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ZAGADNIENIA INFORMACJI NAUKOWEJ

Studia Informacyjne

ISSUES IN INFORMATION SCIENCE

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ISSUES IN INFORMATION SCIENCE – INFORMATION STUDIES

The core purpose of *Issues in Information Science – Information Studies (Zagadnienia Informacji Naukowej – Studia Informacyjne,* ZIN – *Studia Informacyjne)* is to provide a forum for the dissemination of scientific papers and research results in the field of information science and other disciplines which analyze social and technological aspects of various information-related activities performed by contemporary communities. Moreover, the journal is to disseminate critical reviews and summaries of new publications in the field of information science and reports from important conferences discussing contemporary information problems.

We publish papers in Polish or English. For each paper a set of metadata is provided: an abstract and keywords in both languages) as well as author's bio and contact information.

The subtitle of the journal – *Information Studies* – emphasizes the interdisciplinary nature of its subject profile covering a broad spectrum of issues studied by various academic disciplines and professional activity domains related to access to resources of recorded information and knowledge and the use of these resources by contemporary man and society. Other subjects to be covered by ZIN – *Information Studies* involve: (1) theoretical ponderings on the practice of information-related activities performed by various communities, (2) the results of research on the conditions influencing those activities and ways of improving methods and tools employed for the activities in question, (3) the methodology of information science research, information science history and education concerning the information science. The subject profile of ZIN – *Information Studies* covers, among else, the issues of:

- information services in institutions of science, culture, business, education and administration,
- information and knowledge management,
- traditional and online scholarly communication,
- information and knowledge organization,
- metadata theory and practice,
- Web 2.0,
- Semantic Web,
- information architecture,
- information websites usability,
- digital humanities,
- human-computer interaction,
- natural language processing,
- information retrieval,
- use of information and behavior of the information users,
- social response to modern information technologies,
- culture of information,
- information, digital and media skills,
- information policy,
- information ethics.

ZIN – *Information Studies* is addressed to: (1) information science teachers and lecturers, researchers and students, (2) practitioners of information-related activities who analyze methods and tools used to implement those activities in various domains and organizational environments, (3) politicians and donators related to information activities in various domains. The journal content may also be of some interest to teachers, students and researchers in other disciplines of science which deal with various aspects of information existence and use in the contemporary world.

ZIN – *Information Studies* is included in the list of journals scored by Polish Ministry of Science and Higher Education and indexed by: Central European Journal in Social Sciences and Humanities (CEJSH), Central and Eastern European Online Library (CEEOL), Cambridge Scientific Abstracts (CSA), Library and Information Science and Technology Abstracts (LISTA), Polish Bibliography of Book Studies (PBB), Knowledge Organization Literature, Worldcat and Polish Scholarly Bibliography (PBN). The journal is registered in the European Reference Index for the Humanities (ERIH Plus).

ZAGADNIENIA INFORMACJI NAUKOWEJ – STUDIA INFORMACYJNE

Głównym celem *Zagadnień Informacji Naukowej – Studiów Informacyjnych* (ZIN – *Studia Informacyjne*) jest zapewnienie forum dla rozpowszechniania artykułów naukowych i wyników badań z zakresu nauki o informacji (informatologii) oraz innych dyscyplin, w których podejmowane są analizy społecznych i technologicznych aspektów działalności informacyjnej prowadzonej w różnych sferach współczesnego życia społecznego. Czasopismo służyć ma również rozpowszechnianiu krytycznych recenzji i omówień publikacji z tego zakresu oraz problemowych sprawozdań z ważnych konferencji poświęconych współczesnym problemom informacyjnym.

Publikujemy artykuły w językach polskim i angielskim. Każdy artykuł posiada zestaw metadanych: abstrakt i słowa kluczowe (w obu językach) oraz nota biograficzna autora i dane do kontaktu z nim.

Czasopismo adresowane jest zarówno do czytelnika polskiego jak i zagranicznego, publikujemy artykuły zarówno w języku polskim jak i angielskim. Podtytuł czasopisma – *Studia Informacyjne* – podkreśla interdyscyplinarny charakter jego profilu tematycznego, który obejmuje szeroki zakres problemów podejmowanych przez dyscypliny akademickie i dziedziny działalności zawodowej związane z zapewnianiem dostępu do utrwalonych zasobów informacji i wiedzy oraz ich wykorzystywaniem przez współczesnego człowieka i współczesne społeczeństwo. Czasopismo publikuje też artykuły prezentujące teoretyczną refleksję o praktycznej działalności informacyjnej prowadzonej w różnych dziedzinach i obszarach życia społecznego, a także wyniki badań służących poznaniu różnych uwarunkowań tej działalności oraz doskonaleniu jej metod i narzędzi. Na łamach ZIN publikowane są także artykuły poświęcone metodologii badań informatologicznych, historii nauki o informacji oraz edukacji w zakresie nauki o informacji. Profil tematyczny półrocznika ZIN – *Studia Informacyjne* obejmuje m.in. problematykę:

- usług informacyjnych w instytucjach nauki, kultury, biznesu, edukacji i administracji,
- zarządzania informacją i wiedzą,
- komunikacji naukowej i cyfrowej komunikacji naukowej,
- organizacji informacji i wiedzy,
- teorii i praktyki metadanych,
- zagadnień Web 2.0,
- zagadnień Sieci Semantycznej,
- architektury informacji,
- projektowania użytecznych serwisów informacyjnych,
- humanistyki cyfrowej,
- interakcji człowiek – komputer,
- przetwarzania języka naturalnego,
- wyszukiwania informacji,
- wykorzystywania informacji i zachowań informacyjnych użytkowników,
- społecznej recepcji nowoczesnych technologii informacyjnych,
- kultura informacji,
- kompetencji informacyjnych i cyfrowych,
- polityki informacyjnej,
- etyki informacyjnej.

Zagadnienia Informacji Naukowej – Studia Informacyjne adresowane są do wykładowców, badaczy i studentów nauki o informacji, a także praktyków działalności informacyjnej, krytycznie analizujących metody i narzędzia jej realizacji w różnych środowiskach dziedzinowych i organizacyjnych oraz polityków i donatorów działalności informacyjnej w różnych dziedzinach. Lektura czasopisma może też zainteresować wykładowców, studentów i badaczy innych dyscyplin, które zajmują się różnymi aspektami funkcjonowania informacji we współczesnym świecie.

Zagadnienia Informacji Naukowej znajdują się na liście czasopism punktowanych Ministerstwa Nauki i Szkolnictwa Wyższego. Czasopismo jest indeksowane w bazach: Central European Journal in Social Sciences and Humanities (CEJSH), Central and Eastern European Online Library (CEEOL), Cambridge Scientific Abstracts (CSA), Library and Information Science and Technology Abstracts (LISTA), Polska Bibliografia Bibliologiczna (PBB), Knowledge Organization Literature, Worldcat, Polska Bibliografia Naukowa (PBN). Czasopismo jest zarejestrowane w European Reference Index for the Humanities (ERIH Plus).

INTERDISCIPLINARITY OF INFORMATION SCIENCE RESEARCH

INTERDYSCYPLINARNOŚĆ BADAŃ NAUKI O INFORMACJI

Contents | Spis treści

Preface

This issue of *Zagadnienia Informacji Naukowej – Studia Informacyjne* presents eight articles submitted in response to Call for Papers, in which our Editorial Board announced the plan to prepare a special issue devoted to different aspects of interdisciplinarity in information studies. The intention of the Editorial Board was to present the diversity of interdisciplinary connections of modern information science and to examine the various approaches to the potential of interdisciplinary approach in research on information phenomena, information processes, and information problems. We invited research and review articles discussing the interdisciplinary nature of information science and demonstrating examples of research on various information problems conducted using an interdisciplinary approach.

The opening article, entitled *Interdisciplinarity of Information Science Research: Introduction*, is of my authorship. It provides an introduction to the subject. In this article, I present the concept of interdisciplinarity, various types of this research approach in science, and the attempt to characterize the features specific to the interdisciplinarity of information research.

In the article entitled *Information Science in Dialogue with Archival Science, Library Science, and Museum Studies: The Recent Brazilian Experience*, Carlos Alberto Ávila Araújo explores the connections between the theoretical and epistemological foundations of information science and other disciplines focused on the problems of preserving and sharing knowledge resources and cultural heritage recorded in various formats. Araújo's text highlights the possibility of diffusion of concepts developed in information science to other disciplines investigating similar activities.

The next four articles employ various theories and methods of other disciplines in information research with the purpose of developing theoretical foundations of information science.

The article by Tibor Koltay and Enikő Szőke-Milinte – *Complex Interdisciplinary Approach to Modeling Information Literacy Education* – demonstrates the possibilities of a cross-disciplinary approach based on pedagogy and information science in shaping the theoretical foundations of teaching information literacy.

The article by Marek Nahotko – *Application of Interdisciplinary Theory of Genres in LIS* – presents the interdisciplinary connections between information science and linguistics, rhetoric, as well as several other disciplines. The author discusses the use of the theory of genres which has been developed in linguistics, literary studies, and rhetoric, and then in sociology, psychology, cultural studies, and communication science. The use of this theory in LIS allows for a better understanding of the characteristics of communication carried out with the use of specialized tools in bibliographic and library information systems.

In the next article – *Affective Factors in Human Information Behavior: A Conceptual Analysis of Interdisciplinary Research on Information Behavior* – Monika Krakowska considers the interdisciplinary nature of research into human information behavior. She illustrates it with an analysis of the use of theories and research methods of emotional psychology in the study of affective aspects of information behavior.

In the sixth article, entitled *Theoretical Bases of Critical Data Studies*, Łukasz Iwasiński, reviews theoretical literature and empirical studies from diverse fields to examine the application of the critical theory derived from constructivist sociology of knowledge in multidisciplinary data studies, which are a subject for information science research.

The last two articles discuss the use of information science research methods and products in other scientific disciplines.

Piotr Nowak and Piotr Wierzchoń's article *Digital Libraries and a Breakthrough in Linguistic Chronologization. Digitization of Collections in the Service of Linguistics* presents a method used by linguists to study the chronologization of vocabulary, based on computer analysis of large collections of digitized texts. The authors discuss the use of the resources of the Federation of Digital Libraries – aggregating the collections of Polish digital libraries – in linguistic research on neologisms.

The issue ends with an article by Kamila Augustyn – *The Global Book Publishing Market as an Interdisciplinary Research Field* – which uses bibliometric methods to determine the degree of interdisciplinarity of research on the global book market. Although it is rooted in literary studies and book studies, it builds on the findings of information science and computer science, borrowing methods from sociology, culture studies and economics.

The interdisciplinarity of information science research is usually believed to be an inherent feature of this discipline. However, in the information science literature, the term "interdisciplinary" is used as a general concept covering different types of co-operation between information science and other disciplines. In order to highlight the characteristics of the multidimensional interdisciplinarity of information science, this issue collects articles presenting both various interdisciplinary approaches to information research and discussions of the relationships between information science and various other disciplines. We hope that our readers will be interested in the articles both as individual studies, and as parts of a deliberate compilation.

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Editor-in-Chief

Warsaw, 21 September, 2020

Interdisciplinarity of Information Science Research: Introduction

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Abstract

Purpose/Thesis: The article aims to present and discuss some introductory reflections on the nature of interdisciplinarity of research conducted in the field of information science and its effect on the reorganization of the institutional setting of the discipline.
Approach/Methods: This is a conceptual review article based on theoretical considerations and critical analysis of the concept of interdisciplinarity and the features of interdisciplinary approaches employed in information science research and its effect on the position of information science in university structure.
Results and Conclusions: The concept of interdisciplinarity is discussed with reference to two aspects of the development of science: specialization and integration. The article presents selected typologies of interdisciplinarity and discusses the changes in the perception of the concept of discipline. Interdisciplinarity has been discussed as an inherent feature of information science. The types of interdisciplinarity that best correspond to the specificity of the interdisciplinary approach used in information science research has been indicated. Referring to previous studies, the article sketches the most characteristic interdisciplinary connections of information science. In general, the review shows that apart from the permanent relationship with social sciences, in particular with library science and computer science, the relationships between information science and other disciplines are variable and quite loose. Stronger relationships are most often generated through practical activity in related disciplines, in which specialized information services are the most developed and widely used.
Originality/Value: The view that information science is by its very nature an interdisciplinary field of research is common among information researchers and information professionals. Much research has been done on the interdisciplinary connections of the discipline, however, by the best author's knowledge, few of them analyzed the specificity of interdisciplinarity of this field of research. This article attempts to initiate an in-depth discussion on this issue.

Keywords

Crossdisciplinarity. Information science. Institutional structures. Interdisciplinarity. Multidisciplinarity. Transsdisciplinarity. Typology.

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1. Introduction

The aim of this article is to present and discuss some introductory reflections on the nature of interdisciplinarity of information science research and its effects on the reorganization of the institutional setting of the discipline. The view that information science

is an interdisciplinary field of research is common among information researchers and much research has focused on identifying the discipline's interdisciplinary connections. However, to the author's best knowledge, few of them analyzed the specific features of interdisciplinarity of this field of research. This article attempts to initiate an in-depth discussion on this issue. It is meant as an introduction to in-depth analyzes, allowing a better understanding of the specifics of interdisciplinary relationships of information science and their importance for the development of its research.

2. The concept of interdisciplinarity

In recent years, interdisciplinarity has become a key term in discussions of changes in science, organization of research, and universities. Declarations of the development of interdisciplinary research and the establishment of interdisciplinary research groups are increasingly common in the operating strategies of governments, organizations and scientific associations, universities, research institutions and their internal units. In their missions statements, research journals claim to have a particular interest in interdisciplinary research. Such statements usually relate interdisciplinarity to innovation. The interdisciplinary approach is promoted as a modern model of research practice, which, by crossing the boundaries of traditional disciplines and the paradigms they adopted, provides a new, broader perspective on the studied phenomena and finds comprehensive solutions to complex problems, with which research adhering to traditional boundaries between the disciplines cannot cope (see e.g. Wernli & Darberllay, 2016). Interdisciplinarity is therefore seen as a remedy for the limitations of research conducted according to the models defined by the traditional disciplines.

However, interdisciplinary research is by no means a modern invention. The interdisciplinary approach to scientific research has a long history, even if it is only recently that the concept of interdisciplinarity has become popular in meta-scientific discourse. According to Raymond C. Miller, the concept of interdisciplinarity began to be discussed in the social sciences in the early 1970s, along with intensive promotion of the implementation of an interdisciplinary approach in research and in university education. *Interdisciplinarity: Problems of Teaching and Research in Universities*, a report published by the Organization for Economic Co-operation and Development (OECD) in 1972 (Miller, 2010, 2) was the first comprehensive publication on the topic. Piotr Nowak and Piotr Wierzchoń (2020), basing on an analysis of digitized scientific publications collected in the resources of the Polish Digital Libraries Federation (Federacja Bibliotek Cyfrowych – FBC), prove that the term "interdisciplinarity" first appeared in the Polish language in 1966 on the pages of the journal *Przegląd Biblioteczny*. Thus, scholars have been discussing the importance of interdisciplinarity in scientific research for about 50 or 60 years, but it must be remembered that from the earliest times the development of science has been driven by two parallel and complementary phenomena: the phenomenon of differentiation and specialization, and the phenomenon of integration and unification. The former assumes both a gradual narrowing of the area of research and changing the way in which researchers work, introducing new theories and research methods. Of course, the differentiation and specialization of science deepen the knowledge of the world, improve the research methods and

increase the effectiveness of research by the division of labor. However, they also create an ever deeper division of science into disciplines of an ever-narrowing scope, and, at the same time, increase the distance between researchers and the isolation and particularism of research in individual scientific disciplines. The simultaneous integration and unification of science proceed beyond the previously established divisions, forming connections between disciplines, strengthening the unity of scientific cognition and filling the gaps in those areas of research, where exploration and explanation based on the methods and theories of individual disciplines have proved insufficient. The tension between the unity and the multiplicity of sciences is one of the most important forces of progress in science (cf. Kamiński, 1998, 249).

An interdisciplinary approach is necessary for both in-depth and complete understanding of the world in which humanity functions. On the one hand, the disciplinary divisions have led to establishing a huge number of detailed disciplines allowing a more and more detailed understanding of various areas of reality; on the other hand, they have revealed the connections between previously separated disciplines. The disclosure of such connections was a result of the discovery of common aspects of various phenomena (e.g. heat and motion, light and electromagnetism), the widespread use of mathematical methods in an increasing number of sciences (both natural and social sciences), the integration of research in physics, chemistry and technology, followed by the integration of research in biology and medicine, the interest in universalist mathematical structures and the development of the most general theories, allowing the scholars to explain phenomena studied by various fields of science (e.g. general systems theory, cybernetic theories, ecological theories), and, recently, the digitization of scientific research big data analysis, concerning various areas of the world and human life. Although the specialization of science continues at a rapid pace, since the mid-twentieth century, the accuracy of scientific insight based on research conducted in fields with an ever-narrowing scope has been increasingly questioned, while the model of interdisciplinary research has become more and more popular as the effective solution for this problem. Since then, the discussion of interdisciplinarity has developed in research, which led some authors to identify this stage of the development of science as the era of interdisciplinarity (cf. Dudzikowa et al., 2012, 9).

The concept of "interdisciplinarity" is most often defined as a result of the involvement of more than one discipline in certain activities. For example, according to the *Cambridge Advanced Learner's Dictionary & Thesaurus*, the noun "interdisciplinarity" means

> the fact of involving two or more different subjects or areas of knowledge:
> The key characteristic of this work is its interdisciplinarity.
> Interdisciplinarity and collaboration across faculties and between departments are strong features of research activity within the university (Interdisciplinarity, n.d.).

According to the *Słownik Języka Polskiego PWN* (PWN Dictionary of the Polish Language), the adjective "interdisciplinary" (Pl. *interdyscyplinarny*) means:

> concerning two or more scientific disciplines;
> building on the achievements of several sciences;
> composed of scientists representing various branches of knowledge (Interdisciplinarny, n.d.)[1].

[1] In the original version: (1) dotyczący dwu lub więcej dyscyplin naukowych; (2) korzystający z dorobku kilku nauk; (3) złożony z naukowców reprezentujących różne gałęzie wiedzy.

In scholarship, however, the term "interdisciplinarity" does not have a uniform definition. Julie Thompson Klein, in the conclusion of her extensive review of the interdisciplinary literature in the book *Interdisciplinarity: History, Theory, and Practice*, notices that:

> Interdisciplinarity has been variously defined in this century: as a methodology, a concept, a process, a way of thinking, a philosophy, and a reflexive ideology. It has been linked with attempts to expose the dangers of fragmentation, to reestablish old connections, to explore emerging relationships, and to create new subjects adequate to handle our practical and conceptual needs. Cutting across all these theories is one recurring idea. Interdisciplinarity is a means of solving problems and answering questions that cannot be satisfactorily addressed using single methods or approaches. Whether the context is a short-range instrumentality or a long-range reconceptualization of epistemology, the concept represents an important attempt to define and establish common ground (Klein, 1991, 196).

3. Types of interdisciplinarity

Interdisciplinary research is conducted in almost all fields of modern science, and that may sometimes create misunderstandings. Rick Szostak noticed that, until a few decades ago, the main intellectual challenge to quality interdisciplinary research was to falsify the view that this type of research is inherently superficial, which was popular among researchers of traditional academic disciplines and justified by the claim that a solid mastery of one discipline requires many years, and therefore an equally solid mastery of a few is not possible. Currently, the challenge is to disprove the increasingly popular belief that any research can be interdisciplinary (Szostak, 2013). It must therefore be emphasized that interdisciplinary research requires

> the integration of insights from multiple disciplines in order to better understand some complex topic that is that is addressed from different perspectives by different disciplines. (...) Quality interdisciplinary work requires a serious engagement with each discipline one draws upon: This is far from impossible, but also far from being easy (Szostak, 2013, 44–45).

The essence of interdisciplinarity in science is not in the combination of theories and methods from various disciplines, but in the synergy emergent from that combination, resulting in a comprehensive understanding of complex problems and proposing coherent solutions to them (Dudzikowa et al., 2012, 9).

There are many types of interdisciplinary connections characterized by a different degree of the integration of co-operating disciplines. There are also many typologies of interdisciplinary connections. For example, Stanisław Kamiński, a methodologist and philosopher, distinguished four types of interdisciplinary research areas:

(1) border disciplines – emerging at the interface between several disciplines, e.g. physical chemistry, biochemistry, biophysics, geophysics, astrophysics, psycholinguistics, sociolinguistics, etc.;
(2) universalizing disciplines – e.g. cybernetics, general systems theory;
(3) comprehensive disciplines – e.g. science of science, space sciences;
(4) sets of disciplines related only to a common topic, e.g. semiology, pedagogy (Kamiński, 1998, 249).

Shiyali Rammamrita Ranganathan, mathematician and librarian well known in information science as the creator of faceted classification and facet analysis, distinguished five types of interdisciplinary connections by analyzing the structure of research topics:

(1) agglomeration, i.e. compiling components from various disciplines into a larger set, e.g. life sciences, social sciences, humanities;
(2) loose-assemblage, consisting in a relatively small interaction of two disciplines in the form of orientation, the use of a research tool, comparison or influence, e.g. computerization of libraries, comparative studies of Judaism and Christianity, the use of rhetorical methods to study scientific texts in the science of science;
(3) fusion, i.e. merging the research areas of two disciplines into an internally coherent new discipline, e.g. biochemistry, geopolitics, sociolinguistics;
(4) distillation, i.e. extracting certain related concepts from several disciplines or sub-disciplines and organizing a new discipline around them, e.g. methodology of sciences, forestry, management science;
(5) clustering or subject bundles, i.e. focusing the interest of various research disciplines on a certain multifaceted analyzed object or problem, most often taking the form of the so-called area or mission oriented studies, e.g. cultural studies, women studies, cognitive science (Ranganathan, 2006).

Mohinder P. Satija added one more type of interdisciplinary connections to Ranganathan's list:

(6) annexation mode, which consists in isolating from traditional disciplines issues related to a selected object or activity and loosely combining them in the structure of a new research area, e.g. physical education (sports science) (Satija et al., 2014).

Ingetraut Dahlberg, philosopher and historian of science, and researcher of the organization of knowledge, distinguished five types of integration of the sciences:

(1) interdisciplinarity – characterizing research in which the issue of a certain discipline is analyzed from the point of view of other disciplines, e.g. educational psychology, sociology of education, educational policy, educational legislation, educational economics. philosophy of education;
(2) transdisciplinarity – which arises as a result of the penetration of the theory and / or research methods of one discipline into many other disciplines, e.g. energy politics, agricultural politics, environmental politics, financial politics, culture politics, etc.; Another example of transdisciplinarity is the formation of new disciplines that use statistical methods to study various areas of the world, e.g. scientometrics, bibliometrics, psychometrics, econometrics, etc.;
(3) multidisciplinarity – characterizing the areas of multifaceted analysis of a selected research object, the aim of which is to use the contribution of various disciplines to solve a certain problem, e.g. the study of critical phenomena such as earthquakes, floods, AIDS, radicalism, fundamentalism; the space science, commodity science, transportation, etc.;
(4) pluradysciplinarity – manifested by conducting research on the same complex phenomenon, usually weakly interconnected within various disciplines, e.g. security: security of computers, the security of information, the security of buildings, the security of space ships, the security of power plants;
(5) syndisciplinarity – which is the case of the strongest interdisciplinary links in research, when a number of disciplines work together to obtain a complete synthesis of research results, e.g. nanotechnology (Dahlberg, 1994).

Finally, the recent typology of interdisciplinarity presented by Raymond C. Miller (2020) should be mentioned as well. He distinguished three types of interdisciplinary research approach:

(1) multidisciplinary approaches – that involve the process of juxtaposing parts of some conventional disciplines in the effort to get a broader understanding of some common problem; integration of the participating disciplines is weak and their identities and research practices are not threatened; team-taught courses or ad hoc research teams are examples of this approach;
(2) crossdisciplinary approaches – involve real interaction across conventional disciplines, but the extent of integration of their concepts and / or methods may vary significantly; the six subcategories of crossdisciplinarity are distinguished: (a) topics of social interest focused on some social problems, e.g. area studies, gerontology, labor studies, urban studies; (b) professional preparation focused on relevant knowledge for professional activities in a specific area, e.g. business management, diplomatic studies, education, health studies, policy studies; (c) shared analytical methods focused on research methods used across different disciplines, such as statistics, computer modeling, game theory, information theory, etc.; (d) shared concepts that appear in many disciplines, like energy, value, role, evolution, development, cycles, rational choice, etc.; (e) hybrids combining parts of two existing, related disciplines to create interstitial new crossdisciplines that attempt to bridge perceived gaps between disciplines, e.g. social psychology, political economy, bio-geography; (f) shared life experiences focused on the premise that certain social groups share an experience of oppression that gives them shared identity, shared rejection of mainstream knowledge and shared political agenda to replace the unjust social conditions with an egalitarian society, e.g. women studies, ethnic studies, post-colonial studies, refuge studies;
(3) transdisciplinary approaches "involve articulated conceptual frameworks that seek to transcend the more limited worldviews of specialized conventional disciplines" (Miller, 2020, 11); transdisciplinary approaches provide worldviews alternative or supplementary to the conventional disciplines, e.g. general systems theory, cultural studies, gender theory, symbolic interactionism.

The development of interdisciplinarity is often considered to be a phenomenon opposite to the specialization of science, but it is more appropriate to perceive them as complementary. The division of science into classical academic disciplines is a traditional method of organizing scientific knowledge, research institutions and university education, while interdisciplinarity is a method of reorganizing them by designating new configurations and connections (cf. Moran, 2010). It is also worth noting that areas of interdisciplinary research, similarly to specialized fields distinguished in the process of deepening the division between conventional disciplines, strive to consolidate their legitimacy through various forms of institutionalization, from organizing national and international conferences, starting their own journals and scientific societies, to establishing separate units in the structures of universities and other research institutions. Although, according to the classical definition of a scientific discipline, interdisciplinary research areas have not that status, many such areas have long functioned as independent disciplines. These include, for example, pedagogy, management science, as well as information science. The areas of interdisciplinary research are sometimes called "new types of disciplines", neodisciplines, interdisciplines, crossdisciplines, or transdisciplines (Miller, 2020). A few years ago, Carel Stephanus de Beer (2015) published a monograph devoted to the presentation of information science as an interscience.

4. Interdisciplinarity as an inherent feature of information science

Many scholars of information science agree that information science is by its very nature an interdisciplinary field of research. It was formed as an interdisciplinary project, and its pioneers were researchers of various disciplines, both of pure sciences and engineering, as well as social sciences and humanities, conducting both basic and applied research. Their common aim was to ensure efficient access to relevant information, meeting the needs of users seeking it in growing resources of recorded knowledge. Specialists from various fields contributed both ideas derived from their mother disciplines, theories, concepts and research methods useful for information research, as well as experiences related to the information needs specific to these disciplines, methods of satisfying them and ways to overcome various barriers to the efficient operation of information processes.

In 1968, Harold Borko presented one of the first accounts of information science as an interdisciplinary area with a broad research agenda. According to him, information science emerged from studies exploring the properties and behavior of information, the forces governing its flow, and the means of processing it to optimize collection, storage, retrieval and use:

> It is an interdisciplinary science derived from and related to such fields as mathematics, logic, linguistics, psychology, computer technology, operational research, the graphic arts, communications, library science, management, and other similar fields. It has both a pure science component, which inquiries into the subject without regard to its application, and an applied science component, which develops services and products (Borko, 1968, 3).

Borko considered librarianship and documentation to be applied aspects of information science.

Thirty years later, Tefko Saracevic (1999) referred to Borko's concept in one of the most frequently cited characterizations of information science, emphasizing interdisciplinarity as its defining feature, alongside its focus on solving the problems of information explosion, and on ensuring an effective transfer of recorded knowledge with the use computer technology. Saracevic argued that interdisciplinary relationships of information science are constantly changing, and that the process of shaping these connections is far from over. He highlighted two aspects of information science's relationships with other disciplines. Firstly, research problems of information science which relate to effective transfer of knowledge in modern information society are inherently complex and multifaceted, and thus cannot be solved with the use of approaches and concepts developed in one discipline only. Therefore, an interdisciplinary approach is a prerequisite of effective research in information science. Secondly, the main source of interdisciplinarity of information science is the diversity of backgrounds of researchers working in this field. They are very diverse, but the actual contribution of the disciplines to the development of information science is also very varied. So far library science and computer science have had the greatest impact on the development of the research agenda for information science. Library science and information science share a social role and an interest in the effective use of accumulated knowledge. Computer science provides information science with methods and technological tools for formulating practical solutions to its main problems. It should also be noted that Saracevic emphasizes that information science is a separate discipline, however strongly associated with library science and computer science.

Interdisciplinary connections of information science are constantly evolving as a consequence of changes in its so called intellectual structure. However, two dominant orientations have been present from the outset:

> toward the human and social need for and use of information pertaining to knowledge records, on the one hand, and toward specific information techniques, systems, and technologies (covered under the name of information retrieval) to satisfy that need and provide for effective organization and retrieval of information, on the other hand. From the outset, information science had these two orientations: one that deals with information need, or more broadly human information behavior, and the other that deals with information retrieval techniques and systems (Saracevic, 2010, 2570).

These two orientations continue to develop now, but become increasingly independent from one another, which is confirmed e.g. by co-citation studies (White & McCaine, 1998). The growing gap between information science focused on social issues and information science focused on computer technology is reflected in the structures of many institutions of higher education. It has been evident in some classification schemas organizing research. For example, OECD Field of Science and Technology Classification includes information science in section 1 Natural sciences, in sub-section 1.2 Computer and information sciences, and in section 5 Social sciences, in sub-section 5.8 Media and communication – Information science (social aspects) (OECD, 2007). This scheme, with minor changes, was the basis of the new division of scientific fields and disciplines that was a part of the recent reorganization of the structure of universities in Poland. As a result, at most universities, information science focused on social aspects was incorporated into faculties or departments of social communication and media sciences, and in several cases, faculties or departments of cultural sciences. The technological aspects of information science, on the other hand, were merged with the engineering sciences (information and communication technology) or within the pure and natural sciences (the computer and information sciences). Thus, the distance between the two orientations in information science has been enlarged even further in a consequence of this arbitrary decision.

5. The interdisciplinarity of information science research

In each science, its interdisciplinary connections, their distribution, intensity, orientation, and models of cooperation between researchers of various specialties are shaped by the nature of the problems studied and the solutions sought. The degree of synergy of integrated theories and research methods in various sciences also varies, as do the types of interdisciplinarity emergent in such relationships. The relatively large number of disciplines involved in information science research and the variability of these correlations over time suggest that the interdisciplinary relationships of information science are rather loose. Following the typology of interdisciplinarity discussed in section three, information science can be classified as a comprehensive discipline, or a set of disciplines related only to a common topic (in Kamiński's terms), clustering or subject bundles (Ranganathan's), multidisciplinarity (Dahlberg's), and crossdisciplinary approach of the types "a – topics of social interest" and "b – professional preparation" (Miller's). Like Dahlberg, George Adam Holland recognized information science as a field of multidisciplinary research, noting that there is no explicit intent of strategic integration with collaborated disciplines

(Holland, 2008, 14). The fact that the unequivocal identification of interdisciplinary connections specific to information science research as one of the types of interdisciplinarity distinguished in theoretical studies is not possible proves that these relationships are not only loose and variable, but also that they function on various levels (methodological, theoretical, educational, and practical).

Assessing the degree of interdisciplinarity in information science is not easy, as the literature which would be the material for such empirical analysis is usually categorized as belonging to the broader Library and Information Science (LIS) class. Firstly, it does not allow for tracing the relationship between information science and library science, and secondly, it provides information on the distribution of connections with other disciplines for information science and library science taken together. An example of such "aggregated" analysis is the bibliometric study of Vincent Larivière, Cassidy R. Sugimoto and Blaise Cronin, carried out on a large sample of data extracted from 96 000 articles published over the course of 110 years (1900–2010) in 160 scientific journals currently included in the LIS category (Larivière et al., 2012). The research showed that since the 1960s, the references to literature of other disciplines in LIS papers had been systematically growing; in 2010 only approximately 36% of references made to an item in any given LIS paper referred to a LIS source. Most citations in LIS literature came from the literature on management (from 2% in 1960 to 18% in 2010) and on computer science (from 4% in 1960 to slightly above 8% in 2010). In the case of computer science, the citation level has been consistent since the mid-1990s: it has remained at the level of approximately 8%. A high level of citations was also recorded for the literature of medical sciences (6% in 2000 with a downward trend to 4% in 2010) and pedagogical sciences (most often cited in the 1940s – up to 12% of citations; since the 1970s the citation intensity remains at the level of 1–2%). Larivière, Sugimoto, and Cronin also found a clear upward trend in references to LIS literature in research of other disciplines: from the mid-1990s to 2010, there was an increase in such citations from 20% to 60%, most of them from management sciences (10% in 2010) and computer science (8% in 2010). The citation analysis showed LIS research connections at the level of at least 700 references (publications citing LIS papers and cited by LIS papers) for 31 disciplines in the period 1991–2010 (Larivière et al., 2012, Fig. 11). This study also confirmed that the number of LIS researchers' publications in journals of other disciplines had increased: from 20% in the 1960s to 60% in 2010. An analysis of the distribution of LIS's interdisciplinary relationships compared to the distribution of such relationships in other humanities and social sciences (political science, archeology, sociology, philosophy and literary studies) showed that LIS was one of the most interdisciplinary fields of inquiry.

Taiwanese researchers Yu-Wei Chang and Mu-Hsuan Huang (2012) obtained similar results in their analysis of a much smaller sample of approx. 1500 articles published over a period of 30 years (1978–2007) in the ten journals with the highest Impact Factor. An equal number of journals was selected from both sub-categories of the LIS category: five for library science and five for information science. Because four of information science journals fell into both the LIS and CIS (Computer and Information Science) categories, the authors have arbitrarily eliminated from the sample the articles they saw as belonging to computer science. It should be noted that such decision might have affected the sample's capacity to reflect LIS's interdisciplinarity. On the other hand, determining the scope and nature of LIS's interdisciplinary relationships was not the main aim of Chang's and Huang's research,

which primarily focused on testing three methods employed in bibliometric analyzes of interdisciplinarity in science: direct citation, bibliographic coupling and co-authorship analysis. According to the data of Chang and Huang, the results obtained with the use all three methods showed a similar degree of influence of other disciplines on LIS research (from 50% for direct citation and co-authorship to 34% for bibliographic references). According to the study, the disciplines in the general science category (covering the science of science) had the strongest connections with LIS – from 7.1 to 13.2%; business / management – from 1.8 to 4.4%; computer science – from 2.7 to 7.6% and pedagogical sciences – from 0.9 to 3.4%. These studies also found a clear upward trend in citations of literature from other disciplines, but a decrease in references to LIS found in the research of other disciplines.

The "aggregated" approach was employed also in Yu-Wei Chang's (2018) study of external contributors to LIS knowledge who, although unaffiliated with LIS-related institutions, published their research results in LIS journals; the differences between contributors to library science and contributors to information science were also considered. Analyzing the sample of 11 641 articles published in 2005–2014 in 39 strongly LIS-oriented journals indexed in the Web of Science database, the study demonstrated that more than 46% of the LIS articles were written by at least one non-LIS author, with the authors' backgrounds ranging across 29 disciplines. In the period studied, an increasing trend of interdisciplinarity was apparent both in information science and in library science. Almost 70% of non-LIS authors were affiliated with institutions related to computes science (47.4%) or business and economics (20.6%). The number of non-LIS authors publishing in the information science journals was three times the number of non-LIS authors publishing in library science journals. Authors with computer science background were the most frequent contributors to information science journals; authors with medical background were identified as the non-LIS authors most frequently (31.4%) publishing in the library science journals.

The results of the bibliometric analyzes discussed above clearly show the high interdisciplinarity of LIS research, situating LIS, information science and library science taken together, among the most interdisciplinary research areas in contemporary humanities and social sciences. Additionally, Chang's study showed that information science is characterized by a much higher degree of interdisciplinarity than library science.

Finally, we may recall the interesting results of the study by Zbigniew Osiński (2019), analyzing the connections between LIS, media studies and cognition and social communication sciences to verify the legitimacy of combining them into a single overarching discipline in the new division of the fields and disciplines of science recently introduced to the organization of research in Poland. Osiński applied a triangulation of qualitative and quantitative methods: an analysis of the content of review articles concerned with the research issues of these disciplines published in 2010–2018 in Polish journals considered to be the most important sources of new scholarship within the studied disciplines; an analysis of the thematic scope of the journals presented on their websites; a citation analysis of 1432 articles published in these journals in the same period, in search of references to journals representing other subdisciplines included in the newly established overarching discipline; and an analysis of the overlap of sets of keywords used in metadata of the articles. The results of the analysis of review articles showed that research fields of LIS, media studies and the cognition and social communication sciences are aligned and complementary. This observation was confirmed by the analysis of the thematic scope of the studied journals. Quantitative research revealed

many methodological problems, e.g. related to the domination of citations from foreign literature. However, overall, the results of the citations analysis did not suggest that there was an interdisciplinary relationship between LIS, media studies, and the cognition and social communication sciences. The references to articles published in the studied Polish journals associated with other disciplines were incidental. The results of the keyword analysis also showed weak relationships between the research issues of LIS and the other two disciplines. While Osiński's research did not confirm the officially established relationships between LIS, media studies, and cognition and social communication sciences, it should be noted, however, these studies referred to actual research practices in the Polish scientific community in the analyzed period. It is an open question whether the administrative changes of the organization of research will actually result in a closer cooperation between the interconnected disciplines. It is also worth noting that, for example, according to the results of Chang's (2018) study conducted on the sample of international journals, out of non-LIS authors publishing in information science journals, only 2.3% authors were affiliated with media studies (or more generally: communication sciences).

Over the past two decades, the place of information science in the organizational structure of university education has changed in many countries, and the changes provoked many discussions regarding the impact of interdisciplinarity on the development of information science and its relationships with other sciences. Two distinct positions emerged in these discussions (Madsen, 2016), illustrating what is sometimes referred to as "the problematic situation of interdisciplinarity" (cf. Dudzikowa, 2012). Researchers leaning towards the first position focus on the problem of fragmentation of contemporary information science, its eclectic nature, and increasingly fluid and permeable boundaries, considered to be inevitable consequences of researching objects, processes, and phenomena studied also in other disciplines. This is perceived as a threat to the discipline's identity (e.g. Bates, 1999; Meadows, 2008). Researchers holding the second position see the development of multidisciplinary information research as an opportunity to solve the problems of information science, and thus – as a chance to further its development and to increase its prestige. This has been shown to be possible by the evolution of the so-called i-schools (Nolin & Åstrøm, 2010). However, it should be remembered that i-schools have not developed according to a uniform pattern. They take different forms in different countries and at different institutions, implement various interdisciplinary approaches and integrate different configurations of research and professional education on information phenomena and information services. In some cases, they focus more on the relationships with computer science and information technology, in others on those with social disciplines and user studies, and in others – on the traditional links with library science. There is also a visible trend of transforming former faculties or departments of library and information science, or information and library science, into faculties or departments of information science or information studies.

6. Final remarks

The complex and multifaceted nature of information science requires the use of the achievements of various disciplines, their methods and theories. At the same time, it seems that the interdisciplinary connections of information science are rather loose: they arise ad

hoc in search for solutions to various specific research problems. The configuration and intensity of these connections change depending on the focus of the researchers' attention.

The most sustained interdisciplinary relationships of information science are that with computer science, despite the growing distance between research focused on social issues and research focused on technological issues – and with library science, or, more broadly, with the disciplines concerned with the collection and sharing of knowledge recorded in various forms.

The interdisciplinary approach related to professional preparation, which is specific to information science, results in a large number of interdisciplinary connections, generated by practical aspects of the use of information services and the development of information products for particular fields and disciplines. Such connections are usually of a loose nature, as they primarily involve identifying the needs of specialists in a given field to be fulfilled by information services and monitoring their utility in practice; they do not inspire a more significant involvement of this field in information research. Sometimes, however, the connection between information science and another discipline is based on the significant use of information products and of the methods of providing information services developed in information science in the other discipline's own research and practice, e.g. systematic reviews of research literature and their use in evidence-based medicine. It seems that the situation of management sciences is similar, although there, the use of research methods derived from management sciences in the management of information processes and information resources is important as well. On the other hand, the similarity of the research issues of information science and media studies, and the sciences of cognition and social communication, already indicated by theorists, has not confirmed in the analyzes of mutual citations of researchers working in these disciplines.

The research on the interdisciplinarity of information science conducted so far has most often focused on identifying disciplines with which information science enters into interdisciplinary connections. Little attention was paid to the nature of these links. Certainly, such a reflection would allow a better understanding of the phenomenon of interdisciplinarity in information science, which in turn could contribute to a more effective organization of information research and education in the field of information science at universities.

References

Bates, M. (1999). The Invisible Substrate of Information Science. *Journal of the American Society for Information Science*, 50(12), 1043–1050. https://doi.org/10.1002/(SICI)1097–4571

Beer, C. S. de (2015). *Information Science as an Interscience: Rethinking Sccience, Method and Practice*. Kidlington: Chandos.

Borko, H. (1968). Information Science: What Is It? *American Documentation*, 19(1), 3–5. https://doi.org/10.1002/asi.5090190103

Chang, Y.-W. (2018). Examining Interdisciplinarity of Library and Information Science (LIS) Based on LIS Articles Contributed by Non-LIS Authors. *Scientometrics*, 116, 1589–1613. https//doi.org/10.1007/s11192–018-2822–7

Chang, Y.-W., Huang, M.-H. (2012). A Study of the Evolution of Interdisciplinarity in Library and Information Science: Using Three Bibliometric Methods. *Journal of the American Society for Information Science and Technology*, 63(1), 22–33. https://doi.org/10.1002/asi.21649

Dahlberg, I. (1994). Domain Interaction: Theory and Practice. In: H. Albrechtsen & S. Oernager (eds.). *Knowledge Organization and Quality Management. Proceedings of the Third International ISKO Conference 20–24 June, 1994, Copenhagen, Denmark* (60–71). Frankfurt/Main: Index Verlag.

Dudzikowa, M. (2012). Sytuacja problematyczna interdyscyplinarności w naukach społecznych i humanistycznych (z kryzysem w tle). In: A. Chmielewski, M. Dudzikowa & A. Grobler (eds.). *Interdyscyplinarnie o interdyscyplinarności. Między ideą a praktyką* (10–37). Kraków: Impuls.

Dudzikowa, M., Chmielewski, A., Grobler, A (2012). Przedmowa. W: A. Chmielewski, M. Dudzikowa & A. Grobler (eds.). *Interdyscyplinarnie o interdyscyplinarności. Między ideą a praktyką* (9–11). Kraków: Impuls.

Holland, G.A. (2008). Information Science: An Interdisciplinary Effort? *Journal of Documentation*, 64(1), 7–23. https://doi.org/10.1108/00220410810844132

Interdisciplinarity (n.d.). *Cambridge Advanced Learner's Dictionary & Thesaurus* [online], [20.08.2020], https://dictionary.cambridge.org/dictionary/english/interdisciplinarity

Interdisciplinarny (n.d.). *Słownik Języka Polskiego PWN* [online], [20.08.2020], https://sjp.pwn.pl/sjp/interdyscyplinarny;2466577.html

Kamiński, S. (1998). *Nauka i metoda. Pojęcie nauki i klasyfikacja nauk*. Ed. by A. Bronk. Lublin: Towarzystwo Naukowe KUL.

Klein, J.T. (1991). *Interdisciplinarity: History, Theory, and Practice*. Detroit: Wayne State University Press.

Larivière, V., Sugimoto, C., Cronin, B. (2012). A Bibliometric Chronicling of Library and Information Science's First Houndred Years. *Journal of the American Society for Information Science and Technology*, 63(5), 997–1016. https://doi.org/10.1002/asi.22645

Madsen, D. (2016). Liberating Interdisciplinarity from Myth: An Exploration of the Discursive Construction of Identities in Information Studies. *Journal of the American Society for Information Science*, 67(11), 2697–2709. https://doi.org/10.1002/asi.23622

Meadows, J. (2008). Fifty Years of UK Research in Information Science. *Journal of Information Science*, 34(4), 403–414. https://doi.org/10.1177/0165551508089718

Miller, R.C. (2020). *Interdisciplinarity: Its Meaning and Consequences* [online]. Oxford Research Encyclopedia, International Studies [30.09.2020], https://doi.org/10.1093/acrefore/9780190846626.013.92

Moran, J. (2010). *Interdisciplinarity*. Second ed. London, New York: Routledge.

Nolin, J., Åstrøm, F. (2010). Turning Weakness into Strength: Strategies for Future LIS. *Journal of Documentation*, 66(1), 7–27. https://doi.org/10.1108/00220411011016344

Nowak, P., Wierzchoń, P. (2020). Digital Libraries and the Breakthrough in Linguistic Chronologization. The Applications of Digitization in Linguistics. *Zagadnienia Informacji Naukowej*, 58(1A). [in print].

OECD (2007). *Revised Field of Science and Technology (FOS) Classification in the Frascati Manual* [online]. OECD, Committee for Scientific and Technological Policy, [5.08.2020], https://www.oecd.org/science/inno/38235147.pdf

Osiński, Z. (2019). Analysis of the Thematic Overlap Between Library and Information Science and Other Subdisciplines of the Social Communication and Media Sciences in Poland. *Zagadnienia Informacji Naukowe*, 57(2A), 28–44. https://doi.org/10.36702/zin.468

Ranganathan, S.R. (2006). *Prolegomena to Library Classification*. Ed. III. Reprint. Bangalore: Ess Ess Publications, Sandra Ranganathan Endowment for Library Science.

Saracevic, T. (1999). Information Science. *Journal of the American Society for Information Science*, 50(12), 1051–1063. https://doi.org/10.1002/(SICI)1097–4571

Saracevic, T. (2010). Information Science. In: M. J. Bates & M.N. Maack (eds.). *Encyclopedia of Library and Information Sciences* (2570–2585). Boca Raton: CRC Press.

Satija, M.P., Madalli, D.P., Dutta, B. (2014). Modes of Growth of Subjects. *Knowledge Organization*, 41(3), 195–204.

Szostak, R. (2013). The State of the Field: Interdisciplinary Research. *Issues in Interdisciplinary Studies*, (31), 44–65.
Wernli, D., Darbellay, F. (2016). *Interdisciplinarity and the 21st Century Research-intensive University. Technical Report* [online]. League of European Research Universities, [30.09.2020], https://doi.org/10.13140/RG.2.2.21578.16321
White, H., McCain, K. (1998). Visualizing a Discipline: An Author Co-citation Analysis of Information Science, 1972–1995. *Journal of the American Society for Information Science*, 49(4), 327–355. https://doi.org/10.1002/(SICI)1097+4571(19980401)49:4<327::AID-ASI4>3.0.CO;2+4

Interdyscyplinarność badań nauki o informacji: wprowadzenie

Abstrakt

Cel/Teza: Artykuł ma na celu przedstawienie i omówienie wstępnych refleksji na temat istoty interdyscyplinarności badań prowadzonych w nauce o informacji oraz jej konsekwencji dla reorganizacji instytucjonalnego otoczenia dyscypliny.
Koncepcja/Metody badań: Jest to przeglądowy artykuł konceptualny, oparty na rozważaniach teoretycznych i krytycznych analizach pojęcia interdyscyplinarności oraz cech podejścia interdyscyplinarnego stosowanego w badaniach informacyjnych i jego konsekwencji dla ustalenia miejsca nauki o informacji w strukturze organizacyjnej uczelni.
Wyniki i wnioski: Pojęcie interdyscyplinarności omówiono w kontekście dwóch kluczowych zjawisk rozwoju nauki: specjalizacji i integracji. Przedstawiono wybrane typologie interdyscyplinarności oraz omówiono zmiany w postrzeganiu pojęcia dyscypliny. Omówiono interdyscyplinarność jako nieodłączną cechę nauki o informacji. Wskazano rodzaje interdyscyplinarności, które najlepiej odpowiadają specyfice podejścia interdyscyplinarnego stosowanego w badaniach informacyjnych. Nawiązując do wcześniejszych badań, wskazano na najbardziej charakterystyczne interdyscyplinarne powiązania informatyki. Generalnie oceniono, że poza trwałym związkiem z naukami społecznymi, w szczególności z bibliotekoznawstwem i informatyką, interdyscyplinarne związki nauki o informacji są zmienne i dość luźne. Silniejsze relacje generowane są najczęściej przez dziedziny działalności praktycznej i związane z nimi dyscypliny, w których wyspecjalizowane usługi informacyjne są najbardziej rozwinięte i szeroko stosowane, np. przez medycynę.
Oryginalność/Wartość poznawcza: Pogląd, że nauka o informacji ze swej natury jest interdyscyplinarnym obszarem badawczym jest powszechny wśród badaczy i specjalistów informacji. Przeprowadzono wiele badań dotyczących powiązań interdyscyplinarnych dyscypliny, jednak według najlepszej wiedzy autorki, w żadnym z nich nie analizowano specyfiki interdyscyplinarności tej dziedziny badań.

Słowa kluczowe

Interdyscyplinarność. Krosdyscyplinarność. Multidyscyplinarność. Nauka o informacji. Struktury instytucjonalne. Transdyscyplinarność. Typologia.

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w środowisku informacyjnym *(Encyklopedia Książki, Wrocław 2017),* The impact of the works by Paul Otlet and Suzanne Briet on the development of the epistemology of documentation and information science in Poland *(Fondaments épistémologiques et théoriques de la science de l'information-documentation, London, 2018),* Big data (dane masowe) w nauce o informacji *(Zagadnienia Informacji Naukowej, 2018),* Organizacja wiedzy w cyfrowym świecie: wpływ rewolucji cyfrowej na ewolucję metod i narzędzi organizacji wiedzy *(Zagadnienia Informacji Naukowej, 2019).*

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Information Science in Dialogue with Archival Science, Library Science and Museum Studies: The Recent Brazilian Experience

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Abstract

Purpose/Thesis: In this article we discuss the theoretical common ground of archival science, library science and museum studies share with one another and with information science.
Approach/Method: The article offers a systematic review of scholarship in each of the disciplines discussed, starting with foundational texts and progressing through different periods, geographical areas, and traditions of thought.
Results and conclusions: We present the historical context in which the three disciplines were established and identify the twentieth-century theoretical developments that resulting rejection of the previously dominant paradigm. We conclude that the concept of information as studied recently may favor the advancement of theoretical perspectives in the three areas and points to the possibility of its epistemological dialogue.
Research limitations: The literature review focused on the studies that had the most significant impact on Brazilian scholarship. It could be extended to other countries, and other theories.
Practical implications: The results of the presented research may provide a conceptual basis for university courses in archival science, library science and museum studies, as they already do in Brazil. They may also inspire a comparison with other countries.
Originality/Value: There are only few studies which combine the analysis of archival science, library science and museum studies; even less relate these disciplines to information science. We believe that considering the theoretical frameworks of all these disciplines together will be beneficial for all.

Keywords

Archival science. Information science. Library science. Museum studies.

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1. Introduction

Several undergraduate programs in archival science and museum studies were recently created in Brazil, many of them in colleges, schools or departments of information science, which, in almost all cases, already offered undergraduate programs in library science. Once the introduction of these courses was possible on the institutional level, there still remained a need to establish a theoretical common ground between these theories – indeed, it is a permanent process of scientific construction, a task to be carried out in everyday teaching

and research. This text argues that it is possible and desirable to promote the dialogue epistemological integration between the disciplines of archival science, library science and museum studies in information science, which should occur in specific theoretical conditions we will analyze below. We will demonstrate that throughout the twentieth century the theoretical evolution of the three disciplines (as well as certain practical developments) often blurred the boundaries between them – and therefore, furthered their integration. Accordingly, information science and the concept of information itself will be central to the future developments of these three disciplines.

To support our argument we discuss the development of these disciplines, without the pretension of providing an exhaustive history. Our interest is in the epistemological aspect, in the production of knowledge about the meaning of each of these disciplines, and in the attempts to conceptualize each discipline from a specific theoretical perspective. Accordingly, the analysis focuses on these disciplines' theoretical frameworks. After a brief discussion of the information science, we discuss the two frameworks together to support our argument in favor of epistemological integration.

Different authors studied the dialogue between these disciplines. Otlet (1934) and Briet (1951) suggested it; the "merger" of the three disciplines we will be discussing below is also encouraged by authors such as Buckland (1997), Bates (2007), and Given & McTavish (2010). Several other authors propose joint professional or institutional action and services, e.g. Usherwood, Wilson & Bryson (2005), Wythe (2007), Yarrow, Clubb & Draper (2008), Trant (2009), Maron, Yun & Pickle (2013) and Accart (2014). Scholars of digital humanities and common services known as GLAM (galleries, libraries, archives, and museums), such as Zorich, Waibel & Erway (2008), Zorich (2010), and Marcum (2014), should be mentioned as well.

Our approach is based on a specific systematic literature review of each of these disciplines, with foundational texts as a starting point, progressing through different periods, geographical areas, and traditions of thought. The texts were selected from the reading lists of courses such as "introduction to", or "fundamentals of", present in undergraduate programs in archival science (15 programs), library science (37 programs) and museum studies (14 programs), and postgraduate programs (15 programs) in Brazil.

2. From origins to a disciplinary and paradigmatic consolidation

Reflecting on the disciplines of archival science, library science and museum studies begins with attending to the first human cultural activities – understood here as symbolic actions of interpreting the world and producing material records of these interpretations as a physical support of any type. But it is with the invention of writing and the finding of the first cities, at the beginning of the processes of urbanization, more than five thousand years ago, that we find the earliest records of specific spaces dedicated to the preservation of documentary collections. Authors studying the history of archives, libraries and museums often list specific institutions which have been accepted as models, although very rigid distinctions of what would be an archive, library or museum do not adequately describe reality (Silva, 2006). Numerous archives, libraries and museums were established and functioned in Ancient Egypt, Greece and Rome, in the Arab and Chinese worlds and, in the medieval period, in Europe.

However, we find the first traces of theoretical reflection on these disciplines only in the early modern period, when the first most significative treatises on these institutions were published. It was at this time that the interest in human production, as represented by artistic, philosophical and scientific works – both classical and contemporary is reborn.

Between the fifteenth and seventeenth centuries, text we recognize today as theoretical studies of archival or library sciences focused on regulating of the functioning of the institutions responsible for storage, conservation and description (accounting for legitimacy, provenance, and other characteristics) of their collections. The concept of "treasure", an object that would need to be preserved in a specific manner, emerges with the development of archival and library practices, and becomes the core of the idea of a "heritage" (a selection of intellectual and aesthetic works to be preserved and passed on to future generations).

Human symbolic production understood as a "treasure" that would need to be properly preserved, becomes the subject matter of a patrimonialist vision (the set of intellectual and aesthetic human production, to be preserved and passed on to future generations). However, the focus there was on the content of the collections, with no archives, libraries and museums functioning outside institutions dedicated to the study of literature, arts, history and sciences. At that time, there was no consistent archival, library or museological knowledge (to complement operational rules following from the common sense), but only artistic, literary, philosophical or historical knowledge of the contents stored in these institutions.

The norms of articulating knowledge regarding the functioning of libraries, archives and museums changed in the period following the French Revolution and other bourgeois revolutions in Europe, now regarded as the beginning of the modern period. Nineteenth century witnessed a profound transformation in all dimensions of human life (in politics, in economics, in law), and accordingly archives, libraries and museums transformed as well. It was then that the modern concepts of "National Archives", "National Library", "National Museum", which have a distinctly public character (as "National" invokes the collective of the nascent modern states) were used for the first time. These national institutions acquired large collections, which reinforced their custodial role. Their need for qualified personnel resulted in the establishment of the first vocational courses, focused on these institutions' functioning and supplemented by general humanistic knowledge (the subjects of the collections preserved).

Finally, with the consolidation of modern science as a legitimate form of knowledge production and intervention in nature and society, humanities became subject to the standards of a scientific discipline. Throughout the nineteenth century, various manuals seeking to establish the project of a scientific constitution of archival science, library science and museum studies were published. The nineteenth-century model of science based on natural sciences, focusing on regularities and laws with an aim of intervening in nature through technical and technological processes, was expanded to the social and human sciences as a part of the turn towards Positivism. This model inspired scientific development in the archival science, library science, and museum studies, privileging technical procedures: inventorying, cataloging, describing, classifying and ordering the documentary collections. It had a real "metonymic effect": what had once been a part of the process (technical operations to facilitate the use of collections) became the core, and in some cases, exclusive, content of the nascent disciplines. Archival science, library science and museum studies became the (positive) sciences aiming to develop the techniques of treatment of the collections at

the related institutions. At the same time, the positivist consolidation of these disciplines promoted their "liberation" from other disciplines of which they had been only auxiliary fields (such as arts, history, literature) and their scientific autonomization, through which it enacted an effective separation between these disciplines.

There are more similarities than differences between the three disciplines. They all prioritize the "treasures" which must be guarded, assuming the importance of human symbolic production. Although syncretism of the previous centuries did not disappear altogether, there was a distinction between archives, libraries and museums. Nineteenth century witnessed specialization of institutions, archives, libraries and museums, which organized structures and routines for the exercise of custody. The positivist foundation furthered the particularity of the techniques each institution used to treat its collections. Thus, we can observe in the late nineteenth and early twentieth century the consolidation of a custodial and technical paradigm for these three disciplines (Silva, 2006). It framed these institutions' collections as heritage, focusing on their value for the future generations. It is custodial in its privileging of custody and preservation of the collections. And it is technical by centering the procedures for the identification, description and representation of documents.

One of the most visible effects of this model was that, by privileging the physical dimension of the collections, the institutions that keep them and the techniques these institutions employ to treat them, it promoted the separation of the three disciplines and their constitution as autonomous sciences. This was followed in the first decades of the twentieth century by the decisions of the professional associations to distinguish between archival, library and museum professionals. Different professionals in different institutions, employed different techniques for the treatment of specific collections – such was the result of the theoretical transformation, i.e., the custodial paradigm, and the practical developments that followed: the strengthening of institutions, professional and associative movements, and the beginning of the first university courses (Bolaños, 2002; Delsalle, 1998; López Cózar, 2002; Silva, 2006).

However, throughout the twentieth century, the theoretical development in the three disciplines did not strengthen the dominant paradigm. On the contrary, later scholarship very often commented on the various limits of this model, emphasizing those aspects that eventually made evident the need to overcome it. Furthermore, larger changes in Brazil (such as the increasing importance of information and knowledge in agricultural primary production, the development of digital technologies, the increasing interdisciplinarity of practice in the scientific community and the increasing specialization of social sciences) contributed to the transformation of archives, libraries and museums, inspiring practical initiatives that revealed the limits of the dominant paradigm. In the midst of these changes, information science emerged as an independent discipline, sharing research objects with archival science, library science, and museum studies – which we will discuss in more detail below.

3. Theoretical developments in the twentieth century

The diversity of scientific and theoretical knowledge produced in archives, libraries and museums, both in natural sciences and in other disciplines (such as history, pedagogy, literature) makes a comprehensive summary extremely difficult. For the purposes of this

article, we opted to organize the varied contributions according to their engagements with the custodial and technicist paradigm.

3.1. The functionalist studies

By the end of the nineteenth century, essays, manifestos and initiatives called for changes in archives, libraries and museums, by means of expressions such as "effective archive", "living library", "dynamic museum", among others. They criticized these institutions' exclusive focus on their collections and their techniques, suggesting that they "move", seeking to actively engage with the social contexts in which they function. Moreover, they also introduced considerable changes to theoretical formulations.

All these texts based on functionalism, a vision of human reality inspired by a biological understanding of a living organism. Human society is understood as an organic whole, composed of parts that perform specific functions necessary for the maintenance of the balance of the whole set. Functionalist studies are therefore concerned with determining the functions (in this case, of archives, libraries and museums), to verify whether the functions are being fulfilled or not (and to identify and eliminate the obstacles to their fulfillment), and to identify the dysfunctions that may be occurring and formulate of strategies to overcome them. This vision prioritizes effectiveness: it construes scientific research as a means to boost the proper functioning of institutions and, consequently, further the development and progress of societies.

The first manifestations of this thought in the discipline of archival science are found in Jenkinson's and Casanova's pioneering manuals (published in 1922 and 1928, respectively) which argued that archives should be effectively organized to support general organizational efficiency. But it was with the development of records management, tasked specifically with the elimination of documents, that a more effective pragmatist thought was formulated – in the works by Warren, Brooks, and especially Schellenberg, who discussed primary and secondary value of archival documents (Delsalle, 2000). Together, their proposals aimed at preserving a maximum information and a minimum of documents – prioritizing the function of the documents as opposed to their historical value. Another aspect of the functionalist attitude to the archives was prioritizing their cultural and pedagogical functions. This inspired interest in a greater "dynamization" of these institutions (Alberch i Fugueras et al., 2001).

To find the first effectively public libraries, it is necessary to return to the mid-eighteenth century. They were first established in England and later in the USA (Murison, 1988). We use the term "effectively" to emphasize that the first modern libraries, while "public" in the name, were not established with the general public in mind. Acts, manifestoes and practical initiatives concerned with public libraries (public library movements), led by librarians such as Mann and Barnard, sought to break their isolation and attract more people into their space. As early as 1876, Green, as a forerunner of the so-called reference services, advocated practical innovations in libraries to increase physical and intellectual accessibility (Fonseca, 1992). Library science was formally established as a discipline at the University of Chicago, where the first program for graduate study was established in 1928. Authors such as Butler, Shera, Danton, and Williamson advocated a scientific approach to library science, not to study its technical processes but to analyze the fulfillment of their social functions. Thus, the library was understood primarily in relation to the social needs

it met (Norman, 1988; Shera, 1972). Shera proposed a new field for the study of the role of knowledge in society, social epistemology (Martínez-Ávila & Zandonade, 2020; Zandonade, 2004). Theorists from different countries, such as Lasso de la Vega, Litton, Buonocore, Mukherjee and Usherwood, followed the argument that a library was a democratic, active institution, rather than a depository of books (López Cózar, 2002). In India, Ranganathan, developed the five "laws" of library science, advocating for the effective use of the library and its resources while library continued to meet the needs of society, accounting for all its parts. Later developments in the laws of library science, such as those introduced by Thompson (1974) and Urquhart (1981) also prioritized social functions and the need for libraries to be dynamic and active.

The main development in the discipline of museum studies occurred in the area of museum education, primarily in the Anglophone scholarly community. According to Gómez Martínez (2006), it is a "verbal" museology, oriented towards action, established in opposition to the tradition whose major symbol would be the Louvre – the so-called "nominalist" tradition, aimed at the possession and description of objects. Zeller (1989) points out that museum studies focused on the efficiency of museums, effective propagation of certain values to the population, and the "return" on the investments it made. Authors such as Flower, Goode, Dana, Rea, and Coleman remarked on the specificity of the new museums as institutions that would have value not in the opportunity for contemplation they may present, but in use; which would not wait for the visitors, but reach out to them, drawing them by eliminating barriers and increasing accessibility (Carbonell, 2012; Zeller, 1989). Several museums entered into partnerships with the private sector to increase industrial and commercial activities, resulting in museographic innovations (Bolaños, 2002). This trend is apparent outside Brazil as well. The imaginary museum of Malraux and the Pompidou Center in Beaubourg in France stand out as examples of, respectively, great theoretical and practical innovation (Rivière, 1993). Canadian museums approached the concept of "communication" present in the works of Cameron (1968), emphasizing communication between museums and their public.

Since the 1980s and the advent of digital technology, with its possibilities of remote access and interactive exhibitions, the functionalist current has been revitalized which might be observed, for example, in the work by the group of researchers affiliated with the University of Leicester (Merriman, Pearce, Arnold, Hooper-Greenhill, and others) and, Vergo's concept of "new museum studies" (1991).

3.2. The Critical Perspective

Critical approaches to social phenomena have been developing intensely since the nineteenth century in response to Positivism. While recent social sciences sought to establish patterns and regularities, critical theory denounced the historical character of reality, arguing for the study of historical contexts to understand phenomena. In opposition to functionalism, which aimed at the proper functioning of the society's parts, critical theory argued that social reality became intelligible in conflict, rather than integration. Critical approaches, characteristically premised on suspicion, have developed in practically all social and human sciences, including the disciplines of archival science, library science and museum studies. Scholars studied archives, libraries and museums not in order to identify the functions they

should perform for the improvement of the social whole; rather, they focused on their role in the dynamics of power and domination, denouncing their ideological actions.

The first traces of critical theory in archival science appear in the work of scholars such as Bautier, who studied the impact of specific ideological interests on the archives' choice of criteria in the early modern period. Other studies analyzed the power that came with the possession of documents, as in the case of the decolonization processes in Africa and Asia (Silva et al., 1998). In the 1960s and 1970s, debates of national information policies promoted by UNESCO focused on the role of archives, the issue of the right to information, and the need for the state to be transparent (Jardim, 1995). Presenting a radically different argument, authors such as Colombo (1992) warned against the obsession of contemporary societies with archiving and recording of human activities. The critical perspectives most important to contemporary archival science were developed in Canada. Following Terry Cook's work (2013), scholars sought to overcome the assumption of the neutrality and passivity of archival practices, analyzing archives as spaces in which power relations are negotiated, contested, and confirmed, shifting emphasis from collections to contexts. Authors such as Caswell (2010), Harris (2007) and Montgomery (1995) studied specific archival realities, for example in totalitarian regimes, developing Cork's work with a reference to theoretical frameworks developed by Hannah Arendt and Jacques Derrida.

Critical theory first manifested in library science in developing countries in relation to the processes of redemocratization following the fall of military dictatorships. At first, such manifestations mostly practical (e.g., creation of new library services, such as the library-car), and aimed to increase socially excluded populations' access to knowledge. Years later, these practices were theorized as a part of more general reflections on cultural action and cultural animation, in which different types of cultural ideologies were distinguished, with the expectation that the librarian would identify them and act before them, the librarian would identify them and act before them with "emancipation", rather than "domestication" as their goal (Flusser, 1983). The scholars postulated that libraries should be dynamic and active, and oppose the processes of alienation – a concept they used in a different sense than the functionalists (Milanesi, 2002). Critical studies have developed in France as well, where authors such as Estivals, Meyriat and Breton shared a Marxist approach to the study of different circuits of the book and the printed document (Estivals, 1981).

The first instances of critical theory in museum studies are found in the work of artists and essay writers such as Zola, Valéry and Marinetti (Bolaños, 2002), who viewed the museum as a "mausoleum", an institution that degraded art, and an instrument of power some people wielded over others. In the 1960s, a new wave of criticism provoked the emergence of "anti-museum" forms (Bolaños, 2002) and important museological innovations. However, critical theory's main contribution to the museum studies was its approach to the sociology of culture pioneered by Pierre Bourdieu (1979) and the generation of researchers he inspired. Bourdieu aligned material and symbolic dimensions, analyzing the relations of different social groups with culture (including museums). Contemporary scholars use Bourdieu's framework and his concept of cultural capital to study different museological practices (Lopes, 2007). Others study the role that museums play in the construction of the idea of a nation, following the work of Benedict Anderson. A more recent area of critical museum studies focuses on the critique of museological strategies of preserving natural and human heritage (Santacana Mestre & Hernández Cardona, 2006).

3.3. User studies

While archives, libraries and museums always had users and visitors, they were not a prominent part of the custodial paradigm. In the early twentieth century, functionalism became the attitude of the public, as various institutions sought to obtain data on satisfaction indexes for service improvement. Gradually, the interest in the users' subjective experiences grew, to the point where it became an autonomous area of study. Users and visitors were no longer only seen as the target of archival, library and museological processes, but as active agents, construing meanings and interpretations, with diverse needs and strategies. This new interest in the users changed theory and practice.

The relationship between users and archives became an object of research for archival science in the 1960s (Silva et al., 1998), as part of a wider discussion regarding the access to archives, conducted at the meetings of the International Council on Archives (ICA). However, the subject has never been widely studied. According to Jardim and Fonseca (2004), Taylor, Dowle, Dearstyne, Pugh, Cox and Wilson pioneered the study of the user in archival science, aiming to understand the information needs of different types of users. Other user studies in the field concerned with the work cultural dynamization focus on the typology of users and, more recently, on citizens and their interests in family history and in teaching (Coueré & Duclert, 2001).

The first manifestation of the interest in users in library science were the "community studies" conducted by researchers at the University of Chicago, who focused on social groups, rather than on the individual users. They carried out various empirical studies of reading habits and sources of information, which remained an important point of reference for the next three decades. Gradually, interest shifted to the evaluation of library services, converting user studies into use studies for library diagnosis. Focusing on the evaluation of collections, these studies have promoted practical innovations, such as the selective dissemination of information. In the 1970s, researchers such as Line, Paisley, Brittain and Totterdall shifted attention to information needs, which in the next decade became the main area of user studies (Figueiredo, 1994). The 2000s brought significant studies of the school library, which employed a cognitivist perspective, identifying the use of the information in the different phases of the research process – for example, Kuhlthau's (2004) and Todd's (2003).

Users studies became a part of museum studies as a part of a wider transformation of archives from repositories of objects to places of learning. These institutions' focus moved from the collections to the public, and the visitor studies followed (Hooper-Greenhill, 1998). At the beginning of the twentieth century, first empirical studies were carried out, with Galton following the visitors through the museum corridors, and Gilman studying the fatigue and other physical problems caused by the design of exhibitions. Early rigorous investigations, sponsored by the American Museum Association, took place in the late 1920s – the results were presented in the first visitor behavior study, published by Robinson in 1928. The 1940s witnessed a proliferation of studies on the impact on visitor exhibitions by authors such as Cummings, Derryberry and Melton. Other studies, led by authors such as Rea and Powell, traced socio-demographic profiles of visitors and mapped their cultural habits (Pérez Santos, 2000). In the 1960s, Shettel and Screven introduced a new perspective on the measures used to study visitors' learning experiences. In the following decades,

cognitive-based approaches to the exhibitions' efficiency were developed (Eason, Friedman, Borun), together with constructivist approaches, such as Loomis's three-dimensional model, McManus's filter theory, Uzzell's sociocognitive model, Hooper-Greenhill's communicational approach and the contextual model of Falk and Dierking (Pérez Santos, 2000). All these various approaches sought to understand how users interpreted museographic exhibitions, constructing different meanings, informed by their individual experiences, background and sociocultural contexts (Davallon, 2005).

3.4. Studies on representation

Since their inception, archives, libraries, and museums faced the challenge of representing their collections – inventorying them for control and storage, cataloging and classifying them for retrieval purposes, describing them to facilitate access and use. Historically, such a challenge has been conceived of as a technical issue, with the objective of finding the most appropriate way to achieve the goal. In the eighteenth and nineteenth centuries, encyclopedism, historicism, positivism, and their propositions of universal schemes of representation strongly influenced the understanding of representation in these institutions. Throughout the twentieth century, however, different theories problematized this process, gradually forming a sub-field of studies strongly influenced by the language sciences.

The question of principles of organization and description of archival documents emerged and was debated throughout the period of consolidation of the custodial paradigm. Since 1898 and the publication of the Dutch manual by Muller, Feith and Fruin, it has gained a different status, opening up a space to reflect on the norms and archival techniques. Practical applications of classification tools, including bibliographic classification systems, were tested in the following years, unaccompanied by a significant theoretical reflection – which followed only in later manuals, such as those of Tascón in 1960 and Tanodi in 1961, and in theoretical works of researchers such as Schellenberg. In the 1970s authors such as Laroche and Duchein problematized the principles of order by comparing the US concept of *record group* with the European principle of provenance. Later in that decade, authors such as Dollar and Lytle introduced the question of electronic records and information retrieval (Silva et al., 1998). Aspects of preservation and authenticity were at the center of debates on digital documents, involving researchers such as Duranti and Lodolini, who sought to confirm the value of the provenance principle and the respect for funding as a fundamental criterion of archival science. The growth of digital media also inspired research on archival standardization, based primarily on the idea of systems' interoperability and the possibility of networking, involving researchers, professional associations and governmental entities (Ribeiro, 2003).

The issues related to description and organization are the foundation of the library science as an autonomous discipline. The rules of cataloging, involving the description of the formal aspects of documents were first formulated in the nineteenth century. From the 1960s onwards, international standards of bibliographic description shared by various scholarly communities have been in operation. At the same time, first models of description accounting for reading by a computer appeared, establishing standards that, years later, would form the field known as Metadata. At the same time, classification emerged as a separate field of study with the creation of the first general and enumerative bibliographic

classification systems, such as those created by Dewey, Otlet, Bliss, and Brown. In the first half of the twentieth century, Ranganathan's work on faceted classification revolutionized the field by proposing flexible and non-hierarchical forms of classification. His theories had a great impact on the Classification Research Group, founded in London in 1948, which brought together researchers such as Foskett, Vickery and Pendleton, engaged in the construction of faceted systems for specific domains of knowledge and problematization of classification principles (Souza, 2007). In the following years, various fields and research sectors have established a dialogue or appropriated the principles of faceted classification, among them Aitchison's faceted thesauri, Dahlberg's Concept Theory, Neelameghan's faceted database studies, Albrechtsen and Jacob's boundary objects, Kwasnik's classification structure searches, and the mapping of sentences for the facet evidence by Beghtol (1995).

The nationalist and historiographical spirit of the first modern museums informed the criteria of ordination, description, classification and exhibition of the collections (Mendes, 2009). The sub-field of museological documentation arose at the beginning of the twentieth century, inspired by the work of authors such as Wittlin, Taylor, and Schnapper (Marín Torres, 2002). These authors sought to problematize classificatory aspects of museums, such as the representation of the genres, of the different peoples of the world, of different human cultures, in line with cultural studies (Pearce, 1994). Regarding practical applications, Bolaños (2002) presented several examples of innovative methods of representation, such as Dorner's radical historicism, Prado Museum's period rooms, the multidisciplinary approach of the Museum of Modern Art in New York, the antiracist stance of the Trocadero Museum and the dynamic model of the Museum of Ethnography of Neuchâtel, and the recent development in the design of museums wherein buildings themselves become museological pieces, e.g., the Guggenheim Museum in Bilbao.

4. Contemporary approaches flows, mediations, systems

The most recent advances in the disciplines of archival science, library science and museum studies sought to combine the various contributions of the last decades. New types of institutions, services and actions carried out in the extra-institutional sphere have received more attention, as research has become more concerned with flows and the circulation of information. In order to revise models which focus on the action of the institutions in relation to the public, or on the public's uses and appropriations of the collections, new models emerged, prioritizing interaction and mediation, contemplating the reciprocity of the relationship between these actors. Scholars also introduced systemic models integrating actions, collections or services previously contemplated in isolation. In response to the questions about the subject matter of archival science, library science and museum studies, the very idea of a collection was problematized. Furthermore, new digital technologies transformed both the practice and theory of these disciplines.

The 1960s saw a greater theorization regarding the research object of the archive science (notably, Tanodi defined the subject matter as "archivalia" in 1961); an extension of the discipline's domains (to include administrative files, private and corporate files); and the emergence of new fields (concerned with sound files, visual files and the use of microfilm). These changes led to the creation of the Document and Archives Management Program

(RAMP), structured by the ICA (International Council Archives) and UNESCO (United Nations Educational Scientific and Cultural Organization) and the UNESCO's General Information Program (PGI), created in 1976. The greatest theoretical innovation, the Integrated Archives, emerged in the early 1980s with the article by Ducharme and Rousseau (1980), which presented a systematic view of the documentary flow. Two years later, Couture and Rousseau (1982) formalized the quest for a synthesis of records management and the archives administration, which, according to them, should comprise an overview of the archives, accounting for the management of documents in the field of action of the archival science, i.e., encompassing the so-called three ages of the documents from an integrated perspective. This approach was later developed by authors such as Cortés Alonso and Conde Villaverde in Spain, Menne-Haritz in Germany, Cook in England and Vásquez in Argentina. Shortly thereafter, the expression "post-custodial" was coined to designate a new phase of archival science (Cook, 1997). Other recent studies focused on the relationship between archives and oral history, the field of personal and family archives (Cox, 2008), the archive mediation (Duff, 2016) and the discussion of the discipline's object as "archivalization" (Ketelaar, 2012).

Where the library science is concerned, we may distinguish two major trends in the recent scholarship. The first is known as "Mediation". The term was first used by Ortega y Gasset, in 1934, in a sense of bridge, or filter, to signify the librarian, emphasizing their role as a guide of the user's reading experience. Years later, the concept of a library underwent a structural alternation from a "collection of books and other documents, duly classified and cataloged" to "an assembly of information users" (Fonseca, 1992). Thus, the idea of mediation itself has changed, shifting the emphasis from the diffusive character (of transmission of knowledge) to the dialogical character of the library (Almeida Jr., 2009). The concept features in new librarianship (Lankes, 2011), which postulates that the function of the library is to help in the creation of knowledge in communities, and in the discussion of library as a public sphere, a space to rational argumentation regarding collective decisions on the conducting of the society (Ventura, 2002). The role of the library as a public sphere is also analyzed within the studies on mediation. It developed from the concept of information literacy, which emerged in the USA in 1974 with an intention of identifying and promoting information skills of subjects, who were no longer understood only as users with information needs (Campello, 2003; Dudziak, 2003). The third recent trend in the library studies is the study of electronic or digital libraries, and their implications for collections, services and dynamics related (Rowley, 2002).

Where museum studies are concerned, the development of the ecomuseums and the so-called New Museology deserve to be mentioned. According to Davis (1999), the concept of ecomuseum emerged at the beginning of the twentieth century, in response to environmentalism, concepts related to ecology and ecosystems: it involved creation of open-air museums, which incorporated geological or natural sites into their collection. Another meaning of the term ecomuseum features in New Museology, which rethinks of the museum as an institution (Poulot, 2002), inspired by Rivière, Hugues de Varine and Bazin. Thus understood, museums should engage local communities in the process of treating and caring for their heritage. It implies that museum studies should study the relation of people to cultural heritage and that the museum itself should be understood as an instrument and agent of social transformation – which goes beyond traditional functions of identification,

conservation and education towards the effects of the institution's actions on its social and physical surroundings, with an aim of involving the local community. Promoting community participation over the "monologue" of an expert technician changes the traditional triad of building / collections / public of museum studies into a new network of concepts, composed of territory, heritage and community. However, New Museology must be distinguished from the recent new museum studies proposed by Vergo (1991), which revitalize functionalist thinking. Recent trends in the museum studies involve discussions of the musealization of intangible heritage (Costa, 2009). Finally, the contemporary phenomenon of virtual museums inspires various practical and theoretical developments. For Deloche (2002), the arrival of the digital technology into museums entails a reformulation of the very concept of the institution. Without a building or collections, the defining traditional institutional milestones, the museum sees itself as providing new services, through new practices and functions, to users who act in new conditions. At the same time, the adoption of technologies to treat their collections and plan exhibitions makes the museum more of an information system. These phenomena are studied in a specific field of museum informatics, which deals with sociotechnical interactions (between people, information and technology) in museum spaces (Marty & Jones, 2008).

Contemporary developments such as the New Museology, mediation, intangible heritage, and virtual museums led to the expansion of the object of the discipline of museum studies (its organization, its techniques and its collections) into museality. As Stránský (2008) pointed out, as it is not political institutions but "the political" that is the object of study for political science, i.e., the political dimension of all human actions, so with museum studies: the object of the discipline is not the museum, the institution, but "the museum", a dimension of human action present in the most diverse contexts – including, but not limited to, actions occurring in the museum.

5. The development of information science

The roots of information science lie in the study of documentation, pioneered by Otlet and La Fontaine in the early twentieth century. Concerned with the availability of records on the totality of human knowledge (more than with the storage of these records), the authors developed the concept of "document", extending the scope of their research beyond books and other printed records. Although the discipline discusses archives, libraries and museums, it eventually developed as a distinct, parallel discipline, concerned mainly with scientific and technological information.

The first scholars of information science studied the registration and provision of information, as well as specific fields of science and technology (Feather & Sturges, 2003). The attempts to institutionalize the activities of these professionals led to the establishment of information science. For Shera and Cleveland (1977), the event marking the transformation of the study of documentation into information science was the International Conference on Scientific Information, held in Washington in 1958. In the same year, the Institute of Information Scientists was founded in United Kingdom. A few years later, in 1966, the American Documentation Institute (ADI) changed its name to American Society for Information Science (ASIS), becoming the first scientific institution devoted specifically

to information science. The theoretical foundations immediately adopted were Shannon and Weaver's Mathematical Theory of Communication, Wiener's Cybernetics, and Vannevar Bush's contributions to a systemic perspective of studies (Vickery & Vickery, 1987). Together, they developed the scientific concept of information, the discipline's research object (the information systems) and its research agenda, expressed in an article by Borko, published in 1968, which has since then become a classic in the field (Debons et al., 1988).

Later development of information science exceeded early expectations. According to Bawden and Robinson (2012), since the 1980s information science has developed in relation to several "research programs": information organization, information technologies (creation, dissemination and retrieval), informetrics, information behavior, communicating information, information society, information management and policy, and digital literacy. The scope of the discipline's research has extended beyond physical records in information systems, to include, e.g. "invisible schools" (informal information exchange processes), "tacit knowledge", and information needs and information skills of subjects.

According to several authors (Bawden & Robinson, 2012; Capurro, 2014; Orom, 2000; Saracevic, 1999; Salaün & Arsenault, 2009; Vega-Almeida, Fernández Molina & Linares, 2009), three broad models of information phenomena emerged: the physical model (which privileges the idea of information as a "thing" transferred from one point to another, or processed within a system), the cognitive model (inspired by Popper's philosophy and emphasizing information as an element altering users' mental models) and the social modal (which seeks to understand what information is to user communities, rescuing the idea of intersubjective construction). Hjørland (2018) emphasizes the importance of a culture – and social – oriented views for the study of information phenomena in recent years, while Floridi (2019) lists the qualities of contemporary societies that pose new challenges for thinking about information. Recent concepts in information science include digital curation, the open access movement, ontologies, folksonomies, domain analysis, Internet of Things, information practices, critical information literacy, information culture, information orientation, intercultural ethics of information, information regimes, altmetrics, neo-documentation and digital humanities (Araújo, 2018).

Information science has been characterized as interdisciplinary (Saracevic, 1999), post-modern (Wersig, 1993) and belonging to the field of human and social sciences (Cronin, 2009). These characteristics testify to the discipline's flexibility, its capacity for dialogue and interaction with different disciplinary fields; it is critical of the limits of positivism and sensitive to the specificities of the current "information society"; and capable of accommodating different schools and theoretical currents.

6. Conclusion: The possibility of epistemological integration

The developments in the theory of archival science, library science and museum studies rendered the previous custodial model obsolete. Within the custodial paradigm, these disciplines studied the stored and inherited treasures, institutional routines of the entities dedicated to their preservation and the technical procedures for the treatment of the collections. Theories developed in the twentieth century undermined the rigid boundaries between the disciplines proposing to study relations between these institutions and the

society (both from a functionalist and a critical perspective), focusing on the subjects' experience, problematizing representations and attending to flows and mediations. Thus, the broader dynamics of processes occurring at these institutions became the object of research, which now examined the production of records (even without physical existence), the composition of the collections, the users' appropriation of the collections, and the different layers of meaning construed with professional intervention and the instruments of description and classification. In museum studies, this development is evident in the turn from "museum", "museality", or "musealization" as in the classical definition of Stránský (2008); in archival science, in the concept of "archivalization" (Ketelaar, 2012) or archival mediation (Duff, 2016); and in library science in the notion of mediation or dialogue, as in the recent discussions of information literacy, or in the new librarianship (Lankes, 2011).

These three disciplines, then, may with profit enter into dialogue with information science. An example of such dialogue appears in Bates' approach (Bates, 2015), which brings these disciplines together through the concepts of knowledge (library science), memory (archive science), and heritage (museum studies).

In addition, because information science has been from the beginning established as a scientific discipline, it may provide a space for theoretical reflection and problematization, without the pressure to establish practical, applicable rules, which dominated the early history of archival science, library science, and museum studies.

The concept of information does not have to be discussed in epistemological terms, as it was here, but also in terms of ontology: however, first it is necessary to return to very origin of the term, which, according to Capurro (2007), derives from the Greek concepts of *eidos* (idea) and *morphé* (form), meaning "to form something". Information, therefore, may be considered to be a human action on the world ("in-form"), an act apprehending it through the symbolic, naming and classifying the objects (objects of nature), creating objects to be used (instruments with the most diverse purposes), producing records that constitute new objects (printed texts, visual and sound) and creating records of these records (catalogs, indexes, inventories, etc.).

Information is, therefore, a concept central to the whole process. It originates from the production of material records and extends to human interactions (archival, library science, museological) with these records. However, its significance may be even broader: it is all that involves human action beginning with the first record, the first act of "in-forming". A part of the everyday human action of seizing the world and producing material records of this process has been institutionalized and subjected to technical procedures developed specifically to interact with these records, but information surpasses these institutions in the most diverse uses, flows, appropriations, contexts. The breadth of information science enables it to consider the various archival, library science and museum processes as more than the technical procedures defined by the custodial paradigm. Thus, it also blurs the rigid disciplinary boundaries (without negating these disciplines' identity and specifity) to the benefit of theoretical reflections and practical applications – as recently illustrated by Europeana (a comprehensive digital system which is at the same time an archive, a library and a museum of collections of European culture) or the merge of the National Archive and the National Library in Canada. Finally, information science, without imposing itself on the three disciplines, and remaining open to the specificities and contributions of each, allows a dialogue required for the development of scientific knowledge that is not reduced

to the study and practice of the institutions that each discipline is related to. Information science makes it possible for the three disciplines to be more than "archival science", "library science", and "museum science" – and still enrich each other.

References

Accart, J.-P. (2014). *Regards croisés sur les métiers des sciences de l'information: bibliothèques, archives, documentation, musées*. Mont-Saint-Aignan: Éditions Klog.

Alberch i Fugueras, R. et al. (2001). *Archivos y cultura: manual de dinamización*. Gijón: Trea.

Almeida Jr., O. (2009). Mediação da informação e múltiplas linguagens. *Tendências da Pesquisa Brasileira em Ciência da Informação*, 2(1), 89–103.

Araújo, C. A. Á. (2018). *O que é ciência da informação*. Belo Horizonte: KMA.

Bates, M. J. (2007). Defining the Information Disciplines in Encyclopedia Development. *Information Research* [online], 12(4), paper colis29 [21.09.2020], http://informationr.net/ir/12-4/colis/colis29.html

Bates, M. J. (2015). The Information Professions: Knowledge, Memory, Heritage. *Information Research* [online], 20(1), paper 655 [21.09.2020], http://informationr.net/ir/20–1/paper655.html#.X4mSD-0wjcs

Bawden, D., Robinson, L. (2012). *Introduction to Information Science*. London: Facet.

Beghtol, C. (1995). Mapping Sentences and Classification Schedules As Methods of Displaying Facets. *Advances in Classification Research Online* [online], 6, 1–12, http://doi.org/10.7152/acro.v6i1.12657

Bolaños, M. (2002). *La memoria del mundo: cien años de museología: 1900–2000*. Gijón: Trea.

Bourdieu, P. (1979). *La distinction: critique sociale du jugement*. Paris: Éditions de Minuit.

Briet, S. (1951). *Qu'est-ce que la documentation?* Paris: Éditions Documentaires Industrielles et Técnique.

Buckland, M. K. (1997), What is a "Document"? *Journal of the American Society for Information Science*, 48(9), 804–809.

Campello, B. (2003). O movimento da competência informacional: uma perspectiva para o letramento informacional. *Ciência da Informação*, 32(3), 28–37.

Capurro, R. (2007). Epistemología y ciencia de la información. *Enl@ce: Revista Venezoelana de Información, Tecnología y Conocimiento*, 4(1), 11–29.

Capurro, R. (2014). Pasado, presente y futuro de la noción de información. *Logeion*, 1 (1), 110–136.

Carbonell, B. M. (ed.). (2012). *Museum Studies: An Antology of Contexts*. West Sussex: Wiley-Blackwell.

Caswell, M. (2010). Khmer Rouge Archives: Accountability, Truth, and Memory in Cambodia. *Archival Science*, 10(1), 25–44.

Coeuré, S., Duclert, V. (2001). *Les archives*. Paris: La Découverte.

Colombo, F. (1992). *Os arquivos imperfeitos: memória social e cultura eletrônica*. São Paulo: Perspectiva.

Cook, T. (1997). What is Past is Prologue: A History of Archival Ideas since 1898, and the Future Paradigm Shift. *Archivaria*, 43(1), 17–63.

Cook, T. (2013). Evidence, Memory, Identity and Community: Four Shifting Archival Paradigms. *Archival Science*, 13(2), 95–120.

Costa, P. (Ed.) (2009). *Museus e património imaterial: agentes, fronteiras, identidades*. Lisboa: Instituto dos Museus e da Conservação; Softlimits.

Couture, C., Rousseau, J.-Y. (1982). *Les archives au XXe siècle: une réponse aux besoins de l'administration et de la recherche*. Montréal: Université.

Cox, R. (2008). *Personal Archives and a New Archival Calling: Readings, Reflections and Ruminations*. Duluth: Litwin.

Cronin, B. (2009). The Sociological Turn in Information Science. In: A. Gilchrist (ed.). *Information Science in Transition* (109–127). London: Facet.

Davallon, J. (2005). Penser la muséologie. In: J. Davallon & B. Schiele (eds.). *Doctorat en Muséologie, mediation, patrimoine* (69–98). Sainte-Foy: Multimondes.
Davis, P. (1999). *Ecomuseums: A Sense of Place*. London: Leicester University Press.
Debons, A., Horne, E., Cronenweth, S. (1988). *Information Science: An Integrated View*. Boston: G. K. Hall.
Deloche, B. (2002). *El museo virtual*. Gijón: Trea.
Delsalle, P. (2000). *Une histoire de l'archivistique*. Sainte-Foy: Presses de l'Université du Québec.
Ducharme, J., Rousseau, J.-Y. (1980). L'Interdépendance des archives et de la gestion des documents: une approche globale de l'archivistique. *Archives*, 12(1), 5–28.
Dudziak, E. (2003). Information literacy: princípios, filosofia e prática. *Ciência da Informação*, 32(1), 23–35.
Duff, W. (2016). Mediação arquivística. In: T. Eastwood & H. MacNeil (eds.). *Correntes atuais do pensamento arquivístico* (171–202). Belo Horizonte: Ed. da UFMG.
Estivals, R. (1981). A dialética contraditória e complementar do escrito e do documento. *Revista da Escola de Biblioteconomia da UFMG*, 10(2), 121–152.
Feather, J., Sturges, P. (2003). *International Encyclopedia of Information and Library Science*. London: Routledge.
Figueiredo, N. (1994). *Estudos de uso e usuários da informação*. Brasília: IBICT.
Flusser, V. (1983). A biblioteca como um instrumento de ação cultural. *Revista da Escola de Biblioteconomia da UFMG*, 12(2), 145–169.
Fonseca, E. (1992). *Introdução à biblioteconomia*. São Paulo: Pioneira.
Floridi, L. (2019). *The Logic of Information: A Theory of Philosophy as Conceptual Design*. Oxford: Oxford University Press.
Given, L. M., McTavish, L. (2010). What's Old is New Again: The Reconvergence of Libraries, Archives and Museums in the Digital Age. *Library Quarterly*, 80(1), 7–32.
Gómez Martínez, J. (2006). *Dos museologías: las tradiciones anglosajona y mediterránea – diferencias y contactos*. Gijón: Trea.
González de Gómez, M. (2000). Metodologia de pesquisa no campo da Ciência da Informação. *DataGramaZero*, 1(6).
Harris, V. (2007). *Archives and Justice: A South African Perspective*. Chicago: Society of American Archivists.
Hjørland, B. (2018). Library and Information Science (LIS) Part 2. *Knowledge Organization*, 45(2), 319–338.
Hooper-Greenhill, E. (1998). *Los museos y sus visitantes*. Gijón: Trea.
Jardim, J. M., Fonseca, M. O. (2004). Estudos de usuários em arquivos: em busca de um estado da arte. *Datagramazero*, 5(5).
Jardim, J. M. (1995). *Sistemas e políticas públicas de arquivos no Brasil*. Niterói: EdUff.
Ketelaar, E. (2012). Cultivating Archives: Meanings and Identities. *Archival Science*, 12, 19–33.
Kuhlthau, C. (2004). *Seeking Meaning: A Process Approach to Library and Information Services*. London: Libraries Unlimited.
Lankes, D. (2011). *The Atlas of New Librarianship*. Cambridge: MIT Press.
Lopes, J. (2007). *Da democratização à democracia cultural*. Porto: Profedições.
López Cózar, E. (2002). *La investigación en biblioteconomía y documentación*. Gijón: Trea.
Marcum, D. (2014). Archives, Libraries, Museums: Coming Back Together? *Information & Culture: A Journal of History*, 49(1), 74–89.
Marín Torres, M. T. (2002). *Historia de la documentación museológica: la gestión de la memoria artística*. Gijón: Trea.
Martínez-Ávila, D., Zandonade, T. (2020). Social Epistemology in Information Studies: A Consolidation. *Brazilian Journal of Information Science*, 14(1), 7–36.

Maron, N., Yun, P., Pickle, S. (2013). *Sustaining our Digital Future: Institutional Strategies for Digital Content*. London: Strategic Content Alliance.
Marty, P., Jones, K. (eds.). (2008). *Museum Informatics: People, Information and Technology in Museums*. New York: Routledge.
Mendes, J. (2009). *Estudos do patrimônio: museus e educação*. Coimbra: Univ. Coimbra.
Milanesi, L. (2002). *Biblioteca*. São Paulo: Ateliê.
Montgomery, B. (1995). Archiving Human Rights: The Records of Amnesty International USA. *Archivaria*, 39, 108–131.
Murison, W. (1988). *The Public Library: Its Origins, Purpose and Significance*. London: C. Bingley.
Norman, S. (1988). The Library Quarterly in the 1930s: A Journal of Discussion's Early Years. *The Library Quarterly*, 58, 327–351.
Orom, A. (2000). Information Science, Historical Changes and Social Aspects: A Nordic Outlook. *Journal of Documentation*, 56(1), 12–26.
Otlet, P. (1934). *Traité de documentation: le livre sur le livre: théorie et pratique*. Bruxelles: Mundaneum.
Pearce, S. (Ed.). (1994). *Museums and the Appropriation of Culture*. London: Athlone.
Pérez Santos, E. (2000). *Estudio de visitantes en museos: metodología y aplicaciones*. Gijón: Trea.
Poulot, D. (2002). *Musée et muséologie*. Paris: La Découverte.
Ribeiro, F. (2003). *O acesso à informação nos arquivos*. Lisboa: Fundação Calouste Gulbenkian; MCT; MCEC.
Rivière, G. H. (1993). *La museología: curso de museología, textos y testimonios*. Madrid: Akal.
Rowley, J. (2002). *A biblioteca eletrônica*. Brasília: Briquet de Lemos.
Salaün, J. M., Arsenault, C. (2009). *Introduction aux sciences de l'information*. Montreal: Presses de l'Université de Montréal.
Santacana Mestre, J., Hernández Cardona, F. (2006). *Museologia crítica*. Gijón: Trea.
Saracevic, T. (1999). Information Science. *Journal of the American Society for Information Science*, 50(12), 1051–1063.
Shera, J. (1972). *The Foundations of Education for Librarianship*. New York: Becker and Hayes.
Shera, J., Cleveland, D. (1977). History and Foundations of Information Science. *Journal of the American Society of information Science and Technology*, 12, 249–275.
Silva, A. M. et al. (1998). *Arquivística: teoria e prática de uma ciência da informação*. Porto: Afrontamento.
Silva, A. M. (2006). *A informação: da compreensão do fenômeno e construção do objecto científico*. Porto: Afrontamento.
Souza, R. (2007). Organização do conhecimento. In: L. Toutain (Ed.). *Para entender a ciência da informação*. (pp. 103–123). Salvador: EdUFBA.
Stránský, Z. (2008). Sobre o tema 'Museologia – ciência ou trabalho prático'? *Museologia e Patrimônio*, 1(1), 101–105.
Thompson, J. (1974). *Library Power: A New Philosophy of Librarianship*. London: C. Bingley.
Todd, R. (2003). Adolescents of the Information Age: Patterns of Information Seeking and Use, and Implications for Information Professionals. *School Libraries Worldwide*, 9(2), 27–46.
Trant, J. (2009). Emerging Convergence? Thoughts on Museums, Archives, Libraries and Professional Training. *Museum Management and Curatorship*, 24 4), 369–387.
Urquhart, D. (1981). *The Principles of Librarianship*. Metuchen: Scarecrow.
Usherwood, B.; Wilson, K., Bryson, J. (2005). Relevant Repositories of Public Knowledge? Libraries, Museums and Archives in the "Information Age". *Journal of Librarianship and Information Science*, 37(2), 89–98.
Vega-Almeida, R. L., Fernández Molina, J. C., Linares, R. (2009). Coordenadas paradigmáticas, históricas y epistemológicas de la ciencia de la información: una sistematización. *Information Research*, 14(2).

Ventura, J. (2002). *Bibliotecas e esfera pública*. Oeiras: Celta.
Vergo, P. (ed.) (1991). *The New Museology*. London: Reaktion Books.
Vickery, B., Vickery, A. (1987). *Information Science in Theory and Practice*. London: Bowker-Saur.
Wersig, G. (1993). Information Science: The Study of Postmodern Knowledge Usage. *Information Processing & Management*, 29(2), 229–239.
Wythe, D. (2007). New Technologies and the Convergence of Libraries, Archives, and Museums. *RBM: a Journal of Rare Books, Manuscripts, and Cultural Heritage*, 8(1), 51–55.
Yarrow, A., Clubb, B., Draper, J.-L. (2008). *Public Libraries, Archives and Museums: Trends in Collaboration and Cooperation*. The Hague: International Federation of Library Associations.
Zandonade, T. (2004). Social Epistemology from Jesse Shera to Steve Fuller. *Library Trends*, 52(4), 810–832.
Zeller, T. (1989). The Historical and Philosophical Foundations of Art Museum Education in America. In: N. Berry & S. Mayer (eds.). *Museum Education: History, Theory and Practice* (10–89). Reston: National Art Education Association.
Zorich, D., Waibel, G., Erway, R. (2008). *Beyond the Silos of the LAMs: Collaboration Among Libraries, Archives and Museums*. Dublin: OCLC Online Computer Library Center.
Zorich, D. (2010). A Survey on Cultural Heritage Initiatives and Their Sustainability Concerns. In: R. Parry (ed.). *Museums in a Digital Age* (406–416). Oxon: Routledge.

Dialog nauki o informacji z archiwistyką, bibliotekoznawstwem i muzealnictwem: ostatnie doświadczenie brazylijskie

Abstrakt

Cel/Teza: W artykule omówiono teoretyczne podstawy archiwistyki, bibliotekoznawstwa i muzeologii, które dyscypliny te dzielą ze sobą oraz z nauką o informacji.
Koncepcja/Metody badań: Artykuł zawiera systematyczny przegląd kluczowych ustaleń każdej z omawianych dyscyplin, zaczynając od tekstów podstawowych i przechodząc przez różne okresy, obszary geograficzne i tradycje myślowe.
Wyniki i wnioski: Przedstawiony został kontekst historyczny, w którym powstały trzy omawiane dyscypliny, oraz wskazano ich rozwój teoretyczny w XX w., który spowodował odrzucenie wcześniej dominujących paradygmatów. Stwierdzono, że koncepcja informacji, którą badano ostatnio, może sprzyjać postępowi perspektyw teoretycznych w tych trzech obszarach i wskazano na możliwość dialogu epistemologicznego.
Ograniczenia badawcze: Przegląd literatury skupiono na badaniach, które miały największy wpływ na naukę brazylijską. Przegląd taki można rozszerzyć na inne kraje i inne teorie.
Zastosowania praktyczne: Wyniki przedstawionych badań mogą stanowić koncepcyjną podstawę dla uniwersyteckich programów kształcenia z zakresu archiwistyki, bibliotekoznawstwa i muzealnictwa, tak jak ma to już miejsce w Brazylii. Mogą też inspirować do porównań z innymi krajami.
Oryginalność/Wartość poznawcza: Niewiele jest opracowań łączących analizę archiwistyki, bibliotekoznawstwa i muzeologią; jeszcze mniej wiąże te dyscypliny z nauką o informacji. Autor wierzy, że rozważenie ram teoretycznych wszystkich tych dyscyplin razem będzie korzystne dla nich wszystkich.

Słowa kluczowe

Archiwistyka. Bibliotekoznawstwo. Informatyka. Muzeologia.

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Complex Interdisciplinary Approach to Modelling Information Literacy Education

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Abstract

Purpose/Thesis: This paper identifies the most important theoretical issues and frameworks that may serve as a basis for models of teaching information literacy.
Approach/Methods: The paper reviews relevant subject literature published between 1990s and the present to outline the disciplinary context of information literacy in order to identify concepts that might be used to model teaching of information literacy.
Results and conclusions: In the light of convergences and overlaps between different literacies, this paper considers various pedagogic approaches – phenomenographic, sociocultural, and discourse analytical, to combine them with the cognitive approach to information literacy. The literature review shows that all these approaches might contribute to a theoretical foundation of information literacy across different age groups and on different levels of education.
Originality/Value: Teaching information literacy is examined from a cross-disciplinary perspective with a focus on information science and pedagogy.

Keywords

Cognitive approach. Discourse analytical approach. Information literacy. Information science. Pedagogy. Phenomenography. Sociocultural approach.

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1. Introduction

Information literacy (IL) is a core subject and one of the most common topics in information science (IS) (also referred to as library and information science) (Pinto et al., 2013). However, our understanding of information literacy might be furthered by attending to its relation to teaching and learning as well as varied types of literacy (Onyancha, 2020).

For the purposes of this study, information science was defined in the following terms:
– It is a field of study concerning human recorded information;
– It focuses on the components of the information chain; and

– It is based on a long-standing perspective as well as more up-to-date insights (Robinson, 2009).

Information literacy is a research area and a field of practice and expertise for information professionals at the same time (ALISE, 2016). It concerns disciplines other than IS; as such, while it is not its exclusive preserve (Onyancha, 2020). This becomes clear in an analysis of research papers on IS, in which IL features frequently (Dora & Kumar, 2019). IL is not restricted even to the social sciences, as it is a research interest of 27 disciplines (Onyancha, 2020). This makes clear that there is a need for investigating how the outcomes of different studies, targeting IL can be harmonized with each other (Bruce, 2016).

1.1. Convergences that define theory

New literacy theories, stemming from the "ideological" model of literacy which accounts for the increasing multiplicity and integration of significant (textual, visual, audio, spatial, or behavioral) modes of meaning-making (New London Group, 1996). This model marks the appearance of radically different approaches that portray literacy as a social practice consisting of a potentially endless number of different literacies (multiliteracies), sharing in the same time a holistic view of literacy, related to empowerment and community building (Street, 1984).

In our information-intensive world, the process of acquiring information literacy requires an understanding of numerous possible ways of interacting with information and media, without forgetting about the implications of such behaviors (Materska, 2014).

Information literacy also follows the developments of varied information environments (Koltay et al., 2016). These changes are reflected in the most current definition of IL articulated by CILIP (2018):

> Information literacy is the ability to think critically and make balanced judgements about any information we find and use. It empowers us as citizens to develop informed views and to engage fully with society.

This definition confirms the importance of empowerment, and moves away from a simplistic understanding of IL as a set of skills for finding, evaluating and using information (Secker, 2018). It also emphasizes IL's relation to print, data, images, and the spoken word. It also acknowledges the overlaps between IL and digital literacy, as well as media literacy (CILIP, 2018). This perception is in conformity with the idea that the convergences between varied literacies of the information age are decisive for its present and future development.

1.2. Other approaches

Today, we see clearly that the convergences between different forms of media and information and communication technologies (ICTs) (Livingstone et al., 2008) have been followed by other convergences between information literacy, media literacy and other literacies, also shaping their terminologies.

As a result of these convergences, IL and media literacy overlap and complement each other as they are meant to foster the same skills, while addressing different information constructs (Lau, 2013), even though there is no consensus regarding the boundaries and territories of these two literacies (Lee & So, 2014).

When defining digital and media literacy in the media-saturated, information-rich society, Hobbs (2010) listed various skills, of which two in particular demonstrate the effect of the abovementioned convergences. The first skill is knowing how to make responsible choices when accessing, comprehending, and sharing information and ideas. The second, closely related one is knowing how to analyze messages by identifying their author(s), purpose and point of view, and evaluating the quality and credibility of their content. It is necessary to develop these competencies both over the course of formal education as well as in informal settings, as without these competencies no one can be said to be literate.

The above convergence is also recognized by broad definitions of media literacy which go beyond specific formats. They emphasize primary skills, such as critical thinking, and social skills. These primary skills can then be adapted to specific media developments (Pfaff-Rüdiger & Riesmeyer, 2016).

All these arguments posit that there is a common ground between media literacy and information literacy, and this convergence is also acknowledged by the idea of metaliteracy, which is a comprehensive framework that informs other literacy types of the digital age (Mackey & Jacobson, 2011).

The emergence of the concept of data literacy is a result of the recent technological developments which enabled computers to generate and handle large quantities of data. Data literacy is also an outcome of the convergences mentioned above both in regard to recent technological developments and to varied literacies, as it shares several features with other literacies, especially information literacy (Koltay, 2015).

It is feasible to recognize that information theory and the theory of learning also are converging, especially if we accept the longstanding view that learning with information is authentic learning, and that IL is indispensable for successful learning (AASL, 1998). In other words, we can count with the absorption of information literacy by the educational disciplines (Bawden, 2015). In this context, it can also be said that IL is both an object of teaching and an object of learning (Limberg et al., 2012).

We also have to acknowledge the persisting need for adjusting the properties of IL to the digital environment, underlined among others by Špiranec and Banek Zorica (2010). It is particularly important, as the concept of IL originally was dominated by questions of access, because it had been dealing with media which was not always easily accessible (Livingstone et al., 2008). However, now we deal with the overabundance of information, and require new concepts, such as information overload, to think with (Bawden & Robinson, 2009).

2. Constructivist approaches to IL

Despite considerable advances in the field of IS, a unified theory of IL is still lacking (Špiranec et al., 2016). Clarifying the relationship between research and practice also continues to be a challenge (Aharony et al., 2017). Although we witness a constant expansion of scholarship, which reflects empirically and theoretically grounded research, produced within the fields of information science and educational science, the theoretical foundations of IL remain vague (Pilerot, 2016). The following section partially redresses this lack.

If we want to go beyond the view of information users as lacking skills and knowledge, it is crucial to combine IL theory with pedagogical approaches (Limberg et al., 2012).

Undoubtedly, a pluralistic approach is required for such a development of IL theory, so it should not be restricted to teaching information handling skills only. On the other hand, we must be aware of the importance of these skills which make the level of information literacy of our students measurable.

According to Bruce (1997), constructivist views can be contrasted with behaviorist approaches, based on measurable characteristics of being information literate. Nonetheless, while acknowledging the affordances of constructivist views, she argues that they fail to adequately define characteristics exhibited by individuals. Considering this, the Bruce's relational model maps IL onto the different ways of experiencing it. The experiential nature of learning is tangible insofar as it involves continuous building, amending and eventually transforming previous knowledge structures (Walton & Cleland, 2017).

In any constructivist view, information literacy is more than the ability to engage successfully with codified forms of knowledge; it also facilitates knowing of an information landscape (Lloyd, 2006). Information landscapes are communicative spaces, created by people who co-participate in a field of practice (Lloyd, 2010). They are the "context" in which information is described (Whitworth, 2014). They define ways of knowing central to the construction of someone's individual agency and intersubjectivity relating to the common reference points and knowledge shared by people who are collectively engaged in a common endeavor or practice (Lloyd, 2017).

Many new approaches to IL take a constructivist approach to teaching and learning by highlighting the experiential and empowering nature of the learning process. Constructivist approaches represent a clear turn from the neutral and linear view of skills deployment, questioned by several information science scholars and information literacy professionals (see e.g. Marcum, 2002; Webber & Johnston, 2000).

In the following sections of this paper, we will focus on three constructivist approaches, discussed by Limberg, Sundin and Talja (2012), who use phenomenographic and sociocultural theories, explicitly grounded in theories of learning, and discourse analytical approaches providing a broader historical and sociological perspective to these theories.

2.1. Phenomenographic approaches

Phenomenography defines learning as an activity of constructing meaning, without classifying learning experiences as right or wrong. Accordingly, phenomenographic approaches do not focus on a transfer of knowledge from teacher to student, but on the importance of understanding the learners' perspective (Limberg et al., 2012).

At the core of phenomenographic research are participants' experiences. As a consequence, whatever the premises of a given study, it seeks to find out not only why something happens, but also to inquire how experiences evolve and what the participants do and how they feel about it (Morrison & Secker, 2017).

Phenomenographic studies show that IL can take on a range of meanings within any group of information users. Applying phenomenography produces a complete picture of a given knowledge domain and knowledge-based capacities (Forster, 2016).

The "seven faces" model of information literacy, developed by Bruce (1997) is also rooted in research, basing on phenomenography. Although originally conceived for use in the

higher education – in our opinion – it may be also used in the education of schoolchildren. This model identifies following skills and abilities:

- being able to use ICTs for seeking and communicating information;
- seeking and finding information sources;
- executing information seeking processes;
- organizing and controlling information;
- building a knowledge base in a new area of interest;
- working with knowledge and personal perspectives for novel insights; and
- using information wisely for the benefit of others.

2.2. The sociocultural perspective

The sociocultural perspective emphasizes the situated nature of learning and focuses on the relationship between individuals and various forms of collective practices, which may be defined as ways of understanding and doing things in the world, or, in other words, as socially structured and structuring patterns and resources that form the core of everyday life activities (Thorne, 2013). Such practices are embodied in communities of practice, which are groups of people who share similar goals and interests. They employ common practices, work with the same tools, and use a common language. In a community of practice, we learn not only the rules for the performing of an actual practice, but also acquire information required to determine which practices and knowledge that are deemed legitimate. This tacit information is coded and determined by the community, reflecting its history, assumptions, beliefs, values, and rules (Lloyd, 2010).

Over the course of learning, we interact with culturally constructed tools of practice, such as objects, signs, symbols, language, and technologies; accordingly, the sociocultural theory focuses on tool-based IL practices and does this within the context of learning communities. As learning is connected to specific situations and practices, following sociocultural approaches involves questioning the generic nature of acquiring IL (Limberg et al., 2012). While it accepts the broad framework of socially contextualized learning experience, the sociocultural approach may help in developing educational practices that move the perceptions and experiences of the individual learner to the center of educational practice (Talja & Lloyd, 2010).

From a sociocultural perspective, IL is conceptualized as a collective practice occurring in complex social realities (Lloyd, 2012). It situates learning in a collaborative environment where it is related to social events and interactions with other people, objects, and events. This is a constructivist approach, but instead of emphasizing the role of the individual, it highlights social relations, community, and culture (Wang et al., 2011).

2.3. The discourse analytic perspective

Discourse analysis is heavily influenced by the work of Michel Foucault, for whom the central issue was to uncover the mechanisms in which social reality is produced. By "capturing the socially and culturally shaped ways of understanding information competencies and information practices" (Limberg et al., 2012, 110), discourse analysis recognizes language as central to social life, and a key to functioning in a society (Walton & Cleland, 2017).

From this perspective, the word "discourse" may simply refer to groups of linguistic signs that expresses what has been said or written. The socio-constructivist understanding is based on the following premise:

> the meaning of words arises from their use and at its core privileges the role of language as a practice and assigns it centre stage for the creation of knowledge and the negotiation of truths (Haider & Bawden, 2007, 537).

Social realities are formed through discourses. Therefore, discourse can be understood as

> a productive practice, which obeys specific rules, is generative of knowledge and related to a particular field of use which, through discourse, is related to other fields and to other practices (Haider & Bawden, 2007, 540).

The sociocultural and the discourse analytic perspectives are similar insofar as they both portray learning as a social activity that uses tools, practices, and conditions for meaning-making (Pilerot, 2016). The discourse analytic perspective focuses on identifying broader historical discourses of information literacy which will further the understanding of how interpretive repertoires vary. It also demonstrates that IL is constructed differently in different conversational contexts.

Discourse analysts do not accept information competences as uncontested phenomena, and therefore they study the interpretive repertoires, through which people ascribe meanings to information competencies and practices. They define discourses as systems of statements, i.e., sets of interlinked claims, assumptions, and meanings. It is presumed that we are users of already existing discourses, expressions, and conceptual frameworks; thus we accept implicit claims about the nature of information, even if we have not consciously scrutinized them and concluded that they are truthful or valid (Limberg et al., 2012). In general, however, this perspective shares several premises with phenomenographic and sociocultural approaches.

The comparison of the three approaches discussed above, done by Limberg, Sundin and Talja (2012) shows that phenomenography focuses on different patterns of experiencing information literacy. The focus of the sociocultural theory is the study of information literacy practices within specific contexts and communities. Discourse analysis aims to identify broad historical discourses. Their priorities bring in different understandings that define information literacy, i.e., variation in people's experiences, people's practices within specific communities, and variation in interpretive repertoires, respectively.

Based on social constructionist views as they are, these approaches might be criticized for their emphasis on the social construction of human realities and underestimating the role of the individual (Palmaru, 2016). This issue might be a subject of further discussion, especially if we accept that learning is inconceivable without learners' understanding of prior knowledge (Salisbury & Karasmanis, 2011).

Nonetheless, these approaches offer tools for studying the impact of new technologies and digital media (especially social media) on conditions for learning in contemporary society. Both phenomenographic and sociocultural theories are explicitly grounded in theories of learning, therefore they reproduce the pedagogical perspective, as related to information literacy. The sociocultural perspective pays more attention to mediation by digital and other tools, while phenomenography and discourse analysis are more directly interested in analyzing experiences and interpretations not specifically based on theoretical assumptions about the use of various tools (Limberg et al., 2012).

3. A cognitive model of information literacy

The approaches discussed above can be complemented by a cognitive model of information literacy, which not only bases on ideas taken from cognitive psychology and cognitive pedagogy, but also refers to the theories of representation, thus engaging with the concept of information-as-process. Understood as the act of informing, this concept – alongside with information-as-knowledge and information-as-thing (Buckland, 1991) – is an important and relatively well-known "building block" of information science.

Any cognitive model approaches information and knowledge in a relatively traditional manner – which does not mean that it is simplistic.

As its starting point, we can take the opinion of Machlup (1962) that knowledge and information are deeply related and united, despite the debates on the differences between them. This understanding might be complemented by Paisley's identification of information as a change in the structure of our thinking (Paisley, 1980), stating that information is every stimulus that changes the recipient's cognitive structure. This means that what is already known to the recipient cannot be identified as information, because it does not change the recipient's cognitive structure. Carl Popper's "Three Worlds" theory also contributed to the development of the cognitive approach. His "World 2" describes the internal, subjective mental state of an individual including their personal knowledge (Popper, 1979). As Bawden and Robinson (2016) argue, we might see that the concept of information-as-process – already mentioned above – encompasses information changing a person's knowledge, and thereby addresses the same issue. Following this line of thought we might see information as interpreted data, facts, phenomena, events, i.e., the result of certain reflective procedures on data, often called cognitive procedures, studied by cognitive psychology and cognitive pedagogy. Such procedures and the results of cognition in our mentality give rise to representations, and therefore – if we wish to understand the nature of information – we have to reckon with the theories that describe this process of representation.

Representations take two forms: informational knowledge (knowing what) and operational knowledge (knowing how). This implies that developing information literacy could rely on supporting the development of these representations.

The growth of informational knowledge involves above all the emergence of psychic representations. Verbal information (knowledge) is structured: it unfolds on the level of data, names, labels; simple statements, facts; stories, descriptions; then, it achieves a higher level of integration, i.e., the level of rules, theories, and formal systems. This integrated system of information forms a network, while integration and networking are enabled by operational knowledge (Csapó, 1992; Eysenck & Keane, 1997).

To support the development of informational knowledge in education, we may use a unified model constructed according to the following principles:

(1) It is necessary to make learners aware of the importance of selecting information before they engage in information processing, because their knowledge may represent objective or subjective reality. This selection should be directed by targeted and purposeful learning activities, and supported by teachers (including school-teachers and teaching staff members in higher education, as well as information professionals). The role of the teacher is therefore to construct a purposefully organized landscape for the learning activities supported by skilled and well-trained individuals, who

became proficient in selecting information. As a result, the process of cognition might become more time-efficient, but more importantly, there is a possibility of a cognitive economics, enabling the learner saving up cognitive decision-making time on information processing if it is not useful for the particular learning activity.

(2) It is important for both the learners and the teacher to experience the difference between visual and propositional contents, as they can be used to solve different problems. The accessibility of a given type of content for a learner in a given learning context depends on the situation and the learner's aptitude. Different learning situations and learning communities, with different learning practices, experiences and tools, create different propositional or visual content in the cognition process, resulting in constantly changing information in the matrix of actors and activities (see the sociocultural model). The teacher is a professional actor supporting cognitive activities, who can also provide personalized visual or propositional content to the learner. The personal presence and expertise of the teacher guarantees the adaptive application of personalized instructions, explanations, representations and models.

(3) The process of structuring verbal information needs to be coordinated, that is to say, teachers need to support and control the creation of concepts. They also regulate the formation of statements and histories in order to obtain conventional knowledge, mediated by the school, and by teachers. Taken widely, all these are understood as constituents of the given learning environment.

(4) As a result, schools play an instrumental role in introducing students to story-telling, as teachers help them to discover rules and recognize the principles as quickly and efficiently as possible.

(5) The learner should be able to distinguish between elementary information (statements) and complex information (principles) to decide what kind of information is needed to solve a given problem in a purposeful and economical way. In this process, the professional support of the teacher is, again, indispensable.

(6) Being communicative spaces (information landscapes), schools may utilize purposeful planning and teacher's coordination, can store structured groups of concepts, events, series of events, imagery, situations, relationships, or even objects (e.g. when performing a physical experiment) in the form of common representations.

(7) Coordinated by their teachers, students are acquainted with scenarios (stereotypic series of events). They try them out and become accustomed to them, which makes their daily life activities easier and helps them to develop methods of independent knowledge acquisition in the form of searching for sources, evaluating them, analyzing and solving problems.

(8) Theories, formal systems and networks may emerge from long-standing learning activities. Their development is the result of coordinated learning activities, the effort of the teachers supporting the learning process, and, above all, of students' personal psychic operations, as well as their task and problem-solving activities.

The development of informational knowledge described above is not possible without the functioning of the operational knowledge, i.e., the performance of the representations. This is determined by skills, as well as task-solving and problem-solving abilities. Representation – forming a system of informational knowledge the course of a cognitive

process – materializes in operations analysis, synthesis, enhancement, comparison, abstraction, and generalization. Skill-level, automated operations enable the formation of representations, which are carried on in the process of cognition. Thus, for example, problem-solving relies on all levels of thinking, and the theory-making process follows from all preceding stories, descriptions, and rules.

Operational knowledge is formed by cognitive operations producing information and by their integrated systems, the development of which is a pedagogical task. The most important goal is to develop the abilities that will help individuals to recognize their problem, as well as to identify, obtain and use all the necessary information about it in order to solve it (Csapó, 1992; Nagy, 2000).

The development of the operational knowledge in education can be facilitated according to the following principles:

(1) The teacher should plan to form and practice students' lower and higher psychic operations, such as analysis, searching association, synthesis, comparison, sequence recognition, identification, relationship detection, evaluation, application, restructuration, classification, organization, and distribution in a personalized, gradual and learning-specific way. By practicing psychic operations, the educators provide the learner with personalized information, thus initiating the process of reflecting on cognition, i.e., the experience of information processing becomes a personal experience for the cognizer (see the phenomenographic perspective).
(2) Students can follow tailor-made routines and operations in the teacher's presence and with their personalized support, and thus information can be delivered in a subject – and problem-specific form until they can identify actions that should be taken and are able to perform them flawlessly. This is the level of informational skills where recognition and execution are automatic.
(3) Diverse paths of intellectual activities should be purposefully planned, practiced, and implemented by the teacher in order to support the learners' ability to draw conclusions and analogies, as well as their ability to practice the ways of processing information by induction and deduction.
(4) The teacher should confront the students with personalized problem situations that inspire not only the development of informational knowledge, but also gradually reveal their cognitive abilities and creativity.
(5) Offering support to the students should include raising consciousness of their personal learning activities and self-reflection, as this is the only way to develop metacognition and conscious planning of information.

Finally, the acquisition of information and the development of informational knowledge is indispensable if the individual is motivated to acquire the information, to persevere in the information processes in which their information culture develops, and to have a continuous need for information and knowledge acquisition. However as Materska (2014) argues, people do not always invest their full mental capacities in the tasks of information acquisition and evaluation. Individuals' behavior is adaptive, i.e., they seek an optimal balance between cognitive effort and desired outcomes (Simon, 1979). Similarly to other Internet information seekers, most people – more or less unconsciously – resort to satisficing, as they do not use all their cognitive resources to obtain optimal outcomes, but seek just enough (good enough) resources.

In the last section of this paper, we have emphasized cognitive pedagogical approaches. Besides the apparent complexity of cognitive processes, related to acquisition and development of information literacy, cognitive approaches should have their place in teaching of information literacy. They do not have to replace the current approaches, but they may certainly complement them. Moreover, as far as principles are concerned, the strict exclusivity of approaches does not seem to be beneficent to any scholarly enterprise.

4. Conclusion

As Todd (2017) put it, there is little exploration of what constitutes meaningful pedagogy of IL, and therefore there is a need for further discussion of the application of theories of learning and principles of pedagogical design. This study of a cognitive approach to pedagogy is meant to contribute to this undertaking.

This paper discussed three theoretical perspectives applicable to IL, as a part of a wider scholarly turn "from observation to participation, from documents to communities" (Špiranec et al., 2016, 249). Indeed, concepts, such as communities of practice and learning communities feature often in texts that employ phenomenographic, sociocultural, and discourse analytical approaches.

We have argued that these approaches, combined with a cognitive model (which this paper also discussed) promise a solid and novel theoretical basis for information literacy in educational settings, as they offer different, but interconnected insights into various levels of information literacy.

We also stressed that achieving efficient education in information literacy is impossible without situating it in the theoretical context of information science. To establish the relation between information science and our study, we discussed some pertinent issues.

If we ask the question if it is possible to construct an information literacy model or framework unifying all other information literacy models, there are no obvious answers. Nonetheless, we can be confident that we will witness further developments in learning and teaching, and changes in the relationships with other literacies (Onyancha, 2020).

There seems to be no argument against the proposition that questioning is the holy grail of information literacy (Walton, 2017), no matter if we ask questions regarding the trustworthiness, objectivity, and reliability of information, or question these qualities in any online communication, particularly the interactions in social media. Questioning has been always crucial, but it undeniably became particularly urgent in the post-truth society. Lifelong learning and a mind-set based on questioning help to build personal cognitive firewalls against fake news and related phenomena.

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References

AASL. (1998). *Information Power. Building Partnership for Learning*. American Association of School Librarians, Association for Educational Communications Technology, Chicago, IL: American Library Association.

Aharony, N., Limberg, L., Julien, H., Albright, K., Fourie, I., Bronstein, J. (2017). Information Literacy in an Era of Information Uncertainty. *Proceedings of the Association for Information Science and Technology*, 54(1), 528–531, https://doi.org/10.1002/pra2.2017.14505401063

ALISE. (2016). *ALISE Research Taxonomy* [online]. Association for Library and Information Science Education [26.09.2020], https://www.alise.org/research-taxonomy

Bawden, D. (2015). *On Not Being a Weak Discipline* [online]. The Occasional Informationist [14.09.2020], https://theoccasionalinformationist.com/2015/07/06/on-not-being-a-weak-discipline/

Bawden, D., Robinson, L. (2009). The Dark Side of Information: Overload, Anxiety and Other Paradoxes and Pathologies. *Journal of Information Science*, 35(2), 180–191, https://doi.org/10.1177/0165551508095781

Bawden, D., Robinson, L. (2016). Super-Science, Fundamental Dimension, Way of Being: Library and Information Science in an Age of Messages. In: Kelly M. & Bielby J. (eds.). *Information Cultures in the Digital Age* (pp.31–43). Springer VS, Wiesbaden, https://doi.org/10.1007/978-3-658-14681-8_2

Bruce, C. S. (1997). *Seven Faces of Information Literacy*. Blackwood: Auslib Press.

Bruce, C. S. (2016). Information Literacy Research: Dimensions of the Emerging Collective Consciousness. A reflection. *Australian Academic & Research Libraries*, 47(4), 239–244, https://doi.org/10.1080/00048623.2016.1248236

Buckland, M. (1991). Information as Thing. *Journal of the American Society for Information Science*, 42(5), 351–360, https://doi.org/10.1002/(SICI)1097-4571(199106)42:5<351::AID-ASI5>3.0.CO;2-3

CILIP. (2018). *CILIP Definition of Information Literacy* [online]. CILIP. The Library and Information Association [14.09.2020], https://infolit.org.uk/ILdefinitionCILIP2018.pdf

Csapó, B. (1992). *Kognitív pedagógia*. Budapest: Akadémiai Kiadó.

Dora, M., Kumar, H. A. (2019). National and International Trends in Library and Information Science Research: A Comparative Review of the Literature [online]. *IFLA Journal*, First Published December 2019 [14.09.2020], https://doi.org/10.1177/0340035219886610

Eysenck, M. W, Keane, M. T. (1997). *Kognitív pszichológia*. Budapest: Nemzeti Tankönyvkiadó.

Forster, M. (2016). Phenomenography: A Methodology for Information Literacy Research. *Journal of Librarianship and Information Science*, 48(4), 353–362, https://doi.org/10.1177/0961000614566481

Haider, J., Bawden, D. (2007). Conceptions of "Information Poverty" in LIS: A Discourse Analysis. *Journal of Documentation*, 63(4), 534–557, https://doi.org/10.1108/00220410710759002

Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy*. Washington, DC: The Aspen Institute.

Koltay, T. (2015). Data Literacy: In Search of a Name and Identity. *Journal of Documentation*, 71(2), 401–415, https://doi.org/10.1108/JD-02-2014-0026

Koltay, T., Špiranec, S., Karvalics, L (2016). *Research 2.0 and the Future of Information Literacy*. Oxford: Chandos Publishing.

Lau, J. (2013). Conceptual Relationship of Information Literacy and Media Literacy. In: A. Lee, J. Lau, T. Carbo & N. Gendina (eds.). *Conceptual Relationship of Information Literacy and Media Literacy in Knowledge Societies* (pp. 76–91). Paris: UNESCO.

Lee, A. Y., So, C. Y. (2014). Media Literacy and Information Literacy: Similarities and Differences. *Comunicar*, 21(42), https://doi.org/10.3916/C42-2014-13

Limberg, L., Sundin, O., Talja, S. (2013). Three Theoretical Perspectives on Information Literacy. *Human IT: Journal for Information Technology Studies as a Human Science*, 11(2), 93–130.

Livingstone, S., van Couvering, E. J., Thumin, N. (2008). Converging Traditions of Research on Media and Information Literacies: Disciplinary and Methodological Issues. In: J. Coiro, M. Knobel, C. Lankshear & D.J. Leu, (eds.). *Handbook of Research on New Literacies* (pp. 103–132). New York: Routledge.

Lloyd, A. (2006). Information Literacy Landscapes: An Emerging Picture. *Journal of Documentation*, 62(5), 570–583, https://doi.org/10.1108/00220410610688723

Lloyd, A. (2010). *Information Literacy Landscapes: Information Literacy in Education, Workplace and Everyday Contexts*. Oxford: Chandos Publishing.

Lloyd, A. (2012). Information Literacy as a Socially Enacted Practice: Sensitising Themes for an Emerging Perspective of People-in-Practice. *Journal of Documentation*, 68(6), 772–783, https://doi.org/10.1108/00220411211277037

Lloyd, A. (2017). Information Literacy and Literacies of Information: A Mid-Range Theory and Model. *Journal of Information Literacy*, 11(1), 91–105, https://doi.org/10.11645/11.1.2185

Mackey, T. P., Jacobson, T. E. (2011). Reframing Information Literacy as a Metaliteracy. *College & Research Libraries*, 72(1), 62–78, https://doi.org/10.5860/crl-76r1

Machlup, F. (1962). *The Production and Distribution of Knowledge in the United States*. Princeton NJ: Princeton University Press.

Marcum, J. W. (2002). Rethinking Information Literacy. *Library Quarterly*, 72(1), 1–26, https://doi.org/10.1086/603335

Materska, K. (2014). Information Heuristics of Information Literate People. In: S. Kurbanoğlu, S. Špiranec, E. Grassian, D. Mizrachi & R. Catts (eds.). *Information Literacy, Lifelong Learning and Digital Citizenship in the 21st Century* (pp. 59–69). Springer, Cham, https://doi.org/10.1007/978-3-319-14136-7_7

Morrison, C., Secker, J. (2017). Understanding Librarians' Experiences of Copyright: Findings from a Phenomenographic Study of UK Information Professionals. *Library Management*, 38(6/7), 354–368, https://doi.org/10.1108/LM-01–2017-0011

Nagy, J. (2000). *XXI. század és nevelés*. Budapest: Osiris.

New London Group (1996). A Pedagogy of Multiliteracies: Designing Social Futures. *Harvard Educational Review* 66(10), 60–92, https://doi.org/10.17763/haer.66.1.17370n67v22j160u

Onyancha, O. B. (2020). Knowledge Visualization and Mapping of Information Literacy, 1975–2018. *IFLA Journal*, 46(2), 107–123, https://doi.org/10.1177/0340035220906536

Paisley, W. (1980). Information and Work. In: B. Dervin & M. J. Voigt (eds.). *Progress in Communication Sciences vol. 2* (pp. 113–165). New Jersey: Ablex.

Palmaru, R. (2016). Constructivism as a Key Towards Further Understanding of Communication, Culture and Society. *Constructivist Foundations*, 12(1), 30–38.

Pfaff-Rüdiger, S., Riesmeyer, C. (2016). Moved into Action. Media Literacy as Social Process. *Journal of Children and Media*, 10(2), 164–172, https://doi.org/10.1080/17482798.2015.1127838

Pilerot, O. (2016). Connections Between Research and Practice in the Information Literacy Narrative: A Mapping of the Literature and Some Propositions. *Journal of Librarianship and Information Science*, 48(4), 313–321, https://doi.org/10.1177/0961000614559140

Pinto, M., Escalona-Fernández M.I., Pulgarín, A. (2013). Information Literacy in Social Sciences and Health Sciences: A Bibliometric Study (1974–2011). *Scientometrics*, 95, 1071–1094, https://doi.org/10.1007/s11192–012-0899-y

Popper, K. R. (1979). *Objective Knowledge: An Evolutionary Approach (revised edition)*. Oxford, UK: Clarendon Press.

Robinson, L. (2009). Information Science: Communication Chain and Domain Analysis. *Journal of Documentation*, 65(4), 578–591, https://doi.org/10.1108/00220410910970267

Salisbury, F., Karasmanis, S. (2011). Are They Ready? Exploring Student Information Literacy Skills in the Transition from Secondary to Tertiary Education. *Australian Academic and Research Libraries*, 42(1), 43–58, https://doi.org/10.1080/00048623.2011.10722203

Secker, J. (2018). The Revised CILIP Definition of Information Literacy. *Journal of Information Literacy*, 12(1), 156–158, http://dx.doi.org/10.11645/12.1.2454
Simon, H. A. (1979). Rational Decision Making in Business Organizations. *The American Economic Review*, 69(4), 493–513.
Špiranec, S., Banek Zorica, M. (2010). Information Literacy 2.0: Hype or Discourse Refinement? *Journal of Documentation*, 66(1), 140–153, https://doi.org/10.1108/00220411011016407
Špiranec, S., Banek Zorica, M., Kos, D. (2016). Information Literacy in Participatory Environments: The Turn Towards a Critical Literacy Perspective. *Journal of Documentation*, 72(2), 247–264, https://doi.org/10.1108/JD-06–2015-0072
Street, B. (1984). *Literacy in Theory and Practice*. Cambridge: Cambridge University Press.
Talja, S., Lloyd, A. (2010). Integrating Theories of Learning, Literacies and Information Practices. In: A. Lloyd & Talja, S. (eds.). *Practising Information Literacy, Bringing Theories of Learning, Practice and Information Literacy Together* (pp. ix–xviii). Cambridge: Woodhead Publishing.
Thorne, S. (2013). Digital Literacies. In: M. Hawkins (ed.), *Framing Languages and Literacies: Socially Situated Views and Perspectives* (pp. 192–218). New York: Routledge.
Todd, R. J. (2017). Information Literacy: Agendas for a Sustainable Future. *Journal of Information Literacy*, 11(1), 120–136, https://doi.org/10.11645/11.1.2233
Walton, G. (2017). Information Literacy is a Subversive Activity: Developing a Research-Based Theory of Information Discernment. *Journal of Information Literacy*, 11(1), 137–155, https://doi.org/10.11645/11.1.2188
Walton, G., Cleland, J. (2017). Information Literacy: Empowerment or Reproduction in Practice? A Discourse Analysis Approach. *Journal of Documentation*, 73(4), 582–594, https://doi.org/10.1108/JD-04–2015-0048
Wang, L., Bruce, C., Hughes, H. (2011). Sociocultural Theories and Their Application in Information Literacy Research and Education. *Australian Academic and Research Libraries*, 42(4), 296–308, https://doi.org/10.1080/00048623.2011.10722242
Webber, S., Johnston, B. (2000), Conceptions of Information Literacy: New Perspectives and Implications. *Journal of Information Science*, 26(6), 381–397, https://doi.org/10.1177/016555150002600602
Whitworth, A. (2014). *Radical Information Literacy: Reclaiming the Political Heart of the Information Literacy Movement*. Oxford: Chandos Publishing.

Kompleksowe podejście interdyscyplinarne do modelowania kształcenia w zakresie edukacji informacyjnej

Abstrakt

Cel/Teza: W artykule omówiono najważniejsze zagadnienia teoretyczne i ramy badawcze, które mogą służyć za podstawę do opracowania modeli kształcenia w zakresie edukacji informacyjnej.
Koncepcja/Metody badań: W artykule dokonano przeglądu piśmiennictwa tematu od lat 90. XX w. do obecnej chwili oraz zarysowano kontekst dyscyplinarny edukacji informacyjnej w celu zidentyfikowania koncepcji, które mogą okazać się przydatne w modelowaniu kształcenia w zakresie edukacji informacyjnej.
Wyniki i wnioski: W świetle konwergencji i pokrywania się znaczeń różnych koncepcji dotyczących kompetencji, niniejszy artykuł rozważa różne podejścia pedagogiczne – fenomenograficzne, socjokulturowe oraz analizę dyskursu – w celu połączenia ich z podejściem kognitywnym do kształcenia

w zakresie edukacji informacyjnej. Przegląd piśmiennictwa pokazuje, że wszystkie te podejścia mogą mieć wkład w podstawę teoretyczną kształcenia w zakresie edukacji informacyjnej w różnych grupach wiekowych i na różnych poziomach edukacji.
Oryginalność/Wartość poznawcza: Kształcenie w zakresie edukacji informacyjnej zostało przeanalizowane z perspektywy interdyscyplinarnej, z naciskiem na naukę o informacji i pedagogikę.

Słowa kluczowe

Edukacja informacyjna. Fenomenografia. Nauka o informacji. Pedagogika. Podejście dyskursu analitycznego. Podejście kognitywne. Podejście socjokulturowe.

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Application of Interdisciplinary Theory of Genres in LIS

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Abstract

Purpose/Thesis: The article presents the possibilities of using the interdisciplinary theory of genres, developed in the study of linguistics, literary studies, rhetoric, sociology, philosophy, psychology and other disciplines, in library and information science (LIS). The article argues the application of genre theory to LIS offers a new and interesting interdisciplinary perspective.
Approach/Methods: A critical analysis of the literature on the subject introduces the basic premises of the interdisciplinary theory of text/information genres in its historical development in the world and in Poland. A similar method was used to present the most important directions genre theory opens to LIS.
Results and conclusions: Before genre theory was first applied to LIS, it was developed in disciplines such as linguistics, literature, rhetoric, communication and media, discourse analysis, sociology, pedagogy and others and in many countries on all continents (mainly in the USA, Australia, Brazil and Scandinavian countries). The theory's success is a result of its interdisciplinary development, beginning from linguistic and classical rhetorical genres approach and problems of categorizing texts to "de facto genres" and their function in everyday communication activities (social/rhetoric approach). Applied to LIS, it frames information objects as social constructs whose meaning is constructed in social discourse, driven by genre knowledge. The library and other information systems should be treated as a social communication activity in the recurrent situation of organizing and retrieving information. It means that the work of a librarian (or other information organizers) involves rhetorical activity of creating information objects, as does the work of other information creators, e.g. authors of scholarly publications. The functioning of information system, i.e. production and organization of textual information should be investigated using methods applied in other disciplines, especially humanities and social sciences, as it allows for a broader research perspective.
Originality/Value: The article describes the possibilities of applying genre theory in LIS research, which still do not receive the attention they merit. A wider knowledge of the genre theory would make possible collaborative research involving scholars of other disciplines such as linguistics and sociology.

Keywords

Genre theory. Genre studies. Interdisciplinary research. LIS interdisciplinarity. LIS theories.

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1. Introduction

Although all scientific knowledge might be divided into disciplines, the boundaries between them are not clearly defined, and, as time passes they even blur. This is caused by, among others, frequent scientific collaboration between disciplines, valued and supported in the world of science (Chang, 2018, 1589). Library and Information Science (LIS), as a discipline

with information as its main research interest[1], has always interacted with other disciplines concerned with information (Beghtol, 1995, 30), and it is difficult to find a discipline that has no whatsoever connection with the subject however differently understood. Hence, Beghtol's pursuit of a resolution to the contradiction – information as a single object of study, subject to multiple disciplinary treatment – which she believed she found in interdisciplinarity: a way to establish connections between all factors shaping the modern world, incorporating approaches of LIS as a scientific discipline. Therefore, the more scientific institutions and information needs to become specialized, the more necessary is the mutual exchange of thoughts and stimulation to solve current scientific problems. Therefore, paradoxically the more certain issues and research practices become common, the more useful becomes an in-depth specialization will be.

This collaboration and interaction, very common in LIS scholarship[2], gave rise to conviction of the "natural interdisciplinarity" of the discipline, widely shared by the scholars (Prebor, 2010; Saracevic, 1999, 1052). Holland claims (2008, 9) that the main feature of interdisciplinarity is the integration of methods and problems from various disciplines. He proposes a definition of interdisciplinary research as requiring integration of knowledge and/or methods of different disciplines to solve common problems. According to OECD report (Apostel et al., 1972, 25) this interaction may range from simple communication of ideas to mutual integration of organizing concepts, methodology, procedures, epistemology, terminology, data, and organization of research and education in a fairly large field. Therefore, LIS assimilates parts of other disciplines, their ideas, methods and functions as integrated elements of research (Holmes, 1999). Because the interactions of LIS with other disciplines occur constantly and are constantly changing, the level and functioning of LIS as an interdisciplinary discipline is also constantly changing (Zins, 2007). This situation is illustrated by, among others, the inconsistency across various discipline classifications, where LIS is considered as belonging to arts and humanities as well as to social sciences, communication and media, business/management, computer science, to name the most common. This makes manifest the heterogeneity of the discipline with a great variety of alliances (Nolin & Åström, 2010, 9).

Interdisciplinary interactions between LIS and other disciplines are dynamic, inspirational and constructive (Tabatabaei & Beheshti, 2008). LIS researchers need to acquire ideas and knowledge from other disciplines, ensuring that they will built on their achievements; their research and their own achievements must influence the results of other disciplines. The highly interdisciplinary nature of LIS positively distinguishes it from other disciplines, because, as Weinberg (1963, 166) wrote, this field has the highest scientific value, which most influences the achievements of neighboring scientific disciplines.

According to Urbano and Ardanuy (2020), the term "interdisciplinary" is used in the LIS literature as a general concept covering two basic situations: cooperation in publishing

[1] For the purpose of this paper LIS is understood according to Hjørland's definition (2019, 169): a study of human interaction with the universe of recorded knowledge. We will understand recorded knowledge as information.

[2] The extent of the interaction is discussed in studies on the citation of works by specialists outside LIS by LIS researchers and vice versa. There are many more of the former (Pluzhenskaya, 2008). A high proportion of non-LIS articles in LIS journals was also noted, which confirms that LIS is substantially affected by other disciplines (Chang, 2018).

(within the same journal titles without co-authorship, or through co-authorship) and LIS researchers' reception of methodological and epistemological influences from other disciplines. In this article we will mainly deal with the latter. Interdisciplinary research offers special benefits such as quick and effective problem solving when it is possible to find and apply the right theory[3] from another discipline. This practice also allows the development of discipline-specific theories, methods and principles. The integration of theories developed in other disciplines supports methodological development; it also creates challenges and opportunities by linking LIS with dynamic and promising research areas emerging in other disciplines. As a result, well-conducted interdisciplinary research prevents the stagnation of LIS theoretical framework by integrating fresh research questions explored in other disciplines. Collaborative research conducted by groups of scientists from different disciplines, employing their theories to achieve a common goal can be continued in LIS after integration with its own theories, tools and research methods (Rogers et al., 2003, 3).

LIS research often employs tools of other disciplines; theory of genres might become another such tool. It could be particularly beneficial as genre theory is as inherently interdisciplinary as LIS itself. The theory offers interesting research methods and perspective to LIS. In their interdisciplinarity both genre theory and LIS base on the achievements of similar scientific disciplines. This makes genre theory easily implemented in LIS studies. The purpose of the article is to explore the possibilities of using theory of genres, created and developed on the basis of scientific disciplines such as linguistics, literary studies, rhetoric, sociology, philosophy and psychology, in LIS research. Both LIS and genre theory center information contained in texts, utterances and messages, conditioning and orienting social activities of communicating parties. Hence, the application of this theory in LIS has many benefits, as it directly concerns the discipline's main research subject. It provides a new perspective on social rhetorical activities related to the organization of information in information systems.

The next part of the article will discuss genre theory in more detail. Firstly, it will present the theory as interdisciplinary. The activities and achievements of major centers in the world in which this theory is developed will be briefly summarized. Secondly, it will introduce the possibilities of using genre theory in LIS studies. Such a research practice, based on the achievements of another discipline, allows a new perspective on information and knowledge organization processes.

2. Interdisciplinary theory of information genres

All human activities are accompanied by communication processes that depend on many factors, including the communication technologies they use. In oral cultures information and knowledge were communicated with songs, stories, and sagas. Literate cultures have introduced new tools, depending on the technologies used for recording and transmitting information: manuscript, print, digital. Changing forms and means of communication are an inherent part of every culture, as they structure and sustain all social activities. The

[3] The term "theory" is defined here, after Smiraglia (2002), as a system of testable explanatory statements derived from research.

concept, which covers the entirety of information communication forms that support purposeful human interaction, is that of genre.

Genre theory is actually a family of theories employed in theoretical study of information and information-related activities located in social practices (Andersen, 2006; Kjellberg, 2009). Over the past forty years, scholars working in many disciplines have revolutionized our understanding of genres. They have departed from the original idea that genres are simple categories of text types. Instead, they began to treat genres as a combination of differentiated forms of information materialization and forms of social activities. As a result of this research, genres were increasingly defined as a way to recognize and support the reproduction of recurrent situation and to construct responses to it, like a sensible behavior of the situation participants. Treating genres as typized ways of interacting participants of recurrent[4] situations, initiated by Carolyn Miller (1984), had a major impact on the development of genre theory. Several research centers were established for genre theory development on almost all continents (mainly in the USA, Australia, Brazil, France, Denmark, Switzerland), in which genres were studied by scholars of various disciplines (linguistics, literature, rhetoric, communication and media, discourse analysis, sociology, pedagogy and others[5]) and in various contexts (including scientific and professional publishing and knowledge organization). In this way, centers (schools) of research on genres were emerged, which shaped the modern understanding of the concept.

Representatives of abovementioned and other disciplines discussed genre from various research perspectives. This is why they wrote about genres of text, speech, utterance or document (Nahotko, 2018, 129). In my opinion, what all their arguments have in common is the role of information in communication processes. In current rhetoric genre theory, which I will discuss in more detail below, the most important feature of a genre is its communication purpose, achieved through the information transfer. The other features of the genre, such as the form of the message (textual: manuscript, print, electronic etc.), are of secondary importance. Genre is an important tool for locating and organizing forms of information in indexing and accessing archives (Geisler et al., 2001, 278). Genre defines information used in people's communicative activity and their understanding of it. Without the orientation genre provides, we would not know where to look for information or what that information might mean. It means that genre knowledge relates to the information contained in the message, and that its form is matched to communication purpose, achieved by information transfer. For this reason, in the article I use the term information genre as a catch-all generic term.

Such a strong level of interdisciplinarity and geographical dispersion of research made difficult an agreement on an unambiguous definition of term "genre". There are two competing theories of genre: those that treat it as a kind of text (information carrier) and those that treat it as a classification system. This ambiguity stems from the question of whether genres are treated as tools for sorting and classifying experiences, events and activities that they represent (when they are considered a kind of labels or containers for meaning), or

[4] Recurrence is closely related to variation, so genres must be able to adapt to such variation; as Bazerman writes (2012, 265), a conceptual challenge may require a disruption of the genre.

[5] The disciplines listed here mainly use the concept of genre to analyze textual information. Equally extensive theories of genres are offered by disciplines concerned with other forms, such as film and fine arts, and, recently, Internet, combining all previously existing forms and creating its own.

whether they reflect, help to shape, and even create what they represent in a way defined by culture, which would explain why they play an essential role in creating meanings. Genres, therefore, form a set of conventional and highly organized constraints on the creation and interpretation of meaning. In various periods and in different research areas, genre was defined and used mainly as a classification tool, a way to sort and organize materialized texts in documents and other information objects[6]. More recently, in many research disciplines, there has been an understanding of genres as powerful, ideologically active and historically modifiable tools for constructing information, meanings and social activity. From this point of view, genres are understood as a form of knowledge defining, mediating, understanding and performing a typical response to recurrent everyday situations. This view defines genres both as a creating and organizing types of information objects and related social activity in a complex, dynamic and mutual relationships (Bawarshi & Reiff, 2010, 4).

Antunes, Costa and Pino (2006) claim that genres initially served as a way of organizing and classifying literary works, and that the texts were studied as belonging to a specific class of texts, distinguished on the basis of formal features. This allowed the scholars to show the organizing principles of literary creation. More recently, this theory has been used to identify and express the principles and conventions of creating and consuming information objects other than literary texts. This research centers genres of everyday private and professional activities, referred to as "de facto genres", which falls within the rhetorical tradition. Current theory of genres prioritizes the problems of current discourse over traditional disciplinary divisions, as evidenced by the wide range of discipline profiles of researches publishing on genre theory: they are representatives of the humanities, social, cognitive, linguistics and computer science, who all use their specific methodological approaches and theoretical frameworks to describe the nature and goals of genre forms (Trace & Dillon, 2012, 509). Genres in everyday life, as well as within scientific disciplines and professional use are of particular interest to researchers. It is currently believed that genre structures exist within all communication situations, which means that most professional communities use genre structures in collaboration, often without formally expressing the fact. Even if it remains unarticulated, a large part of the education and socialization of professionals for their professional or research activities consists of their education in identifying, creating and applying socially accepted communication patterns used in cooperation with other members of their professional or scientific information world (Jaeger & Burnett, 2010).

Luzón (2005) attempted to order the diverse approaches to information genres, distinguishing two traditions in the treatment of genres: linguistic and rhetorical[7]. There are further complementary empirical approaches to genre analysis which do not fall into the division she describes. Research in empirical direction was initiated by Yates and Orlikowski (1992), who analyzed genres in business organizations using historical analyzes supported by theory of structuration. Their work inspired further research in the field of information

[6] The understanding of information object is borrowed from activity theory to examine the ways in which some groups of people coordinate their actions to achieve a common goal (Winsor, 2007, 3). An object of activity system is the problem, space, or focus of activity upon which the system acts. Objects of information activities are used to contain materialized information. Information object in information system is the object upon which people within the system act with during information activities.

[7] Rhetoric is understood here as a symbolic action; it is the use of language as a symbolic tool to shape attitudes and encourage behaviors (Burke, 1951) by communicating information.

systems using genre analysis. In particular, certain studies in the field of social sciences and cognitive science explored the use of documents in organizations and the design of their new electronic forms, which applied genre theory to everyday life situations to understand how information objects can not only reflect, but also influence the practices.

The linguistic approach focuses on linguistic analyzes of the text and its structure, and the results obtained are often used in models employed in education and efforts to improve literacy. According to researchers using this approach, spoken and written language plays a crucial role in socialization, preparing people to live in a community and to take meaningful actions in recurring situations (Halliday, 2003). The components of linguistic analysis are: text (the content of what is spoken or written), situation (the environment in which the text is created), register (semantic type of the text), code (controlling semantic styles available in a specific context), language system and social structure. Linguistic diversity is a result of the multiplicity of social contexts in which the language is used.

It is worth mentioning the Polish achievements of linguistic genology, which is an undeniably interdisciplinary discipline. It has been developing since the 1960s, when text became the center of linguists' attention, replacing syntax; text linguistics began to develop (Ostaszewska, 2008). Over time, this discipline has evolved to include the social context. The linguists turned to discourse – communication activities as socially and culturally conditioned verbal interactions. This brought on the development of discourse theory, based on psychology (psycholinguistics), cognitive sciences and other social sciences (e.g. sociolinguistics) in addition to linguistics. This allowed the scholars to track the phenomenon of verbal interaction in social, cultural and situational contexts. As a result of this interdisciplinary collaboration, linguistic genology developed, following the tradition of literary genological research and supported by discourse analysis (Furdal, 1982). An important development was the highlighting of the so-called utility (non-literary) genres. According to Ostaszewska (2008, 19), we can identify the following stages of linguistic genology's development:

– from a text treated as a finished product, a structured communication unit: text linguistics;
– through messages created by people in their natural environment: the theory of discourse;
– to the contemporary observation of genre heterogeneity: genology.

The study of genre within rhetoric is close to phenomenological and sociological traditions (Bawarshi & Reiff, 2010). This approach is related to the rhetorical dimension of language use, social constructivism, rhetorical understanding of rationality and the theory of speech act as a mode of action. It emphasizes the relationship between the textual information and the broader social context in which the genre function. It requires understanding of the complex social, cultural, institutional and disciplinary factors affecting people when they create and recreate reality, learn (construct knowledge), and interact with language through different types of information objects. Genres influence the ways in which we experience, co-construct and perform social practices, and choose the places of activity. From this point of view, genres are considered to be relatively unstable or "stabilized for now" constructs, rhetorical forms that must be learned, taking into account the context of their use in relation to the purposes for which they are used by a particular discourse community (Swales, 1990, 21–32). These features result from their momentous role in the

processes of structuration described by Giddens (2003), i.e. reproduction of social structures during their application. People live in a socially structured world, but at the same time, with the help of their social and cultural resources and activities, they co-construct social structures. This approach, which explores genres as forms of situational cognition, social activities, and social reproduction, does not focus as much on the precise linguistic analysis.

Such a dynamic view of genres requires organization of research which goes beyond genre's formal features. These features are treated as secondary, informed by social purposes of communication as well as the related ways of acquiring knowledge. The formal features of the message result from its purpose – which enables genres to perform specific social activities/relationships related to the specific situation in which they are used. Purpose is the most important genre attribute. The rise of a new communication purpose or a modification of an existing one results in the creation of a new or modification of an existing genre. In other words, genre knowledge consists not only of knowledge regarding the formal features of information and its objects, but mainly of the purposes which genres fulfill. Therefore, genres become a tool of orientation, allowing the user to orientate themselves in the meaning of communicated information, and thus in the purpose of the actions undertaken, which are accompanied by communication. Genres make it possible to negotiate intentions in relation to social motives and expectations of genres, to make decisions about the situations and reasons to use genres, to construct relationships between the information's sender and recipient, and to create relationships between genres during the coordination of social life manifestations.

In this tradition, genres are understood, as Miller suggested in her article cited above, as a form of social action. This paper follows this definition. It considers genre as social structure that mediates textual and social ways of constructing knowledge, existence and interaction in a specific context, which makes it a form of situated cognition. The context is very important here; understanding the context, its role in the uptake[8], is both the beginning of the genre analysis and its purpose. In genre theory, information (e.g. textual) and context are not treated as separate categories; information is integrated into the context and action. Genres, as forming discourse or shaping communication strategies, provide flexible constraints or share tools necessary for the existence of an individual constructing reality in social context. Genres act as guides when people jointly and on an ongoing basis negotiate a common understanding of the situation and provide a measure of security allowing using communicated information in a predictable way (Schryer, 2002, 95). At the same time, Bazerman (2009, 290) emphasized that genres are a significantly socio-cognitive phenomenon. They are projections of meanings that allow orientation in mentally constructed shared spaces. They are also cognition tools, a part of the repertoire of cognitive practices comprising human sense-making. Understanding genres as a form of situational cognition, social action and social reproduction is a result of research of many disciplines that participated in the establishing of genre theory: rhetoric, sociology, phenomenology, philosophy, psychology, communication theory, semiotics, professional and scholarly communication (Bawarshi & Reiff, 2010, 60).

[8] Uptake refers to the influence of a genre on the actions it causes (Freadman, 2002). It may, for example, indicate how so-called "calls for papers" produces an effect in the form of article proposals. In other words, it involves turning the act of illocution into perlocution.

This "rhetorical turn" in the theory of genres caused a movement that is sometimes called sociologization of text and textual practices (Andersen, 2015c, 9). Giddens, mentioned above, contributed to the development of the theory; as did scholars of the philosophy of language building on (e.g. works of Wittgenstein and Austin), which prioritize the pragmatic aspect of language. Activity theory, developed by the Russian researchers of philosophy, pedagogy and psychology (such as Bakhtin, Vygotsky, and Luria) influenced Western researchers of genre theory. A common feature of all these disciplines and directions in the study of genres is the interest in, and special consideration of the conditions of human action as shaped by social structure. The concept of genre proposed by Miller and her successors fits perfectly into the relationship between human action and social structure, even if sometimes genre is considered as an action, sometimes as a social structure, and sometimes as an element serving mediation between people and social structures. In any case, genres are currently placed in a different theoretical space than in classical literary studies. Far from being merely "stylistic" devices, genres affect reality and truth, authority and acceptability, which are central to understanding the world in all research disciplines, arts, as well as in everyday life (Frow, 2015, 2).

3. Genre theory in LIS research

The preceding discussion of the development of views on genres in various disciplines suggests that in the contemporary understanding genre is viewed as a social action and as a tool of social organization, whose operation causes certain activities to recur in similar communication situations (Andersen 2004), where the situation is understood as a typical information structure. Because the organization of society can be described by the means and methods of communication known to its members, the creation, dissemination and use of information genres also depends on the system of activity, the abovementioned "uptake" of genres, which ensures that creation, dissemination and use of information will occur at a specific time and place, requiring such an organization of information, that will allow its retrieval. It follows that if theory of genres and their uptake is to allow a correct description of complex social interactions based on information transfer, its genres and social activities, including the creation and use of genres, then the results of LIS research, in particular in the field of information and knowledge organization, must contribute to the theory.

The organization of information and knowledge is therefore part of social organization in general. The organization of information materialized in information objects is a result of social efforts to self-define in communication processes using various tools and methods. Communication is understood here as a deliberate act in which information is intentionally used to change, shape or influence the state of affairs (situation). This definition is shared by representatives of social sciences, such as Jack Goody (2020) (anthropologist, developing literacy theory) and Jürgen Habermas (2015) (philosopher and social theorist), who highlight the role of writing and genres in the organization of societies. In several of his publications Goody showed how literacy affects social organization. He demonstrated for example how societies of Near East and Egypt and their organization were influenced by introduction and increasingly widespread use of writing in legal, political, religious, and trade activities.

Habermas, on the other hand, introduced the concept of the public sphere. He described the splintering of the modern society into many spheres. The public sphere is developed to function as an intermediary connecting private realm and the sphere of public authority. In this sense the public sphere is treated as an organizational principle of social and political order. The theory explains how different kinds of information genres are developed and being used in the social and ideological organization of various spheres and areas in society (Andersen, 2006, 218). Public sphere is materialized in information genres used for social communication. Information genres and their communicative purposes in society determine the manner in which the user searches for information, contained in information objects. Therefore, seeking for information of particular genre means committing to particular forms of social organization. As Habermas's theory describes the role of various communication media in the organization and transformation of modern societies and the formation of public opinion, it can also be understood as the theory of the social organization of information objects and knowledge in society.

The various spheres: public, social and private, have different communication interests, and therefore they generate distinct ideas and conceptions, which are communicated through diverse information genres. Information objects are produced in the spheres, and their immanent feature is to act within and in-between the spheres, and therefore provide material basis for information communication actions. Information objects produced in every sphere are intended for wide public circulation, reception and critical discussion, which cause them to shift to the public sphere. Thus, theory of the public sphere accounts for the relationships between socially organized communication structures and the genres developed historically in those structures in response to the information needs and interests of various social spheres and domains. In effect, the theory reflects the organization of the producers, mediators, and users of information and its genres in society. Thus, it indicates existence of multiple information systems constructed in society. Therefore, it might be considered as a theory of the social organization of information in a form of genres and information objects.

Assuming that genres are typical rhetorical activities implemented in recurrent situations, rhetorical activity does not only have to be recognized (e.g. during cataloging, we determine the genre of the document being described), but that the organization of information is also a typical rhetorical activity. For example, the library, like any information system, facilitates specific rhetorical activities related to the organization and retrieval of information. All these activities require a creation of information, usually in the form of text. These activities fulfill the communication purposes of people functioning in context of the information retrieval, as a part of the social organization of this historically constructed information system. The resulting texts in appropriate information genre (e.g. bibliographic descriptions) are a part of social activities, facilitating their implementation and their reception allowing them for social participation. Information organization and retrieval are activities that support and transform social structures, to which the information users belong.

If we assume that the object of interest of LIS is (among others) the organization of information and knowledge materialized in information objects, then it becomes clear why theory of genres is a useful research tool (Andersen, 2008, 340). Genre studies reveal the important role of genre in connecting the organization of human activity to communicative activity. They point to individual and institutional preferences of genres in various communication situations and contexts. A look at such communication activities from the point

of view of genre theory may inspire systematic study of the organization of information materialization into information objects and the subsequent use of these objects. It follows that the application of genre theory as an analytical tool in LIS allows us to understand the principles that govern communication at all levels of society's organization and the use of genres in the organization of activities (communication and others), information and people (their information worlds). Genre theory applies not only to people and the information they create, but also to their activities in typified, recurrent situations, in which they communicate information. An important aspect of these situations is information organization and retrieval, the domain of LIS.

Just as actions are recurrent, messages are standardized. Viewed through the lens of genre theory, the creation of information and information objects is not an isolated activity, but rather a part of more extensive social processes: information standardized by using genres is a part of all social activities. This results in the disciplinary diversity of genre structures, adapted to specific needs (e.g. geography – maps and atlases; law: codices, psychology: tests) (Hjørland, 2002, 437). The structure of a scientific article genre is also disciplinarily diversified. The organization of information, as a meta-action, takes into account these differences and enables these social activities. Therefore, information systems in which information is organized, structured with the help of such genres, should be treated as the basis for the functioning of all other social systems. Such an information system (e.g. archive, library, digital library, catalog, bibliography, but also search engine like Google) inheres in typical actions performed in recurrent situations of information needs. Therefore it is a genre created historically to support the writing and organization of information objects (Andersen, 2008, 360; Feinberg, 2015, 51). Genre knowledge of the users allows them to effectively distinguish between these (and other, non-listed) information genres (Geisler et al., 2001, 278).

Smiraglia (2002) showed the fundamental role of social sciences in the historical development of LIS' conceptual framework, in particular in the study of the organization of knowledge. The application of genre theory to LIS research, especially to knowledge organization creates the opportunity to form relationships with other theoretical discourses, mainly from social sciences. Genre theory also illuminates an important subject of LIS research. Theory of genres does not apply to information objects studied individually; rather, its purpose is to show that the fulfillment of a specific information need (manifest in both the creator and recipient of information) related to the use of information of a particular genre means the identification of a specific communication situation and the uptake of the genre in action. In social activities, so-called meta-genres, such as textbooks or regulations (e.g. cataloging rules) are used; they provide agreed genre knowledge about ways to create and negotiate genres and their uptake in the genres system that are in use (Bawarshi, 2016, 44).

It is important to note that a significant contribution of genre theory to LIS research is the departure from treating genre only as one of many characteristics of the information object contained in its bibliographic description (Crowston & Kwasnik, 2003) to treating the genre as a typification of social activities related to the transmission of information in communication processes that resulting from the creation and use of materialized information by individuals in the society. This emphasis on information, its organization and participation in everyday social activities means that user studies in LIS can be treated as genre studies (Andersen, 2008, 348).

Andersen (2008, 354) highlighted the following directions in LIS research where genre theory is (or should be) applied:

– The concept of genres as social action in LIS studies. The research concerns the means and methods of communication in the society of professional, scholarly, cultural and social knowledge materialized in information objects (printed and electronic). It also deals with the functions of information systems used to organize information and knowledge during the implementation of this communication processes. Genres, understood according to Miller's definition, are a tool for analyzing various communication practices. Where social activity is concerned, the information system, understood as a genre, must be seen from the perspective of the activities for which it is used and of the ways of mediating human activities in which it participates. The creator of the information system must define the ways in which its information resources will participate in other social activities (e.g. scientific research processes). In addition, genres research is closely related to information user research, as genre defines information needs. Similarly, genre can form the basis of research in knowledge organization.
– Genre and structuration theory in LIS studies. In the light of Giddens's theory, genres might be viewed as social institutions because they shape and are shaped by human communication activities. Genres represent both the social structure and the agent operating in it. As a result, genres simultaneously establish, regulate, create and reproduce social structures. The combined application of both theories (genre and structuration) allows scholars, for example, to describe the dynamics of the relationship between structure and agency in institutions (Yates & Orlikowski, 1992). Knowledge is organized in the complex relationships between human activities, the media, genres, technologies, ideologies and institutional structures. The study of these relationships allows us to describe the ways in which knowledge and information organization influence social organization, genres and human activities. This locates research on the organization of information between both more general social theory and genre theory.
– Genre knowledge and its application in LIS research. Genre knowledge is a form of situational cognition (Bertenkotter & Huckin, 1993). According to Austin (1993, 545), this means that, in order for the acts of locution and illocution (e.g. a scientific article or bibliographic description) to become a perlocutionary (influence, citations, etc. or effective information retrieval), communicators need to know how to use their understanding of genre. Genre knowledge allows the communicators to act properly in a particular (recurrent) communication situation that requires a typical response. In the area of LIS this means that an understanding of the sense of the situation, which forces information-seeking activities, is the condition of effective information retrieval. This also applies to the organization of information. The selection of information objects for cataloging and the way they are cataloged results from the level of genre knowledge of the cataloger. This reveals the cataloger's view of the document and its possible uses, which also allows the cataloger to determine the degree to which the goals and policy of the institution employing them are implemented. The information user's genre knowledge also allows for effective search for information (the correct use of the results of the information system's operation).

- Genre systems in LIS research. Genres usually appear in groups and remain in relationships with each other. Research on the coexistence of related genres in a given situation helps to understand ways of organizing communication activities by using information materialized in documents. In LIS, such an understanding of genre-related practices (e.g. Nahotko, 2018) contextualizes activities related to the organization of information in information systems. In this way the information system is treated as a genre system, where a number of genres is used during organizational, professional practices.
- Genre and user studies. From the point of view of genre theory, information users can be perceived as sense-makers capable of designing and performing actions. This allows us to understand how the genre may be used alongside other tools and other tools to achieve our information goals in action. The user is shaped by language, genre and goal-oriented action. Therefore, they are seen in the context of complex interactions with other users, tools and activities used, typical and managed by genres in which all these elements interact with each other (Andersen, 2015b, 29). It also makes possible the contextualization of user activities leading to satisfaction of information needs with particular information genre.

The applications of genre theory are many and varied because genre uptake may result from the context of activities outside the genre, since genres always act as mediators between local and global levels (Andersen, 2017, 5). For example, the genre of bibliographic description mediates between its local cataloging context and the global, multi-domain context of information retrieval and development of domain knowledge. In this way, genres coordinate these social activities.

We can explore some of the possibilities of the use of rhetorical information genre theory on an example of six articles published in *Genre Theory in Information Studies* (2015), edited by Jack Andersen. This book gathers the results of research in LIS based on information genre theory. The authors of subsequent parts of the book have positions at departments of media or information studies in Canada, the USA, the Netherlands, and Denmark.

In the first text, Andersen (2015c) explains how genre theory approaches textual information and their corresponding social actions. While rhetorical genre theory had its beginnings in the humanities, it turned towards social sciences at the beginning of 1980s, which gave the theory its explanatory power. The theory was employed in LIS fields centering textual information and its social and communicative effects (Andersen, 2015a, xiv).

The second text, of the same author (Andersen, 2015b) proposes of a re-description of knowledge organization area based on genre and activity theories. In his opinion knowledge organization requires a new description in order to account for activities and practices constituting and causing concrete knowledge organization tasks. Genre theory was used as a framework for situating such a re-description.

The next author, Melanie Feinberg (2015) offers a new view of information systems. She argues that information systems can function as places for manipulation of genre resources, but without the purposeful actions of information objects' authors. Feinberg introduces the notion of "writerless" actions, undertaken by people responsible for organizing information in information systems based on appropriate rules and standards. These actions may result in genre modifications just as the purposeful actions of specific writers do.

The other areas of LIS explored with the reference to genre theory are information seeking and information management. Pamela McKenzie (2015) examines these two areas

by means of genre theory. She has chosen two areas of practice: information seeking and distribution in clinical settings and personal information management in the household. Both case studies allow her to present possibilities of implementing genre approach to remove the dichotomy between workplace and everyday life information activities, usually existing in LIS research. As McKenzie argues, genre theory allows for approach focused on contexts of information activities.

Heather MacNeil (2015) also used a case study, focusing on a particular archival genre of finding aid, i.e. the calendar. She demonstrated how genre theory deepens and extends our understanding of archival finding aids as socio-cultural texts in contrast to the traditional approach which treats them as neutral tools used for facilitating access to archival resources.

Fiorella Foscarini (2015) has taken her case study from the archives too, although her paper is more theoretical. She commented on the limitations of the notion of organizational record used before. Using genre theory, she discovered that genre approach may help to both expand the scope of genre implementation area and to provide records management with new and more sophisticated tools to explore how records are made, used and transmitted in the workplace.

Laura Skouvig (2015), the author of the last chapter mentioned here, discusses information network in a specific chosen city (Copenhagen). Skouvig argues that, looking at different genres and genre systems, we can understand the ways of informing different groups of the town citizens. It shows how information develops in different genres, belonging to particular genre system, forming information network. Skouvig explains the dialogic nature of genres, information and the social world: genres shape and form information and thus affect their context.

The entire collection shows the possibilities of applying genre theory in LIS. It is an example of LIS interdisciplinary research on genre in information development, organization and use context which raises new questions and offers directions for further study (Andersen, 2015a).

4. Conclusion

The article discussed the possibilities of using interdisciplinary theory of information genres in LIS research. For this purpose it presented the interdisciplinary potential of the theory itself and the areas of LIS related to typified communication activities in recurrent situations of information organization and retrieval. Theory of genres furthered the field's development as it expanded the understanding of genre beyond the strictly linguistic and classical definition employed in the study of rhetoric, prioritizing the problems of categorizing texts to "de facto genres" and their function in everyday information communication activities. In LIS, this change is manifested in the shift of interest from genres traditionally treated as one of the attributes of information objects to treating information processes and information organization as a recurrent communication situations controlled by complex systems of information genres.

The application of the achievements of social constructivist theory in the field of LIS genre studies reframes information objects as social constructs whose meaning is constructed in social discourse, driven by genre knowledge. Genres are not neutral forms; rather they

reflect the epistemological norms of discourse community that can be analyzed, discussed and questioned (Hjørland, 2002, 438). Research conducted with a reference to thus understood genre gives a better understanding of the organization of information in the theoretical context in which social activities and interactions that constitute information processes play the most important role. From this point of view, information organization both supports and constructs social activities and interactions.

The theory of genre is strongly situated in the humanities and social sciences, which also includes LIS. The application of genre theory in LIS frames users, information objects and systems as elements of social and cultural activities related to communication behaviors. Thus, LIS becomes an interdisciplinary field, capable of assimilating many perspectives developed in other disciplines. Interdisciplinary disciplines are naturally inclined to borrow perspectives from related disciplines. On the other hand, LIS studies should also provide their own contribution to genre theory, rather than rely on others' achievements. Such interdisciplinary cooperation will benefit LIS itself, as quantitative and qualitative research of genres used in different discourse communities (information worlds) may give rise to richer and more diverse information services.

References

Andersen, J. (2004). *Analyzing the Role of Knowledge Organization in Scholarly Communication* [online]. Royal School of Library and Information Science, [20.04.2020], https:/curis.ku.dk/ws/files/47069480/jack_andersen_phd.pdf

Andersen, J. (2006). The Public Sphere and Discursive Activities: Information Literacy as Sociopolitical Skills. *Journal of Documentation*, 62(2), 213–228.

Andersen, J. (2008). The Concept of Genre in Information Studies. *Annual Review of Information Science and Technology*, 42(1), 339–367.

Andersen, J., ed. (2015). *Genre Theory in Information Studies*. Bingley: Emerald Publ.

Andersen, J. (2015a). Introduction. In: J. Andersen (ed.). *Genre Theory in Information Studies* (xiii–xvi). Bingley: Emerald Publ.

Andersen, J. (2015b). Re-describing Knowledge Organization – a Genre and Activity-based View. In: J. Andersen (ed.). *Genre Theory in Information Studies* (13–42). Bingley: Emerald Publ.

Andersen, J. (2015c). What Genre Theory does. In: J. Andersen (ed.) *Genre Theory in Information Studies* (1–12). Bingley: Emerald Publ.

Andersen, J. (2017). Genre, Organized Knowledge, and Communicative Action in Digital Culture. In: J. Andersen & L. Skouvig (eds.). *The Organization of Knowledge: Caught Between Global and Local Meanings* (1–16). Bingley: Emerald Publ.

Antunes, P., Costa C., Pino, J. (2006). The Use of Genre Analysis in the Design of Electronic Meeting Systems. *Information Research*, [online], 11(3), [19.04.2020], http://InformationR.net/ir/11-3/paper251.html.

Apostel, L. et al. (1972). *Interdisciplinarity: Problems of Teaching and Research in Universities*. Paris: OECD.

Austin, J. (1993). *Mówienie i poznanie. Rozprawy i wykłady filozoficzne*. Warszawa: Wydaw. Naukowe PWN.

Bawarshi, A. (2016). Between Genres. Uptake, Memory, and US Public Discourse on Israel-Palestine. In: M. Reiff & A. Bawarshi (eds.). *Genre and the Performance of Publics* (43–59). Boulder, CO: Univ. of Colorado Press.

Bawarshi, A., Reiff, M. (2010). *Genre. An Introduction to History, Theory, Research, and Pedagogy*. West Lafayette: Parlor Press.

Bazerman, Ch. (2009). Genre and Cognitive Development: Beyond Writing to Learn. In: Ch. Bazerman, A. Bonini & D. Figueiredo (eds.). *Genre in a Changing World* (283–298). Fort Collins, CO: Parlor Press.
Bazerman, Ch. (2012). Writing with Concepts: Communal, Internalized, and Externalized. *Mind, Culture, and Activity,* 19(3), 259–272.
Beghtol, C. (1995). Within, Among, Between: Three Faces of Interdisciplinarity. *Canadian Journal of Information and Library Science*, 20(2), 30–41.
Burke, K. (1951). *A Rhetoric of Motives*. Berkeley, CA: Univ. of California Press.
Chang, Y. (2018). Examining Interdisciplinarity of Library and Information Science (LIS) Based on LIS Articles Contributed by non-LIS Authors. *Scientometrics*, 116(3), 1589–1613.
Crowston, K., Kwasnik, B. (2003). Can Document-Genre Metadata Improve Information Access to Large Digital Collections? *Library Trends*, 52(2), 345–361.
Feinberg, M. (2015). Genres without Writers: Information Systems and Distributed Authorship. In: J. Andersen (ed.). *Genre Theory in Information Studies* (43–66). Bingley: Emerald.
Foscarini, F. (2015). Organizational Records as Genres: an Analysis of the "Documentary Reality" of Organizations from the Perspectives of Diplomatics, Records Management, and Rhetorical Genre Studies. In: J. Andersen (ed.). *Genre Theory in Information Studies* (115–132). Bingley: Emerald Publ.
Freadman, A. (2002). Uptake. In: R. Coe, L. Lingard & T. Teslenko (eds.). *The Rhetoric and Ideology of Genre: Strategies for Stability and Change* (39–53). Cresskill, NJ: Hampton Univ. Press.
Frow, J. (2015). *Genre*. London, New York: Routledge.
Furdal, A. (1982). Genologia lingwistyczna. *Biuletyn Polskiego Towarzystwa Językoznawczego*, 39, 61–70.
Geisler, C. et al. (2001). IText: Future Directions for Research on the Relationship between Information Technology and Writing. *Journal of Business and Technical Communication*, 15(3), 269–308.
Giddens, A. (2003). *Stanowienie społeczeństwa. Zarys teorii strukturacji*. Warszawa: Zysk i S-ka.
Goody, J. (2020). *Logika pisma a organizacja społeczeństwa*. Warszawa: Wydaw. Uniw. Warszawskiego.
Habermas, J. (2015). *Teoria działania komunikacyjnego*. T. 1. *Racjonalność działania a racjonalność społeczna*. Warszawa: Wydaw. Naukowe PWN.
Halliday, M. (2003). Language as Social Semiotic. In: J. Maybin (ed.) *Language and Literacy in Social Practice* (23–43). Clevedon: Multilingual Matters.
Hjørland, B. (2002). Domain Analysis in Information Science. Eleven Approaches – Traditional as well as Innovative. *Journal of Documentation*, 58(4), 422–462.
Holland, G. (2008). Information Science: An Interdisciplinary Effort? *Journal of Documentation*, 64(1), 7–23.
Hjørland, B. (2019). The Foundation of Information Science: One World or Three? A Discussion of Gnoli (2018). *Journal of Documentation*, 75(1), 164–171.
Holmes, B. (1999). An Inquiry into the Domain of Information Science, with an Emphasis on Contributing Disciplines, 1973 to 1998: Preliminary Results. In: *Information Science: where has it been, where is it going?* (84–114). Proceedings of the Annual Conference of CAIS, June 9–11, 1999. Sherbrooke, Quebec: Université de Sherbrooke.
Jaeger, P., Burnett, G. (2010). *Information Worlds: Social Context, Technology and Information Behavior in the Age of the Internet*, New York, NY: Routledge.
Kjellberg, S. (2009). Scholarly Blogging Practice as Situated Genre: an Analytical Framework Based on Genre Theory. *Information Research* [online], 14(3), [19.04.2020], http://InformationR.net/ir/14–3/paper410.html
Luzón, M. (2005). Genre Analysis in Technical Communication. *IEEE Transactions on Professional Communication*, 48(3), 285–295.
MacNeil, H. (2015). The Role of Calendars in Constructing a Community of Historical Workers in the Public Records Office of Great Britain ca. 1850s – 1950s. In: J. Andersen (ed.) *Genre Theory in Information Studies* (91–114). Bingley: Emerald Publishing.

McKenzie, P. (2015). Genre and Typified Activities in Informing and Personal Information Management. In: J. Andersen (ed.) *Genre Theory in Information Studies* (67–90). Bingley: Emerald Publishing.

Miller, C. (1984). Genre as Social Action. *Quarterly Journal of Speech*, 70(2), 151–167.

Nahotko, M. (2018). *Teoria gatunków w organizacji informacji. Podejście informatologiczne*. Kraków: Wydaw. UJ.

Nolin, J., Åström, F. (2010). Turning Weakness into Strength: Strategies for Future LIS. *Journal of Documentation*, 66(1), 7–27.

Ostaszewska, D. (2008). Genologia Lingwistyczna jako subdyscyplina współczesnego językoznawstwa. W: D. Ostaszewska & R. Cudak (red.). *Polska genologia lingwistyczna* (11–39). Warszawa: Wydaw. Naukowe PWN.

Pluzhenskaya, M. (2008). LIS and Other Knowledge Domains: Interdisciplinarity of LIS Scholars' Publications (Pilot Study). In: C. Guastavino & J. Turner (eds.). *Proc. of the 36th Annual Conference of the CAIS* [online], Vancouver, Univ. of British Columbia, June 5–7, 2008 [27.04.2020], https://doi.org/10.29173/cais127

Prebor, G. (2010). Analysis of the Interdisciplinary Nature of Library and Information Science. *Journal of Librarianship and Information Science*, 42(4), 256–267.

Rogers, Y., Scaife, M., Rizzo, A. (2003). Interdisciplinarity: an Emergent or Engineered Process? Cognitive Science Research paper 556. Brighton: Univ. of Sussex.

Saracevic, T. (1999). Information Science. *Journal of the American Society for Information Science and Technology*, 50(12), 1051–1063.

Schryer, C. (2002). Genre and Power: a Chronotopic Analysis. In: R. Coe, L. Lingrad & T. Teslenko (eds.). *The Rhetoric and Ideology of Genre: Strategies for Stability and Change* (73–102). Cresskill, NY: Hampton Press.

Skouvig, L. (2015). Genres of War: Informing a City. In: J. Andersen (ed.). *Genre Theory in Information Studies* (133–154). Bingley: Emerald Publishing.

Smiraglia, R. (2002). The Progress of Theory in Knowledge Organization. *Library Trends*, 50(3), 330–349.

Swales, J. (1990). *Genre Analysis. English in Academic and Research Settings*. Cambridge: Cambridge Univ. Press.

Tabatabaei, N., Beheshti, J. (2008). Interdisciplinary Outreach of Library and Information Science as Reflected in "Essential Science Indicators". In: C. Guastavino & J. Turner (eds.). *Proc. of the 36th Annual Conference of the CAIS* [online], Vancouver, Univ. of British Columbia, June 5–7, 2008 [27.04.2020], https://doi.org/10.29173/cais133

Trace, C., Dillon, A. (2012). The Evolution of the Finding Aid in the United States: from Physical to Digital Document Genre. *Archival Science*, 12(4), 501–519.

Urbano, C., Ardanuy, J. (2020). Cross-disciplinary Collaboration Versus Coexistence in LIS Serials: Analysis of Authorship Affiliations in Four European Countries. *Scientometrics* [online], April, [24.04.2020], https://doi.org/10.1007/s11192–020-03471-z

Weinberg, A. (1963). Criteria for Scientific Choice. *Minerva*, 1(2), 159–171.

Winsor, D. (2007). Using Texts to Manage Continuity and Change in an Activity System. In: M. Zachry & Ch. Thralls (eds.). *Communicative Practices in Workplaces and the Professions. Cultural Perspectives on the Regulation of Discourse and Organizations* (3–19). Amityville, NY: Baywood Publ. Company.

Yates, J., Orlikowski, W. (1992). Genres of Organizational Communication: a Structural Approach to Studying Communication and Media. *Academy of Management Review*, 17(2), 299–326.

Zins, Ch. (2007). Conceptions of Information Science. *Journal of the Association for Information Science and Technology*, 58(3), 335–350.

Zastosowanie interdyscyplinarnej teorii gatunków w badaniach informatologicznych

Abstrakt

Cel/Teza: Celem artykułu jest przedstawienie możliwości zastosowania interdyscyplinarnej teorii gatunków, tworzonej i rozwijanej przez uczonych wielu dyscyplin, między innymi w badaniach informacji naukowej (informatologii). Tezą autora jest możliwość zastosowania teorii gatunków w informatologii, co powinno otworzyć nowe i interesujące, interdyscyplinarne perspektywy badawcze.
Koncepcja/Metody badań: Zastosowano metodę krytycznej analizy literatury przedmiotu w celu omówienia podstawowych założeń interdyscyplinarnej teorii gatunków tekstu/informacji w jej rozwoju historycznym na świecie i w Polsce. Z zastosowaniem podobnej metody przedstawione zostały także najważniejsze kierunki zastosowań teorii gatunków w informatologii.
Wyniki i wnioski: Zanim teoria gatunków znalazła zastosowanie w informatologii, była ona rozwijana w wielu innych dziedzinach i dyscyplinach, takich jak: językoznawstwo, literaturoznawstwo, retoryka, komunikacja i media, analiza dyskursu, socjologia, pedagogika i innych oraz w wielu krajach na wszystkich kontynentach (głównie w USA, Australii, Brazylii i krajach skandynawskich). Sukces tej teorii, stosowanej w badaniach wielu dyscyplin, wynika z kierunków jej interdyscyplinarnego rozwoju, poczynając od klasycznych teorii językoznawczych i retoryki, w których stosowana była do badania zagadnień związanych z kategoryzacją tekstów, aż po tzw. gatunki „de facto" i ich funkcje w codziennych działaniach komunikacyjnych (podejście socjologiczne/retoryczne). Jej zastosowanie w badaniach informatologii powoduje, że obiekty informacyjne rozumiane są jako konstrukty społeczne, których znaczenie jest konstruowane w dyskursie społecznym, w oparciu o wiedzę gatunkową społeczności użytkowników gatunku. Biblioteka, podobnie jak każdy system informacyjny, może być uważana za środowisko społecznej aktywności komunikacyjnej, realizowanej w powtarzalnych sytuacjach organizacji i wyszukiwania informacji. Oznacza to, że aktywność zawodowa bibliotekarza (lub innego pracownika informacji) polega na działaniach retorycznych, służących tworzeniu obiektów informacyjnych, w takim samym stopniu, jak innych twórców informacji, np. autorów publikacji naukowych. Funkcjonowanie systemu informacyjnego, służące tworzeniu i organizacji informacji tekstowej, powinno być badane z wykorzystaniem metod stosowanych i typowych dla innych dyscyplin, głównie społecznych i humanistycznych, ponieważ dają one szerszą perspektywę badawczą.
Oryginalność/Wartość poznawcza: W artykule opisano nadal niedostatecznie znane możliwości zastosowania teorii gatunków w badaniach informatologicznych, szczególnie z punktu widzenia możliwości współpracy naukowej z przedstawicielami innych dyscyplin, takich jak językoznawstwo i socjologia.

Słowa kluczowe

Badania interdyscyplinarne. Genologia. Interdyscyplinarność informatologii. Teoria gatunków. Teorie informatologii.

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application] *(Kraków, 2006),* Metadane. Sposób na uporządkowanie Internetu. [Metadata. A way to organize the Internet] *(Kraków, 2004).*

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Affective Factors in Human Information Behavior: A Conceptual Analysis of Interdisciplinary Research on Information Behavior

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Abstract

Purpose/Thesis: The article contains theoretical and conceptual reflection and analysis of how emotions and other affective phenomena are defined and understood in contemporary research on human information behavior. The article draws attention to the interdisciplinary nature of research into affective information activities.
Approach/Methods: The reported research employs a qualitative approach, relying on critical literature review, and conceptual and thematic analysis. The analyzed material came from select publications from 2014–2020.
Results and Conclusions: Information science studies the role of emotions in information behavior. However, the application of the affective paradigm remains very limited. The affective understanding of information activities should be constantly expanded on an interdisciplinary basis with reference to theories and methods of other disciplines, such as psychology.
Originality/Value: The article studies the development of the theoretical affective phenomenon paradigm and presents the most important approaches psychology takes to emotions. By analyzing the latest trends in the study of affective information behaviors, the study joins the collaborative effort to develop an agenda providing a theoretical and practical basis for the development of interdisciplinary research within the affective paradigm.

Keywords

Affective paradigm. Emotions. Information behavior. Interdisciplinary approach. Psychology of emotions. Qualitative analysis. Qualitative content analysis.

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1. Introduction

An interdisciplinary approach to research on human information behavior (HIB) requires a cohesive and holistic view of an individual whose various activities, including broadly understood information activities and processes, depend on many factors explored in various disciplines other than information science, such as psychology, sociology, philosophy, biology, cognitive science, and medicine. Following of theories and concepts between disciplines, both in social and natural sciences, information science scholars

should consider expanding their discipline by researching and establishing a multifaceted, universal view of undertaken analysis and creating new concepts, by employing different approaches to specific issues and phenomena. This would contribute to the development of the affective paradigm that creates an entity-sensitive multidisciplinary framework forming the basis of further explorations of the subjective aspect of information behavior, as well as the implementation of multifaceted research and the use of various qualitative methods (Hartel, 2019).

This study has two main goals. First, it intends to verify and offer a synthesized picture of research in the area of human information behavior conducted within the affective paradigm through a systematic review of the distributed results of investigations characterizing particular affective factors. Secondly, the goal is also to describe the psychology of emotions in order to develop theoretical and terminological foundations, a certain scheme and a perspective for research into affective phenomena in information behavior. The article introduces a conceptual view of the study of affective factors by presenting key theories, concepts and terms of psychology of emotions. The article focuses on this, because proper understanding of affective phenomena deepens the understanding of the influence affects, feelings and emotions have on information processes undertaken by an individual user in a variety of contexts. To this end, conceptual analysis was carried out to find out how researchers approached the study of affective factors, the features and role of affect, emotions and feelings, and their impact on the information behavior. In order to expand the interdisciplinary perspective in information science research, the review also included publications concerned with information behavior studied within the affective paradigm, which indicate global trends in the research on affective factors in information processes. The most important theories of emotional psychology provided a starting point, as they allow scholars to understand the ways in which affective factors function and impact human information behavior. Undoubtedly, emotions are an integral part of any information activity, as they affect the information users' attention, memory, performance, evaluation and judgments: they found opinions and affect the users' understanding of the world (Fourie & Julien, 2014a; Lopatovska, 2014; Nahl & Bilal, 2007). Studies on emotions in information behavior have been conducted since the late 1980s which marked the affective turn in information and library studies (Hartel, 2019). This paper examines the state of research on affective information processes, and explores the general state of the study of more specific issues, such as, terminological chaos, affective barriers, information retrieval processes and verification of information behavior models (Lopatovska & Arapakis, 2011; Savolainen 2015; 2016).

The research identifies affective factors determining multiple human information activities. Understanding what affective conditions, comprising emotions, feelings, and affects, are, is crucial for interpretation and precise and versatile exploration of human information behavior. Taking into account the multiplicity of concepts, theoretical frameworks and interpretations of information behaviors, they will be primarily understood here as activities, actions and reactions of a person related to information, both individual and collaborative (Wilson, 2013). Information behavior may include seeking, searching, acquiring, receiving, storing, collecting and using information in the contexts within which the individual operates. Furthermore, all these activities are also characterized as conscious or unconscious, dynamic, diverse and multidimensional information processes (Cisek 2017a;

2017b; Krakowska 2016). Appropriate comprehension and scrutiny, next to a suitable conceptualization of emotions, are the foundation of a valid research process and of the further development of an interdisciplinary approach in information science. The analysis presented in the article, focusing solely on the fundamental approach to psychology of emotions, constitutes only a basic and preliminary step to expanding the affective paradigm. The study was limited by the exclusion of the issues of cognitive and social psychology from the qualitative analysis. Further, more in-depth, grounding interdisciplinary research on affective phenomena in information behavior remains to be carried out.

2. Conceptual framework

2.1. Emotions in the context of psychological theories

The intricacies of information processes and the complexity of the person themself and their functioning, their reactions to internal and external factors, and the multiplicity of concepts and paradigms employed to study these, are the reasons why there is no uniform definition of emotions (Cowie, Sussman & Ben-Ze'ev, 2011). Generally speaking, scholars agree that an "emotion" is definitely a short-term psychological and physiological phenomenon involving cognitive processes, as well as physiological and bodily reactions. At the same time, it directs human action through registered information, prompts assessments reactions, and profiles the individual's choices (Lopatovska, 2014; Payne & Cooper, 2001). Evidence arising from the considerations and practices of psychology and related sciences, including information science, confirms that humans are by nature an emotional being, and that emotions inform their development, actions and behavior in various ways. It should be noted that psychology's definition and understanding of emotions and affective factors may be different than those employed, e.g., in biology, focusing on mental processes, the brain functions, and bodily reactions (Damasio & Carvalho, 2013; Fourie & Julien, 2014a; 2014b; Gallagher, 2014), or in sociology, which prioritizes the creation of mutual social relations through emotional phenomena (Crisp & Turner, 2015). The next part of the article focuses on the fundamental issues in the psychology of emotions, including key definitions, theories and approaches to the affective phenomena.

2.2. Affective phenomena, affective realm

A critical difficulty in understanding and defining emotions is the lack of scholarly consensus regarding the difference between emotions and related affective phenomena, such as feelings, moods, sentiments, and affective traits (Savolainen, 2015). Developing more precise definitions of individual concepts and phenomena should result in a comprehensive characterization of the affective realm (Ben-Ze'ev, 2000). Affective phenomena can be analyzed from two perspectives, i.e., intentionality and availability, which makes it possible to divide them into their basic types. These include (1) emotions, treated as specific conditions with intentionality, e.g. anger; (2) sentiments that are particularly conscious, but also subjective for an individual, e.g. sadness; (3) mood, which is a general intentional state, e.g. being satisfied; (4) affective features, which are also general and purposeful, but refer

to specific predispositions of the individual, e.g. shyness (Ben-Ze'ev, 2000). Furthermore, the categorization of affective phenomena, slightly modified and expanded to include neurocognitive knowledge, identifies six most important factors of the affective domain: (1) emotions, meaning short, physiological, cognitive-behavioral episodes that optimize a person's response to significant stimuli, internal or external situations; (2) feeling, constituting a subjective and individual, more or less complex representation of emotions; (3) mood, which is less intense than emotion, and lasts longer, constituting a diffuse affective state; (4) attitude, which is a permanent phenomenon and determines human beliefs and preferences; (5) affective style, defined as a specific feature of emotional reactivity, human affective replica in the context of assessment, evaluation of phenomena, people, objects; (6) temperament, determined by genetic factors, which is a set of personality traits, i.e., internal affective, cognitive and biological conditions along with schematic reactions to the external context in which the individual functions (Davidson et al., 2003; Savolainen, 2015).

2.3. Affect

Affect is a complementary building unit of emotions; it is the so-called affective core consisting of two values: hedonic (associated with processing of feelings of pleasure and dissatisfaction, which affects motivation and decision-making) and arousal (rest-activated; it usually involves a physiological response and is associated with the body's stimulation) (Alcaro et al., 2017; Duncan & Barret, 2007; Gu et al., 2019). "Affect" and "emotion" are often used interchangeably, but affect is a separate phenomenon and a fundamental step in the body's process of interaction with stimuli, the instinctive response to stimulation before conventional cognitive processes produce a more complex emotion. Biologically speaking, a reaction to stimuli can occur without perceptual and cognitive coding. Moreover, it can precede the cognitive assessment of the stimulus and the associated situation or subject (Murphy & Zajonc, 1993). Affect refers to the mental equivalent of internal bodily representations associated with emotions, activities that require a certain degree of motivation, intensity and strength, or even personal disposition. Affects are divided into primary and secondary and have a specific value defined as an affect mark. Primary affects are attributes of emotional processes that do not involve cognitive processes and occur as a result of basic neurological mechanisms of evaluation. They regulate emotional responses developed in the process of evolution. Secondary affects, which are attributes of emotional processes, arise as a result of valuation mechanisms and conscious cognitive assessment of the environment (Barrett & Bliss-Moreau, 2009).

2.4. Emotions

Emotions are variously defined as emotional states, states of automatic arousal, emotional phases that evaluate and give positive or negative meaning, and changes in the stimulation of the disposition of activity (Lopatovska & Arapakis, 2011). Despite the lack of a uniform definition, most scholars agree that emotions are constructs based on spinal affect and behavioral response, cognitive assessment, attribution and neurophysiological changes that are a response to an affective, emotional-saturated stimulus (Russell, 2003). Emotion is understood as a biopsychosocial and impermanent reaction with an adaptative value

(Matsumoto & Ekman, 2009, 69). Additionally, emotions consist of components that are common to the produced prototype episodes which determine whether emotions belong to a particular psychological perspective: phenomenological, evaluative, physiological expressive, behavioral and mental. Such a diverse approach allows for the development of various perspectives correlating with the subject of specific research in many disciplines. Even scholars that share a perspective, or a conceptual framework, may have different answers to the question of what "emotion" is. It is interpreted with a reference to feelings, evaluation, and motivation. According to the "feelings paradigm", emotions are specific and conscious experiences. Within the "evaluation paradigm", emotions are defined with a reference to evaluation and judgement of the outside world: an emotion is a specific judgement, triggered in context. Within the "motivation paradigm", emotions are understood as stimulants of action (Scarantino & de Sousa, 2018). However, it is also possible to analyze and define emotions assuming an organistic perspective (emotions as determinants of conscious emotions derived from physiological processes), or a mentalistic one (emotions as a result of mental processes; physiological and bodily responses as a consequence of mental activities). The scholars are also divided between a "classic" (biological) and a "cognitive" (Łosiak, 2007) approach. Moreover, emotions also appear in an evolutionary context, related to the search for behavioral patterns and active adaptation processes (Cosmides & Tooby, 1997). The biological approach to early feeling defines emotions as phenomena processed in the limbic system, through specific centers in the brain, e.g. a) thalamus, the cerebral cortex (this is the basis of Cannon-Bard's thalamic theory of emotions, according to which impulses are released into the autonomic nervous system and cause emotional behavior) (McCarty, 2016) or b) amygdala, which determines the emergence of the so-called declarative emotional memory, when the brain remembers a specific emotion and reacts in a specific, remembered way to recognized stimuli (LeDoux & Brown, 2017) or c) at the level of bodily responses (Coleman & Snarey, 2011). According to the Schachter-Singer theory, emotions and affective reactions arise as a result of receiving information from two systems: the internal state regulated by the hypothalamus and limbic system and the external environment, or context in which the internal state occurs (Barrett & Bliss-Moreau, 2009).

Certain scholars are developing cognitive understandings of emotions (Fox, 2018; Scherer et al., 2001), interpreting emotions as cognitive and causal, the result of perception, or of assessment. The role of cognitive processing, recognition and evaluation of the cognitive stimulus in producing emotions synchronized with many complex bodily, perceptual and cognitive processes is crucial in the causal understanding of emotion. It is therefore not possible to experience emotions without assessing a particular stimulus. Emotions are judgments, resulting from conscious or unconscious, intentional or unintentional cognitive analysis, causing an emergence of thoughts or beliefs, but also a physiological response. Emotions can therefore inhibit or motivate actions (Bechara & Damasio, 2005; Lazarus, 1999). The signal to generate emotions is used to control the organization of the brain in order to prepare the mechanisms of action and the body's resources. This signal is also used to draw attention, establish bias in cognitive processing, and produce awareness of an affective phenomenon. Emotions simplify the decision-making process by quickly marking intentional prefrontal cortex options as positive or negative in the light of their expected emotional consequences (Damasio, 2003). The so-called network theory of emotions deserves a mention as well. It assumes that emotions are units or nodes in a semantic web,

with numerous connections to related ideas, physiological system, muscle reaction and patterns of expression. Cognitive activity may be conscious or unconscious, intentional or unintentional; it takes the form of judgment or reflection (Bower & Cohen, 1982). This activity is also referred to as a cognitive assessment: it verifies reactions to the external environment and determines the importance of emotional quality and individual experiences (Lazarus, 1999). Emotion can be a reaction (adequate or inadequate) to an important affective event; such a reaction then consists of affect, awareness of the emotional object and further assessment of the object, readiness for action and automatic arousal (Frijda, 2016). It is a response to a change that is important for an individual, functioning to prepare and initiate action, and motivate activity (Izard, 2007). Certain scholars analyze emotions as intermediaries between the preceding event and the implication of a particular episode (White, 2015). They understand emotions as a process, a phenomenon embedded in social and psychological phenomenon, which creates the context for their understanding, paying attention to interrelationships with mental activities and actions. Because of their social dimension, emotions may also be defined as a discourse, a tool for interpreting the social environment, reality and surroundings. Emotions have an adaptive role in social relations; they are a mental and cultural construct, separate for each individual (Barrett, 2017; Scherer & Ekman, 2014).

2.5. Taxonomy of emotions

Various attempts to classify emotions were made in psychology. Four classes of emotions are distinguished: a) pre-emotions, initiating activity, based on the somatic theory of emotions (Murphy & Zajonc, 1993) – these are indistinct, imprecise impressions, imaginations causing certain reactions; b) basic emotions, such as joy or sadness; c) primary cognitive emotions resulting from pre-emotion processing; d) secondary cognitive emotions, which are complex emotions consisting of many external or internal determinants affecting response, action, also referred to as the Izard emotion pattern, i.e. affective states which have been evolving since early childhood (Izard, 2007; Zinck & Newen, 2008). Other classifications divide emotions into: a) basic, innate, associated with primary affect, common to all people, regardless of the community, arising before or after the recognition of the stimulus, underlying more complex emotional evaluation processes; b) complex, shaped through experience and processed cognitive processes, thoughts, mental patterns, they are derivatives of basic emotions, are dependent on conscious judgments and are social in nature (Johnson-Laird, 2007).

According to discrete emotional theory, primary emotions are biologically determined responses expressed and recognized in essentially the same way by everyone, regardless of ethnic or cultural background. Furthermore, under this theory, there are between seven and ten basic emotions and thousands of words related to emotions (Magai & Izard, 2007), such as happiness, surprise, sadness, anger, disgust, contempt, and fear. The research on the recognition of facial expressions also distinguishes general types of emotions: fear, sadness, anger, disgust, surprise and happiness (Ekman, 1999). The circular model of emotions, proposed by Plutchik, assumes the existence of eight basic emotions, reactions to sensory stimuli, diverse in value and valence. In the model they function as diadems of opposing emotions: surprise and expectation, fear and anger, sadness and joy, disgust and liking. An important assumption in this theory is that selected emotions play a regulatory

role, where one enables another or easily occurs together during an affective reaction and creates mixed emotions (TenHouten, 2017).

Emotions can be additionally characterized by three dimensions: pleasurable to non-pleasurable, arousing to subduing, and strained to relaxed, which are then optimized for the pleasantness – unpleasantness, attention – rejection, and level of activation perspective (An et al., 2017). Research suggests that there are both positive and negative dimensions associated with specific emotions. Emotions can also have conflicting consequences when, e.g., positive emotions lead to negative consequences of an affective reaction (Tan & Forgas, 2010). Furthermore, there are so-called epistemic emotions, which are described as particularly important in the search for knowledge and understanding as they are related to achieving goals (Vogl et al., 2020).

2.6. Feelings and mood

Feelings result from actions; they provide information about human activities (Laird, 2007). They can be subjective, and independent of the impressions, thoughts or images that cause them. They are usually divided into positive, or negative, although they may have more specific intrapsychic characteristics. Feelings result from complex and conscious cognitive processes, which makes them inextricably interlinked (Burkitt, 2002). The physiological responses of the body to various situations are subjectively interpreted during cognitive processes, and then, basing on processed information, they are constructed at the cognitive level in emotions that affect the formation of feelings (Laird, 2007). Feelings further differ from emotions in that they are purely mental (*Feelings*, 2020). Nevertheless, they facilitate social relations with the outside world and constitute peculiar social interrelationships that allow any modification of group behavior (Burkitt, 2002).

Mood is a phenomenon analyzed incidentally in the studies of emotions or motivations (Delancey, 2006). It usually refers to a diffuse affective state, which is often less intense than emotions, but lasts longer (Ellenbogen, 2005; Russel, 2003). It is one of the basic determinants of the mental well-being of an individual and determines their mental health (Larsen, 2000). Similarly, to emotions, it depends on various external factors, the environment and context, as well as on internal physiological, cognitive and mental processes (Davidson, 2003). Just like emotions, a mood may be positive or negative (Ekkekakis, 2013). Mood can be treated as an emotional reaction and a response to the overall functioning of the body (Delancey, 2006). These are seemingly objectless affective states (Frijda, 2016). According to Ekman, a given moods seem to lower the threshold of arousing emotions that are likely to occur when a person is in that specific mood (Ekman & Davidson, 1994). The mood is treated as subjective or empirical, a sensory component of all related affective states, including emotions. Importantly, it covers all subjective states of feelings, not just the experiences that accompany classic, prototypical emotions. Mood does not share all components with emotions: the associated peripheral physiology, facial expression, or action tendencies, are not as pronounced or distinct as in emotions (Ekkekakis, 2013). The tasks and functions characteristic of the mood include preparatory processes or warning of a specific situation, or object and consequently informing cognitive processes, as well as reducing the threshold for triggering correlating emotions (Ekman & Davidson, 1994).

3. Affective paradigm in the information behavior research

3.1. Research scope

As Fourie and Julien (2014a) note, researchers are often not aware of recent developments in analysis of emotions and affect in information behavior. The development of research following the affective paradigm, however, requires refinement, and an interdisciplinary view in line with the developments in psychology and sociology of emotions. A study of emotion from the perspective of information science is fundamental for the development of multidimensional research. Emotions are related to the evaluation of situations, events, objects, and people. They are also an element of cognitive processes, related to creation of knowledge. Moreover, they motivate or inhibit many reactions and conscious actions. They inform multi-context social relations. Thus understood, emotions are studied as an influence on information processes, on the creation and use of information systems, and on the use of the new forms and tools of communication and information (Lopatovska & Arapakis, 2011). Another part of research on affective research is establishing an affective-cognitive framework for acquiring and creating knowledge, verifying models of information behavior and information activity in various contexts, or the impact of emotions on the implementation of information processes. The study of emotions in information science also concerns the impact of emotions on the realization of information processes, as well as the users' affectivity, their emotions, affective patterns, limitations, needs regarding information, awareness, dynamics of conscious cognitive and somatic actions, exploring the micro and macro emotional information environment (Fourie & Julien, 2014a; Lopatovska, 2014; Nahl & Bilal, 2007; Savolainen, 2015; 2016). Efforts were also made by scholars to implement the achievements of psychology and cognitive science into models of information behavior. The patterns of affective information activities are included in the information behavior models of Kulthau, Wilson, and Dervin (Wilson, 2013); affective components are also an important module of concepts of Chatman, Fisher or Sonnevald (Burnett et al., 2008; Cisek & Krakowska, 2019; Krakowska, 2017).

3.2. Goals

The aim of this study, following the characterization of various parts of the affective realm, is to provide a synthesis of the latest, interdisciplinary research on the place of affective realm in information behavior. The article answers the following questions: 1) what affective factors related to general psychology, psychology of emotions have been recently studied in the context of human information behavior; 2) how are affective factors understood: are they analyzed as key components of information behavior, or are they identified as incidental to human information activities; 3) what is the current position of psychological theory in the study of information science – whose research, concepts and models the authors most often refer to in research on emotions in information behavior; 4) what methods are most often used in the study of emotions and affect in information behavior – are the methods of psychological research applied; 5) which users are most often examined in the studies of the place of affect in information behavior?

3.3. Methodology

To focus on affective factors in information behavior, the research prioritized the impact, assessment, display of registered emotions, feelings, and affects in various information activities. The analysis also included review of publications that give an idea of the research undertaken in the area of human affective information behavior. The studies from the areas of cognitive psychology and social psychology were beyond the scope of this analysis, although some of their research interests, such as investigating causes and effects of emotional and mental reactions, defining affective factors, and exploring the cognitive role of emotions and the influence of the group on the individual, are present in the study insofar as they are shared by the discipline of psychology. Analyses referring to evolutionary psychology, biological and cultural conditions for understanding the external world, as well as those based on the theory of personality as a set of relatively constant traits, their psychological identity, and patterns of adaptation of an individual to the environment, taking into account the set of internal conditions, have also been excluded from the analysis. These directions remain to be explored in further interdisciplinary research of information behavior.

The article presents results of a qualitative strategy (Nowell et al., 2017) comprising of critical review of literature (Cisek, 2010), conceptual analysis (Furner, 2004) and thematic content analysis (Cisek, 2014). Earlier review publications, especially Fourie and Julien's (2014a), which summarized the most important research on affect between 2009 and 2013, became the basis for continuing the analysis and the reason for the selection of the period. While foreign research on information science has been making use of the affect theory since the 1990s (Hartel, 2019), it remains rare in Poland. Nevertheless, a growing interest in the place of affect in information behavior is evident in Polish scholarship, as it has been studied by Sobielga (1997; 2000), Kisilowska and Mierzecka (2019), Krakowska (2017), Cisek and Krakowska (2019). Thus, an additional intention of this publication is to update the knowledge on research on the place of affective phenomena in information behavior and to draw attention to the potential of interdisciplinary research in information science.

A critical review of literature was conducted to determinate the extent of affect theory's presence within the HIB field. In May 2020, the LISTA and SSCI/Web of Knowledge databases were searched with the combination of phrases "information behaviour or information behavior", "emotion", "affect", "feeling" ,"mood", "emotional state", "research" with limitations to years 2014–2020 and English language. Over 320 publications were retrieved, which subject to further selection based on abstracts and keywords. After eliminating duplicates, 35 relevant publications were selected (34 articles and 1 dissertation). The databases of the Digital Libraries Federation, CORE, CeON Agregator, Media Library, and Google Scholar were also searched in order to verify and expand the search by the publications in Polish related to the issues of testing emotions in information behavior. After verifying the received articles, no publications that would meet the criteria were found

The analysis was limited to general psychology of emotions, eliminating issues related to cognitive psychology and social psychology. Issues related to emotions and other affective factors, both in psychology and information science are so extensive that they require a rather complementary approach and analysis in research, even at the theoretical and conceptual level. The social and cognitive dimension of affective information behavior remains to be explored in further explanatory studies.

4. Results

Qualitative content analysis of selected publications on affective phenomena in information behavior showed that currently, the most frequently undertaken studies are those where emotions are a secondary result of the exploration of information behavior. The study of emotions as key components of information behavior most often concerns model verification and tends to focus on the processes of information searching and seeking. Among those publications, the reviews published by Fourie and Julien (2014a; 2014b) and O'Brien, Dickson and Askin (2017) are noteworthy. The authors recommend further research in the area, especially research of affective factors. This could mean a study of emotions in the library and information science environment, emotions in the library and information science (LIS), the study of affective information behavior. It should interest researchers who would do well to incorporate knowledge about emotions into their study of information practice and education of LIS professionals (Fourie & Julien, 2014b). The authors make clear that there is a need for a more systematic review of cognitive and affective factors, personality variables, and their impact on information searching and information retrieval, particularly as related to the fast development of new technologies and information searching systems, as well as to the diversity of digital sources and the use of networks and social media. Fourie and Julien also recommended that scholars use more mixed methods in research evaluating physiological factors to see individual differences from new perspectives, as well as to analyze professional user groups with developed information competences (O'Brien et al., 2017). Similar conclusions regarding the need for further research on the place of affect in information behavior might be drawn from the content analysis of the select articles.

Tab. 1. Thematic categories – number of terms referring to the various categories of affective phenomena issue in the research on information behavior in the period 2014–2020

Categories	Emotions – positive and negative		Information behavior – a variety of issues	Information activities – information searching	Information activities – information seeking	Cognitive psychology	Affect	Information activities = information sharing, information gathering, information responding, information use
Number of terms related to category	94		26	22	21	19	16	11
Categories	Affective factors	Kulthau's Information Search Process model	Feelings	Mood	Social psychology	Time	Personality	Information behavior determinants – Miscallena –
Number of terms related to category	8	7	7	4	3	3	1	27

As part of the thematic analysis, the given issue based on theoretical framework, topics, users examined, and methodology occurred in all 35 articles published in scientific journals between 2014 and 2020 were selected and then coded. Subsequently, these elements

were categorized according to their frequency of appearance. In the Table 1 all categories assigned to affective phenomena in information behavior research are presented.

4.1. Research on affective factors

The study showed that affective factors, especially emotions, are analyzed in various ways. The term "emotion" is used arbitrarily to describe various affective states, without categorizing them into core affective states, emotions, feelings, or moods (94 different terms describe emotions, 16 of which concerned definitely positive, and 14 negative emotions). Eight texts mentioned general affective factors (e.g. Behesti et al., 2014; Canning & Buchanan, 2019; Meyer & Fourie, 2017; Zanganeh & Hariri, 2018). However, the authors tried to be more specific when analyzing the results of the research (e.g. after selecting negative emotions, mood, feeling). The term "affect" itself appears only in four articles, and the authors understand it as an emotional state, or an aspect of it (Fitzgerald, 2018; Fourie & Julien, 2014b; Julien & Fourie, 2015; Meyer & Fourie, 2017). Emotions are usually divided into primary and secondary or positive and negative. Negative emotions, such as those associated with depressive disorders, receive particular attention (Campbell et al., 2018), as do negative emotions (fear, anxiety) determining the passive information behavior of the incarcerated (Canning & Buchanan, 2019), or the frustration of scientists in the process of information retrieval (Ashlee, 2015). The role of emotions and moods was considered in the studies of the relationship between primary and secondary emotions, and of the mood as the reaction during online information search. The possibility of creating a unified affective information search model was raised in passing in a study based on the analysis of facial micro expression to identify patterns of different emotions (Lopatovska, 2014). Furthermore, certain articles also discussed negative emotions related to depression and anxiety, and their impact on the information search process, formulating and applying emotionally charged keywords to the search. The results showed a strong influence of affective states on the user's functioning, their thought processes and problems (Campbell et al., 2018).

4.2. Psychological theories used in research

Only 14 publications studied behavior explicitly borrowed theoretical frameworks from the discipline of psychology. Different authors made similar use of the borrowed methods and tools (Lopatovska, 2014). Moreover, the methods applied in medicine as electrocardiography and the analysis of physiological processes at the level of the activity of internal organs in correlation with emotions through the electrical measurement of skin conductivity, were also used (Ashlee, 2015). Nevertheless, it is clear that there is much more to be done in the area of affect research within the discipline of information science. There are more methods to be used as a part of interdisciplinary cooperation, and theoretical frameworks, grounding the study of affect, to be borrowed. Along with the psychology of emotions, issues of cognitive psychology and social psychology appeared, in 19 and three publications respectively, e.g., studies of emotions as an element of cognition, an impulse in metacognition processes and the importance of affect in learning. The combination of emotional and cognitive processes as well as the influence of emotions on the processes of knowledge creation were analyzed (Koh et al., 2019; Meyer & Fourie, 2017; Orlu, 2016).

Research on emotions analyzes them as key determinants of actions, where they are understood as inhibitors, activators, response or motivation to undertake information processes. Kulthau's Information Search Process model was the most often studied object of such analyzes, which is why it was listed separately in the Table 1. However, the models including Wilson's (Santana Júnior & Lima, 2019) or Dervin's (Koh et al., 2019; Lloyd & Olsson, 2019; Meyer & Fourie, 2017; O'Brien et al., 2017) were also mentioned in the research as schemas of the affective realm. A particular study evaluating a model of dynamic, conscious, and non-linear information seeking was carried out among students to map emotions which occur during the implementation of information tasks according to the patterns proposed by Ellis, Kulthau, Vakkari and Foster (Orlu, 2016). An analysis of emotion as a factor in stimulating memories, experiences as determinants of mental cognitive processes, creating mental representations, functioning like a schema of the information search process in the research strategy, is also noteworthy (Fitzgerald, 2018). Moreover, processes related to cognitive activities were explored in the context of the implementation of specific tasks, where the impact of time and difficulty of the problem were the subject of analysis. The information processes and the impact of emotions, such as frustration and uncertainty, were examined among various user groups, but most often among university students (Luo & Nahl, 2019) or high school students conducting the research project (Kim, 2015).

4.3. Research on emotional information behavior

As far as information behavior and key activities are concerned, emotions were studied through their intensity of occurrence and their impact on various information processes. In addition to general analysis of information behaviors (26 publications in which the term information behavior appeared), the authors focused on the significant information acquisition processes. Among them, the following were distinguished: 1) evaluating information in relation to its source in the process of information searching, and the role of sources in effective collaborative information seeking (Wu et al., 2018); 2) intensification of emotions during a research project in students of various levels proficiency in English (Kim, 2015); 3) sharing good news that is associated with positive emotions influencing information behavior (Tinto & Ruthven, 2014); 4) the impact of positive emotions in Chinese microblog users on their practices of sharing information (Wang et al., 2017). While analyzing various information behaviors, different issues related to the place of affect in information behavior emerged. Those were included in the category of *information behavior determinants – Miscallena*. It comprises the issues of dynamics and complexity of information activities, the impact of multitasking on information processes and the impact of the group on information activities. Often during the study of information behavior emotions become an additional object of analysis as researchers notice the emotions affecting information activities.

4.4. Emotion as a reaction

Authors analyzed emotions as reactions, exploring their influence on processes related to conscious action (Lopatovska, 2014; Orlu et al., 2017; Park, 2015; Wang et al., 2017; Zanganeh & Hariri, 2018). Emotions resulting from cognitive processes, constituting an

emotional reaction to various sources of information have been studied in various contexts. The reactions to information and sources of culture were examined, where the medium, in this case websites and information portals, constituted a cognitive authority that elicited various reactions, often negative. The innovative study was primarily concerned with emotional response at a specific point in the reception of information, emerging through the message and its source (Mierzecka et al., 2019). The analyzed studies also discussed the affective context of the information retrieval process and the possibility of using the knowledge of determinants that arouse emotions. The influence of affective factors on information behavior in creative work environments, such as libraries, defined as places of knowledge creation (Meyer & Fourie, 2017) was also studied. Moreover, the authors explored determinants of information activities, such as chronic pressure, time (Liu et al., 2019), language (Kim, 2015), or the competences and the role of librarians, in identifying attributes in affective information behavior of students (determining the success or failure in performing a search task) in relation to emotions and affective reactions. Other subjects of study included attributive style of emotions and satisfaction level in the information retrieval process, as well as methods of assigning emotions to different factors and situations (Behzadi & Sanatjoo, 2019). Ekman's achievements in cognitive and social psychology were the basis for the evaluation of emotional aspect of facial expressions. It allowed the analysis of the appearance of primary emotions through facial muscle movements, and of the impact these basic emotions have on secondary affective changes, including mood (Lopatovska, 2014). Facial expressions were also explored in studies focused on information retrieval from the web to examine the relationality of satisfying effectiveness of the information process and positive emotions of users (Zanganeh & Hariri, 2018). Additionally, emotional mimic reactions while responding to information were explored (Mierzecka et al., 2019).

4.5. Methodology used in research on affective information behavior

All publications were studied based on critical analysis of literature. However, as mentioned above, only 14 articles referred to existing psychological concepts, such as Ekman's, Lazarus, or Plutchik's theories (Luo & Nahl, 2019). Additionally, authors employed the tools used in psychological experiments, such as the PANAS – Positive Affect Negative Affect Scale (Lopatovska, 2014), cognitive stimulation, electrocardiographic analysis and the BioPac program measuring electrodermal activity (Ashlee, 2015), ROST software for emotion analysis (Wu et al., 2018) or FaceReader for the assessment of micro expression (Mierzecka et al., 2019). The term qualitative research appeared three times, quantitative – four times. The most commonly used research methods included coding and thematic analysis: it appeared in 18 articles, some of which even mentioned cover coding of selected emotions. The commonly-used tools included a) various questionnaires, including those borrowed from psychological sciences, such as the ASQ attribution style questionnaire or the satisfaction questionnaire (Behsadi & Sanatjoo, 2019); b) recruitment interviews (16 publications in total); c) experimental methods, such as a laboratory experiment arranged in specific conditions (Ashlee, 2015; Huang & Bilal, 2019); d) observations (six publications); e) think-aloud protocols (four publications). The memory stimulation was used once (Fitzgerald, 2018). Case study, discussion, mapping

and research project appeared three times (e.g. Cole at al., 2015). Methods of searching diaries, focus groups, verbalization, triangulation and interview during recruitment and selection of users for research appeared twice. The number of occurrences of individual methods is presented in Table 2.

Tab. 2. Thematic categories – number of terms related to a given methodology used in the study of affective factors in information behavior for the period 2014–2020

Categories	Critical analysis of literature	Thematic analysis, coding	Question-naire	Interview	Search task	Experiment	Observa-tion
Number of terms related to category	35	18	18	14	10	7	6
Categories	Quantity methods	Think-alo-ud protocol	Qualitative methods	Micro expression analysis	Case study	Discussion	Mapping
Number of terms related to category	4	4	3	3	3	3	3
Categories	Research project	Searching diary	Focus group	Recru-itment interview	Verbaliza-tion	Triangula-tion	Stimulation
Number of terms related to category	3	2	2	2	2	2	1

4.6. Users

The study distinguished between the different categories of researched users, the types of participants selected for various studies aiming to capture specific affective components of various information activities. Among the most represented users were students, studying both information and library studies, as well as social and psychological sciences, culture management, economy and art studies (21 publications). Other groups included the Internet or Web 2.0 users as fandom participants, music band fans, YouTube users (Pennington, 2016), microblogging users. Occasionally, some peculiar users such as prisoners or car mechanics featured. The participants also included high school students (four publications), scientists and doctoral students (two publications each), and youth (two publications concerning young users suffering from depression, or generally young people aged 14–16). A rank list of types of users who were examined for affective phenomena along with their categories is presented in Table 3.

Tab. 3. Thematic categories – number of terms referring to specific groups of users in the study of affective factors in information behavior for the period 2014–2020

Categories	Students (information science and other fields)	Users, web 2.0 Users	Secondary school students	Scientists	Phd students	Youth
Number of terms related to category	21	8	4	2	2	2

5. Conclusions and limitations

Various studies of affective phenomena indicate that emotions are an important aspect of all information activities and should be taken into account in the study of information behavior (Behzadi & Sanatjoo, 2019; Lopatovska & Arapakis, 2011; Savolainen, 2014). Emotions are one of the most important components of human activity, not only at the biological level, but also as a part of various processes that shape behaviors on a social, cognitive and psychological plane. Thus, they absolutely influence information activities. Because the treatment of emotions in information science has so far been limited, there is a need to extend the research to consolidate an affective perspective in this discipline. The affective paradigm is a constantly evolving, interdisciplinary set of theoretical and methodological foundations. This requires up-to-date knowledge of global developments in the area, and the adjustment of various approaches based on concepts in the field of psychology, cognitive science and sociology. This article provided an overview of terms related to affective realm, key theories and concepts related to emotions from the discipline of psychology. It also offered a synthesis of the latest exemplary international research on affective information behavior. The obtained results made clear that there is a need to constantly deepen the research on the role of emotions and other affective factors in information behaviors, which, apart from the most frequently analyzed processes of seeking, also include collecting, sharing, using, and avoiding or destroying information (Cisek, 2017). Too rarely specific theories of emotional psychology were referred to, with affective factors featuring only as a side-note to research on information behavior. Too often, different concepts such as affect and emotion were mixed up, indistinct from feelings or moods. Interdisciplinary cross-referencing from adjacent disciplines researching emotions was scarce (Lopatovska & Arapakis, 2011). There is a need of change: information science scholars should refer to existing concepts, research, tools and methods of psychology. They also need to intensify research on the psychology of emotions by verifying lesser-known models of information behavior, going beyond the well-established tradition of examining Kulthau's model. It would be good to study more varied groups of users to explore the differences in perceived emotions, different interpretations of their functions, roles and tasks in heterogeneous and dynamic information behaviors. Finally, this article aimed to create a specific compendium of basic knowledge about affective factors. It developed an outline of selected affective information behavior research, which hopefully will contribute to the deepening

of specialization and interdisciplinarity of information science as it draws attention to the existing gaps in the scholarship and to the potential of affect theory as a lens to be used. The author is fully aware that the selected concepts, issues, selected research areas, do not cover all dilemmas, theories and psychological approaches, including social psychology, or evolutionary psychology. Each of these issues, and its relation to information science and human information behavior, requires a separate discussion.

References

Alcaro, A., Carta, S., Panksepp, J. (2017). The Affective Core of the Self: A Neuro-Archetypical Perspective on the Foundations of Human (and Animal) Subjectivity. *Frontiers in Psychology*, 01 September, https://dx.doi.org/10.3389/fpsyg.2017.01424

An, S., Ji, L. J., Marks, M., Zhang, Z. (2017). Two Sides of Emotion: Exploring Positivity and Negativity in Six Basic Emotions across Cultures. *Frontiers in Psychology* [online], April, [06.09.2020], https://doi.org/10.3389/fpsyg.2017.00610

Barrett, L., F. (2017) The Theory of Constructed Emotion: An Active Inference Account of Interoception and Categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1–23, https://doi:10.1093/scan/nsw154

Barrett, L. F., Bliss-Moreau, E. (2009). Affect as a Psychological Primitive. *Advances in Experimental Social Psychology*, 41, 167–218, https://doi.org/10.1016/S0065-2601(08)00404-8

Bechara, A., Damasio, A. R. (2005). The Somatic Marker Hypothesis: A Neural Theory of Economic Decision. *Games and Economic Behavior*, 52(2), 336–372, https://doi.org/10.1016/j.geb.2004.06.010

Behzadi, H., Sanatjoo, A. (2019). Attributional Style of Emotions and Its Relationship With Users' Search Behaviour. *Journal of Information Science*, 45(1), 105–116, https://doi.org/10.1177/0165551518782400

Ben-Ze'ev, A. (2000). *The Subtlety of Emotions*. Cambridge, Mass.; London: The MIT Press.

Bower, G. H., Cohen, P. R. (1982). Emotional Influences in Memory and Thinking: Data and Theory. In: M.S. Clark & S.T. Fiske (eds.). *Affect and Cognition* (291–331). Hillsdale, N.J.: Erlbaum.

Burkitt, I. (2002). Complex Emotions: Relations, Feelings and Images in Emotional Experience. *The Sociological Review*, 50(2_suppl), 151–167, https://doi.org/10.1111/j.1467-954X.2002.tb03596.x

Burnett, G., Jaeger, P. T., Thompson, K. M. (2008). Normative Behavior and Information: The Social Aspects of Information Access. *Library & Information Science Research*, 30(1), 56–66, https://doi.org/10.1016/j.lisr.2007.07.003

Campbell, A. J., F. Ridout, B. F., Linden, M., Collyer, B., Dalgleish, J. (2018). A Preliminary Understanding of Search Words Used by Children, Teenagers and Young Adults in Seeking Information about Depression and Anxiety Online. *Journal of Technology in Human Services*, 36(4), 208–221, https://doi.org/10.1080/15228835.2018.1518186

Canning, C. and Buchanan, S. (2019). The Information Behaviours of Maximum Security Prisoners: Insights Into Self-Protective Behaviours and Unmet Needs. *Journal of Documentation*, 75(2), 417–434, https://doi.org/10.1108/JD-06-2018-0085

Cisek S. (2010). Metoda analizy i krytyki piśmiennictwa w nauce o informacji i bibliotekoznawstwie w XXI wieku. *Przegląd Biblioteczny*, 78(3), 273–284.

Cisek S. (2017). Zachowania informacyjne. In: A. Żbikowska-Migoń & M. Skalska-Zlat (eds). *Encyklopedia książki. T. 2* (643–647). Wrocław: Wydaw. Uniwersytetu Wrocławskiego.

Cisek, S. (2014). Analiza danych jakościowych we współczesnej informatologii. W: B. Sosińska-Kalata (ed.) *Nauka o informacji w okresie zmian* (79–88). Warszawa: Wydaw. SBP.

Cisek, S., Krakowska, M. (2019). Qualitative Analysis of Visual Data in Information Behavior Research. *Zagadnienia Informacji Naukowej – Studia Informacyjne*, 57(1), 7–25, https://doi.org/10.36702/zin.492

Cole, Ch. Beheshti, J., Abuhimed, D., Lamoureux, I. (2015). The End Game in Kuhlthau's ISP Model: Knowledge Construction for Grade 8 Students Researching an Inquiry-Based History Project. *Journal of the Association for Information Science and Technology*, 66(11), 2249–2266, https://doi.org/10.1002/asi.23300

Coleman A.E., Snarey J. (2011) James-Lange Theory of Emotion. In: S. Goldstein & J.A. Naglieri (eds). *Encyclopedia of Child Behavior and Development* (844–846). Boston, MA: Springer, https://doi.org/10.1007/978-0-387-79061-9_3146

Cosmides, L., Tooby, J. (1997). *Evolutionary Psychology: A Primer* [online], [06.09.2020]. https://www.cep.ucsb.edu/primer.html

Cowie, R., Sussman, N., Ben-Ze'ev, A. (2011). Emotion: Concepts and Definitions. In: P. Petta, C. Pelachaud & R. Cowie (eds). *Emotion-oriented Systems* (8–31). Berlin: The Humaine Handbook, Springer.

Crisp, R. J., Turner R. N. (2015). *Psychologia społeczna*. Warszawa: Wydaw. Naukowe PWN.

Damasio A., Carvalho, G.B. (2013) The Nature of Feelings: Evolutionary and Neurobiological Origins. *Nature Reviews: Neuroscience*, 14(2), 143–152, https://doi.org/10.1038/nrn3403

Damasio, A.R. (2003) *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*. New York: Harcourt Brace & Co.

Davidson, R. J. (2003). Seven Sins in the Study of Emotion: Correctives From Affective Neuroscience. *Brain and Cognition*, 52(1), 129–132, https://doi.org/10.1016/S0278–2626(03)00015–0

Davidson, R.J., Scherer, K.R., Goldsmith, H.H. (2003). Introduction. In: R. J. Davidson, K. R. Scherer & H. H. Goldsmith (eds). *Series in Affective Science. Handbook of Affective Sciences* (3–7). New York: Oxford University Press.

DeLancey, C. (2006). Basic Moods. *Philosophical Psychology*, 19(4), 527–538, https://doi.org/10.1080/09515080600806567

Duncan, S., Barrett, L. F. (2007). Affect Is a Form of Cognition: A Neurobiological Analysis. *Cognition & Emotion*, 21(6), 1184–1211, https://doi.org/10.1080/02699930701437931

Edwards, A. (2015). *Engaged or Frustrated?: Disambiguating Engagement and Frustration in Search. A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the School of Information and Library Science. Chapel Hill*. [online], [06.09.2020], https://static1.squarespace.com/static/56bccb403c44d80c6246148d/t/5712ec3145bf21968b6d9c2d/1460857909249/Edwards-Dissertation.pdf

Ekkekakis, P. (2013). *The Measurement of Affect, Mood, and Emotion: A Guide for Health-Behavioral Research.* Cambridge, UK: Cambridge University Press.

Ekman, P. (1999). Basic Emotions. In: T. Dalgleish & M. J. Power (eds). *Handbook of cognition and emotion* (45–60). New York: Wiley, https://doi.org/10.1002/0470013494.ch3

Ekman, P., Davidson, R. J., eds (1994). *Series in Affective Science. the Nature of Emotion: Fundamental Questions*. New York: Oxford University Press.

Ellenbogen, M. A. (2005). Stress, Psychopathology, and the Regulation of Mood and Cortisol Levels. In: A. V. Clark (ed.) *Causes, Role and Influence of Mood States* (1–32). New York: Nova Biomedical Books.

Feeling. (2020). *APA Dictionary of Psychology* [online], [06.09.2020], https://dictionary.apa.org/feeling

Fitzgerald, S. (2018). The Role of Affect in the Information Seeking of Productive Scholars. *The Journal of Academic Librarianship*, 44(2), 263–268, https://doi.org/10.1016/j.acalib.2018.01.001

Fourie, I., Julien H. (2014a). Ending the dance: a research agenda for affect and emotion in studies of information behaviour. In: *Proceedings of ISIC, the Information Behaviour Conference, Leeds, 2–5 September, 2014: Part 1, (paper isic09)* [online]. Information Research. [06.09.2020], http://InformationR.net/ir/19–4/isic/isic09.html

Fourie, I., Julien, H. (2014b). IRS, Information Services and Lis Research – a Reminder About Affect and the Affective Paradigm ... and a Question. *Library Hi Tech*, 32(1), 190–201, https://doi.org/10.1108/LHT-10-2013-0144

Fox, E. (2018). Perspectives From Affective Science on Understanding the Nature of Emotion. *Brain and Neuroscience Advances*, 2, https://doi.org/10.1177/2398212818812628

Frijda, N. H. (2016). The Evolutionary Emergence of What We Call "Emotions". *Cognition and Emotion*, 30(4), 609–620, https://doi.org/10.1080/02699931.2016.1145106

Furner J. (2004). Conceptual Analysis: A Method for Understanding Information as Evidence, and Evidence as Information. *Archival Science*, 4(3–4), 233–265, https://doi.org/10.1007/s10502-005-2594-8

Gallagher, S. (2014). Phenomenology and Embodied Cognition. In: L. Shapiro (ed.). *The Routledge Handbook of Embodied Cognition* (9–18). New York: Routledge.

Gu, S., Wang, F., Cao, C., Wu, E., Tang, Y.-Y., Huang, J. H. (2019). An Integrative Way for Studying Neural Basis of Basic Emotions With fMRI. *Frontiers in Neuroscience*, June, https://doi.org/10.3389/fnins.2019.00628

Hartel, J. (2019). Turn, Turn, Turn. In: *Proceedings of CoLIS, the Tenth International Conference on Conceptions of Library and Information Science, Ljubljana, Slovenia, June 16–19, 2019* [online]. Information Research, 24(4), paper colis1901, [06.09.2020], http://InformationR.net/ir/24-4/colis/colis1901.html

Izard, C.E. (2007) Basic Emotions, Natural Kinds, Emotion Schemas, and a New Paradigm. *Perspectives on Psychological Science,* 2(3), 260–280, https://doi.org/10.1111/j.1745-6916.2007.00044.x

Johnson-Laird, J. D. (2007). *Feelings. The Perception of Self.* New York: Oxford University Press.

Julien, H., Fourie, I. (2015). Reflections of Affect in Studies of Information Behavior in HIV/Aids Contexts: An Exploratory Quantitative Content Analysis. *Library and Information Science Research*, 37(1), 3–9, https://doi.org/10.1016/j.lisr.2014.09.001

Kim, S.U. (2015). Investigating How English Language Learners Feel During their Research Project with the Framework of Kuhlthau's ISP. *School Libraries Worldwide*, 21(2), 85–102.

Kisilowska, M., Mierzecka, A. (2019). Emotions, Experience, Identity – Motivations of the Teens' Information Behaviour in the Area of Culture. In: *Proceedings of ISIC, The Information Behaviour Conference, Krakow, Poland, 9–11 October: Part 2* [online]. Information Research, 24(1), paper isic1826. [06.09.2020], http://InformationR.net/ir/24-1/isic2018/isic1826.html

Koh, K., Snead, J. T., Lu, K. (2019). The Processes of Maker Learning and Information Behavior in a Technology Rich High School Class. *Journal of the Association for Information Science and Technology*, 70(12), 1395–1412, https://doi.org/10.1002/asi.24197

Krakowska M. (2016). Zachowania informacyjne człowieka. In: W. Babik (ed.). *Nauka o informacji* (429–455). Warszawa: Wydaw. SBP.

Lazarus R. S. (1999). *Stress and Emotion*: A New Synthesis. New York: Springer.

LeDoux, J. E., Brown, R. (2017). A Higher-Order Theory of Emotional Consciousness. *Proceedings of the National Academy of Sciences*, 114(10), E2016–E2025, https://doi.org/10.1073/pnas.1619316114

Liu, Ch., Liu, Y. H., Gedeon, T., Zhao, Y., Wei, Y., Yang, F. (2019). The Effects of Perceived Chronic Pressure and Time Constraint on Information Search Behaviors and Experience. *Information Processing & Management,* 56(5), 1667–1679, https://doi.org/10.1016/j.ipm.2019.04.004

Lloyd, A., Olsson, M. (2019). Untangling the Knot: The Information Practices of Enthusiast Car Restorers. *Journal of the Association for Information Science and Technology*, 70(12), 1311–1323, https://doi.org/10.1002/asi.24284

Lopatovska, I. (2014). Toward a Model of Emotions and Mood in the Online Information Search Process. *Journal of the Association for Information Science and Technology*, 65(9), 1775–1793, https://doi.org/10.1002/asi.23078

Lopatovska, I., Arapakis, I. (2011). Theories, Methods and Current Research on Emotions in Library and Information Science, Information Retrieval and Human–Computer Interaction. *Information Processing & Management*, 47(4), 575–592, https://doi.org/10.1016/j.ipm.2010.09.001

Luo, M. M., Nahl, D. (2019). Let's Google: Uncertainty and Bilingual Search. *Journal of the Association for Information Science and Technology*, 70(9), 1014–1025. https://doi.org/10.1002/asi.24174

Łosiak, W. (2007). *Psychologia emocji*. Warszawa: Wydaw. Akademickie i Profesjonalne.

Magai, C. (2001). Adulthood: Emotional Development. In: N. J. Smelser & P. B. Baltes (eds.). *International Encyclopedia of the Social and Behavioral Sciences* (156–159). Amsterdam: Elsevier.

Matsumoto, D., Ekman, P. (2009). Basic Emotions. In: D. Sander & K.R. Scherer (eds.). *The Oxford companion to emotion and the affective sciences* (69–73). Oxford: Oxford University Press.

McCarty, R. (2016). The Fight-or-Flight Response. Stress: Concepts. Cognition, Emotion, and Behavior. In: G. Fink (ed.). *Handbook of Stress. Volume 1, Stress: Concepts, Cognition, Emotion, and Behavior* (33–37). San Diego: Elsevier.

Meyer, A., Fourie, I. (2017). Thematic Analysis of the Value of Kuhlthau's Work for the Investigation of Information Behaviour in Creative Workspaces in Academic Libraries. In: *Proceedings of ISIC, the Information Behaviour Conference, Zadar, Croatia, 20–23 September, 2016: Part 2* [online]. Information Research, 22(1), paper isic1626. [06.09.2020], http://InformationR.net/ir/22-1/isic/isic1626.html

Mierzecka, A., Wasilewski, J., Kisilowska, M. (2019). Cognitive Authority, Emotions and Information Quality Evaluations. In: *Proceedings of CoLIS, the Tenth International Conference on Conceptions of Library and Information Science, Ljubljana, Slovenia, June 16–19, 2019* [online]. Information Research, 24(4), paper colis1910, [06.09.2020], http://InformationR.net/ir/24-4/colis/colis1910.html

Murphy, Sh. T., Zajonc, R. B. (1993). Affect, Cognition, and Awareness: Affective Priming With Optimal and Suboptimal Stimulus Exposures. *Journal of Personality and Social Psychology*, 64 (5), 723–739.

Nahl, D., Bilal, D., eds (2007). *Information and Emotion. The Emergent Affective Paradigm in Information Behavior Research and Theory*. Medford, NJ: Information Today Inc.

Nowell, L.S., Norris, J.M., White, D.E., Moules, N.J. (2017). Thematic analysis: striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16, 1–13.

O'Brien, H. L., Dickinson, R. Askin, N. (2017). A Scoping Review of Individual Differences in Information Seeking Behavior and Retrieval Research Between 2000 and 2015. *Library & Information Science Research,* 39(3), 244–254, https://doi.org/10.1016/j.lisr.2017.07.007

Orlu, A. D. (2016). Information Seeking Behaviour of Masters Students: Affective and Behavioural Dimensions[online]. *Library Philosophy and Practice,* Summer, 1387. [06.09.2020], http://digitalcommons.unl.edu/libphilprac/1387

Orlu, A. D., Mafo, I. H., Tochukwu, N.,T. (2017). Perceived Emotions in the Information Seeking Behaviour of Manchester Metropolitan University Students [online]. *Library Philosophy and Practice* Spring, 1534. [06.09.2020], http://digitalcommons.unl.edu/libphilprac/1534

Park, M. (2015). Human Multiple Information Task Behavior on the Web. *Aslib Journal of Information Management*, 67(2), 118–135, https://doi.org/10.1108/AJIM-12–2013-0154

Payne R. L., Cooper, C. L (2001). *Emotions at Work—Theory, Research and Applications for Management.* Chichester: Wiley-Interscience.

Pennington, Rasmussen D. (2016). The Most Passionate Cover I've Seen: Emotional Information in Fan-Created u2 Music Videos. *Journal of Documentation*, 72(3), 569–590, https://doi.org/10.1108/JD-07–2015-0086

Plutchik, R. (2001). The Nature of Emotions. *American Scientist*, 89, 34–350.

Russell J. (2003). Core Affect and the Psychological Construction of Emotion. *Psychological Review*, 110(1), 145–172, https://doi.org/10.1037/0033–295X.110.1.145

Santana Junior, C.A., Lima, S. R. (2019). Information Behaviour in Facebook Focused on Brazilian Popular Music (BPM). *Investigación Bibliotecológica*, 33(80), 13–30. https://doi.org/10.22201/iibi.24488321xe.2019.80.57931

Savolainen, R. (2014). Emotions as Motivators for Information Seeking: A Conceptual Analysis. *Library & Information Science Research*, 36(1), 59–65, https://doi.org/10.1016/j.lisr.2013.10.004

Savolainen, R. (2015). Cognitive Barriers to Information Seeking: A Conceptual Analysis. *Journal of Information Science*, 41(5), 613–623, https://doi.org/10.1177/0165551515587850

Savolainen, R. (2016). Approaching the Affective Barriers to Information Seeking: The Viewpoint of Appraisal Theory. In: *Proceedings of ISIC, the Information Behaviour Conference, Zadar, Croatia, 20–23 September, 2016: Part 1* [online]. Information Research, 21(4), paper isic1603. [06.09.2020], http://InformationR.net/ir/21-4/isic/isic1603.html

Savolainen, R. (2017). Information Need as Trigger and Driver of Information Seeking: A Conceptual Analysis. *Aslib Journal of Information Management*, 69(1), 2–21, https://doi.org/10.1108/AJIM-08-2016-0139

Scarantino, A., de Sousa, R. (2018). Emotion [online]. In: E. N. Zalta (ed.). *The Stanford Encyclopedia of Philosophy*, [06.09.2020], https://plato.stanford.edu/entries/emotion/#EarlFeelTradEmotFeel

Scherer, K. R., Ekman, P., eds (2014). *Approaches to Emotion*. New York, London: Taylor Francis Psychology Press.

Scherer, K. R., Schorr, A., Johnstone, T., eds (2001). *Series in Affective Science. Appraisal Processes in Emotion: Theory, Methods, Research.* New York: Oxford University Press.

Sobielga J.(1997). Psychologiczne aspekty barier informacyjnych – badania wśród studentów. *Praktyka i Teoria Informacji Naukowej i Technicznej*, 4, 13–18.

Sobielga, J. (2000). Czynniki kształtujące opinie studentów o bibliotece [online]. *Biuletyn EBIB*, 4(12), [06.09.2020], http://www.ebib.pl/2001/12/sobielga.php

Tan, H. B., Forgas, J. P. (2010). When Happiness Makes Us Selfish, but Sadness Makes Us Fair: Affective Influences on Interpersonal Strategies in the Dictator Game. *Journal of Experimental Social Psychology*, 46(3), 571–576, https://doi.org/10.1016/j.jesp.2010.01.007

TenHouten, W. D. (2017). From Primary Emotions to the Spectrum of Affect: An Evolutionary Neurosociology of Emotions. In: A. Ibáñez, L. Sedeño & A. M. García (eds.). *Neuroscience and Social Science: The Missing Link* (141–168). Switzerland: Springer International Publishing.

Vogl, E., Pekrun, R., Murayama, K., Loderer, K. (2020). Surprised–Curious–Confused: Epistemic Emotions and Knowledge Exploration. *Emotion*, 20(4), 625–641, https://doi.org/10.1037/emo0000578

Wang, Ch. Zhoub, Z. Jinc, X. L., Fangd, Y. Leed, M.K.O. (2017). The Influence of Affective Cues on Positive Emotion in Predicting Instant Information Sharing on Microblogs: Gender as a Moderator. *Information Processing & Management*, 53(3), 721–734, https://doi.org/10.1016/j.ipm.2017.02.003

White, P. R. R. (2015). *Appraisal Theory*. In: K. Tracy, C. Ilie & T. Sandel (eds.). *The International Encyclopedia of Language and Social Interaction* (1–8). Wiley-Blackwell, New Jersey, https://doi.org/10.1002/9781118611463.wbielsi041

Wilson, T. (ed.) (2013). *Theory in Information Behaviour Research*. Sheffield, UK: Eiconics Ltd.

Wu, D., Liang, S., Dong, J., Qiu, J. (2018). Impact of Task Types on Collaborative Information Seeking Behavior. *Libri*, 68(3), 231–245, https://doi.org/10.1515/libri-2017–0051

Zanganeh, Y. M., Hariri, N. (2018). The Role of Emotional Aspects in the Information Retrieval From the Web. *Online Information Review*, 42(4), 520–534, https://doi.org/10.1108/OIR-04-2016-0121

Zinck, A., Newen, A. (2008). Classifying Emotion: A Developmental Account. *Synthese,* 161, 1–25, https://doi.org/10.1007/s11229-006-9149-2

Czynniki afektywne w zachowaniach informacyjnych człowieka: analiza koncepcyjna interdyscyplinarnych badań zachowań informacyjnych

Abstrakt

Cel/Teza: Artykuł zawiera refleksję teoretyczną i koncepcyjną oraz analizę definiowania i rozumienia emocji i innych zjawisk afektywnych oraz eksplorowania afektywnych czynników we współczesnych badaniach zachowań informacyjnych ludzi. Podjęto próby zwrócenia uwagi na interdyscyplinarny charakter badań nad afektywnymi aktywnościami informacyjnymi.
Koncepcja/Metody badań: W dociekaniach zastosowano podejście jakościowe oraz metody/techniki: krytyczny przegląd literatury, analizę konceptualną i analizę tematyczną. Jakościowa analiza treści dotyczyła wybranych, reprezentatywnych publikacji z lat 2014–2020.
Wyniki i wnioski: Badania nad emocjami w zachowaniach informacyjnych, dotyczące różnych aspektów, są rozwijane w nauce o informacji. Jednak badania nadal dotyczą ograniczonego pola poszukiwawczego. Afektywny paradygmat działań informacyjnych powinien być stale poszerzany w ujęciu interdyscyplinarnym poprzez odwoływanie się do teorii i metod m.in. psychologii.
Oryginalność/Wartość poznawcza: Artykuł dotyczy próby rozwinięcia teoretycznego zjawiska afektywnego i przedstawia najważniejsze podejścia rozumienia emocji w psychologii. Analizując najnowsze trendy w badaniu afektywnych zachowań informacyjnych, wpisuje się w nowatorskie próby opracowania agendy stanowiącej teoretyczną i praktyczną podstawę rozwoju interdyscyplinarnych badań w paradygmacie afektywnym.

Słowa kluczowe

Analiza jakościowa. Emocje. Jakościowa analiza zawartości. Paradygmat afektywny. Podejście interdyscyplinarne. Psychologia emocji. Zachowania informacyjne.

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Theoretical Bases of Critical Data Studies

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Abstract

Purpose/Thesis: The paper presents main premises and analyzes the theoretical bases of critical data studies (CDS).
Approach/Methods: The article uses critical review of the literature on CDS, social aspects of big data, sociology of knowledge, philosophy of knowledge and science and technology studies.
Results and conclusions: Author identifies three main theoretical premises of CDS: (1) A critique of market-oriented instrumental rationality; (2) Rejection of the idea that data is independent from the research process; (3) Rejection of the concept of raw data. Article discusses intellectual roots of CDS. It is argued that CDS derive from constructivist sociology of knowledge, and science and technology studies.
Originality/Value: The article brings together theoretical literature and empirical studies from diverse disciplinary fields to examine theoretical bases of CDS and situates it in its intellectual context. It stresses the need of critical view of data and data processing, which is especially important in the big data area. CDS are recognized in cultural studies and media studies (however poorly discussed in related Polish scholarship), but they remain almost absent in Information Studies, which would benefit from it.

Keywords

Big data. Critical data studies. Datafication. Instrumental rationality. Social constructivism. Sociology of knowledge.

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1. Introduction

Simply put, critical data studies (CDS) apply critical theory, or, more generally, a critical intellectual attitude, to data. CDS is an attempt to consider data in all its aspects, and to show that their significance extends beyond the technical and the epistemological to the cultural, the social, the economical, the ethical, and the political.

We witness an increasing quantification of reality. Qualitative aspects of the world are reduced to numbers, subject to mathematical processing. Ian Hacking writes that the development of statistics in the nineteenth century made numbers into a fetish. Statistics introduced new styles of reasoning; it imposed new categories on reality, especially on people, transforming the organization of social life and facilitating its surveillance (Hacking, 1990; 1991). This process continues – the possibility of an increasingly precise measurement of further aspects of social life, and of lives of individual persons, changes

our world. It allows the state and the market to monitor their subjects and in the case of self-tracking, it enables auto-surveillance (Iwasiński, 2017) – an operation to a large extent subordinated to the logic and needs of contemporary capitalism (Wróblewski, 2016). Nowadays, we pursue a reduction of all aspects of reality to a sequence of quantitative data (Iwasiński, 2016; Szpunar, 2019). Lev Manovich suggests that we treat contemporary world as a data base (Manovich, 2012, 355). Viktor Mayer-Schonberger and Kenneth Cukier (2013) term this phenomenon "datafication". Other researchers seeking metaphors to describe contemporary reality refer to "metric fixation" (Muller, 2018), "metric culture" (Ajana, 2018), or "data-driven life" (Wolf, 2010). Jose van Dijck uses the term "dataism" in reference to the ideology premised on the assumption that data is the most appropriate means to understanding human behavior (Dijck, 2014, 197–208). It could be said that the ideology of dataism affirms that a mathematical analysis of data is the most effective method of optimizing any and all actions and processes undertaken by people, ensuring the greatest control over reality, the greatest objectivity of its view, and the best decisions. CDS questions the validity of this position.

I would like to highlight three basic premises of CDS, from which all more detailed assertions of the critical data study follow. Firstly, CDS opposes the supremacy of the market-oriented instrumental rationality, driven by datafication. Secondly, it rejects the assumption that data is separate from the process of cognition. Thirdly, it assumes that there are no raw data, i.e., that the concept of "raw data" has no immanent sense but that their sense is always contextual. Before I proceed to a more detailed discussion of these aspects of CDS, I will briefly summarize its history.

At the same time, I would like to make clear that I have no intention of negating the worth and use of research based on data, including big data. It is an important – perhaps, the most important – means to acquiring knowledge. However, the narrative celebrating research based on quantitative data would be incomplete without a critique and a discussion of its bases. In the last few years, the need for such a critical perspective became increasingly obvious[1].

2. Critical data studies: a history

The indirect sources of CDS lie in critical theory and the poststructuralist/postmodernist thought; direct – in constructivist sociology of knowledge (as opposed to the classical) and in sociology of scientific knowledge deriving from it, as well as in science and technology studies (STS). These fields constitute CDS's intellectual background. Critical theory developed by the Frankfurt School in the 1930s questioned the positivist view of science; it rejected the division between the subject and object of observation, underlined the normative quality of knowledge – including scientific knowledge – and highlighted the negative aspects of instrumental rationality. In the 1960s, this approach was radicalized by poststructuralism/postmodernism, cultural studies, and more specific sub-disciplines: media studies, feminism, queer theory, postcolonialism and others. In 1970s, it entered

[1] In 2016, the journal *Big Data & Society* published an issue devoted entirely to CDS, see: *Big Data & Society* 3(2), 2016.

research concerned with scientific knowledge and with technology, and enriched by new concepts (the "strong programme" of Edinburgh School and Bath School, actor-network theory [ANT], sociology of statistics, including critical statistics promoted by the Radical Statistics group). It was in this spirit that Siva Vaidyanathan (2005) proposed Critical Information Studies – almost a decade before the term "critical data studies" was introduced. All these disciplines gestured towards the ideological and political complicity of all knowledge; they exposed science and technology as tools maintaining existing power dynamics, and highlighted their own liberating potential. CDS shares these aims.

The emergence of big data and datafication phenomena inspired critical reflection on data. Although big data is the main subject of CDS analysis, CDS is not confined to the issue of big data, even if it is in relation to big data that CDS's central concerns may be viewed with greatest clarity. Critical reflection on big data has been developing for more than a decade[2]. Chris Anderson in his opinion piece from 2008 argued that, in a datified world, where we may use big data technologies to describe reality and predict its future states, theory is no longer necessary, because data speaks for itself:

> Petabytes allow us to say: "Correlation is enough". We can stop looking for models. We can analyze the data without hypotheses about what it might show. We can throw the numbers into the biggest computing clusters the world has ever seen and let statistical algorithms find patterns where science cannot (...). Correlation supersedes causation, and science can advance even without coherent models, unified theories (...). There's no reason to cling to our old ways (Anderson, 2008).

Anderson's views resonated with the world of business, and opinion journalism responding to developments in science. Marc Prensky wrote that

> [s]cientists no longer have to make educated guesses, construct hypotheses and models, and test them with data-based experiments and examples. Instead, they can mine the complete set of data for patterns that reveal effects, producing scientific conclusions without further experimentation (Prensky, 2009).

Andy Clark stated that big data analysis removed "the human element (...) and, as such, all the human bias that goes with it" (Clark, 2013). However, the academic community questioned these claims. Rob Kitchin's summary of the position shared by Anderson and his supporters is worth citing here in full:

- Big Data can capture a whole domain and provide full resolution;
- there is no need for a priori theory, models or hypotheses;
- through the application of agnostic data analytics the data can speak for itself free of human bias or framing, and any patterns and relationships within Big Data are inherently meaningful and truthful;
- meaning transcends context or domain-specific knowledge, thus can be interpreted by anyone who can decode a statistic or data visualization (Kitchin, 2014).

Kitchin argues that all these claims are false. Briefly, his argument was as follows: firstly, big data analysis always relies only on a part of the potentially available data, and its results constitute only one of the possible images of a given fragment of reality, informed by the quality of the data, the method of its processing, and technology; as such, it is susceptible to bias. Secondly, the supposedly flawless inductive modelling of the world with the help

[2] The most important critics of big data have a background in media studies, sociology, social geography and mathematics; they include Rob Kitchin, Jim Thatcher, Craig M. Dalton, danah boyd (styled lowercase), Kate Crawford, Tracey P. Lauriault, Lisa Gitelman, Stefania Milan, Wendy Hui Kyong Chun, Deborah Lupton, Cathy O'Neil.

of big data does not occur in a theoretical vacuum – data is collected by instruments constructed with reference to theory, according to a methodology based on theory, and processed according to theory or scientific laws (cf. Frické, 2015). Thirdly, as the previous two points show, data does not "speak for itself":

> Data itself does not speak. What is required is a huge amount of background knowledge, or assumptions, or prior research of one kind or another (Fricke, 2015).

We should add that the results of big data analysis are not necessarily intelligible and unambiguous; in fact, they require interpretation (e.g. to prevent apophenia, i.e., the mistaken perception of connections where there are none). Fourthly, it is a specific discourse, rather than a mathematical operation, that invests data with meaning.

Big data processing is useful, and effective when applied instrumentally, e.g. in predictive market analysis. However, it is not sufficient to explain the causes of a given phenomenon, or to illuminate its significance. Kitchin (2014) states that while data may allow us to identify a pattern, it cannot explain it. Interpretation requires theory and knowledge of context. David Sumpter, a professor of mathematics specializing in big data processing, particularly in the analysis of collective behavior, observes that

> (...) when it comes to understanding the world around us, mathematical models don't usually beat humans ... While computers are very good at collecting large numbers of statistical measures, humans are very good at discerning the underlying reasons for these measures (Sumpter 2019, 90–91).

In an article published in a 2012 issue of *Critical Questions for Big Data*, danah boyd and Kate Crawford proposed six "provocations", with the aim of "sparking conversations" about the issues of big data: (1) Big Data Changes the Definition of Knowledge; (2) Claims to Objectivity and Accuracy are Misleading; (3) Bigger Data are Not Always Better Data; (4) Taken Out of Context, Big Data Loses its Meaning; (5) Just Because it is Accessible Doesn't Make it Ethical; (6) Limited Access to Big Data Creates New Digital Divides.

It would be difficult to agree that big data indeed changes the definition of knowledge. It offers new methods of knowledge formation, however, it does not undermine, contrary to what Chris Anderson and others declare, the premises of the previous research methodology. Points (2), (3), and (4) derive from the premises of CDS discussed above, namely its critique of the assumption that data is separate to the process of cognition, and its rejection of the concept of "raw data", whose meaning would be independent from research context. These premises are discussed in more detail below. The last two points, (5) and (6), gesture towards ethical dilemmas of big data analysis. Big data specialists occasionally follow the "capture all" principle, which dictates that they should collect and preserve all available data, as it will allow them to analyze any phenomenon they wish. It is easy to misuse data from the large bases, e.g., intruding on the privacy of a person to whom the data pertains. Even if anonymity is maintained, aggregation of data from many sources allows its deanonymization (Villasenor, 2011; Waszewski, 2015, 245). The increase of data it is possible to capture and the datafication of an expanding part of our lives create new ethical issues, related to the intrusion of privacy, digital surveillance and the possibility of manipulative profiling. The last point, (6), says that data is not equally accessible to every user – it is much easier to access for internet companies. Easy access to data gives these companies a massive advantage, and marginalizes those who lack access to data and to the

tools to analyze it. A different aspect of digital divide may be observed as different people are not equally subject to datafication. Kate Crawford (2013) says that

> [d]ata are assumed to accurately reflect the social world, but there are significant gaps, with little or no signal coming from particular communities. (...) With every big data set, we need to ask which people are excluded. Which places are less visible? What happens if you live in the shadow of big datasets?

Do such people choose to escape datafication, or not? Do they lose by that, and if so, how? What do they gain? It seems that some people, aware of the risks posed by datafication, seek to consciously escape it; for others, who did not choose to remain outside its reach, their position outside the realm of datafication may be a source of difficulties, as it may prevent them from benefitting from digital services.

The term "critical data studies" emerged after boyd and Crawford published their 2012 article. Craig M. Dalton and Jim Thatcher are agreed to have coined it. They used in their 2014 article, *What does a critical data studies look like, and why do we care?*, published in an online edition of the *Society & Space* journal. They showed that there were many reasons to identify "critical data studies" as a separate field. Firstly, they point to the increasing role of big data in the contemporary world; furthermore, they observe that data is never raw, and that big data analysis is never neutral, i.e., devoid of cultural, social, and political leanings. They argue that big data techniques have consequences for the society, affect human behavior, shape social dynamics, and inevitably influence various spheres of social life. According to them, the goal of CDS is to expose ideological agendas hidden in data itself, and in the operations conducted on them. To realize it, we must combine big data techniques with research based on "small data", i.e. data which may be analyzed and interpreted by a single individual, allowing an in-depth qualitative description.

3. Critical data studies and market-oriented instrumental reason

The increasing prominence of instrumental rationality is a part of the general progress of modernity. Its nature is selection of an optimal means to a given goal (Sztompka, 2003, 57, 65). Actions suggested by instrumental rationality were proven the most effective in controlling reality, manipulating its elements to achieve certain benefits, and predicting its future states. Instrumental rationality is fundamental for technology, but with the progress of modernity, it begins to be applied in other spheres of social life. In other words, an increasing number of areas of life is subject to the rule of technocracy (Habermas, 1977; 1983; Zybertowicz, 2015b, 54). The risks of the domination of instrumental rationality over social life were observed as early as in 1940s, by the founders of critical theory represented by the Frankfurt School. Max Horkheimer, a key member of the School, argues that the development of instrumental rationality leads towards an increasing instrumentalization of the world and of the human, which can only result in the man's enslavement:

> As a result of the development of technical knowledge, the autonomy of the individual subject decreases, and his power to resist the growing apparatus of mass manipulation, his imagination and independent judgement weaken. The development of technical means is accompanied by dehumanization (Horkheimer, 1987, 245),

and

> The more apparatuses to tame nature we invent, the more we must serve them if we wish to survive (Horkheimer, 1987, 245).

Datafication is closely related to instrumental rationality; certainly it facilitates an extension of instrumental reason's dominance. After all, it is easier for instrumental reason to govern what is quantitative. Therefore, the more quantified the reality, the easier it is to follow the rules of the instrumental reason. This is particularly relevant to digitized objects (objects in digital form). In the mid-1990s Nicholas Negroponte (1997, 13–18) wrote that an increasing number of objects was digitized, atoms turned to bites. Material goods, or, more specifically, digital representations of material goods are moved into the virtual world, where they are much easier to modify. Andrzej Kiepas (2017, 39) observes that "digital objects are much easier to manipulate than analog objects." Wiesław Godzic (1998) writes that a digital world is a tamed world. Every element of such a world may be reduced to its basic components (data), subject to analysis, modified, transferred. As far as instrumental reason is concerned, it would be ideal if the entirety of reality were digitized, so that all problems might be solved by strictly mathematical operations[3]. In such a world, even the individual persons would be reduced to data sets and parameters, and their relationships – even their relationships with themselves, i.e., auto-reflection – would be realized by mathematical formulas. Several scholars suggest that this is precisely the direction in which we are headed. Zybertowicz (2015a, 449) writes that

> widely defined postmodernism achieved a conceptual, philosophical, intertextual deconstruction of the subject. Today we face the next step: new technologies make possible not only a conceptual, but also a practical, entirely literal technical transformation, and even a dismantling of the human person.

Jan Waszewski states that

> the assumption that data bases contain the entirety of a human being, his beliefs, personality, motivations, moods, future behaviors and so on, is a key element of the majority of analyses based on the Big Data technology (Waszewski, 2015, 255).

The rapidly developing self-tracking technologies, supported by the idea of Quantified-Self, dating platforms based on parametrization, or Chinese social credit may all be seen as substitutes of, or first steps towards, the fully digitized world.

According to Horkheimer (1987), instrumental rationality discloses the most efficient methods of realizing imposed goals, but it does not account for the reflection on these goals and the values which underlie them. It does not make space for any normative rules. Following the principles of instrumental reason alone, it is impossible to prove that "justice and freedom are by themselves better than injustice and bondage" (Rudziński, 1987, 11). Instrumental rationality deprives people of a part of their reason – the part responsible for value judgements, assessments in moral categories, or questions regarding meaning. It allows one to determine the most economically profitable solution of a given problem, but the decision to prioritize economical profitability, as opposed to preserving health of the

[3] It is an utopian vision for many reasons, but particularly because it would be impossible to mathematize fundamental dilemmas and conflicts of social life resulting from disparities of values and interests.

individuals or of the environment, and so on, goes beyond instrumental rationality. Such awareness belongs to the realm of normative knowledge beyond the reach of instrumental rationality; it occurs in the sphere of values and meanings.

Who then, or what, decides what we should aim for? In contemporary capitalism, a key mechanism for determining goals to be realized by the society is the market[4]. Therefore actions geared towards optimizing the accumulation of profit are prioritized. Datafication of reality facilitates the subordination of further spheres of life to market's rule, as quantification promotes valuation. Furthermore, the development of information and communication technologies, and related economic networkization fosters the global expansion of capitalism – even if it does not determine it (Szumlewicz, 2005, 175). Therefore, it should not come as a surprise that big data analysis primary object is to establish economic value derived from data. IDC, a firm offering big data analysis for markets declares:

> Big Data technologies describe a new generation of technologies and architectures, designed to economically extract value from very large volumes of a wide variety of data, by enabling high-velocity capture, discovery, and/or analysis (Villars et al., 2011).

Mathematics and the market have long been connected:

> Scholarly work on early modern mathematics in its cultural context has ably demonstrated the relationship between evolving protocapitalist market economies and increasingly ubiquitous mathematical discourses related to mercantile activity (Williams, 2013, 41; cf. Brine & Poovey, 2013).

Georg Simmel (2012) observed it as early as in 1900 in his famous study *The Philosophy of Money*. Under the late datacentric capitalism, which emphasizes individualism and flexible management, hegemony of instrumental reason does not pose a risk of the progressing standardization of the world and people, prophesized by the classical critical theorists of the Frankfurt School. Instead, it threatens to subordinate further spheres of social life to market logic, and a resulting commodification of the datified man. After all, the currency with which we pay for various services is data we generate; therefore, we do not pay with money, but with our privacy, sharing information regarding our interactions, relationships, views, interests, thoughts and feelings, with market subjects. In the light of CDS, our life – our very identity – becomes subject to market's exploitation. Furthermore, reduced to data, "mapified" man or social group becomes an easy target for manipulation – as evidenced by

[4] Obviously, it is not the only mechanism. However, as Kazimierz Krzysztofek observes, the aims suggested by social institutions, such as the family, school, or Church, erode "insofar as the patterns of control they establish by promoting social roles are incompatible with the individual's performance of his role as a producer and a consumer". Furthermore: "Why not remake Acropolis into a hotel with a McDonald's, Colosseum into a stadium and a gym; why not clean up the ruins of Forum Romanum and erect there a Hiperforum mall, re-make Troy into an antique theme park, and Cheops's pyramid into a Cheops Beer pub. It would certainly be rational. Fortunately, nobody thinks in these categories, even the most ardent supporters of the market; fortunately culture with its ethical and religious systems provides us with some restraints". However, the market is capable of accommodating the needs generated by other, cultural systems. The author goes on to ask if the cultural imperative to protect heritage is rational from the market's point of view: "Yes and no. It is irrational, as it stops its [the market's – ŁI] expansion; it is rational as without preserving heritage, there would be no tourism, which is nowadays perhaps the largest business in the world; the ruins of Forum Romanum generate more profit that Hiperforum mall ever would" (Krzysztofek, 2000, 125).

the results of political microtargeting and neuromarketing (Hegazy, 2019). Such practices interest the CDS researchers.

4. Critical data studies and the assumption of the data's separation from the research process

The proponents of CDS reject the assumption that data is independent from the research process. It comes from their opposition to the objectivist model of knowledge, premised on the assumptions that reality consists of objects independent from the mind, and that its full, unambiguous and true description is possible (Zybertowicz, 1995, 72–77; cf. Szahaj, 2014, 213). Objectivist model of knowledge seems intuitive, and is implicitly accepted by researchers who believe that by conducting appropriate operations on data, they uncover facts and adequately reconstruct the properties and qualities of the world. CDS, however, has its basis the constructivist model of knowledge. It questions the separation of two spheres: the sphere of reality, defined by qualities pre-existing and independent from the process of knowing, and the sphere of knowledge, which accurately and objectively reflects such reality (Zybertowicz, 1995, 101). According to this model, knowing of the object changes it. This idea is the basis of postpositivism (understood as an epistemological position), characteristic of poststructuralism/postmodernism (understood as a general approach to cultural analysis). It is a foundation of constructivist sociology of knowledge and its derivatives: sociology of scientific knowledge, as well as science and technology studies (STS). Postpositivism and poststructuralism/postmodernism problematize (or reject) the idea of representationalism, which claims that it is possible to create unambiguous models of reality, or its fragment, basing on the methods of cognition available to us. Tomasz Szkudlarek and Zbyszko Melosik introduce,

> the concept of (re)presentation – I write it thus because no expression of the world is not, and cannot be a mirror reflection of it; it is always a presentation – shaped by the dynamics of knowledge/power, interpretation, biography ... In its attempt to present reality, representation – itself an integral part of reality – creates it. It constitutes an indispensable and substantial element of the dynamic of reality's existence (Szkudlarek & Melosik, 1998, 42).

According to the objectivist model, knowledge is uncovered, and according to the constructivist model, it is always constructed. The former model assumes that, correctly conducted, with the use of rigorous procedures, research uncovers the truth (as defined by the classical correspondence theory); the latter – that research presents only one of the few possible interpretations of a given fragment of reality (with the problematized understanding of truth, the term used only in the non-classical sense – constructivist, pragmatic, or as defined by the coherence theory of truth).

Donald MacKenzie (1978), using as an example the research of Karl Pearson and George Udny Yule, and the discussion between the two, argues that the development of seemingly abstract, rigid field detached from a socio-cultural background, such as the measurement of statistical relations, was informed by cognitive interests resulting from various interests of the groups from which these scholars came. If we follow MacKenzie's argument, we must admit that even the research of statistical formulas is not ideologically neutral, and its result depends on sociocultural factors. CDS states that facts and data is socially

constructed, rather than objective – which I discuss in more detail below. According to CDS, creating knowledge is a social process, in which values, convictions, and interests all play a role (to use the term of Florian Znaniecki, it is characterized by the humanistic coefficient)[5]. It could be said that a critical, constructivist understanding of knowledge – which is a part of CDS – always involves reflecting on the society (Zybertowicz, 1995, 94). It is not surprising then that a major inspiration and one of the main intellectual sources of CRS is non-classical (constructivist) sociology of knowledge and related disciplines (science and technology studies, actor-network theory).

5. CDS and the problem of raw data

The objectivist model of knowledge considers data as objective particular pieces of information, observed and registered. This model distinguishes between data (empirical) and interpretations (speculative). Data must be accepted, while interpretations may be discussed. It follows from the commonsensical assumption that one does not argue with facts. It is a common belief that there are no facts harder than raw data, as it would seem that data precedes facts. However, the proponents of CDS write

> [a]t first glance data are apparently before the fact: they are the starting point of what we know (...). This shared sense of starting point with data often leads to an unnoticed assumption that data are transparent, that information is self-evident, the fundamental stuff of truth itself. If we're not careful, in other words, our zeal for more and more data can become a faith in their neutrality and autonomy, their objectivity (Gitelman & Jackson, 2013, 2–3).

CDS assumes that there is no raw data; that it is impossible to separate raw data from interpretation "Data need to be imagined as data to exit and function as such, and the imagination of data entails an interpretive base" (Gitelman & Jackson, 2013, 3). How are such claims justified? Zybertowicz (1995, 86–97) identifies key arguments. Firstly, knowledge is always conditioned by conceptual resources and values of a given culture. Secondly, he refers to the Duhem-Quine thesis, which claims that data in and of itself does not determine theory; there are no meaningful claims based on data alone; any claim must refer to knowledge beyond data. In other words, to make any use of data, we must "pollute" it with outside knowledge. Therefore, basing on one set of data, we may propose empirically equal, but mutually exclusive interpretations (Zybertowicz, 1995, 90–91). Thirdly, data is always selectively dissociated from a fragment of reality.

Let us consider specific examples. Firstly, construction of data involves assigning a value to select objects or their properties. We may consider the number of ill persons in a given society. We will see that it is not unambiguous, as it depends on a given definition of illness (a set of concepts and values). For example, it encompassed homosexual persons until 1972 when American Psychiatric Association ruled that homosexuality was not an illness. Therefore, a given object is assigned different values depending on cultural context. Often, these values are assigned basing on indicators or indices, which are obviously socially

[5] Znaniecki related it only to humanistic knowledge, however, as Jerzy Kmita argues (1985, 47), we should reject the claim that "natural sciences study exclusively the phenomena observed without the humanistic coefficient (objectivized)".

constructed (there are different methods of accounting for unemployment or inflation, based on differently constructed indicators). Secondly, a practical example of the Duhem-Quaine thesis, claiming that data by itself does not determine conclusions and highlighting the social aspect of knowledge formation, is the research of scientific controversies conducted by the Bath School. It showed that there is a degree of flexibility to the interpretation of laboratory data. When a dispute arises, it is often social factors, rather than the nature of the studied object, that determine which interpretation will be accepted (Afeltowicz, 2012, 76–77). Thirdly, any selection of data to be considered in a given study is arbitrary: certain data is shared, while other is neglected, which has impact on results, or sometimes may be a result of a conscious manipulation. If we say that the proportion of drivers punished for traffic offenses rose from 5% to 15% of the entire population, it will seem that the drivers have been less cautious. However, if we add that, at the same time, the number of highway patrols tripled, or that the regulations became more strict, our conclusions will be different. The constructivist critique of statistics refers to "statistical wars", i.e., the use of statistics with the intention of forcing a specific view of reality and justifying specific claims (Miś, 2017, 82).

Alongside big data, CDS is interested in "thick data", i.e., qualitative data aiming to capture as many relevant contexts as possible. The same set of data may have a different sense in different contexts:

> Three different "likes" on a Facebook status may reflect three disparate emotional responses: from intense agreement to sardonic recognition to sympathetic pity. However, when it is analyzed simply as a "like" (...), the thickness of the data and its variety of meanings is lost. In practice, data are not simple evidence of phenomena, they are phenomena in and of themselves (Dalton, Thatcher, 2014).

Hypothetically, we may assume that any context might be datified, and therefore that thick data might be integrated into big data (Der, 2017). From this point of view, the thickness of data is simply a function of its amount and density. However, the number of contexts is potentially infinite, and therefore its selection and assigned importance will always be arbitrary. Thus, Tom Boellstorff (2013) writes that "[w]hat makes data thick is recognizing its irreducible contextuality".

In order to extract knowledge from large dispersed bases, to conduct research in interdisciplinary, dispersed teams, and for the platforms reliant on dispersed online data to realize their tasks, data need to be "communicated and reshaped" (Nafus, 2017). Data movement and reshaping processes do not occur spontaneously; rather, they are initiated by specific subjects and subordinated to specific rules. These processes are not always smooth, as come up against legal, economic, cultural and physical (technical, infrastructural) barriers; they are sometimes entangled with ideological and political issues. All these barriers and entanglements may be referred to as data friction (Bates, 2017; Edwards, 2010). We may take GDPR as an example: there is no doubt that the regulation has a significant impact on data movements, shaping the relations of the subjects using personal data.

I have argued above that any form of critical, constructivist understanding of knowledge, including CDS, involves a measure of reflection on the society. I may add that the researchers associated with CDS are interested not only in the question of the relation between data and results of the analyses conducted on it to reality or truth, but also in its relation to the society and culture; they ask if these analyses are not biased, if they do not serve specific interests, on what systems of value they rely. It is precisely to answer such questions that the research of algorithmic bias has emerged (Iwasiński, in press).

6. Conclusion

The discussion above should not suggest that data has no use in research. On the contrary, it is the basic material of knowledge formation and science. Also, I am in no way arguing that the meaning of data is completely relative. But we should be aware that an observation acquires the status of data, and the knowledge derived from is considered objective (if never absolutely so), only in relation to specific assumptions – strictly methodological and technical, and social – referring to values and interests involved in the society's process of knowledge formation. CDS studies precisely these assumptions. In Gitelman's phrase, it is concerned with "looking into data or, better, looking under data to consider their root assumptions" (Gitelman & Jackson, 2013, 4). These assumptions comprise the context of data and of knowledge generated on their basis. Often this context becomes transparent, because such assumptions are invisible, accepted as obvious and unproblematic; often it is simply unconscious. But sometimes it is hidden as a result of an intentional tactic.

I do not mean to negate the value of knowledge formed with the use of operations conducted on data. However, we should not forget that such knowledge might be – and, according to some, always is – tendentious, at least to a degree. It is particularly the case with the algorithms processing big data to predict behaviors or future states. David Sumpter, cited above, argues that no algorithms are free from ideological leanings. Every algorithm is, from some point of view, unfair; it always discriminates against some group subject to the analysis. The group is discriminated not on the basis of mathematics, but of axiology – beliefs and sense of fairness of the algorithm's author:

> Unfairness is like those whack-a-mole games at the fairground where the mole keeps popping up in different places. You hammer it down in one place and another one comes out somewhere else ... There isn't an equation for fairness. Fairness is something human. It is something we feel (Sumpter, 2019, 83–84).

Finally, I should observe that while datafication definitely facilitates market-oriented instrumental rationality, it may also drive developments of a different character – bottom up, social, not prioritizing economical profit. However, they may emerge and succeed only if the relevant data is made available to the groups interested in promoting such initiatives, rather than monopolized by market subjects, and especially not by large internet firms (Morozov, 2016, 22–26).

References

Afeltowicz, Ł. (2012). *Modele, artefakty, kolektywy. Praktyka badawcza w perspektywie współczesnych studiów nad nauką*. Toruń: Wydaw. Nauk. UMK.

Ajana, B, ed. (2018). *Metric Culture: Ontologies of Self-tracking Practices*. Bingley: Emerald Group Publishing.

Anderson, C. (2008). The End of Theory: The data deluge makes the scientific method obsolete. *Wired* [online], 16(7), [04.06.2020], https://www.wired.com/2008/06/pb-theory/

Bates, J. (2018). The Politics of Data Friction. *Journal of Documentation,* 74 (2), 412–429. https://doi.org/10.1108/JD-05–2017-0080

Boellstorff, T. (2013). Making Big Data, in Theory. *First Monday* [online], 18 (10), 7 Oct, https://doi.org/ 10.5210/fm.v18i10.4869

boyd, d., Crawford, K. (2012). Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon. *Information, Communication & Society,* 15(5), 662–679.

Brine, K. R., Poovey, M. (2013). From Measuring Desire to Quantifying Expectations: A Late Nineteenth-century Effort to Marry Economic Theory and Data. In: L. Gitelman (ed.). *Raw Data is an Oxymoron* (61–76). Cambridge, Mass.: MIT Press.

Clark, L. (2013). No Questions Asked: big data firm maps solutions without human input. *Wired* [online], 16, [01.02.2016], http://www.wired.co.uk/news/archive/2013–01/16/ayasdibig-data-launch

Crawford, K. (2013). The Hidden Biases in Big Data. *Harvard Business Review* [online], 4, [04.06.2020], https://hbr.org/2013/04/the-hidden-biases-in-big-data

Dalton, C., Thatcher, J. (2014). What Does a Critical Data Studies Look Like, And Why Do We Care? Seven points for a critical approach to "big data". *Society and Space* [online], 29, [04.06.2020] https://www.societyandspace.org/articles/what-does-a-critical-data-studies-look-like-and-why-do-we-care

Dijck, J. van (2014). Datafication, Dataism and Dataveillance: Big Data Between Scientific Paradigm and Ideology. *Surveillance & Society*, 12, 197–208.

Edwards, P. N. (2010). *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming.* Cambridge, Mass.: MIT Press.

Frické, M. (2015). Big Data and Its Epistemology. *Journal of the Association for Information Science and Technology*, 66(4), 651–661, https://doi.org/ 10.1002/asi.23212

Gitelman, L., Jackson, V. (2013). Introduction. Raw Data is an Oxymoron. In: L. Gitelman (ed.). *Raw Data is an Oxymoron* (1–15). Cambridge, Mass.: MIT Press.

Godzic, W. (1998). Cyfrowy film i analogowy widz. *Kino*, 12, 42 – 45.

Habermas, J. (1977). Technika i nauka jako „ideologia". In: J. Szacki (ed.). *Czy kryzys socjologii?* (342–396). Warszawa: Czytelnik.

Habermas, J. (1983). Postęp techniczny i społeczny świat życia. In: Z. Krasnodębski (ed.). *Teoria i praktyka: wybór pism* (357 – 369). Warszawa: PIW.

Hacking, I. (1990). *The Taming of Chance*. Cambridge: Cambridge University Press.

Hacking, I. (1991). How Should We Do the History of Statistics?. In: G. Burchel et al. (eds.). *The Foucault Effect: Studies in Governmentality* (181–196). Chicago: The University of Chicago Press.

Hegazy, I. M. (2019). The Effect of Political Neuromarketing 2.0 on Election Outcomes: The Case of Trump's Presidential Campaign 2016. *Review of Economics and Political Science* [online], ahead--of-print, https://doi.org/10.1108/REPS-06–2019-0090

Horkheimer, M. (1987). Krytyka instrumentalnego rozumu. In: M. Horkheimer (ed.). *Społeczna funkcja filozofii: wybór pism* (244–413). Warszawa: PIW.

Iwasiński, Ł. (2016), Społeczne zagrożenia danetyzacji rzeczywistości. In: B. Sosińska-Kalata et al. (eds.). *Nauka o informacji w okresie zmian. Informatologia i humanistyka cyfrowa* (135–146). Warszawa: Wydaw. SBP.

Iwasiński, Ł. (2017). Quantified Self. Self-tracking a problem tożsamości. *Zagadnienia Informacji Naukowej – Studia Informacyjne*, 55(2), 126–136, https://doi.org/10.36702/zin.369

Iwasiński, Ł. (in press). Social Implications of Algorithmic Bias. In: B. Sosińska-Kalata et al. (eds.). *Nauka o informacji w okresie zmian. Rewolucja cyfrowa – dziś i jutro: Infrastruktura, usługi, użytkownicy*. Warszawa: Wydaw. SBP

Kmita, J. (1985). *Kultura i poznanie.* Warszawa: PWN.

Kiepas, A. (2017). *Filozofia techniki w dobie nowych mediów*. Katowice: Wydaw. UŚ.

Kitchin, R. (2014). Big Data, New Epistemologies and Paradigm Shifts. *Big Data & Society*, 1(1), https://doi.org/10.1177/2053951714528481

Krzysztofek, K. (2000). Racjonalność, tabu kulturowe i kontrola przez wolność. In. L. Zacher (ed.). *Racjonalność myślenia, decydowanie i działanie* (121–132). Warszawa: Wyższa Szkoła Przedsiębiorczości i Zarządzania im. Leona Koźmińskiego.

MacKenzie, D. (1978). Statistical Theory and Social Interests: A Case-study. *Social Studies of Science*, 8(1), 35–83.

Manovich, L. (2012). *Język nowych mediów*. Warszawa: Oficyna Wydaw. Łośgraf.
Mayer-Schönberger, V., Cukier, K. (2013). *Big Data: A Revolution That Will Transform How We Live, Work, and Think*. Boston; New York: Houghton Mifflin Harcourt.
Miś, L. (2007). *Problemy społeczne: teoria, metodologia, badania*. Wydawnictwo UJ.
Morozov, E. (2016). Neoliberalizm na google'owskich sterydach. *Krytyka Polityczna* [online], 44, [04.06.2020], https://krytykapolityczna.pl/gospodarka/morozov-neoliberalizm-na-google-owskich-sterydach/
Muller, J. Z. (2018). *The Tyranny of Metrics*. Princeton: Princeton University Press.
Nafus, D., (2017). Data Friction. *Playtus* [online] [04.06.2020] http://blog.castac.org/2017/02/data--friction/
Negroponte, N. (1997). *Cyfrowe życie: jak się odnaleźć w świecie komputerów*. Warszawa: Książka i Wiedza.
Prensky, M. (2009). H. Sapiens Digital: From Digital Immigrants and Digital Natives to Digital Wisdom. *Innovate: Journal of Online Education* [online], 5(3), [04.06.2020] https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1020&context=innovate
Rudzinski, R. (1987). Wstęp. Filozofia Maxa Horkheimera. In: M. Horkheimer (ed.). *Społeczna funkcja filozofii: wybór pism* (5–33). Warszawa: PIW.
Sikora, M. (2007). *Problem reprezentacji poznawczej w nowożytnej i współczesnej refleksji filozoficznej*. Poznań: Wydaw. Nauk. Instytutu Filozofii UAM.
Simmel, G. (2012). *Filozofia pieniądza*. Warszawa: Wydawnictwo Aletheia.
Sumpter, D. (2019). *Osaczeni przez liczby: o algorytmach, które kontrolują nasze życie: od Facebooka i Google'a po fake newsy i bańki filtrujące.* Kraków: Copernicus Center Press.
Szahaj, A. (2004). *Zniewalająca moc kultury: artykuły i szkice z filozofii kultury, poznania i polityki*. Toruń: Wydaw. UMK.
Szkudlarek, T., Melosik, Z. (1998). *Kultura, tożsamość i edukacja – migotanie znaczeń*. Kraków: Impuls.
Szpunar, M. (2019). Kwantyfikacja rzeczywistości. O nieznośnym imperatywie policzalności wszystkiego. *Zeszyty Prasoznawcze*, 3(239), 95–104.
Sztompka, P. (2002). *Socjologia. Analiza społeczeństwa.* Kraków: Znak.
Szumlewicz P. (2005), Technika jako polityka prowadzona innymi środkami. In: P. Żuk (ed.). *Dogmatyzm, rozum, emancypacja: tradycje Oświecenia we współczesnym społeczeństwie polskim* (169–185). Warszawa: Scholar.
Vaidhyanathan, S. (2005). Critical Information Studies: A Bibliographic Manifesto [online]. SSRN [04.06.2020], https://papers.ssrn.com/sol3/papers.cfm?abstract_id=788984
Villasenor, J. (2011). *Recording Everything: Digital Storage as an Enabler of Authoritarian Governments* [online]. Brookings. Center for Technology Innovation [04.06.2020], https://www.brookings.edu/research/recording-everything-digital-storage-as-an-enabler-of-authoritarian-governments/
Villars, R.L., Eastwood, M., Olofson, C.W. (2011). IDC White Paper: Big Data:What It Is and Why You Should Care [online]. The Data Analytics Report [04.06.2020], https://dataanalytics.report/whitepapers/big-data-what-it-is-and-why-you-should-care/4519
Waszewski, J. (2015). Ewolucja systemów nadzoru. In: A. Zybertowicz (ed.). *Samobójstwo Oświecenia? Jak neuronauka i nowe technologie pustoszą ludzki świat* (233–283). Kraków: Wydaw. Kasper
Williams, T. D. (2013). Procrustean Marxism and Subjective Rigor: Early Modern Arithmetic and Its Readers. Raw Data Is an Oxymoron. In: L. Gitelman (ed.). *Raw Data is an Oxymoron* (41–59). Cambridge, Mass.: MIT Press.
Wolf, G. (2010). The Data-driven Life. *The New York Times* [online], April 28, [04.06.2020], https://www.nytimes.com/2010/05/02/magazine/02self-measurement-t.html
Wróblewski, M. (2016). Nowe szaty healthismu. Self-tracking, neoliberalizm i kapitalizm kognitywny. *Acta Universitatis Lodziensis. Folia Sociologica*, (58), 5–23.

Zybertowicz, A. (1995). *Przemoc i poznanie: studium z nie-klasycznej socjologii wiedzy*. Wydaw. UMK.
Zybertowicz, A. (2015a). Bilans. In: A. Zybertowicz (ed.). *Samobójstwo Oświecenia? Jak neuronauka i nowe technologie pustoszą ludzki świat* (429–452). Kraków: Wydaw. Kasper.
Zybertowicz, A. (2015b). Oświecenie – utopia, która działa. In: A. Zybertowicz (ed.). *Samobójstwo Oświecenia? Jak neuronauka i nowe technologie pustoszą ludzki świat* (29–57). Kraków: Wydaw. Kasper.

Teoretyczne podstawy critical data studies

Abstrakt

Cel/Teza: Celem artykułu jest przedstawienie głównych założeń oraz analiza podstaw teoretycznych nurtu critical data studies (CDS).
Koncepcja/Metody badań: Analiza opiera się na krytycznym przeglądzie literatury z zakresu CDS, społecznych aspektów Big Data, a także socjologii wiedzy, filozofii wiedzy oraz studiów nad nauką i techniką.
Wyniki i wnioski: Autor wskazuje trzy główne teoretyczne postulaty CDS: (1) krytyka rynkowo zorientowanej racjonalności instrumentalnej; (2) Odrzucenie założenia o niezależności danych od procesu badawczego; (3) Odrzucenie koncepcji surowych danych. W artykule omówiono intelektualne źródła CDS. Autor argumentuje, że nurt CDS wyrasta z konstruktywistycznej socjologii wiedzy oraz studiów nad nauką i technologią.
Oryginalność/Wartość poznawcza: Artykuł czerpie z literatury teoretycznej i studiów empirycznych z różnych dziedzin w celu zbadania teoretycznych podstaw CDS i ulokowania tego nurtu na historycznej mapie idei. Podkreśla potrzebę krytycznego patrzenia na dane i ich przetwarzanie, co jest szczególnie istotne w obszarze big data. Nurt CDS jest rozpoznany na gruncie kulturoznawstwa i nauk o mediach (choć słabo dyskutowany w polskiej literaturze naukowej z tych dziedzin), ale nieobecny w informatologii, której dorobek mógłby istotnie wzbogacić.

Słowa kluczowe

Big Data. Critical Data Studies. Danetyzacja. Konstruktywizm społeczny. Racjonalność instrumentalna. Socjologia wiedzy.

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Digital Libraries and the Breakthrough in Linguistic Chronologization. The Applications of Digitization in Linguistics

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Abstract

Purpose/Thesis: The turn of the century marked a beginning of the dynamic growth of Polish digital libraries. The process had results beyond the increased accessibility of library resources. From the perspective of information science, a digital library has many functions aside from sharing its resources; therefore, it is important that we attend to the role such libraries play in research conducted by scholars of different disciplines.
Approach/Method: This article is a review. The authors briefly present the role of digital libraries in applied linguistics, primarily in linguistic chronologization, i.e dating and re-dating of neologisms, with a focus on twentieth-century Polish language.
Results and conclusions: The analysis shows that the development of digital libraries was the condition sine qua non for establishing contemporary linguistic chronologization theory (which may be also considered to be a research method). The future growth of digital resources will allow the scholars to pose more plausible hypotheses regarding linguistic chronologization.
Originality/Value: Linguistic chronologization theory (TLCH) often features in linguistics scholarship. As far as the authors know, no information science journal published a paper considering the role of digital libraries in applied linguistics.

Keywords

Applied linguistics. Digital libraries. Digitization of library resources. Information science. Linguistic chronologization.

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1. Introduction

"Interdisciplinarity" is a term often mentioned (and over-interpreted) in scholarship. It has become common, not to say – fashionable – in the discourse of Polish humanities scholars. Of course, to claim that there is a need for interdisciplinary research is not to conduct it, or to gain genuinely interdisciplinary knowledge on such research's basis. We will refrain from discussing theoretical conditions for interdisciplinarity, but we will attempt

to present specific studies which we consider interdisciplinary. Its culmination – modest, but eloquent – shall be an articulation of a linguistic chronologization hypothesis of the neologism "interdisciplinarity". We will explain "how it's done" below, highlighting the extraordinary importance of Polish digital libraries for the study of linguistics.

2. Origins and functions of the digital libraries

As our readers may guess, there were many reasons to develop digital libraries, but the primary aim of the process was to preserve the most valuable collections. A further aim was to increase access to the libraries' resources, or at least, make them more accessible than the undigitized resources. The digitization of the library resources greatly reduced the previously enormous costs of conservation and safe handling of valuable objects. It does not have any serious limitations, as objects of almost all types might be transferred into the digital world, and thus shared. Finally, it avoids the inherent limitations of "traditional" access: a single object might be viewed by an unlimited number of people at the same time (Kowalska, 2006).

These qualities of digitization made it rather fashionable. It should come as no surprise that the comparatively advanced technology, which the process required from previously traditional libraries, was first introduced in the more developed countries. The libraries in the USA were the pioneers of digitization. When it came to Europe, the first countries that digitized the resources of their libraries were France, Spain, and Germany; Czech Republic and Hungary in Central Europe (Kowalska, 2006).

General digitization arrived to Poland later; however, its rate was only slightly slower than in the leading countries of the region. First digital libraries in Poland were established on the cusp of 2001 and 2002 (Polish Internet Library, Wielkopolska Digital Library). According to Małgorzata Kowalska's early report on the digitization in Poland, 25 libraries digitized their resources by the end of 2003; out of 55 libraries constituting the national library resource, 14 conducted the necessary work in their own digitization labs. As far as the size of the digitized collections is concerned, about 10 thousand objects have been digitized (Kowalska, 2006).

In the following years, the rate of digitization grew. It is estimated that by the end of 2016, there were 120 digital libraries and repositories in Poland (Osińska et al., 2017, 5). In 2007, Polish Digital Libraries Federation (FBC, n.d.), a website collecting Polish digital libraries, providing access to almost 7 million objects was established.

3. Methods of dating Polish neologisms before formulating the linguistic chronologization theory

Later generations of humanities scholars constructed a research framework which, unlike the frameworks used in more theoretical disciplines, retained traditional (manual, introspective) premises. In the general understanding prevailing towards the end of the last century, "traditional" meant non-digital, i.e., lacking digital research tools.

The study of linguistic chronologization was conducted with the use of this framework. An analysis of the text required an enormous number of hours spent in the library, which resulted in a proportionally high number of errors. Thus conducted, research could not yield

highly plausible hypotheses (its aims were too ambitious), as it did not cover statistically significant corpuses. This was impossible, because the traditional methods available to a humanities scholar did not allow for processing large amounts of data. Therefore, at the beginning of this century Hanna Jadacka could suggest that *motyczkowanie* was a neologism which had appeared after the Second World War, because the research conducted with a "traditional" method had not allowed her to pose any other hypothesis (Jadacka, 2001).

If scientific progress is nothing but a radical or dramatic refutation of previous hypotheses or theories, then, considering that Jadacka formulated her hypothesis basing on research conducted with "traditional" methods (which did not allow precise estimations of linguistic chronologization), we might suspect that her hypothesis did not correspond to the reality as closely as she would have wished. More erroneous linguistic chronologizations were posed basing on such uncertain premises. To save our readers a lengthy survey, we will consider Jadacka's work as a representative example. Alongside *motyczkowanie,* she considered following terms to be post-war neologisms:

autokontrola (Jadacka 2001, 97),
odmianoznawstwo (58),
ofensywność (187),
podatnicy (104),
podkategoria (90),
and many other lexical units.

Certain methodologists say that the reconstruction of humanities scholars' framework involves a transformation of a study into a lab. Therefore, the lab requires a complete reconstruction of humanities, which borrows categories from other disciplines to become a "science". The text studied in a lab is not a text, but a data sample (Pawlicka, 2017). Therefore, after a move from a "study" to a "lab", we may refute the dating of all post-war neologisms, because, although the laborious reading of the text, which was the basis of research in a study, suggested that they were post-war neologisms, the analysis of data processed in a lab shows that these terms functioned before the war; in one case, as far back as in the nineteenth century.

4. Linguistic chronologization theory

We employ the term "linguistic chronologization *theory*" because it has been used in research and resulting publications since 2008, but there is no reason the readers should not consider it a method, or even a technique. It is a matter of secondary importance. If preliminary research clearly shows significant disparities between the previous dating of a neologism and the factual time of its emergence then, obviously, a new linguistic chronologization theory, based on now available tools, is required. Following the suggestion of Jan Warzyńczyk, among others, it was funded on the cusp of the second decade of the twenty-first century (Wierzchoń, 2008), as it was agreed that the previous Polish linguistic chronologizations were outdated (inefficient) in their premises and applications. Their critics held that the material these theories relied on was not representative, and therefore they could not continue to yield reliable hypotheses regarding the emergence and evolution of neologisms (Wierzchoń, 2013).

This objection to the previous linguistic chronologization theories is related to another: all datings were based only on two dictionaries published after the war. The first was edited

by Witold Doroszewski; the second – by Mieczysław Szymczak. The outdated linguistic chronologization theories accepted as their premise the that words absent from these dictionaries, but present in texts published after 1945, were post-war neologisms. This method neglected vocabulary which might have featured in a *Supplement* to the Warsaw Dictionary[1] which comprised approximately 60 thousand entries. Unfortunately, the Supplement was lost during the Second World War.

The dynamic development of digital libraries mentioned above filled this gap. The digitization, increasing on a daily basis, allowed:

(1) research, which resulted in a new program of linguistic chronologization;
(2) revision of the rules of Polish neologisms;
(3) formulation of a methodology for explaining phenomena occurring in Polish language (Graliński, 2019, Wierzchoń, 2013).

As a result, we may formulate a model of linguistic chronologization theory (TLCH), which allows us to answer the following question:

> Why does a scholar S, to realize an aim A in model M, assuming a system of values and beliefs S, employ in their chronologization grammar G in the year Y, distant from the year of capacity C as regards the completion of the task, the series of premises P_1, P_2, P_n, resulting in chronologization H of a lexical unit U, following the neologism rule N, overcoming obstacle O, ignoring a class of evident warnings W, formulated by authority A and taking into consideration advice D, resigning from the previous tradition of conducting research of this type, T, and benefiting from support S (Wierzchoń, 2013).

In other words: why somebody concluded that *motyczkowanie* is a post-war, rather than pre-war, neologism.

TLCH comprises two elements. Its first element is theoretical, i.e. (1) the described object and, (2) the parameters of description. The parameters of description are identical to the dimensions of lexical units described. These dimensions might be grouped as follows:

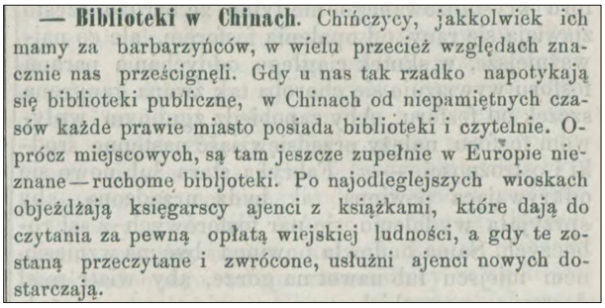
– units of language (morphological, unit-word-semantical, unit-phrasematic-semantical, of the linguistic product, syntaxemic, of syntaxemic valency, of the part of speech, of valency of the part of speech, lexical);
– time (minute, hour, time of the day, day of the week, working / free day, summer suspension of socio-political life, week of the month, month, year, epoch, cyclicality);
– geographical location (city, district, countryside, country, continent);
– position in the text (pagination, layout).

Each of these dimensions has its characteristics. The characteristics of the dimension "day of the week" will be Monday, Tuesday, Wednesday, and so on; of the dimension "country" – USA, France, Switzerland; "parts of speech" – adjective, verb, noun, and so on.

The second element of linguistic chronologization theory is its application, i.e. identification and extraction of the units containing the information regarding the time of publication from the digitized texts available in digital libraries, followed by photo – documentation (including the context). The process of identification might involve collecting thematic information of encyclopedic (general knowledge), or linguistic (knowledge of language, vocabulary, etc.) type. A browser of digital libraries' resources was constructed to facilitate research. This article bases on an analysis of c. 50% of the collections made available by Polish digital libraries

[1] *Słownik języka polskiego* edited by Jan Karłowicz, Adam Kryński and Władysław Niedźwiedzki, published in eight volumes in 1900–1927.

(approximately 3 million of open access objects). The image files were translated into text with the help of the DjVuLibre package (http://djvu.sourceforge.net), and the entirety of the data (including metadata) was indexed using the Linux platform Apache Solr (https://lucene.apache.org/solr or https://www.elastic.co/). All resources were found in public domain.

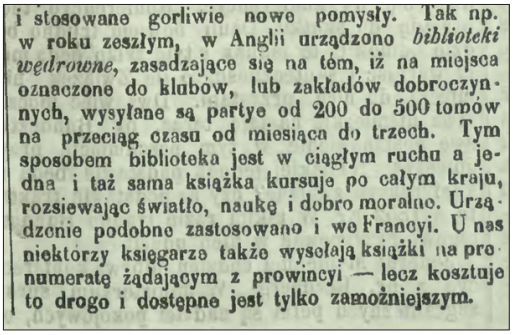


— **Biblioteki w Chinach.** Chińczycy, jakkolwiek ich mamy za barbarzyńców, w wielu przecież względach znacznie nas prześcignęli. Gdy u nas tak rzadko napotykają się biblioteki publiczne, w Chinach od niepamiętnych czasów każde prawie miasto posiada biblioteki i czytelnie. Oprócz miejscowych, są tam jeszcze zupełnie w Europie nieznane — ruchome bibljoteki. Po najodleglejszych wioskach objeżdżają księgarscy ajenci z książkami, które dają do czytania za pewną opłatą wiejskiej ludności, a gdy te zostaną przeczytane i zwrócone, usłużni ajenci nowych dostarczają.

[Translation: Libraries in China. Chinese, no matter how savage we might think them, are in many ways our superiors. While here public libraries are a rarity, in China, from time immemorial, each city boasts libraries and reading rooms. Next to the stationary libraries, there are mobile libraries – virtually unknown in Europe. Library agents reach the most remote villages, lending books to the rural communities for a small sum, and when these are read and returned, the solicitous agents supply new ones].

Source:

Opiekun Domowy, Warsaw, 13/24 March, 1869.



i stosowane gorliwie nowe pomysły. Tak np. w roku zeszłym, w Anglii urządzono *biblioteki wędrowne*, zasadzające się na tém, iż na miejsca oznaczone do klubów, lub zakładów dobroczynnych, wysyłane są partye od 200 do 500 tomów na przeciąg czasu od miesiąca do trzech. Tym sposobem biblioteka jest w ciągłym ruchu a jedna i taż sama książka kursuje po całym kraju, rozsiewając światło, naukę i dobro moralne. Urządzenie podobne zastosowano i we Francyi. U nas niektorzy księgarze także wysełają książki na prenumeratę żądającym z prowincyi — lecz kosztuje to drogo i dostępne jest tylko zamożniejszym.

[Translation: ... Thus, *travelling libraries* were organized last year in England, on a principle that to the places assigned to clubs or charitable organizations, there would be sent collections of 200 to 500 volumes for a period of one to three months. In this fashion, the library is in constant motion, and a single book travels across the country, spreading light, science and moral good. A similar device was employed in France, too. In our country, some book-sellers send books to subscribers from a province – however, it is expensive and available only to the wealthy].

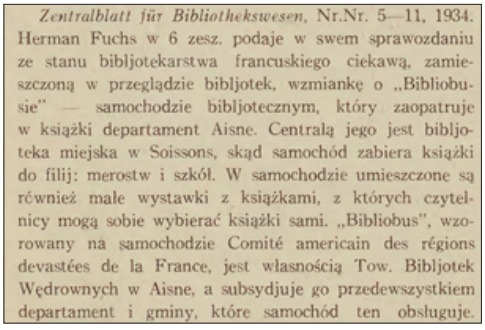
Source:

Gazeta Warszawska, Monday, 29 February, 1864.

Fig. 1. The example of of the phases *ruchoma / wędrowna biblioteka* (*mobile / travelling library*)

Below are two examples related to the development of libraries from the second half of the nineteenth century and the first half of the twentieth century (Fig. 1 and Fig. 2).

As we said, digital libraries are constantly multiplying and therefore, the number of lexical units they archive has increased beyond estimation. Thus, there emerges another principle of the applied element of TLCH: the extraction of words will be optimized. A method for optimization has been included in the principles of the linguistic chronologization theory. Its formulation has three extraordinarily important effects: it makes possible a rapid identification and dating of lexical units; it lowers the cost; it allows for a highly precise verification of their accuracy. The question is, how to produce the largest possible dictionary comprising previously unrecorded units of a given language (e.g. Polish), of the most satisfying quality, in the shortest possible time and at the lowest possible cost.



Zentralblatt für Bibliothekswesen, Nr.Nr. 5—11, 1934.
Herman Fuchs w 6 zesz. podaje w swem sprawozdaniu ze stanu bibljotekarstwa francuskiego ciekawą, zamieszczoną w przeglądzie bibljotek, wzmiankę o „Bibliobusie" — samochodzie bibljotecznym, który zaopatruje w książki departament Aisne. Centralą jego jest bibljoteka miejska w Soissons, skąd samochód zabiera książki do filij: merostw i szkół. W samochodzie umieszczone są również małe wystawki z książkami, z których czytelnicy mogą sobie wybierać książki sami. „Bibliobus", wzorowany na samochodzie Comité americain des régions devastées de la France, jest własnością Tow. Bibljotek Wędrownych w Aisne, a subsydjuje go przedewszystkiem departament i gminy, które samochód ten obsługuje.

[Translation: ...Herman Fuchs in the sixth cahier provides, in his report on the state of French librarianship, an interesting mention, in the review of libraries, regarding a 'Bibliobus' – a library bus, which supplies with books the entire district of Aisne. It is based in the city library of Soissons, whence the vehicle takes the books to the library's branches: mairies and schools. In the car there is also a small collection of books to take away, from which the readers may choose themselves. 'Bibliobus,' modelled on the car of Comité american des régiones devastées de la France is the property of the Association of the Travelling Libraries in Aisne, and it is funded primarily by the district and municipalities, which are served by this vehicle].

Source:

BIBLJOTEKARZ
BIULETYN BIBLJOTEKI PUBLICZNEJ m. st. WARSZAWY
POŚWIĘCONY SPRAWOM BIBLJOTEK PUBLICZNYCH
Grudzień, Styczeń, Luty 1934/35

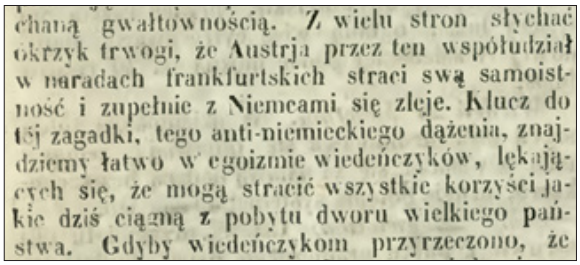
Bibljotekarz... December, January, February, 1934/35

Fig. 2. The documentation of the occurrence of the word *bibliobus* (*bookmobile*)

5. The results of the research based on the TLCH

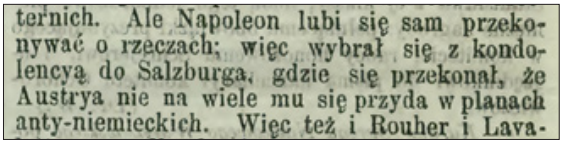
The core component of the theory in its current state is the photo-documentation method, which makes possible a graphic presentation of the results of the analysis conducted basing on the TLCH. Thanks to this method, it is possible to present the result of linguistic chronologization analysis with the original context of the neologism. This method eliminates time-intensive and error-prone transcription. See for the three orthographic forms of the adjective *anti-niemiecki*, *anty-niemiecki*, *antyniemiecki* (anti-German) (Fig. 3).

anti-niemiecki


chaną gwałtownością. Z wielu stron słychać okrzyk trwogi, że Austrja przez ten współudział w naradach frankfurtskich straci swą samoistność i zupełnie z Niemcami się zleje. Klucz do tej zagadki, tego anti-niemieckiego dążenia, znajdziemy łatwo w egoizmie wiedeńczyków, lękających się, że mogą stracić wszystkie korzyści jakie dziś ciągną z pobytu dworu wielkiego państwa. Gdyby wiedeńczykom przyrzeczono, że

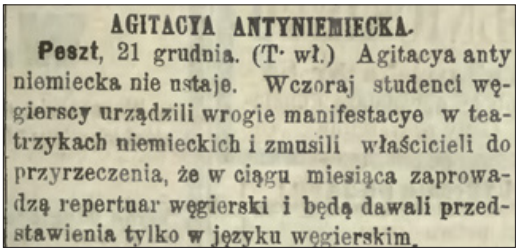
[Translation: ... From many corners there might be heard a cry of terror, that Austria, by its co-participation in the Frankfurt meetings will lose its identity and completely merge with Germany. The answer to this riddle, this anti-German aspiration, is to be easily found in the egoism of the Viennese, afraid that they may lose all the benefits from the presence of a great country's court they enjoy today].

anty-niemiecki


ternich. Ale Napoleon lubi się sam przekonywać o rzeczach; więc wybrał się z kondolencyą do Salzburga, gdzie się przekonał, że Austrya nie na wiele mu się przyda w planach anty-niemieckich. Więc też i Rouher i Lava-

[Translation: ... But Napoleon likes to see things for himself; therefore, he went to Salzburg with condolences, where he found out that Austria will not be of much help in his anty-German designs].

antyniemiecki


AGITACYA ANTYNIEMIECKA.

Peszt, 21 grudnia. (T· wł.) Agitacya antyniemiecka nie ustaje. Wczoraj studenci węgierscy urządzili wrogie manifestacye w teatrzykach niemieckich i zmusili właścicieli do przyrzeczenia, że w ciągu miesiąca zaprowadzą repertuar węgierski i będą dawali przedstawienia tylko w języku węgierskim.

[Translation: ANTYGERMAN AGITATION. Pest, 21 of December [the author's text]. Antygerman agitation does not cease. Yesterday the Hungarian students organized protests in German theatres and forced the owners to promise that before the month is over they will institute Hungarian repertoire and perform exclusively in Hungarian language].

Fig. 3. The documentation of the orthographic forms of adjective *anti-niemiecki, anty-niemiecki, antyniemiecki* (anti-German)

The presentation of this type is the basis of the National Photo-corpus of Polish Language (www.nfjp.pl), which is described as follows:

> The National Photo-corpus of Polish Language (NFJP) is a particular lexicographic enterprise. It takes up, in a new form and within a new methodological framework, a certain part of the tasks realized by the authors which, under the direction of Witold Doroszewski, created the eleven volumes of *Słownik języka polskiego* (Warszawa 1958–1969). (...)
> But NFJP's collation of excerpts does not involve manual identification and transcription, typing up the occurrences of specific entries and sub-entries. NFJP employs photo-excerpts, prepares digital copies of extracts, guaranteeing a complete fidelity, which has an enormous significance for the description of language and the study of its development.

The records gathered in NFJP and the work done on it, does not compete with any research program currently realized in Poland or anywhere in the world – it is completely beyond it. For more than 10 years, we have been discussing photo-lexicography; now, we are moving at an increasing speed towards photo-corpus linguistics. Currently, we are working (or, e-working) on source texts, the number of which is trebles that considered by Doroszewski's dictionary. In the near future, our collection of photo-excerpts will encompass c. 20 000 bibliographic positions. Time has arrived for extensive excerption, aiming at total excerption, featuring all documents printed in the period between 1773 and the present day, created during the period (Wawrzyńczyk & Wierzchoń, 2017, 3–4).

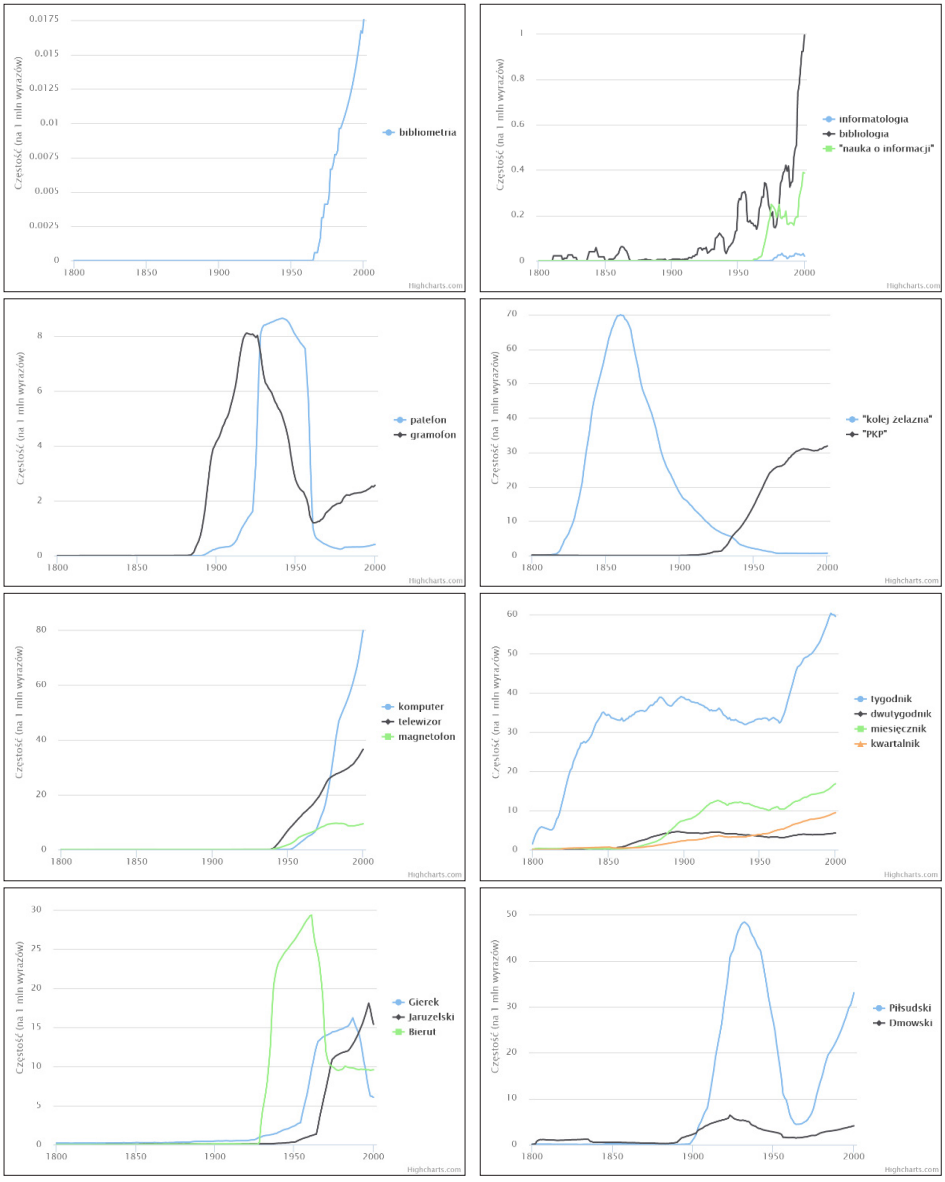


Fig. 4. The samples of diachronic curves generated by TLCH

An important element of TLCH is the tool for tracking the frequency with which a given lexical unit occurred over time in the form of the so-called diachronic curve. Diachronic curves may describe the names of phenomena, ideas (words or word combinations), as well as proper names, e.g. of people (Fig. 4).

6. Conclusions

Linguistic chronologization theory (or, the photo-documentation method) is not only an example of interdisciplinary thinking but also (or, perhaps, primarily) of an enterprise which would be impossible, were the achievements of one discipline not implemented in the research undertaken within the framework of another. This was possible thanks to the extent of digitization of Polish libraries and to formulating a theory comprising an element of applied linguistics.

Tylko w tym sensie da się mówić o naukowej dyscyplinie zawodowej, którą wszakże lepiej uznać i zorganizować jako spójną całość, niż traktować jako okolicznościową sklejkę, konglomerat. Sposób powiązania tak rozumianej dyscypliny bywa różny i w różnym stopniu zwarty. Rozprawia się w ostatnich czasach równie często o specjalizacji (w sensie podziału dawniej jednolitych dyscyplin), jak i o interdyscyplinarności i integracji nauk. Wszystkie te czynniki komplikują skrystalizowanie zwłaszcza nowych dyscyplin, których społeczna potrzeba i aktualna celowość dla ludzkości jest zupełnie oczywista i powszechna. Do takich właśnie dyscyplin należy bibliotekoznawstwo.

[Translation: Only in this sense we may speak of a professional scientific discipline, which we would do better to consider and organize as a coherent whole, rather than as a contingent assemblage, conglomerate. The manner of binding thus defined discipline varies, as does the degree of its uniformity. Recently, we often discuss specialization (in the sense of division of previously uniform disciplines), as well as interdisciplinarity and integration of sciences. All these factors complicate the process of crystallizing, especially of the new disciplines, whose social need and actual relevance to humanity is completely obvious and general. It is to such disciplines that the library science belongs].

Source:

PRZEGLĄD
BIBLIOTECZNY

ORGAN NAUKOWY
STOWARZYSZENIA BIBLIOTEKARZY
POLSKICH

ROCZNIK XXXIV — ZESZYT 3
LIPIEC—WRZESIEŃ
1966

Przegląd Biblioteczny... 34.3 July–September, 1966.

Fig. 5. Photo-documentation for the term *interdyscyplinarność* ("interdyscyplinarity")

These successes were possible thanks to scholars who spent decades laboriously scanning library resources. However, TLCH borrowed from disciplines such as linguistics, information technology, artificial intelligence, history, media studies, library sciences, and so on.

Finally, as we promised in the beginning of our article, we may pose a hypothesis regarding linguistic chronologization of the lexical unit *interdyscyplinarność* ("interdisciplinarity"). Photo – documentation and diachronic curve are presented in Figures 5 and 6.

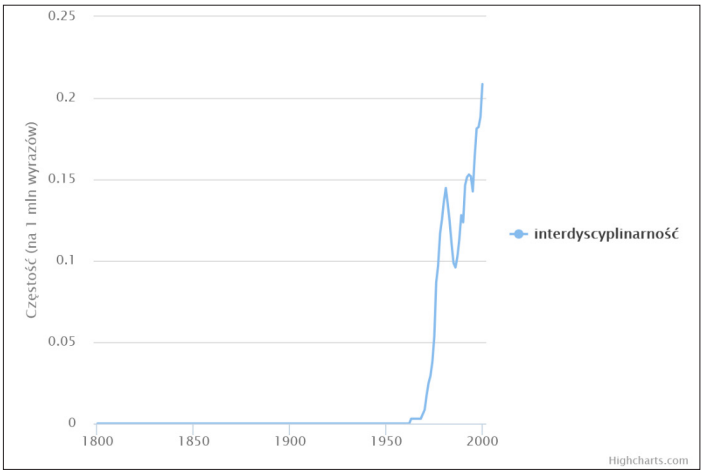


Fig. 6. Diachronic curve for the term *interdyscyplinarność* ("interdyscyplinarity")

References

FBC (n.d.). Federacja Bibliotek Cyfrowych [online], https://fbc.pionier.net.pl.

Jadacka, H. (2001). *System słowotwórczy polszczyzny 1945–2000*. Warszawa: Wydaw. Nauk. PWN.

Graliński, F. (2019). *Against the Arrow of Time: Theory and Practice of Mining Massive Corpora of Polish Historical Texts for Linguistic and Historical Research*. Poznań: Wydaw. Nauk. UAM.

Kowalska, M. (2006). Stan i perspektywy polskich zasobów cyfrowych w Internecie. *Biuletyn EBIB* [online], 11(81) [22.05.2020], http://www.ebib.pl/2006/81/a.php?kowalska

Osińska, V., Kowalska, M., Bednarek-Michalska, B., Malak, P. (2017). Czas uwolnienia zasobów a dynamika rozwoju i profil polskich bibliotek cyfrowych. *Zagadnienia Naukoznawstwa*, (1), 3–27.

Pawlicka, U. (2017). Humanistyka: pracownia, centrum czy laboratorium? *Teksty Drugie*, (1), 314–333.

Wawrzyńczyk, J. Wierzchoń, P. (2017). Podstawowe informacje o „Narodowym Fotokorpusie Języka Polskiego". Warszawa: Bel Studio.

Wierzchoń, P.(2008). *Fotodokumentacja, chronologizacja, emendacja: teoria i praktyka weryfikacji materiału leksykalnego w badaniach lingwistycznych*. Poznań: Instytut Językoznawstwa UAM.

Wierzchoń, P. (2013). Jak badać słownictwo XX wieku dziś. 2008, 2009, 2010, 2011, 2012, 2013 – sześciolecie metody fotodokumentacyjnej. In: S. Puppel, T. Tomaszkiewicz (eds.), *Scripta manent – res novae* (557–568). Poznań: Wydaw. Nauk. UAM.

Biblioteki cyfrowe i przełom w lingwochronologizacji. Zastosowania digitalizacji w językoznawstwie

Abstrakt

Cel/Teza: Żywiołowy rozwój bibliotek cyfrowych w Polsce rozpoczął się na przełomie wieków. Zwiększenie łatwości dostępu zbiorów bibliotecznych nie było jedynym motywem i jednocześnie skutkiem ich upowszechnienia. Z perspektywy nauki o informacji funkcji bibliotek cyfrowych wymienić można zdecydowanie więcej, dlatego warto wskazać również na rolę, jaką biblioteki te spełniły w badaniach prowadzonych w ramach innych dyscyplin.
Koncepcja/Metoda badań: Artykuł ma charakter przeglądowo-opisowy. Jego autorzy skrótowo przedstawiają dotychczasowe wykorzystanie polskich bibliotek cyfrowych w językoznawstwie stosowanym, ściślej – w lingwochronologizacji, czyli datowaniu oraz redatowaniu neonimów, w naszym przypadku: dwudziestowiecznej polszczyzny.
Wyniki i wnioski: Z przeprowadzonej analizy wynika, że rozwój bibliotek cyfrowych był warunkiem sine qua non stworzenia nowoczesnej teorii lingwochronologizacji, którą można też traktować w terminach metody badawczej. Postęp w digitalizacji zbiorów bibliotecznych w przyszłości wpływać będzie na coraz wyższy stopień uprawdopodobnienia hipotez lingwochronologizacyjnych.
Oryginalność/Wartość poznawcza: Teoria lingwochronologizacji (TLCH) była wielokrotnie przywoływana w piśmiennictwie językoznawczym. Z informacji dostępnych autorom artykułu wynika, że nikt dotychczas nie podejmował problematyki wykorzystania bibliotek cyfrowych w językoznawstwie stosowanym na łamach czasopiśmiennictwa informatologicznego.

Słowa kluczowe

Biblioteki cyfrowe. Dygitalizacja zbiorów bibliotecznych. Językoznawstwo stosowane. Lingwochronologizacja. Nauka o informacji.

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i liczbach *(Poznań 2016),* Autogloryfikacja: rzeczowniki z członem inicjalnym „auto-" z lat trzydziestych dwudziestego wieku w obrazach i liczbach *(Poznań 2016),* Depozytorium leksykalne języka polskiego: fotosuplement do Słownika warszawskiego. *T. 11–40 (Warszawa 2015),* Depozytorium leksykalne języka polskiego: fotosuplement do Słownika warszawskiego. *T. 40 (Warszawa 2015),* Depozytorium leksykalne języka polskiego: nowe fotomateriały z lat 1901–2010. *T. 2 (Warszawa 2011),* Depozytorium leksykalne języka polskiego: nowe fotomateriały z lat 1901–2010. *T. 3 (Warszawa 2012),* Dlaczego fotodokumentacja? Dlaczego chronologizacja? Dlaczego emendacja?: instalacja gazowa, parking podziemny i „odległość niezerowa" *(Poznań 2008),* Długodystansowiec: rzeczowniki z członem terminalnym „-owiec" z lat trzydziestych dwudziestego wieku w obrazach i liczbach *(Poznań 2016),* Fotodokumentacja, chronologizacja, emendacja: teoria i praktyka weryfikacji materiału leksykalnego w badaniach lingwistycznych *(Poznań 2008),* Fotosuplement do „Słownika warszawskiego": indeks a fronte (Warszawa 2015), Gramatyka diakrytologiczna: studium ortograficzno-kwantytatywne *(Poznań 2004),* Indeks a tergo jednostek przekładowych Wielkiego słownika rosyjsko-polskiego z kluczem polsko-rosyjskim: porządek translandowy *(Warszawa 2007),* Indeks a tergo jednostek przekładowych Wielkiego słownika rosyjsko-polskiego z kluczem polsko-rosyjskim: porządek translatowy *(Warszawa 2006),* Jaskółki przejawów internacjonalizacji w słowotwórstwie współczesnej polszczyzny w materiałach z lat 1894–1984: tylko 100 przykładów *(Łask 2008),* Kotuś: „verba polona abscondita ..." (w fotodokumentacji): szkic lingwochronologizacyjny: centuria pierwsza *(Poznań 2008),* Polish digital libraries as a philologist's tool: based on 666 adjectives from the Digital Library of Wielkopolska *(z: Mirosław Górny) (Poznań 2010),* Półgłupek: rzeczowniki z członem inicjalnym „pół-" z lat trzydziestych dwudziestego wieku w obrazach i liczbach *(Poznań 2016),* Problem informacji frekwencyjnej w słowniku przekładowym *(Łódź 2006),* Radiomiłośnik: rzeczowniki z członem inicjalnym „radio-" z lat trzydziestych dwudziestego wieku w obrazach i liczbach *(Poznań 2016),* Słownictwo lat 30. XX w. w obrazach i liczbach: tylko 100 fotoprzykładów z „Depozytorium leksykalnego języka polskiego" i dużo wykresów z systemu „Odkrywka" *(Warszawa 2015),* Wczesnokapitalistyczny: przymiotniki z członami inicjalnymi „wczesno-", „późno-", „szybko-" i „wolno-" z lat trzydziestych dwudziestego wieku w obrazach i liczbach *(Poznań 2016),* Z cudzysłowów do poczekalni leksykograficznej *(Łódź 2003),* Z cudzysłowów do poczekalni leksykograficznej II *(Warszawa 2005).*

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The Global Book Publishing Market as an Interdisciplinary Research Field

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Abstract

Purpose/Thesis: The article characterizes the research on the global book publishing market to determine the extent of its interdisciplinarity.
Approach/Methods: This article uses quantitative and qualitative analysis of selected academic papers, discipline profiles of their authors and of the journals to investigate which subject area dominate in scientific output of researchers and to establish the relationship between publishing studies and other disciplines on the field of the global book market. In order to prove the relatedness of journals bibliometric methods (co-citation, bibliographic coupling analysis of sources) and knowledge visualization technologies will be used.
Results and conclusions: The selected papers focused on book history and book culture, economics and technological aspects of book publishing, and users' attitudes and preferences. The authors published in journals associated with disciplines such as media & communication studies and education (*Publishing Research Quarterly, Journal of Scholarly Publishing, Learned Publishing*), book studies (*Logos*) and information studies (*Electronic Library, Journal of Documentation*). In Corpus 1 (C1) there were co-cited trade magazines and academic journals on library and information science, in Corpus 2 (C2) – academic journals mostly focused on marketing and economics. Co-authored publications constituted 42% of C1 and 63% of C2. The study showed that the research of the global book publishing market is led by interdisciplinary researchers, but rarely by international teams.
Research limitations: The initial corpus of academic papers was narrowed down to 230 articles published in English between 2001 and 2018. The study did not include articles focusing on book markets in the countries that make only slight contributions to the global book publishing industry. The discipline classification adopted in the study follow that of the Scopus database.
Originality/Value: This study provides insight into the research on the global publishing market and proves that it is interdisciplinary.

Keywords

Bibliometrics. Book market. Book publishing. Global book publishing market. Information sources. Interdisciplinarity. Publishing industry. Publishing studies. Scientific journals.

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1. Introduction

This article emerged from a research study titled "Sources of Information Regarding the Global Book Publishing Market After 2001. Typology and Characterization" driven by an interest in the mechanisms of changes on global book market resulting from the

technological development, widened access to information and increased prominence multi-channel distribution. The analysis will allow a more detailed characterization of the global book publishing market, with a focus on the sources of information on the subject. The variety, form, type, accessibility, relevance, provenance, reliability, and language of these sources reflects the qualities of the contemporary book publishing market and the dynamics of the transformations occurring in it; they testify to the methods adopted in research and to the communication in trade or in the academic community; they show the shared attitudes and business models; finally, it gestures towards various obstacles to the information flow (systematic, technological, logistical). As a part of the study, a database, "Sources of Information Regarding the Global Book Publishing Market, 2001–2017," was created: it will be developed over the course of further research[1].

For the purposes of this study, the "global book publishing market" is defined with a reference to production – books and journals – and geography – largest book markets worldwide: the USA, China, Germany, Great Britain, France, Japan, and Spain[2] (Wischenbart, 2016; 2018) in terms of market value (at consumer prices) and the revenues of the largest publishing companies from the sales of books (physical and digital, hardcover and paperback editions), digital material, academic and trade journals, professional information, and business-to-business book distribution. This definition does not account for the sales of newspapers and magazines, wire services, and media such as radio, television, music, and games (Milliot, 2018; Wischenbart & Fleischhacker, 2019).

To examine the interdisciplinarity of the studies on the global book publishing market, a corpus of academic papers was distinguished (C1): it comprises academic articles and reviews on the book market in a global perspective, or in the leading countries, published in English between 2001 and 2018.

2001 was a symbolic year, as it marked the new century; it was also the year when the disruptive technologies, and electronic books in particular, became an object of research (Lian, 2010; Lichtenberg, 2011; Overdorf & Barragree, 2001)[3]. The turn towards e-books was inspired, in a large part, by Stephen King who, together with the Simon&Shuster publishing house, published *Riding the Bullet*, the first mass-market e-book in the form of a digital file, in 2000 (Stevenson, 2008, 282–283). In 2002, the trade publishing houses – Harper Collins and Random House – added e-books to their products. 2018 was a natural end-point for the study, as it relies on the analysis of indexed publishing activity.

The assessment and selection of documents required familiarity with hundreds of titles, abstracts, keywords and texts to reject those that were irrelevant, i.e. concerned with book publishing market in the countries, whose contribution to the global publishing industry was only slight. However, these articles were not always disqualified solely on the basis of

[1] A special bibliography was created as a part of fulfilling a restructuring grant to increase the efficiency of scientific activity at the Faculty of Letters at the University of Wrocław. A ruling of MNiSW [Ministry of Science and Higher Education] no 6674/E-344/R/2017 from 01.03.2017. Project co-ordinator: dr hab. Bożena Koredczuk, prof. UWr.

[2] Spain was included primarily because of large publishing conglomerates such as Grupo Planeta (Milliot, 2018).

[3] "«Disruptive technologies» are new technologies that make products cheaper, simpler, smaller, and more convenient to use (...) often have a lower profit margin than sustaining technologies, and therefore require a new concept of product value" (Lian, 2010, 39).

their focus on the local contexts. If the research they presented allowed a better understanding of larger mechanisms, or if the authors explained emergent patterns, compared and analyzed data from a number of markets, or at least referred to them, to give their study a larger perspective, the articles reached beyond the local cultural context and, as such, they were considered to be relevant to the present study.

The analyzed texts were concerned with three publishing sectors: 1) trade/consumer publishing, 2) educational and 3) professional / academic / scientific-technical-medical / humanities and social sciences (STM & HSS). Unlike the "[e]xtant research into contemporary book publishing, [which] tends to cohere around five nodal points: industry research and vocational information; personalised accounts such as memoirs, autobiographies, biographies and house histories; the history of the book; communication, media, cultural studies and sociology; and nationalist and post-colonial studies," discussed by Simone Murray (2006, 4), this paper focuses on the content of the articles and distinguishes four research areas in the field of global publishing market studies. The discussion of the various aspects of book publishing employs terms similar to those proposed by Rojers P. Joseph in his research of higher education book publishing (2015): **technological elements of book publishing** (digital and electronic publishing, disruptive technologies, information technology, digitization, formats, platforms, apps, devices, digital developments, content management), **user attitudes and preferences** (reading habits, usage patterns, user experience, design), **economics of book & journals publishing** (price, revenues, sales and purchase patterns, business models, international investments, mergers & acquisitions, fairs, market reports, marketing of books, supply chain, distribution, copyright issues and permission barriers, open access), **book history & book culture** (history of publishing, authors, editors, publishers, booksellers, genres, types of books, journals, storytelling, translation, diversity). The analyzed articles were categorized accordingly on the basis of their dominant themes. The multiplicity of authors' research approaches was apparent in their employment of methods from various disciplines, and, occasionally, from various fields.

This paper proves that the research on the global book publishing market is interdisciplinary. The qualitative analysis of the articles allowed to establish the discipline affiliation of the research questions discussed by the authors. In the next stage, the discipline profiles of the authors and the academic journals in which they published were outlined. The organization of the publication structure was analyzed with the use of bibliometrics (co-citation analysis, bibliographical coupling analysis of sources) and knowledge visualization technologies to identify the core journals, and to establish the relations between them.

The study did not include monographs, academic textbooks, and conference publications. They merit a discussion of their own, and a detailed analysis. Course syllabi reading lists may be studied as well, as Pehar & Selthofer suggest (2015).

The initial corpus (C1) comprised 230 academic articles authored by 247 researches. Despite the apparent prominence of two journals – *Logos* and *Publishing Research Quarterly* (PRQ), the corpus was intended to represent the variety of publications, research questions, disciplines, and methodologies. Bibliographic data and discipline classification derive from Scopus, which might be a limitation, as Zbigniew Osiński argued (2019, 49); therefore, the discipline classification was also an object of a qualitative study – an analysis of the titles, abstracts and methods of the select articles. The data were collected between 2017 and 2020, and revised in April of 2020.

2. Research areas in global book publishing studies

2.1. Book history and book culture

The corpus was dominated by the articles concerned with the economic aspect of the publishing process and the history and culture of the book. However, the modifications of the value chain and distribution, resulting from the development of information technologies, make the users' needs and preferences increasingly important; therefore, more scholars turn toward technology and use.

The category of 'book history and book culture' encompassed publications from the disciplines of literary studies, book studies, cultural studies and sociology. It included articles on the culture of reading (Kovač, 2007), bibliographies of market products or sectors, e.g. scholarly publishing (Bailey, 2001; Greco, 2005), analyses specific types of books: textbooks (Friesen, 2013), academic monographs (Williams et al., 2009), comic books (Brienza, 2009; 2010), books for children and young adults (Marcus, 2016), bestsellers as a form offering "insights into the cultural logic of book markets" (Kovač & Wischenbart 2010; 2018). They also included articles concerned with history, structure, and issues of academic or trade publishing houses and university presses[4] (Clare, 2014; Kernan, 2013; Mannana-Rodriguez & Giménez-Toledo, 2018), with the role of publishers with symbolic capital in the access of writers to global market (Sapiro, 2017), as well as texts devoted to bookshops as curators of books (Steiner, 2017) and new methods of book-store management in the digital era (Emblidge 2012; 2013; 2016).

The largest part of the analyzed texts was concerned with bibliodiversity (Benhamou & Peltier, 2007; Hawthorne, 2016), discussed mostly in the community of French economists and sociologists (Peltier, Benhamou, Sapiro). Bibliodiversity is fostered by small and independent publishers (Bold, 2015; 2016), release and promotion of diverse books (Shea et al., 2018), concerned with cultural, racial, and gender differences (Bold, 2018; Moeller & Becnel, 2018), books translated from less widely-spoken languages (Ban, 2015; Bold & Norrick-Rühl, 2017; Sapiro, 2010), authored by writers from communities marginalized by the West (Bold, 2018). Scholars concerned with bibliodiversity also seek to analyze the barriers present on the labor market in the publishing industry (Fröhlich 2014) and try to define changing relations in the publishing hierarchy (Carolan & Evain, 2013). Such discussions of the importance of diversity and of the resistance to the dominant discourses are founded on Pierre Bourdieu's concepts of cultural capital and symbolic violence (Haeusermann, 2013; Sapiro, 2008; 2015; Thomlison & Bélanger, 2015). Sapiro analyzed the role of literary awards and festivals in the context of material and ideological conditions of production (Sapiro, 2016). Others studied the ways in which the communities of writers and fans/readers are created (Patterson & Brown, 2009; Squires, 2004), the digital ecosystem of the literary sphere (Murray, 2016), and literary celebrities (Ohlsson et al., 2014).

Many articles in the category of book history and book culture belong to more than one category. Such was the case of papers on posing the question of whether globalization and digitalization further the commercialization of culture and make the publishing

[4] We distinguish university presses, trade presses, and commercial academic presses (Striphas, 2002, 443).

industry more market-oriented (Martin et al., 2018; Von Rimscha & Putzig, 2013), and whether they change the circulation of books in specific countries, or language spheres (Steiner, 2018).

2.2. Economics of publishing

The articles focused on the mechanics of publishing industry frame the book as a product, rather than a cultural artifact, subject to theoretical or aesthetic reflection. Authors prioritized marketing issues: brand phenomenona such as Harry Potter (Brown & Patterson, 2010), purchase habits of individual and institutional consumers (e.g., academic libraries), the methods of sales measurement (Andrews & Napoli, 2006; Gallagher & Bohme, 2009), market, and the influence of various factors on sales: the form and formats of the book (Asai, 2015; 2016; Li et al., 2015; Schmidt-Stölting et al., 2011), its type (literary and popular fiction), genre, price, and distribution model (wholesale model or agency model), the time it entered the circulation, sales channels, presence on the bestseller lists (Feather & Woodbridge, 2007; Sorensen, 2007), publicity (Zhang, 2008), the type of contract signed by the author (royalty or buy out arrangements) (Hao & Fan, 2014), library loans (Burleigh, 2017). The researchers also tested the reality of the long-tail effect phenomenon, referring to the indicators of presence in media (Peltier et al., 2016). They predicted the consequences of mergers and acquisitions (Peltier, 2004), digitization (Buschow et al., 2014), or the results of the concentration of media properties, including its influence on the distribution of "quality literature" (Rimm, 2014). Others analyzed the variances in interest in a book depending on its form (Costa-Knufinke, 2012; Vasileiou et al., 2009) and the reasons behind the global expansion of e-books (Herther, 2005; Weinstein, 2010); they considered various business models and innovative ways of value creation in the realm of mass production and distribution, and of communication between the publisher and the consumers (Faherty, 2013). Scholars also raised the issue of marketing budget allocation. According to Shehu and others, publishing houses should devote a larger part of their budget to promote promising books by lesser known authors (Shehu et al., 2014).

Many papers were concerned with the development and structure of a given market, its size, publishing industry, the largest publishing houses, their revenue, price strategies, internationalization and the challenges posed by digitization (Birtle, 2011; Himma & Just, 2007; House, 2013; Liu, 2008; Magadán & Rivas, 2018; Xiaomei, 2011; Xu & Fang, 2008). Papers discussing the planning and management of university presses, their price politics and digital sales models (Greco, 2001; Greco et al., 2012; Greco & Spendley, 2016) were also categorized as focused on the economics.

The scholars agreed that the absence of data regarding a number of aspects of the book circulation, and the incomparability of available data, resulting from the disparity between the definitions assumed over the course of data collection seriously limited their research (Kovač et al., 2017). The issues of property rights in the case of mass-produced multi-format cultural goods distributed across many channels are another challenge to the publishing industry (Beetz, 2008; Striphas, 2006; 2009; Williams, 2011).

2.3. Technology and usability

Researchers analyzed the influence of information and communication technologies (ICT) on the information systems and education (Roosendaal et al., 2003), and proposed innovative solutions to promote products of university presses as to increase their visibility and sales (Esposito, 2010; Greco & Aiss, 2015). They suggested a consolidated catalogue for university presses and a non-profit website for the consumers, consistently generating data on sales and marketing. It would harness big data and predictive analysis to the needs of higher education. The scholars signaled the necessity of transforming the distribution, selection and preparation of available content for education, which should be better suited to the consumers' needs and involve them in effective (e)learning, based on practices beyond reading specific materials (Tian & Martin, 2013). David Emblidge suggested "a publishing studies online academic database available by subscription from a major academic publisher, reflecting publishing practices worldwide", containing "variety of teaching and learning tools" (2015, 178). Papers on e-books analyzed definitions, preservations activities and methods of (re)presentation of content on platforms of various types (Machovec, 2018; Tovstiadi & Wiersma, 2016), facilitating library purchases (Forzetting et al., 2012; Vasileiou et al., 2012), as well as the readers' attitudes and behaviors, the influence of screen-based technologies (Mangen & van der Weel, 2016) and cultural differences, of education systems specific to each country, and of the level of socio-economic development, on the preferences regarding the format of the book and reading habits (Kovač & van der Weel, 2018; Shimray et al., 2015). The research subjects were usually students at a university, or a number of universities (Mizrachi et al., 2018). The scholars also studied the publishers' attitudes and their capacity for adjustment, as well as new start-ups (McIlroy, 2017).

3. Methodology review

Two contrasting approach emerge from the analysis of studies of the global book publishing market published between 2001 and 2018: the academic approach, which seeks to delve into the nature of the studied object and to situate it in a historical and socio-cultural context, and the pragmatic and summary approach of the publishing trade representatives. Often, the former is termed "publishing studies", and the latter – "book/publishing business". The former is dominated by qualitative multi-aspect studies small samples borrowing the methods of social sciences: sociology, social communication and media studies, as well as history, culture studies, and literary studies. In the latter, quantitative studies of relations between phenomena or variables conducted with mathematical and statistical methods by economists are more prominent.

The data on the readers' preferences and habits, the creation of library collections, the state and structure of the trade, the attitudes and activities of the publishing houses' employees, the publishers' strategies, readiness to change their business models, solutions to the problems of digitization, and the role the small publishers play in the local communities, are usually collected by surveys and interviews. The research also relies on the testimonies from the representatives of the publishing trade.

Market subjects and products are studied using methods of case study, content analysis, close reading, ethnographic observation, and netnography. Many papers offer a review of scholarship, combined with the analysis of data and trends (network, time-trend analysis), studies of specific cases and comparative analysis. The comparison of the results from a specific research with data from other markets allows the author to make predictions regarding the further development of a given sector, product, or trend. The basic source of data for such studies are trade reports of book market analysts, associations (e.g. Association of American Publishers, Book Industry Study Group), databases, surveys conducted by various institutions (Bowker – Pub Track Consumer; BML, a British agency – Books & Consumers) and data providers, such as the Nielsen BookScan firm. P.E.S.T. (Political, Economic, Socio-Cultural, and Technological factors) and S.W.O.T. (Strengths, Weaknesses, Opportunities, and Threats aspects) analyses are conducted basing on data from these sources, and from the national readership surveys, as well as on demographic data and data regarding purchasing habits. They yield the fullest characterization of the book market in a given country and of the competitive environment of publishing companies, facilitating management. Studies on the influence of factors such as the degree of acceptability and utility for the customer, the cost of technology, cannibalization of distribution channels, the strength and reach of a brand, the asymmetry of information, are also important. To this end, economists project market scenarios, based on, e.g., the game theory (Alptekin, 2015; Hin & Li, 2012); they conduct the analysis of statistic correlation, and employ mathematic modelling (Artiles et al., 2013; Hao & Fan 2014; Hu & Zhang 2016).

4. The position of the discipline

Many attempts have been made to situate publishing studies in relation to other disciplines. The first decade of this century brought a renewed interest in the issue. The specifics of academic study are a subject of discussion, as are teaching programs. Jonathan Rose lists the examples of publishing programs in various countries. Publishing and Printing Arts at Pacific Lutheran University (Tacoma, Washington) offers courses that reflect the contents, and the interdisciplinary nature of this research field: The Book in Society borrows from history of literature, book studies and sociology; The Art of the Book involves designing a book and its reception; Publishing Procedures is oriented towards professional development (Rose, 2003, 16)[5]. The role publishing education play in professional and academic development is also discussed by Miha Kovač (2007), Masha Stepanova (2007), Alison Baverstock and Jackie Steinitz (2014). Kovač emphasizes also important role of developing research programs and reviews the most important sources of information on the subject: books and journals such as *Publishing Research Quarterly*, *Logos*, *International Journal of the Book*.

Simone Murray verifies the discipline's methodology and notes "the lack of engagement with cultural politics", criticizes academic researchers preference for description over critical analysis and "adopt the mode of industry [not research – K.A.] surveys" (Murray, 2006, 5, 7).

[5] https://www.plu.edu/ppa/publishing-resources/

According to her, this preference is a result of the excessive reliance on the sources such as reports, industry updates, vocational guides and memoirs, biographies, house histories, essays authored by members of the publishing trade. The insights they offer age quickly, or fail to reach beyond their subjective experience; although they provide the researchers with valuable, otherwise unavailable information, they can never suffice by themselves, or be verified. Therefore, they are often used to comment on the state of knowledge, rather than to expand it.

The thematic analysis conducted in this paper showed that the business approach (the book as a commodity) competes with the cultural ("book as itself an agent in complex global cultural flows," Murray, 2006, 6). However, they share the idea that book is an object distributed by different channels, that changes its form and structure under the influence of socio-cultural, economical, and technological transformations.

Book (history) studies, in which the book is defined "broadly to take in periodicals, manuscripts, letters, ephemera, and even websites as well as books per se" (Rose, 2003, 11–12), analyzes the dynamic of the book market's development (transformations of book production), and of the books themselves as products of their time, the tools of communication and culture with the methods and paradigms borrowed from bibliography, book and literary studies, sociology and economic history, among others (Murray, 2006, 9; Stepanova, 2007).

Media studies extend the concept of the market to account for products so it becomes a media-publishing market, a part of the creative sector. It threatens to blur the research field, as the book has to compete with other media formats. However, it allows an understanding of the book as a phenomenon emergent in the interaction with other formats, and to see the mutual conditioning of media products and their marketing, as well as the transformation of book's form and reception.

Equally important is the study of the influence of the information technology on the management of communication and information flow (the access to information on the book publishing market), and the following distribution of information contained in books and journals. Thus framed, book industry preserves areas of knowledge. Donald Hawkins showed most clearly how the issues of book industry fit into the schemes of information science. He distinguished two sub-fields of information sciences that correspond to the book industry: **The Information Industry** (Information & knowledge management; Markets & players; Economics & pricing; Marketing, e-commerce), and **Publishing & Distribution** (Print; Electronic: e-journals, e-books; Secondary publishing; Scholarly communication) (Zins, 2007, 657). In the schemes of other researchers, the book market issues figures as Economics of Information: Information Industry, Information and Media Products (Capurro); The Information Market: Publishers, Consumers, Publication media, Marketing & Advertising Information Professionals & Services (Moukdad); Systems & Products and Societal Dimensions (Menou).

5. Disciplinary classification of scholars and journals

5.1. Corpus 1 – scholars

To see if the authors of the select articles employ an interdisciplinary approach in their research, their discipline profiles in the Scopus database were analyzed[6]. The sample was restricted to 65 scholars, who authored at least two articles from C1. Together, they wrote 151 out of 230 (66%) articles in C1. Table 1 presents the total number a given discipline featured in the profiles of the authors.

Tab. 1. Total number of subject areas and fields of 65 authors from C1

Social Sciences		**Physical Science**		**Health Science**		**Life Sciences**	
SS	64	CS	56	Med.	11	BGMB	4
BMA	51	E	47	HP	3	ABS	3
AH	43	M	17	N	1	IM	2
EEF	18	ES	6			Neu	1
DS.	12	EPS	5			PTP	2
P	8	Energy	3				
		MS	2				
		CHE	1				
		PA	1				

71% of the scholars were associated with five or more disciplines. The number ranged between two and 12. Two main subject areas featured in almost all profiles: Social Sciences (SS, BMA, and AH) and Physical Science (CS and E). The profiles of eight out of 11 researchers with the highest Hirsch index (above 10) featured eight or more disciplines.

The effect of collaboration between scholars was tested as well. Ninety-seven (42%) out of 230 select articles were a result of such a collaboration. Six research teams, whose at least three papers featured in C1, are compared in Table 2. Together, their members published 25 articles (11% of C1). The members of five out of six research teams worked at the same institution. The profiles of 10 scholars out of those 13 involved in the research teams featured at least five disciplines (SS, CS, BMA, E, and AH). The number of the

[6] The names of the subject areas and fields were abbreviated as follows: ABS: Agricultural and Biological Sciences; AH: Arts and Humanities; AH: LL – Language and Linguistics; AH: LLT – Literature and Literary Theory; AH: VA – Visual Arts and Performing Arts; BGMB: Biochemistry, Genetics and Molecular Biology; BMA: Business, Management and Accounting; CH: Chemistry; CHE: Chemical Engineering; CS: Computer Science; D: Dentistry; DS: Decision Sciences; E: Engineering; EEF: Economics, Econometrics and Finance; E: MT – Engineering: Media Technology; EPS: Earth and Planetary Sciences; ES: Environmental Science; HP: Health Professions; IM: Immunology and Microbiology; M: Mathematics; Med: Medicine; MS: Material Science; N: Nursing; Neu: Neuroscience; P: Psychology; PA: Physics and Astronomy; PTP: Pharmacology, Toxicology and Pharmaceutics; SS: Social Sciences; SS: E – Social Sciences: Education; SS: C – Communication; SS: CS – Social Sciences: Cultural Studies; SS: Law; SS: LIS – Library and Information Science; SS: LL – Linguistics and Language.

disciplines featured varied, especially in the first team. In each team, one member had a markedly higher number of citations, but their h-index were relatively similar. As the data from Scopus shows, the lesser cited authors' most cited papers were precisely these co-authored with the researchers that were more widely-cited, with a broader, or slightly different discipline profile.

Out of the 91 multi-author articles[7] as many as 73 (80%) were a result of a collaboration between the researchers from the same country, while 53 (58%) originated at the same institution. Eighteen (20%) articles were a result of an international collaboration (e.g. Kovač/Wischenbart; Kovač/van der Weel; Bold/Norrick-Rühl). This data suggests that the research on the global book publishing market is rarely international, even if it is interdisciplinary.

Tab. 2 Research teams based on the number of co-authored articles in C1 (min. 3)

Team	Authors	h-index	Total citations	Number of disciplines	Affiliation
1	Jennifer Rowley	49	8367	11	Manchester Metropolitan University Manchester, United Kingdom
	Richard Hartley	7	228	6	
	Magdalini Vasileiou	5	146	2	
2	Albert N. Greco	8	175	6	Fordham Univeristy, United States
	Robert M. Wharton	5	69	5	
3	Bill Martin	10	278	6	Swinburne University of Technology, Australia
	Xuemei Tian	7	131	9	
4	Qing Fang	5	62	8	Wuhan University, Wuhan, China
	Lifang Xu	4	38	5	
5	Miha Kovač	4	70	5	University of Ljubljana, Slovenia
	Rüdiger Wischenbart	4	32	5	Content and Consulting, Vienna, Austria; Inštitut za Germanistiko Univerze na Dunaju, Austria
6	Gabrielle Wiersma	3	33	3	University of Colorado Boulder, United States
	Esta Tovstiadi	2	11	2	University of Colorado Boulder, United States; The State University of New York at Potsdam, Potsdam, NY, United States

[7] The institutional affiliations of authors of the six articles were not identified.

5.2. C1 – journals

Half of the articles included in C1 was published in one of two academic journals: 41% (94) were published in *Publishing Research Quarterly* (PRQ), 10% (22) in *Logos – Journal of the World Publishing Community*, 13 in *Journal of Scholarly Publishing*, eight in *Electronic Library*, six in *Learned Publishing*, five in *Journal of Cultural Economics*, four in *International Journal of the Book*[8], three in *Journal of Media Economics*, *Journal of Electronic Publishing* and *Online Information Review* (in total 70% of the articles was published in these 10 journals).

The classification of these journals was as follows:

- **Social Sciences & Humanities**[9], mainly: SS: LIS – 25 (27), SS: C – 7 (8), SS: CS – 4 (6), SS: E – 3 (6); Arts & Humanities – 12 (13), mainly AH: LLT – 7; BMA – 6 (13); EEF – 3 (5)[10];
- **Physical Sciences**, mainly E: MT – 3 (4) and CS – 1 (15).

Table 3 presents the journals which published at least two articles from C1, and identifies the disciplines on whose rankings these journals had the highest positions. Of the 18 titles, AH represents 4 (5)[11], SS: C – 4 (5), SS: LIS – 4, CS – 2 (6), and E: MT – 2 (3). The highest number of the articles from the entire corpus was published in the journals with positions on the rankings of AH – 38 (40), SS: LIS – 36 (38), SS: C – 16 (110), and CS – 3 (28).

The number of articles published in the journals ranked on the list of SS: C bolstered by *PRQ*, whose second highest position on the ranking of SS: C – it published most of the relevant articles. However, it ranks higher on the list of E: MT, because of its focus on new technologies, media, and digital culture. *PRQ* "examines the social, political, economic, and technological conditions that shape the publishing process; provides a platform to present new developments in digital multimedia publishing; explores product development, marketing, financial aspects, and print and online distribution" as we may read on the journal's website[12].

Logos "features articles from and about the publishing world, illustrating the unity, commonality, and conflicting interests of those who write, edit, manufacture, publish, disseminate, preserve, study, and read published works. *Logos* is international and intercultural, bridging gaps between academia and business, the developing and developed worlds, printed and digital media"[13]. The second highest position of *Logos* is on the E: MT list, but it ranks higher on the list of AH: LLT. Out of the studied journals, *Journal of Scholarly Publishing* (JSP) ranks highest on the E: MT list. JSP "is the indispensable resource

[8] Current Title: *Information, Medium, and Society: Journal of Publishing Studies* (since 2020) ISSN: 2691-1507, e-ISSN: 2691-1515, https://informationmediumsociety.com/journal

[9] Several journals were associated with more than one field of study. The classification follows that of the Scopus database, accounting for the journal's highest and second highest position in the disciplines' ranking (Category 1 and Category 2, respectively). The total number of journals whose highest or second highest position is on ranking of a given discipline follows in the parentheses. See: https://service.elsevier.com/app/answers/detail/a_id/14882/supporthub/scopus/~/what-are-the-most-frequent-subject-area-categories-and-classifications-used-in/

[10] See: footnote 6.

[11] Five if the journal whose second-highest position was on the AH list is included.

[12] *Publishing Research Quarterly*, Springer, https://www.springer.com/journal/12109

[13] *Logos*, Brill, https://brill.com/view/journals/logo/logo-overview.xml

for academics and publishers that addresses the new challenges resulting from changes in technology, funding and innovations in publishing (...) JSP has also examined the future of scholarly publishing, scholarship on the Web, digitization, copyright, editorial policies, computer applications, marketing, and pricing models"[14].

Bibliometrics showed that the marketing journals are largely dispersed and make only a slight contribution.

Tab. 3 Subject areas and fields of journals from C1 (min. 2 documents)

No.	Title	Documents	ISSN	Category 1	Percentile	Category 2	Percentile
1	Publishing Research Quarterly	94	1053-8801	E: MT	64th	SS: C	47th
2	Logos (Netherlands)	22	0957-9656	AH: LLT	74th	E: MT	40th
3	Journal of Scholarly Publishing	13	1198-9742	E: MT	73rd	SS: E	57th
4	Electronic Library	8	0264-0473	SS: LIS	80th	CS	48th
5	Learned Publishing	6	0953-1513	SS: C	83rd		
6	Journal of Cultural Economics	5	0885-2545	EEF	88th		
7	International Journal of the Book	4	1447-9516	AH: LLT	7th	AH: H	4th
8	Journal of Electronic Publishing	3	1080-2711	CS	6th		
9	Journal of Media Economics	3	0899-7764	SS: C	50th	EEF	36th
10	Online Information Review	3	1468-4527	SS: LIS	89th	CS	75th
11	Convergence	2	1354-8565	SS: C	74th	AH	64th
12	First Monday	2	1396-0466	SS: Law	87th	CS	55th
13	Javnost	2	1318-3222	SS: C	63rd		
14	Library Hi Tech	2	0737-8831	SS: LIS	82nd	CS	48th
15	PLOS ONE	2	1932-6203	Multi	90th	Agricultural	89th
16	Poetics	2	0304-422X	SS CS AH: LLT	99th	AH: LL SS: LL	96th
17	Primerjalna Knjizevnost	2	0351-1189	AH: LLT	41st		
18	Serials Librarian	2	0361-526X	SS: LIS	45th		

[14] *Journal of Scholarly Publishing*, University of Toronto Press, https://utorontopress.com/us/journal-of scholarly-publishing

Articles from C1 were published in 71 journals, with a half published in PRQ and Logos. An analysis with the use of VOSviewer software version 1.6.14 (Van Eck & Waltman, 2010) showed that these journals had the highest combined number of bibliographical couplings (total link strength – TLS), with other journals from the list and between each other (126 TLS). Their citations related them to *International Journal of the Book* (43 TLS with PRQ), *Primerjalna Knijezevnost* and *Convergence* (Tab. 4). *Journal of Scholarly Publishing* (28 TLS with PRQ), *Journal of Electronic Publishing*, *Learned Publishing*, *First Monday* and *PLOS One* formed another, larger cluster. However, these journals were largely dispersed, and the link between them was not very strong – most likely due to the relatively small number of articles in C1.

The larger number of citations (315) was registered for the PRQ, but it did not reflect popularity of the journal. The number of citations of a source equals the total number of citations that the documents of the source (only this from C1) have received in Scopus. High citation number of a specific article was the case with the journals *PLOS One* (Laakso et al., 2011), *Library Hi Tech* (Vassiliou, 2008), and Poetics (Sapiro, 2010).

Tab. 4 Bibliographic coupling of journals from C1
(min. 2 documents, 2 citations, TLS>0)

No.	Title	Documents	TLS	Citations
1	Publishing Research Quarterly	94	323	315
2	Logos (Netherlands)	22	207	20
3	Journal of Scholarly Publishing	13	52	66
4	Electronic Library	8	26	134
5	Learned Publishing	6	22	26
6	Journal of Cultural Economics	5	43	72
7	International Journal of The Book	4	56	7
8	Journal of Media Economics	3	41	75
9	Online Information Review	3	18	86
10	Journal of Electronic Publishing	3	5	15
11	First Monday	2	40	17
12	Primerjalna Knjizevnost	2	39	5
13	Poetics	2	34	95
14	Convergence	2	28	7
15	Javnost	2	17	12
16	Library Hi Tech	2	15	113
17	Plos One	2	14	299

Co-citation analysis of sources may be imprecise when applied to a specific value (which might be lower) because it requires manual standardization of titles. However, it showed high TLS for the sources of trade information, e.g. *Publishers Weekly*, *Information Today*, *Library Journal*, and academic journals, *Electronic Library*, *PRQ*, *Library Hi Tech* (Tab. 5).

Tab. 5 Top co-cited sources from C1 (min. 5 citation and 2000 TLS)

No.	Title	TLS	Citations
1	Publishers Weekly	23254	109
2	Information Today	12010	39
3	Library Journal	9779	34
4	Electronic Library	3775	11
5	Publishing Research Quarterly	3554	139
6	Library Hi Tech	3503	34
7	Online	2864	16
8	Logos	2466	45
9	Against the Grain	2402	18
10	Electronic Engineering Times	2379	9
11	Computers in Libraries	2365	10
12	Seybold Report on Internet Publishing	2262	6
13	Technology Review	2262	6

5.3. Corpus 2 – scholars

Corpus 2 (C2) comprised all publications indexed in Scopus by the scholars who authored at least two articles on the global book publishing market featured in C1. C2 was created to identify the most important sources of papers on the book market, on a larger sample and to test the connection between the journals based on the number of times they are cited together (co-citation analysis) and the number of references they share (bibliographic coupling analysis).

C2 comprised 1723 texts published between 1978 and 2020. 1337 were published in journals. 882 met the general criteria (an article, a review, or a short survey in English published between 2001 and 2018). They were published in 301 journals. 130 journals published at least two of these articles. 1014 articles out of 1723 (59%) were a result of a collaboration; out of the 882 articles meeting the criteria, 552 (63%) were a result of a collaboration – which is a larger proportion than in the C1 (42%). Out of the 539 multi-author articles with affiliation to institution, 170 (31%) were a fruit of an international collaboration, and 369 (68%) of a collaboration between the researchers from the same country, out of which 211 (39%) emerged from one institution.

Thirty-seven (57%) out of the 65 authors whose profiles featured more than four disciplines published their work in more than four journals, out which 14 (22%) published in a number of journals double the number of the disciplines in their profiles, and five (8%) published in a number of journals triple the number of the disciplines in their profiles. Approximately 10 to 20% of the researchers were active in multiple research fields and published in a number of journals with varied discipline profiles. However, an analysis of the publications comprising C1 showed that the researchers whose discipline profiles were less varied (they featured less than 10 disciplines; usually four to six), and who published

in a similarly low number of journals, might have been more important (Tab. 6). However, this hypothesis should be tested further.

Tab. 6 Key researchers based on number of articles in C1 (min. 4)

No.	Author	Number of articles in C1	Number of all documents (Scopus)	Number of disciplines (Scopus)	Number of journals (Scopus)
1	A.N. Greco	13	37	6	6
2	D. Emblidge	6	12	5	3
3	M. Kovač	6	22	5	5
4	J. Rowley	6	309	11	92
5	R.M. Wharton	6	13	5	4
6	M.R. Bold	5	13	5	5
7	C. Brienza	5	16	5	10
8	R. Hartley	5	31	6	11
9	S. Peltier	5	8	4	6
10	G. Sapiro	5	57	4	25
11	M. Vasileiou	5	6	2	5
12	G. Wiersma	5	16	3	7
13	L. Xu	5	10	5	5
14	S. Asai	4	22	7	9
15	Q. Fang	4	26	8	10
16	B. Martin	4	36	6	16
17	S. Murray	4	17	5	11
18	H.E. Roosendaal	4	18	9	13
19	X. Tian	4	21	9	7
20	E. Tovstiadi	4	6	2	5
21	A.van der Weel	4	22	5	9
22	R. Wischenbart	4	13	5	4

5.4. Corpus 2 – journals

PRQ published the highest number of the articles from C2 (74), followed by *Logos* (51). However, they constitute a smaller part of C2 than they did of C1 – only 10%. The disparity between the contributions of each journal also lessened. An analysis of the 882 articles comprising C2 shows that 325 (36%) was published by 18 journals, 274 (31%) by 58, and 279 (32%) by 225. The ratio is, approximately, 1:3:12 (Tab. 7).

Nine out of these 18 journals were included in C1; four of these published the highest numbers of the articles on a given subject (in bold type). They were associated with the following disciplines: E: MT, AH: LLT, and SS: C. The titles in grey, absent in C1, extend

the set of the journals considered, mostly those associated with SS: LIS and BMA. Because of the high number of disciplines listed in the authors' profiles, the verification of the articles' content would be required. The analysis of bibliographic couplings shows that LIS and BMA are important to the publishing studies (Tab. 7).

Tab. 7 Core journals from C2 based on number of documents with bibliographic coupling analysis (min. 10 documents, 100 citations, 100 TLS)

No.	Title	Documents 2001–2018/ all	Category	ISSN	TLS (bibliographic coupling)	Citations
1	Publishing Research Quarterly	74/88	E: MT	1053-8801	279	270
2	Logos (The Netherlands)	51/56	AH: LLT	0957-9656	—	—
3	Journal of Scholarly Publishing	23/25	E: MT / SS: E	1198-9742	162	142
4	Learned Publishing	19/22	SS: C	0953-1513	153	261
5	Journal of Documentation	15/18	SS: LIS/CS	0022-0418	326	382
6	Journal of Librarianship and Information Science	15/24	SS: LIS	0961-0006	185	206
7	Electronic Library	14/18	SS: LIS/CS	0264-0473	221	252
8	Online Information Review	13/14	SS: LIS/CS	1468-4527	220	345
9	Journal of Information Science	12/24	SS: LIS/CS	0165-5515	218	914
10	Journal of Media Economics	12/13	SS: C / EEF	0899-7764	333	227
11	Information Research	11	SS: LIS	1368-1613	103	335
12	Journal of Product and Brand Management	11/15	BMA	1061-0421	—	—
13	Marketing Intelligence and Planning	11	BMA	0263-4503	—	—
14	Journal of Marketing Management	10/20	BMA	0267-257X	279	434
15	Library Management	10/18	SS: LIS	0143-5124	60	391
16	Marketing Theory	10/11	BMA	1470-5931	180	207
17	International Journal of Research in Marketing	9/10	BMA	0167-8116	245	184
18	Journal of the American Society for Information Science and Technology	9/11	SS: LIS / CS	1532-2882	147	727

The graph created with VOSviewer (Fig. 1) for the co-citation analysis of publication sources from C2 shows that the highest number of couplings (TLS) included *Journal of Scholarly Publishing – JSP* (the yellow cluster). There is a strong connection with *PRQ* (2737) and *Harvard Business Review* (1130). *JSP* was also related to journals concerned with marketing, management, economics and information science: *Journal of Marketing* (1693), *Marketing Science* (1483), *Management Science* (1478), *Journal of The American Society for Information Science and Technology* (1060). However, after the fractional counting method was applied, the importance of *JSP* and *PRQ* decreased (Fig. 2). The three clusters visible on the second graph encompass journals focused on marketing, management and economics (green and blue) and information science (red), connected to *PRQ*[15].

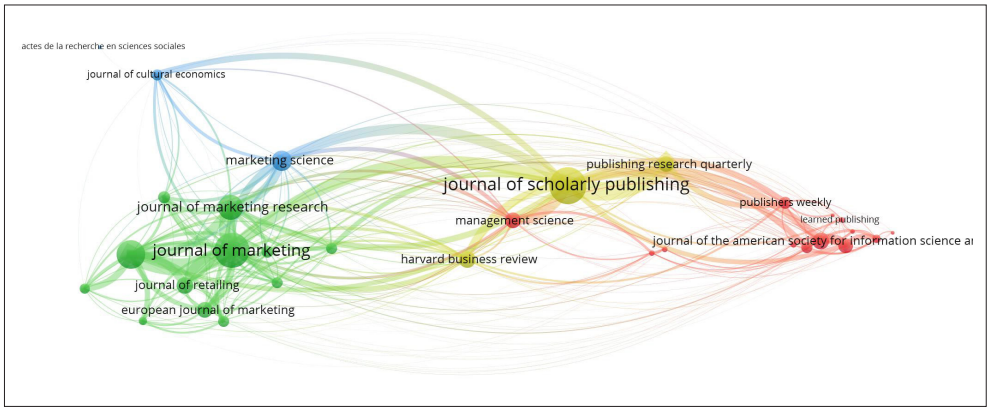

Fig. 1. Co-citation analysis of sources from C2
(min. 100 citations, weight TLS, full counting method)

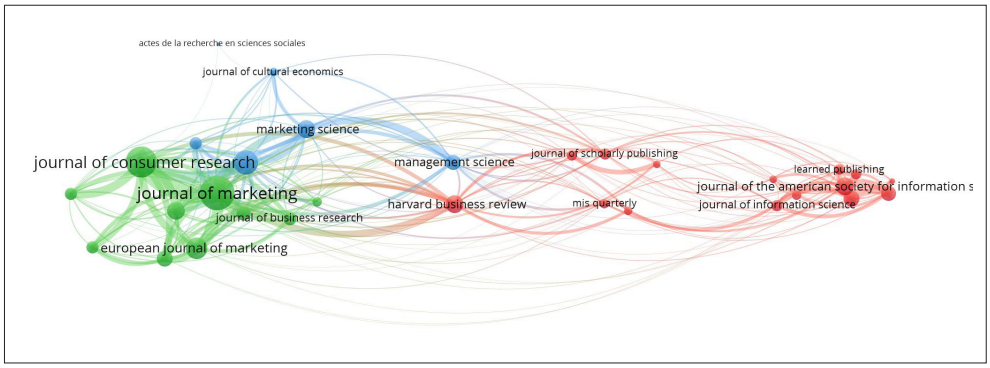

Fig. 2. Co-citation analysis of sources from C2
(min. 100 citations, weight TLS, fractional counting method)

[15] This cluster encompasses journals such as *Journal of Documentation*, *Electronic Library*, and *Scientometrics* – concerned with Library and Information Studies – invisible on the graph.

6. Conclusion

The field of book publishing studies is situated on the boundary of social sciences, humanities, and physical sciences. It is rooted in literary studies and book studies; it builds on the findings of information science and computer science; it borrows methods from sociology, culture studies and economics; as a result of the technological transformations, it studies new medias and technologies, which shape the product, the method of production, and the reception.

Between 2001 and 2018, research of the global book publishing market was dominated by the following issues:

- the research of the different types of books and literature in general, especially the need for bibliodiversity, diversify and democratize titles in response to globalization and the commercialization of culture;
- the effect of digitalization on various stakeholders: from authors small and independent publishers, which play important part in the innovation distribution chain, through the publishers of professional publications and university presses to the global commercial publishers of books and journals, the largest English-language trade and academic publishers and media-publishing syndicates;
- the transformation of business models, price strategies, and choices of distribution channels depending on the form of the book and the readers' preferences.

The book publishing market (global, or in the key markets) was a subject of research conducted by scholars with backgrounds in multiple disciplines. The initial study of their discipline profiles showed that approximately 70% (of 65) worked in at least five disciplines (usually SS, CS, BMA, E, and AH), and between 10 and 20% were active in many research fields, publishing in a number of journals twice, or three times as high as the number of disciplines identified in their profiles (four and more). Qualitative analysis of the publications comprising C1 showed that the authors whose profiles featured between four and six disciplines, publishing in a similar number of journals, made a larger impact. Combining perspectives particular to specific disciplines, they sought to integrate the knowledge of the book publishing market as a material, multi-dimensional object of study (Walczak, 2016, 122). Despite the interdisciplinarity of the researchers, there was little international collaboration.

The major journals in the field of publishing studies include *Publishing Research Quarterly* (E: MT, SS: C), *Logos* (AH: LLT, E: MT), *Journal of Scholarly Publishing* (E: MT, SS: E) and *Learned Publishing* (SS: C). Articles published in the journals associated with information studies, *Electronic Library*, *Journal of Documentation*, and *Journal of Librarianship and Information Sciences* constituted a large part of both corpuses. Co-citation analysis showed that trade journals (C1) and journals focusing on marketing, management, and information science (C2) play an important role in the book publishing market studies.

A more detailed analysis of the research areas of publishing studies and the key authors, combined with an analysis of institutions with which they are associated, accounting for the previously omitted types of publications and articles from the indicated journals, should fill out, or correct, the results of the present study. In the further research on global publishing it will be necessary to take into account emerging markets and developing countries such as India, Brazil or Mexico, where demographic conditions generate a potential for more rapid educational and economic growth.

Data Availability

Special bibliography:

Augustyn, K. (2018). *Źródła informacji o globalnym rynku książki w latach 2001–2017*. Wersja 1. Pracownia Humanistyki Cyfrowej, http://phc.uni.wroc.pl/bibliografie/rynek_show.php

Augustyn, K. (2020). *Źródła informacji o globalnym rynku książki po 2001 roku / Sources of information regarding the global book publishing market after 2001*. Wersja 2. Pracownia Humanistyki Cyfrowej, http://phc.uni.wroc.pl/pl/Bibliografie_spec.html (2020–08-01). Plik XLS: http://phc.uni.wroc.pl/pl/assets/files/Global_book_publishing_2001_2018_Augustyn.xls

Bibliography for this study from Corpus 1 (C1):

Augustyn, K. (2020). Corpus 1 (C1): The Global Book Publishing Market as an Interdisciplinary Research Field, Pracownia Humanistyki Cyfrowej, http://phc.uni.wroc.pl/pl/Bibliografie_spec.html. Plik XLS: http://phc.uni.wroc.pl/pl/assets/files/Augustyn_Corpus1_The_Global_Book_Publishing_Market.xls

References

Alptekin, G. I. (2015). Strategic Pricing Model Based on Genetic Algorithm: The Case of Electronic Publishing Market. *Journal of Intelligent & Fuzzy Systems*, 29(4), 1551–1564, https://doi.org/10.3233/IFS-151634

Andrews, K., Napoli, P. M. (2006). Changing Market Information Regimes: A Case Study of the Transition to the Bookscan Audience Measurement System in the Us Book Publishing Industry. *Journal of Media Economics*, 19(1), 33–54, https://doi.org/10.1207/s15327736me1901_3

Artiles, M., Beaulieu, C., Carey, S., Danza, M., Gatian, A., Gavin, A., ... Wharton, R. M. (2013). The Impact of E-Readers and E-Books on the Library of Congress and the Us Copyright Office. *Journal of Scholarly Publishing*, 45(1), 1–34, https://doi.org/10.3138/jsp.45-1-001

Asai, S. (2015). Purchase Patterns of Popular Japanese Novels in Hardcover and Paperback. *Publishing Research Quarterly*, 31(3), 149–159, https://doi.org/10.1007/s12109-015-9409-4

Asai, S. (2016). Determinants of Demand and Price for Best-Selling Novels in Paperback in Japan. *Journal of Cultural Economics*, 40(4), 375–392, https://doi.org/10.1007/s10824-015-9256-3

Bailey, C. W. (2001). Evolution of an Electronic Book: The Scholarly Electronic Publishing Bibliography. *The Journal of Electronic Publishing*, 7(2), http://hdl.handle.net/10150/105451

Ban, A. (2015). Books in Translation in the United States. *Publishing Research Quarterly*, 31(3), 160–174, https://doi.org/10.1007/s12109-015-9406-7

Baverstock, A., Steinitz, J. (2014). How Is the Discipline of Publishing Studies Accommodated Within Universities?. *Learned Publishing*, 27(4), 291–300, https://doi.org/10.1087/20140409

Beetz, A. (2008). Selling Digital Rights as a General Publisher: Text and Images. *Publishing Research Quarterly*, 24(2), 129–132, https://doi.org/10.1007/s12109-008-9071-1

Benhamou, F., Peltier, S. (2007). How Should Cultural Diversity Be Measured? An Application Using the French Publishing Industry. *Journal of Cultural Economics*, 31(2), 85–107, https://doi.org/10.1007/s10824-007-9037-8

Birtle, R. (2011). The Development and Future of the Japanese Ebook Market. *Publishing Research Quarterly*, 27(4), 345–353, https://doi.org/10.1007/s12109-011-9247-y

Bold, M. R. (2015). Standing in the Shadow of Giants: Publishing in the Midlands and North of England. *Logos*, 26(4), 37–50, https://doi.org/10.1163/1878-4712-11112089

Bold, M. R. (2016). An "Accidental Profession": Small Press Publishing in the Pacific Northwest. *Publishing Research Quarterly*, 32(2), 84–102, https://doi.org/10.1007/s12109-016-9452-9

Bold, M. R. (2018). The Eight Percent Problem: Authors of Colour in the British Young Adult Market (2006–2016). *Publishing Research Quarterly*, 34(3), 385–406, https://doi.org/10.1007/s12109-018-9600-5

Bold, M. R., Norrick-Rühl, C. (2017). The Independent Foreign Fiction Prize and Man Booker International Prize Merger: Can the Man Booker Association Help With the Three per Cent Problem? *Logos*, 28(3), 7–24, https://doi.org/ 10.1163/1878-4712-11112131

Brienza, C. E. (2009). Books, Not Comics: Publishing Fields, Globalization, and Japanese Manga in the United States. *Publishing Research Quarterly*, 25(2), 101–117, https://doi.org/10.1007/s12109-009-9114-2

Brienza, C. (2010). Producing Comics Culture: A Sociological Approach to the Study of Comics. *Journal of Graphic Novels and Comics*, 1(2), 105–119, https://doi.org/10.1080/21504857.2010.528638

Brown, S., Patterson, A. (2010). Selling Stories: Harry Potter and the Marketing Plot. *Psychology & Marketing*, 27(6), 541–556, https://doi.org/10.1002/mar.20343

Burleigh, D. (2017). Using Consumer Data to Illustrate How the Library Channel Drives Digital Sales. *Publishing Research Quarterly*, 33(4), 380–391. DOI: 10.1007/s12109-017-9555-y

Buschow, C., Nölle, I., & Schneider, B. (2014). German Book Publishers' Barriers to Disruptive Innovations: The Case of E-Book Adoption. *Publishing Research Quarterly*, 30(1), 63–76, https://doi.org/10.1007/s12109-014-9342-y

Carolan, S., Evain, C. (2013). Self-publishing: Opportunities and Threats in a New Age of Mass Culture. *Publishing Research Quarterly*, 29(4), 285–300, https://doi.org/10.1007/s12109-013-9326-3

Clare, J. (2014). University Presses in the Digital Age: How Pace University Press and Other University Presses Can Survive and Thrive. *Publishing Research Quarterly*, 30(2), 195–211, https://doi.org/10.1007/s12109-014-9362-7

Costa-Knufinke, J. (2012). Overview of the Spanish Ebook Market. *Publishing Research Quarterly*, 28(2), 135–142, https://doi.org/10.1007/s12109–012-9260–9

Emblidge, D. (2012). The Gotham Bookmart: Location, Location, Location. *International Journal of the Book*, 9(4), 147–160, https://doi.org/10.18848/1447–9516/CGP/v09i04/36917

Emblidge, D. (2013). Borders"Concept Store'. *Logos*, 24(3), 7–19, https://doi.org/10.1163/1878-4712-11112021

Emblidge, D. (2015). A Publishing Studies Online Academic Database: In-Progress Research Project. *Publishing Research Quarterly*, 31(3), 178–182, https://doi.org/10.1007/s12109-015-9410-y

Emblidge, D. (2016). Kepler's Angels, Big and Small. *Logos*, 27(4), 7–17, https://doi.org/10.1163/1878-4712-11112113

Esposito, J. J. (2010). Creating a Consolidated Online Catalogue for the University Press Community. *Journal of Scholarly Publishing*, 41(4), 385–427, https://doi.org/10.3138/jsp.41.4.385

Faherty, A. (2013). Curiouser and Curiouser: Novelty-Centred Business Models and Value Creation in Established Publishing Firms. *International Journal of the Book*, 11(1), 39–57, https://doi.org/10.18848/1447-9516/CGP/v11i01/37006

Feather, J., Woodbridge, H. (2007). Bestsellers in the British Book Industry 1998–2005. *Publishing Research Quarterly*, 23(3), 210–223, https://doi.org/10.1007/s12109–007-9013–3

Forzetting, S., Wiersma, G., Eager, L. (2012). Managing E-Book Acquisition: The Coordination of "P" and "E" Publication Dates. *The Serials Librarian*, 62(1–4), 200–205, https://doi.org/10.1080/0361526X.2012.652921

Friesen, N. (2013). The Past and Likely Future of an Educational Form: A Textbook Case. *Educational Researcher*, 42(9), 498–508, https://doi.org/10.3102/0013189X13513535

Fröhlich, R. (2014). Book People in Germany: A Study on the Professional Situation and Career Conditions of Men and Women in the German Book Publishing Industry and the Book Trade. *Publishing Research Quarterly*, 30(2), 223–243, https://doi.org/10.1007/s12109-014-9361-8

Gallagher, K., Bohme, S. (2009). A Special Relationship? A Comparison of Consumer Book Buying Habits and Trends in the United States and Great Britain. *Publishing Research Quarterly*, 25(4), 246–253, https://doi.org/10.1007/s12109-009-9139-6

Greco, A. (2005). A Bibliography of Books and Journal Articles on Scholarly Publishing. *Journal of Scholarly Publishing*, 37(1), 48–54, https://doi.org/: 10.3138/jsp.37.1.48

Greco, A. N. (2001). The Market for University Press Books in the United States: 1985–1999. *Learned Publishing*, 14(2), 97–105, https://doi.org/10.1087/095315101300059459
Greco, A. N., Wharton, R. M., Sen, F. (2012). The Price of University Press Books: 2009–2011. *Journal of Scholarly Publishing*, 43(4), 363–380, https://doi.org/10.3138/jsp.43.4.363
Greco, A. N., Aiss, C. G. (2015). University Presses in the Twenty-First Century: The Potential Impact of Big Data and Predictive Analytics on Scholarly Book Marketing. *Journal of Scholarly Publishing*, 46(2), 105–140, https://doi.org/10.3138/jsp.46.2.01
Greco, A. N., Spendley, A. M. (2016). The Price of University Press Books, 2012–14. *Journal of Scholarly Publishing*, 47(2), 106–120, https://doi.org/10.3138/jsp.47.2.106
Haeusermann, T. (2013). Custom Publishing in the UK: Rise of a Silent Giant. *Publishing Research Quarterly*, 29(2), 99–109, https://doi.org/10.1007/s12109–013-9310-y
Hao, L., Fan, M. (2014). An Analysis of Pricing Models in the Electronic Book Market. *MIS Quarterly*, 38(4), 1017–1032, https://doi.org/10.2307/26627960
Hawthorne, S. (2016). Bibliodiversity: Creating Content or Invigorating Culture? *Logos*, 27(1), 63–71, https://doi.org/10.1163/1878-4712-11112099
Herther, N. K. (2005). The E-Book Industry Today: A Bumpy Road Becomes an Evolutionary Path to Market Maturity. *The Electronic Library*, 23(1), 45–53, https://doi.org/10.1108/02640470510582727
Himma, K. E., Just, P. (2007). Electronic Books in the USA–Their Numbers and Development and a Comparison to Germany. *Library Hi Tech*, 25(1), 157–164. DOI: 10.1108/07378830710735939
House, E. (2013). Challenges Facing the UK Book Industry. *Publishing Research Quarterly*, 29(3), 211–219, https://doi.org/: 10.1007/s12109-013-9320-9
Hu, J., Zhang, Y. (2016). Understanding Chinese Undergraduates' Continuance Intention to Use Mobile Book-Reading Apps: An Integrated Model and Empirical Study. *Libri*, 66(2), 85–99, https://doi.org/10.1515/libri-2015-0090
Jin, B. H., Li, Y. M. (2012). Analysis of Emerging Technology Adoption for the Digital Content Market. *Information Technology and Management*, 13(3), 149–165, https://doi.org/10.1007/s10799-011-0113-6
Joseph, R.P. (2015). Higher Education Book Publishing—From Print to Digital: A Review of the Literature. *Publishing Research Quarterly*, 31(4), 264–274, https://doi.org/10.1007/s12109-015-9429-0
Kernan, M. A. (2013). When Is a Publishing Business Truly 'Global'? An Analysis of a Routledge Case Study With Reference to Ohmae's Theory of Globalization. *Publishing Research Quarterly*, 29(4), 344–364, https://doi.org/10.1007/s12109-013-9329-0
Kovač, M. (2007). Reading the Texts on Book Publishing: A New Body of Knowledge About an Old Body of Knowledge. *Publishing Research Quarterly*, 23(4), 241–253, https://doi.org/10.1007/s12109-007-9030-2
Kovač, M., Wischenbart, R. (2010). A Myth Busted: Bestselling Fiction in Europe and Slovenia. *Primerjalna Književnost*, 33(2), 117–135+287–305.
Kovač, M., Phillips, A., van der Weel, A., Wischenbart, R. (2017). Book Statistics: What Are They Good For? *Logos*, 28(4), 7–17, https://doi.org/10.1163/1878-4712-11112137
Kovač, M., van der Weel, A. (2018). Reading in a Post-Textual Era [online]. *First Monday*, 23(10) [09.09.2020], https://doi.org/: 10.5210/fm.v23i10.9416
Kovač, M., Wischenbart R. (2018). Bestsellers 2008 to 2014: The Last King of Analogue and the First Dame of the Digital Pleasure House. *Logos* 29(1), 18–27, https://doi.org/10.1163/18784712-02901003
Laakso, M., Welling, P., Bukvova, H., Nyman, L., Björk, B. C., Hedlund, T. (2011). The Development of Open Access Journal Publishing from 1993 to 2009. *PloS One*, 6(6), e20961, 1–10, https://doi.org/10.1371/journal.pone.0020961
Li, Y., Lin, Z., Xu, L., Swain, A. (2015). "Do the Electronic Books Reinforce the Dynamics of Book Supply Chain Market?"– a Theoretical Analysis. *European Journal of Operational Research*, 245(2), 591–601, https://doi.org/:10.1016/j.ejor.2015.01.048
Lian, X. C. (2010). Publisher's Dilemma From Penguin Books to E-Books. *Logos*, 21(3–4), 37–46, https://doi.org/:10.1163/095796511X559936

Lichtenberg, J. (2011). In From the Edge: The Progressive Evolution of Publishing in the Age of Digital Abundance. *Publishing Research Quarterly*, 27(2), 101–112, https://doi.org/10.1007/s12109-011-9212-9

Liu, B. (2008). Use of Digitization to Modernize China's Publishing Industry. *Publishing Research Quarterly*, 24(1), 40–47, https://doi.org/10.1007/s12109-008-9064-0

Machovec, G. (2018). Consortial Ebook Archiving Environmental Scan. *Journal of Library Administration*, 58(1), 81–90, https://doi.org/: 10.1080/01930826.2017.1399706

Magadán, M., Rivas, J. (2018). The Impact of Digitization on the Spanish Publishing Industry. *The International Journal of the Book*, 16(2), 1–18, https://doi.org/10.18848/1447-9516/CGP/v16i02/1-18

Mangen, A., Van der Weel, A. (2016). The Evolution of Reading in the Age of Digitisation: An Integrative Framework for Reading Research. *Literacy*, 50(3), 116–124, https://doi.org/10.1111/lit.12086

Mannana-Rodriguez, J., Giménez-Toledo, E. (2018). Specialization and Multidisciplinarity of Scholarly Book Publishers: Differences Between Spanish University Presses and Other Scholarly Publishers. *Scientometrics*, 114(1), 19–30, https://doi.org/10.1007/s11192-017-2563-z

Marcus, L.S. (2016). The Global/Local Book Publishing (R)evolution. *Publishing Research Quarterly*, 32(1), 64–69, https://doi.org/: 10.1007/s12109-015-9441-4

Martin, A., Bartscher-Finzer, S., Richards, A. (2018). The Motivations of Book Publishers in Germany and Australia: An Empirical Comparison. *Publishing Research Quarterly*, 34(1), 69–88, https://doi.org/: 10.1007/s12109-018-9570-7

McIlroy, T. (2017). Startups Within the US Book Publishing Industry. *Publishing Research Quarterly*, 33(1), 1–9, https://doi.org/10.1007/s12109-017-9500-0

Milliot, J. (2018). *The World's 54 Largest Publishers, 2018. The U.K. Educational Publishers Remained the World's Largest Publisher in 2017* [online]. Publishers Weekly [09.09.2020], https://www.publishersweekly.com/pw/by-topic/industry-news/publisher-news/article/78036-pearson-is-still-the-world-s-largest-publisher.html

Mizrachi, D., Salaz, A. M., Kurbanoglu, S., Boustany, J., ARFIS Research Group. (2018). Academic Reading Format Preferences and Behaviors Among University Students Worldwide: A Comparative Survey Analysis. *PloS One*, 13(5), https://doi.org/10.1371/journal.pone.0197444

Moeller, R. A., Becnel, K. (2018). Drawing Diversity: Representations of Race in Graphic Novels for Young Adults [online]. *School Library Research*, 21 [09.09.2020], https://files.eric.ed.gov/fulltext/EJ1182162.pdf

Murray, S. (2006). Publishing Studies: Critically Mapping Research in Search of a Discipline. *Publishing Research Quarterly*, 22(4), 3–25, https://doi.org/10.1007/s12109-007-0001-4

Murray, S. (2016). 'Selling'Literature: The Cultivation of Book Buzz in the Digital Literary Sphere. *Logos*, 27(1), 11–21, https://doi.org/10.1163/1878-4712-11112094

Ohlsson, A., Forslid, T., Steiner, A. (2014). Literary Celebrity Reconsidered. *Celebrity Studies*, 5(1–2), 32–44, https://doi.org/: 10.1080/19392397.2014.887533

Osiński, Z. (2019). The Usefulness of Data From Web of Science and Scopus Databases for Analyzing the State of a Scientific Discipline. the Case of Library and Information Science. *Zagadnienia Informacji Naukowej – Studia Informacyjne*, 57(2A), 94–106, https://doi.org/:10.36702/zin.469

Overdorf, M., Barragree, A. (2001). The Impending Disruption of the Publishing Industry. *Publishing Research Quarterly*, 17(3), 3–18, https://doi.org/:10.1007/s12109-001-0027-y

Patterson, T., Brown, S. (2009). Never Tickle a Sleeping Bookworm: How Readers Devour Harry Potter. *Marketing Intelligence & Planning*, 27(6), 818–832, https://doi.org/: 10.1108/02634500910988708

Pehar, F., Selthofer, J. (2015). Towards a Better Understanding of Publishing Studies Based on Course Syllabi Reading Lists [online]. *Books and reading in an age of media overload. By the Book. International Symposium, Florence, Italy, 18–19 June 2015* [09.09.2020], https://bib.irb.hr/datoteka/766556.ByTheBook2_FP_JS_2015.pdf

Peltier, S. (2004). Mergers and Acquisitions in the Media Industries: Were Failures Really Unforeseeable? *Journal of Media Economics*, 17(4), 261–278, https://doi.org/10.1207/s15327736me1704_2

Peltier, S., Benhamou, F., Touré, M. (2016). Does the Long Tail Really Favor Small Publishers? *Journal of Cultural Economics*, 40(4), 393–412, https://doi.org/10.1007/s10824-015-9257-2

Rimm, A. M. (2014). Conditions and Survival: Views on the Concentration of Ownership and Vertical Integration in German and Swedish Publishing. *Publishing Research Quarterly*, 30(1), 77–92, https://doi.org/10.1007/s12109-014-9353-8

Roosendaal, H. E., Huibers, T. W., Peter, A. T. M., van der Vet, P. E. (2003). Changes in the Value Chain of Scientific Information: Economic Consequences for Academic Institutions. *Online Information Review*, 27(2), 120–128, https://doi.org/10.1108/14684520310471734

Rose, J. (2003). The Horizon of a New Discipline: Inventing Book Studies. *Publishing Research Quarterly*, 19(1), 11–19, https://doi.org/10.1007/s12109-003-0019-1

Sapiro, G. (2008). Translation and the Field of Publishing: A Commentary on Pierre Bourdieu-'s "A Conservative Revolution in Publishing". *Translation Studies*, 1(2), 154–166, https://doi.org/10.1080/14781700802113473

Sapiro, G. (2010). Globalization and Cultural Diversity in the Book Market: The Case of Literary Translations in the US and in France. *Poetics*, 38(4), 419–439, https://doi.org/10.1016/j.poetic.2010.05.001

Sapiro, G. (2015). Translation and Symbolic Capital in the Era of Globalization: French Literature in the United States. *Cultural Sociology*, 9(3), 320–346, https://doi.org/10.1177/1749975515584080

Sapiro, G. (2016). The Metamorphosis of Modes of Consecration in the Literary Field: Academies, Literary Prizes, Festivals. *Poetics*, 59, 5–19, https://doi.org/10.1016/j.poetic.2016.01.003

Sapiro, G. (2017). The Role of Publishers in the Making of World Literature: The Case of Gallimard. *Letteratura e letterature, 11*, 81–93, https://doi.org/: 10.19272/201709801008

Schmidt-Stölting, C., Blömeke, E., Clement, M. (2011). Success Drivers of Fiction Books: An Empirical Analysis of Hardcover and Paperback Editions in Germany. *Journal of Media Economics*, 24(1), 24–47, https://doi.org/: 10.1080/08997764.2011.549428

Shea, N., Mulvihill, G., La Bianca, V., Hanchar, A. (2018). Who Is Publishing Diverse Books Best?. *Publishing Research Quarterly*, 34(2), 207–217, https://doi.org/10.1007/s12109-018-9573-4

Shehu, E., Prostka, T., Schmidt-Stölting, C., Clement, M., Blömeke, E. (2014). The Influence of Book Advertising on Sales in the German Fiction Book Market. *Journal of Cultural Economics*, 38(2), 109–130, https://doi.org/10.1007/s10824-013-9203-0

Shimray, S. R., Keerti, C., Ramaiah, C. K. (2015). An Overview of Mobile Reading Habits. *DESIDOC Journal of Library & Information Technology*, 35(5), 343–354, https://doi.org/10.14429/djlit.35.5.8901

Sorensen, A. T. (2007). Bestseller Lists and Product Variety. *The Journal of Industrial Economics*, 55(4), 715–738, https://doi.org/10.1111/j.1467-6451.2007.00327.x

Squires, C. (2004). A Common Ground? Book Prize Culture in Europe. *Javnost-The Public*, 11(4), 37–47, https://doi.org/: 10.1080/13183222.2004.11008866

Steiner, A. (2017). Select, Display, and Sell: Curation Practices in the Bookshop. *Logos*, 28(4), 18–31, https://doi.org/10.1163/1878–4712-11112138

Steiner, A. (2018). The Global Book: Micropublishing, Conglomerate Production, and Digital Market Structures. *Publishing Research Quarterly*, 34(1), 118–132, https://doi.org/10.1007/s12109-017-9558-8

Stepanova, M. (2007). Disciplinary Duality: The Contested Terrain of Book Studies. *Publishing Research Quarterly*, 23(2), 105–115, https://doi.org/10.1007/s12109-007-9018-y

Stevenson, I. (2008). Harry Potter, Riding the Bullet and the Future of Books: Key Issues in the Anglophone Book Business. *Publishing Research Quarterly*, 24(4), 277–284, https://doi.org/10.1007/s12109-008-9086-7

Striphas, T. (2002). Banality, Book Publishing and the Everyday Life of Cultural Studies. *International Journal of Cultural Studies*, 5(4), 438–460.

Striphas, T. (2006). Disowning Commodities: Ebooks, Capitalism, and Intellectual Property Law. *Television & New Media*, 7(3), 231–260, https://doi.org/10.1177/1527476404270551

Striphas, T. (2009). Harry Potter and the Simulacrum: Contested Copies in an Age of Intellectual Property. *Critical Studies in Media Communication*, 26(4), 295–311, https://doi.org/10.1080/15295030903177516

Thomlison, A., Bélanger, P. C. (2015). Authors' Views of E-Book Self-Publishing: The Role of Symbolic Capital Risk. *Publishing Research Quarterly*, 31(4), 306–316, https://doi.org/10.1007/s12109-015-9422-7

Tian, X., Martin, B. (2013). Value Chain Adjustments in Educational Publishing. *Publishing Research Quarterly*, 29(1), 12–25, https://doi.org/10.1007/s12109-012-9303-2

Tovstiadi, E., Wiersma, G. (2016). Comparing Digital Apples and Oranges: A Comparative Analysis of E-Books Across Multiple Platforms. *The Serials Librarian*, 70(1–4), 175–183, https://doi.org/10.1080/0361526X.2016.1148979

Van Eck, N.J., Waltman, L. (2010). Software Survey: Vosviewer, a Computer Program for Bibliometric Mapping. *Scientometrics*, 84(2), 523–538, https://doi.org/10.1007/s11192-009-0146-3

Vasileiou, M., Hartley, R., Rowley, J. (2009). An Overview of the E-Book Marketplace. *Online Information Review*, 33(1), 173–192, https://doi.org/10.1108/14684520910944454

Vasileiou, M., Rowley, J., Hartley, R. (2012). Perspectives on the Future of E-Books in Libraries in Universities. *Journal of Librarianship and Information Science*, 44(4), 217–226, https://doi.org/10.1177/0961000611434759

Von Rimscha, M. B., Putzig, S. (2013). From Book Culture to Amazon Consumerism: Does the Digitization of the Book Industry Lead to Commercialization?. *Publishing Research Quarterly*, 29(4), 318–335, https://doi.org/10.1007/s12109-013-9327-2

Walczak, M. (2016). Czy możliwa jest wiedza interdyscyplinarna? [online]. *Zagadnienia Naukoznawstwa*, 1(207), 113–126 [09.09.2020], https://journals.pan.pl/Content/94261/mainfile.pdf

Weinstein, A. (2010). A Look at Global Expansion for E-Books. *Publishing Research Quarterly*, 26(1), 11–15, https://doi.org/10.1007/s12109-010-9148-5

Williams, E. (2011). Copyright, E-Books and the Unpredictable Future. *Publishing Research Quarterly*, 27(1), 19–25, https://doi.org/10.1007/s12109-010-9196-x

Williams, P., Stevenson, I., Nicholas, D., Watkinson, A., Rowlands, I. (2009). The Role and Future of the Monograph in Arts and Humanities Research. *Aslib Proceedings*, 61(1), 67–82, https://doi.org/10.1108/00012530910932294

Wischenbart, R. (2016). *The Business of Books 2016: Between the First and the Second Phase of Transformation. An overview of market trends in North America, Europe, Asia and Latin America, and a look beyond books.* Frankfurt: Frankfurter Buchmesse.

Wischenbart, R. (2018). *Business of Books 2018. New Tuned for an Old Trade* [online]. Frankfurt: Frankfurter Buchmesse [09.09.2020], https://www.buchmesse.de/files/media/pdf/FBM_White-Paper_The_Business_of_Books_2018.pdf

Wischenbart R., Fleischhacker M.A. (2019). *Global 50. the World Ranking of the Publishing Industry 2019* [online]. Paris: Livres Hebdo [09.09.2020], https://www.publishersweekly.com/binary-data/Global502019.pdf

Xiaomei, C. (2011). 2010: The Turning Point for Chinese Book Publishing Industry. *Publishing Research Quarterly*, 27(1), 76–82, https://doi.org/10.1007/s12109-011-9203-x

Xu, L., Fang, Q. (2008). Chinese Publishing Industry Going Global: Background and Performance. *Publishing Research Quarterly*, 24(1), 64–72, https://doi.org/10.1007/s12109-008-9045-3

Zhang, W. (2008). Effects of Promotion in the Three Media on Book Sales. *Publishing Research Quarterly, 24(1)*, 27–31, https://doi.org/10.1007/s12109-008-9061-3

Zins, C. (2007). Classification Schemes of Information Science: Twenty Eight Scholars Map the Field. *Journal of the American Society for Information Science and Technology*, 58(5), 645–672, https://doi.org/10.1002/asi.20506

Globalny rynek książki jako interdyscyplinarny obszar badań

Abstrakt

Cel/Teza: Celem artykułu jest charakterystyka badań globalnego rynku książki, zmierzająca do wykazania stopnia ich interdyscyplinarności.
Koncepcja/Metody badań: Analizy jakościowa i ilościowa wybranych artykułów naukowych, profili dyscyplinarnych ich autorów i czasopism oraz struktury piśmiennictwa przy użyciu bibliometrycznych metod (analiza współcytowań i powiązań bibliograficznych) oraz technologii wizualizacji wiedzy posłużyła do ustalenia, w pola badawcze jakich dyscyplin wpisuje się problematyka podejmowana przez badaczy.
Wyniki i wnioski: Wybrane publikacje dotyczyły: book history & book culture, economics & technological elements of book publishing, user attitudes & preferences. Autorzy publikowali głównie w czasopismach z: media & communication studies, education (*Publishing Research Quarterly*, *Journal of Scholarly Publishing*, *Learned Publishing*), book studies (*Logos*) i information studies (*Electronic Library*, *Journal of Documentation*). Współcytowane były czasopisma branżowe (C1) oraz naukowe, głównie z marketingu i ekonomii (C2). Publikacje współautorskie stanowiły: 42% (C1) i 63% (C2). Badania nad globalnym rynkiem książki są prowadzone przez multidyscyplinarnych badaczy, ale rzadko jeszcze przez międzynarodowe zespoły.
Ograniczenia badań: Wstępny korpus publikacji zawężono do 230 artykułów w języku angielskim, opublikowanych między 2001 a 2018 r. Nie zostały w nim uwzględnione artykuły na temat rynków książki krajów, których udział w globalnej produkcji wydawniczej jest niewielki. Kategoryzacje dyscyplinarne pochodzą z bazy Scopus.
Oryginalność/Wartość poznawcza: Artykuł oferuje wgląd w specyfikę badań nad globalnym rynkiem książki i dowodzi, że jest to obszar będący wspólnym punktem odniesienia dla badaczy reprezentujących wiele dyscyplin.

Słowa kluczowe

Bibliometria. Czasopisma naukowe. Globalny rynek książki. Interdyscyplinarność. Przemysł wydawniczy. Publikowanie książek. Rynek książki. Studia wydawnicze. Źródła informacji.

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1. General guidelines

1.1. Format

All files should be submitted in RTF (Rich Text Format) files, including text and illustrative content. All pages must be typed and 1.5 spaced using 12-point Times New Roman font. The title of the manuscript should be typed 14-point font. Please do not use any preformatted styles.

Illustrative content inserted in the article, should be send also in JPG format. Attachments should be numbered in order of occurrence and include the title, for example: *1. Tab. 1. List...* or *3. Fig. 1. System....*

1.2. Extent

Manuscript should be no longer than 40,000 characters (including spaces), review and report no longer than 14,000 characters.

1.3. Title page

Authors should prepare **separate title page**, which include:

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An abstract (about 100 words or 1000 characters) should be included with each submission and placed on the title page. Abstract should be formatted according to categories listed below. Author should identify at least four mandatory sections:

- **Purpose/Thesis** *(mandatory)*
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Title page should include keywords (4 to 10) as a noun phrases in singular form, where first element is capitalized. Keywords in alphabetical order should be delimited by full stop.

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2. Manuscript format and preparation

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The text should be organized into entitled sections and subsections. Text should start with **Introduction**, giving an overview and stating the purpose and end with **Conclusion**, giving the summary of the author contributions to the study.

Author may use three levels of headings. Each heading should have its own title and number according to the following pattern:

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Bibliographic citations are not allowed in footnotes. The reference list should be prepared according to APA 6-th Edition citation style (see below). Footnotes can be used only to give additional information or commentary. Footnotes to the text are numbered consecutively with Arabic numerals. It is recommended to limit the amount of footnotes per page.

2.3. Titles in the body of the text

Titles of exhibitions, conferences, programmes, etc should be written within double quotation marks. Use italics for publication titles (books, journals, papers, etc.).

2.4. Emphasis

Bold face should be used to emphasize certain words or passages.

2.5. Illustrative content

All illustrations (tables, charts, figures etc.) should be converted to greyscale. All illustrations should be cited in the text properly to their form (Table, Figure, Photograph, etc.) and have title and consecutive number (e.g. Tab. 1. Metadata levels). Use abbreviation in the text when refereeing to the illustrative content (e.g. see Tab. 1, see Fig. 5).

2.6. Citations and reference list

Use APA 6-th Edition as a citation and reference list format. The references list should only include works that are cited in the text.

Cite references in the text by name of the author(s) and year of publication in parentheses: (Name, Year of publication), eg. (Dembowska, 1991). If there are two authors, put their names with ampersand (&) mark

between: (Name & Name, Year of publication), eg. (Cisek & Sapa, 2007). If there are more than two authors, put the name of the first one followed by abbreviation *et al.*: (Name et al., Year of publication), eg. (Berners-Lee et al., 2001). Edited books are cited by the name(s) of the editor(s) followed by abbreviation *ed(s).*: (Name, ed., Year of publication), eg. (Bellardo Hahn & Buckland, eds., 1998). If there is no author or editor information, put the first word from the title and the year of publication : (Word, Year of publication), eg. (Biblioteki, 1976). Use the following pattern when referring to specific pages in the cited publications: (Dembowska, 1991, 15) or (Cisek & Sapa, 2007, 40–42) or (Bellardo Hahn & Buckland, eds., 1998, 18).

Place the reference list at the end of the text under the heading **References**. Reference list should be in alphabetical order without numbering.

List the references (books and journal articles) in alphabetical order by authors' last names. Citations of edited books list under the name of editor followed by abbreviation Ed.. If there is no author or editor information, list the publication under the first word from the title.

Use italics for book titles and regular font for titles of papers and book chapters. Use abbreviation In: when referring to book chapters in citations.

If there are two or more items by the same author(s), list them in order of year of publication (reverse date order). If two or more works are by the same author(s) within the same year, list them in alphabetical order by title and distinguish them by adding the letters a, b, c, … to the year of publication:

Dembowska, M. (1976a) ....

Dembowska, M. (1976b) ...., etc.

2.6.1 References List Examples

BOOK

Breslin, J.G., Passant, A., Decker, S. (2009). *The Social Semantic Web*. Berlin: Heidelberg: Springer Verlag.

Dembowska, M. (1991). *Nauka o informacji naukowej: organizacja i problematyka badań w Polsce.* Warszawa: IINTE.

BOOK (EDITED)

Bellardo Hahn, T., Buckland, M., eds. (1998). *Historical Studies in Information Science*. Medford, NJ: Information Today.

Biblioteki (1976). *Biblioteki publiczne województwa toruńskiego: informator*. Toruń: Wojewódzka Biblioteka Publiczna i Książnica Miejska im. M. Kopernika.

JOURNAL ARTICLE

Osińska, V. (2010). Rozwój metod mapowania domen naukowych i potencjał analityczny w nim zawarty. *Zagadnienia Informacji Naukowej*, 96(2), 41–51.

Dervin, B., Nilan, M. (1986). Information Needs. *Annual Review of Information Science and Technology*, 21, 3–31.

BOOK CHAPTER

Rayward, W.B. (1998). Visions of Xanadu: Paul Otlet (1868-1944) and Hypertext. In: T. Bellardo Hahn & M. Buckland (eds.). *Historical Studies in Information Science* (65–80). Medford, NJ: Information Today.

ELECTRONIC JOURNAL ARTICLE

Berners-Lee, T., Hendler, J., Lassila, O. (2001). The Semantic Web. *Scientific American* [online], May, [30.06.2013], http://www.scientificamerican.com/article.cfm?id=the-semantic-web

Bartalesi, V., Meghini, C. (2016). Using an Ontology for Representing the Knowledge on Literary Texts: The Dante Alighieri Case Study. *Semantic Web* [online], 8(3), 385–394, http://doi.org/10.3233/SW-150198

Miller, H. (2013). Big-Data in Cloud Computing: A Taxonomy of Risks. *Information Research* [online], 18(1), [15.07.2013], http://informationr.net/ir/18-1/paper571.html

ARTICLE IN ENCYCLOPEDIA

Psychology of Culture Contact (1926). *Encyclopaedia Britannica*, Vol. 1, 13th ed. (765–771). London and New York, NY: Encyclopaedia Britannica.

Iluminatorstwo (1971). *Encyklopedia Wiedzy o Książce* (911–952). Wrocław – Warszawa – Kraków: Zakł. Narod. im. Ossolińskich.
Big Data (2013, November 12). *Wikipedia, The Free Encyclopedia* [online] [12.11.2013], http://en.wikipedia.org/w/index.php?title=Big_data&oldid=581347727

Article in encyclopedia with author information describe as book chapter.

ELECTRONIC DOCUMENT FROM WEBSITE

MNiSW (2011). *Narodowe Centrum Nauki w Krakowie. Nadchodzi czas nauki* [online]. Ministerstwo Nauki i Szkolnictwa Wyższego, [15.07.2013], http://www.nauka.gov.pl/?id=2268
Smith, B. (2004). *Ontology and Information Systems* [online]. The Buffalo University, Department of Philosophy, [15.07.2013], http://ontology.buffalo.edu/ontology.doc
US NLM (2004). *Medical Subject Headings* [online]. US National Library of Medicine. National Institutes of Health, [15.07.2013], http://www.nlm.nih.gov/mesh/meshhome.html

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