THE POTENTIAL OF ONLINE LIBRARY CATALOGUES FOR SUPPORTING OPPORTUNISTIC ACQUISITION OF INFORMATION PERTAINING SCHOLARLY LITERATURE

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ABSTRACT: The article includes a description and analysis of empirical research, which by comparative means looked to determine the potential of various solutions for academic libraries in configuring the interfaces of online catalogues in support of opportunistic acquisition of information pertaining to scholarly literature. The research consisted of experiments using 22 different search instructions and an analysis of the results of other encountered sources. The research was carried out from May to July 2007 in 33 Polish libraries based on 8 different computer systems. The research allowed for the establishing of links between applied solutions in OPAC, the form of search instruction and the chances of discovering publications which are not able to satisfy the needs of an intentional and deliberate search, but can satisfy or even inspire other information needs of library users.

INFORMATION ACQUIRED ACCIDENTALLY AND INTENTIONALLY – A THEORETICAL OVERVIEW

Opportunistic encountering of information has already been the subject of various research papers, both as an independent concept, as well as part of an elaboration of other theories pertaining to library and information science. Here we may recall the so-called everyday information behaviour, the concept of information territories or personal information management (Erdelez, 2005). There isn't place here for a deeper analysis of the tangential issues of opportunistic acquisition of information, but at least a few words should be said on the most important differences between accidental and intentional acquisition of information.

Within the theory of information behaviour, the informed, deliberate, intentional and active seeking of information is in the centre of attention. In consequence, tools for searching, or indeed entire information systems, are usually evaluated in respect of active searching conducted by their users, particularly in categories of ability to satisfy consciously defined information requirements or provide relevant replies to information enquiries or search instructions. Such behaviours are not the only way of obtaining information and even researchers not dealing directly with the issue of opportunistic acquisition of information have noted the importance of passive encountering (Wilson, 1999, p. 257).

Since however the very phenomenon of opportunistic acquisition of information is not uniform, the research required a definitive and interpretive basis. To this end, I made recourse to few theoretical models of information behaviour which, generally speaking, take into account such a form of information acquisition (Foster, 2005; McKenzie, 2002). Simultaneously, on account of the conjecture that there is very little chance of finding information about scholarly literature when not searching for it at all (such information, as a rule, is distributed via dedicated channels, which are usually used only purposely), I sought to narrow my understanding of opportunistic acquisition of information to a situation wherein the finding of specific sources is an additional result or alternate aim. The most

inspiring model was that proposed by Sanda Erdelez (2004, pp. 1015-1016), where opportunistic acquisition is treated as an adjunct to information search, the diverging aim being the purpose of the search.

PURPOSE AND METHODS OF RESEARCH

The research was empirical and comparative, determining the potential of various solutions applied in the configuration of the interfaces of online library catalogues in the scope of supporting opportunistic acquisition of information pertaining to scholarly literature. In other words, the focus of interest was the possibility of retrieving unsought information **while** deliberately searching for well defined information about scholarly literature in library catalogues. Here we looked to assess the extent to which applied solutions in OPAC facilitate such discoveries. However, what this research did not look at is the actual role of discoveries of this type in the cognitive process of the user: noticing and absorbing such information and the influence of the size, scope and reach of catalogue databases on the number and character of accidentally retrieved titles (limited to an analysis of the consequence of not finding relevant documents). These findings would undoubtedly be essential to building a more complete picture of the accidental retrieval of scholarly literature in library online catalogues, but would in turn require separate research and the application of different methodology.

Conducted were a sequence of experiments relating to information retrieval pertaining to scholarly literature in selected catalogues of academic libraries (as those most involved in providing access to information about scholarly literature) using different search configurations. The achieved results were subjected to interpretation in terms of their potential value for opportunistic acquisition of information. This research was conducted in the period from May to July 2007, and involved two stages. In the first phase an in-depth review was carried out on occurrences at the point of search in the OPACs of five Polish academic libraries based on different computer systems:

- OPAC of the Jagiellonian Library (The Computer Catalogue of the Jagiellonian University Libraries Collections): http://www.bj.uj.edu.pl/uj/katalog – Virtua system (henceforth BJ),

– OPAC of the Poznań University Library (Online Catalogue of the Poznań University Library): http://150.254.35.111/webpac-1.2-buamPL/wgbroker.exe?new+-access+top – WebPAC/Horizon system (henceforth BUP),

– OPAC of the Main Library and Scientific Information Centre, Wroclaw University of Technology (Main Catalog): http://aleph.bg.pwr.wroc.pl – Aleph system (henceforth BPWr),

– OPAC of the Library of Rzeszów University (module: Books): http://opac.univ.rzeszow.pl – Prolib system (henceforth BUL),

– OPAC of the Main Library of Opole University (Catalogue of Books of the Main Library): http://www.bg.uni.opole.pl/sowa – Sowa system (henceforth BUO).

This allowed for the re-drawing of search queries applied in experiments (see Appendix 1) and the positing of hypotheses which were then verified in the second phase of the research, where 28 further library catalogues were tested (see Appendix 3).

The selection of catalogues was guided above all by a desire to carry out an analysis based on the different interfaces and configurations offered by different computer systems applied at Polish academic libraries. The idea was to compare the chances that these various solutions create for opportunistic acquisition of information, rather than simply comparing or evaluating alone OPACs, their stores or their ability to satisfy specific user needs.

In spite of the obvious similarities of the solutions applied in the interfaces of catalogues built on the same computer systems, I decided to look at 5 interfaces of different catalogues in the case of systems widely used in academic libraries (Virtua, Horizon, Aleph, Prolib) and 2 that are to be found in those more rarely used (Sowa, Mak, Mol, Tinlib). The adoption of this solution proved its correctness: it allowed for the detection of differences, albeit small in number, but heavy in meaning. Furthermore, it made it possible to identify various informational situations offering new potential for opportunistic acquisition of information.

Since in principle each OPAC featured in this study offered various possibilities for formulating a search query, the actual number of performed experiments was much larger – they were all repeated in configurations of available modes and search options which generate

other replies or show the same replies, albeit in a different way. However, separate experiments were not performed for those configurations which differed only in a graphic form, and as such, did not affect the search results. Observation was narrowed to the direct response of the systems to a given enquiry. I did not look at consequences arising from the possibility of further interactions. In other words, the results and conclusions presented here refer to the informational situation arising from the systems' first reply.

Each set consisted of 18 standard search queries (including 2 alternative ones, applied in the case of unavailability of a given book in the catalogue being searched for) and 4 additional queries tested only in those OPACs which facilitated simultaneous search in a number of indexes. Search queries were formulated with reference to three hypothetical situations, where the deliberate aim of the search was:

- publications of the chosen author,
- publications with the specific title,
- publications on a specific subject.

The comprehensive list of search queries used in the experiments together with essential explanations are to be found in Appendix 1. In the first phase of the research 15 basic search sets were carried out in the various interface configurations of library catalogues listed above (see Appendix 2).

RELEVANCE AND PERTINENCE

A precise determination of the way of differentiation between intended search results as opposed to "unsolicited" or unexpected ones, constituted immediate object of research and analysis. And so, it was necessary to make recourse to the issue of information needs. The point of departure was the conviction that the specificity of a given opportunity to meet information needs could cause both a lowering of the level of the need, which at that particular moment is impossible to satisfy, and an increase in the level of this one which could be met in a given situation (Próchnicka, 1991, pp. 30-31).

Erdelez, when formulating a theory relating to encountering information, based this on the assumption that the searching person has many information requirements, but on account

of their inability to narrow their focus to a specific purpose, these other needs remain dormant. The accidental discovery of information associated with some of these needs may cause rotation, which involves moving needs to a new centre of interest (Erdelez, 2004, pp. 1015-1016). The consequence of accepting such a point of view is the division of searched information into three basic groups dependent on their ability to satisfy different information requirements:

1. Information capable of meeting requirements being the main reason for an intentional and deliberate search.
2. Information capable of meeting other information needs.
3. Information inadequate to any information needs of an information seeker.

On account of the purpose of this research, I excluded the first category, as referring to information intentionally retrieved, rather than by chance. However, the precise presentation of the two remaining categories requires terminological remarks, peculiarly referring to the notions of relevance and pertinence.

The term "relevant" is used in literature so often and in such different contexts, that it is hard to talk about its explicit meaning. Indeed, it is often defined in a general and ambiguous way, (e.g. ASIS&T Thesaurus, 2005, p. 111). The discrepancy in its definition principally relates to its point of reference – for some authors relevantness means compliance with the search query, while for others it pertains to information requirements. In *Słownik encyklopedyczny informacji, języków i systemów informacyjno-wyszukiwawczych* [Encyclopedic Lexicon of Information and Information Retrieval Languages and Systems], 4 kinds of relevance were distinguished: technical, semantic, pragmatic and logical (Bojar, ed., 2002, pp. 229-231).

For the purposes of this research "relevant" will be understood in the category of technical relevance, "that is of relations, which in the information set [...] of a given information retrieval system selects a subset of information, in which for each piece of information a condition of no lesser accordance (similarity) with the search query than that established for the given system is fulfilled" (Bojar, ed., 2002, p. 231). I adopted, in turn, the principle of full syntactic conformity of a search query with the content of bibliographical descriptions. And so, all replies (index terms, bibliographical descriptions) shown by online catalogues which did not contain words or phrases used in the search queries will be named as irrelevant

in further deliberations.

However "pertinent" will be understood in categories of pragmatic relevance, i.e. the relation "arising between information retrieved by the system [...] and the user of information, and particularly his information needs" (Bojar, ed., 2002, p. 230). It will be used here for naming this retrieved information (be it relevant or not) which can contribute to the direct satisfaction of the information need being the direct purpose of a given search.

Accepting such an understanding of pertinence meant the need to solve one more terminological dilemma: namely how to label information which is able to satisfy information requirements dormant at that particular moment, not being the direct purpose of a search. Below, in order to its differentiate from pertinent and non-pertinent information, I will use the term "quasi-pertinent".

The assessment of pertinence (and quasi-pertinence) requires a closer definition of the informational situation of the searcher. Even in the case of a relatively straightforward search for the publications of an author, it may happen that the publications of two different authors with the same surnames and names and on the same subject (or a few publications of one author but representing different areas of his/her interests – e.g. scientific and poetry) will be found. And so, here I will understand quasi-pertinent as information which simultaneously:

- is not appropriate in relation to the need, for which satisfaction constitutes the basic aim of the search,
- concerns scholarly literature in one chosen discipline (here of library and information science) – so it means, that can potentially satisfy other information needs of the searcher which are connected with scholarly literature.

From the perspective of opportunistic acquisition of information, the completely non-pertinent results (that is, those which do not satisfy the need being the direct reason of the search, or indeed the other information needs pertaining to scholarly interest), cannot be treated as completely unwanted by-products of the search. Adopting a reverse outlook is necessary – results of this type may not immediately interest the searcher, but can prove to be inspiring and give rise to new information requirements. Endowing them with a potentially positive

role in the process of obtaining information about scholarly literature as opposed to "completely non-pertinent", they may be labelled as being "potentially inspiring". To sum up, information accidentally retrieved (that is "opportunistically", "unsolicited") fulfils any of the 4 following conditions:

I. Relevant and potentially inspiring.
II. Relevant and quasi-pertinent.
III. Irrelevant and potentially inspiring.
IV. Irrelevant and quasi-pertinent.

It should be emphasized here that findings and conclusions presented in the following parts of this paper concern exclusively this kind of opportunistic acquisition of information and refer only to search situations defined in this way. One should not, without verification, stretches them to all possible situations associated with retrieval information about scholarly literature. One must also remember that this research was aimed at defining conditions for opportunistic acquisition of information about publications in selected configurations of the interfaces of library online catalogues, and not at understanding the scale and mode of the factual use of this potential by scholars or the subjective value of various accidentally encountered information. Researching the potential of search tools, I looked at the chances for opportunistic acquisition of information, not at the phenomenon itself.

RESEARCH FINDINGS

The first general conclusion relates to all analysed situations in all 33 researched catalogues. Irrespective of the content of search queries and the chosen configuration of modes and options of searching, the interfaces of these catalogues show no information about literature independently of a currently conducted search. And so, there are not links, advertisements or references to the latest publications, other books offered etc., typical for search engines or internet bookstore services. The obvious conclusion entails limiting the scope of the information returns by the catalogues exclusively to the specific effects of the direct search (aside from information relating to using the system), and thus narrows the chances for opportunistic acquisition of information. What is more, traditional card catalogues functioned in a specific environment, which in respect of its space could be used whether consciously or not for the stimulation of information encountering. Notices or exhibitions of recent

publications and events could happily be located in catalogue rooms or, in turn, the catalogues could stand by shelves in reading rooms, or in a system of free access. A relatively small computer screen simply does not provide such possibilities – in effect the environment for OPAC users is not a library space, but a real world surrounding a monitor, which provides stimuli rather not controlled by catalogue providers. Although one could regard the virtual environment (library websites, WWW as the whole...) as the natural surrounding of any OPACs, but such an environment is different to that of the real world – catalogues and their virtual environment can not be seen at the same time!

The situation is rather like looking through a keyhole – it is necessary to open the door in order to see more. Possible stimuli derived from virtual environment will not reach the recipient without his conscious decision: without clicking on the chosen link or navigational button (not counting, of course, the different forms of so-called spam). They cannot, therefore, be treated as factors affecting the potential of online catalogues for fostering opportunistic acquisition of information.

The next general conclusion pertains to presentations of search results. The available configurations of modes and search options in the researched catalogues can be divided into two groups: those which lead to a showing of the answer in the so-called intermediate screens (the relevant excerpts of indexes), and those whose search results are presented in the direct showing of abbreviated bibliographical descriptions. The majority of the catalogues offer configurations using both solutions. Out of the 28 interfaces tested in the second phase of the research, as many as 27 ones facilitated the choice of the configuration of modes and search options which led to a showing of appropriate index fragments. These are usually search options conducted separately in different indexes. As many as 26 tested interfaces allowed for the selection of modes and options leading to the direct showing of found bibliographical records. As a rule these are different forms of simultaneous searches in a number of indexes, at least for example in catalogues built on the Aleph system. Here bibliographical descriptions are shown when searching separately in certain indexes (modes: "Simple", "Simple searching") (see Appendix 3). Whether index fragments or bibliographical descriptions appear depends on the choice of the configuration of modes and search options. Only in one case (the Central Catalogue of Warsaw University of Technology, mode "Simple search", indexes: words in the title, author, keywords) was there a dependence on the mode of result sets. In the event of finding relevant documents, the system presents bibliographical descriptions, and

in the case of not finding such documents, the relevant excerpts of a given index are retrieved.

This distinguishing is important in terms of the research findings. As a rule the adoption of one of these solutions accompanies other solutions directly affecting the ability of systems to "draw up" for users the information that hasn't been searched for, which can be quasi-pertinent or potentially inspiring. Of course, it is also essential from the perspective of differences in the direct perception of index entries and entire bibliographical descriptions, coupled with their ability to directly inspire the user. Indeed, it was also seen that the chances for encountering unsolicited information also depended on whether the given system found relevant documents in its sources, or not.

The research and OPAC interface analysis distinguished a few essential search situations relating to potentially supporting opportunistic acquisition of information, which may come to the fore depending on the entanglement of these two factors (table 1).

Table 1. The occurrence of different situations of various potential for opportunistic acquisition of information depended on the mode of presenting results and the availability of relevant information in catalogues (typical solutions in bold)

Modes of presentation of results Search results	Intermediate screens (index fragments)	Bibliographic description
Lack of relevant results	P1. Lack of information **P2. Fragment of index without relevant search words**	**B1. Lack of information** B2. Bibliographic descriptions related to the index entries closest to the relevant one in the given index.
Retrieval of relevant results	P3.Only relevant index entries **P4. Index fragment including a relevant entry**	**B3. Only relevant bibliographical descriptions** B4. Relevant bibliographical descriptions as well as descriptions related to the closest entries in the index.

Here we are dealing with a high degree of regularity. Indeed, solutions differing from the norm were exceptional. The situations assigned with symbols P1 and P3 were observed only in 5 researched configurations, and those marked with symbols B2 and B4 were stated exclusively in BUO for the option "the closest alphabetically" (see Appendix 2). Such a solution is unavailable in the two other researched catalogues based on the SOWA system (see Appendix 3). On this level of deliberation, it can be stated that the configurations applied in the catalogues leading to immediately-shown bibliographical descriptions are certainly disadvantageous in respect of opportunistic acquisition of information, because they fail to provide "unsolicited" information. On the other hand, configurations leading to the presentation of index fragments offer great potential for opportunistic acquisition of information – in the vast majority of cases, apart from or instead of relevant entries, they suggest other headings.

RELEVANT AND IRRELEVANT RESULTS

Out of the mentioned situations, the first two (table 1, situations P1 and B1) may be eliminated from our deliberations as being of no value in terms of opportunistic acquisition of information. These represent doubly disadvantageous situations for the user – not only not

finding the object of the search but with no prospect for opportunistic acquisition of information. It is worth noting, that these unfavourable situations obtains also for configurations which lead to the direct showing of bibliographical descriptions (such as in BUWr or BUO for the option "with fixed beginning"), as well as those which show the user intermediate screens (as in some searches in BUR). However, the first case is the standard (in all cases researched in the second phase – see Appendix 3), and the second one is rather exceptional (5 cases out of the 28 examined). In other words, if the system directly shows bibliographical descriptions, one can be almost sure that in the event of not finding relevant descriptions it will show an empty screen or, as in the case of the majority of researched here catalogues based on the Aleph system, there will be no response at all, leaving the user in uncertainty about the search results. And inversely, if it is configured to show intermediate screens, it most often shows the closest fragment of the appropriate index (table. 1, situation P2) – the closest means that in which the relevant entry would be if it were in the index at all.

This doesn't mean, however, that the configuration of any interfaces leading directly to the showing of bibliographical descriptions entirely undoes the possibility of applying favourable solutions for opportunistic acquisition of information (also for situations, where there are no relevant results). Applying the additional search option proposed in BUO "the closest alphabetically" brings about in this case the showing of bibliographical descriptions associated with the closest relevant entries in the given index (table. 1, B2 situation). In this situation searching for the title *Architektura informacji w serwisach internetowych* [Information Architecture for the World Wide Web] (unavailable in the catalogue) does not lead to the showing of an empty screen, but to the showing of book descriptions whose titles begin with the word "architektura" [architecture] (e.g. *Architektura klasztorów cysterskich na Śląsku* [The Architecture of Cistercian Monasteries in Silesia], *Architektura komputerów* [The Architecture of Computers] etc.). Admittedly, in this particular case, the retrieved documents may only be potentially inspiring, because none of them have anything in common with either online services or information science. But by searching for the subject heading (index: "Headings") "methodology of information science" , all found books (on visual information and on classified information), can be treated as quasi-pertinent, even though none were relevant. And so, it is a valuable solution for opportunistic acquisition of information. The question remains whether the user will use this option if the default one "with fixed beginning" is established, leading in the earlier cases to the direct showing of empty screens. By configuring the interface in this way, the potential of such library catalogues for

opportunistic acquisition of information becomes hidden from their users. Taking advantage of this potential requires co-activity on the part of the user: serendipity is not purely accidental.

In turn, for configurations leading to the showing of fragments of appropriate indexes, the lack of a given entry represents an opportunity for noticing quasi-relevant or potentially inspiring headings and for opening new "paths" to books not purposely searched for, but valuable for the user. Searching for "methodology of information science" in the index "KABA Subject Headings" in BJ catalogue brings up ten irrelevant search results, which are of great potential for the user. Clicking on each of them may lead to quasi-pertinent, potentially inspiring, and in the case of search words "the methodology of sciences", even pertinent information objects. On the other hand, there are also some exceptions. One of them is the BUR catalogue, which, in the case of a failure to find a relevant answer, shows an empty screen, and what is more, offers the additional option "precise" . It is accessible by searching in the index "Subject headings" and leads to an even narrower set of results, thus further limiting the chances of opportunistic finding of an interesting or inspiring book. Choosing this option leads to the showing of entries identical to the search query, also in the area of determiners. And so, if the user searches with the phrase "information science", in the response he or she will see only one index entry, and will not see all the entries where the heading "information science" is followed by any determiners, e.g. "information science – examination – methods", "information science – bibliography" etc. Similar solutions, unfavourable for opportunistic information acquisition, are applied in BUO in the configuration with the option "with fixed beginning" activated (searching in the index "Keyword" – in the case of not finding the sought-for keyword, an empty screen is shown).

Generally, where relevant positions are not found, configurations leading directly to the showing of bibliographical descriptions as a rule do not create conditions for opportunistic acquisition of information (empty screens). Conversely, configurations leading to the showing of intermediate screens potentially support such a form of recognition, suggesting information about books which have not been searched for. It is worth noting, however, that this potential becomes apparent in the event that either the stores of the system are too small in terms of the expectations of the user, or when the search query was badly formulated. And so, the researched potential is a consequence of negative occurrences and as such may compensate for the failure to find the precise material – this is a kind of a consolation prize.

In cases where systems find the relevant documents, we are once again dealing with similar converse potentials for supporting opportunistic acquisition of information in both groups of the configuration (see table 1). Even though, in each of them opportunistic acquisition of information is possible, the chances of the occurrence of this phenomenon are various. In both groups the significantly lesser potential is shown where the systems return exclusively relevant replies (descriptions or headings) (see table 1, situations P3 and B3). They are typical for configurations leading to the direct showing of bibliographical descriptions and are exceptional for those which in response to the enquiry show intermediate screens. In such situations, the possibility of opportunistic acquisition of information pertaining to scholarly literature appears only in the case of an incorrectly or vaguely defined search query, because then relevant but and non-pertinent documents will be shown.

It can so happen that accidental recognition will be the result of a mistake (e.g. giving wrong surname of the author) or a lack of knowledge of the principles of formulating the appropriate queries in the given interface (choosing wrong indexes or options), or a typographical error. It can arise also from a lack of knowledge pertaining to the contents of the given index – for example, name indexes contain not just the surnames of the authors but also the surnames of the editors or translators. The user looking for books written by Maria Dembowska in the Online Catalogue of the University of Warsaw Library, and choosing the author index, typing the search query in the form of "Dembowska Maria", will receive both information about the books of her authorship, as well as about those she contributed to in other roles (that are quasi-pertinent). A similar occurrence obtains also for when the user searches in the title index, where the index includes also series titles or where searching means not only searching for the beginnings of titles but for all the words from titles, and the user is not informed of the availability of appropriate options (e.g. in the Catalogue of the Library of the University of Białystok or the Central Catalogue of the Central Catalogue of the Main Library of the Medical University of Silesia). Accidentally retrieved information will once again represent here something of a consolation prize.

However, this can also be the consequence of a specific search strategy which involves a minimum of involvement or effort in hope that it may be enough to bring positive effects – a "bonus for lazybones". Irrespective of whether such a strategy is successful or not, finding unsolicited information may constitute a fortuitous outcome. This would happen, for example,

when looking for the work authored by Zofia Gaca-Dąbrowska, *Bibliotekarstwo II Rzeczypospolitej: zarys problemów organizacyjnych i badawczych* [Librarianship in the Second Polish Republic: Overview of Organizational and Research Issues] – wherein the search is conducted in title index with the help of only one word.

When using the word "bibliotekarstwo" [librarianship], most of the results (9 from 10 retrieved bibliographical descriptions in BUO and BPWr and headings in BJ and BUP) will be quasi-pertinent – albeit they will not be descriptions of the searched-for book, but of other books relating to librarianship. Of course, if we use other words or phrases from the title, unrelated to librarianship (e.g. the "II Rzeczpospolita" [Second Polish Republic] or "zarys problemów" [overview of issues]), the records shown in the search result will be rather potentially inspiring than quasi-pertinent. What is more, the chances for opportunistic acquisition of information relating to scholarly literature will still be high.

Another example of the same phenomenon relates to searching "by words" (in a few indexes simultaneously) in BJ – greater are the chances of finding descriptions that have not been searched for when the search query has fewer words or is less precisely constructed. If searching for the book by Maria Dembowska *Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce* [The Science of Information Science (Informatology): Organisation and Research Issues in Poland] we formulate the search query in the following form: "Dembowska Maria" (author index) and "nauka o informacji" [science of information] (title index), in response we get only one bibliographic description. However, if we limit the search instruction to "Dembowska" (author index) and "science" (title index), the system will additionally show the description of one quasi-pertinent book *Bibliotekarstwo polskie 1925-1951 w świetle korespondencji jego współtwórców* [Polish Librarianship 1925-1951 in the Light of the Correspondence of its Founders]. It is possible to observe the same phenomenon when comparing this with the search results in the author index for the query "Dembowska Maria" and "Dembowska". Of course, the possibility of a "bonus for lazybones" depends to a large extent on the stores of a given catalogue and the specificity of the search query. If, for example, the only "Dembowska" in the catalogue is "Dembowska Maria", such a strategy doesn't increase chances for opportunistic acquisition of information.

In the majority of cases, the systems configured to show intermediate screens, present

a certain, fixed number of index entries (most often 10 main headings plus cross references, or 10 entries including cross references, and in 2 cases 20 entries) irrespective of how many founded and presented entries are relevant. The exception in this regard obtains for the Catalogue of Books and Periodicals of the Main Library of the Technical-Humanistic Academy in Bielsko-Biała, whereby in the case of finding relevant entries the system presents all of them (regardless of their number). Such a solution (suggesting other entries in addition to the relevant ones) increases the chances for opportunistic acquisition of information (table 1, situation P4). In this case, different to situations where a given system shows only relevant descriptions or index entries (B3 and P3), opportunistic acquisition of information does not have to be the result of a lack of knowledge or ability, absent-mindedness or a minimalist approach towards formulating the search query. Indeed, it may accompany correctly (from the perspective of information needs dominating at the given moment) formulated queries or even whole search strategies. In such a configuration of modes and search options, the accidental retrieval of information about the existence of any book can be seen as an additional benefit for the user, aside from the actual finding of what he or she deliberately searched for.

An interesting phenomenon can be observed here: because the number of entries presented at once is fixed, the fewer results are relevant, the more likely this solution is better for accidental retrieving of information than those described in situations P3 and B3. In the extreme scenario, if the number of relevant documents are equal or exceed the fixed number of shown entries – the situations P4 and P3 will support opportunistic acquisition of information to the same degree. For example, searching for the book *Informacja naukowa w Polsce: tradycja i współczesność* [Information Science in Poland: Past and Present] in the title index of the BJ catalogue, one will receive the searched-for entry and additionally 7 titles of other books pertaining to information science and two titles of books from other disciplines. The question remains whether a satisfied user will be as interested in other presented entries as another user who fails to find his searched-for book? However, this issue requires separate research and with the application of different methodology.

The solution, that is the showing of relevant and non-relevant descriptions beside one another, is as a rule not applied to those configurations which lead to the showing of bibliographical descriptions (table. 1, situation B4). As mentioned earlier, the possibility of the appearance of such a solution was stated only in BUO with the option of the "closest alphabetically". A search in the author index for "Oleński Józef" led to the showing of 6 relevant descriptions

of books under the authorship of Józef Oleński and of 4 completely non-relevant descriptions, and in no way related to Józef Oleński's field of scholarly interest. Of course, even those relevant books are not necessarily pertinent ones and can enter the pool of quasi-pertinent and potentially inspiring (table 1, situation B3).

Generally it is justifiable to state that the chances for opportunistic acquisition of information in configurations of modes and search options leading to the showing of bibliographical descriptions are definitely smaller than those that lead directly to indirect screens. However, here it is not justifiable to conclude that this relationship is determinist or even one of cause-and-effect. On the contrary, the research proved that both configurations could be used both in support of and adverse to opportunistic acquisition of information. And so we should take ideas from both solutions, which may improve the chances of opportunistic acquisition of information pertaining to scholarly literature in online academic catalogues.

But if there is no cause-and-effect relationship between these features, it means that their frequent co-occurrence may have another shared cause. It seems that there are some set patterns of thinking characteristic for interface designers, holding true also for those who are responsible for the implementation and choice of a given configuration. According to one pattern, the overarching objective is that of precision and search efficiency, wherein the interface is supposed to take the user to the search target in an accurate manner and with minimum effort. And so this effectively entails the ambition to reduce the number of decisions that the user must make, measured by the number of "clicks" (this is probably why in some catalogues bibliographical descriptions are shown directly with omitting intermediate screens) and to eliminate from his or her perception any potentially distracting information (e.g. irrelevant information).

However, there is also a converse way of thinking. It does not assume that the user knows best what he or she really need and that he or she is able to express this in the form of a correct search query. It rather banks on dialogue, reflection and a holistic approach to the process of information retrieval. And this means that the interface should induce its users to think and make decisions while searching for information (this is why intermediate screens are presented). This also means that not always only directly relevant search results are desirable – also those derived from the environment and unsolicited could be of high value for the user. The adoption of such a concept in the construction of online catalogue interfaces supports

opportunistic acquisition of information. Generally, it seems that breaking this dichotomy in thinking would be beneficial for designing more flexible interfaces.

NUMBER OF RESULTS

The next factor conditioning the ability of online library catalogues to "suggest" to the user a quasi-pertinent and potentially inspiring position is the number of results (index entries or bibliographical descriptions) that is shown apart from or instead of pertinent results.

The research has proved that interfaces configured to show directly bibliographical descriptions presents all the retrieved descriptions at once (of course, provided their number does not exceed the set limit which for example in BUW and BUO totals 1,000 descriptions). Conversely, as it was mentioned before, systems configured to present intermediate screens (fragments of indexes) strictly limits the number of entries presented at once. In such systems relevancy itself does not limit the number of presented entries (as in the systems directly presenting bibliographic descriptions) and this is why some sort of quantitative restriction must be applied, otherwise it would be necessary to show all the entries available in a given index.

Based on research relating to the behaviour of users of Internet search engines, it is known that user interest is focused on web pages to be found at the beginning of the list of results (Ford and others, 2002, pp. 30-31). However, one essential feature differentiates typical library catalogues from search engines – in catalogues there are no ranking mechanisms, and as a rule the alphabet decides on the order of the information displayed. Here the library user cannot anticipate that every next item on the list of results will be less valuable. And so, the number of unsolicited results he or she can notice will depend on where a relevant description or index entry is placed on the list. As a rule, in catalogues tested here this was the first result on the list. Only when searching in the author index (and in BJ also in the remaining indexes) of catalogues built on the Virtua system it was the second position on the list of results. Such a solution increases search efficiency, but hampers opportunistic acquisition of information – the user can simply ignore the remaining (not strictly relevant) results.

AUTHOR OR TITLE?

It is not possible to limit the influence of the configuration of interfaces of library catalogues on the chances for opportunistic acquisition of information exclusively to issues of the showing of irrelevant documents or the number of results placed before the user. The potential of OPACs for opportunistic acquisition of information depends not only on their ability to find and show information that have not been directly searched for but also on the content of what has been found and presented to users within the fragment of index or the set of bibliographic descriptions.

In further deliberations, situations which prevent opportunistic acquisition of information will not be taken into account (table 1, P1 and B1 situations). The starting point for further analysis is the establishing of the scope of bibliographical descriptions shown in those configurations which lead directly to their showing (table 2). Altogether, in 28 researched catalogues, 26 such configurations were identified (see Appendix 3).

Table 2. The scope of bibliographical descriptions shown in response to searches carried out in selected catalogues in the second phase of research

Scope of bibliographical description	Number of catalogues
Author, title	1
Author, title, year of publication	9
Author, title, place and year of publication, publisher	8
Author, title, place and year of publication, publisher, series title	2
Author, title, place and year of publication, publisher, physical description	1
Author, title, place and year of publication, publisher, series title, physical description	3
Author, title, place and year of publication, publisher, series title, physical description, subject heading	2 (but only in selected cases)
Total	26

If as a result of searching in the author index a fragment of this index is shown, the user receives the list of surnames with first names. Sometimes they also contain cross references to appropriate forms of names. In terms of the opportunistic acquisition of quasi-pertinent information, this may only take place in the event when the user can recognize on this list any

surname related to other (not searched for at the very moment) his/her information needs. This is almost improbable situation wherein surnames accidentally recognised and searched for would have to be very similar to each other in order to be placed together in 10 alphabetically-ordered entries from the index. It is difficult to see how such a list could inspire new needs for information, although we should not discount this altogether. After all, any surname placed on such a list may trigger a chain of associations. But if bibliographical descriptions appear in the place of index entries (see table. 2), apart from the surnames of authors, the user can also see titles, and sometimes the place and year of publication or, as in the Online Catalogue of the University of Warsaw Library and in the University Library Catalogue of the Maria Curie-Skłodowska University in Lublin, when searching in subject indexes – even subject headings. More information means a greater chance of matching some descriptions to dormant needs. There is also the potential for being inspired. Without additional research one may state that in the majority of cases the title and the subject description of the book interest the user more than the earlier unknown surname of its author. When it comes to searching in an author index, it seems to be an indisputable fact that solutions leading directly to the showing of bibliographical descriptions better support opportunistic acquisition of information.

The effects of searching in the title index do not allow for explicit judgement. Depending on the configuration of an interface, the user receives a list of titles in alphabetical order, along with information about the author (also editors, compilers etc. – for example in the catalogues based on the Virtua system and in the Catalogue of the Library of the University of Łódź based on the Horizon system) or shortened bibliographical descriptions. It is hard to judge whether additional information in bibliographical descriptions – e.g. the place and year of publication or publishing company – represent an increase in the capacity of OPACs to inspire new interests or awaken dormant informational needs. This may be such a subjective issue for which even user study may fail to provide objective assessment. It seems that a subject heading may have a significant influence, but its appearance as a description default is rare (see also table 2).

It is equally difficult to assess differences in support of opportunistic acquisition of information between subject heading lists and abbreviated bibliographical descriptions. Too many subjective factors may influence whether a subject heading is more or less inspiring than, for example, a book title.

CONCLUSIONS

The experiments and analyses which I conducted allowed for both an identification of various solutions applied in the construction of interfaces of online library catalogues and for a preliminary determination of the chances for opportunistic acquisition of information pertaining to scholarly literature. I also identified, in turn, where such situations may arise. I should emphasize that the conclusions concern only the conditions created for opportunistic acquisition of information by OPACs. The evaluation of these potentials from the perspective of use and the suitability of applied solutions pertaining to preference and the cognitive abilities of the user require further research. In order to arrive at a comprehensive overview of opportunistic acquisition of information pertaining to scholarly literature in library catalogues, one should also look to the role of various issues associated with the specificity of the given natural language and information-retrieval languages applied in different systems. Certain occurrences from this scope emerged in the course of this research, but generally these are distinct issues requiring also separately designed research.

Chances for opportunistic acquisition of information pertaining to scholarly literature in the online catalogues of academic libraries are generally small and are clearly marginalised by the tendency to improve the efficiency of systems and to concentrate on finding relevant documents. They arise as the result of negative occurrences from the perspective of the design of interfaces: of mistakes, insufficient database stores, a failure to understand search apparata or the minimalist strategies of search users. These have come to be seen as "consolation prizes", "bonuses for lazybones" or, not so often, "additional awards" for a correctly carried out search. This places opportunistic acquisition of information in opposite proportionality to the quality of these catalogues which may be understood in categories of search completeness and precision. Although it is impossible to eliminate such a correlation (if somebody finds exclusively what they searched for, they will not discover anything else by chance, and conversely, if something was noticed by chance, namely the system showed something that the user hadn't searched for), it is possible to increase chances for the "consolation prize" (and its value) and, on the other hand, to extend the visual field of the user beyond relevant documents, and in this way to interrupt the fragmentariness of the entire process. This may be understood as reducing the adverse consequences of the "keyhole phenomenon" mentioned before.

The research highlighted many inappropriate solutions in terms of supporting opportunistic acquisition of information in the configurations leading directly to the showing of bibliographical descriptions. The adoption of certain solutions characteristic for the configurations leading to the showing of intermediate screens (indexes) could significantly raise the potential of these researched catalogues for opportunistic acquisition of information – it principally demands the avoidance of the showing of empty screens in the event of the failure to find relevant documents and not limiting the response to the presentation of exclusively relevant results in case of their finding.

The possibility of applying such solutions can be attested by the configurations which are small in number but functional. It seems that enriching bibliographical descriptions by adding subject headings would produce a positive outcome. On the other hand, the possible introduction of many solutions potentially supporting opportunistic acquisition of information could reduce the efficiency of searching for pertinent information in relation to information needs as being the fundamental reason for the search.

Such consequences, for example, could be produced by the moving of the relevant index entry or bibliographic description to a lower position on the list of results with the aim of forcing the user to notice preceding irrelevant entries or descriptions. This may also involve resigning from the presentation of any entries from author indexes in favour of the direct presentation of bibliographical descriptions.

It is hoped that the research will encourage deeper reflection on human information acquisition in general, as it closely relates to the information age in terms of its unpredictability, non-descriptiveness and multi-dimensional aspects. The question remains whether current search tools will not eventually hamper the process of obtaining information? The aspiration to search efficiency and precision in library catalogues should not hide from view other aspects of obtaining information. Perhaps it is worth also considering how solutions pertaining to information retrieval are applied elsewhere in the digital environment.

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Appendix 1. List of search queries used in the experiments

Searches in separate indexes		
Index	Search query	Intended purpose of the search (pertinent results – according to the definition of the term accepted in this paper)
Author index	Dembowska Maria	Publications authored by Maria Dembowska (such as *Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce* [The Science of Information Science (Informatology): Organisation and Research Issues in Poland]. Warszawa: IINTE, 1991)
	Dembowska	As above
	Dębowska	As above – an example of mistaken surname
	Oleński Józef	Publications authored by Józef Oleński (such as *Ekonomika informacji* [The Economics of Information]. Warszawa: The Edward Lipiński Foundation for the Promotion of Development, 1988) – alternative to query "Dembowska Maria" for testing those systems, where no publications by Maria Dembowska were found.
	Oleński	As above – alternative to search query "Dembowska Maria" for testing those systems, where no publications by Maria Dembowska were found.
	jhjgdtkyh	Random entry of characters for testing those systems where relevant bibliographic descriptions were not found.
Title index	Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce	Book description: Dembowska, Maria (1991). *Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce*. Warszawa: IINTE.
	Nauka o informacji naukowej	As above – the beginning of the title

	Informacja naukowa	Book description: Ścibor, Eugeniusz, red. (1998). *Informacja naukowa w Polsce: tradycja i współczesność.* Olsztyn: Wydaw. WSP – short beginning of title	
	Informatologia	Book description: Dembowska, Maria (1991). *Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce.* Warszawa: IINTE. – a significant word from the title, but not the first one.	
	Bibliotekarstwo	Book description: Gaca-Dąbrowska, Zofia (1983). *Bibliotekarstwo II Rzeczypospolitej: zarys problemów organizacyjnych i badawczych.* Wrocław: Wydaw. UWr. – first word from the title.	
	Architektura informacji w serwisach internetowych [Information Architecture for the World Wide Web]	Book description: Rosenfeld, Louis; Morville, Peter (2003). *Architektura informacji w serwisach internetowych.* Gliwice: Wydaw. Helion – the most well-known meaning of the beginning of the title ("architektura" means "architecture") takes us radically away from the topic of the searched book, which actually is on information architecture, not on buildings.	
	jhjgdtkyh	Random entry of characters for testing those systems where relevant bibliographic descriptions were not found.	
Subject index	informacja naukowa [information science]	Bibliographic descriptions of books on i*nformation science*	
	informacja [information]	Bibliographic descriptions of books on i*nformation science*	
	metodologia informacji naukowej [methodology of information science]	Bibliographic descriptions of books on the methodology of information science	
	informacja naukowa metodologia [information science methodology]	Bibliographic descriptions of books on the methodology of information science	
	jhjgdtkyh	Random entry of characters for testing those systems where relevant bibliographic descriptions were not found.	

Searching in a number of indexes simultaneously	
Search query	Intended purpose of the search (pertinent results – according to the definition of the term accepted in this paper)
"Dembowska Maria" (author) and "nauka o informacji" [information science] (title)	Bibliographic description of one book: Dembowska, Maria (1991). *Nauka o informacji naukowej (informatologia): organizacja i problematyka badań w Polsce*. Warszawa: IINTE.
„Dembowska" (author) and „nauka" [science] (title)	As above
"Dembowska Maria" (author) and "informacja naukowa" [information science] (subject heading)	Bibliographic descriptions of books by Maria Dembowska on various aspects of *information science* (that is excluding bibliographic descriptions of any books by other authors with the same full name, but writing on other subjects)
"Dembowska Maria" (author) and "hydrologia" [hydrology] (title)	Descriptions of the books by Maria Dembowska on hydrology – for testing the systems where there are no relevant replies.

Appendix 2. List of all interface configurations for the library catalogues, which were included in the first phase of the research, tested with the use of all the search queries presented in Appendix 1

BJ – mode "Separately in indexes" (standard questions, search carried out separately in a number of indexes: "Author", "Title", "KABA subject headings")

BJ – mode "By words" (allows for the linking of indexes, additional questions)

BUP – mode "Separately in indexes" (standard questions, search carried out separately in a number of indexes: "Author", "Title", "Subject headings alphabetically")

BUP – mode "Multi-index" (additional questions – searching hampered on account of imperfections of the interface: all the time one index remains active on the page, even though it is not used in the process of formulating search parameters; formulating queries requires knowledge of specific grammar rules.

BPWr – mode "Simple search" (standard questions, search carried out separately in a number of indexes: "Author", "Title", "Subject headings") with an activated option "neighbouring words"

BPWr – mode "Simple search" (standard questions, search carried out separately in a number of indexes: "Author", "Title", "Subject headings") with deactivated option "neighbouring words"

BPWr – mode "Searching in many fields" (allows for the linking of indexes, additional questions)

BUR – mode "Simple search" (standard questions, search carried out separately in a number of indexes: "Person", "Title", "Subject headings"), option "from the beginning"

BUR – mode "Simple search" (standard questions, search carried out separately in a number of indexes: "Person", "Title", "Subject headings"), option "words"

BUR – mode "Simple search" – option "precise", only available in the subject index

BUO – no possibility of choosing a search mode (standard questions, search carried out separately in a number

of indexes: "Author", "Title", "Keyword"), options: "with fixed beginning", "search in the catalogue"

BUO – no possibility of choosing a search mode (standard questions, search carried out in the index "Keyword"), options: "with fixed beginning", "search" and "search in the index"

BUO – no possibility of choosing a search mode (standard questions, search carried out separately in a number of indexes: "Author", "Title", "Keyword"), options: "the closest alphabetically", "search in the catalogue"

BUO – no possibility of choosing a search mode (standard questions, search carried out in the index "Keyword"), options: "the closest alphabetically", "search" and "search in the index"

BUO – mode "Indexes" (standard questions)

Appendix 3. List of 28 academic library catalogues included in the second phase of the research

System	Catalog	Shows intermediate screens	Directly shows bibliographical descriptions
Virtua	Online Catalogue, University of Warsaw Library (https://opac.buw.uw.edu.pl/)	mode "Simple search"	mode "Advanced Search"
	University Library Catalogue, Maria Curie-Skłodowska University in Lublin (http://katalog.umcs.lublin.pl)	mode "Indexes"	mode "Keywords"
	Computer Catalogue, Gdańsk University Library (http://katalog.bg.univ.gda.pl)	mode "Simple search"	mode "Advanced Search"
	Computer Catalogue, Wrocław University Library (http://www.bu.uni.wroc.pl/katalog/)	mode "Simple search"	mode "Advanced Search"
	Computer Catalogue, University Library of the John Paul II Catholic University of Lublin (http://www.bu.kul.pl/katalog)	mode "Simple search"	mode "Advanced Search"
Horizon	Catalogue, Library of the University of Łódź (http://212.191.71.3/)	mode for separate search in selected indexes: author alphabetically, title alphabetically and subject heading alphabetically	mode "Multi-indeks" as well as searching in indexes: words from surname, words from title, words from subject heading
	NCU Library Catalogue, University Library in Toruń (http://opac.bu.umk.pl/webpac-bin/B_horizonPL/wgbroker.exe?new+-access+top)	mode "Indexes"	mode "Keywords"

	Computer Catalogue, Library of Łódź University of Technology (http://webpac.biblioteki.lodz.pl/bgplpl/wgbroker.exe?new+-access+top)	mode for separate search in selected indexes: author, title and subject heading	mode "Multi-index" as well as searching in indexes: words from surname, words from title, words from subject heading
	Catalogue, Kazimierz the Great University Library in Bydgoszcz (http://82.146.234.3/webpac-bwsp/wgbroker.exe?new+-access+top	mode for separate search in selected indexes: title, author, subject heading	mode "Multi-index" as well as searching in indexes: words from author's name, words from title, words from subject heading
	Online Catalogue, Poznań University of Technology Library (http://webpac.ml.put.poznan.pl/webpac-1.2-bppPL/wgbroker.exe?new+-access+top)	mode for separate search in selected indexes: author alphabetically, title alphabetically and subject heading alphabetically	mode "Multi-index" as well as searching in indexes: author-keywords, title-keywords and subject heading-keywords
Aleph	Catalogue, Library of the University of Białystok (http://212.33.72.5/ALEPH/)	mode "Indexes"	modes: "Simple" and "Many fields"
	Central Catalogue, Main Library of Warsaw University of Technology (http://gate.bg.pw.edu.pl/F/)	mode "Simple search" for the following options: words in title, author, keywords – in the event of not finding relevant records mode: "Indexes"	modes: "Simple search" for remaining cases and "Searching in many fields"
	Central Catalogue, Main Library of the Medical University of Silesia (http://aleph.slam.katowice.pl/ALEPH/)	mode "Indexes"	modes: "Simple" and "Many fields"
	Main Catalogue, Main Library of the Police Academy in Szczytno (https://aleph.wspol.edu.pl/ALEPH/)	mode "Browse"	modes: "Simple" and "Many fields"
	Main Catalogue, Main Library of the Univeristy of Physical Education in Wrocław (http://aleph.awf.wroc.pl)	mode "Browse"	modes: "Simple search" and "Searching in many fields"
Prolib	Online Catalogue, Main Library of the Silesian University of Technology (http://www.bibgl.polsl.gliwice.pl/opacwww)	mode "Simple search"	mode "Advanced search"
	Books Catalogue of the Central Medical Library (http://195.187.98.4/cgi-bin/wspd_cgi.sh/wo_log.w)	mode "Simple search"	mode "Advanced search"
	Online Catalogue, Toruń School of Banking Library (http://opac.wsb.torun.pl/)	mode "Simple search"	mode "Advanced search"

	Catalogue of Books and Periodicals, Main Library of the Technical-Humanistic Academy in Bielsko-Biała (http://www.bibl.ath.bielsko.pl/cgi-bin/wspd_cgi.sh/WService=wsbroker1/wo_log.w)	mode "Simple search"	mode "Advanced search"
	Online Catalogue, Main Library of the *Academy* of Podlasie in Siedlce (http://opac.ap.siedlce.pl/cgi-bin/wspd_cgi.sh/WService=wsbroker1/wo_log.w)	mode "Simple search"	mode "Advanced search"
Sowa	Main Catalogue, Main Library of the National Defence Academy in Warsaw – (http://biblioteka.aon.edu.pl/)	mode "Indexes"	available only as a complex mode
	Books of the Academy of Fine Arts in Warsaw (http://www.asp.waw.pl/sowa/ksiegozbior/)	mode "Indexes"	available only as a complex mode
MAK	Books, Main Library of the Christian Academy of Theology in Warsaw (http://chat.edu.pl/biblioteka/index.htm)	mode available only to allow for search in indexes separately	
	Catalogue, Library of Koszalin University of Technology (http://62.108.166.204/cgi-bin/makwww.exe?BM=1)	mode available only to allow for search in indexes separately	
MOL / Patron	Catalogue, Library of the University College of Social Sciences in Lublin (http://www.wsns.lublin.pl/biblioteka.php)	mode "Simple"	mode "Complex"
	Catalogue, Library of the Higher School of Business in Tarnów (http://217.117.134.114/scripts/opac.dll/)	mode "Simple"	mode "Complex"
TINLIB	Computer Catalogue, The Library of the Cracow University of Technology (http://www.biblos.pk.edu.pl/katalog_info)		modes "Simple search" (allows for searching in different indexes simultaneously!), "Complex search" (also allows for searching in different indexes simultaneously!), "Advanced search"
	Catalogue, Main Library of the Kielce University of Technology (http://katalog.tu.kielce.pl/WebOPAC/index.asp)	mode "Browsing"	modes: "Simple search" i "Super search"