



## Finding fiction: Search moves and success in two online catalogs



Anna Mikkonen\*, Pertti Vakkari

School of Information Sciences, University of Tampere, FIN-33014, Tampere, Finland

### ARTICLE INFO

#### Article history:

Received 15 July 2014

Received in revised form 23 August 2015

Accepted 29 January 2016

Available online 19 February 2016

### ABSTRACT

Search moves for finding novels in five search tasks and two catalogs were analyzed. Search tasks reflected the following search tactics: known-author search, topical search, open-ended browsing, search by analogy, and searching without a query. The most used search moves in both catalogs across all tasks were querying, search results inspection, and book page examination. In a traditional catalog, more effort was needed in the form of queries, search moves, and opened book pages to gain equivalent average book scores when compared with an enriched catalog. In a traditional catalog, a typical search strategy for interesting titles seemed to involve issuing queries and considering suitable entry terms carefully, and devoting more attention to search results instead of book pages. In an enriched catalog, a common approach involved time devoted to exploring the catalog's enriched front page and multiple entry points together with attention to the enriched results list.

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### 1. Introduction

Leisure reading focuses on fiction (National Endowment for the Arts, 2012; Van Riel, Fowler, & Downes, 2008). Fiction is often searched for and found in public libraries (Maker, 2008; Moyer & Weech, 2005; The Reading Agency, 2013; Yu & O'Brien, 1996). In 2013, 44% of all book loans in public libraries in the United Kingdom were for fiction (The Reading Agency, 2013). Although it is known that leisure reading concentrates mostly on fiction, and fiction readers make up a large portion of the public library clientele, it is not known how readers are currently using library catalogs for fiction searching.

Research on search behavior in digital systems has mainly focused on retrieving non-fiction (e.g. Hessel & Fransen, 2012; Lau & Goh, 2006; Moulaison, 2008; Waller, 2010). Users' interaction with library catalogs in fiction retrieval is clearly an under-researched area, although research interest in fiction retrieval as a casual leisure activity is on the rise (Stebbins, 2007). For example, Buchanan and McKay (2011) examined search strategies used for finding books. Thudt, Hinrichs, and Carpendale (2012) have designed visualization techniques to support serendipitous book discovery in digital library collections. Oksanen and Vakkari (2012) have studied how enriched tools are used when searching for novels in a catalog. In addition, Pöntinen and Vakkari

(2013) have examined how readers explore the fiction metadata in a gaze tracking study.

### 2. Problem statement

In recent years, public library online catalogs have been developed to meet the needs of diverse reader groups. Unique metadata that enrich the bibliographic description of a collection and enable users to browse and interact with the collection have become increasingly available in online library catalogs (Eden, 2002). The concept of an enriched library catalog (or a metadata-enriched library catalog) refers to various metadata elements and applications (such as book cover images, book descriptions, and virtual book shelves) that provide many different kinds of access points to library collections and allow users to read, add reviews, and generate content; these metadata supplement professionally created metadata. In spite of the development of enriched library catalogs and enhanced fiction content description, evaluation of these tools in fiction retrieval is scarce. Little is known about how fiction readers currently search for recreational reading material in enriched online catalogs as compared to traditional catalogs. A better understanding would inform the design of library catalogs for finding fiction. The study addresses the following research questions:

1. Which search moves are applied in different types of search scenarios for finding fiction?
2. Are there differences in search moves among different types of catalogs?

\* Corresponding author.

E-mail address: [anna.mikkonen@uta.fi](mailto:anna.mikkonen@uta.fi) (A. Mikkonen).

3. Are there differences in search moves among different types of search tasks?

### 3. Literature review

#### 3.1. Search moves and tactics

Search moves and search tactics in online searching have been examined by (among others) Bates (1979, 1990); Fidel (1985); Wildemuth (2004), and Xie and Joo (2010). Fidel (1985) described a search move as a query formulation during a search process. By analyzing 90 searches, she identified operational and conceptual search moves. Operational search moves modified the query without changing the meaning of query components, whereas conceptual search moves changed the meaning of query components. Bates (1979) identified 29 search tactics in four categories: monitoring, file structure, search formulation, and term tactics. In subsequent research, Bates (1990) presented levels of search activities from a search move to a search strategy. A search move refers to an identifiable action that is a part of information searching.

According to Wildemuth (2004), a search move refers to an iteration in the search formulation and reformulation process. Instead of analyzing individual search moves, Wildemuth examined the sequences of moves. A set of moves that were temporally and semantically related was described as a search tactic. Xie and Joo (2010) analyzed transitions of search tactics during online searching. They defined search moves as basic actions in the information search process. Search moves form search tactics, which refer to users' choices that are applied to advance the search process.

#### 3.2. Search tactics for fiction

Pejtersen (1989) has identified four search tactics that apply to fiction searching in online catalogs. A bibliographical search tactic is used when readers are searching for a known item or author. An analytical search tactic is used when readers wish to access books about a specific topic, such as the French revolution. A search-by-analogy tactic is generated when readers want something similar to a novel they have read. A browsing tactic is applied in situations when readers have only a vague idea of what they would like to read. To support the four search tactics applied for fiction searching, Pejtersen (1989) presented the BOOKHOUSE model. In the model, the works of literature are indexed with the AMP classification scheme, which has four independent dimensions: subject matter, frame, author's intention, and accessibility (Pejtersen, 1989; Pejtersen & Austin, 1983, 1984). Evaluation of BOOKHOUSE revealed that users were especially satisfied with the indexing principles because they were effectively matching the users' perception of the contents of the books. Also, the ability to use different search tactics gave the users a sense of system flexibility, as it enabled different routes to the contents of the collection. The most popular search tactics used in BOOKHOUSE were the analytical search tactic and search within book cover images (Pejtersen, 1989).

Adkins and Bossaller (2007) compared different entry points for fiction collections in online bookstores, reader advisory databases, and public library catalogs. They suggested that public library catalogs can function effectively, especially for known-item searches. Hinze, McKay, Vanderschantz, Timpany, and Cunningham (2012) observed the book selection process in academic libraries and found that browsing and serendipitous discoveries were not effectively supported in digital libraries.

Oksanen and Vakkari (2012) examined search tactics in an enriched public library catalog. They found that advanced search, exploring result lists, and inspecting book pages were the major search moves for fiction. The findings suggested that effort invested in inspecting search results and book pages instead of querying was an essential factor for finding interesting novels in browsing situations. In their gaze tracking study,

Pöntinen and Vakkari (2013) examined how the metadata of books were examined in an enriched catalog compared to a traditional catalog when searching for fiction. They found that the same metadata elements were inspected as much in both catalogs. The strongest predictor of successful book selection was the duration of visits to the author/title information, suggesting that the content description did not play a crucial role in fiction selection.

In fiction searching, the concept of social browsing (Peters, 2011) refers to the ability to re-orientate browsing by social navigational tools (Tang, Sie, & Ting, 2014). Tang et al. conducted a user study of aNobii, an online book sharing website. It provides three social book-finding tools: browsing books by known authors, browsing similar bookshelves, and browsing friends' bookshelves. The author browsing was found to be the most efficient, while browsing similar and friends' bookshelves produced more serendipitous choices.

In addition to social browsing, user interfaces such as Blended Shelf (Kleiner, Rädle, & Reiterer, 2013) and Bookfish (Pearce & Chang, 2014) visualize book collections and offer the possibility for serendipitous browsing and discovery with visual tools. However, evaluation studies of the usability and usefulness of these tools in fiction book search remain scarce. In the Bohemian Bookshelf, introduced by Thudt et al. (2012), serendipitous book discovery in a library catalog was enabled through information visualization techniques such as virtual book piles, book recommendations, and visualization of connections among books. The Bohemian Bookshelf was created to support especially open-ended explorations and the browsing search tactic. The use of folksonomies, such as tag clouds, and their effect on user behavior in an academic library context was studied by Anfinnsen, Ghinea, and de Cesare (2011). Tag clouds were found to encourage users to browse a catalog in depth and to enhance active user involvement. Similarly, Hassan-Montero and Herrero-Solana (2006) noticed that tag clouds may increase users' browsing activity.

## 4. Procedures

### 4.1. Participants

Participants were recruited in three cities situated in the Pirkanmaa, Kanta-Häme, and Uusimaa regions in Finland. In order to find participants with realistic and natural fiction reading interest, 80 people were recruited in public libraries, in fiction reading groups, and in writing and literature classes in the Open University of Finland. The writing and literature classes were open to all adult students paying a course fee, regardless of age or educational background. The literature and writing classes were arranged in cooperation with university departments. In addition, the snowball sampling method and a newspaper advertisement were used. Participants were offered a movie voucher to participate in the study. Participants with no genuine fiction reading interest were excluded from the study.

The participants were randomized into control and test groups, where the control group used a traditional online catalog and the test group used an enhanced catalog that provided enriched fiction related metadata elements (such as cover images and book descriptions) and enabled users to browse the collection via different access points to literature. In both groups, 18% of the participants were male and 82% female. In both groups, the age distribution of participants varied from 20 to 80. In the group using a traditional catalog, participants averaged 34 years of age (*SD* 12.7). In the case of the enriched catalog, participants averaged 42 years of age (*SD* 16.8). The age distribution of participants in the enriched catalog group was significantly higher in comparison with the age distribution in the traditional catalog group ( $t = 2.46$ ,  $p < 0.05$ ). The educational level of the participants was designated as middle or high. Middle level education is a comprehensive school education, which is finished when the syllabus of a comprehensive school education has been completed. This compulsory education starts in the year of the child's seventh birthday and is finished when the

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