
Taking Our Sweet Time to Search

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Abstract

In this paper we make the case for slowness in search. The main tenet of information seeking today is retrieving the right result rapidly. Developments such as instant search, question answering, and fact sheets strive to further this tendency towards acceleration. While there is value in quick lookups, the emphasis on immediacy not only limits the temporal scope of search, but also the breadth of what search can be as a human activity. In deliberate contrast to fast facts, we propose the concept of slow search and derive some design directions for a type of search that is a longer, maybe more laborious or ludic, process.

Author Keywords

Information seeking, search, time, slow technology.

Introduction

Not so long ago, finding something interesting to read was a time-consuming procedure involving, among other things, entering a place filled with books, browsing through little cards sorted by author or subject, walking between rows of packed shelves, and grasping books with our bare hands. During this time one might have taken several flights of stairs, encountered a fellow reader, had a chat with a friendly librarian, and thus also learned about a few other possibly interesting books. If we exchange this admittedly romanticized process of finding a book at a library with today's search interfaces, we are seeing not only dramatic reduction in the time spent retrieving an item, but also a drastic diminution of a social, embodied, and multisensory experience.

This paper is not a nostalgic look back into seemingly distant ways of organizing and retrieving books, but rather an invitation to reconsider time in information seeking. Our general aim is to rethink time as a dimension that is not to be reduced but rather expanded, transformed, and enriched. In the subsequent sections we will relate current developments in information seeking with the growing aspirations to recover slowness as a positive quality in our lives. We hope that an explicit treatment of time in the design and study of search interfaces can improve our understanding and support of information seeking.

Background

To cope with the rising sea of information, search experts see the future of information retrieval in question answering [3]. To some degree question answering is not the future anymore, but already the present for many people. Apple's voice command software Siri provides not only verbal access to the functions of the mobile device, but it also gives quick answers to a wide range of general questions for example about the weather and sports. Google Search has also been moving towards question answering with its knowledge graph and the associated side panels providing facts about people, places, and many other types of entities. Furthermore, Google's instant search function updates the search results as the searcher enters the query promising 2-5 seconds saved per search.

Despite this trend towards quick answers in search, there is a growing dissatisfaction with the prominence of the fast facts model for search. More and more evidence point at more long-term information practices with diverging notions of search as information encountering and exploration. Studies of information practices show how people often encounter important information without explicitly searching for it, but by purposefully monitoring their environment over longer periods of time [10]. What

is particularly interesting, is that people with a tendency to encounter useful information serendipitously are more inclined to move laterally between interests and problems across multiple time windows to cross-pollinate their discoveries [2]. This longer time frame for search is also present in exploratory search, a higher-level form of information seeking that includes learning and investigation over multiple search sessions [6].

The dominant model of search as instantaneous and short-lived seems largely at odds with exploratory information practices. A concept that rose to prominence recently is serendipity, which is commonly understood as a fortunate discovery. Serendipity is known to play an important role in having scientific insights and artistic inspiration; it requires an "open and questioning mind" to see hidden connections [4]. An essential aspect attributed to serendipity is the intellectual capacity to recognize a discovery and act upon it [1]. However, cultivating a questioning mind that is able to recognize discoveries requires time and thought, something which our fast-paced search interfaces are not designed for. How can we help searchers to recognize the value in slowness? A recent effort to support serendipitous information practices proposes interactive visualizations as multiple entrance points into and diverse perspectives onto an information collection to encourage curiosity and play [8].

Towards Slow Search

While today's search assumes that we we can approach the rising sea of information with increasing speed, could we approach it with slowness instead? To answer this question we take Sten Nadolny's protagonist in *The Discovery of Slowness* as our role model [7]. The semi-fictional Sir John Franklin is born slow. Despite the difficulties that this trait brings, Franklin learns to embrace his slowness as a source of calmness, strength,



Figure 1: Slow search is a type of information seeking that favours perspective and reflection over facts and immediacy.

and endurance, which allow him to sail around the world as an arctic explorer and write books about his discoveries. If we consider the rising sea of information, can we think of ourselves as slow explorers? How can we be searchers who are not overwhelmed by great quantities, but whose slowness affords reflection and perspective?

There is a growing movement determined to recover the value of slowness in many aspects of everyday life such as food, travel, and technology [9]. Slow technology should give time and space for learning, reflection, and presence as opposed to taking time away by shortening tasks [5]. These different efforts can be summarized by three key aspirations towards slowness at different levels:

- Encourage rest and reflection.
- Expand a practice that has become reduced.
- Expose inner logic and hidden workings of a system.

We now use these aims to formulate goals for slow search. We are particularly interested in personal, cultural, and technological implications of slowness for search.

Person. On a personal level, slowness gives the searcher permission to take a step back, take a deep breath, and think thoroughly about their information need as well as the presented information. Our goal is to invite the searcher into a reflective search activity, by slowing down the search process and thus encouraging them to be mindful of their intentions, present in their interactions, and reflective about what is presented to them.

Culture. Considering search as a cultural practice, we wish to expand its scope from a simple lookup to an extensive journey that may require the development of skills and lead to rich stories. Time becomes a crucial aspect of an information voyage to perceive semantic distances among information items and to structure narratives woven together from diverse discoveries.

Technology. Search rankings can be read as judgements about what is true and important, however, the contested nature of rankings is hidden and presented in a neutral way, which is actually the result of an ongoing struggle of search-engine optimizers and software engineers. Instead of picking the first result and moving on, a slowed-down search invites the searcher to peek behind the curtain and make otherwise hidden connections.

Our aim behind slowing down search is to give the time and space necessary to treat search through digital information spaces as a critical and creative activity.

Design Directions

With slow search as a starting point, we will now speculate about possible ways to create search interfaces towards slowness.

Subverting lookups into strolls. People already experience shifts from fast to slow searches, for example, when quickly looking up facts on Wikipedia and slowly finding themselves ambling from one article to the next. While some may file this under browsing, we are interested in this phenomenon as a shift from fast into slow search modes. On one hand, it seems to be the familiar format and consistent structure of Wikipedia pages that let us pan between close reading and skimming, and find interesting information along the way. On the other hand, we can adjust the focus of our interest by zooming in and out of such a stroll by following links to respectively more specific or more general articles. To achieve such panning and zooming movements in a search interface, one could include complementary queries and results, and suggest some more specific and more general queries. Results and queries would need to be displayed without obstructing the search task, yet be present enough to allow for a detour deviating from the original information need.

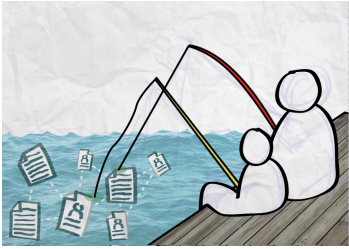


Figure 2: Environments for slow search nurture moments of patience and contemplation.

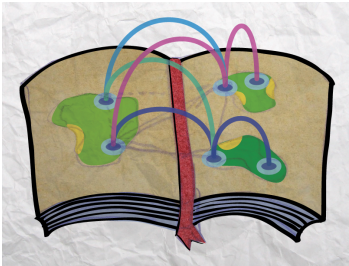


Figure 3: Journals capture search journeys based on logged steps, manual waypoints, and custom decorations and descriptions.

Slow search spaces. Besides subverting conventional search interfaces for the cause of slow search, one can also create information environments that are by default conducive to slow search activities. Similar to how people often enter a bookshop without a particular title or author in mind, a slow search environment would invite the searcher to follow their interest and slowly but steadily search through the information resources. To expand our understanding of search, a slow search space could reveal the inner workings of search by disclosing sources, the basis of rankings, and relations among items.

Journals of journeys. While a slow search activity may have no clear purpose or goal, searchers may want to return to their discoveries, for example, to revisit valuable information, gather material for a story, or share bits with other people. However, if there is no record of a long-term search session, one might lose track of what one has found along the way. The existing bookmarking and note-keeping services mostly fail to weave items into a coherent path. To go beyond an automatic history, there should be a low threshold to mark waypoints. These waypoints could become the basis for a journal, like a scrapbook that allows flexible spatial arrangements and rich visual decorations of discoveries and thus let people personalize their experiences and share them with others.

Conclusion

There is definitely a place for quick lookups, the success of Apple's Siri and Google's instant search is a testament to people's desire to make quick factual searches. However, we are convinced that these interfaces are not the most adequate ones for going on longer-lasting information journeys involving joyful digressions, open questions, and profound reflections. We are looking forward to fruitful discussions with workshop participants about these tensions around time and slowness in search and beyond.

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