

Casual-leisure Searching: the Exploratory Search scenarios that break our current models

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ABSTRACT

In trying to understand Exploratory Search, the community has focused on users who are working towards an information need, but who are unclear of their goal, technology, or domain of information. Our recent research, however, suggests that this definition misses perhaps the most exploratory search scenario of all - scenarios where the goal is not information-oriented. We present combined evidence from two on-going research projects, which demonstrates that such situations occur regularly within casual-leisure situations. We use our findings to characterise such tasks and suggest that casual-leisure search scenarios deserve more focus as we work towards supporting exploratory search.

Keywords

Exploratory Search, Information Needs, Casual Search

1. INTRODUCTION

In trying to understand Exploratory Search, the community has focused on users who are working towards solving an information need, but who are unclear of their goal, technology, or domain of information. Exploratory searches typically involve learning or investigating. Similarly, Information Seeking typically presumes the resolution of an information need. In two separate research projects, however, we have recorded several examples of real-life information behaviours that are outside of our definition of Exploratory Search, and do not fit the model of ‘Work Tasks’ at home. Although neither project was focused on exploratory search, both revealed novel scenarios that we believe need more focus in our community. These novel scenarios include users with no explicit information need to solve and where the act of searching is often of greater importance than the content found. Such scenarios, which occur regularly in casual-leisure situations [12], are often more exploratory than the notions of learning and investigation that we currently work with, and are sometimes performed for much longer periods of time.

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In the following sections we first summarise important information seeking and exploratory search research, and discuss related work from leisure-studies, which frames our recent findings. We then provide an overview of our two research projects, highlighting the findings on casual-leisure information behaviours. We conclude by presenting an initial definition of casual-leisure searching and discuss the impact that our results may have on how we define and study exploratory search.

2. RELATED WORK

Our models of Information Retrieval (IR), Information Seeking (IS), Exploratory Search (ES) and Sensemaking are all typically information focused. IR is well established as the more technical returning of relevant documents or information in relation to a specific given query. IS is more behaviour-oriented, describing the resolution of an information need [8]. ES is defined as trying to resolve an information need when the searcher has limited knowledge of their goal, domain, or search system [13], normally involving some kind of learning or investigating behaviour [9]. Sensemaking has been described as bridging a knowledge gap [2]. Each of these definitions underlines the assumption that searching occurs to find information (or media, etc).

Investigations have revealed that these situations are often motivated by work tasks [6], where one or more information seeking episodes help resolve a higher level need. It is typical within the IS community to consider that Exploratory Search or Sensemaking occurs in order to write a report, and that as part of IS process, IR is performed to find references. Included in the definition of ‘Work Tasks’ is the notion of personal work tasks, such as buying a car or booking a holiday (e.g. [10]).

Despite including “personal tasks”, most of the models underpinning the mentioned research stem from library and information science, which has historically focused on work contexts. However, technological advances and cultural changes mean that information now pervades peoples’ everyday lives and non-work scenarios have become increasingly important with respect to information behaviour research [5, 4]. Stebbins [12] characterises non-work or leisure activities as hedonic in nature, the benefits of which include 1) Serendipity; 2) Edutainment; 3) Regeneration or re-creation; 4) Maintenance of interpersonal relationships; and 5) Well-being. Stebbins distinguishes between 3 different leisure situations: *Serious leisure*, e.g. serious hobbies or volunteer activities; *Project-based leisure* e.g. planning a holiday or car purchase; and *Casual leisure* short, pleasurable activities requiring lit-

tle or no special training to enjoy.

It is within the third space, casual-leisure, where least information seeking research has been performed and has been the focus of our research. Our work has highlighted specific examples of search behaviours that we believe are of interest to the exploratory search community. Below, we characterise these situations as found in our two studies and provide an initial definition of casual-leisure search behaviours for the community to work with.

3. TV-BASED CASUAL INFORMATION BEHAVIOURS

In recent work [3], we performed a diary study with a heterogeneous population (n=38) to learn about information needs in the context of television viewing. An inductive grounded theory approach was taken by four researchers on both the needs recorded and motivating factors to produce affinity diagrams and a final coding scheme for both needs and reasons. The final coding schemes can be found in [3]. Here we focus on then novel scenarios relating to exploratory search behaviours.

We found many examples of standard information needs that fit into the information-oriented models of how we search; example quotes are shown in Table 1. Participants noted, for example, wishing to know the name of an actor, or finding the time that a specific show was going to begin. These tasks involve an information need, and the goals are not satisfied until the information was found. Others involved making viewing decisions, and depended on multiple factors such as obtaining a plot summary of a film in order to decide if they had seen it before. These are good examples of needs with complex and multiple dependencies – the kind typically investigated in ES.

- (a) Need: How old was Tina Turner when that concert was filmed?
- (b) Need: [I would like] a list of interesting films / documentaries showing, from 7 or 8pm
- (c) Need: “[I am looking for] up-to-date news; [I need to know the] channel and time of broadcast”

Table 1: Example tasks recorded in diary entries: (a) a simple information-based need, (b) a fuzzy information-based need, and (c) a complex information-based need.

Many of the motivations recorded were not information-oriented, as shown in Table 2. At the highest level, we saw participants wishing to ‘kill time’, while others noted wishing to find something to distract their attention or provide something entertaining to support a laborious task like ironing. In each of these cases, the answer or information found was not of critical importance. When looking for edutainment the participants’ needs were mostly non-specific in nature with participants noting a desire for something “interesting”, “sophisticated” or “challenging” and not on a particular topic or domain as would be typical of work-based tasks. Participants often reported satisficing for the first appropriate result they found, regularly not being bothered to check if there was a better or more appropriate option available.

From analysing the motivating reasons, we recorded examples of users wishing to enhance or change their mood, by finding something relaxing, thrilling, entertaining, or simply new. We also saw people finding something to watch

Need:	[I want an] entertaining programme, something funny, to distract me
Reason:	Stressful day!
Need:	[I want] something interesting, distracting, informative, cultured such as a travel report or history programme
Reason:	I need to iron and at the same time i like to watch tv - it takes my mind off the chore
Reason:	Stressful day!
Need:	[I’m looking for] short entertainment during dinner
Reason:	[I have a] little time to waste
Need:	Channel hopping
Reason:	I’m bored

Table 2: Example entries where the information need is secondary to the experience of searching.

because they could not sleep, or because they were feeling curious. Again, in these situations, people aimed primarily to achieve a hedonistic goal, where success in their search was more closely tied to achieving this primary aim than finding a specific show to watch. The last example in Table 2, the oft recorded “need” to channel hop, which was regularly motivated by a short period of free time or boredom, particularly highlights the importance of experience over information found.

This investigation of information needs in the context of a particular casual-leisure activity has provided novel insights into how and why people search, but it is not clear how these generalise into other casual-leisure situations e.g. online shopping. Our second project, discussed below, has begun to demonstrate that these kinds of scenarios do pervade both our physical and digital worlds.

4. HARVESTING REAL SEARCH TASKS

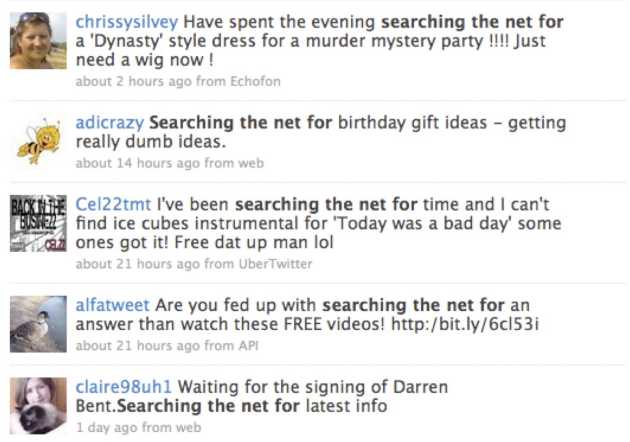


Figure 1: Example tweets about real information needs and searching behaviours.

In the second study, Twitter¹ was used as a data source to learn about casual-leisure information behaviour in a wide variety of situations. Twitter provides a public forum where people discuss a broad range of everyday life experiences, including search behaviours [14]. We collected a corpus of 2.4M unique tweets over 5 months by accessing and storing tweets containing search-oriented keywords like ‘browse’,

¹<http://www.twitter.org>

‘explore’, and ‘search’ in their past, present, and future tenses. 12 seed-terms were used to query Twitter each hour, with the 100 newest tweets being stored each time. Our corpus contains information about hundreds of thousands of real human searching scenarios and information needs, some examples are shown in Figure 1.

To investigate the information behaviours described in the corpus, we embarked on a large-scale qualitative, inductive analysis of these tweets using a grounded theory approach. With the aim of building a taxonomy of searching scenarios and their features, we have so far coded 2500 tweets in approx. 40 hrs of manual coding time. Already, we have begun to develop a series of dimensions and learned, ourselves, a great deal about the kinds of search scenarios that people experience in both the physical and digital domains.

To date, we have identified 10 dimensions within our taxonomy, 6 of which were common in the dataset and have become fairly stable. We will present this taxonomy in future work, when more tweets have been coded and the taxonomy is complete. Further, once the taxonomy is stable and has been tested for validity, we will use alternative automatic or crowd-sourcing techniques to gain a better idea of how important the factors are and how they relate. Here, however, we will highlight some of the casual-leisure search behaviours documented so far.

4.1 Need-less browsing

Much like the desire to pass time at the television, we saw many examples (some shown in Table 3) of people passing time typically associated with the ‘browsing’ keyword.

- 1) ... I'm not even *doing* anything useful... just browsing eBay aimlessly...
- 2) to do list today: browse the Internet until fasting break time..
- 3) ... just got done eating dinner and my family is watching the football. Rather browse on the laptop
- 4) I'm at the dolphin mall. Just browsing.

Table 3: Example tweets where the browsing activity is need-less.

From the collected tweets it is clear that often the information-need in these situations are not only fuzzy, but typically absent. The aim appears to be focused on the activity, where the measure of success would be in how much they enjoyed the process, or how long they managed to spend ‘wasting time’. If we model these situations by how they manage to make sense of the domain, or how they progress in defining their information-need, then we are likely to provide the wrong types of support e.g these users may not want to be supported in defining what they are trying to find on eBay, nor be given help to refine their requirements. We should also point out, however, that time wasting browsing was not always associated with positive emotions (Table 4).

- 1) It's happening again. I'm browsing @Etsy. Crap.
- 2) browsing ASOS again. tsk.
- 3) hmmm, just realized I've been browsing ted.com for the last 3 hours.

Table 4: Example tweets where the information-need-less browsing has created negative emotions.

The addictive nature of these activities came through repeatedly and suggests perhaps that support is needed to

curtail exploration when it is not appropriate.

4.2 Exploring for the experience

Mostly related to the exploration of a novel physical space, we saw many people exploring *with* family and friends. The aim in these situations (see Table 5) is often not to find specific places, but to spend time with family.

- 1) exploring the neighbourhood with my baby!
- 2) What a beautiful day to be outside playing and exploring with the kids:)
- 3) Into the nineties and exploring dubstep [music] while handling lots of small to-dos

Table 5: Example tweets where the experience outweighs the things found.

In these cases, the goal may be to investigate or learn about the place, but the the focus of the activity is less on the specific knowledge gained than on the experience itself. Another point of note is that in these situations people regularly tried to behave in such a way that accidental or serendipitous discoveries were engendered. While examples 1) and 2) are physical-world examples, it is easy to image digital world equivalents, such as exploring exploring the Disney website with your children.

Below we attempt to combine the characteristics we have discovered to create an initial definition of what we refer to as casual search.

5. CASUAL SEARCH

We have seen many examples of casual information behaviours in these recent projects, but here we highlight the factors that make them different from our understanding of Information Retrieval, Information Seeking, Exploratory Search, and Sensemaking. First, we should highlight that it is not specifically their information-need-less nature that breaks the model of exploratory search, although some examples were without an information need entirely. The differentiators are more in the motivation and reasoning for searching, where all of our prior models of search are typically oriented towards finding information, but casual search is typically motivated by more hedonistic reasons. We present the following defining points for casual search tasks:

- In Casual search the information found tends to be of secondary importance to the experience of finding.
- The success of Casual search tasks is usually not dependent on actually finding the information being sought.
- Casual search tasks are often motivated by being in or wanting to achieve a particular mood or state. Tasks often relate at a higher level to quality of life and health of the individual.
- Casual search tasks are frequently associated with very under-defined or absent information needs.

These defining points break our models of searching in several ways. First, our models focus on an information need, where casual search often does not. Second, we measure success in regards to finding the information rather than the experience of searching. Third, the motivating scenarios we use are work-tasks, which often is not appropriate in casual search.

5.1 Discussion

In many ways, we are typically aware of these casual information behaviours in everyday life. Most of us have ourselves wasted time, either intentionally or accidentally, endlessly following links in Wikipedia or watching related movies on youtube. Similarly, services like flickr are for sharing and discovering interesting photographs, where trying to find suitable images for a work task is only one identifiable use of the system.

Yet our investigations into Exploratory Search, for example, typically focus on whether people were able to find what they wanted. In evaluating the MrTaggy interface [7], for example, the amount learned was measured by the quality of subsequent report writing and level of cognitive load. Yet systems built with social tags are often designed to help people discover interesting content. It may be also interesting, therefore, to measure how long a user wants to continue an exploratory search task or the affects the task has on his mood or state. Capra et al [1] chose specifically not to use time as a metric for ES, noting that a good ES system may encourage people to search for longer. Their tasks, however, had information-oriented learning goals, and so increased time would not have been a suitable measure in their case either. More appropriate measures of casual search are beginning to arrive. O'Brien et al [11], for example, have designed a measure of Engagement, identifying how long people remain engaged in an activity, and what factors influence their prolonged engagement. Our work supports the use of this kind of metric for casual search scenarios.

Beyond challenging the way we measure the success of exploratory search tasks, we must also consider the way we define exploratory search tasks. Currently, we design tasks that have information-oriented Work Tasks, such as trying to buy a new piece of technology or writing a report. We must consider how we can, with high ecological validity, create studies where users are provided with hedonistically motivated tasks. Studies could be designed, for example, where users are told that there is a unforeseen delay and told they may use a computer while they wait. Then, when they appear to be bored, or after a reasonable amount of time, the faux-study continues.

We believe these insights into *casual search* are particularly important for the study of Exploratory Search, where our working definition of Exploratory Search does not include searchers with non-information oriented goals. Further, these activities are important to health and wellbeing [3]. Some of the casual information behaviours we have identified motivate people to explore for websites for hours, but our definition of exploratory search does not cover them all. The community will struggle to design effective support for these lengthy casual search scenarios, or indeed the short hedonistically motivated searches, if continuing focusing on systems that help build knowledge or refine information needs.

6. SUMMARY

In this paper we have presented initial evidence, from two recent and on-going research projects, towards a notion of *casual search*. We believe that *casual search* is not properly covered by existing definitions of information seeking and exploratory search, but is perhaps one of the more exploratory scenarios discovered so far. People engaged in casual search

are typically not trying to resolve an information need, and their objective is not to learn or investigate. Instead casual search involves hedonistically motivated scenarios which involves, for example, searching to be entertained and satisfying for any result that, in this case, enjoyable. Consequently, the models and measures we have for exploratory search may not be sufficiently inclusive, and may need redefining. Instead, we may wish to focus on measures of maintained engagement (e.g. [11]) for how well a search system supports need-less exploration.

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