Is there a Ghost in the [Search] Machine? Improving Search UX using Query Analysis and Machine Cues

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### pinboard.in tag

### pinboard.in/u:jasonclark/t:search-ux/

### twitter as channel (#hashtag)

## @jaclark #DLFforum

### Overview

- What are the "ghosts" of the search act?
- Applying context and intention to Search UX
- Anticipatory Design in a search prototype
- Questions



### MIND | BODY

#### The Concept of Mind

Gilbert Ryle

"Such in outline is the official theory. I shall often speak of it, with deliberate abusiveness, as "the dogma of the Ghost in the Machine." I hope to prove that it is entirely false, and false not in detail but in principle. It is not merely an assemblage of particular mistakes. It is one big mistake and a mistake of a special kind. It is, namely, a category mistake."

Ryle, Gilbert, "Descartes' Myth," in The Concept of Mind, Hutchinson, London, 1949

### Search Act | Context + Intention

Search Act => Context + Intention



Ask the Library 😪



### Thinking the unthinkable: a library without a catalogue — Reconsidering the future of discovery tools for Utrecht University library

Home News

Read a very interesting piece from Simone Kortekaas (Utrecht University Library) – a summary of the author's presentation at the LIBER General Annual Conference 2012.

![](_page_11_Picture_3.jpeg)

Like every other library, we at Utrecht University Library have always offered our users a catalogue. In 2002 we built our own discovery tool specifically designed for electronic journal articles. We called it Omega and it immediately became a huge success. Explaining this separate tool for e-journals to our users was not difficult. Looking for printed material? Search the WebOPAC. Looking for electronic journals or e-books? Search Omega. Looking for specific disciplines or materials? Search the dedicated electronic databases. This division also determined the layout of our homepage. In the last few years, things have been changing rapidly. New commercial discovery tools such as Primo and Summon entered the library market and we lost our pioneering role. Meanwhile more and more users are finding their way to our licensed journals through larger and stronger search engines like Google Scholar which is freely available on the Internet and contains massive numbers of scientific material. But our users also switched to databases we subscribed to such as Web of Science and Scopus. Statistics showed that usage of our library catalogue and Omega was stabilising while the usage of our licensed journals was still growing. The time had come to rethink the future of our library

![](_page_11_Figure_5.jpeg)

![](_page_12_Picture_0.jpeg)

Figure: Google UI inviting natural language question - "Calories in cranberry sauce?"

# What are the Ghosts in the Search Act?

search query =
literal aspect + inferred aspect

### "yellowstone national park" [search query]

### "yellowstone national park" [literal aspect]

iPhone user, on MT highway [tacit, inferred aspect]

### This is anticipatory design.

www.smashingmagazine.com/2015/09/anticipatory-design/

### Cues from the "live" Query

\$cueWords = array( "about", "above", "across", "after", "afterwards", "again", "against", "all", "almost", "alone", "became", "because", "become", "becomes", "becoming", "been", "before", "beforehand", "behind", "being", "below", "beside", "besides", "between", "beyond", "by", "call", "can", "cannot", "cant", "could", "couldnt", "cry", "describe", "do", "either", "except", "few", "fill", "find", "found", "from", "front", "full", "further", "get", "give", "go", "had", "has", "hasnt", "have", "how", "however", "hundred", "if", "in", "indeed", "interest", "into", "is", "keep", "might", "mine", "more", "moreover", "most", "mostly", "move", "much", "must", "my", "myself", "name", "never", "nevertheless", "nor", "not", "nothing", "now", "nowhere", "of", "off", "often", "on", "once", "one", "only", "onto", "or", "other", "others", "otherwise", "our", "ours", "ourselves", "out", "over", "own", "part", "per", "perhaps", "please", "put", "rather", "see", "seem", "seemed", "seeming", "seems", "should", "show", "side", "since", "so", "some", "somehow", "someone", "something", "sometime", "sometimes", "somewhere", "still", "such", "system", "take", "temp", "temperature", "than", "that", "the", "their", "them", "themselves", "then", "thence", "there", "thereafter", "thereby", "therefore", "therein", "thereupon", "these", "they", "this", "those", "though", "three", "through", "throughout", "thru", "thus", "to", "together", "too", "top", "toward", "towards", "under", "until", "up", "upon", "us", "very", "time", "were", "weather", "what", "whatever", "when", "whence", "whenever", "where", "whereafter", "whereas", "whereby", "wherein", "whereupon", "wherever", "whether", "which", "while", "whither", "who", "whoever", "whole", "whom", "whose", "why", "will", "with", "within", "without", "would", "yet", "you", "your", "yours", "yourself", "yourselves");

```
cueWords = ["about", "above", ..., "can", ...]
query = 'Can I get research help?';
if (in_array(strtolower($query), $cueWords)) {
    echo "Here are some people to talk to: ";
}
```

OR

```
# python example
cueWords = ["about", "above", ..., "can", ...]
query = 'Can I get research help?'
query.lower()
if query in cueWords:
    print Here are some people to talk to:
```

### Cues from the Machine

Host: www.lib.montana.edu Connection: keep-alive Accept: text/html,application/xhtml+xml,application/xml;g=0.9,image/webp,\*/\*;g=0.8 User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_7\_5) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/38.0.2125.122 Safari/537.36 Referer: http://www.lib.montana.edu/~jason/files.php Accept-Encoding: gzip,deflate,sdch Accept-Language: en-US,en;g=0.8 Cookie: is\_returning=1; optimizelyEndUserId=oeu1413387638672r0.9280797478277236; optimizelySegments=%7B%22204658328%22%3A%22false%22%2C%22204728159%22%3A%22none%22%2C%22204736122% optimizelyBuckets=%7B%7D; s\_fid=1162C3214F4A86F8-1B28DA485FC96756; s\_lv=1413387991698; atuvc=0%7C39%2C0%7C40%2C0%7C41%2C0%7C42%2C1%7C43; is returning=1; utma=55097015.1071264323.1398267937.1415934660.1415983050.7; utmz=55097015.1415983050.7.7.utmcsr=googlelutmccn=(organic)lutmcmd=organiciutmctr=(not%20provided); \_ga=GA1.2.1071264323.1398267937; \_\_utmt=1; \_\_utma=112212121.694734941.1395729614.1416383505.1416454676.267; utmb=112212121.2.10.1416454676; utmc=112212121; utmz=112212121.1416383505.266.57.utmcsr=googlelutmccn= (organic)lutmcmd=organiclutmctr=(not%20provided) Page URL: http://www.lib.montana.edu/~jason/files/digital-collections-custom-search-api/index.php Referring URL: http://www.lib.montana.edu/~jason/files.php IP Address: 153,90,170,5

Timestamp: Wednesday, November 19, 2014 8:38 pm

### HTTP Headers + Global Server Variables

en.wikipedia.org/wiki/List\_of\_HTTP\_header\_fields

### Location from the Browser or Network Info

![](_page_24_Figure_0.jpeg)

"longitude": -110.9013, "latitude": 45.628, "asn": "AS13476", "offset": "-6", "ip": "153.90.170.5", "area\_code": "0", "continent\_code": "NA", "dma\_code": "0", "city": "Bozeman", "timezone": "America/Denver", "region": "Montana", "country\_code": "US", "isp": "Montana State University", "postal\_code": "59717", "country": "United States", "country\_code3": "USA", "region code": "MT"

Figure: Screenshot of JSONLint view of values returned from Telize API

### Cues from Analytics Logs

```
deer,
divergent,
indian,
avalanche,
dissertations,
cinnabar,
Election+1845,
Hudson%2C+B.,
montana+hospital+records+1927-1933,
yearbook,
JFK+assassination,
William+Lester+Stockton,
bison,
sounds+of+yellowstone,
dissertation,
Search+our+digital+collections...,
Search+our+digital+collections...,
service+learning,
bozeman+claims+association,
photosynthesis,
Dissertations,
milk+river,
bison+vocalization,
geothermal,
thunder,
swan,
dissertation,
burgess,
Reproductive+biology+of+brown+and+rainbow+trout+below+Hauser+Dam \$2C+Missouri+River\$2C+with+reference+to+proposed+hydroelectric+peaking, the second second
yearbook,
bison,
leadership+philosophy,
ISSW,
dissertations,
jason+clark,
justin+spinelli,
jason+clark,
Lanny+Real+Bird,
dissertations,
```

arc.lib.montana.edu/digital-collections/search-log.txt

### Applying Contextual and Intentional Cues

Use these cues to show different parts of search index and additional context

Search...

Search

#### Facets

Not seeing what you need? Watch the space below for refinements.

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

What is this? Privacy?

www.lib.montana.edu/~jason/files/search-ux/ github.com/jasonclark/search-ux

sara mannheimer data services

Search

Sort: Relevance or Date

"sara mannheimer data services" (About 10 results)

Sara Mannheimer - Data Management Librarian [Assistant Professor ...

www.lib.montana.edu/people/about/139

Publication and Data Services - MSU Library | Montana State

https://www.lib.montana.edu/services/publication-and-data/

Home - Data Management - Library Guides at Montana State

guides.lib.montana.edu/data

Sara Mannheimer - Library Guides at Montana State University guides.lib.montana.edu/prf.php?account\_id=33395

Faculty & Professional Vitae :: Montana State University Libraries

#### Facets

Not seeing what you need? Watch the space below for refinements.

- Categories
- People
- ► FAQ
- Offers

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

What is this? Privacy?

#### Small Result Set ( < 30 results)

research help

Search

Sort: Relevance or Date

"research help" (About 825 results)

Ask the Library - Ask the Library

ask.lib.montana.edu/

Research and Instruction Services - MSU Library | Montana State ...

www.lib.montana.edu/services/research-and-instruction/

Services - MSU Library | Montana State University

https://www.lib.montana.edu/services/

Home - Psychology Research - Library Guides at Montana State ...

guides.lib.montana.edu/psy

Publication and Data Services - MSU Library | Montana State ... https://www.lib.montana.edu/services/publication-and-data/

#### Facets

Not seeing what you need? Watch the space below for refinements.

- Categories
- "Hand-picked" Topics
- Topics by Location
- Popular
- People
- ► FAQ
- Offers

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

What is this? Privacy?

#### Large Result Set ( > 30 results)

who is susan borda?

Search

Sort: Relevance or Date

"who is susan borda?" (About 9 results)

Susan Borda - Digital Technologies Development Librarian ... www.lib.montana.edu/people/about/141

People in the Library - Results :: Montana State University (MSU ...

www.lib.montana.edu/people/view.php? team=Library...and...

Faculty & Professional Vitae :: Montana State University Libraries

www.lib.montana.edu/people/vitae.php

Liaisons by College/Department - MSU Library | Montana State ... www.lib.montana.edu/services/liaisons-by-department.html

Profiles - Library Guides at Montana State University guides.lib.montana.edu/prf.php

#### Facets

Not seeing what you need? Watch the space below for refinements.

It looks like you are asking a question.

Do you want to talk to a librarian?

- Research Help
- ► FAQ
- Categories
- Offers

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

What is this? Privacy?

#### Suggestions Based on Natural Language Question

research help

Search

Sort: Relevance or Date

"research help" (About 846 results)

Ask the Library - Ask the Library

ask.lib.montana.edu/

Research and Instruction Services - MSU Library | Montana State ...

www.lib.montana.edu/services/research-and-instruction/

Services - MSU Library | Montana State University https://www.lib.montana.edu/services/

Home - Psychology Research - Library Guides at Montana State ...

guides.lib.montana.edu/psy

Publication and Data Services - MSU Library | Montana State

https://www.lib.montana.edu/services/publication-and-data/

#### Facets

Not seeing what you need? Watch the space below for refinements.

- Categories
- "Hand-picked" Topics

A few common topics based on our human-created sitemap and an analysis of our search logs.

articles & research databases, borrow, research help, library hours, yellowstone, parking & directions, montana history, google scholar msu, montana code annotated, mla format 6th edition

- Topics by Location
- Popular
- People
- FAQ
- Offers

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

#### Suggestions Based on Result Set Size

research help

Search

Sort: Relevance or Date

"research help" (About 825 results)

Ask the Library - Ask the Library

ask.lib.montana.edu/

Research and Instruction Services - MSU Library | Montana State ... www.lib.montana.edu/services/research-and-instruction/

Services - MSU Library | Montana State University https://www.lib.montana.edu/services/

Home - Psychology Research - Library Guides at Montana State ...

guides.lib.montana.edu/psy

\*\*\*

Publication and Data Services - MSU Library | Montana State

https://www.lib.montana.edu/services/publication-and-data/

#### Facets

Not seeing what you need? Watch the space below for refinements.

- Categories
- "Hand-picked" Topics
- Topics by Location
- Popular
- People
- ► FAQ
- Offers

An offer based on local weather.

It's cloudy and cold, stop in for a cup of something warm. Check out the "Brewed Awakening" hours and menu.

With this prototype, I'm looking at ways that the search act can be treated as a conversation.

What is this? Privacy?

#### **Suggestions Based on Local Context**

### Woman Stalked Across 8 Websites By Obsessed Shoe Advertisement

![](_page_35_Picture_1.jpeg)

LAWRENCEVILLE, GA—Expressing her growing unease at repeatedly spotting the same picture and text lurking in the corners of her favorite webpages, local woman

### Next Steps + Possibilities

- Library Discovery Search "Bento Box"
- Speciality Search Applications
- Library Digital Collections
- User Testing with the Prototype

#### BookMeUp @ The Library O What 00 Where Q Suggest Local topics for BookMeUp Montana -- Bozeman Region Montana -- Fort Ellis Montana -- Gallatin County Montana -- Chestnut Montana -- Gallatin Gateway Montana -- Belgrade Region Montana -- Hyalite Canyon Montana -- Springhill Montana -- Churchill Montana -- Amsterdam Montana -- Amsterdam Region Montana -- Bridger Range Montana -- Cokedale Montana -- Palace Butte Montana -- Gallatin Canyon Montana -- Garnet Mountain Montana -- Manhattan Region Montana -- Sedan Montana -- Paradise Valley Montana -- Logan Montana -- Gallatin Range Montana -- Emigrant Montana -- Fridley Montana -- Clyde Park Montana -- Park County Montana -- Horseshoe Hills Montana -- Hot Springs Creek (Madison County) Montana -- Missouri River Headwaters State Park Montana -- Jefferson River United States -- Madison River + home

MSU Library

SWorldcat

#### www.lib.montana.edu/beta/bookmeup/index?view=where

![](_page_38_Picture_0.jpeg)

# Quaero ergo sum "I search, therefore I am"

### There are Ghosts in the [Search] Machine.

# What do we as a profession choose to do with them?

## Questions?

### twitter.com/jaclark www.lib.montana.edu/~jason/talks.php

# Acknowledgements

I would like to thank Montana State University and my excellent colleagues at MSU Library for supporting my research.

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![](_page_43_Picture_0.jpeg)