

Off the Beaten Tracks: Exploring Three Aspects of Web Navigation

Harald Weinreich, Hartmut Obendorf, Matthias Mayer

Dept. of Informatics, University of Hamburg

Eelco Herder

University of Twente, NL / L3S, University of Hannover, DE



Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International
World Wide Web Conference

Overview

The Study

Results: Three Aspects of Web Navigation

1. Navigation Actions
2. Velocity of Navigation
3. Within-Page Navigation

Conclusion



2

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International
World Wide Web Conference

Long-Term Client-Side Web Usage Study

How do people use the Web?

How do they return to pages?

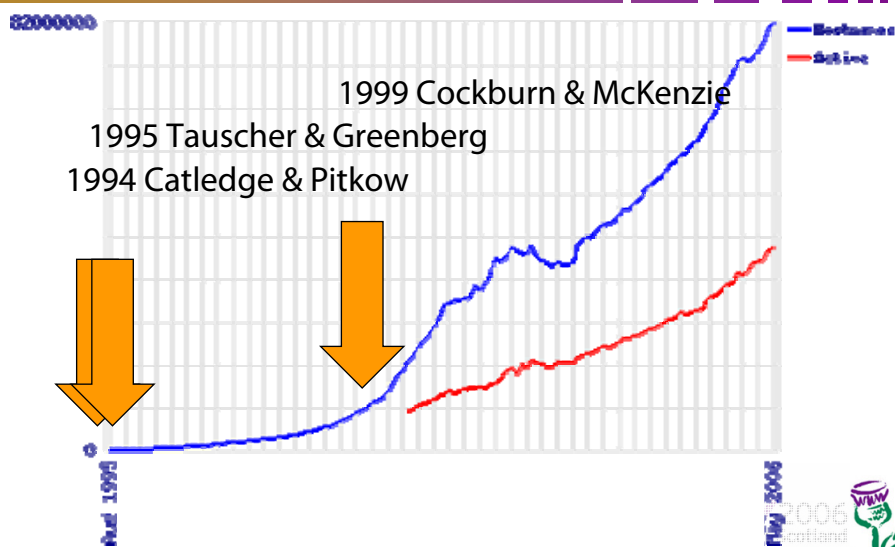
Identify changes of the Web

3

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

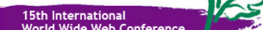


Web Usage Studies



4

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder



Client-Side Long-Term Web Usage Study

25 experienced participants

- 6 female (24%)
- Age: 24-52 years (mean: 30.5 years)
- 9 non-IT people (36%)

Long-term

- Between 2 and 6 months (mean 4 months)

This Study: Data Collection

Client-side logging

- WBI/Scone intermediary (active proxy)
- Instrumented Firefox (15 participants)

Two Interviews

Data merging and cleaning: frames, ads, reloads

Largest study, yet.

- 136,200 visits & 65,600 URIs

Overview

The Study

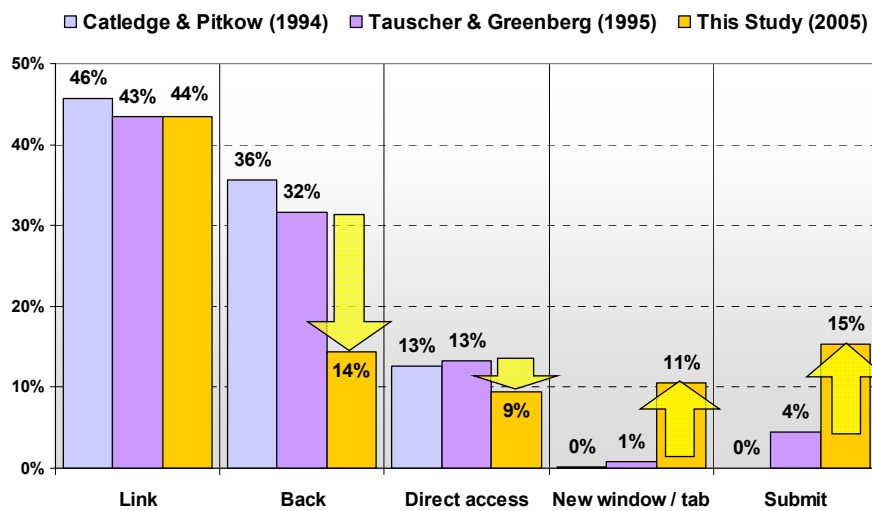
Results: Three Aspects of Web Navigation

1. Navigation Actions
2. Velocity of Navigation
3. Within-Page Navigation

Conclusion



1. Navigation Actions



Windows, Tabs and Backtracking

Users work on parallel tasks

Open links in new tabs or windows

- Faster
- Stay on current page
- Compare target pages

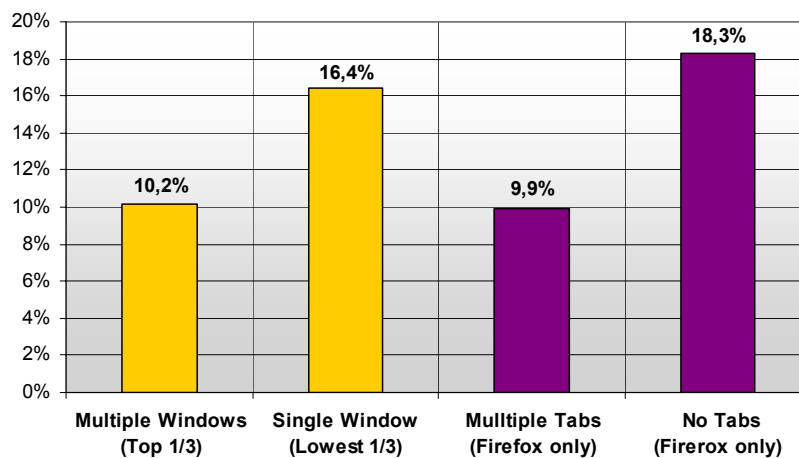
Problems:

- Breaks concept of backtracking
- Increased cognitive overhead



Windows, Tabs and Backtracking

Relative Frequency of Backtracking



Form Submission and Backtracking

Online Apps:

- Not hypertext navigation

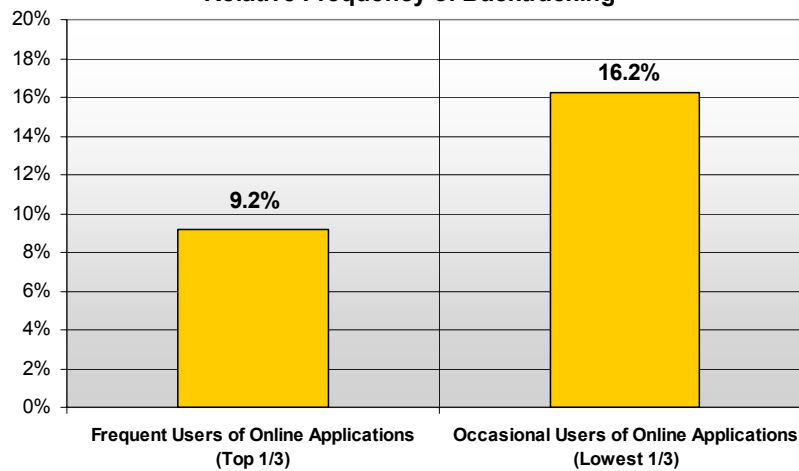
Problems:

- "Undo" instead of back required
- Long-term revisitation not supported
- New problems with dynamic pages / Ajax



Form Submission and Backtracking

Relative Frequency of Backtracking



Overview

The Study

Results: Three Aspects of Web Navigation

1. Navigation Actions
2. Velocity of Navigation
3. Within-Page Navigation

Conclusion



2. The Velocity of Navigation

Navigation is fast interaction:

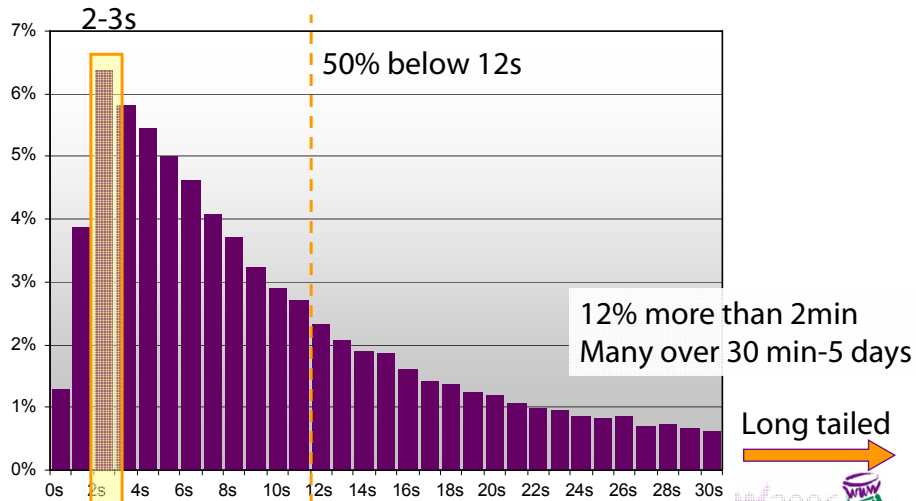
- "People scan pages"
- "Rapidly interactive"

Open questions:

- How fast?
- Only for simple pages?
- Web fast enough?



Velocity: How fast?

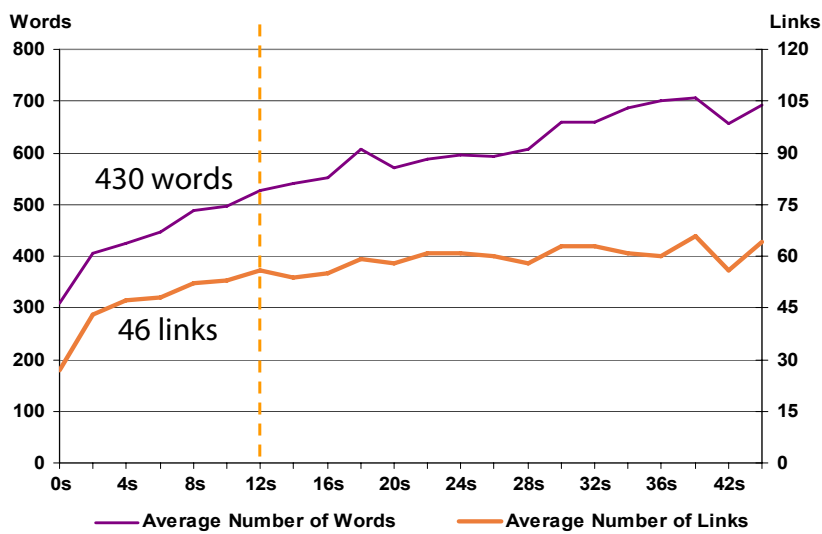


15

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International World Wide Web Conference

Velocity: Simple pages?



16

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International World Wide Web Conference

Velocity: Responsiveness of the Web

Measured “real speed of the Web” on client side

Two values:

1. Response times
2. Page load times

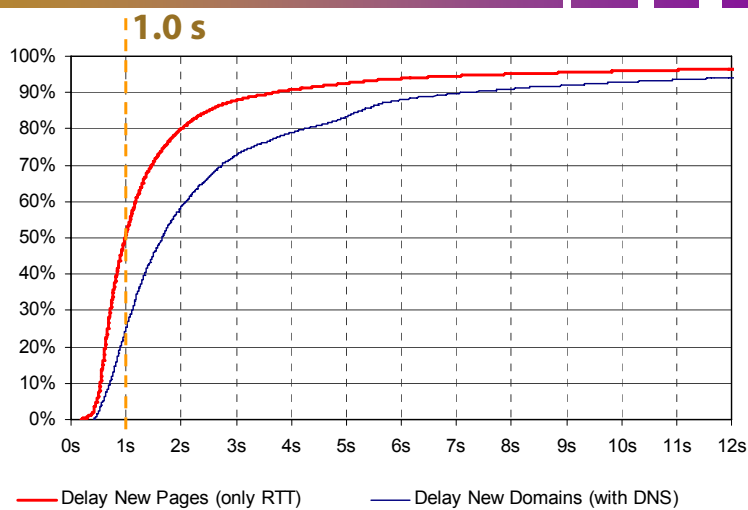
Only first time visits

17

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

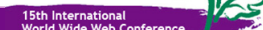


Velocity: Response Times

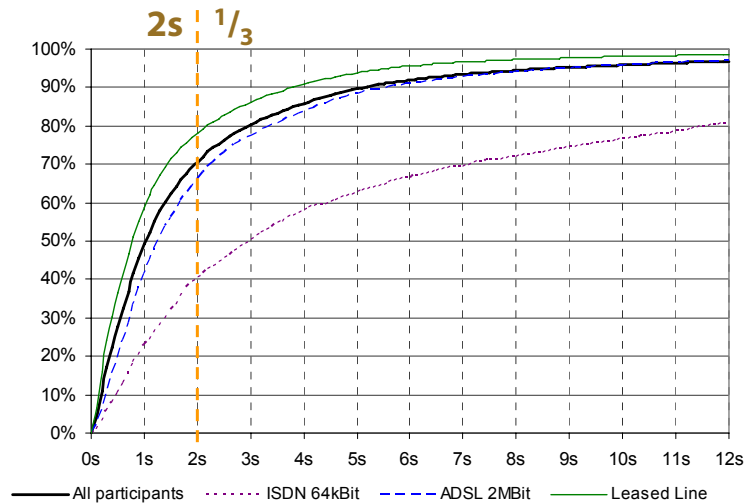


18

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder



Velocity: Load Times



Velocity: Fast Enough?

Far from fast enough:

- Response time has to be considered as well
- New sites create extra delay
- Many pages are too big / servers too slow



Overview

The Study

Results: Three Aspects of Web Navigation

1. Navigation Actions
2. Velocity of Navigation
3. Within-Page Navigation

Conclusion



3. Within-Page Navigation

“People do not scroll”

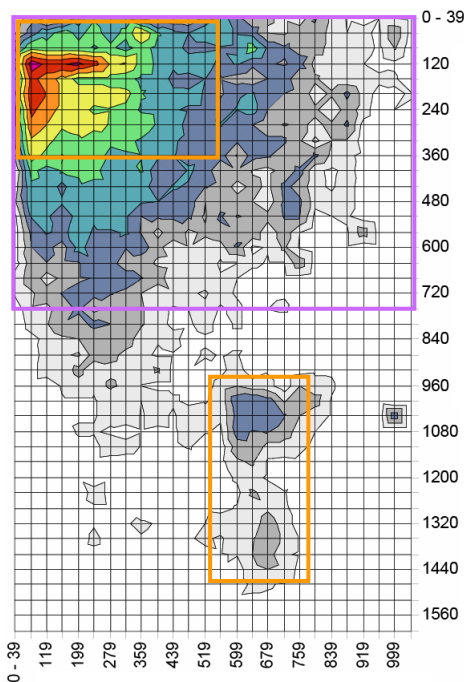
“People only scroll on content pages”

Do people scroll on navigation pages?

Do they consider links “below the fold”?

We recorded **link click positions**





Link Click Map

76% in initially visible area

45% in upper left quadrant

¼ of outside clicks created by Google's "next" button



erder

Design of Non-Scrolling Pages

Until 2004: 800x600 recommended

Now: 1024x768

Recorded available "screen real estate"

- 45% rarely used full resolution
- 55% used full screen most of the time, but:
 - Manually set to "full screen"
 - Tools and plugins take space

Use *only* 85% of the theoretical maximum space



24

Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International World Wide Web Conference

Conclusion

1. Web interaction has changed

- Better support for multiple windows and tabs is required
- Interactive Web applications pose new demands

2. Navigation is a fast activity

- Pages should be designed for fast interaction
- Web page standards are needed to easy scanning
- Response times still have to be reduced

3. Users and tasks differ a lot

- Browsers should be more responsive to the users' habits and
- the specific requirements of the current Web site