Off the Beaten Tracks: Exploring Three Aspects of Web Navigation

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WWW 2006
Edinburgh Scotland

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

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Long-Term Client-Side Web Usage Study

How do people use the Web?

How do they return to pages?

Identify changes of the Web

Web Usage Studies

1999 Cockburn & McKenzie
1995 Tauscher & Greenberg
1994 Catledge & Pitkow
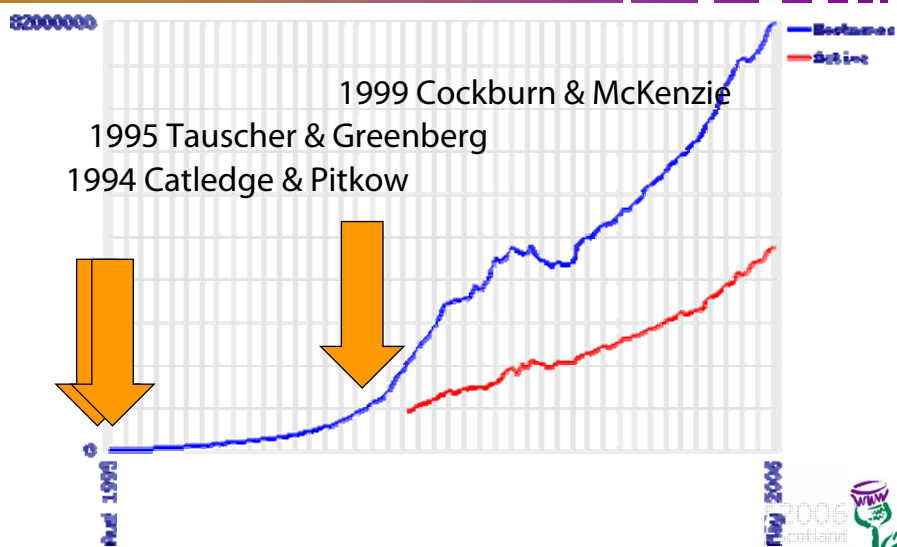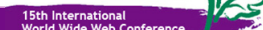
Client-Side Long-Term Web Usage Study

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
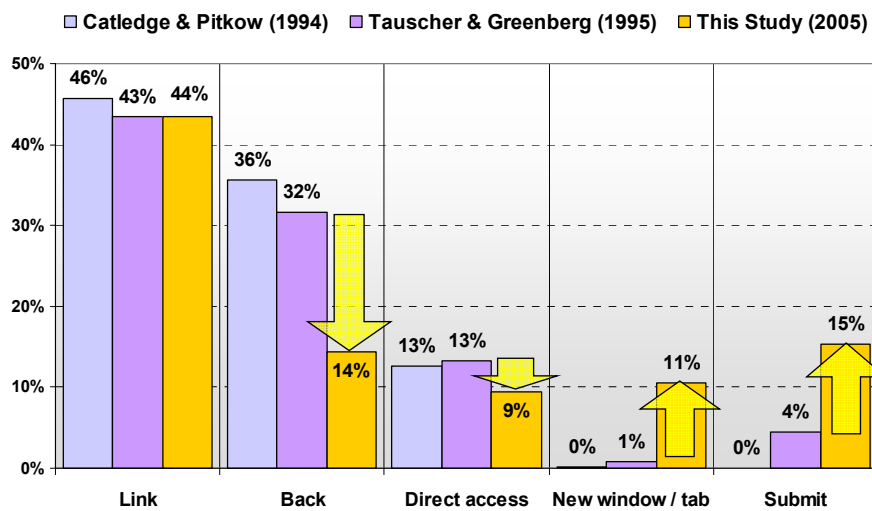
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1. Navigation Actions

□ Catledge & Pitkow (1994)   □ Tauscher & Greenberg (1995)   ■ This Study (2005)

	Link	Back	Direct access	New window / tab	Submit
Catledge & Pitkow (1994)	46%	36%	13%	0%	0%
Tauscher & Greenberg (1995)	43%	32%	13%	1%	4%
This Study (2005)	44%	14%	9%	11%	15%

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Windows, Tabs and Backtracking

Users work on parallel tasks

Open links in new tabs or windows
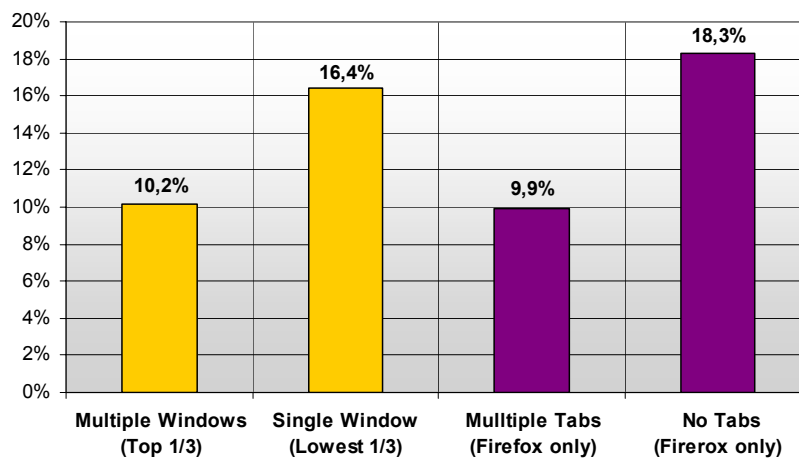
- Faster
- Stay on current page
- Compare target pages

Problems:

- Breaks concept of backtracking
- Increased cognitive overhead

Windows, Tabs and Backtracking

Relative Frequency of Backtracking

10,2%	16,4%	9,9%	18,3%
Multiple Windows (Top 1/3)	Single Window (Lowest 1/3)	Mulltiple Tabs (Firefox only)	No Tabs (Firerox only)

Form Submission and Backtracking

Online Apps:
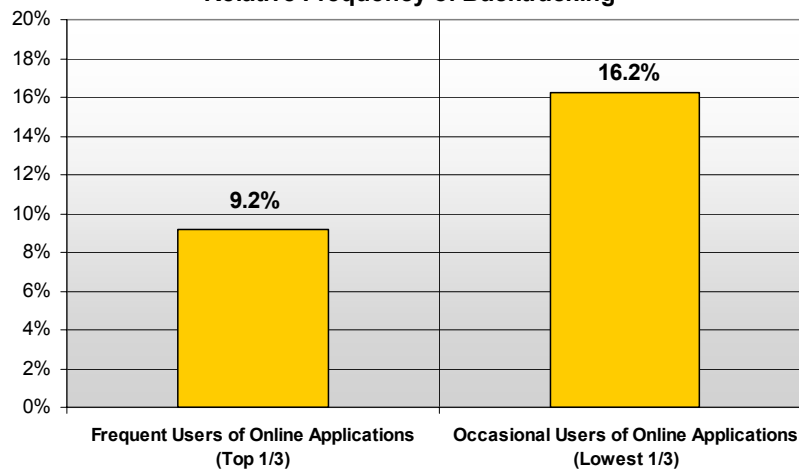
- Not hypertext navigation

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

Frequent Users of Online Applications (Top 1/3): **9.2%**

Occasional Users of Online Applications (Lowest 1/3): **16.2%**

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2. The Velocity of Navigation

Navigation is fast interaction:
- "People scan pages"
- "Rapidly interactive"

Open questions:
- How fast?
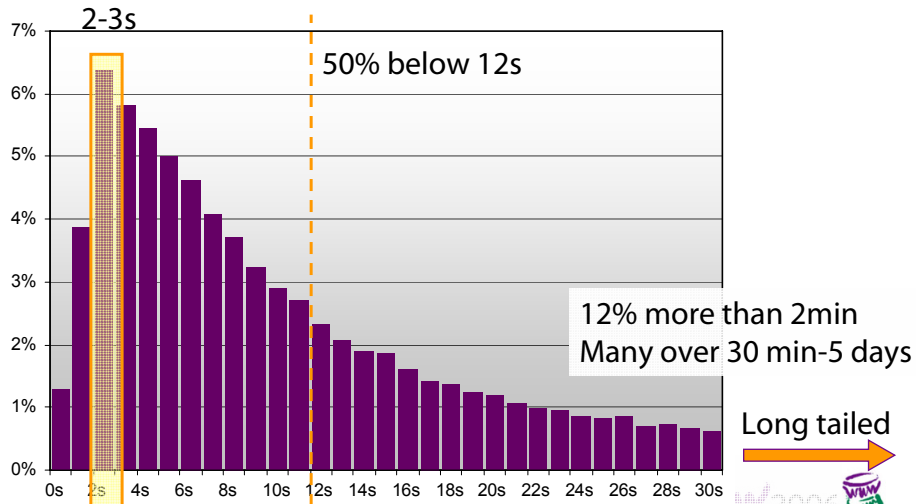- Only for simple pages?
- Web fast enough?

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Velocity: How fast?

2-3s

50% below 12s

12% more than 2min
Many over 30 min-5 days

Long tailed

Velocity: Simple pages?

430 words

46 links

Average Number of Words   Average Number of Links

Velocity: Responsiveness of the Web

Measured "real speed of the Web" on client side
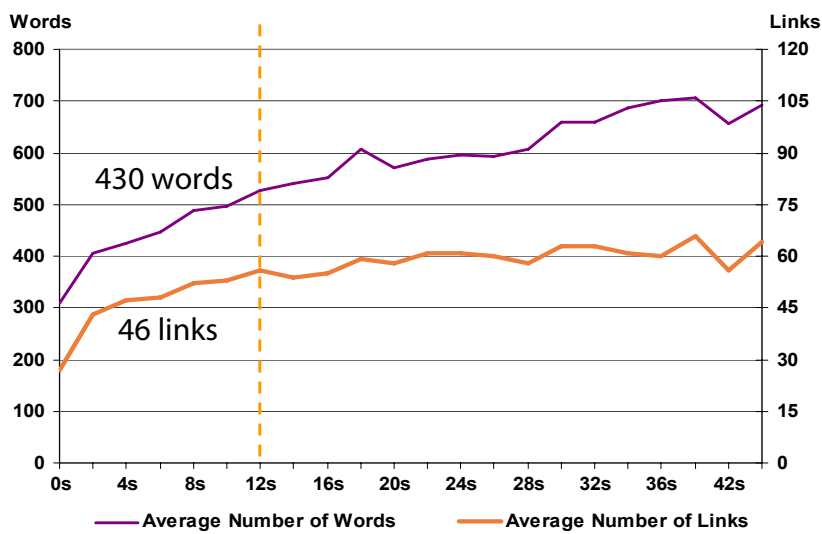
Two values:

1. Response times
2. Page load times

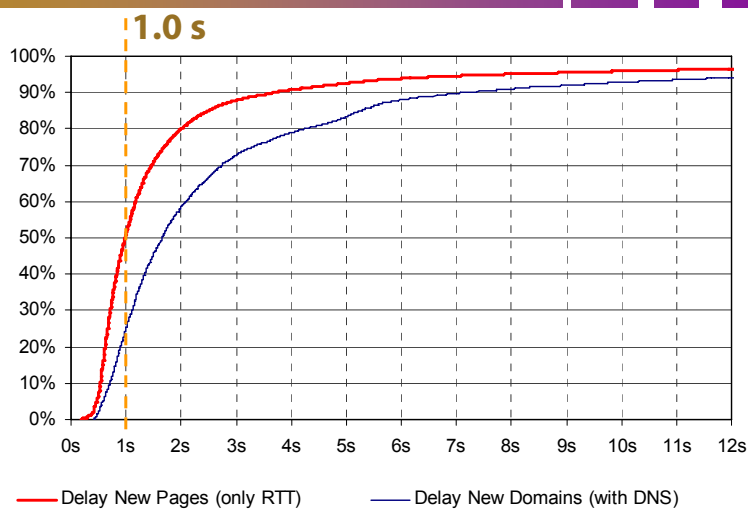Only first time visits

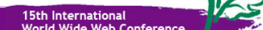Off the Beaten Tracks - Harald Weinreich, H. Obendorf, M. Mayer, E. Herder

15th International
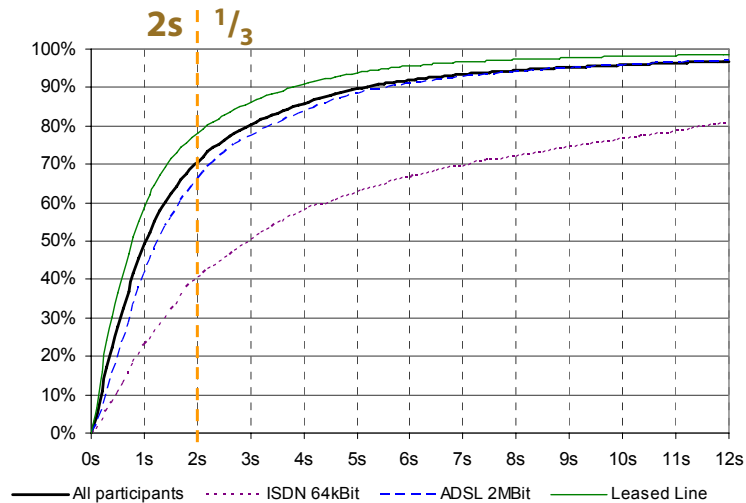World Wide Web Conference

Velocity: Response Times

1.0 s

Delay New Pages (only RTT)   Delay New Domains (with DNS)

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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

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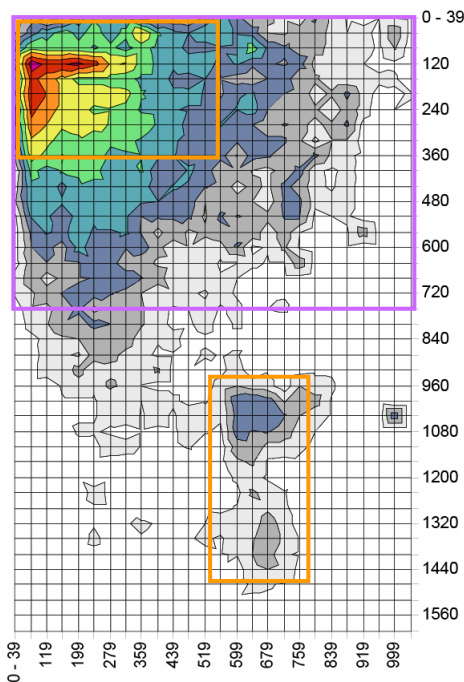Conclusion

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

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

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