Designing for Ease of Navigation

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Navigation

- Definition: Directing one’s course; finding one’s way to a goal.
- An old topic in information retrieval, made especially important by the advent of the Web and ecommerce.
Navigation in the Design Process

- Business Idea
- Competitive Analysis
- Contextual Inquiry & Design
- USER GOALS, TASKS
- Design or Prototype
- Empirical Techniques
- Analytic Techniques
- CW, HE, MHP
- Think Aloud Tests
- Think Aloud Tests
- Redesign

Analytic Techniques

Navigation:
- content
- architecture
- page design

beta testing
Key Concept: Information Scent

- Theory from Xerox Parc
  - Stu Card & Peter Pirolli
  - Arose from development of hyperbolic tree browser; modelling user search

- Major assumptions.
  - Users are “foraging”
  - Goal is information (content)
  - Proximal cues guide search.
Example - Looking for a job
(1999-2001 site design)

click on “cue”-category link
Link leads to another cue—another “category link”
“Jobs” link leads to named categories
Theoretical arguments

- Search has energy costs.
- Users attempt efficiency (stay within page or site if there are cues). Giving up is very low cost.

Search across & within patches
Heuristic nature of search

- Search occurs across problem spaces (MHP theoretical legacy)
  - URL typing
  - key word
  - link search
  - visual search
- “Un-GOMs-like” (nonlinear backtracking, returning to landmarks)
Ecommerce adaptation

- From research on consumer behavior
  - Hunting & gathering versus foraging
  - Hunters follow *the* scent to prey; gatherers happen on a scent (impulse shopping).
- Must pull user towards content (a target) with a clear scent of information (cues).
- Users need confidence
  - Before click, that they are on the right track
  - After click, that they are closer.
Research on “Hunting”

- Users start general and then narrow.
- Users can tell you if they are on the right track.
- Users can’t tell you how far away they are (most think they are 1 or 2 clicks away).
- As long as users think they are on the right track, they will keep clicking.
- So... every design element that gives users more confidence, keeps them there and pulls them to content.
Importance of Scent

• No controlled experiments so far
• Comparison of sites with/without stronger scent (ratings of information similar to goal) shows stronger scent associated with sticking to “trail” within a site

From Card et al., CHI 2001
Great strides in the last 5 years but there remains much room for improvement. See clutter on this site.

Customers find simple flight search but other tasks harder.
How people gain and lose scent: APA home has a mix of information for different constituencies. How to appeal?
Task: You are looking for a therapist who practices in Florida. What do you do next?
If you clicked “Public”
Click on “Find a psychologist”

Assumes you recognize “therapist” = “psychologist”
All that for a phone number?

Find a Psychologist

A psychologist can help you cope with many of life's problems. The American Psychological Association does not provide referral services. For a referral to a psychologist in your area call 1-800-964-2000. The operator will use your zip code to locate and connect you with the referral system in your area. Neither APA nor the operators answering the 800 number can respond to specific questions regarding personal situations, appropriate diagnosis or treatment, or otherwise provide any clinical opinions. If you do not live in the United States or Canada, contact your national psychological association or local mental health facility. If you believe you need immediate assistance, please call your local emergency number or the mental health crisis hotline listed in your local phone book's government pages. Because APA does not operate, supervise, or exercise any control over any of the above-referenced referral services, it makes no representations or warranty whatsoever, either express or implied, regarding any information or advice provided by these referral services. In no event shall APA be liable to you or anyone else for any decision made or action taken in reliance on information provided by these referral services.
Research on Scent and Scent Blockers

- Users find content in 4 ways
  - memory - type URL
  - search engine - type key words
  - link following
  - visual search of page (next lecture)

- Any method can turn up scent
  - e.g., “www.landsend.com”
Memory

- People recall brand name URLs
  - cancernet.gov or NCI.gov vs. macys.com
- Many people type URL into Google
Search Engines

- Web search better than site search
- Site searches often fail within web sites
- Usability Engineering study of video and CD sites, 2001
  » Hunters: 53% users found content goal with category links vs. 30% with search engine
  » Gatherers: 74% users found new content of interest with category links vs. 26% with search engine
- New study in 2002 of apparel and home goods sites: Search did worse.
Example. “Return policy” in search box found 39 books, no policy.

Books: See all 39 results in Books...

- **Palestinian Refugees: The Right of Return** -- Naseer Aruri (Editor); Paperback
- **Wake Up America: A Call to the President, the Congress, Our National Leaders, and the American People to Return to Greatness** -- Courtney, Jr. Burton; Hardcover
- **American Solution Without Sacrifice: An End to Special Interests a Return to American Middle-Class Interests** -- Ronald A. Drum; Paperback
Link Following

• Problem is to differentiate links

You are an 18 yr old female student, shopping for clothes for college.
  • women or young attitude?
  • beauty or boutiques?

• Design challenge: many differentiated categories easy to find and linked to content
Earliest empirical study of interface features that increase store traffic and sales

Gerald Lohse and Peter Spiller (1996)

• Measured 32 store features for 28 Internet retail stores.
• Examined monthly traffic & sales in April 1996
• Multiple regressions to predict traffic and sales
Features studied

• Store navigation
• Product search
• Site maps
• Product lists: name, navigation, images, price
• Number of products
• Product descriptions
• Multiple shopping modes
• Multiple store entrances
• Service information
• Company information, etc.
# Product lists

## VIDEOS

Click on the **Product Name** to see additional information:

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Product Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Baby's World</td>
<td>Video</td>
<td>$39.95</td>
</tr>
<tr>
<td>A Little Duck Tale</td>
<td>Video</td>
<td>$9.99</td>
</tr>
<tr>
<td>African Shark Safari</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Amazing Earth</td>
<td>Video</td>
<td>$29.95</td>
</tr>
<tr>
<td>Amer. Ed. Trips: Blue Ridge Mtn, Vermont and Mich</td>
<td>DVD</td>
<td>$19.95</td>
</tr>
<tr>
<td>Amer. Ed. Trips: California, Hawaii and Alaska</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Amer. Ed. Trips: Red Rock, New Mexico, Natches</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>America’s Great Parks</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>American Commandoes</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>An Interior Motives Christmas</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Ancient Inventions</td>
<td>Video</td>
<td>$49.95</td>
</tr>
<tr>
<td>Ancient Warriors</td>
<td>Video</td>
<td>$49.95</td>
</tr>
<tr>
<td>Animal Planet National Dog Championship</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Apartheid's Last Stand</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Archaeology: Mysteries of the Holy Land</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Arthur C. Clarke's Mysterious Universe</td>
<td>Video</td>
<td>$24.95</td>
</tr>
<tr>
<td>Astronomy 101</td>
<td>Video</td>
<td>$14.95</td>
</tr>
<tr>
<td>Banished: Living with Leprosy</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Battle of Midway: A Twist of Fate</td>
<td>Video</td>
<td>$19.95</td>
</tr>
<tr>
<td>Battle of the Alamo</td>
<td>Video</td>
<td>$19.95</td>
</tr>
</tbody>
</table>
Multiple shopping modes
Main findings

• Product list navigation explained. . .
  7% of variance in monthly traffic
  61% of variance in monthly sales.

*Each additional mouse click reduced the probability of a purchase.*

• Store entrances.
  7% variance in traffic
  10% variance in sales
  3% sales per entrance

*Most stores had too few entrances.*

• Promotions.
  1% variance in traffic
  4% variance in sales

*Worked for main entrances not exit*
More findings

● More products
  No effect on sales but 17% of variance in traffic

● FAQ section
  Stores with a lot of traffic added FAQ to deal with customer questions.

● Customer feedback
  9% variance in monthly traffic
  1% variance in monthly sales
  Good service associated w. higher sales.
Scent blockers

- Links that lie
- Missing keywords
- More general content
- Cute or weak links
- Intrusive gateways

Loss of confidence causes people to give up. They often leave for good.
The page you requested cannot be found. The page you are looking for may have been changed, or is temporarily unavailable.

Please try the following:
- If you typed the page address in the Address bar, make sure that it is spelled correctly.
- Open the [www.cnn.com](http://www.cnn.com) home page and look for links to the information you want.
- Use the navigation bar on the left to find the link you are looking for.
- Click the Back button to try another link.
- Enter a term in the search form below to look for information on CNN site.

Sorry, the page you requested cannot be found. It is possible you typed the address incorrectly, or that the page no longer exists. A good place to start is your local weather forecast or visit any of the pages listed below.

Get Your Local Weather Forecast

Connect With Your Weather
- Health Outlook
- Travel Outlook
- Events Outlook
- Recreation Outlook
- Home & Garden Outlook

Other Useful Links
- weather.com Homepage
- Weather Maps
- Weather News
- Weather Video

Error — Page Not Found

The page you've requested has been moved or taken off the site. We apologize for the inconvenience.

There are several ways you can find the information you need:

Search the TIME Archive

Slashdot

News for Nerds. Stuff that matters.

404 File Not Found

The requested URL (AnErrorPage.html) was not found.

If you feel like it, mail the url, and where ya came from to [paten@slashdot.org](mailto:paten@slashdot.org).

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The page you're viewing has information that requires a browser "plug-in", which is not supported by your browser. Get the plug-in now, then return to the page to enjoy all it has to offer.
Let ServiceMagic find pre-screened contractors to compete for your job!

We Bring Customer-Rated Contractors to You!
Choose from pre-screened home service pros matched to your needs.
- FREE SERVICE
- NO OBLIGATION
- QUICK RESPONSE

Start by selecting a category:
Enter Text
Additions & Remodels

Search here for projects and articles:
Enter Text

IMPROVE
Addition | Remodel
Bath Remodel
Kitchen Remodel
Appraisers
Architects
Designers
General Contractors
Home Inspectors

REPAIR
Carpentry
Electrical
Flooring
Plumbing
Roofing
Walls | Ceilings
Handyman
Repairs, Installs & Small Jobs

MAINTAIN
Appliances
Cleaning Services
Decks | Fences
Heating
Home Security
Mail Service
Painting
Windows | Doors
...More

FREE Monthly Tips & Advice
Click Here to Learn More

Ratings & Reviews: Our Cornerstone
Honest reviews from previous customers.
Ratings and Reviews

Finance Your Project
Find the right loan for you.
Visit Our Loan Center
Additions & Remodels

Choose the task that best fits your needs to narrow your search for a service professional with the right skills to complete your project.

- General Additions
- Other Remodel Jobs
- Plumbing
- Major Remodels
- Heating & Cooling
- Home Security
- Painting/Staining
- Disability Services
- Glass & Mirrors
- Flooring
- Electrical
- Drywall & Plaster
- General Contractors
- Architects, Designers, & Engineers
- Cabinets & Countertops
General Additions

Select the type of addition you want:
- Sunroom/Enclosure - Addition
- General Home Additions
- Carport Metal - Build
- Carport Wood - Build
Form asks for addition details (costs increase but scent remains)
1. What kind of addition do you want? (Check all that apply) **Helpful Info**
- Ground level addition
- Add dormer
- Remodel existing space
- Second story addition
- Detached addition
- Not sure
- Other

2. What type of design preparation has been done? **Helpful Info**
   - None
   - Professional drawings
   - Other
   - Photos & sketches
   - Permits pulled

3. How many square feet do you expect to add to your home approximately?
   50

4. What rooms and areas will be included in this project? (Check all that apply)
   - Kitchen
   - Master suite
   - Living room
   - Dining room
   - Laundry room
   - Attic/Storage
   - Basement
   - Bathroom
   - Bedroom
   - Family/Great room
   - Recreation/Theater room
   - Porch
   - Garage/Workshop
   - Other

5. Have you established a budget for this project?
   - Yes, I have funds available
   - No, I need to determine how much I can afford
   - No, I need an estimate to get funding
   - Other
Uh Oh!
Beautiful site but difficult to shop

Katy Beh Contemporary Jewelry is for today's individual. It is fine jet classic, yet selected with a modern, intelligent eye. Katy Beh has personally select designers as well as sneak them from across the United States, assembling a pool of over thirty jewelry artists that are producing exceptional fine jewelry. The Katy is jewelry that begs to be worn. The artists masterfully embrace classic techniques for today's fast paced world. Drawing on an industry where jewelry is a where quality is sacrificed for quantity, Katy Beh's collection is worthy of these represents. The warm and personal attention of a gallery setting enhances the look beauty of the exquisite jewelry collection. Katy Beh Contemporary Jew distinctive solution for luxurious ladies.

Katy Beh Christmas Party
Featuring the works of Heidi Nahser
December 7th, 2002

3703 Magazine Street, New Orleans, Louisiana 70115-3806
(504) 896-9660
email: kate@katybeh.com
Katy Beh's Essential Gift Portfolio

Katy Beh's Essential Gift Portfolio offers you a unique collection, hand selected by Katy, to solve your gift giving needs.

Please visit this site frequently during gift giving seasons, as we will update the choices as our artists create new pieces.

Pillow Collection
By Michele Meraldo
18k Yellow Gold and Sterling Silver

Poppy Collection
By Darrien Segal
Sterling Silver with Pink Pearls

Peridot Petal Collection
By Liz Norkus
Oxidized Sterling Silver with Peridot

Liz Norkus
Flower Collection with Peridot
A. $125
B. $115

To place an order
Please call or e-mail us!
1-504-896-9600
(Monday through Saturday, 10am–5pm CST)
Practical Tips

- Quality of links
- Links inspire confidence through
  - Type of link
  - Amount of information
  - How the link is organized with other links
Types of links

- Content link (goes to pages containing content)
- Category link (goes to pages containing mostly other links)
- Keyword link (search; what the user types)
- Back or home link

Typical category link
Content links work best

- Users are more likely to be successful when they use content links
  » But most sites have more category links
- Back/Home are a symptom of a problem
  » User has lost the scent
- Can you create more content links?
  » Suggests shallow architecture

![Shallow vs. Deep Architecture Diagram]
Link Organization

Organization affected by

• Grouping
• Structuring
• Differentiating
• Avoiding links altogether
Grouping

• Users perceive items in close proximity are related
  – Increases confidence before clicking
• Web pages with more groups of links do better
  – Groups of content links do MUCH better
Groups of links
Structuring

- Structure provides a way to assess completeness of the content
  - What’s here
  - What’s missing (know when to stop looking)
- Helps users scan
For a great introduction to the Greek world, check out Thomas Martin’s *Overview of Archaic and Classical Greek History*. This work contains over 3000 links to Perseus’ primary materials and is also available as a book from Yale University Press. Also check out highligh-ts of the Perseus Web site.

**Catalogs of sites, buildings, and objects**

- **Architecture Catalog** All images are available.

- **Site Catalog** All images are available. Also with clickable site plans.

- **Coin Catalog** Images from the *Arthur S. Dewing Collection* available to all

- **Vase Catalog**
What constitutes structure?

- Common taxonomy
  » Does the user know it?
- Familiar domain
  » Car manufacturers, sports teams
- Hierarchy
  » Alphabetizing alone often does not convey structure.
Differentiating links

- Links that lead to different content need to make their differences clear.
  » Links that aren’t well differentiated from each other make it harder to choose.
Why do brackets, indents, and bullets help?

- Help users chunk information
- Help with scanning
- Help users distinguish links from each other.

Money Market Funds
Money Market
Federal Municipal Money Market
State Municipal Money Market

Users thought there were 4 funds here
HP’s differentiation is better
Redundant links

- Redundant links lead to the same page
- They support users with:
  » Different backgrounds
  » Different contexts
  » Different goals
- Fit with research on multiple entrances
- Give multiple scents to a single target
Redundant links...

Three links to the same page
No links

Using new technology (e.g., Flash) to avoid links:
Example http://www.vwasia.com/start/visualiser/index.html, Configure a car without following multiple links.

• See the whole picture
• Fill in forms in any order

Conclusion

- Links must offer & maintain scent
  » Link following is a major source of success in web navigation

- Topics not covered today: content design, page design, use of technologies, community.

- Technology, businesses, and usability are changing fast. (Examples in this lecture could be outdated by next year.)

- Guidelines interact with content. Theory is just at a beginning stage. Therefore you must do user testing.