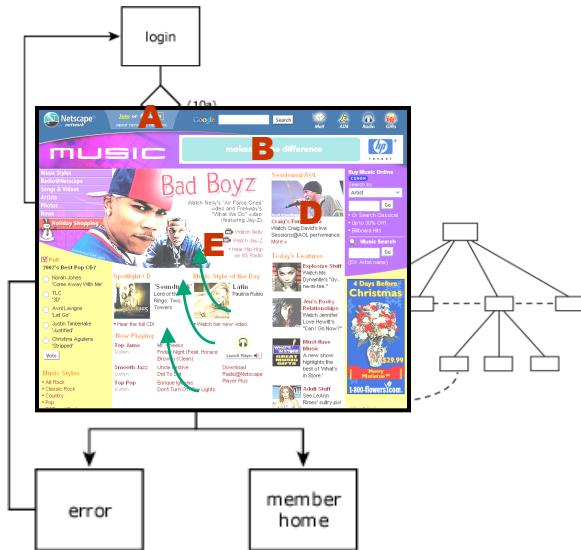


Representing Website Design



Professor David K. Farkas
Department of Technical
Communication
University of Washington

WinWriters Online Help Conference

Seattle, Washington

February 19, 2003

Copyright © 2003 David K. Farkas.

Five ways to represent the design of a website

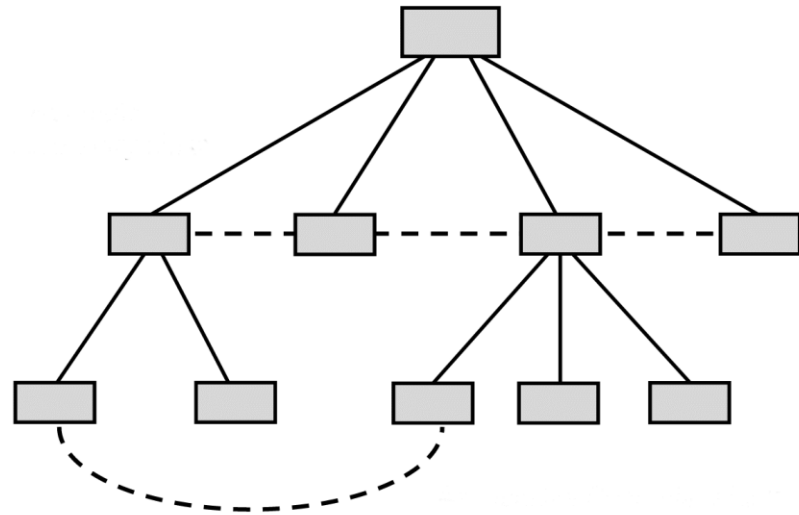
1. Node-link diagrams
2. Flowchart node-link diagrams
3. Page mock-ups
4. Visual hierarchy diagrams
5. Page Layout Change (PLC) notation

Node-Link Diagrams

Node-link diagrams

Hypertext Theory:

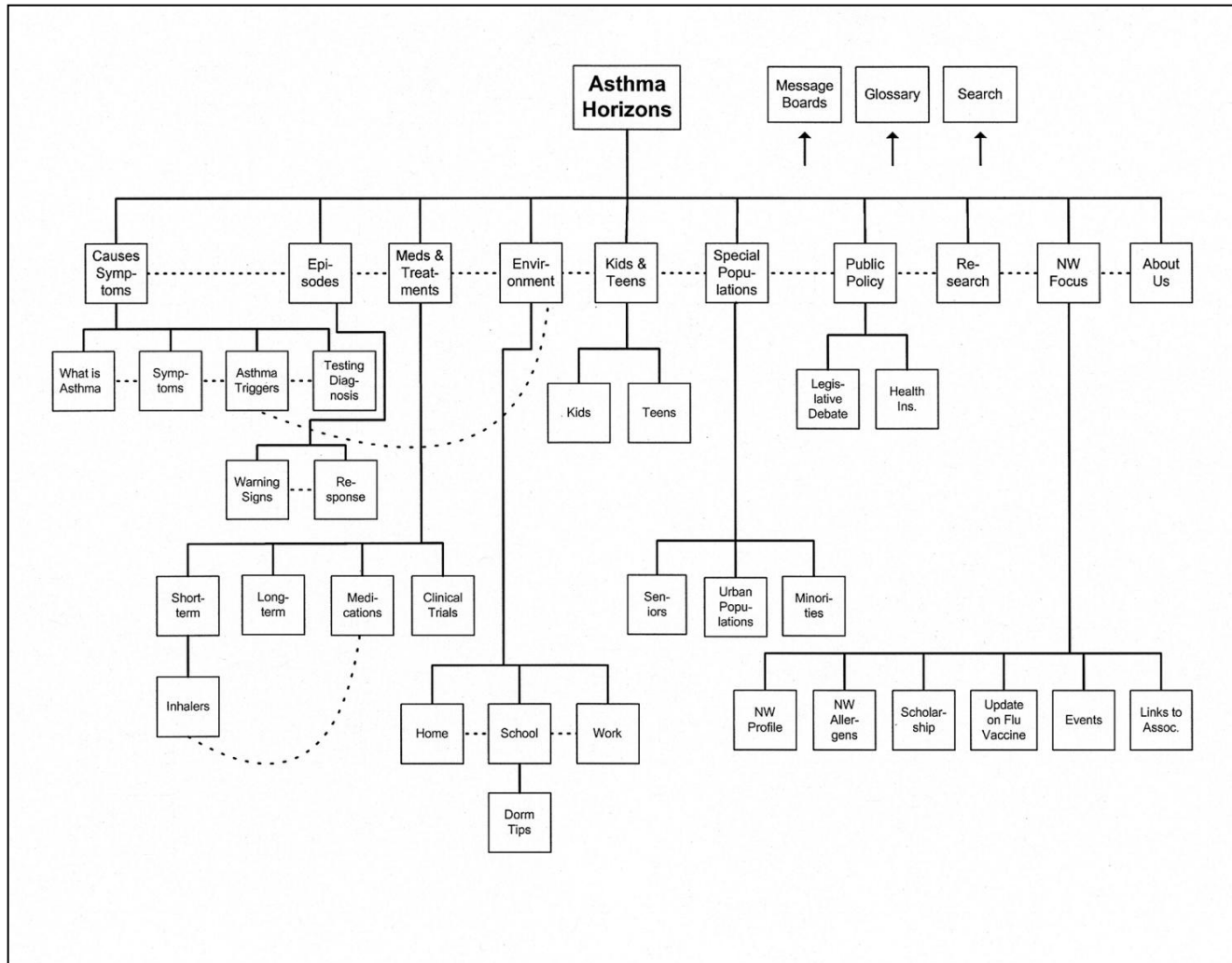
A node is a generalized unit of content (often equivalent to an HTML page). The electronic pathways that connect nodes are links.



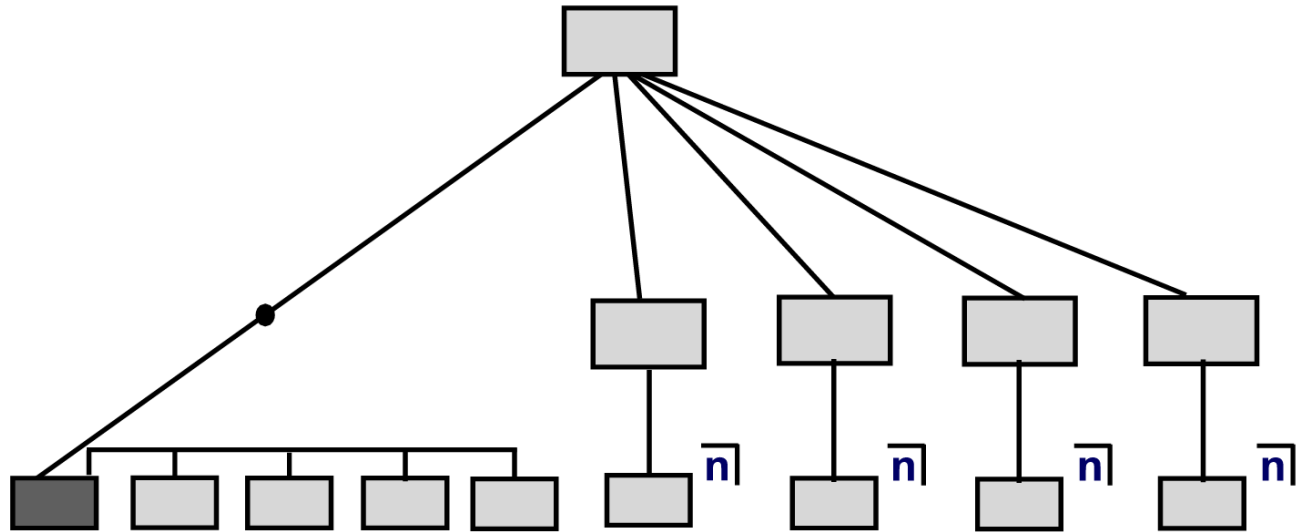
The uses of node-link diagrams

- They enable designers to represent the design of particular websites.
- They enable designers to think through design ideas.
- They enable designers to gauge whether users can achieve situational awareness.

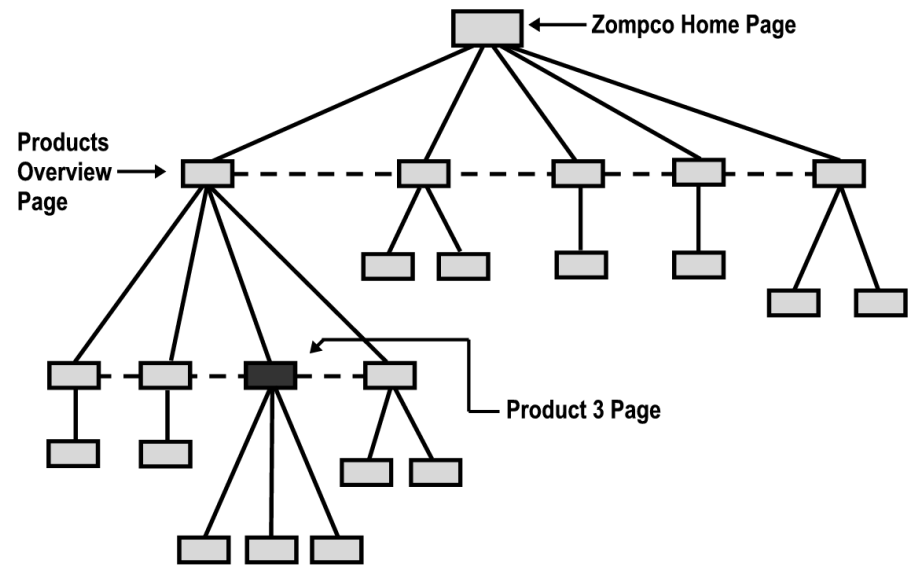
Representing a particular design



Thinking through design ideas



Gauging whether users can achieve situational awareness



Limitations of node-link diagrams

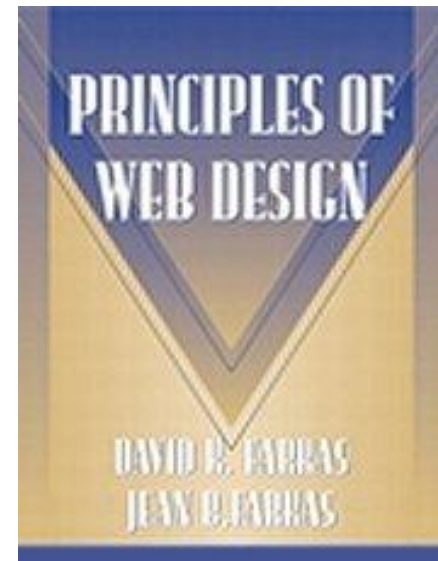
- You can run out of space trying to represent a large website.
- A node-link diagram has an “impoverished” notion of a node and a link. For example, how do you represent transactions? How do you represent downloads?
- They don’t tell you anything about the appearance of the website.

For detailed information on node-link diagrams

David K. Farkas and
Jean B. Farkas

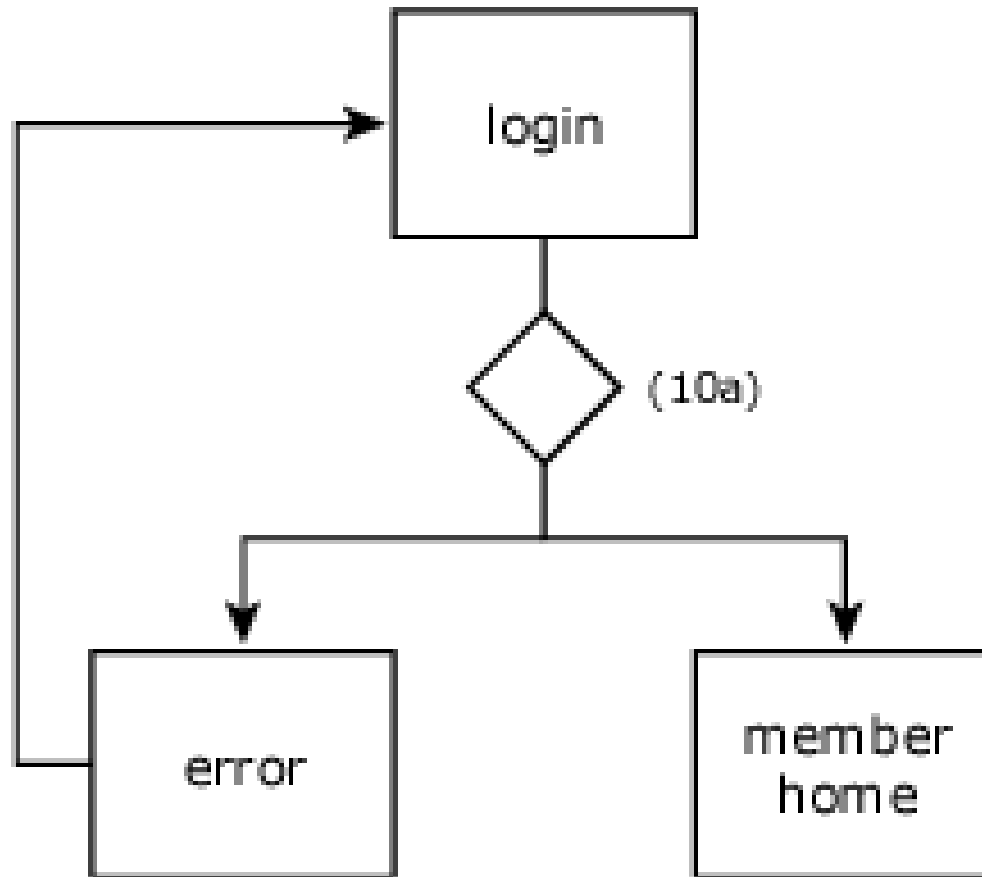
Principles of Web Design

Longman 2002

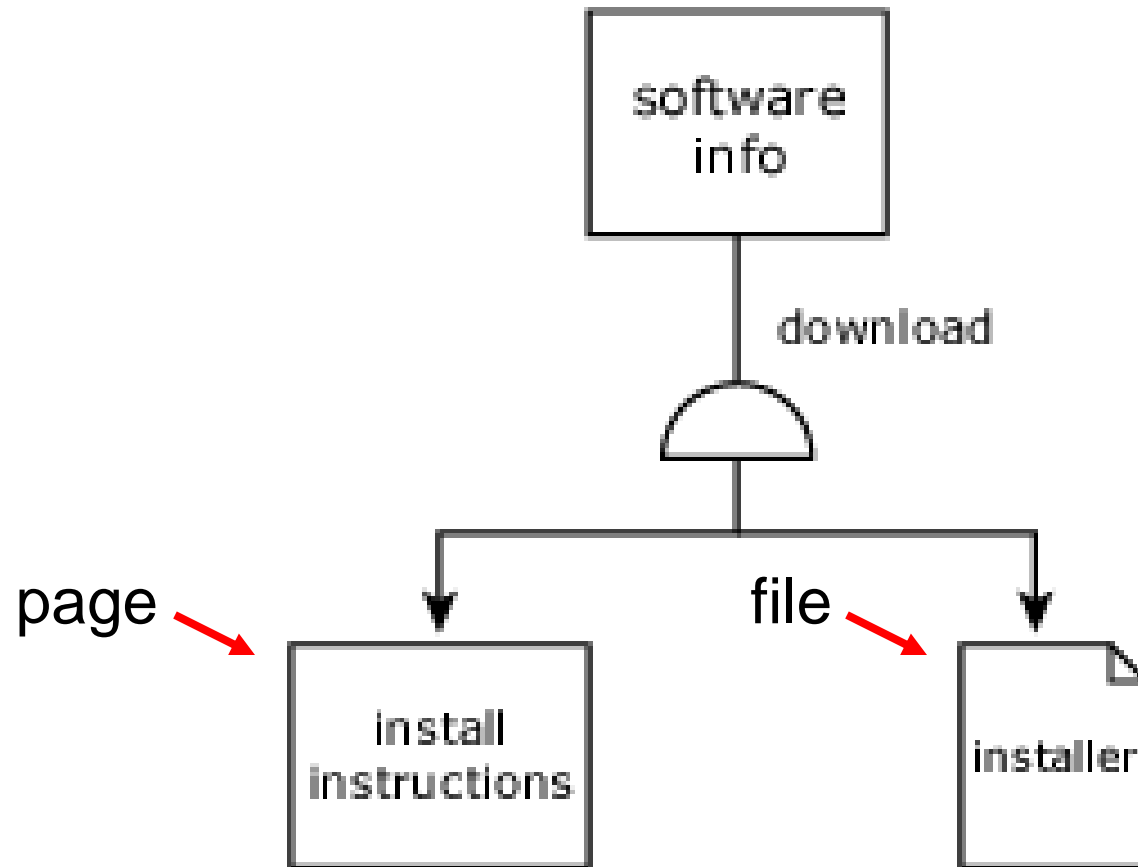


Flowchart Node-Link Diagrams

Flowchart node-link diagrams can represent processes



Flowchart node-link diagrams can represent processes—2



The limitations of classical and flowchart node-link diagrams

- You can run out of space trying to represent a large website.
- They don't tell you anything about the appearance of the website.

For detailed information on flowchart node-link diagrams

Jesse James Garrett's
website: <http://www.jjg.net>



“A visual vocabulary for describing information
architecture and interaction design”

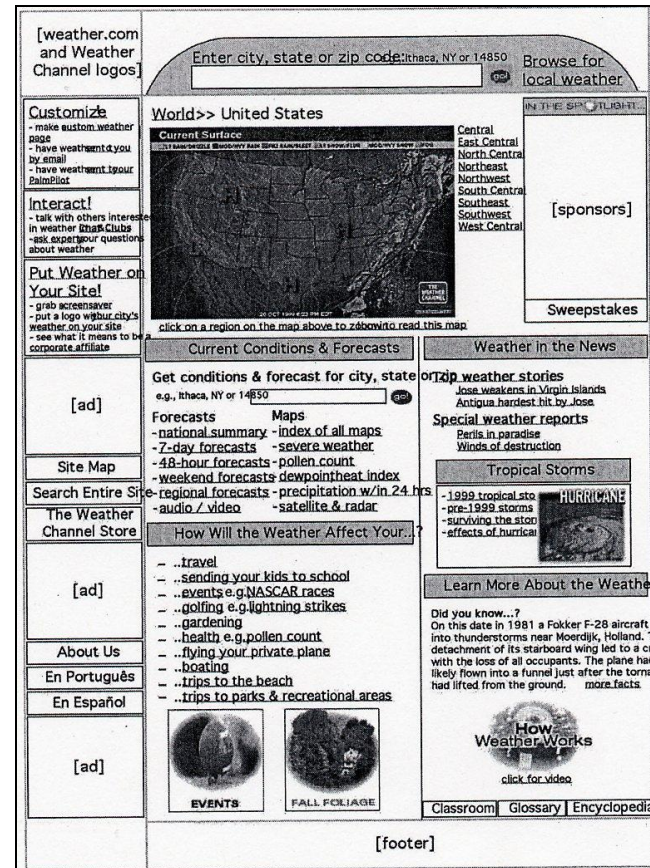
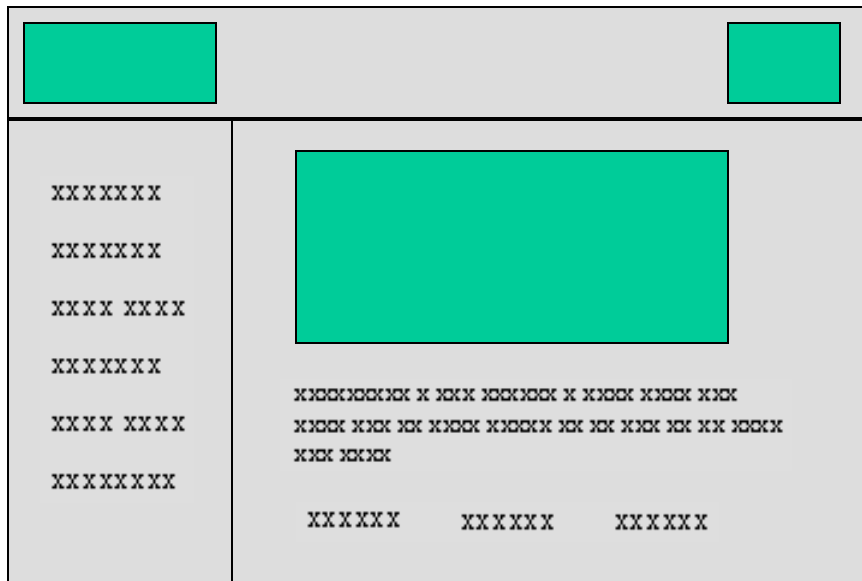
<http://www.jjg.net/ia/visvocab>

Page Mock-ups

Page mock-ups (thumbnails, sketches, wireframes)

- Page mock-ups are simply representations of individual pages—usually created early in the design process.
- Page mock-ups are central to design work. Human beings almost always “rough out” their design ideas.

Page mock-ups vary in fidelity to the finished page



From Rosenfeld and Morville, 2002

The limitations of page mock-ups

Page mock-ups do not capture the thinking that surrounds them. They don't tell you *why* the designer did what he/she has done.

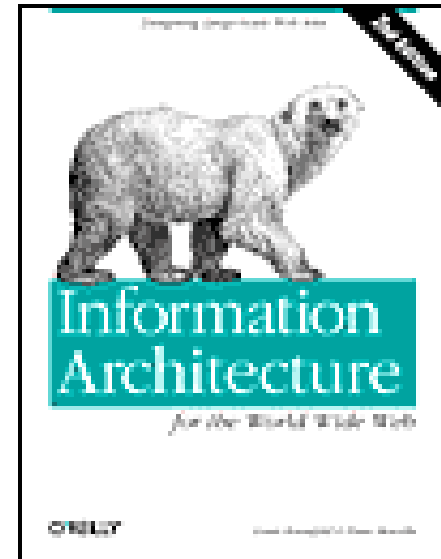
For detailed information on using page mock-ups in Web design

Louis Rosenfeld and
Peter Morville

Information Architecture for the World Wide Web

2nd. ed., O'Reilly 2002

. . . and many other books.



Visual Hierarchy Diagrams

Visual hierarchy diagrams

Visual hierarchy diagrams explicitly represent the subordination of the regions and elements on a page. Therefore, they convey a key aspect of the designer's thinking.

“Each page should have a clear visual hierarchy”

“One of the best ways to make a page easy to grasp in a hurry is to make sure that the *appearance* of the things on the page—all of the visual cues—clearly and accurately portray the *relationship* between the things on the page: which things are related and which things are part of other things. In other words, each page should have a clear visual hierarchy.”

Steve Krug, *Don't Make Me Think*. Que, 2000.

A web page with a simple, straightforward visual hierarchy

University of Washington
Department of Technical Communication

TC 510 Information Design
Professor David K. Farkas

A (1)

- **Home**
- Syllabus
- Course readings
- Grading and Policies **B (2)**
- Discussion groups (EPost)
- Download area
- Contact info/Office hours

TC Department website

My Departmental web pages

Course Website — Fall 2002 (Day)

In this course we investigate a broad range of print and online documents from various rhetorical and cognitive perspectives. In particular, hypertext theory is our means to better understand how a document's explicit structure guides users as they navigate, shapes the message, and contributes to the user's overall experience. **C (2)**

We look closely at traditional print documents and at such innovations as STOP and Information Mapping. Our consideration of print is a foundation for studying the Web, other online media (e.g., ebooks, PDF, PowerPoint), and Virtual Reality.

This is a practice-oriented course aimed at improving your writing and design skills.

Visual hierarchies may be complex

The image shows a screenshot of a Netscape Music website with several annotations and arrows indicating a complex visual hierarchy. The annotations are as follows:

- B(2)**: Located at the top center, pointing to the search bar.
- C(2)**: Located at the top right, pointing to the HP logo.
- A(1)**: Located in the center, pointing to the main image of a man wearing a cap.
- D(2)**: Located on the left side, pointing to the 'Poll' section.
- E(2)**: Located in the middle, pointing to the 'Spotlight CD' section.
- F(3)**: Located on the right side, pointing to the 'Sessions@AOL' section.
- G(3)**: Located on the far right, pointing to the 'Buy Music Online' section.

Arrows indicate the flow of the visual hierarchy, starting from the top and moving down and across the page, connecting various elements like the search bar, main image, poll, spotlight CD, sessions, and buy music sections.

Uses of visual hierarchy diagrams

1. Gauging how well the elements on the page are organized. Is there a clear visual hierarchy? Does it accord with the rhetorical function of the text?
2. Gauging—and informally scoring—the complexity of a design (the number of elements and regions).

A poor visual hierarchy



The screenshot displays the University of Chicago website with several elements that contribute to a poor visual hierarchy:

- Header:** A large image of a building spire on the left, the University of Chicago crest and name in the center, and a list of navigation links on the right.
- Navigation Bar:** A dark bar containing links for Search, Maps, SiteFinder, Directories, and Comments.
- Quick Links:** A list of links on the right side, including Events & Calendars, Library, Computing, Networks, & Phones, Administrative Offices & Resources, Staff Resources & Pages, Job Opportunities, Hospitals, Campus Plan and Construction, Giving to The University of Chicago, City of Chicago & Hyde Park, and Convocation & Visitor Info.
- News Section:** A section titled "In the News:" featuring a photo of a group of people and a headline: "University of Chicago breaks ground for \$200 million science building".
- Search Bar:** A search input field and a "Search" button located at the bottom center.
- Footer:** Copyright information and additional links at the bottom of the page.

Can't find what you're seeking? Please [ask the Webmaster](#).
[Directories](#) • [SiteFinder](#) • [Maps](#) • [Comments](#)

uchicago® • ©2002 The University of Chicago® • 5801 South Ellis Ave., Chicago, IL 60637 • 773-702-1234 • NSIT
[View text-based navigation tree](#) • [Site Info](#) • [DMCA agent](#) • [Time](#) • [The Chicago Initiative](#)

A poor visual hierarchy

Call for price 301-345-9504

Special import from Germany

Frankie Lyman and the Teenagers

3 CD boxed set, 72 cuts and illustrated booklet

Scoring visual complexity

University of Washington
Department of Technical Communication

A (1)

TC 510 Information Design

Professor David K. Farkas

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C (2)

Course Website — Fall 2002 (Day)

- In this course we investigate a broad range of print and online documents from various rhetorical and cognitive perspectives. In particular, hypertext theory is our means to better understand how a document's explicit structure guides users as they navigate, shapes the message, and contributes to the user's overall experience.
- We look closely at traditional print documents and at such innovations as STOP and Information Mapping. Our consideration of print is a foundation for studying the Web, other online media (e.g., ebooks, PDF, PowerPoint), and Virtual Reality.
- This is a practice-oriented course aimed at improving your writing and design skills.

18 design elements + 3 regions = 21

Limitations of visual hierarchy diagrams

1. Determining a visual hierarchy is a very inexact science with numerous principles involved.
2. Visual hierarchy diagrams take time to create.
3. Visual hierarchy diagrams focus our attention on individual pages. Users, however, experience a website as a **succession** of pages.

For detailed information on visual hierarchy diagrams

K. Reichenberger, K. J. Rondhuis, J. Kleinz
and J. Bateman, “Effective Presentation of
Information Through Page Layout: A
Linguistically Based Approach,” in *Electronic
Proceedings of the ACM Workshop on
Effective Abstractions in Multimedia*, Nov.
4, 1995 San Francisco, CA.

[http://www.cs.tufts.edu/~isabel/reichen/
page-layout.html](http://www.cs.tufts.edu/~isabel/reichen/page-layout.html)

Page Layout Change (PLC) Notation

PLC Notation

PLC notations expand upon visual hierarchy diagrams. They represent user pathways through a website and help us gauge—and informally score—the degree of page layout change.

Using PLC

1. Trace one or more user pathway, marking the regions of each page on the path.
2. Annotate the user's pathway using PLC syntax.
3. Calculate the PLC score.
4. Compare PLC score to visual complexity score.

PLC Syntax

→

Link → Region(s)

“operates on”

>>

Region(s) >> Region(s)

“reconfigured as”

(Note: Refer to >> as a “chevron.”)

=

Region(s) = Region(s)

“remains as”

A simple example with minimal change (no reconfiguration)



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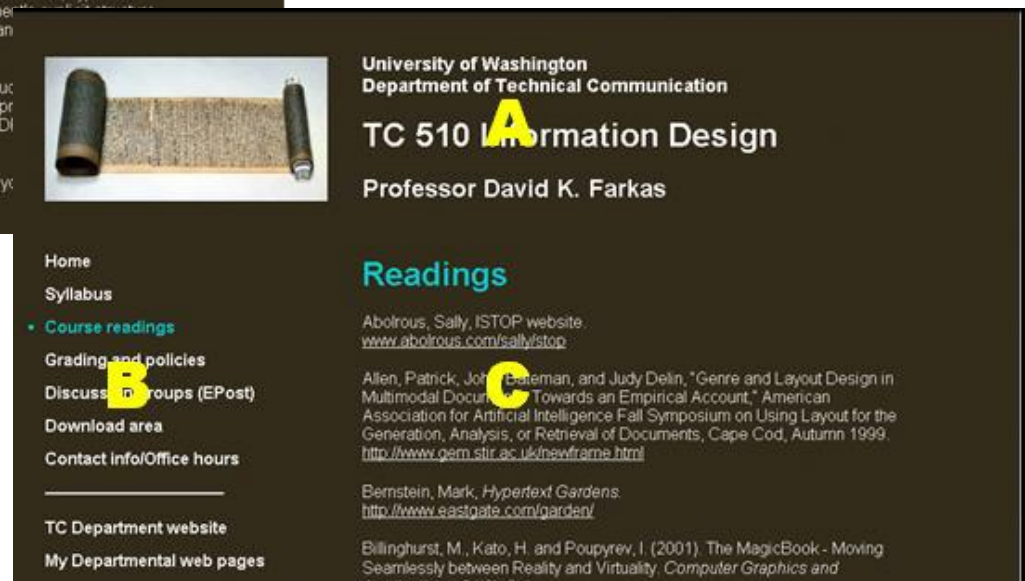
This is a practice-oriented course aimed at improving your skills.

B → C

A = A

Clicking a link in B drives a change in C.

This is a very typical design.



University of Washington
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Readings

Abolrous, Sally, ISTOP website.
www.abolrous.com/sally/istop

Allen, Patrick, John Cateman, and Judy Delin, "Genre and Layout Design in Multimodal Documents: Towards an Empirical Account," American Association for Artificial Intelligence Fall Symposium on Using Layout for the Generation, Analysis, or Retrieval of Documents, Cape Cod, Autumn 1999.
<http://www.gem.stir.ac.uk/newframe.html>

Bernstein, Mark, *Hypertext Gardens*.
<http://www.eastgate.com/garden/>

Billinghurst, M., Kato, H. and Poupyrev, I. (2001). The MagicBook - Moving Seamlessly between Reality and Virtuality. *Computer Graphics and Applications*, 15(12), 40-49.

Fusing regions

(Tracing a path across three pages)

Winter Sale at NORDSTROM.com - Save Now, Wear Now... 25-60% off

MSN Home | My MSN | Sign In

Thursday, Dec 26

Search the Web: [Search]

Free Shipping amazon.com

Subscribe Now! 3 Months FREE!

Car warranties: 10 things a dealer might not tell you

Post-holiday sales: See where the bargains are

Celeb couples scoop: Who's hooking up?

Bed & Bath Liquidation Save up to 85% NOW!

MSN Internet Services

Internet Services & specials

Internet software

MSN Messenger Service

Find

All Auto Price Quotes

Books

Build a Family Tree

Find a Job

Get a quote

Hotels

Maps & Directions

Old Friends

Personals

Weather

Today on MSN

- 1 ticket wins \$315M lotto
- Best states for small biz
- Test your music IQ
- Go to new position to fill?

Tech, Trends & Toys

- 5 'bite-size' cell phones
- Battled to new PC?
- 24-hr online help
- Man anywhere
- Taboos of 'Instant Messenger' dating

MSN Channels

- Autos
- Business
- Career
- City Guides
- Family
- Fitness & Recreation
- Games
- Health
- Holiday
- House
- Kids
- Learn
- Love & Relationships
- Movies, Music & TV
- News
- Slate Magazine
- Sports
- Travel
- Women

Your World

- Check Hotmail anywhere
- Best time to finance?
- Use car hire's guide

Get online free, 3 mos.

- Sign up for MSN 8 & get a stuffed toy butterfly, free!

MSN Top Headlines

more...

MSNBC News

- U.S. retailers set post-holiday sales
- Northeast stays out after snowstorm
- The Pictures
- Slate: Opinion & Commentary
- Bring back the 30-year bond
- ESPN Sports
- Woman plays in college bowl game

MSN Shopping

more...

What's Hot Right Now

- Ralph Lauren \$29.95
- 10% off FTD.COM flowers
- Savings up to \$20
- Upgrade!
- Up to 50% off gifts
- New Year's party prep

Send holiday roses \$25

Today's Sales & Deals

$D^2 \rightarrow C-J$
 $C-J \gg C, D$

MSN Home | My MSN | Hotmail | Search | Shopping | Money | People & Chat | Sign In

Search the Web: [Search] powered by MSN Search

Get a Quote!

1 My New Car 2 My Options 3 My Info 4 My Dealer 5 My Price

Get a free price quote...

Find your next car or truck on MSN Autos. You're just seconds away from requesting a free quote from a local qualified dealer.

Select a make & model Enter ZIP Code

Select [Go]

Why get a quote with MSN?

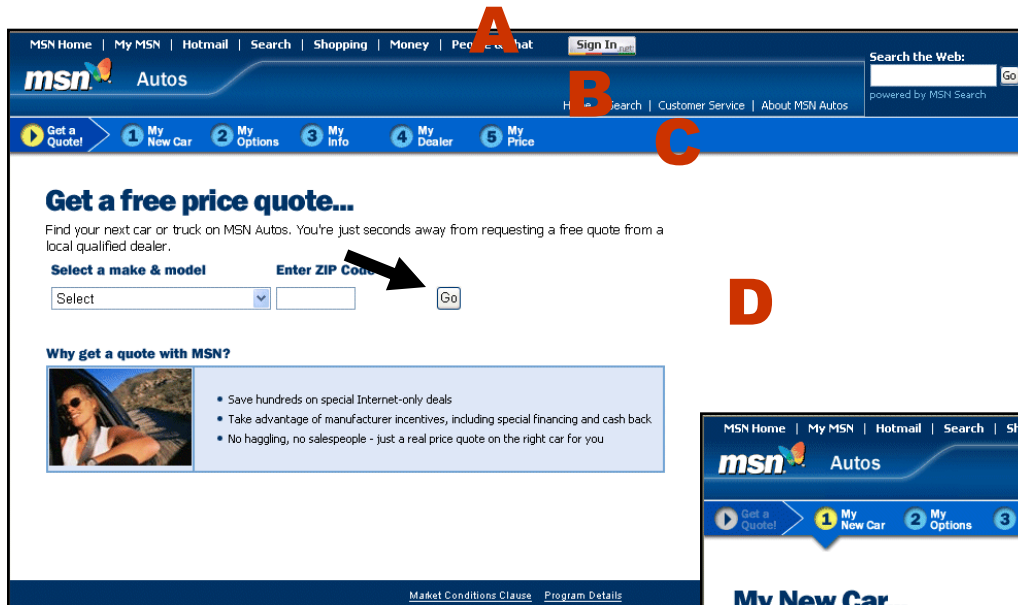
- Save hundreds on special Internet-only deals
- Take advantage of manufacturer incentives, including special financing and cash back
- No haggling, no salespeople - just a real price quote on the right car for you

Market Conditions Clause Program Details

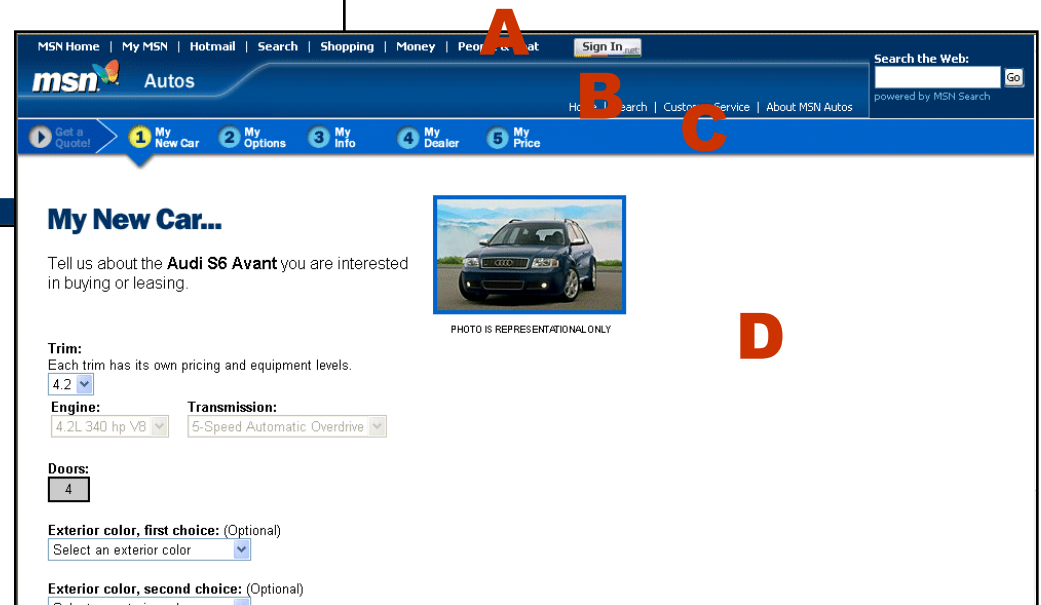
Massive reconfiguration,
 fusion of multiple regions.

Fusing regions

(Tracing a path across three pages)

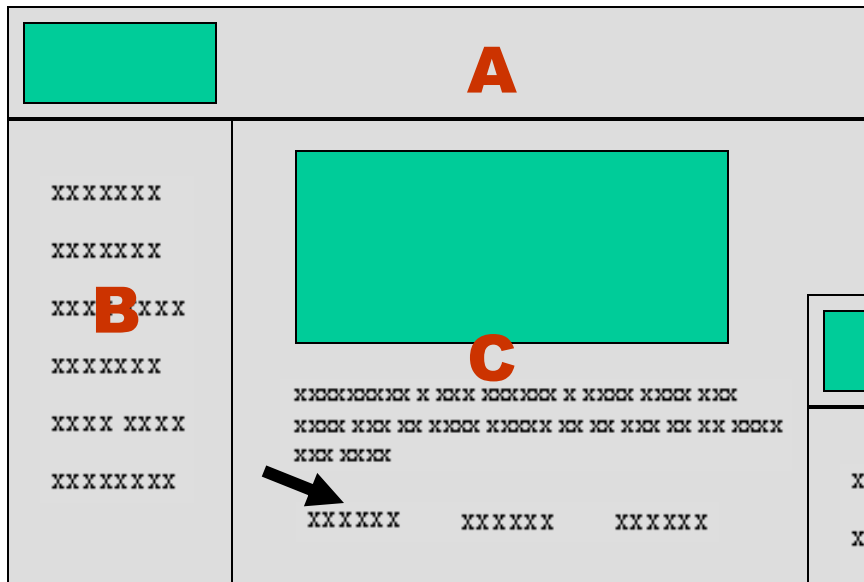


D → D

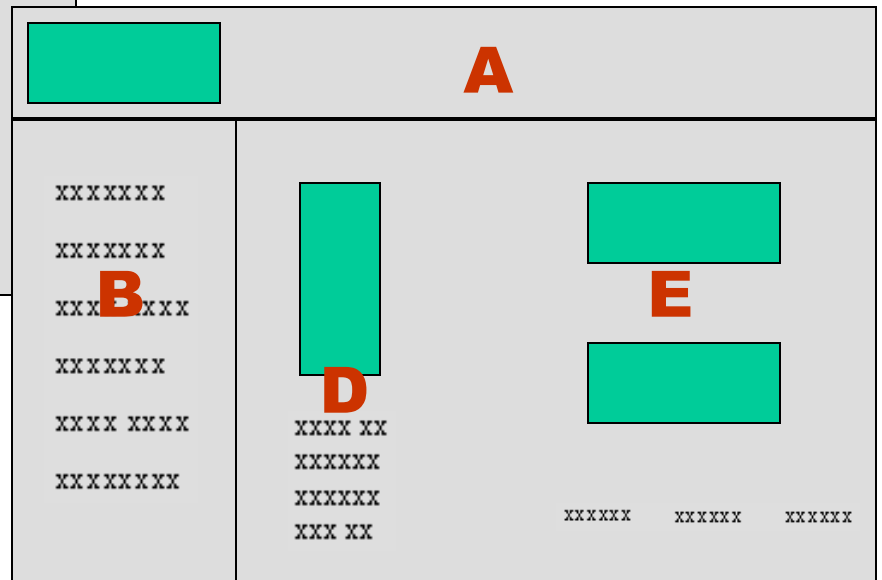


Link in main content area (MCA) changes content of main content area.

Splitting a region



$C \rightarrow C$
 $C \gg D+E$



Spawning a new region

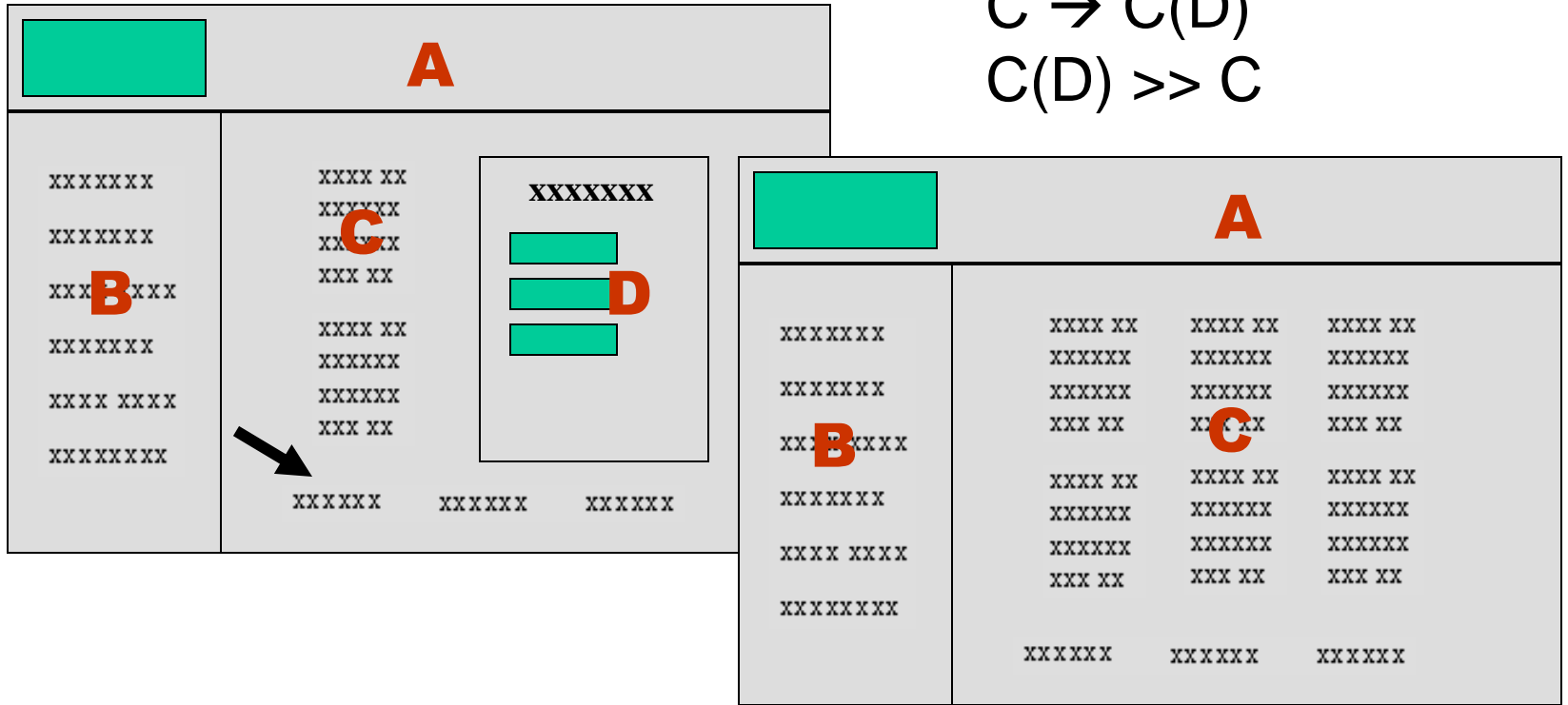


B → B
B >> B(C)

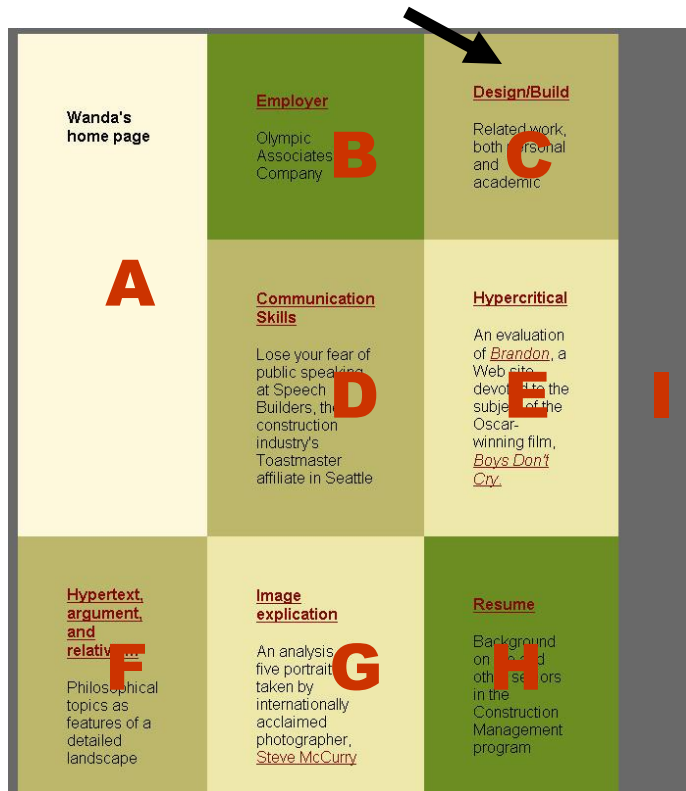


Dropping a region

$C \rightarrow C(D)$
 $C(D) \gg C$

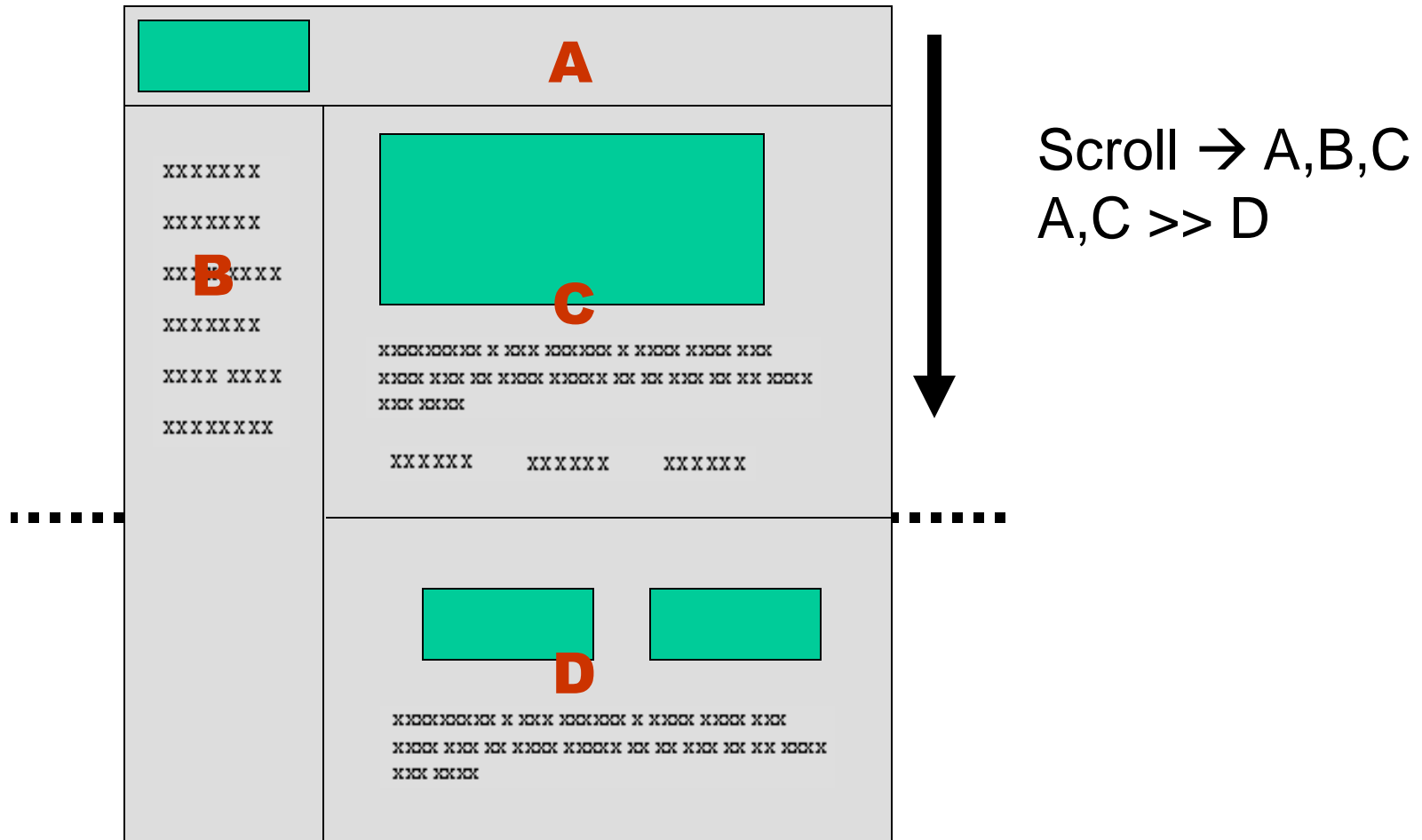


Shifts in the dimensions of regions



C → A-I
 (A-I) >> (A-I)

Regions introduced by scrolling



The scope of PLC: What behaviors can it track?

1. Changes in content only (no reconfiguration)
2. Splitting into two or more regions
3. Fusing regions
4. Spawning a region
5. Dropping a region
6. Shifts in the dimensions of regions
7. Regions introduced by scrolling
8. Any and all combinations

The scope of PLC: What events are supported?

- Mouse click
- Mouse rollover
- Scrolling via scroll bar
- Scrolling via an anchor link
- Automated cycling of graphics on a page
- Turning of a page (print)

Scoring PLC: Determining the degree of Page Layout Change

$$\text{PLC score} = X + 2Y$$

X = # of regions that change (number of letters following arrow)

Y = # of reconfigured regions (# of letters—whichever is highest—on either side of the chevron)

The scoring is not “objective.” It’s a reference point for design discussions and decisions.

Minimal change yields a score of 1

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Abcorus, Sally. ISTOP website
www.aboutus.com/sallyistop

Alan, Patrick, John, Bateman, and Judy Dehn. "Genre and Layout Design in Multimodal Documents: The Case of an Empirical Account." American Association for Applied and Technical Fall Symposium on Using Layout for the Generation, Analysis, or Design of Documents, Cape Cod, Autumn 1999.
<http://www.gem.stc.ac.uk/technical.htm>

Eberstein, Mark. "Hypertext Gardens"
<http://www.usatpale.com/gardens/>

Billinghurst, M., Kato, H. and Poupyrev, I. (2001). The MagicBook - Moving Seamlessly between Reality and Virtuality. Computer Graphics and Visualization 2001.

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B → C

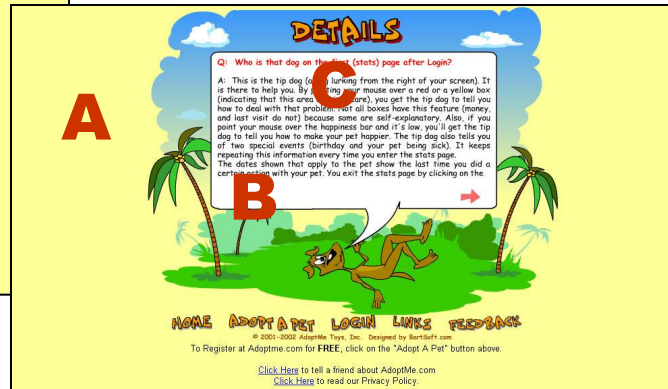
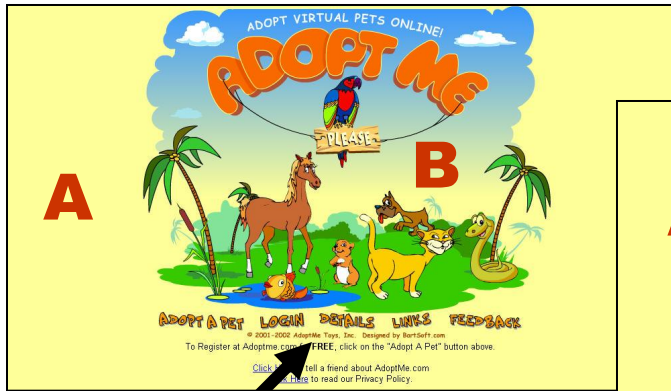
PLC score = $X + 2Y$

PLC score = $1 + 0$

PLC score = 1

Clicking in Region B affected Region C. Therefore, $X = 1$.

Modest change yields a score of 5

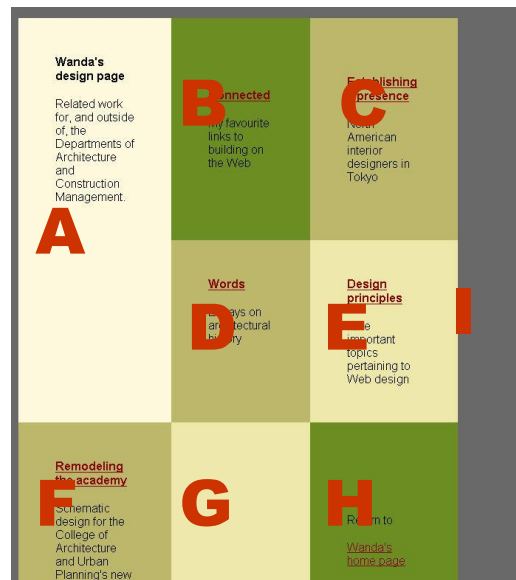


B → B
 B >> B(C)

PLC score = X + 2Y
 PLC score = 1 + 2(2)
 PLC score = 5

Clicking in Region B affected Region B (the content changed). Region B has also been reconfigured by spawning Region C.

Extensive change yields a score of 27

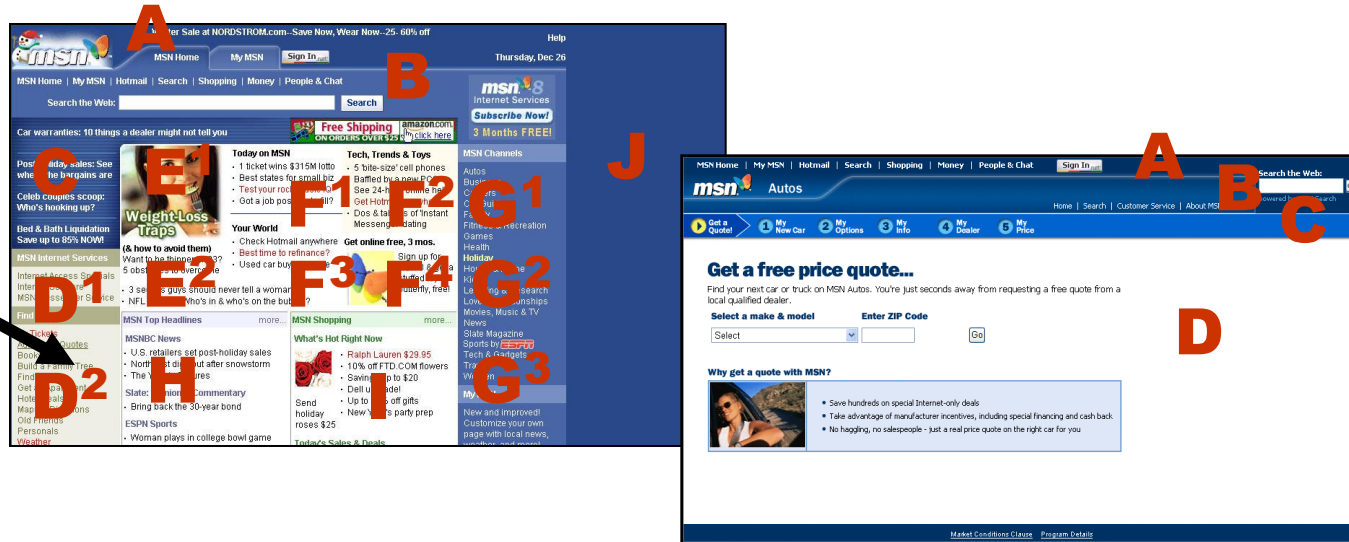


C → A-I
(A-I) >> (A-I)

PLC score = X + 2Y
 PLC score = 9 + 2(9)
 PLC score = 27

All regions were affected and all were reconfigured.

A complex design with extensive change yields a score of 49



$D^2 \rightarrow A-J$
 $B-J \gg B-D$

PLC score = $X + 2Y$

PLC score = $17 + 2 (16)$

PLC score = 49

All regions were affected.

Region A was not reconfigured.

Region B stretched. Regions

C-J fused into Regions C and D.

Comparing PLC scores with visual complexity scores

It is worthwhile to compare how visual complexity correlates with PLC. For example, when the MSN pages scored 49 in PLC, there was also a large drop in visual complexity from 141 to 54. Visual complexity can also increase with PLC score.

Value of PLC

PLC promotes greater awareness of important design variables. It helps designers

- Identify non-standard navigation.
- Identify design errors pertaining to PLC and visual complexity.
- Gauge PLC and visual complexity as aspects of the overall user experience.

Uses of PLC

PLC does **not** directly tell you what is good or bad. It invites such questions as these:

- “Why do I see such different PLC scores among pages serving a similar purpose?”
- “Why does this pathway vary so much in PLC scores?”
- “Is this behavior typical of the genre?”

Conclusion: You can usefully represent the underlying structure and the appearance of a website

1. Node-link diagrams
2. Flowchart node-link diagrams
3. Page mock-ups
4. Visual hierarchy diagrams (with visual complexity scoring)
5. Page Layout Change (PLC) notation

The End

