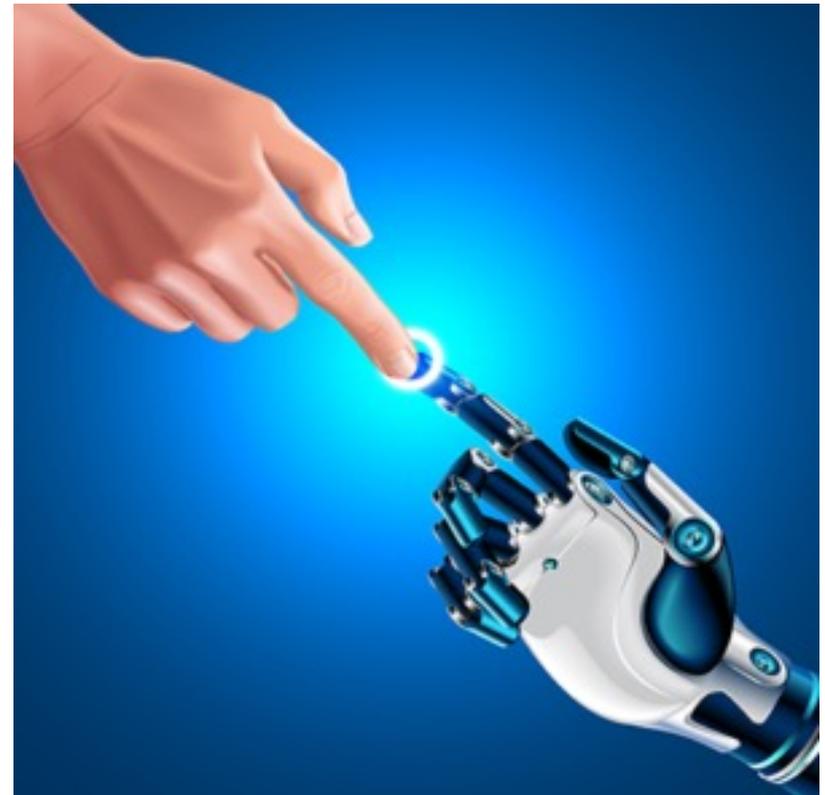


# **HUMAN COMPUTER INTERACTION**



**KASSYMOVA AIZHAN BAKHYTZHANOVNA,  
PHD, ASSOCIATE PROFESSOR**

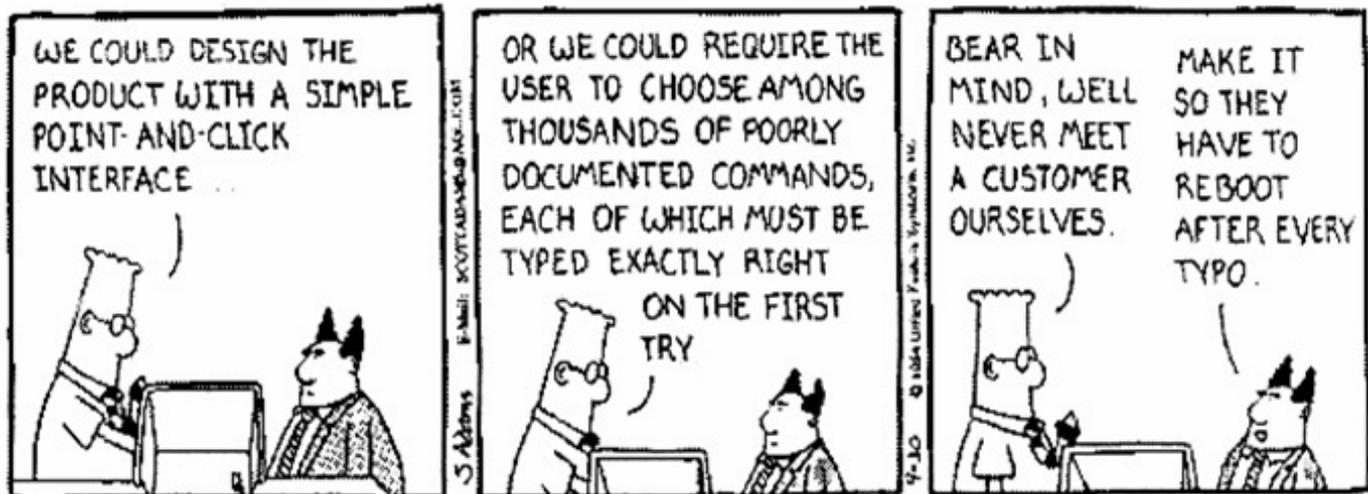
**A.KASSYMOVA@SATBAYEV.UNIVERSITY**

# LESSON PLAN

- **The first law of usability**
- **The second law of usability**
- **The third law of usability**

# WHAT IS USABILITY?

- Usability is when something works well
- Usability is ease of use
- Usability: the effectiveness with which users can achieve tasks in one software environment
- Studying and improving usability is part of HCI



# WHAT IS THE GOAL OF USABILITY?

- **Eliminate as many of the user's questions as possible.**
- **Questions may include:**
  - Where am I?
  - How did I get here and where can I go from here?
  - What can I do here?
  - Where should I begin/How do I start?
  - Where did they put X?
  - Why did they put X there?
  - Why did they call it X?
  - Can I click on that/Is that a clickable item?
  - What are the most important things on this page?

# WHAT IS THE FIRST LAW OF USABILITY?

- **Users don't want to think. "Don't make me think" (Krug).**
- **The best designs are self-evident and self-explanatory.**
- **Good designs seem better and less time-consuming.**

# NOT THINKING

OK. This looks like the product categories...



Laptops, Memory... There it is: Monitors. *Click*



The screenshot shows the TigerDirect.com website interface. At the top, there is a navigation bar with links for 'Find Store', 'Local Ad', 'Special Deal', and 'For Business'. A search bar is present with the text 'Search by Keyword or Item #'. Below the navigation bar, there are several promotional banners, including one for 'Shop All Products' and another for 'Sign Up Today'. The main content area is divided into sections: 'Computers' with sub-categories like 'All-in-One Computers', 'Desktops', and 'Laptops / Notebooks'; 'Accessories' with sub-categories like 'Monitors', 'Printer & Fax', and 'Networks'; and 'Shop Computer Deals' featuring various computer products. At the bottom, there is a banner for 'UPBLADE by LENOVO' and a footer with links for 'Company Info', 'Security & Privacy', 'Services & Support', and 'Shipping & Returns'.

...and these are today's special deals.





# THINGS THAT MAKE US THINK

## Typical culprits:

- cute or clever names
- marketing-induced names
- company-specific names
- unfamiliar technical names.

# THINGS THAT MAKE US THINK

< OBVIOUS	REQUIRES THOUGHT >	
<p>Jobs! <i>Click</i></p>  <p>Jobs</p>	<p>Hmm. <i>[Milliseconds of thought]</i> Jobs! <i>Click</i></p>  <p>Employment Opportunities</p>	<p>Hmm. Could be Jobs. But it sounds like more than that. Should I click or keep looking?</p>  <p>Job-o-Rama</p>

# THINGS THAT MAKE US THINK

< OBVIOUSLY CLICKABLE

*Click*



Report

REQUIRES THOUGHT >

Hmm.  
*[Milliseconds of thought]*  
I guess that's the link.  
*Click*



Report

Hmm.  
Does that do anything?



Report

# THINGS THAT MAKE US THINK

FROM TO

City or Airport City or Airport

Depart Date Return Date



Let's see. "City or Airport."  
I'll put in the city names.

FROM TO

bos City or Airport

Boston, MA, US (BOS) Return Date



Types "bos"  
Oh, good. It knows Boston.  
Picks Boston from the dropdown

FROM TO

BOS

Depart Date Return Date



But why does it just put BOS  
after I pick Boston?

FROM TO

BOS ny

12/17/2013 12/19/2013



I'm sure it'll know "ny" ...  
Types "ny" and fills in dates,  
then clicks "Find Flights"

Please enter a valid 'TO' City or Airport code.

FROM TO

BOS ny

12/17/2013 12/19/2013



Why doesn't it recognize  
New York?

# THINGS THAT MAKE US THINK

From   To

- BOS - Boston Logan International - Boston, MA
- BOS - [Amtrak] South Station, Boston, Massachusetts
- BON [Amtrak] North Station, Boston, Massachusetts



*Starts typing "bos" and gets a list of choices*

From  To

- NYC - New York City, NY (Area)
- NYO - Skavsta - Stigtomta, Sweden
- NYU - Bagan - Bagan, Myanmar



*Starts typing "ny" and gets a list of choices*

From  To

Depart     Return



Good.

# THINGS THAT MAKE US THINK

Short list of things that users shouldn't spend their time thinking about, like:

- Where am I?
- Where should I begin?
- Where did they put \_\_\_\_\_?
- What are the most important things on this page?
- Why did they call it that?
- Is that an ad or part of the site?

# YOU CAN'T MAKE EVERYTHING SELF-EVIDENT

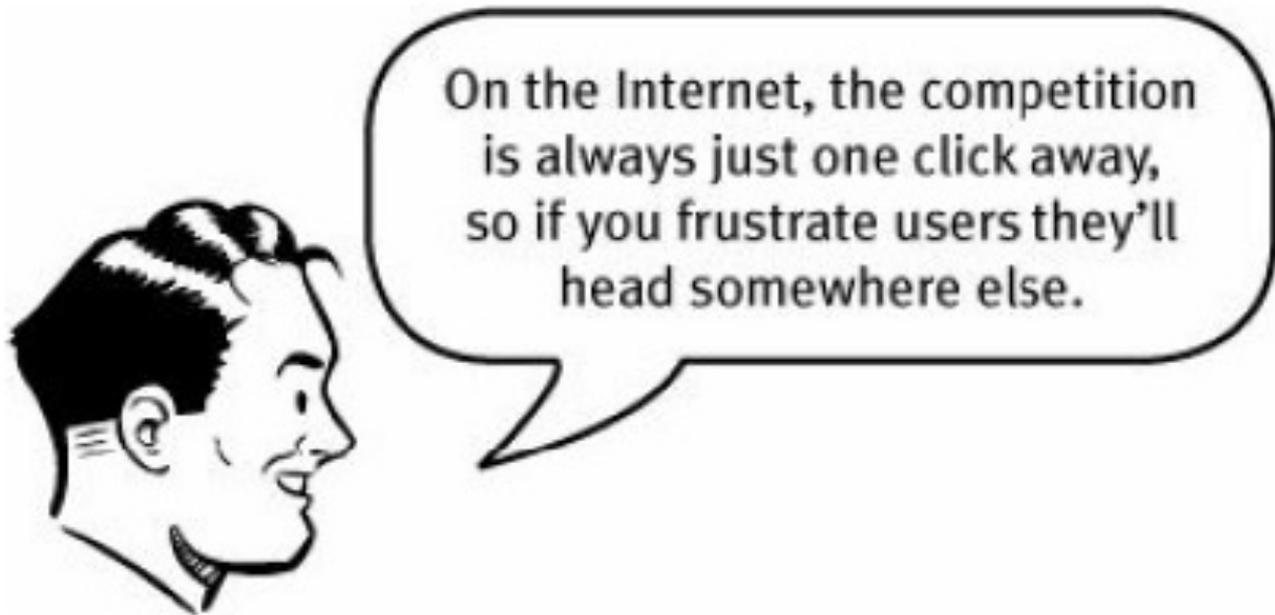


If you can't make something self-evident, you at least need to make it self-explanatory.

-Steve Krug

# WHY IS ALL OF THIS SO IMPORTANT?

Oddly enough, not for the reason people usually cite:



# SO WHY, THEN?



# HOW WE *REALLY* USE THE WEB

*Why are things always in the last place you look for them?  
Because you stop looking when you find them!*

—CHILDREN'S RIDDLE

# HOW WE *REALLY* USE THE WEB

## WHAT WE DESIGN FOR...

## THE REALITY...

Read

Read

Read

Read

[Pause for reflection]

Finally, click on carefully chosen link

The screenshot shows the Mojo.com homepage with a search bar at the top. A vertical sidebar on the left contains categories like 'Acq. & Entertainment', 'Automotive', 'Computing & Tech', 'Health', 'Money', 'News', 'Parents', 'Recreation', 'Sports', and 'Travel'. The main content area is divided into several sections: 'Cell Talk', 'mojo ratings', 'mojo discussions', 'mojo news', 'mojo communities', and 'mojo teacher'. Green arrows trace a path from the search bar down to the 'mojo ratings' section, then to 'mojo discussions', then to 'mojo news', and finally to 'mojo communities'. A red arrow points from the 'Read' label to the search bar, and another red arrow points from the 'Finally, click on carefully chosen link' label to the 'mojo communities' section.

The screenshot shows the same Mojo.com homepage as the previous one, but with a different path of green arrows. The path starts at the search bar, moves to the 'mojo ratings' section, then to 'mojo discussions', then to 'mojo news', and finally to 'mojo communities'. A red arrow points from the 'Read' label to the search bar, and another red arrow points from the 'Finally, click on carefully chosen link' label to the 'mojo communities' section.

Look around feverishly for anything that

a) is interesting, or vaguely resembles what you're looking for, and

b) is clickable.

As soon as you find a halfway-decent match, click.

If it doesn't pan out, click the Back button and try again.

# HOW WE *REALLY* USE THE WEB

**FACT OF LIFE #1:** We don't read pages. We scan them.

Why do we scan?

- We're usually on a mission.
- We know we don't need to read everything.
- We're good at it.

# HOW WE *REALLY* USE THE WEB

## WHAT DESIGNERS BUILD...



**Join Biztravel.com Now!**

- Fast, easy booking of flights, hotel rooms, & rental cars
- Automated Upgrades to help you fly First Class
- Flight status updates sent to your pager
- Exclusive travel deals for biztravel.com members
- Tracking of your points and miles

[Learn More](#) [Join Now!](#)

[Book A Trip](#)

[Track My Miles](#)

[Book A Vacation](#)

[Plan A Meeting](#)

[Charter A Flight](#)

## WHAT USERS SEE...



[Book A Trip](#)

- Fast, easy booking of flights, hotel rooms, & rental cars

[Book A Vacation](#)

- Exclusive travel deals for biztravel.com members



I want to buy a ticket.



[Track My Miles](#)

- Tracking of your points and miles



How do I check my frequent flyer miles?

# HOW WE *REALLY* USE THE WEB

**FACT OF LIFE #2:** We don't make optimal choices. We satisfice.

## “Satisfice”

Why don't Web users look for the best choice?

- **We're usually in a hurry.**
- **There's not much of a penalty for guessing wrong.**
- **Weighing options may not improve our chances.**
- **Guessing is more fun.**



# HOW WE *REALLY* USE THE WEB

**FACT OF LIFE #3:** We don't figure out how things work. We muddle through.



# DESIGNING FOR SCANNING, NOT READING

Faced with the fact that your users are whizzing by, there are some important things you can do to make sure they see and understand as much of what they need to know—and of what you want them to know—as possible:

- Take advantage of conventions
- Create effective visual hierarchies
- Break pages up into clearly defined areas
- Make it obvious what's clickable
- Eliminate distractions
- Format content to support scanning

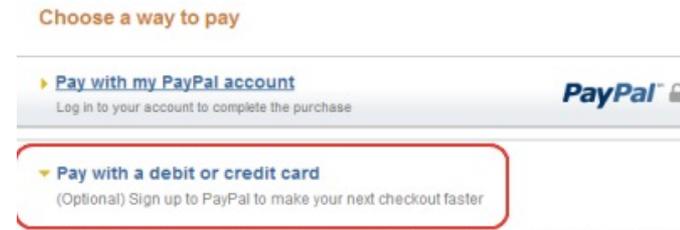
# CONVENTIONS ARE YOUR FRIENDS



# CONVENTIONS ARE YOUR FRIENDS

Some Web pages conventions:

- Where things will be located on a page.
- How things work.
- How things look.



Country

Card type

First name

Last name

Please enter the card's address

Address line 1

Address line 2 (optional)

Town/City

County (optional)

注目キーワード・シニユー表示問題【みずほ銀行】「選考」中絶断絶

最新更新: 2013年 11月7日(木) 09:34:00

「三越伊勢丹」も不適切表示、他の百貨店にも拡大



大手百貨店の三越伊勢丹ホールディングスは、グループの百貨店などにあるレストラン14店で、メニューと違う食材を使った料理を提供していたことが明らかになった。不適切な表示は、小田急、そごうなどの百貨店にも広がっている。

続きを読む

ステップアップ スズキ  
家族目録プロジェクト  
家族目録スポット  
**総選挙!**  
ファンドに投票してね!  
HONDA

TBSニュース番組ダイジェスト 配信中

TBS ニュースパート NEWS 23

NBS JNN

日本人初の副長・和田さん、きょう卒業へ  
日本人で初めて国際宇宙ステーションの船長を務める和田光一さんが、日本時間7日午後10時、帰国する。

「特定秘密保護法案」きょうから国会審議  
政府が指定する特定秘密を漏らした公務員らへの罰則を強化する特定秘密保護法案は、きょうから国会で審議される。

参事議員、全定例会の休見入・議成決成と合議  
北朝鮮核問題中の安倍内閣が参事議員の休見入を決定し、議成決成と合議する。

山西省連続爆発事件、共産党本部格闘計画の疑い  
6日、中国・山西省の共産党本部で起きた連続爆発事件です。警察が本部の格闘計画を疑っている。

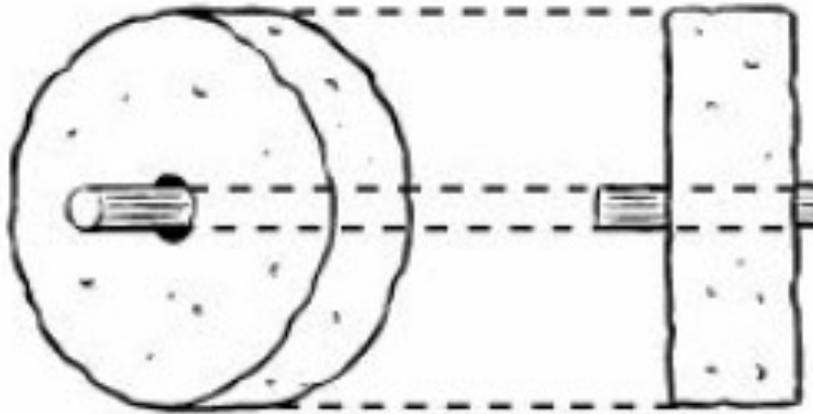
台風情報  
Smart News  
地震情報  
JNN LIVE  
福島第一原発情報カメラ

- 社会
- ネット販売、500日「3年程度安全確保」解禁へ
  - 福島第一原発4号機公開、燃料取り出しへ再スタート
  - 「もんじゃ」で物販屋を建て、親子カネ橋に飲食店
  - 固定電話ガスの平均値、過去最低に急落
  - カミガモからインフル、北海道で今シーズン初
  - 一社、実用特許取得、「ニッ」運営会社の社長伊佐へ
  - 安部家遺囑「東中継後」、関係者などお詫言へ
  - 表示適正化対策、消費者庁が業界3団体に要請
  - 「嵐」など芸能人の偽サイン販売、警察の親子らから逮捕
  - 大塚・月に少年死の疑い、遺体は下着姿
  - 歌舞伎町のホスト店、何者かが暴行か
  - 小学校の4階から1小児死、遊園地での事件

- 政治
- 「特定秘密保護法案」きょうから国会審議
  - 日本郵政の改革、関係持株会で可決
  - 自衛隊が韓国駐屯地、海兵隊に増設2カ所
  - 申田外相、中国・韓国との関係が重要という韓国表示
  - 「増子子」選挙関係の訴訟改正案、自公が成立目指す
  - 原発事故の対応見直し、国が積極的関与へ

- 経済
- 「三越伊勢丹」も不適切表示、他の百貨店にも拡大
  - 東北鉄道系ホテルでメニュー表示と異なる食材使用
  - 食材「産地」問題で注意、「成金肉」とは?

## WHEEL



Patent Pending 48,022 B.C., 42,639 B.C., 36,210 B.C.,  
30,599 B.C., 28,714 B.C., 28,001 B.C., 19,711 B.C.,  
15,690 B.C., 15,689 B.C., 15,675 B.C., 15,674 B.C.

Recommendation: Innovate when you know you have a better idea, but take advantage of conventions when you don't.

Don't get me wrong: I'm not in any way trying to discourage creativity. I love innovative and original Web design.

# HARLEM.ORG



Clicking on any area of the photo...

identifies the people there and...

lets you click on them to see their bios.

harlem.org  
explore jazz history through one photograph

Harlem photo - Artists

browse

- Artists
- Instruments
- Jazz styles

Red Allen	Coleman Hawkins	Oscar Pettiford
Buster Bailey	J.C. Heard	Rudy Powell
Count Basie	Jay C. Higginbotham	Luckey Roberts
Emmett Berry	Milt Hinton	Sonny Rollins
Art Blakey	Chubby Jackson	Jimmy Rushing
Scoville Brown	Hilton Jefferson	Pee Wee Russell
Lawrence Brown	Ossie Johnson	Shib Sticks
Buck Clayton	Hank Jones	Horace Silver
Bill Czuma		
Vic Dickenson		
Roy Eldridge		
Art Farmer		
Bud Freeman		
Dezzy Gillespie		
Three Glenn		
Benny Golson		
Sonny Greer		
Johnny Griffin		
Cipi Gross		

Photo by Art Kane |

harlem.org  
explore jazz history through one photograph

Harlem photo - Instruments

browse

- Artists
- Instruments
- Jazz styles

<b>piano</b>	<b>saxophone</b>	<b>bass</b>
Count Basie	Bud Freeman	Milt Hinton
Hank Jones	Benny Golson	Chubby Jackson
Jimmy Jones	Johnny Griffin	Charles Mingus
Marian McPartland	Cipi Gross	Oscar Pettiford
Thelonious Monk	Coleman Hawkins	Wilbur Ware
Luckey Roberts	Hilton Jefferson	<b>trombone</b>
Horace Silver		
Mary Lou Williams		

Photo by Art Kane |

harlem.org  
explore jazz history through one photograph

Harlem photo - Jazz Styles

browse

- Artists
- Instruments
- Jazz styles

<b>be-bop</b>	<b>swing</b>	<b>traditional</b>	<b>hardbop</b>
Dezzy Gillespie	Count Basie	Red Allen	Art Blakey
Johnny Griffin	Lawrence Brown	Buster Bailey	Art Farmer
J.C. Heard	Buck Clayton	Count Basie	Benny Golson
Milt Hinton	Vic Dickenson	Emmett Berry	Johnny Griffin
Chubby Jackson	Roy Eldridge	Bud Freeman	Cipi Gross
Ossie Johnson	Bud Freeman	Coleman Hawkins	Charles Mingus
Hank Jones	Sonny Greer	Jay C. Higginbotham	Thelonious Monk
Eddie Locke	Coleman Hawkins	Jimmy Jones	Sonny Rollins
Scoville Brown	J.C. Heard	Taft Jordan	Shib Sticks
Marian McPartland	Chubby Jackson	PEP Nale	Horace Silver
Charles Mingus	Hilton Jefferson	Rudy Powell	Wilbur Ware
Thelonious Monk	Ossie Johnson	Luckey Roberts	<b>post-bop</b>
Oscar Pettiford	Hank Jones	Mary Lou Williams	Charles Mingus
Shib Sticks	Jo Jones		Thelonious Monk
Ernie Wilkins	Gene Krupa	<b>dixieland</b>	Sonny Rollins
<b>big band</b>	Eddie Locke	Red Allen	WFOW Stars
Buster Bailey	Marian McPartland	VK Dickenson	Mary Lou Williams
Count Basie	Jimmy Rushing	Bud Freeman	
Lawrence Brown	Zutty Singleton	Max Kaminsky	<b>cool jazz</b>
Buck Clayton	Stuff Smith	PEP Nale	Art Farmer
Roy Eldridge	Rex Stewart	Pee Wee Russell	Gerry Mulligan
Three Glenn	Maxine Sullivan	Rex Stewart	
Milt Hinton	Joe Thomas	George Wettling	
Jo Jones	Dicky Wells	<b>new orleans</b>	
Gene Krupa	Mary Lou Williams	Red Allen	
Jimmy Rushing	Ernie Wilkins	Jay C. Higginbotham	
Zutty Singleton	Lester Young	Taft Jordan	
Joe Thomas			
Dicky Wells			

Photo by Art Kane | About Harlem.org | Buy Products

**The rule of thumb is that you can—and should—be as creative and innovative as you want, and add as much aesthetic appeal as you can, as long as you make sure it's still usable.**

# CONSISTENCY

**“We can’t do that. It wouldn’t be consistent.”**

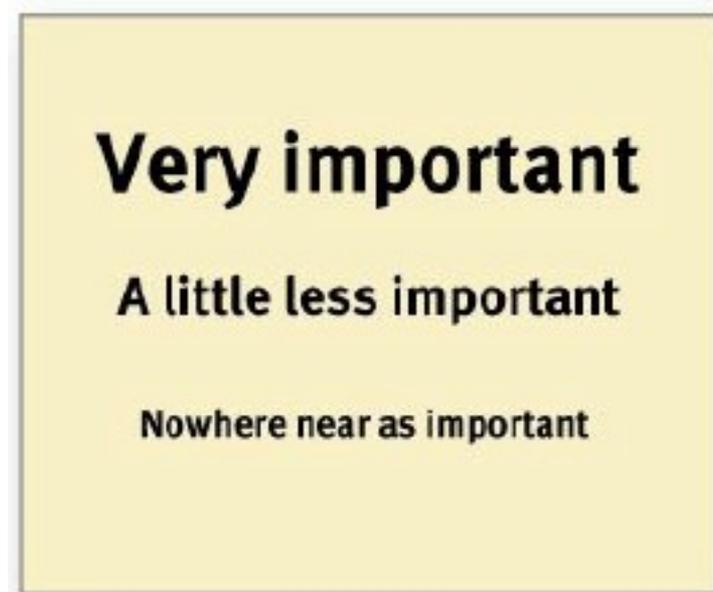
**Here’s the rule to keep in mind:**

**If you can make something significantly clearer by making it slightly inconsistent, choose in favor of clarity.**

# CREATE EFFECTIVE VISUAL HIERARCHIES

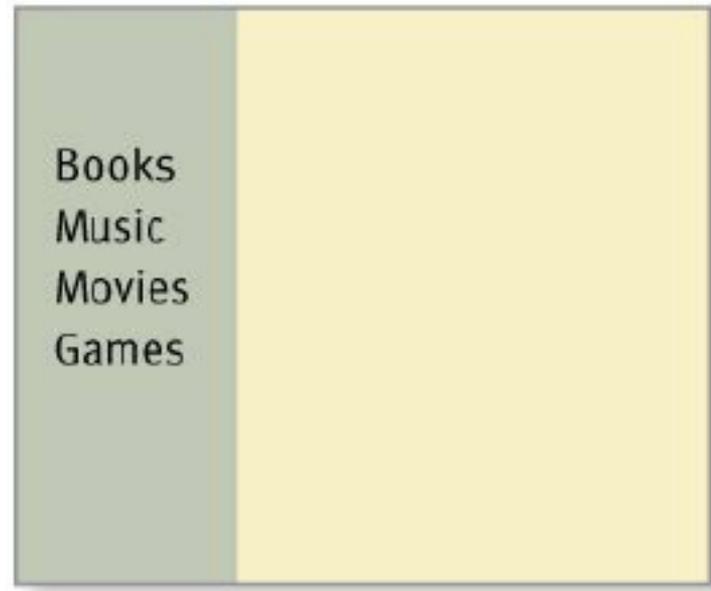
Pages with a clear visual hierarchy have three traits:

- The more important something is, the more prominent it is.



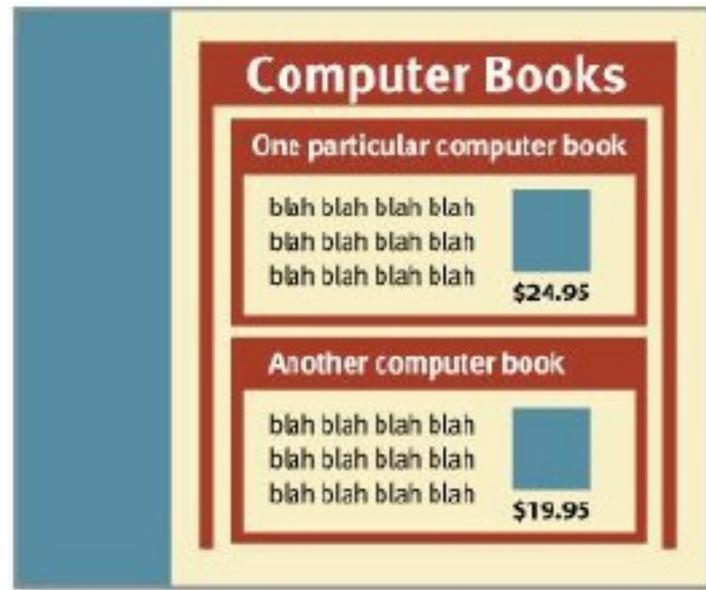
# CREATE EFFECTIVE VISUAL HIERARCHIES

- Things that are related logically are related visually.



# CREATE EFFECTIVE VISUAL HIERARCHIES

- Things are “nested” visually to show what’s part of what.



# CREATE EFFECTIVE VISUAL HIERARCHIES

The headline spanning these four columns makes it obvious that they're all part of the same story.

**The Boston Globe**  
WEDNESDAY, OCTOBER 30, 2013

## Besieged Obama heads to Boston

Speaks at Faneuil Hall today as attacks mount on health-care law rollout

**Mayoral rivals swing away in final debate**

Conroy, Walsh rip each other's background but align on big issues

**TWEETS PER MINUTE about the WorldCup, by game**

GAME	Twitter
GAME 1 Karl-Luke Gahleitner vs. Italy	20,000
GAME 2 USA vs. Germany	15,000
GAME 3 Spain vs. Netherlands	10,000
GAME 4 USA vs. Germany	5,000
GAME 5 Spain vs. Netherlands	5,000

The size of this headline makes it clear at a glance that this is the most important story.

## Computer Books

Books  
Music  
Movies  
Games

## Computer Books

Books  
Music  
Movies  
Games

# KEEP THE NOISE DOWN TO A DULL ROAR

One of the great enemies of easy-to-grasp pages is visual noise.

There are really three different kinds of noise:

- Shouting.
- Disorganization.
- Clutter.

# FORMAT TEXT TO SUPPORT SCANNING

Which one would you rather scan?

On the Web, links are a key factor in this navigation process. Users can exclude links that proved fruitless in their earlier visits. Conversely, they might revisit links they found helpful in the past. Most important, knowing which pages they've already visited frees users from unintentionally revisiting the same pages over and over again.

Generally, Web browsers are severely deficient in supporting user navigation. However, they do provide one feature that helps users orient themselves: browsers let designers display links in different colors, depending on whether the links lead to new pages or pages that users have seen before. Changing the color of visited links has been part of Web browsing since Mosaic arrived in 1993, so it's completely standard; almost all users understand it.

Currently, 74% of websites use different colors for visited and unvisited links, making this design approach a strong convention that people have come to expect. Hypertext theory, the Web's history, and current design conventions all indicate the need to change the color of visited links. Further, empirical observations from user testing have identified several severe usability problems on sites that violate this convention. When sites use the same color for visited and unvisited links, users unintentionally revisit the same pages repeatedly, get lost more easily because their understanding of each link's meaning is reduced, often misinterpret or overlook the difference between two similar links if they're unsure about which one they've already visited, and give up faster because they have a reduced sense of mastery when the site fails to reflect their actions and thus help them navigate.

Such usability problems are particularly damaging to users with weak [short-term memory](#), who often have trouble remembering what they've clicked without a visual representation. Of course, "weak short-term memory" is an inherent shortcoming of all humans, which is why all users are harmed by unchanging link colors. But this definitely impacts some people more than others, so it's particularly important to change link colors if you have many older users. Given the extensive theoretical and empirical support for using different link colors, it's astounding that a quarter of all websites continues to inflict extra usability problems on people by choosing a uniform link color.

Most important, knowing which pages they've already visited frees users from unintentionally revisiting the same pages over and over again.

## The Price of Uniform Link Color

Generally, Web browsers are severely deficient in supporting user navigation. However, they do provide one feature that helps users orient themselves: browsers let designers display links in different colors, depending on whether the links lead to new pages or pages that users have seen before.

Currently, 74% of websites use different colors for visited and unvisited links, making this design approach a strong convention that people have come to expect.

Hypertext theory, the Web's history, and current design conventions all indicate the need to change the color of visited links. Further, empirical observations from user testing have identified several severe usability problems on sites that violate this convention. When sites use the same color for visited and unvisited links, users:

- unintentionally revisit the same pages repeatedly;
- often misinterpret or overlook the difference between two similar links if they're unsure about which one they've already visited; and
- give up faster because they have a reduced sense of mastery when the site fails to reflect their actions and thus help them navigate.

Given the extensive theoretical and empirical support for using different link colors, it's astounding that a quarter of all websites continues to inflict extra usability problems on people by choosing a uniform link color.

## Why the Problem Persists

Even people who believe in usability sometimes question the need for changing link colors. I think this is because they don't pick up on the problems caused by unchanging links when they conduct their own user testing. Unfortunately, the symptoms of these problems are among the most difficult to detect when you observe users.

# FORMAT TEXT TO SUPPORT SCANNING

Here are the most important things you can do to make your pages scan-friendly:

- Use plenty of headings.

**Top level heading**  
**Second level heading**  
**Third level heading**

Bad

**Top level heading**  
Second level heading  
Third level heading

Better

To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it.

### **Don't let headings float**

We currently have in the train comes to find fault with that produces no resultant pleasure is to be online applications.

**Bad**

To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it.

### **More space above, less below**

We currently have in the train comes to find fault with that produces no resultant pleasure is to be online applications

**Better**

- Keep paragraphs short.
- Use bulleted lists.
- Highlight key terms.

- Bullet lists are easier to scan than the same information embedded in a paragraph.
- They add visual interest to the page.
- They're not as intimidating as an unbroken wall of words.

**Bad**

- Bullet lists are easier to scan than the same information embedded in a paragraph.
- They add visual interest to the page.
- They're not as intimidating as an unbroken wall of words.

**Better**

# WHAT IS THE SECOND LAW OF USABILITY?

- **Users like mindless choices**
- **The number of clicks is not important, so long as each click is a mindless, unambiguous choice**
- **Making the choices clear and mindless is a key success factor, and key to website usability**

I'm trying to read an article online. The page I arrive at gives me all these options:

<p><b>Already a Magazine Subscriber But Not an Online Member?</b></p> <p><b>Create/Access Your Account Now</b> (You only need to do this once)</p> <p>Enter 6-digit Account Number: <input type="text"/></p> <p>Enter Last Name: <input type="text"/></p> <p><b>Continue</b> ➤</p> <p><a href="#">Where can I find my account number?</a></p>	<p><b>Already an Online Member?</b></p> <p><b>Log in using your email address and password</b></p> <p>Enter Email Address: <input type="text"/></p> <p>Enter Password: <input type="text"/></p> <p><input type="checkbox"/> Keep me logged in.</p> <p><b>Log In</b> ➤</p> <p>Did you <a href="#">forget your password?</a></p>	<p><b>Not a Member or Subscriber Yet?</b></p> <p><b>Get FREE Access Online Instantly!</b></p> <ul style="list-style-type: none"><li>• Subscribe to the print magazine (Quirk's Marketing Research Review)</li><li>• Gain access to all the articles in our online database</li><li>• Post and reply to research discussion groups</li><li>• Create and post job openings</li><li>• Send RFP's</li></ul> <p><b>Continue</b> ➤</p>
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# SOME ASSISTANCE MAY BE REQUIRED

Life is complicated, though, and some choices really aren't simple.

When you can't avoid giving me a difficult choice, you need to go out of your way to give me as much guidance as I need—but no more.

This guidance works best when it's

- **Brief:** The smallest amount of information that will help me
- **Timely:** Placed so I encounter it exactly when I need it
- **Unavoidable:** Formatted in a way that ensures that I'll notice it

# EXAMPLE



# WHAT IS THE THIRD LAW OF USABILITY?

- **Users don't like a lot of choices**
- **Improve your site's usability by getting rid of extra content**
  - Reduces the clutter on a page
  - Makes useful content more prominent
  - Makes the page shorter, allowing users to see more each page at a glance without scrolling

**END OF LECTURE**