Our Perception is Biased

• The past: our experience

• The present: the current context

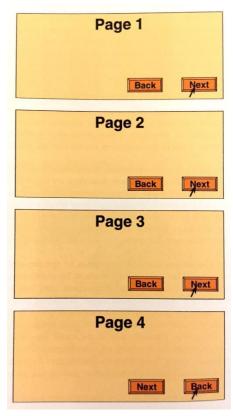
• The future: our goals

- Perceptual priming
- priming the mind can affect perception



Image showing the effect of mental priming of the visual system – (from J Johnson "Designing with the mind in mind", p 2)

- Familiar perceptual patterns or frames
- -repeated exposure to each type of situation builds a pattern in our minds of what we expect to see



The "Next" button is perceived to be in consistent location, even when it isn't – (from J Johnson "Designing with the mind in mind", p 4)

- Habituation
- repeated exposure to the same (or highly similar) perceptions dulls our perceptual system's sensitivity to them



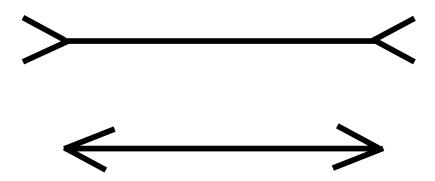
Francis Barlow – illustration of the "The Boy who Cried Wolf" fable https://en.wikipedia.org/wiki/The_Boy_Who_Cried_Wolf

- Attentional blink
- Caused by the brain's perceptual and attention mechanisms being fully occupied with processing the first recognition

Perception biased by current context

What we see is influenced by the context

THE CHT

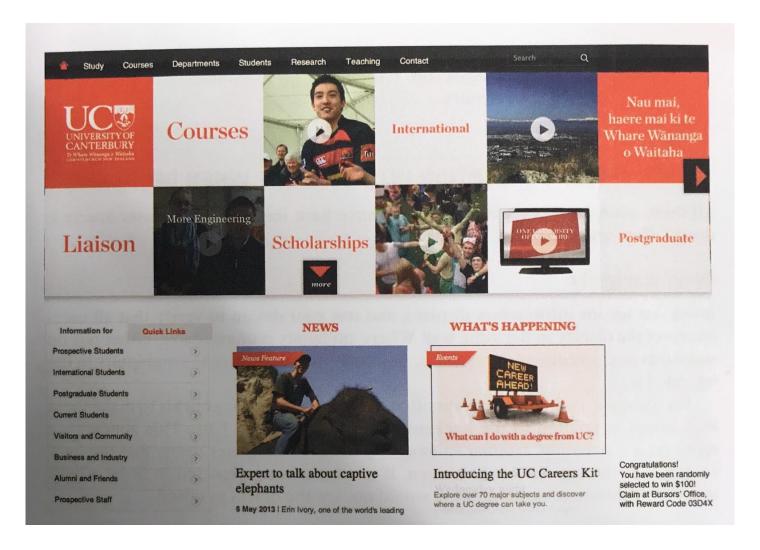


 Guide our perceptual apparatus so we sample what we need from the world around us

• *Filter* our perceptions: things unrelated to our goals tend to be filtered out preconciously, never registering in our conscious minds



Toolbox: Are there scissors here? – (from J Johnson "Designing with the mind in mind", p 10)



University of Canterbury Web site: navigating sites requires perceptual filtering — (from J Johnson "Designing with the mind in mind", p 11)

Mechanisms:

- influencing where to look
- sensitising our perceptual system to certain features

<u>Biased Perception – design implications</u>

Avoid ambiguity

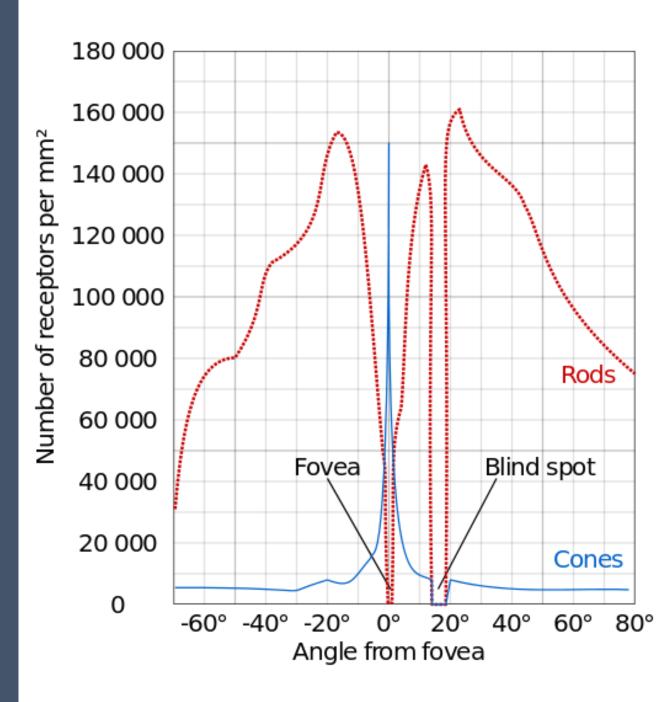
Be consistent

Understand the goals

The human eye is really good at seeing some things and bad at others

The eye is the most detailed at its center, where your focus is.

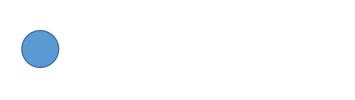
On the edges things are blurry, but you can easily see movement.



Our peripheral vision is poor

Stationary
items in muted
colours
presented in
the periphery of
people's visual
field often will
not be noticed

Motion in the periphery is usually noticed.



2

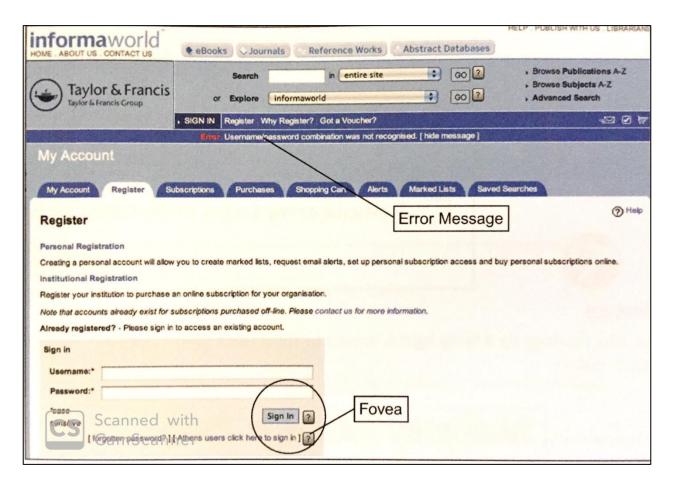
What the visual periphery is good for?

Function 1: Guide fovea

• Function 2: Detects motion

Function 3: Lets us see better in the dark

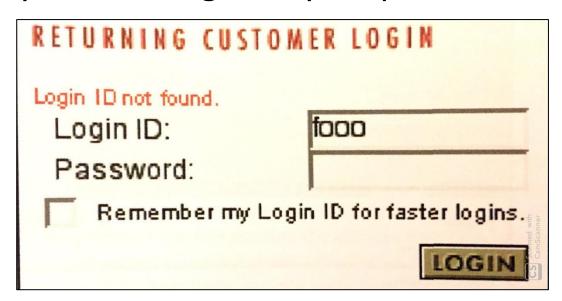
Example from computer user interfaces



This error message for a faulty sign-in appears in peripheral vision, where it will probably be missed. – (from J Johnson "Designing with the mind in mind", p 55)

Think-pair-share

- Look at the image below.
 Can you think of any reasons people might not initially see the error message?
- Pair with your neighbor
- Share your thinking with your partner



This error message for a faulty login is missed by some users even though it is not far from the "Login" button. – (from J Johnson "Designing with the mind in mind", p 56)

Simulation of a user's visual field



Simulation of a user's visual field while the fovea is fixed on the "Login" button. – (from J Johnson "Designing with the mind in mind", p 56)

Common methods of making messages visible

- Put it where users are looking
- Mark the error
- Use an error symbol 🛕 🗘 🕕 🔯



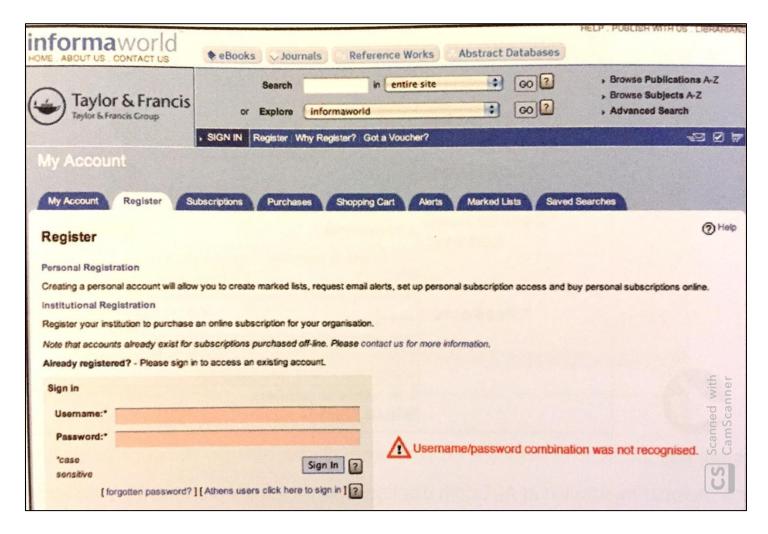






Reserve red for error

Example



This error message for a faulty sign-in is displayed more prominently, near where users will be looking. – (from J Johnson "Designing with the mind in mind", p 57)

Heavy artillery

- Method 1: Pop-up message in error dialog box
- Method 2: Use sound (e.g. beep)
- Method 3: Wiggle or blink briefly (1/4 1/2)(s)

Heavy artillery

• However, use heavy-artillery sparingly!

 Reason → habituation – our brain pay less and less attention to any stimulus that occurs frequently

 Overuse of strong attention-getting methods can cause important messages to be blocked by habituation

 Remember the old fable about the boy who cried 'wolf' too often ...

Visual search is linear

unless targets "pop" in the periphery

LQRBTJPLFBMRWS
FRNQSPDCHKUT
GTHUJLU9JVYIA
EXCFTYNHTDOLL8
GVNGRYJGZST6S
3 LCTVBHUSEMUK
WQELFGHUYIKD9

Finding the Z requires scanning carefully through the characters – (from J Johnson "Designing with the mind in mind", p 62)

GTHUJLU9JVYIA LQRBTJPLFBMRWS 3 LCTVBHUSEMUK FRNQSPDCHKUT WQELFGHBYIKD9 GVN**G**RYJGZST6S EXCFTYNHTDOLL8

Finding the bold letter does **not** require scanning through everything. – (from J Johnson "Designing with the mind in mind", p 62)

Visual search is linear

unless targets "pop" in the periphery

LQRBTJPLFBMRWS
FRNQSPDCHKUT
GTHUJLU9JVYIA
EXCFTYNHTDOLL8
3LCTVBHUSEMUK
GVNGRYJGZST6S
WQELFGHUYIKD9

Counting L's is hard; character shape doesn't "pop" among characters- (from J Johnson "Designing with the mind in mind", p 63)

W Q E L F G H U Y I K D 9
F R N Q S P D C H K U T
3 L C T V B H U S E M U K
G T H U J L U 9 J V Y I A
L Q R B T J P L F B M R W S
E X C F T Y N H T D O L L 8
G V N G R Y J G Z S T 6 S

Counting blue characters is easy because color "pops" – (from J Johnson "Designing with the mind in mind", p 63)

Using peripheral "pop" in design

 Visual hierarchy, e.g. titles, headings, boldness, bullets and indenting

(A) Create a Clear Visual Hierarchy

Organize and prioritize the contents of a page by using size, prominence, and content relationships. Let's look at these relationships more closely. The more important a headline is. the larger its font size should be. Big bold headlines help to grab the user's attention as they scan the Web page. The more important the headline or content, the higher up the page it should be placed. The most important or popular content should always be positioned prominently near the top of the page, so users can view it without having to scroll too far. Group similar content types by displaying the content in a similar visual style, or in a clearly defined area.

(B) Create a Clear Visual Hierarchy

Organize and prioritize the contents of a page by using size, prominence, and content relationships.

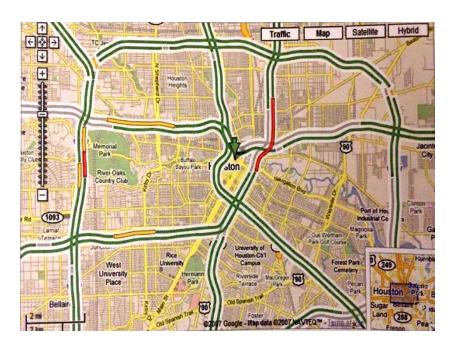
Let's look at these relationships more closely:

- Size. The more important a headline is, the larger its font size should be. Big bold headlines help to grab the user's attention as they scan the Web page.
- Prominence. The more important the headline or content, the higher up the page it should be placed. The most important or popular content should always be positioned prominently near the top of the page, so users can view it without having to scroll too far.
- Content Relationships. Group similar content types by displaying the content in a similar visual style, or in a clearly defined area.

Find the advice about prominence in each of these displays. Prose text format (A) makes people read everything. Visual hierarchy (B) lets people ignore information irrelevant to their goals (from J Johnson "Designing with the mind in mind", p 34)

Using peripheral "pop" in design

 Use colour to indicate status – reserve red for problems (e.g. jams on a map, potential collision)



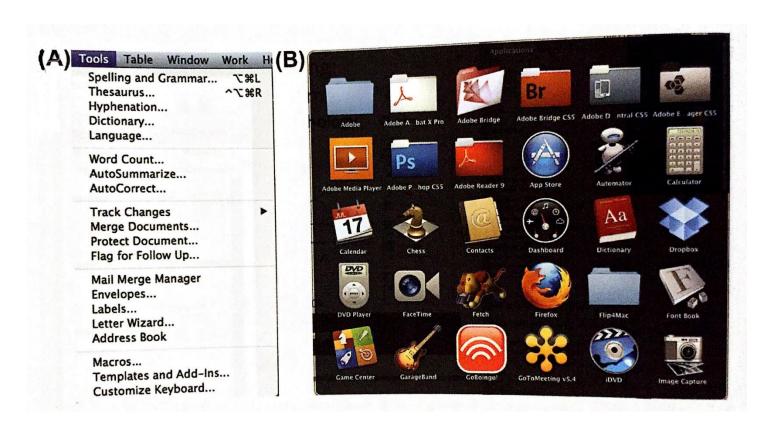
Google Maps uses color to show traffic conditions. Red indicates traffic jams - (from J Johnson "Designing with the mind in mind", p 64)



Air traffic control systems often use red to make potential collisions stand out - (from J Johnson "Designing with the mind in mind", p 65)

Using peripheral "pop" in design

 When there are many possible targets – design icons that can be distinguished in the periphery



(A) Microsoft Word Tools menu, and (B) MacOS application pallet - (from J Johnson "Designing with the mind in mind", p 66)

Humans are surprisingly bad at reading text and very good at pattern matching

So when skimming we don't read, we pattern match (words can be patterns)

Then read once we find something that looks worth reading

You don't need to be able to read something to know what it means



What is the document to the right?



Can you tell what the content is even if you cannot read it?

PULY&LC





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Annual Report from the Inuit People in Canada

Board of Directors



Natan Obed President Inuit Tapiriit Kanatami

Natan Obed is the President of Inuit Tapiriit Kanatami. He is originally from Nain, the northernmost community in Labrador's Nunatsiavut region, and now lives in Ottawa. For 10 years he lived in Iqaluit, Nunavut, and worked as the Director of Social and Cultural Development for Nunavut Tunngavik Inc. He has devoted his career to working with Inuit representational organizations to improve the wellbeing of Inuit in Canada.



Duane Smith Chair and CEO Inuvialuit Regional Corporation

Duane Smith is the Chair and CEO of the Inuvialuit Regional Corporation, whose mandate is to receive Inuvialuit lands and financial compensation resulting from the 1984 Inuvialuit land claims settlement. From 2002 to 2016, he was President of Inuit Circumpolar Council Canada, and served as Chair of the Inuvik Community Corporation for six terms starting in 2004.



Cathy Towtongie President Nunavut Tunngavik Incorporated

Cathy Towtongie first entered politics in 1973 as Secretary Treasurer of Inuit Tapirisat of Canada. In 2001, she was elected President of Nunavut Tunngavik Incorporated, the organization responsible for ensuring that promises made under the Nunavut Land Claims Agreement are carried out.

Proximity and the overlapping of the photo naturally make you group the two bits of text with the photo

The two bits of text are also different colors causing a natural grouping even without the line

PUL7 PLC



ዋኖር Δυσος γραφορίους σας δικου δ



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ውይሩ ጋፊቦሦ_ዮ ማይፈቀያው ትርፈውያው

We are also good at scanning (reading rapidly in order to find specific facts)

I wanted to figure out where a bit.ly link went because it was in a suspicious email (I'm paranoid)

I remembered that bit.ly has statistics pages for all URLs that list the destination URL

So I used DuckDuckGo to search for: bit.ly url number of click statistics

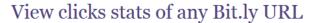
And found this page:



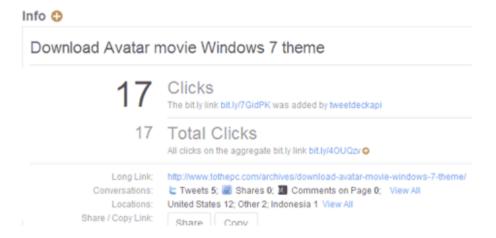
How to see number of clicks statistics of bitly URLs

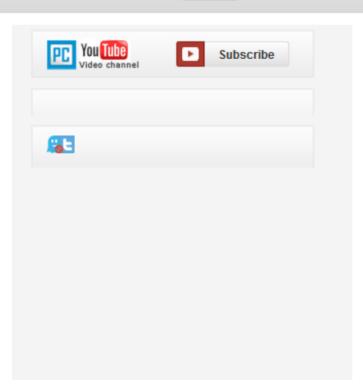
Written by Davinder Singh Kainth

bit.ly is hugely popular URL shortening service among others like tinyurl. Besides the basic functionality of shortening URLs, it also provide feature for URL analysis. You can track number of clicks, locations, referrers, time of clicks for any bitly URL without having to register, login or install any software.



To view stats of any bit.ly url, just add "+" sign in the end. For example, for url "http://bit.ly/7GidPK", open url "http://bit.ly/7GidPK+", this will redirect to "http://bit.ly/info/7GidPK" and show all the statistics for this shortened url.





Ghostery blocked comments powered by Facebook Connect.





Except I'm trying to solve a problem, not read a website. So what I saw looked more like this:

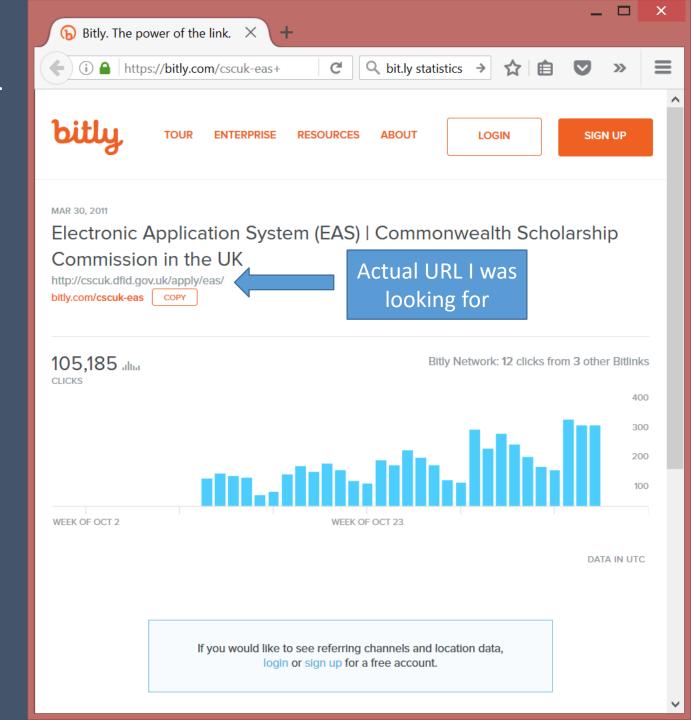


number of clicks statistics bit.ly Street Backle He back fundorably of sturbering office, I also provide National for SML analysis. No our track number of clima. boattors, referrers, brise of close for any billy city, exhaut heaving to register, high or need on softens. View clicks state of any Bit.ly URL To come distill of any SEC y art. Just addl "Y" align in the area. For example, for art MSp. / NAI Sp. TROMPE . pool or "MSp. / NAI Sp. TROMPE+", this of red not not a CAMANATAM TRANSPER AND THE RESERVE OF THE RESIDENCE OF THE REPORTED AT





So I added a + to my URL and landed here which is what I was looking for



For me this was a very usable webpage

- I could quickly see it was the correct place
- Section title used language that matched my search
- Data I needed was bolded and had an example which was also bold



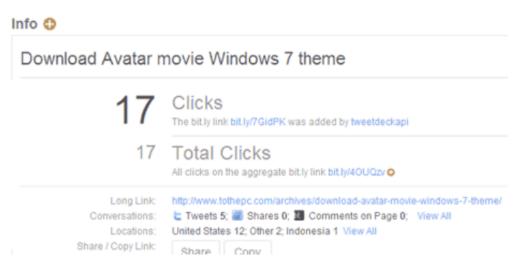
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We don't read, we scan

We typically want something

 We know that we don't actually need to read everything

We are good at scanning

Create effective visual hierarchies

- The more important something is the more prominent it is
- Things that are related logically are related visually
- Things that are nested visually show what's part of what

Important things are prominent

Very important

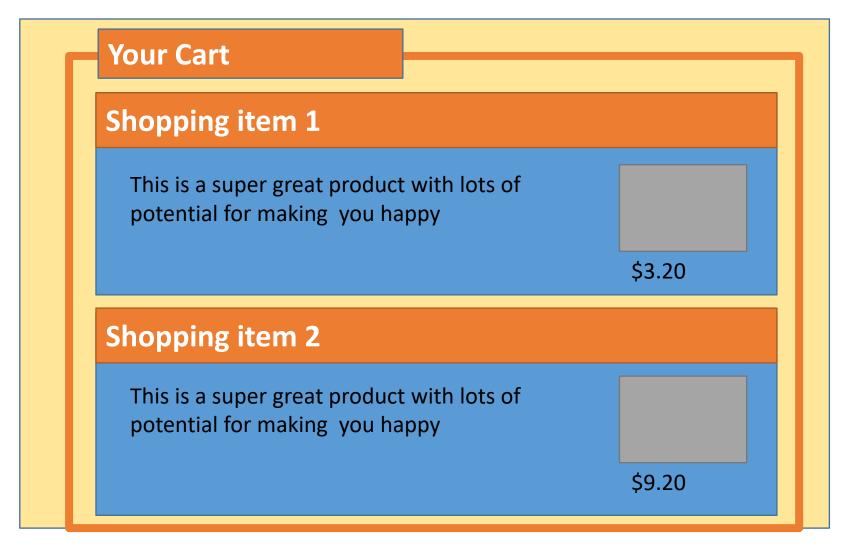
A little less important

Nowhere near as important

Logically related are also visually related

Books	
Music	
Movies	
Games	

Visual nesting shows hierarchy

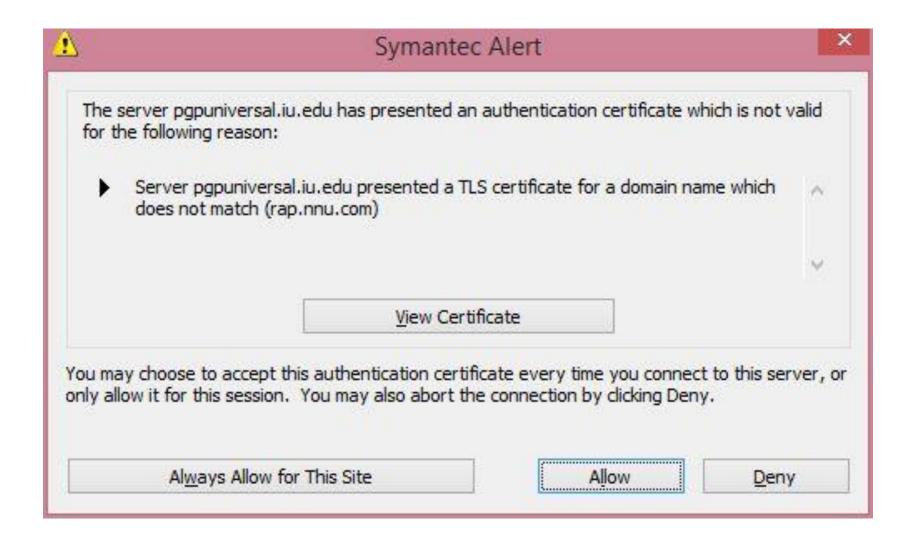


Now lets talk about some of the basics of displaying text

Common issues with text

- Uncommon or unfamiliar vocabulary
- Difficult scripts and typefaces
- Tiny fonts
- Text on noisy backgrounds
- Information buried in repetition
- Centered text
- Too much text (You can usually delete half of most text)

Uncommon or unfamiliar vocabulary



Some example text from usa.gov/mortgages

Predatory Loans

Most mortgage professionals are trustworthy and provide a valuable service, helping you to buy or refinance your home. But dishonest or "predatory" lenders do exist and engage in practices that increase the chances of borrowers losing their homes to foreclosure. To avoid becoming a victim of predatory lending, you need to understand the process to buy a home and be a smart consumer.

What Is Predatory Lending?

- Sell properties for much more than they are worth using false appraisals.
- Encourage borrowers to lie about their income, expenses, or cash available for down payments in order to get a loan.

All capitals is hard to read because it prevents scanning

PREDATORY LOANS

MOST MORTGAGE PROFESSIONALS ARE TRUSTWORTHY AND PROVIDE A VALUABLE SERVICE, HELPING YOU TO BUY OR REFINANCE YOUR HOME. BUT DISHONEST OR "PREDATORY" LENDERS DO EXIST AND ENGAGE IN PRACTICES THAT INCREASE THE CHANCES OF BORROWERS LOSING THEIR HOMES TO FORECLOSURE. TO AVOID BECOMING A VICTIM OF PREDATORY LENDING, YOU NEED TO UNDERSTAND THE PROCESS TO BUY A HOME AND BE A SMART CONSUMER.

WHAT IS PREDATORY LENDING?

PREDATORY LENDERS, APPRAISERS, MORTGAGE BROKERS AND HOME IMPROVEMENT CONTRACTORS COULD USE ANY OF THESE TACTICS TO TAKE AWAY YOUR HOME OR INVESTMENTS:

- SELL PROPERTIES FOR MUCH MORE THAN THEY ARE WORTH USING FALSE APPRAISALS.
- ENCOURAGE BORROWERS TO LIE ABOUT THEIR INCOME, EXPENSES, OR CASH AVAILABLE FOR DOWN PAYMENTS IN ORDER TO GET A LOAN.

Some fonts are easy to read

Predatory Loans

Most mortgage professionals are trustworthy and provide a valuable service, helping you to buy or refinance your home. But dishonest or "predatory" lenders do exist and engage in practices that increase the chances of borrowers losing their homes to foreclosure. To avoid becoming a victim of predatory lending, you need to understand the process to buy a home and be a smart consumer.

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Weird fonts make reading super complex.

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Tiny fonts

Worse than tiny fonts are tiny fonts that cannot be enlarged

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Text on noisy backgrounds

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What Is Predatory Lending?

Predatory lenders, appraisers, mortgage brokers and home improvement contractors could use any of these tactics to take away your home or investments:

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Avoid Predatory Loans by Being a Smart Consumer

To avoid becoming a victim of predatory lending, follow these guidelines:

- Before you buy a home, attend a homeownership education course offered by a U.S.
 Department of Housing and Urban Development (HUD)-approved, non-profit counseling agency.
- Interview several real estate professionals (agents), and ask for and check references before you select one to help you buy or sell a home.

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Information buried in repetition

The options all start and end with the same words making the text hard to read

Keyboard and Documentation

Configure your MacBook with the following language options along with the language of the included user documentation.

- Backlit Keyboard (English) / User's Guide
- Backlit Keyboard (Western Spanish) / User's Guide
- Backlit Keyboard (French) / User's Guide
- Backlit Keyboard (Japanese) / User's Guide

Information buried in repetition

Pull the repeated text out and only say it once

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Backlit Keyboard and User's Guide in:

- English
- Western Spanish
- French
- Japanese

Information buried in repetition



Centered text

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Questions?