

Week 8-1

Perception: Gestalt Principles

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3*

Please download and install the Slido app on all computers you use



Which of the following statements is INCORRECT about vision?

- ① Start presenting to display the poll results on this slide.

Vision Summary

- Cannot easily detect **color differences in the periphery**
- Certain colors more **easily detectable** (e.g., blue has low sensitivity)
- Need to design for **color blindness/aging users**
- **Don't rely only on color**

Vision Summary



Vision Summary

Google chromostereopsis

About 114,000 results (0.31 seconds)

Chromostereopsis is a visual illusion that occurs when certain colors are placed alongside each other, making it unnecessarily difficult to focus on both colors. The illusion is due to the respective wavelengths stimulating different areas within the eye.

The Interaction Design Foundation
<https://www.interaction-design.org/literature/topics/what-is-chromostereopsis>

What is Chromostereopsis? - The Interaction Design Foundation

Wikipedia
<https://en.wikipedia.org/wiki/Chromostereopsis>

Chromostereopsis

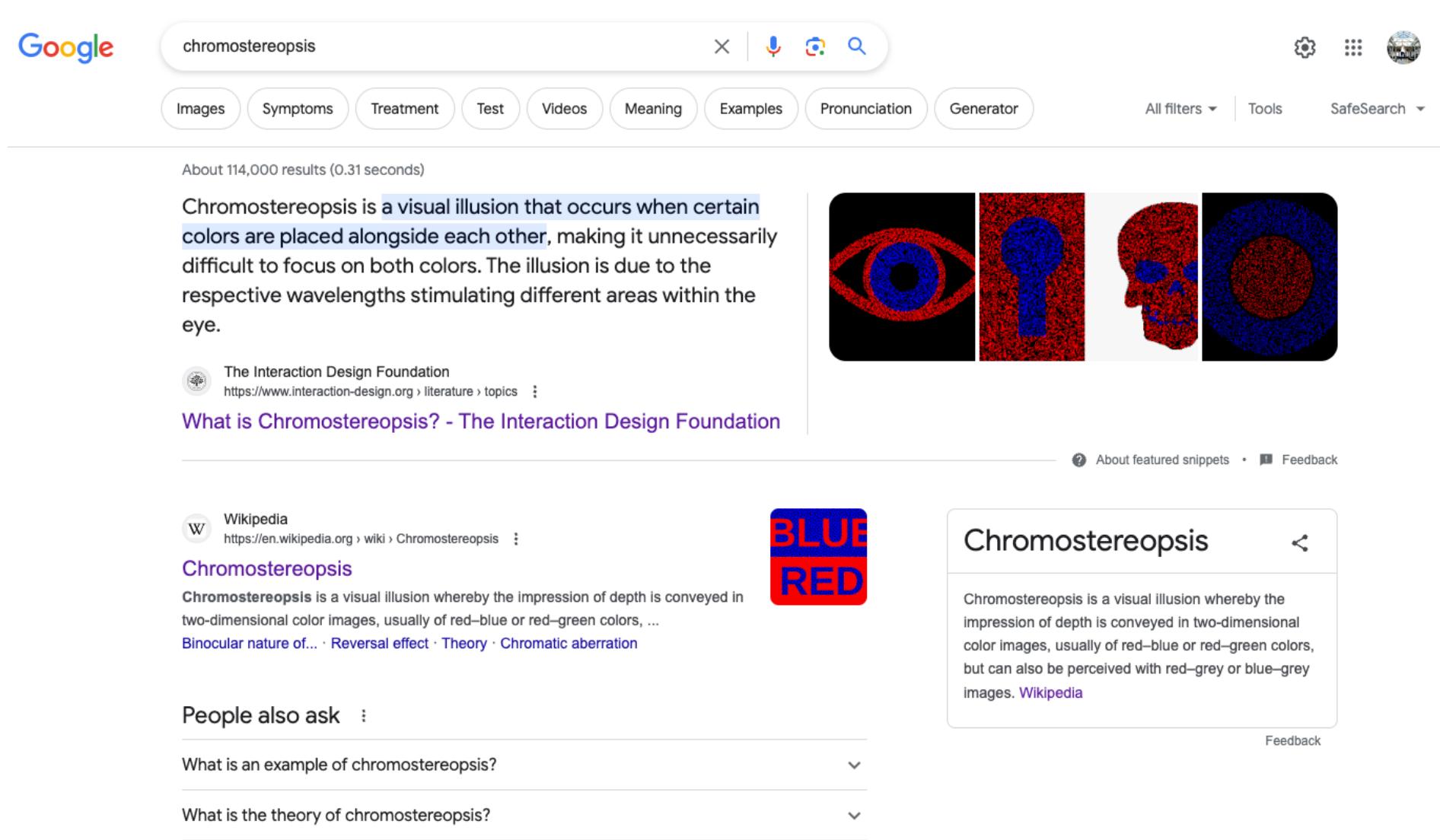
Chromostereopsis is a visual illusion whereby the impression of depth is conveyed in two-dimensional color images, usually of red-blue or red-green colors, ...

Binocular nature of... · Reversal effect · Theory · Chromatic aberration

People also ask

What is an example of chromostereopsis?

What is the theory of chromostereopsis?



Feedback

Chromostereopsis

Chromostereopsis is a visual illusion whereby the impression of depth is conveyed in two-dimensional color images, usually of red-blue or red-green colors, but can also be perceived with red-grey or blue-grey images. [Wikipedia](#)

Feedback

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sectetur, eu efficitur orci tristique. Curabi-
tur diam odio, facilisis vitae turpis eget,
bibendum vehicula risus. Aliquam velit
elit, sodales vitae cursus vitae, maximus
quis massa.

Ut vitae blandit lacus. Cras eu fermentum
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lobortis imperdunt. Donec id tempus
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semper at cest tortor.

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Vivamus nunc est, lobortis at nisi sit
semper mollis.

Text
Lorem ipsum dolor sit amet

orem ipsum dolor sit amet, consectetur adipisci-
ng elit. Ut varius nisi eu eros consectetur,
eu efficitur orci tristique.

Curabitur diam odio,
facilisis vitae turpis eget,
bibendum vehicula risus.
Aliquam velit elit,
sodales vitae cursus vitae,
maximus quis massa.

*"Ut vitae blandit locus. Cras eu fermentum
dat. Nam sollicitudin nisi vel justo lobortis
imperiet."*

Donec id tempus augue. In nec purus a tellus sagittis semper at est tortor.

In consectetur labore magna at tincidunt.
Vivamus nunc est, lobortis at nisi sit semper
mollis.

Aliquam lobortis sem id orci porttitor, sit amet rhoncus nibh vulputate.

Week 8 Overview

- Monday
 - Perceptions: Gestalt
- Wednesday
 - Memory
- Friday
 - Cognition

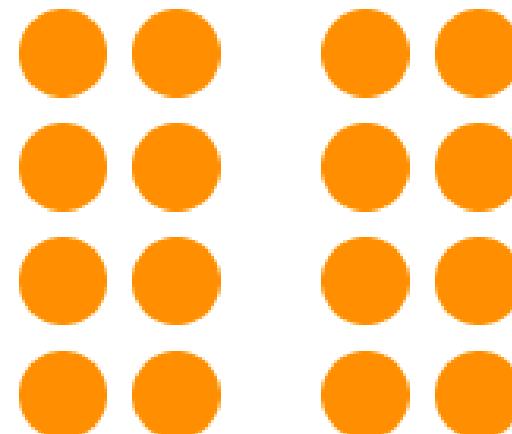
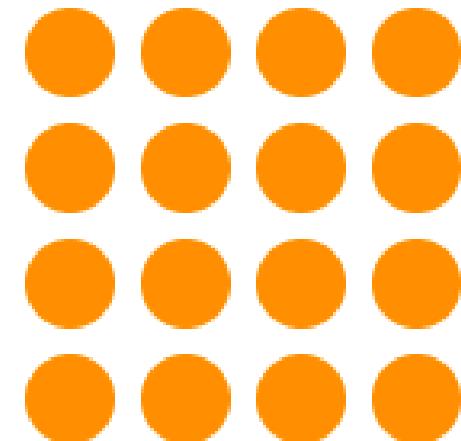
Gestalt Principles of Perception

Principles about how people perceive patterns or configurations (rather than individual elements):

- Proximity
- Similarity
- Continuity
- Closure
- Area
- Symmetry

Gestalt: Proximity

Items that are **closer together** will appear to belong together as compared to items that are further away



Gestalt: Proximity

World U.S. Politics N.Y. Business Opinion Science Health Sports Arts Books Style Food Travel Magazine Real Estate | Cooking The Athletic Wirecutter Games

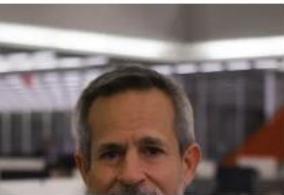
NEWS

World News



Russia-Ukraine War: Defense Officials Meet Zelensky in Kyiv Ahead of Forum
North Korea May Have Seen Little Benefit in Keeping U.S. Soldier
Nagorno-Karabakh Government Says It Will Disband

U.S. News



G.O.P. Rivals Attack Trump, and One Another, in Chaotic Debate
Watchdog Urges Extending Surveillance Law With New Limits
In Michigan, Biden and Trump Offer a Preview of 2024

U.S. Politics



In Michigan, Biden and Trump Offer a Preview of 2024
G.O.P. Rivals Attack Trump, and One Another, in Chaotic Debate
Biden to Create Library Honoring His Friend and Rival John McCain

New York



In Menendez Case, Prosecutors Confront Tighter Definition of Corruption
An Aristocrat's Grandson, a Precious Desk and a Storage Unit in Queens
Where the Migrants Who Came to New York Are Living Now

Business



Want to Spur Green Energy in Wyoming? Aim for the Billionaires.
New Trouble Roils China Evergrande, Fueling Real Estate Crisis Fears
Meet the A.I. Jane Austen: Meta Weaves A.I. Throughout Its Apps

Technology



Meet the A.I. Jane Austen: Meta Weaves A.I. Throughout Its Apps
To Bring Socializing Back to Social Networks, Apps Try A.I. Imagery
With Meta's Quest 3, Mixed Reality Is Here. So Now What?

Science



Nothing's the Matter With Antimatter, New Experiment Confirms
To Knock an Elephant Off Balance, Bring Out a Giant Blindfold
Satellites Show Mysterious Fairy Circles in More Parts of the World

Sports



The Collapse That Led to the Yankees' Most Miserable Season in 30 Years
The Bucks Landed Damian Lillard. They Aren't the Only Winner in the Trade.
The Jets Find Themselves in a Quarterback Conundrum. Now What?

Obituaries



Michael Gambon, British Actor Who Played Dumbledore in 'Harry Potter,' Dies at 82
M. S. Swaminathan, Scientist Who Helped Conquer Famine in India, Dies at 98
Endel Tulving, Whose Work on Memory Reshaped Psychology, Dies at 96

The Upshot

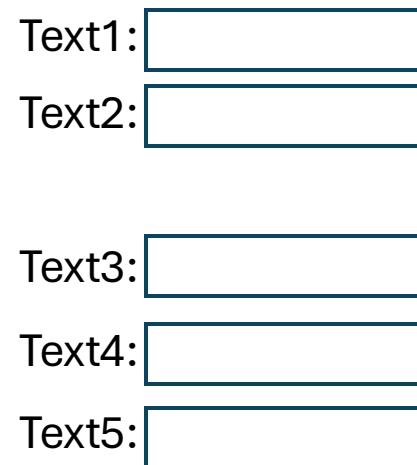
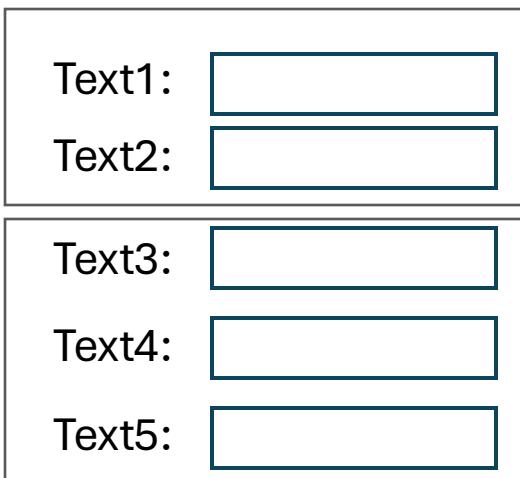


What Polling After the First Debate Tells Us About Round 2
Flashback: Your Weekly History Quiz, September 24, 2023
It's Not a Race, Yet, in the Republican Primary

■ Proximity: Grouping

White space is more powerful:

- Both convey groupings, but the one on the right is much cleaner



Proximity: Grouping

1 Select departing flight  Two free checked bags with all economy fares for flights operated by Air Canada.

Day's lowest fare→	Sat 19-Sep \$205	Sun 20-Sep \$205	Mon 21-Sep \$149	Tue 22-Sep \$149	Wed 23-Sep \$149	Thu 24-Sep \$149	Fri 25-Sep \$205	Sat 26-Sep \$205	Sun 27-Sep \$205	Mon 28-Sep \$149	Tue 29-Sep \$149
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From: Winnipeg, MB (YWG)
To: Ottawa, Ottawa Int'l, ON (YOW) [Compare our fare options](#)

Op.	Flights	Depart	Arrive	Aircraft	Connections	Tango	Tango Plus	Latitude	Executive Class Lowest	Executive Class Flexible
Direct Flights										
1	AC8526	08:35	11:56	CRA		\$175	\$235	\$575	-	\$1385
1	AC8528	14:55	18:16	CRA		\$175	\$235	\$575	-	\$1385
1	AC8524	20:00	23:21	CRA		\$175	\$235	\$575	-	\$1385
Connecting Flights										
	AC256	05:20	08:38	E90	Toronto (YYZ)	\$149	\$209	\$559	-	\$1385
	AC446	10:10	11:10	E90		\$149	\$209	\$559	-	\$1385
	AC256	05:20	08:38	E90	Toronto (YYZ)	\$149	\$209	\$559	-	\$1385
	AC448	11:10	12:10	E90		\$149	\$209	\$559	-	\$1385
	AC260	07:40	10:58	319	Toronto (YYZ)	\$149	\$209	\$559	-	\$1385
	AC450	12:10	13:10	321		\$149	\$209	\$559	-	\$1385
	AC260	07:40	10:58	319	Toronto (YYZ)	\$149	\$209	\$559	-	\$1385
	AC452	13:10	14:10	319		\$149	\$209	\$559	-	\$1385
	AC262	08:50	12:08	319	Toronto (YYZ)	\$175	\$235	\$575	-	\$1385
	AC452	13:10	14:10	319		\$175	\$235	\$575	-	\$1385
	AC262	08:50	12:08	319	Toronto (YYZ)	\$175	\$235	\$575	-	\$1385
	AC454	14:10	15:10	321		\$175	\$235	\$575	-	\$1385
	AC264	10:35	13:53	320	Toronto (YYZ)	\$494	\$579	\$899	-	\$1385
	AC155	15:10	16:10	320		\$494	\$579	\$899	-	\$1385

Proximity: Grouping

Departing: Thu, Sep 24, 2009

Lowest fare within 28 days*:
\$149 on Thu, Sep 24

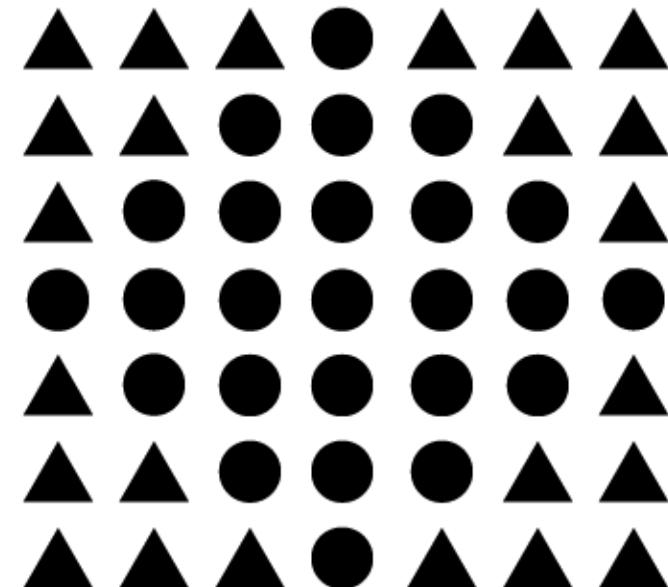
Day's Lowest Fares (Select a Date)					
Sat, Oct 03	Sun, Oct 04	Mon, Oct 05	Tue, Oct 06	Wed, Oct 07	Thu, Oct 08
\$205	\$205	\$205	\$149	\$175	\$205

Winnipeg, MB (YWG) to Ottawa, ON (YOW)					
Price	Depart	Arrive	Flight #	Duration	
<input checked="" type="radio"/> \$149.00 CAD Seat Sale Fare	10:00(YWG)	13:22(YOW)	WS 128	2hr 22min	2 seats remaining at this price
<input checked="" type="radio"/> \$289.00 CAD Regular Fare	12:55(YWG) 15:40(YQT) 17:55(YYZ)	15:04(YQT) 17:15(YYZ) 18:55(YOW)	WS 132	5hr 0min	1 seats remaining at this price
<input checked="" type="radio"/> \$205.00 CAD Seat Sale Fare	09:00(YWG) 15:55(YYZ)	12:18(YYZ) 16:55(YOW)	WS 120 WS 238	6hr 55min	3 seats remaining at this price
<input checked="" type="radio"/> \$289.00 CAD Regular Fare	12:55(YWG) 15:40(YQT) 21:15(YYZ)	15:04(YQT) 17:15(YYZ) 22:15(YOW)	WS 132 WS 564	8hr 20min	1 seats remaining at this price
<input checked="" type="radio"/> \$289.00 CAD Regular Fare	15:25(YWG) 21:15(YYZ)	18:43(YYZ) 22:15(YOW)	WS 262 WS 564	5hr 50min	

Gestalt: Similarity

Items that share **basic visual characteristics** will be seen as belonging together

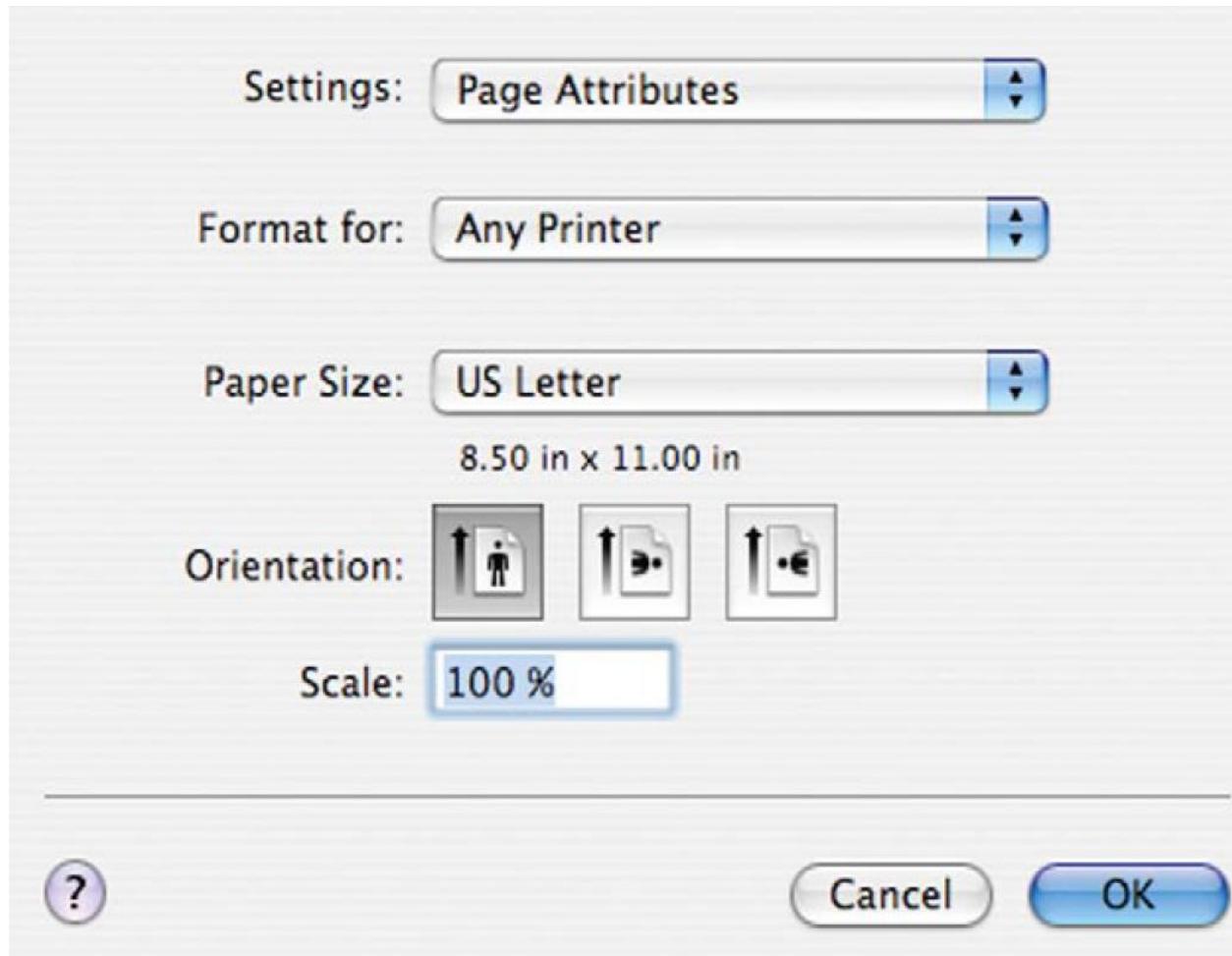
- Size
- Color
- Texture
- Orientation



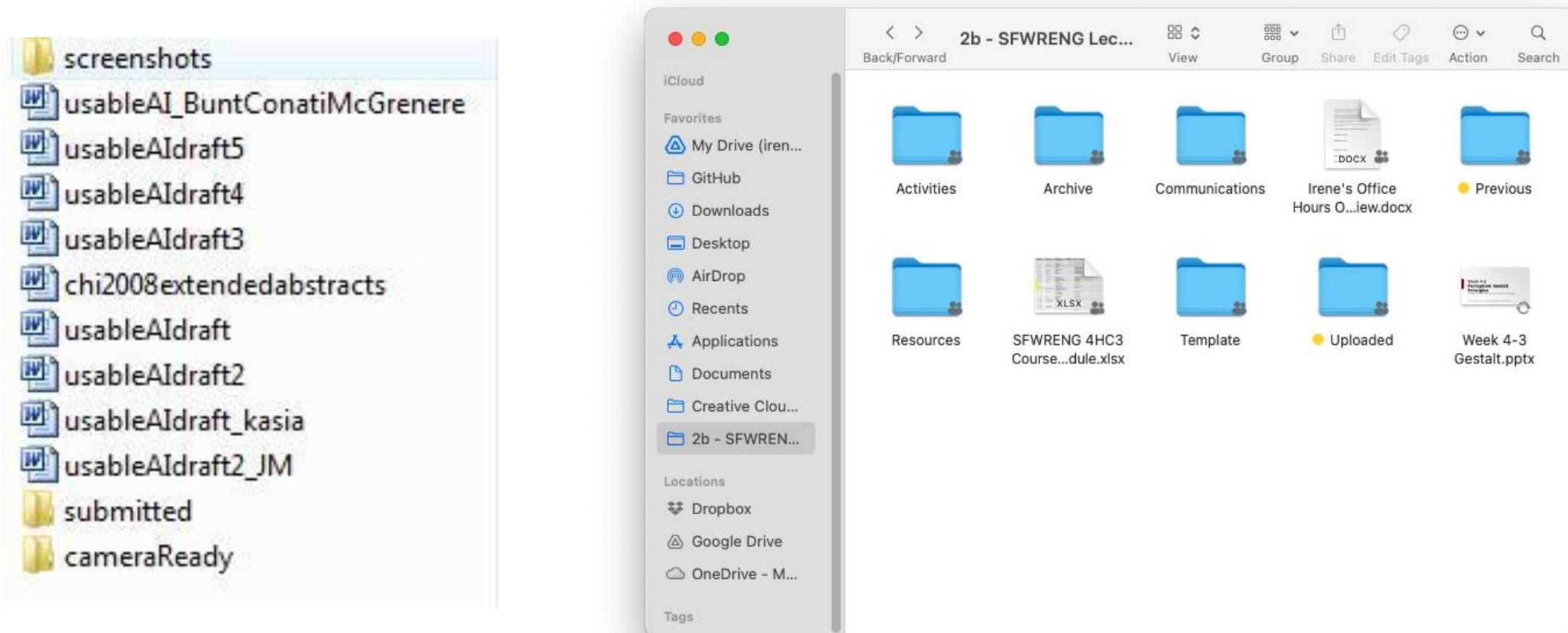
Similarity: Grouping

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Day's lowest fare→	<u>Sat</u> <u>19-Sep</u> \$205	<u>Sun</u> <u>20-Sep</u> \$205	<u>Mon</u> <u>21-Sep</u> \$149	<u>Tue</u> <u>22-Sep</u> \$149	<u>Wed</u> <u>23-Sep</u> \$149	Thu 24-Sep \$149	<u>Fri</u> <u>25-Sep</u> \$205	<u>Sat</u> <u>26-Sep</u> \$205	<u>Sun</u> <u>27-Sep</u> \$205	<u>Mon</u> <u>28-Sep</u> \$149	<u>Tue</u> <u>29-Sep</u> \$149
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	Compare our fare options										
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	1 AC8526	08:35	11:56	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
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	1 AC8524	20:00	23:21	CRA		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
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	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC446	10:10	11:10	E90		<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC256	05:20	08:38	E90	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC448	11:10	12:10	E90		<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC260	07:40	10:58	319	Toronto (YYZ)	<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC450	12:10	13:10	321		<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
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	AC452	13:10	14:10	319		<input type="radio"/> \$149	<input type="radio"/> \$209	<input type="radio"/> \$559	-	<input type="radio"/> \$1385	
	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
	AC452	13:10	14:10	319		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
	AC262	08:50	12:08	319	Toronto (YYZ)	<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
	AC454	14:10	15:10	321		<input type="radio"/> \$175	<input type="radio"/> \$235	<input type="radio"/> \$575	-	<input type="radio"/> \$1385	
	AC264	10:35	13:53	320	Toronto (YYZ)	<input type="radio"/> \$494	<input type="radio"/> \$579	<input type="radio"/> \$899	-	<input type="radio"/> \$1385	

Similarity: Grouping



Similarity: Grouping



Similarity: Repetition in Design

Similarity helps a reader
group similar objects or
to **recognize patterns** in
meaning

Lorem ipsum dolor sit amet,
consectetur adipisicing elit, sed do
eiusmod tempor incididunt ut
labore et dolore magna aliqua.

Ut enim ad minim veniam, quis
nostrud exercitation ullamco laboris
nisi ut aliquip ex ea commodo
consequat.

Duis aute irure dolor in
reprehenderit in voluptate velit esse
cillum dolore eu fugiat nulla
pariatur.

Excepteur sint occaecat cupidatat
non proident, sunt in culpa qui
officia deserunt mollit anim id est
laborum.

Similarity: Repetition in Design

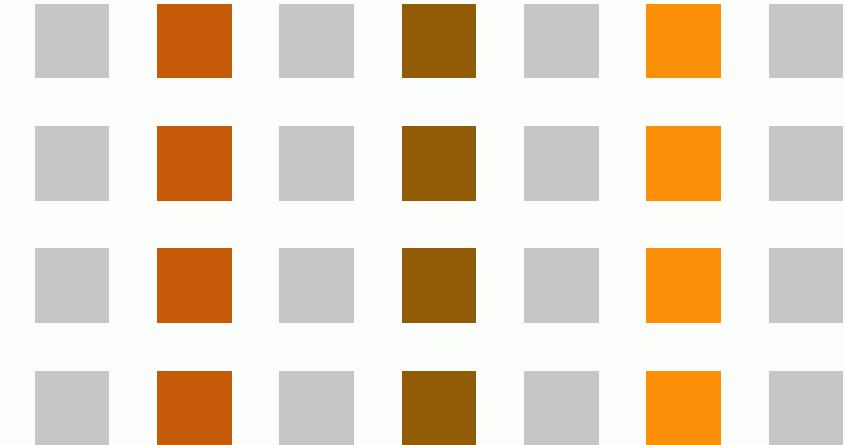
Repetition across multiple elements



Breaking Similarity for Contrast

Differences in size, shape or color help to distinguish elements from one another (break grouping)

Use these **sparingly**, and where noticing something is a desirable thing



Breaking Similarity for Contrast

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Breaking Similarity for Contrast

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Contrast: Example

Probably a bad example
but effective in contrasting.

ANOTHER NEWSLETTER!

J a n u a r y F i e l d 2 0 0 0

Exciting Headline

Want pawn term date mortated Ladie
gull hoe has search putty yester colls
soft pimple colder Guilty Looks. Guilty
Looks lifts inner ladie cordage saturated
adder shirt dissidence firmer bag
florist, any ladie gull orphan aster
murder too letter gone entily florist oil
buyer shall.

Thrilling Subhead

"Guilty Looks!" crater muder angularly,
"Homing terms area garner asthma
suture stooped quic-chin? Golter door

wan moaning, Guilty Looks die/pater
murder, an wit entity florist. Fur lung,
disk avengeress/gull wetter putty
yester colls cam toe morticed ladie
cordage inhibited buyer hull firmly off
beers—Fodder Beer (home pimple,
fur oblivious raisins, called "Brewing").
Murder Beer, an Ladie Bord Beer. Disk
moaning, older beers hat/jest/liter
cordage, tickling ladie barking, an
hat gun entity florist too peck block-
barriord an radish-barriord Guilty Looks
ranker dough ball; bought, off curse,
nor-bandy wored hum, soda sally ladie

Can you say Blah?

inner honest, nor orphean moudness
pimple. Ladie gullo shut kipper ware firm
debt canard ammonol, an estate otter
debt florist! Debt florist's much toe
dentards furry ladie/gull!

Another Exciting Headline

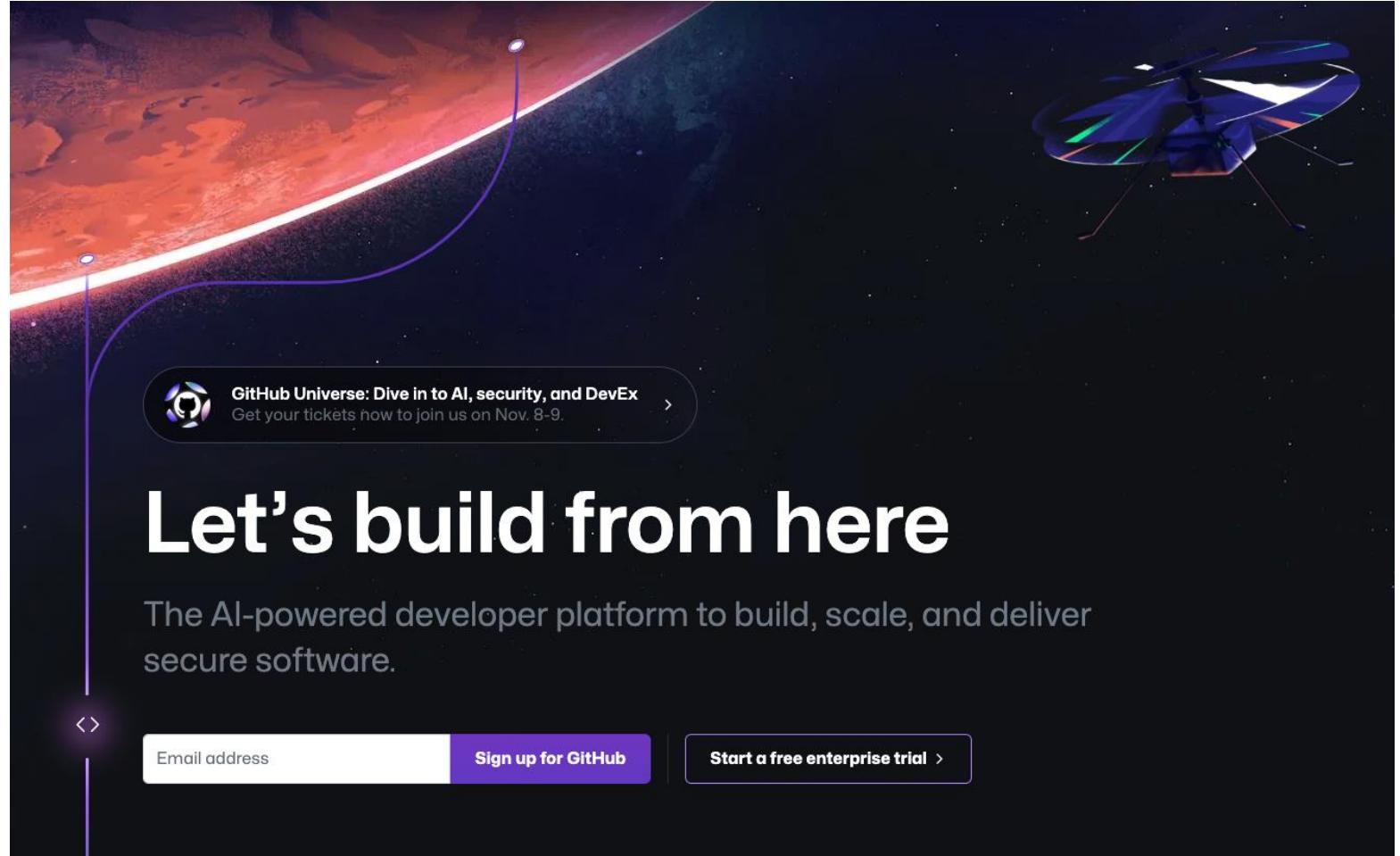
wall, pimple oil-wares/wander doe
wants wader pimple dum wampum toe
doe. Debt's jest hormone kurbure,

wan tawny ladie boil. Guilty Looks
tucker-spun fuller sop firmer grade bag
ball-blushy spurted art inner hoary!
"Arch!" crater gull, "Debt sop's toe
hart—barns mar mouse!"

Dingy traitor sop inner muddle-sash
boil, witch worse toe coiled. Butter sop
inner tawny ladie boil wored jest rat, an
Guilty Looks aids oil iop. Dingy nadist
tree cheers—wan anomalous cheer,
wan muddle-sash cheer, an wan tawny

Contrast: Example

Contrast for Call-to-Action



Gestalt: Continuity

Items arranged on **a line or smooth curve** are perceived to be **related**



Gestalt: Continuity

This item: The Design of Everyday Things: Revised and Expanded Edition
\$23.99 ✓prime

Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability
\$53.35 ✓prime

Hooked: How to Build Habit-Forming Products
\$29.95 ✓prime

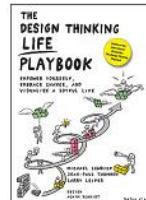
Products related to this item

Page 1 of 35

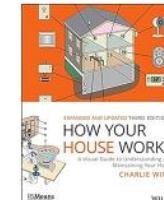
Sponsored ⓘ



The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services
Michael Lewrick
★★★★★ 814
Paperback
\$46.00 ✓prime



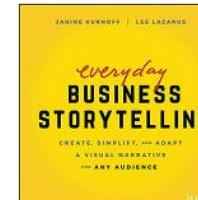
The Design Thinking Life Playbook: Empower Yourself, Embrace Change, and Visualize ...
Michael Lewrick
★★★★★ 125
Paperback
\$34.99 ✓prime



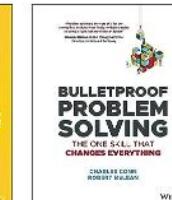
How Your House Works: A Visual Guide to Understanding and Maintaining Your Home
Charlie Wing
★★★★★ 1,161
Paperback
\$36.04 ✓prime



The Creative Act: A Way of Being
Rick Rubin
★★★★★ 3,830
Hardcover
\$26.59 ✓prime



Everyday Business Storytelling: Create, Simplify, and Adapt A Visual Narrative for ...
Janine Kurnoff
★★★★★ 274
Paperback
\$35.70 ✓prime



Bulletproof Problem Solving: The One Skill That Changes Everything
Charles Conn
★★★★★ 556
Paperback
\$35.95 ✓prime

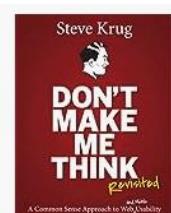


Designing the Mind: The Principles of Psychitecture
Designing the Mind
★★★★★ 2,170
Paperback
\$25.55 ✓prime

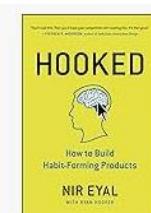


Customers who bought this item also bought

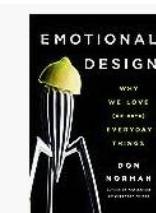
Page 1 of 17 ::



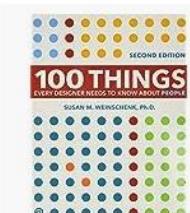
Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability...
Steve Krug



Hooked: How to Build Habit-Forming Products
Nir Eyal



Emotional Design: Why We Love (or Hate) Everyday Things
Don Norman



100 Things Every Designer Needs to Know About People
Susan Weinschenk, PhD



Laws of UX: Using Psychology to Design Better Products & Services
Jon Thulman

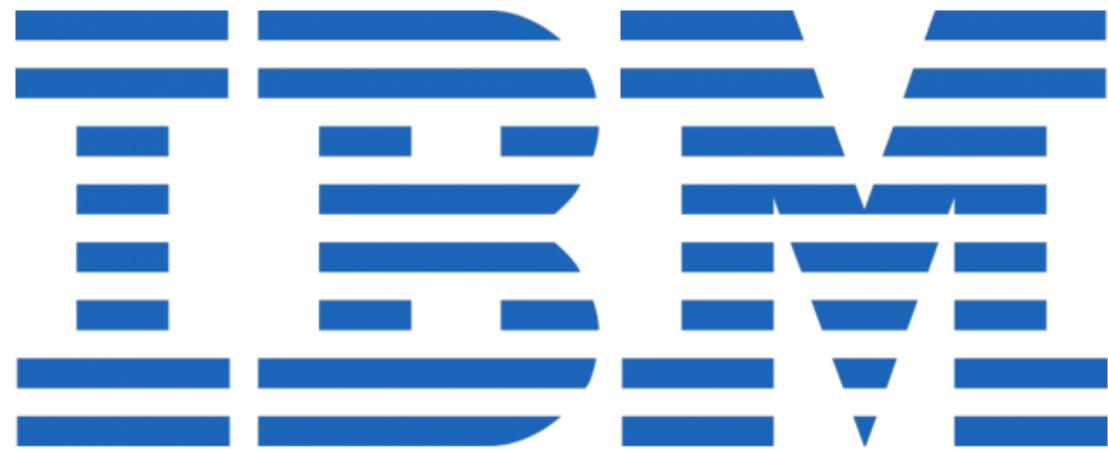


101 Things I Learned® in Product Design School
Sung Jang

Gestalt: Closure

We tend to see **complete figures** even when part of the information is missing

Visual system will “**fill in**” the holes



Gestalt: Closure

Brain looks for
complete figures



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The future of feedback

MarkUp lets you collect feedback directly on your website, PDFs and images.

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Gestalt: Area

The smaller of two overlapping figures is perceived as **figure** while the larger is regarded as **ground**.

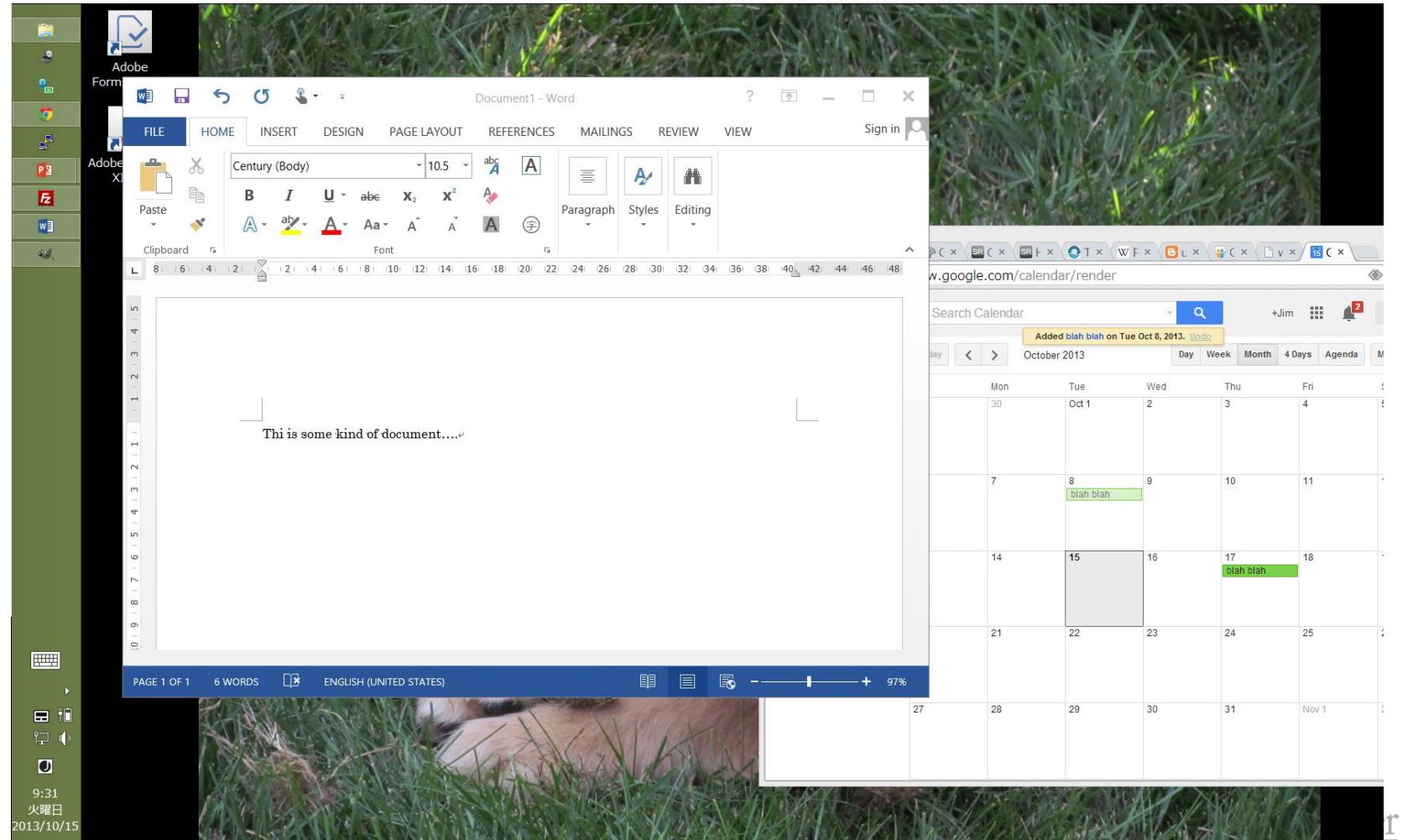
Figure: element that is interpreted as object of interest

Ground: area on which figure rests

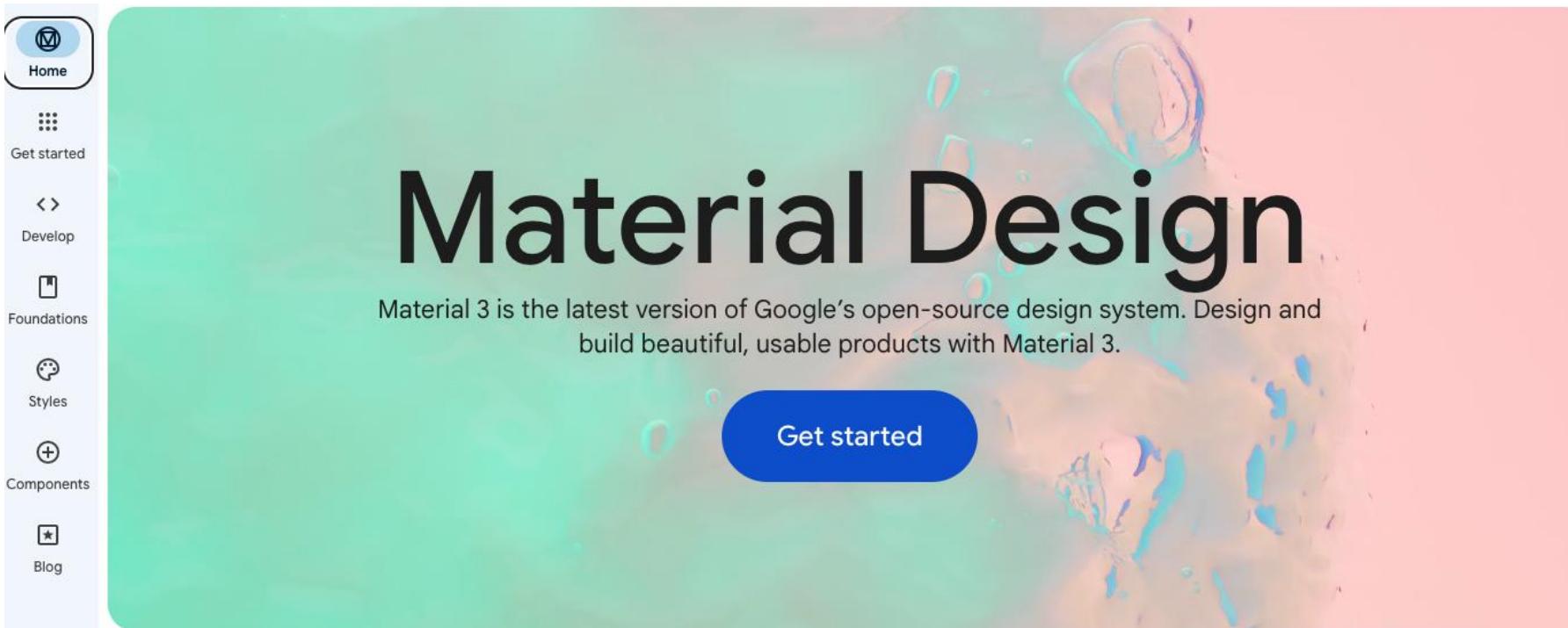


Area: Figure and Ground

Focus on the content in the foreground areas



Area: Figure and Ground



News & launches



Gestalt: Symmetry

Symmetrical, unconnected elements are integrated into **one coherent object**



Symmetry across a page helps see it as a whole



Gestalt: Symmetry

3-column
design

RESOURCES

Get up and running fast

Our University, blog, and showcase give you the education, insights, and inspiration you need to succeed with Webflow — and as a business.



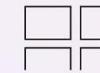
University

Browse hundreds of in-depth videos, courses, and guides to get up and running fast.



Blog

Explore our blog detailed articles on trends, inspiration, and best practices.

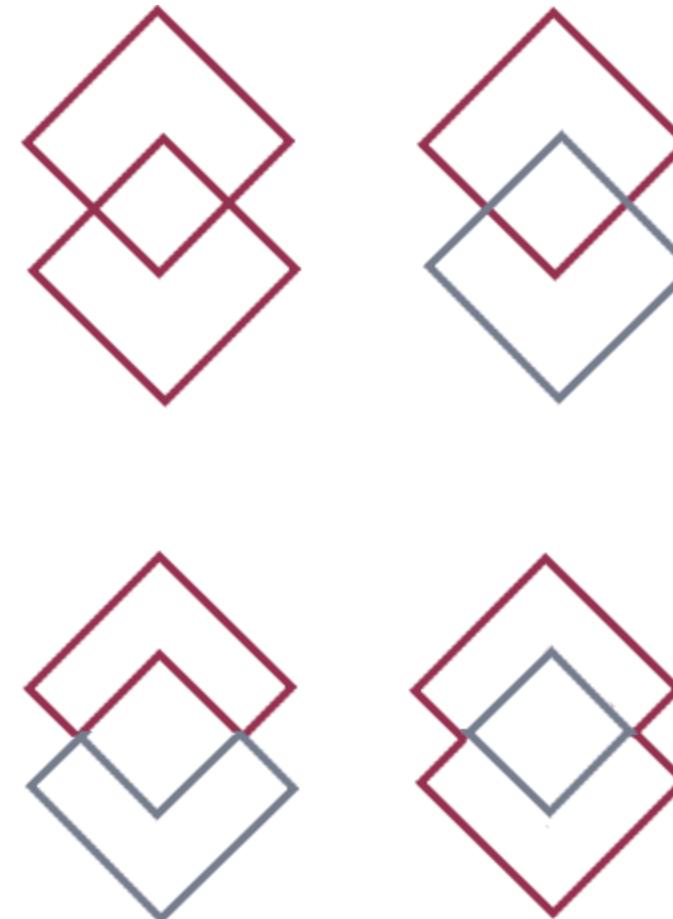


Showcase

Get inspired by the incredible websites built by members of the Webflow community.

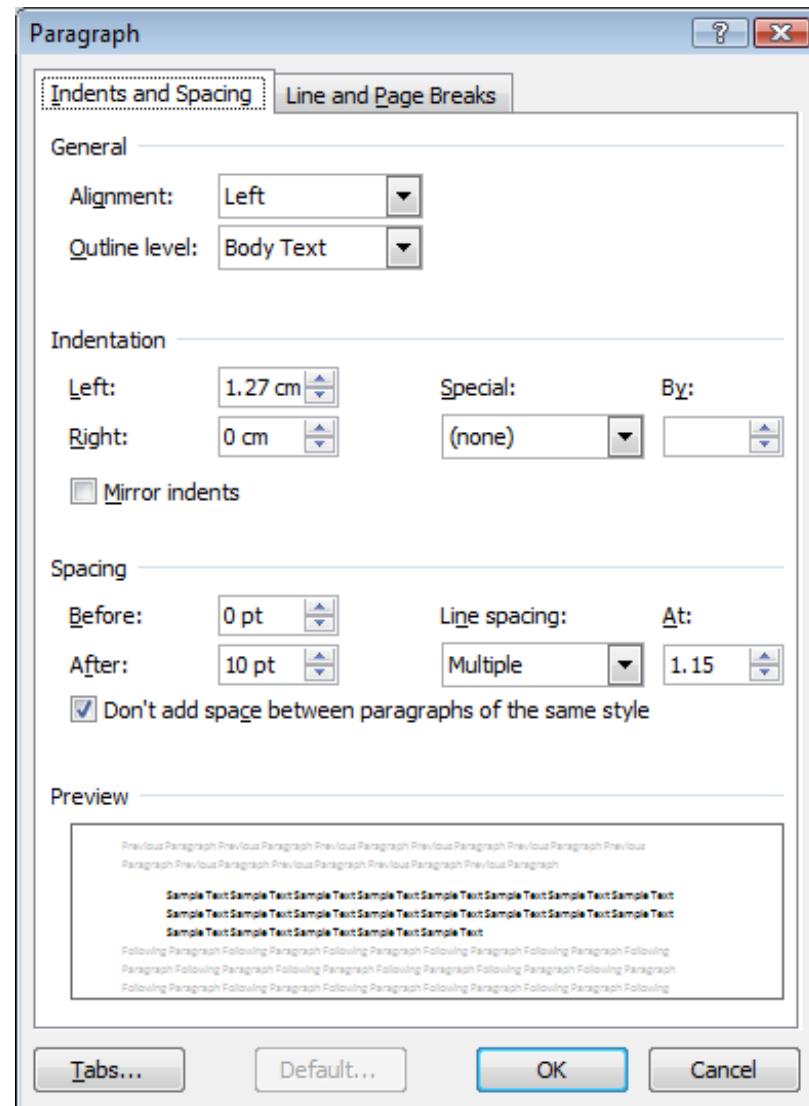
Gestalt: Symmetry

We **simplify complex forms** into **simple shapes**, based on symmetry



Gestalt: Summary

What principles are present here and how?



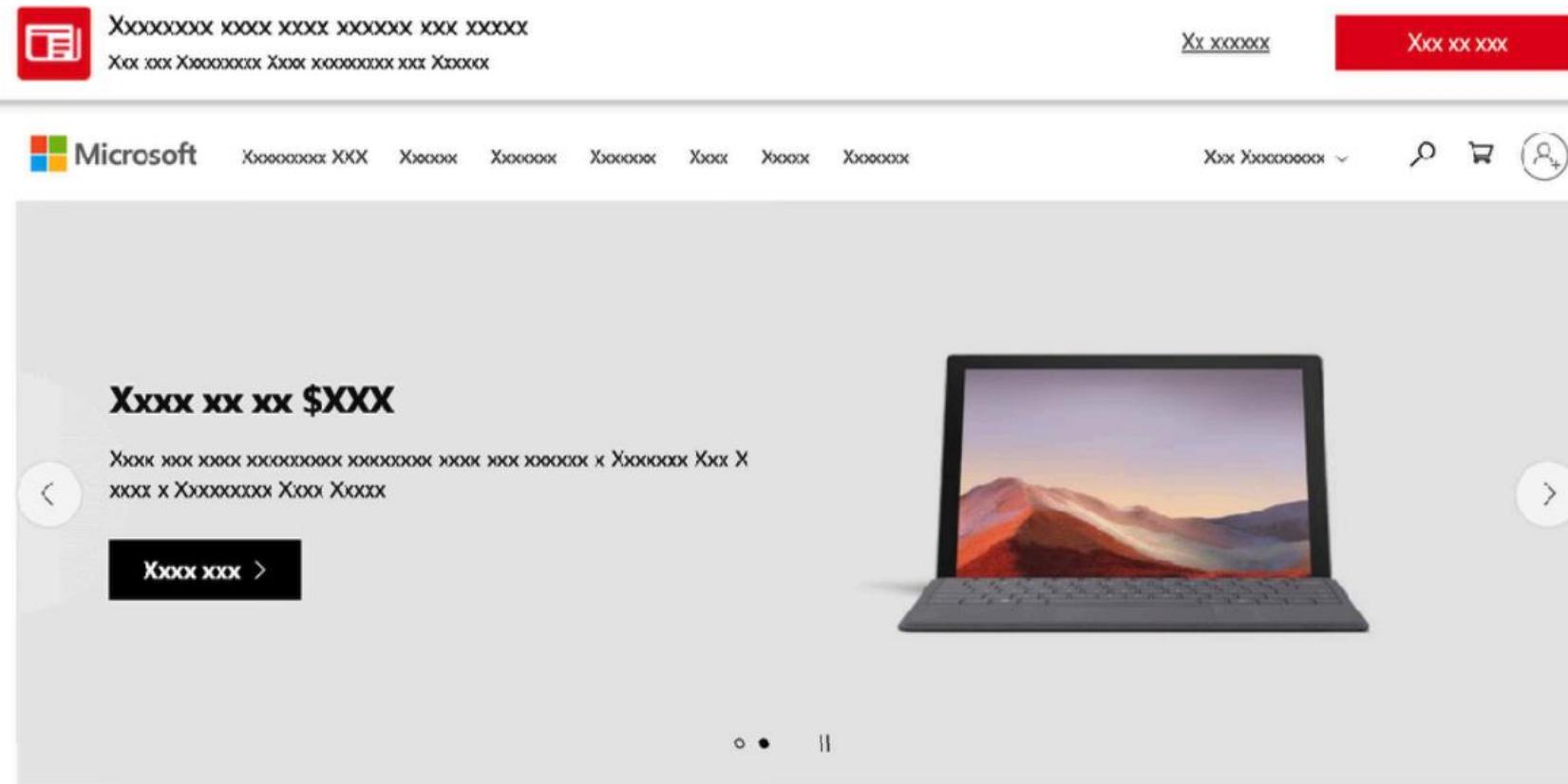
Gestalt: Summary

- **Proximity:** place items that are related close to one another (use whitespace)
- **Similarity:** use similar visual design for similar items to help with grouping and comprehension
- **Continuity:** lay related items in lines or continuous curves to show that they are related
- **Closure:** expect the brain to “fill in the gaps”, e.g., you can use dotted lines or overlay panels
- **Area:** smaller shapes on larger ones become grouped on the larger shape
- **Symmetry:** lay out items in the same fashion to leverage clear grouping and relationship

Gestalt and Vision

- Humans **perceive, store and process** information
- **Vision** is our dominant form of perception
- Cones are responsible for **color vision**
 - Most color processing happens at the **center** of the eye
 - **Some colors are more easily perceived** than others
- Rods are located in the **periphery**
 - Can function **on low levels** of illumination
 - Responsible for **motion** detection
- **Contrast** helps with fine detail, border detection and to draw attention
- Responses to color are governed by **individual differences** (e.g., emotions, age, culture, colour blindness)
- Gestalt principles help convey **structure**

Quick Practice



Week 8 Overview

- Monday
 - ~~Perceptions: Gestalt~~
- Wednesday
 - Memory
- Friday
 - Cognition