Week 8-1
Perception: Gestalt Principles

SFWRENG 4HC3/6HC3 Human Computer Interfaces

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

McMaster University

slido

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Which of the following statements is INCORRECT about vision?

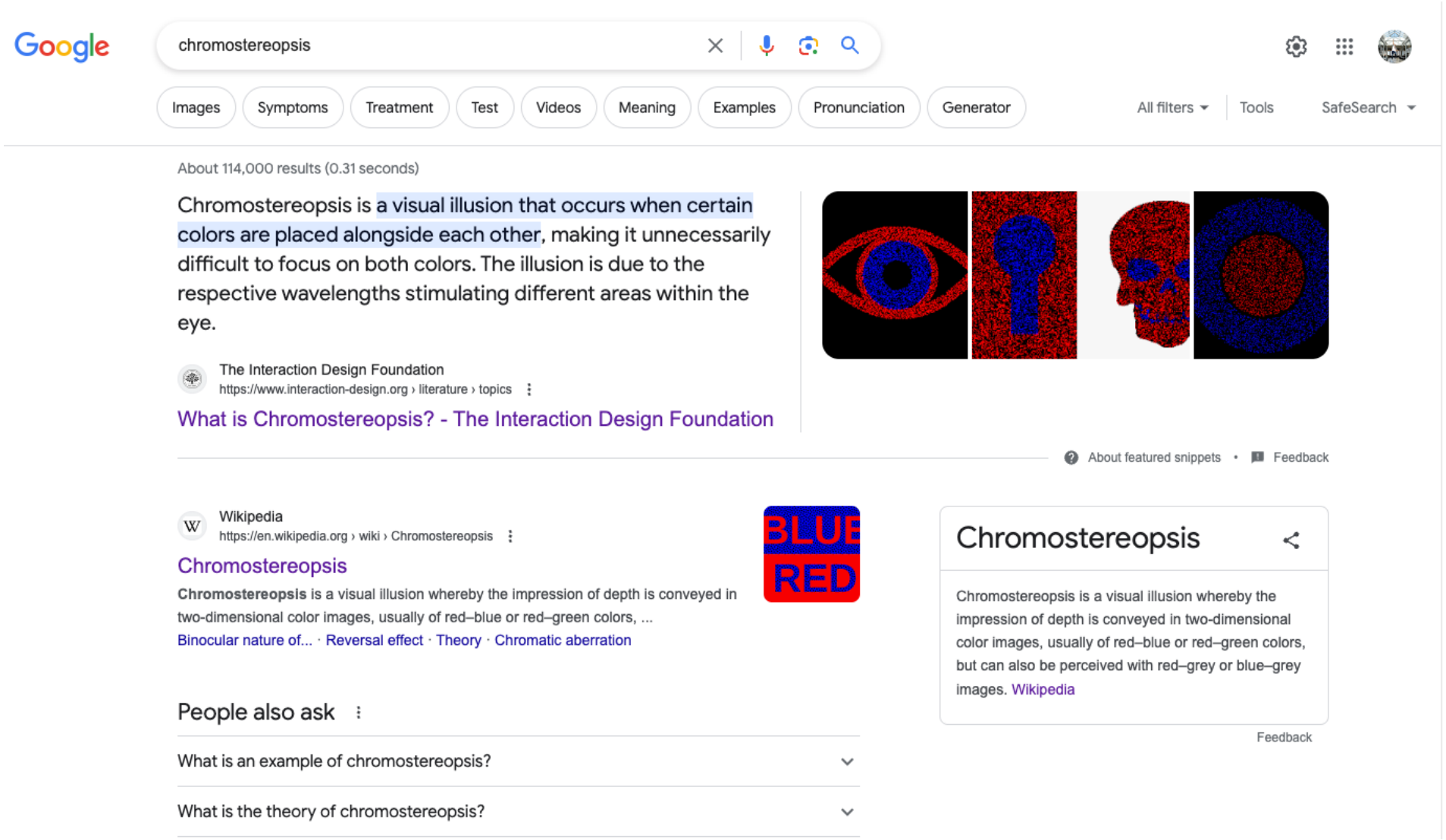
ⓘ Start presenting to display the poll results on this slide.

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



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Week 8 Overview

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

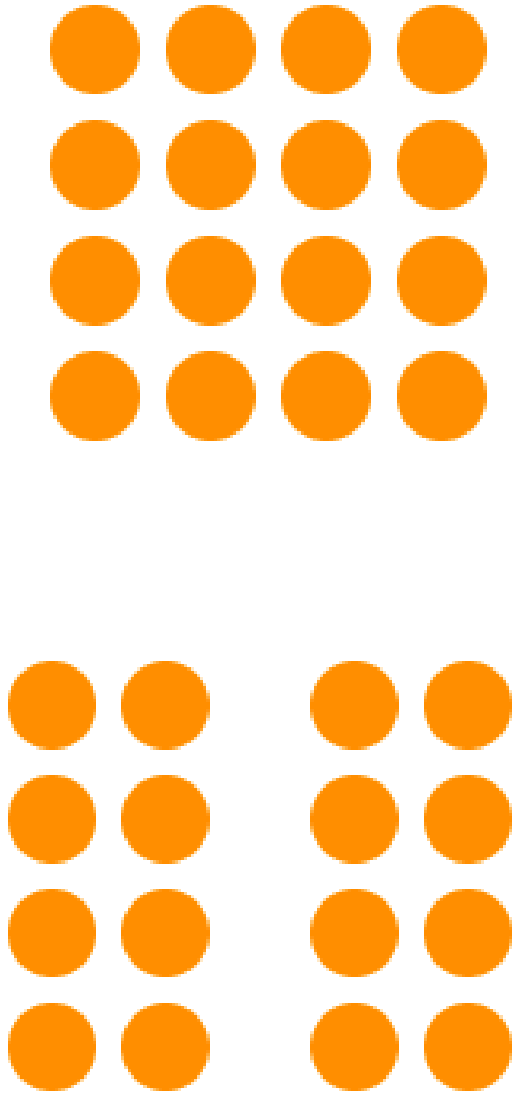
Gestalt Principles of Perception

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

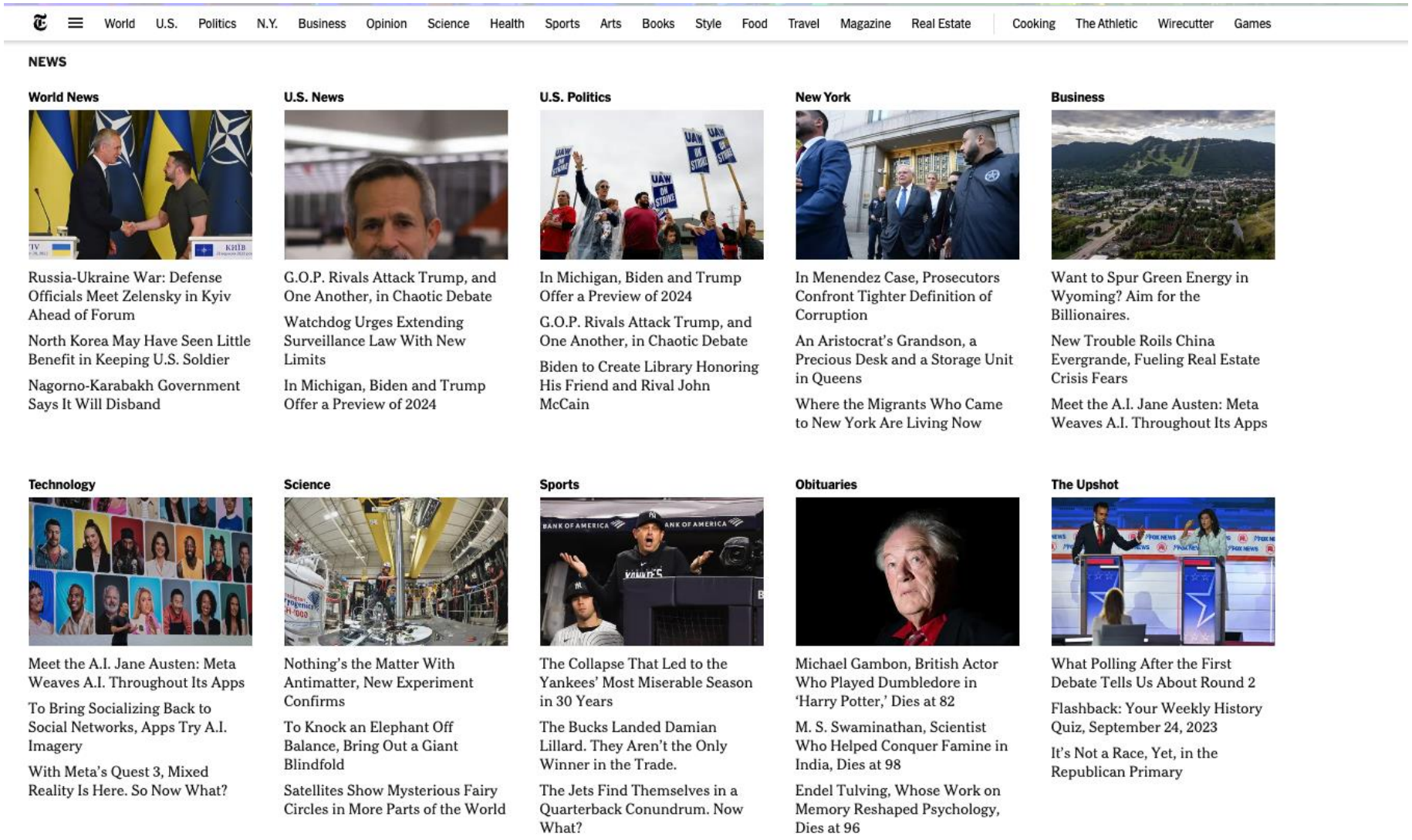
- Proximity
- Similarity
- Continuity
- Closure
- Area
- Symmetry

Gestalt: Proximity

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



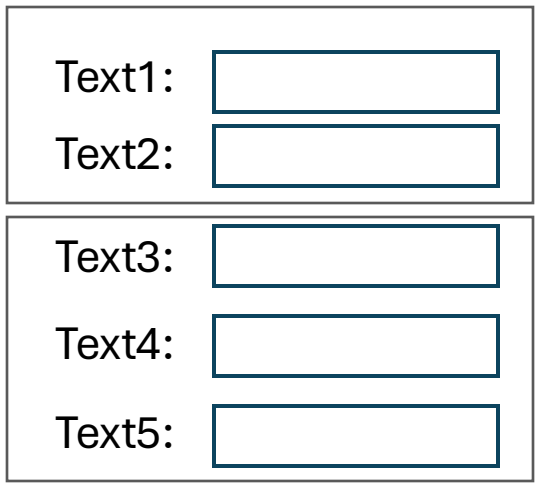
Gestalt: Proximity

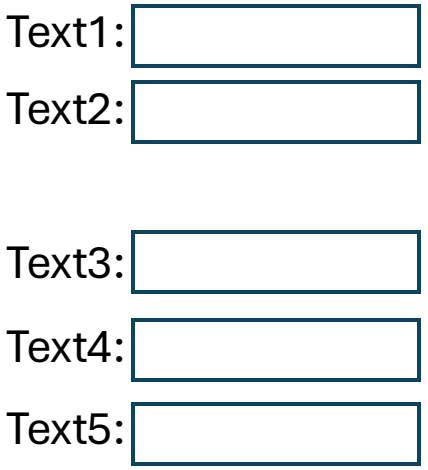


Proximity: Grouping

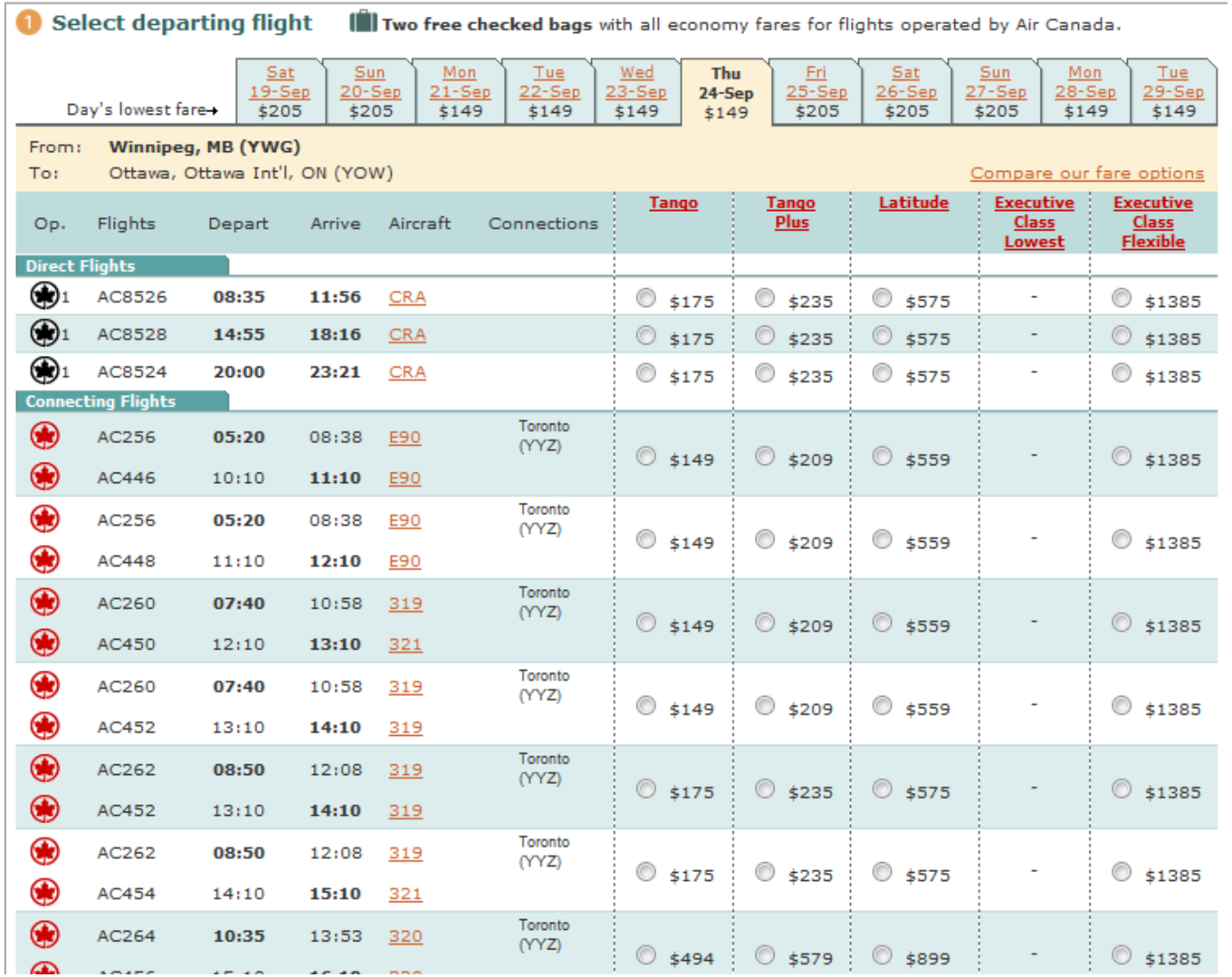
White space is more powerful:

- 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

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						
	AC256	**05:20**	08:38	E90	Toronto (YYZ)	$149	$209	$559	-	$1385
	AC448	11:10	**12:10**	E90						
	AC260	**07:40**	10:58	319	Toronto (YYZ)	$149	$209	$559	-	$1385
	AC450	12:10	**13:10**	321						
	AC260	**07:40**	10:58	319	Toronto (YYZ)	$149	$209	$559	-	$1385
	AC452	13:10	**14:10**	319						
	AC262	**08:50**	12:08	319	Toronto (YYZ)	$175	$235	$575	-	$1385
	AC452	13:10	**14:10**	319						
	AC262	**08:50**	12:08	319	Toronto (YYZ)	$175	$235	$575	-	$1385
	AC454	14:10	**15:10**	321						
	AC264	**10:35**	13:53	320	Toronto (YYZ)	$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

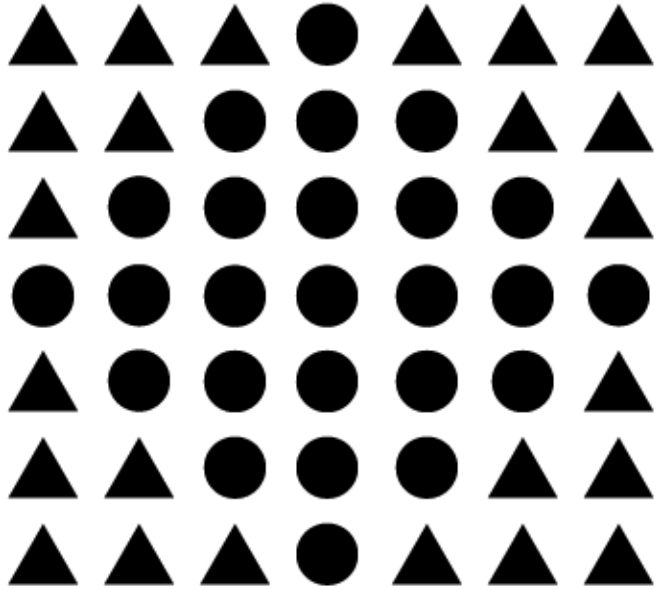
Winnipeg, MB (YWG) to Ottawa, ON (YOW)

Price	Depart	Arrive	Flight #	Duration	
$149.00 CAD Seat Sale Fare	10:00(YWG)	13:22(YOW)	WS 128	2hr 22min	2 seats remaining at this price
$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
$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
$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
$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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	AC260 AC450	**07:40** 12:10	10:58 **13:10**	319 321	Toronto (YYZ)	$149	$209	$559	-	$1385
	AC260 AC452	**07:40** 13:10	10:58 **14:10**	319 319	Toronto (YYZ)	$149	$209	$559	-	$1385
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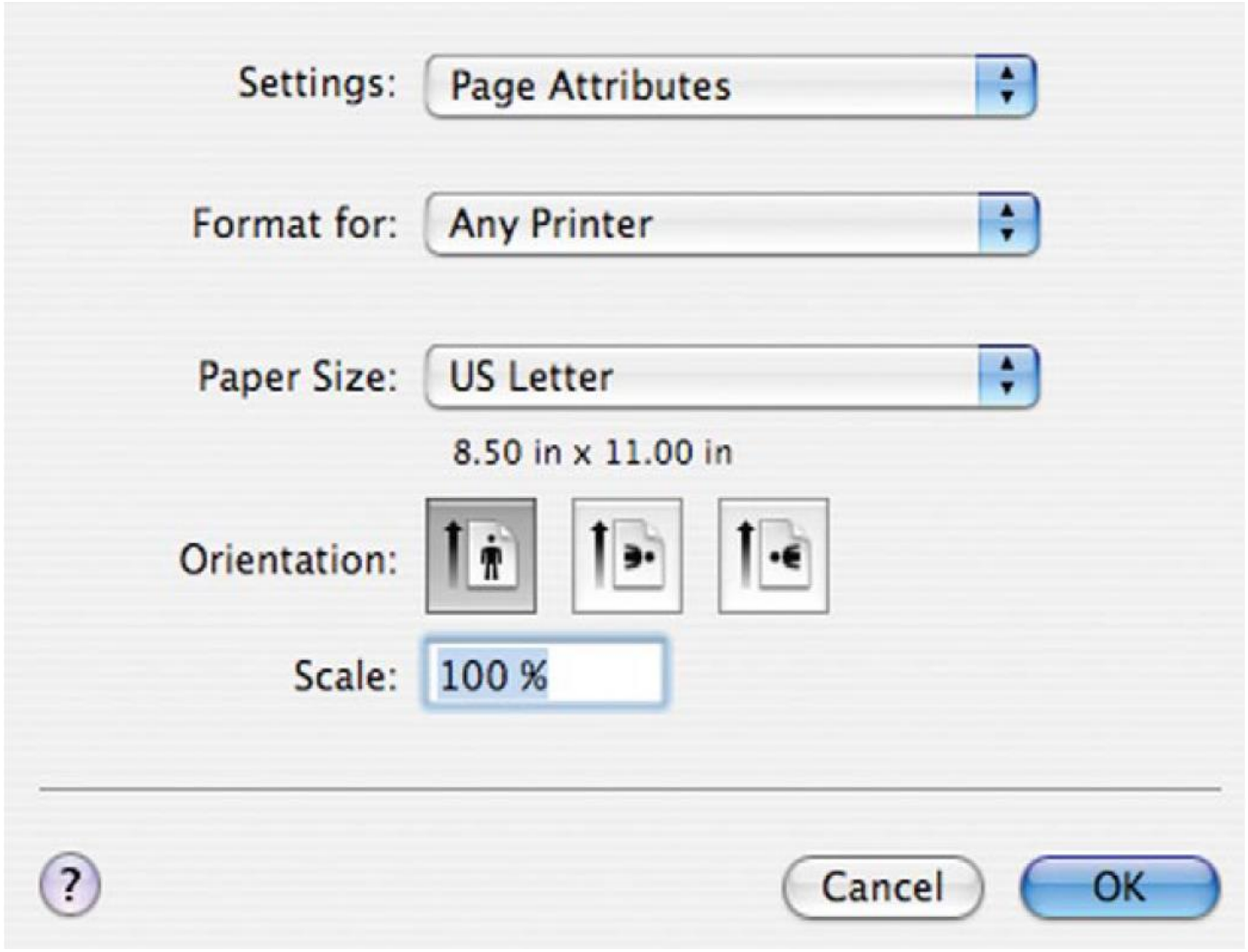
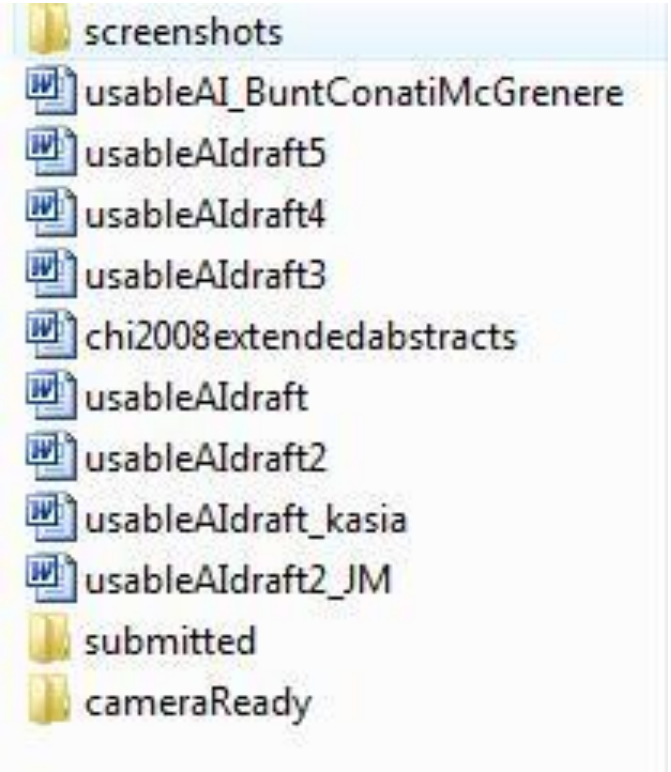
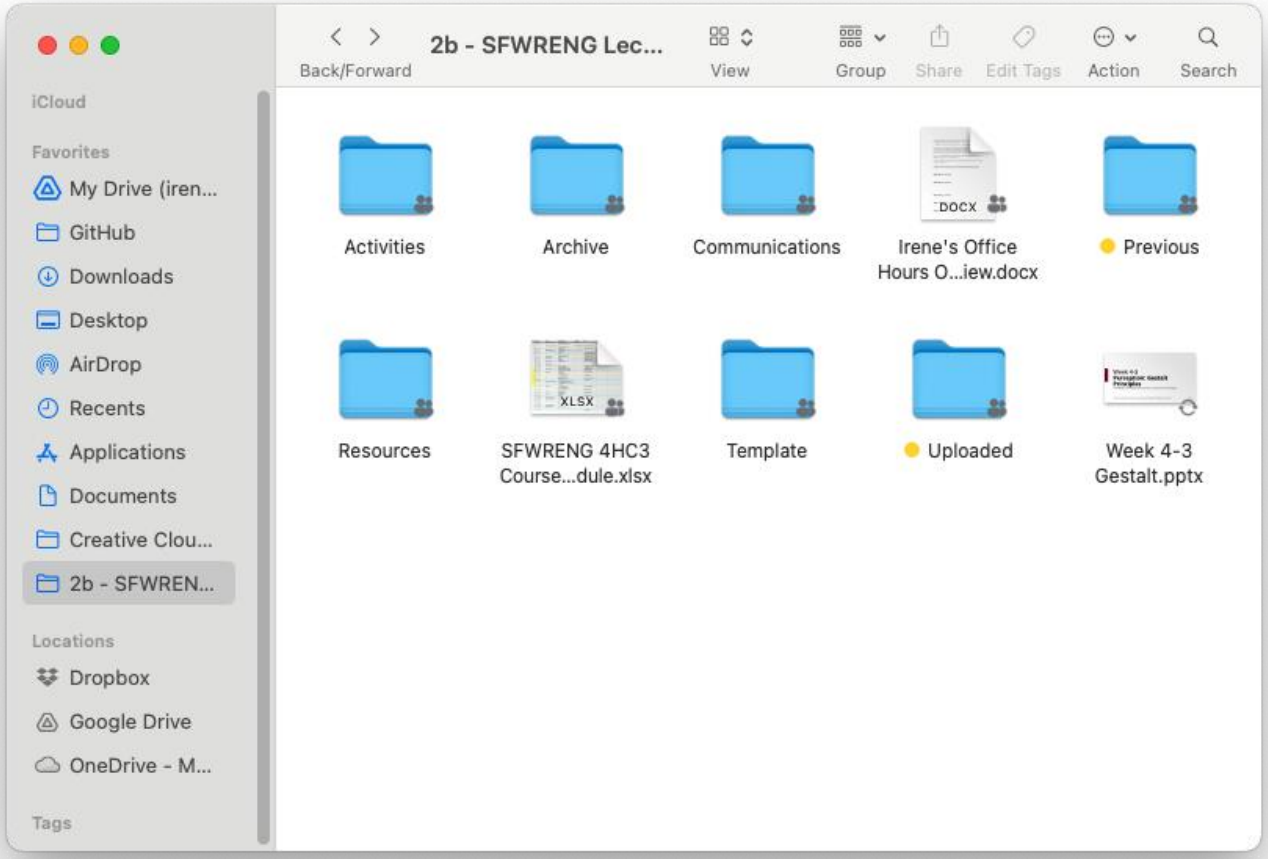
Similarity: Grouping



Similarity: Grouping





Similarity: Repetition in Design

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

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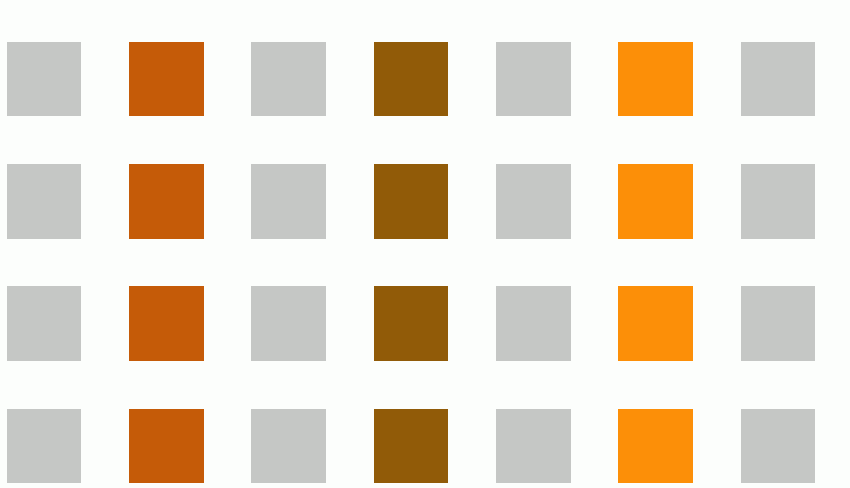
Similarity: Repetition in Design

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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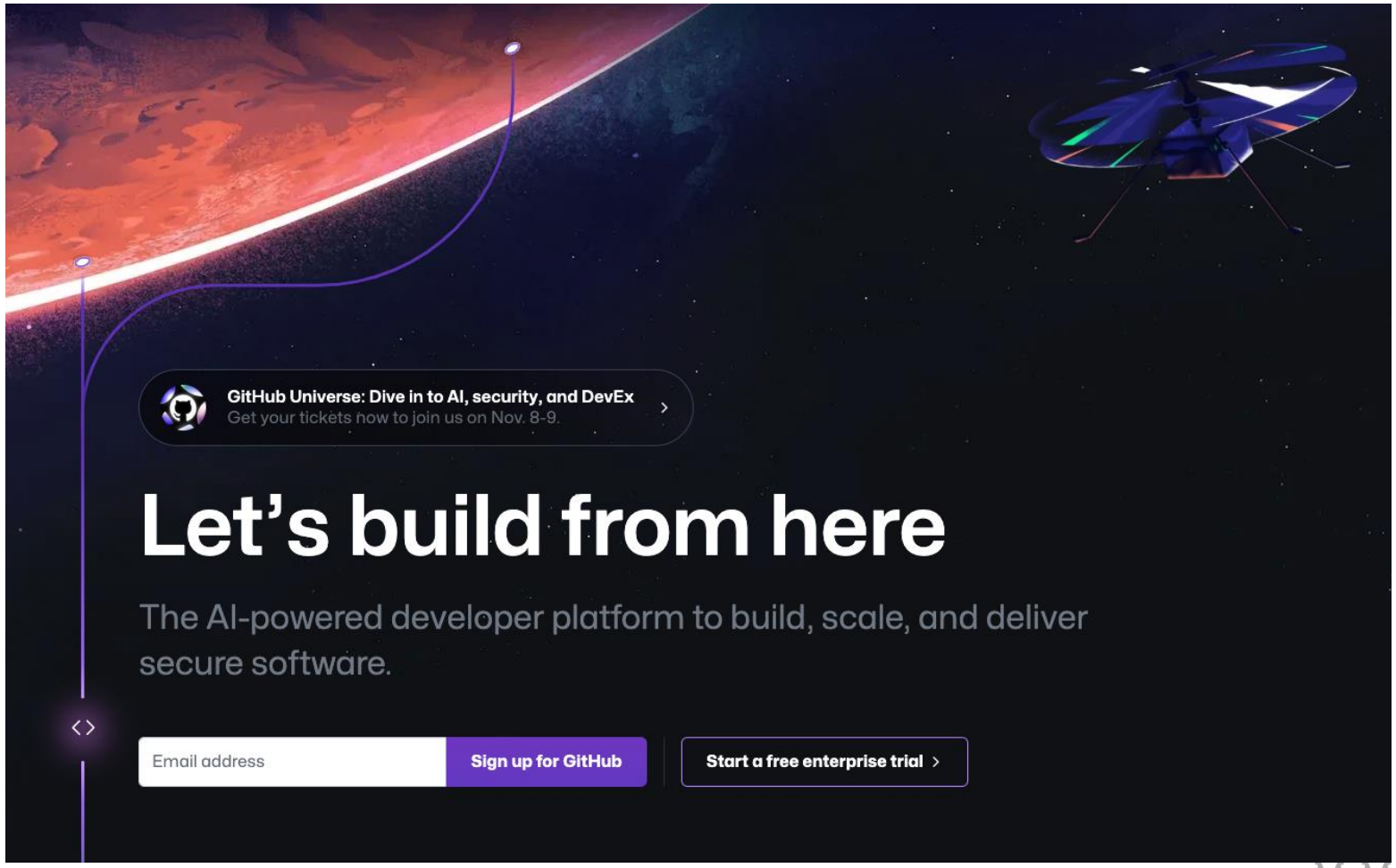
Contrast: Example

Probably a bad example
but effective in contrasting.

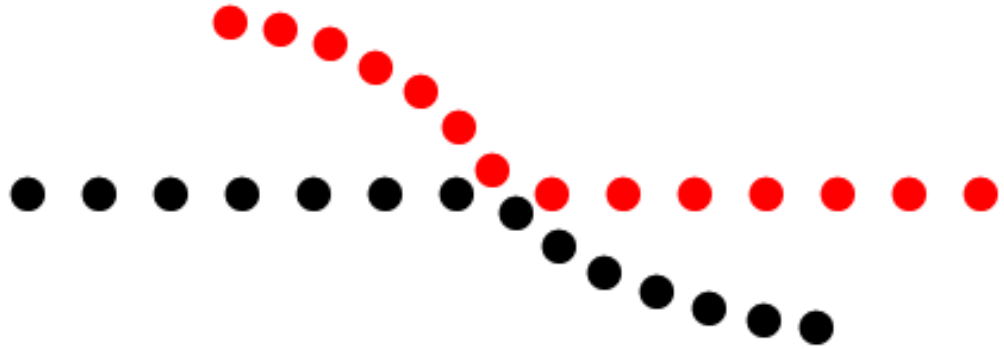
Contrast: Example

Contrast for Call-to-Action



Gestalt: Continuity

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



Gestalt: Continuity

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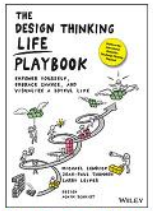

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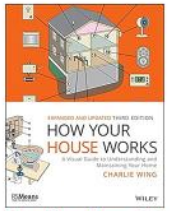

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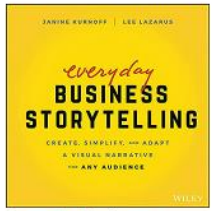

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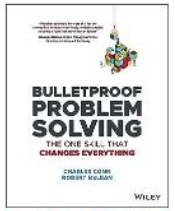

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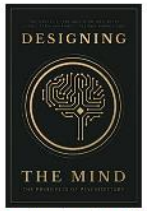

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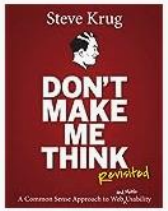

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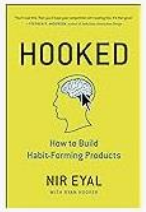

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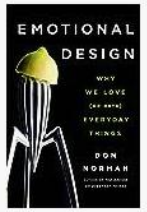
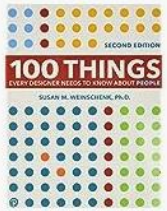
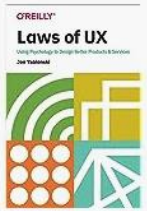
›Nir Eyal



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



100 Things Every Designer Needs to Know About People



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

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›Sung Jang

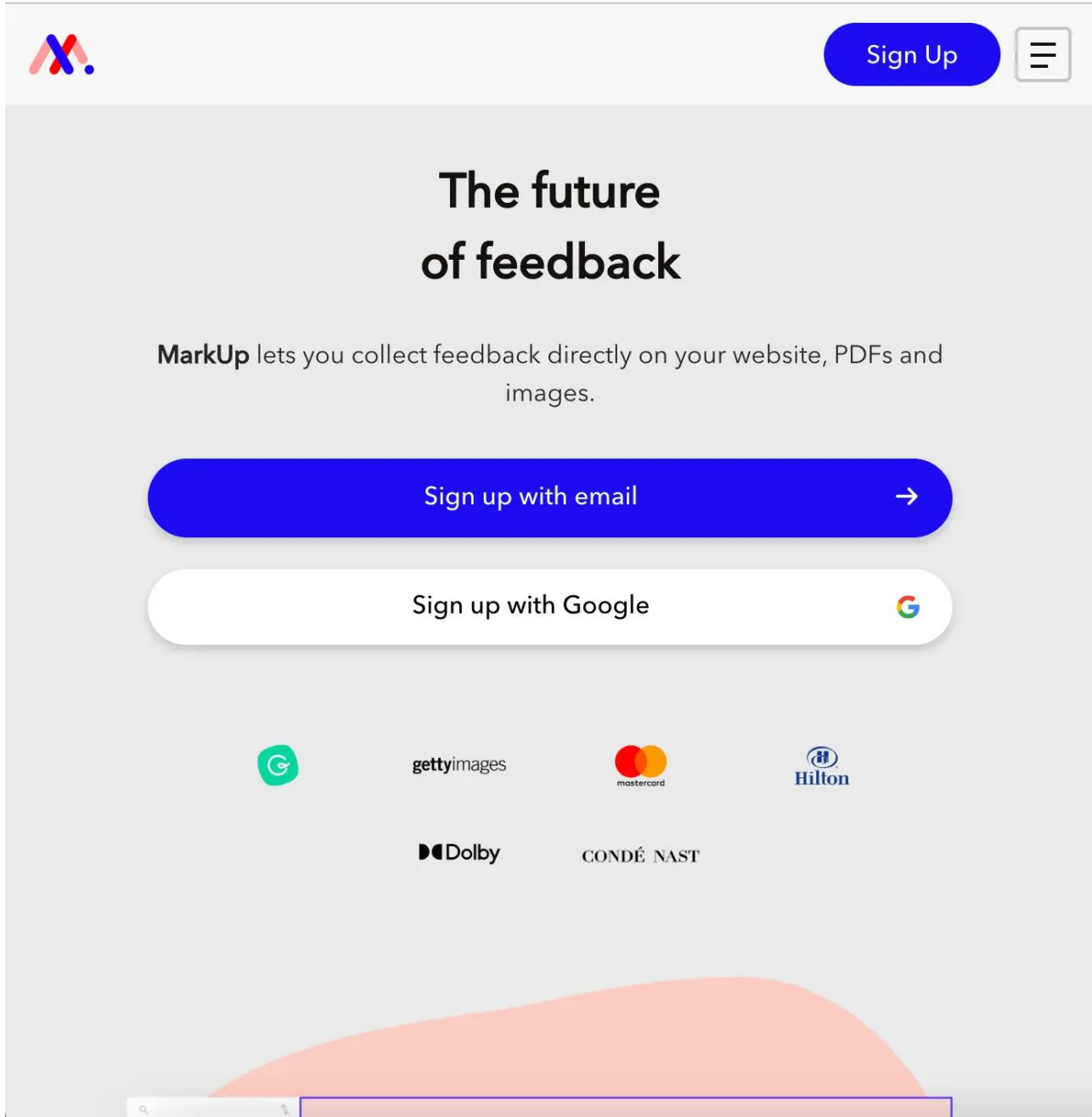
Gestalt: Closure

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



Gestalt: Area

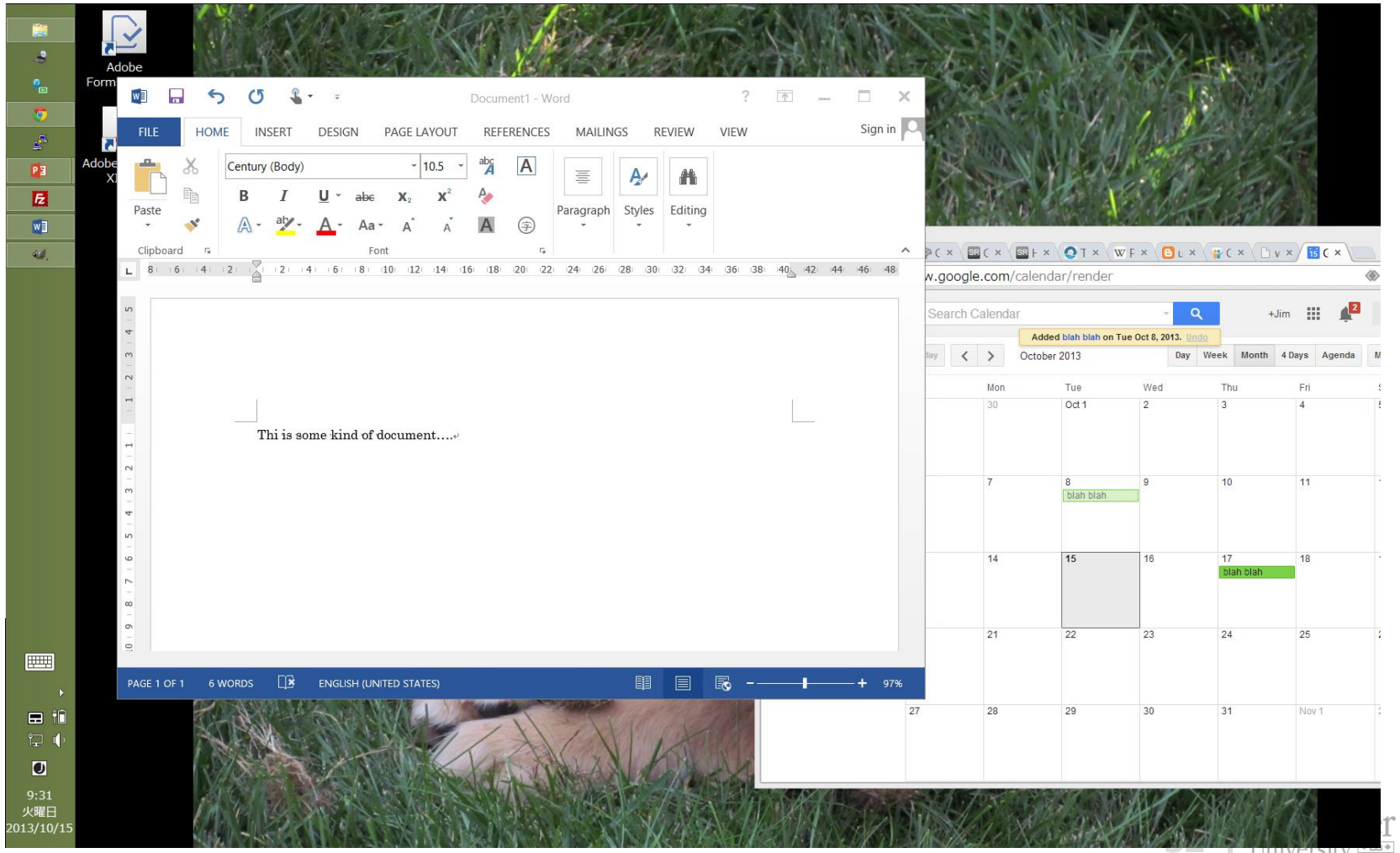
The smaller of two overlapping figures is perceived as **figure** while the larger is regarded as **ground.**

Figure: element that is interpreted as object of interest

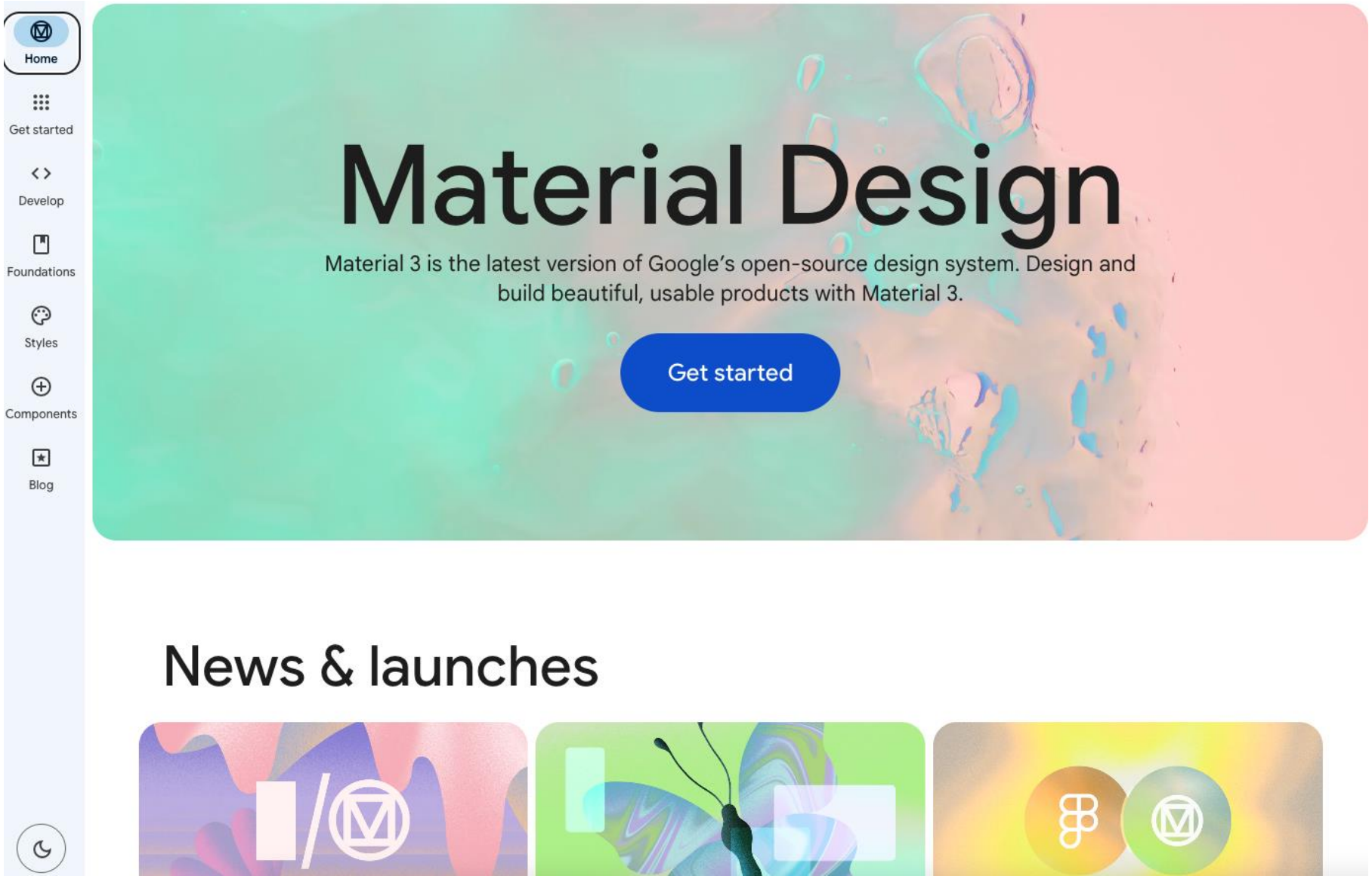
Ground: area on which figure rests

Area: Figure and Ground

Focus on the content in the foreground areas



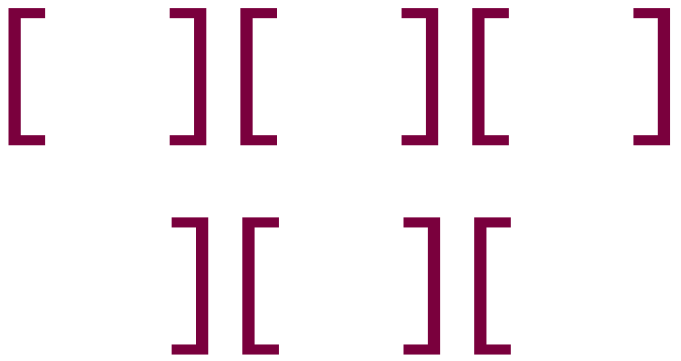
Area: Figure and Ground



Gestalt: Symmetry

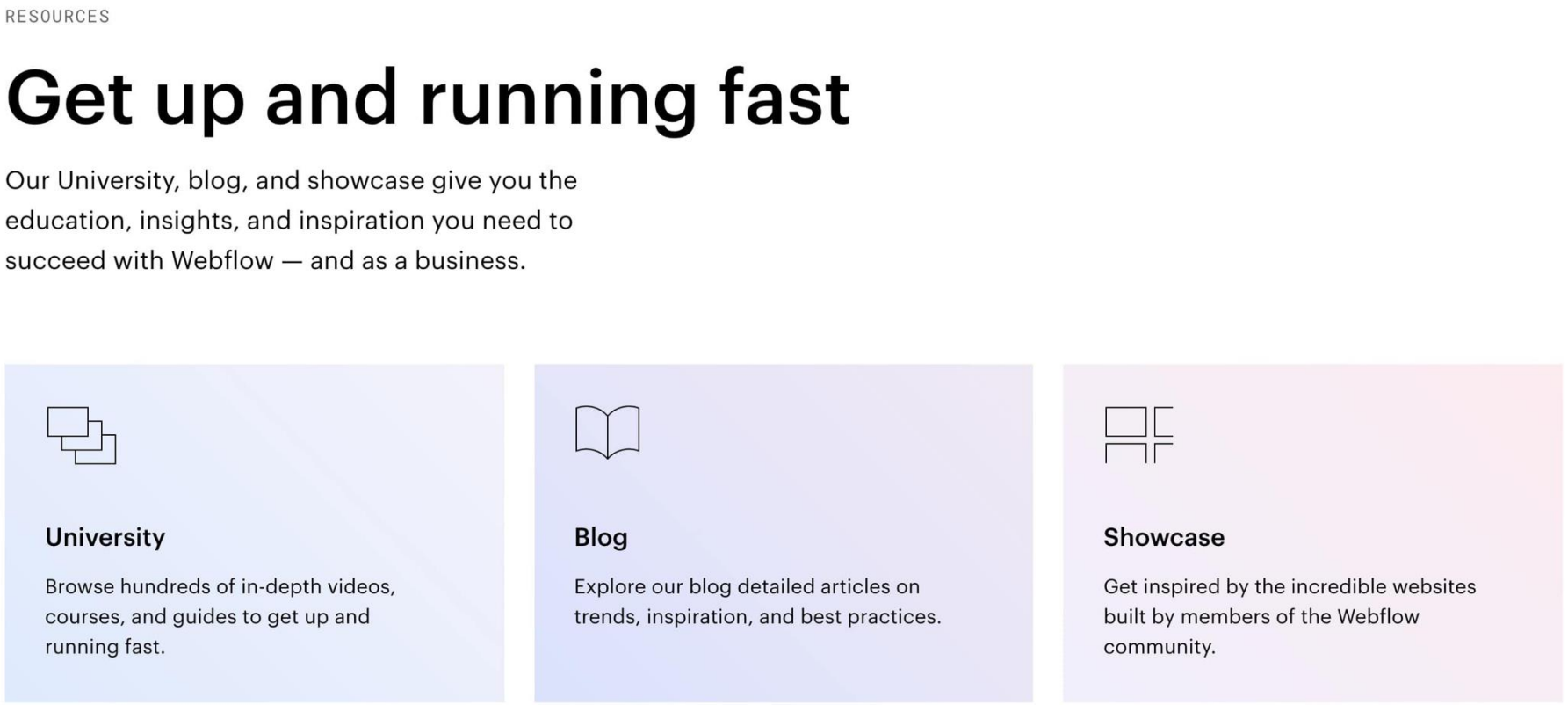
Symmetrical, unconnected elements are integrated into **one coherent object**

Symmetry across a page helps see it as a whole



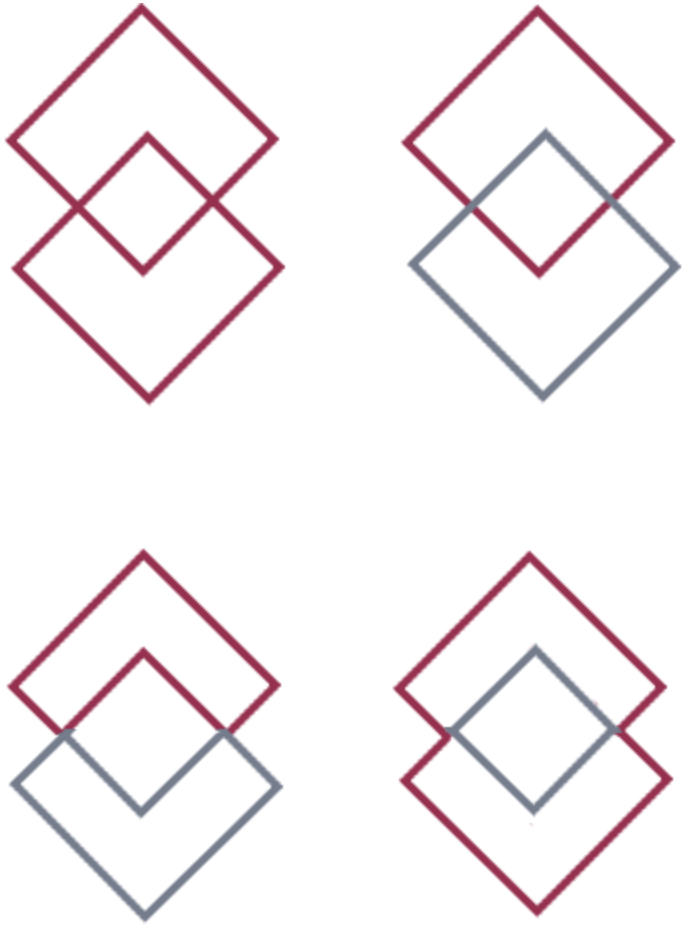
Gestalt: Symmetry

3-column design



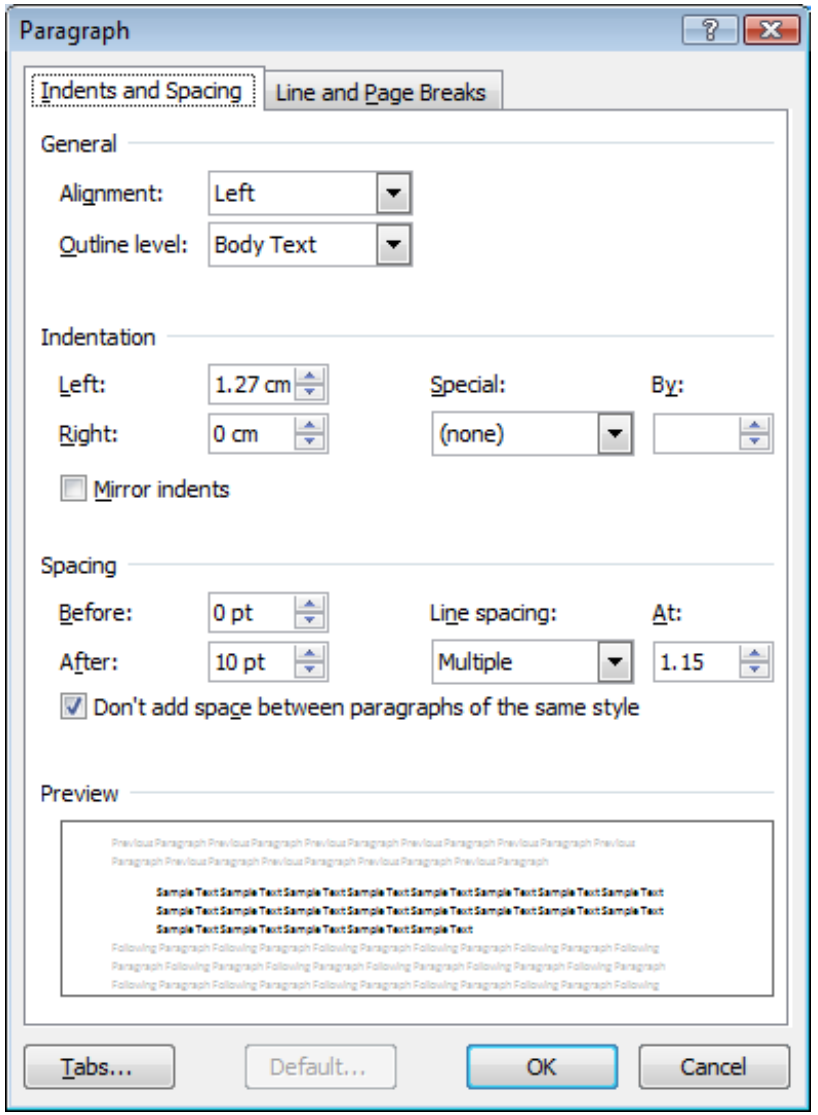
Gestalt: Symmetry

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



Gestalt: Summary

What principles are present here and how?



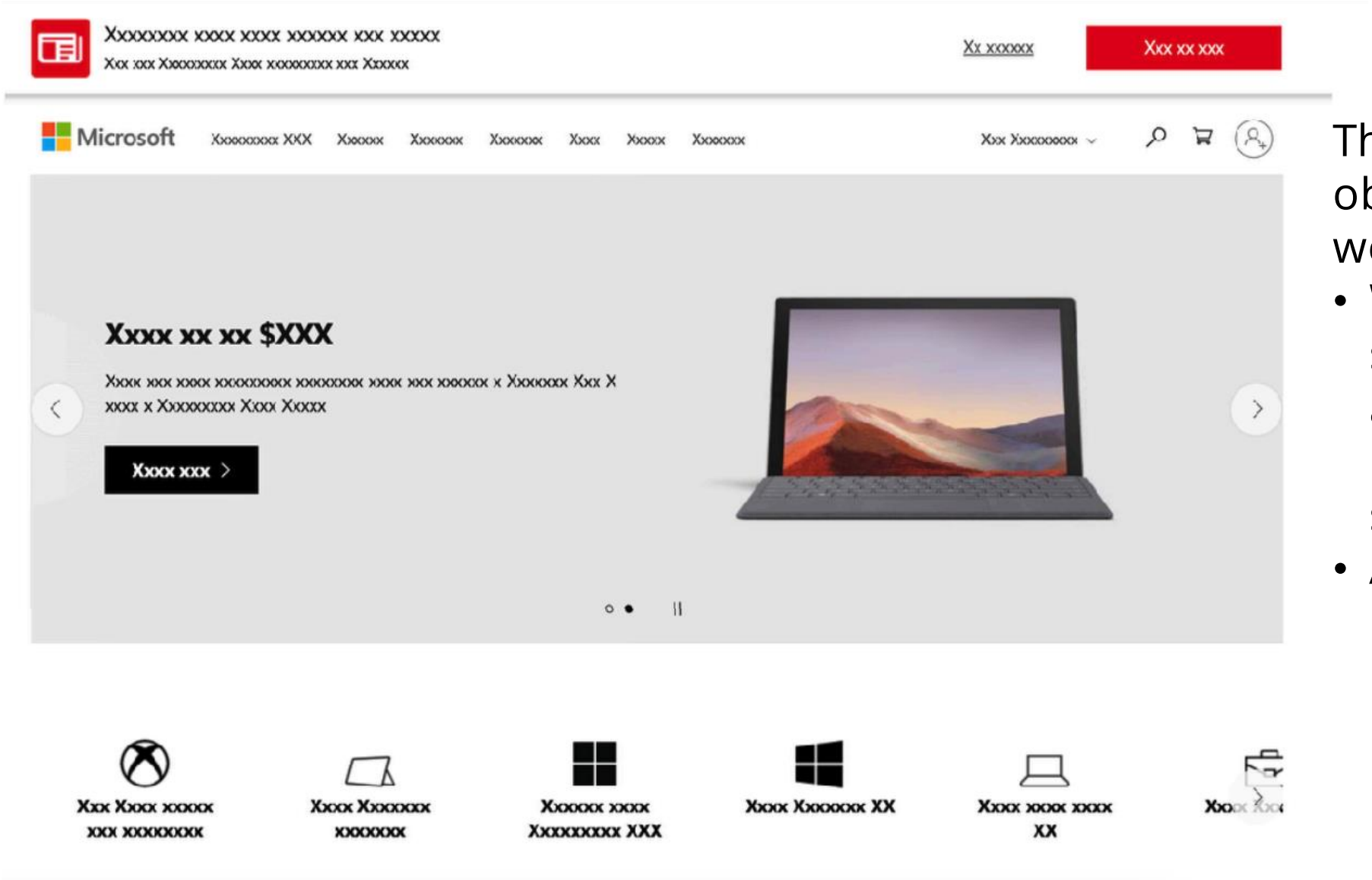
Gestalt: Summary

- **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



The text on the page is obscured. Apply what we talked today:

- What principles you see from this page and how do these principles convey structures?
- Any of the principles might confuse people?

Week 8 Overview

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