

Visual Design

Simplicity, Gestalt Principles, Organization/Structure

Many examples are from *Universal Principles of Design*,
Lidwell, Holden, and Butler



Why discuss visual design?

- You need to present the elements of your interface to the user!
- User needs to know:
 - What can I do in this interface?
 - Where is _____?
 - What is expected of me?
 - What is related to what?
- Want to impose as little thinking as possible on the user.
 - Allow them to concentrate on their task, not the interface.

How do I launch this game?



Objectives

- Highest level goals
 - make supported actions clear
 - create desired relationships and avoid undesired relationships
- To create a presentation that...
 - has an attractive look
 - is easy to understand “at a glance”
 - has a distinctive look, across many windows, and
- To avoid a presentation that...
 - is cluttered and hard to organize
 - is hard to perceive clearly
 - contains excessive idiosyncrasy
 - makes the user stop and think to avoid errors

How?

- Design with the human brain's conscious and unconscious capabilities in mind:
 1. Keep things simple
 - People have limited cognitive processing power.
 2. Leverage pre-attentive processes
 - Makes design seem “intuitive” and “obvious”
- Pre-attentive processes
 - Happen at a lower-level than conscious thought.
 - Do a huge amount of work out of sight, and give your conscious mind the results.

▪ **Rest of the Discussion:**

- Simplicity in design
- Impose organization and structure

Simplicity

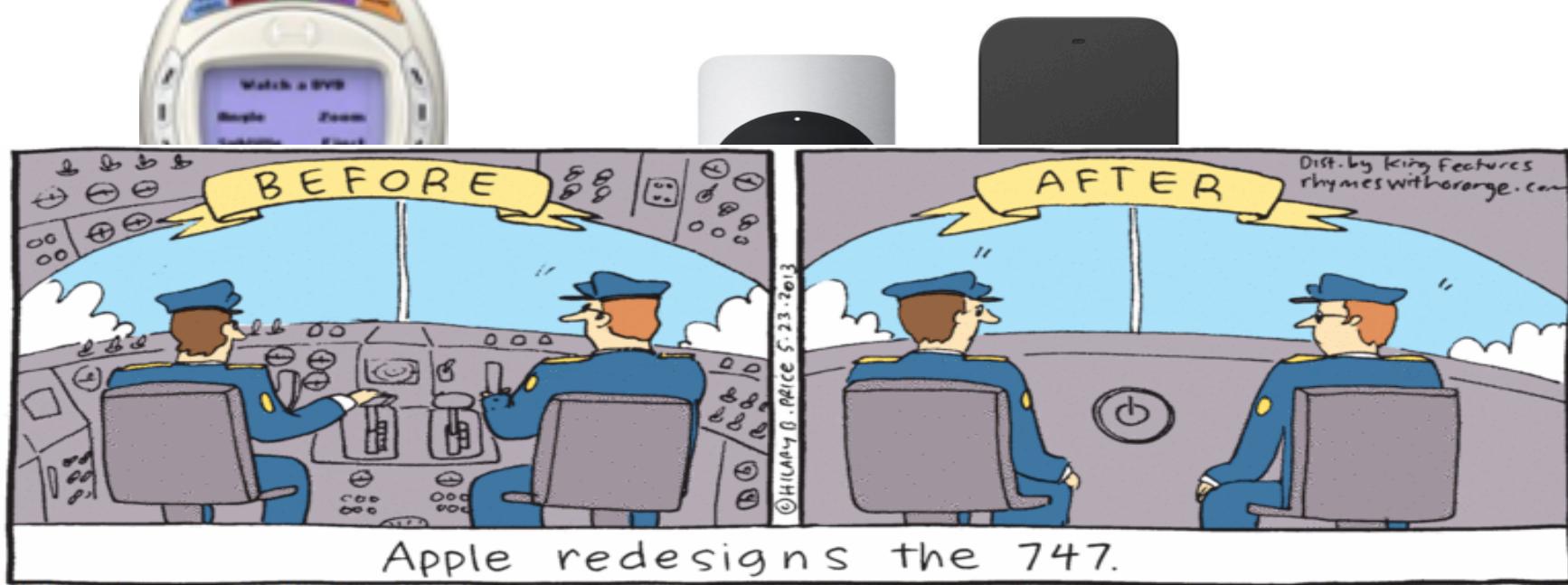
In anything at all, perfection is finally attained not when there is no longer anything to add, but when there is no longer anything to take away.

-- Antoine de Saint Exupery

simplicity

- Present the minimum amount of information to achieve maximum effect
- Simplicity leads to quickly recognized and understood functionality
 - Less information means less time to process
 - Can more quickly produce correct mental models
- Simplicity also aids recall
 - Less to remember, so easier to recall

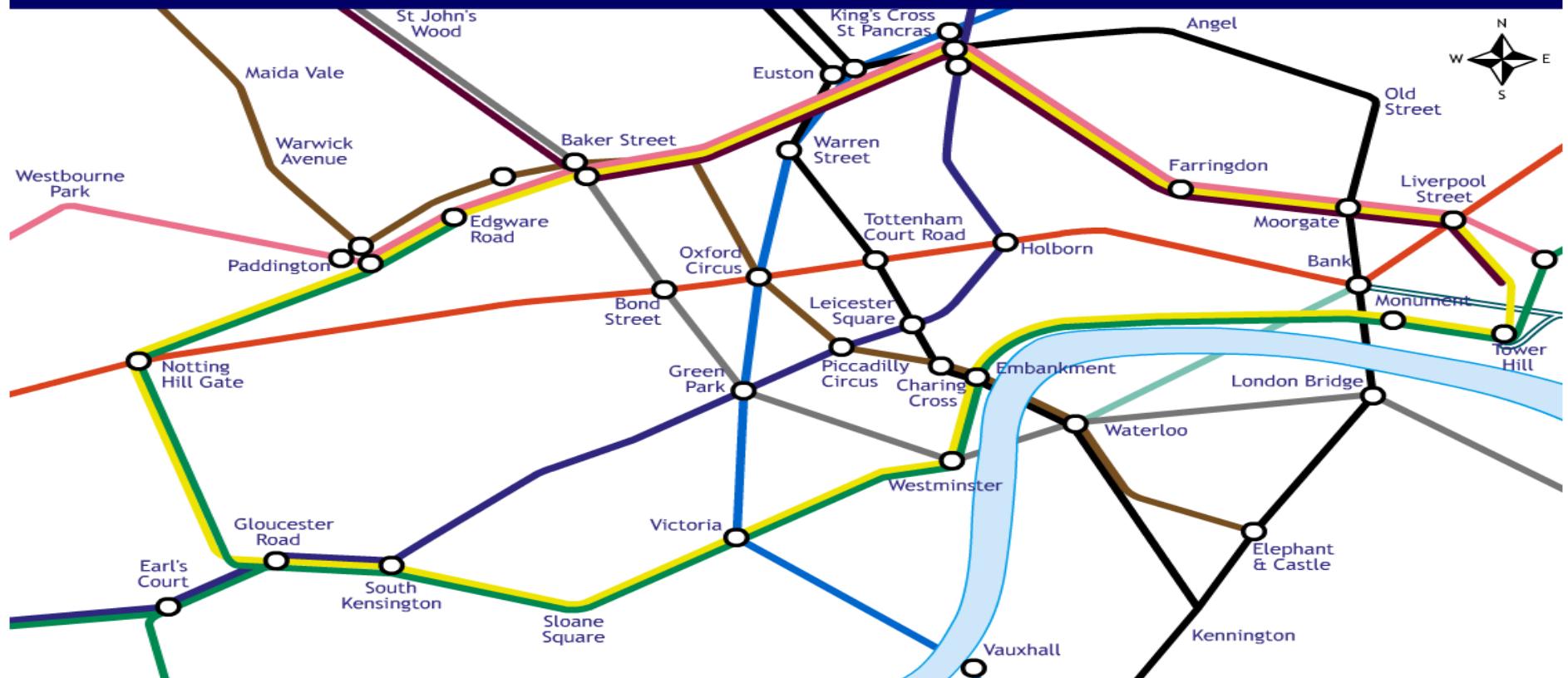
simplity





The Real Underground Morphing Map

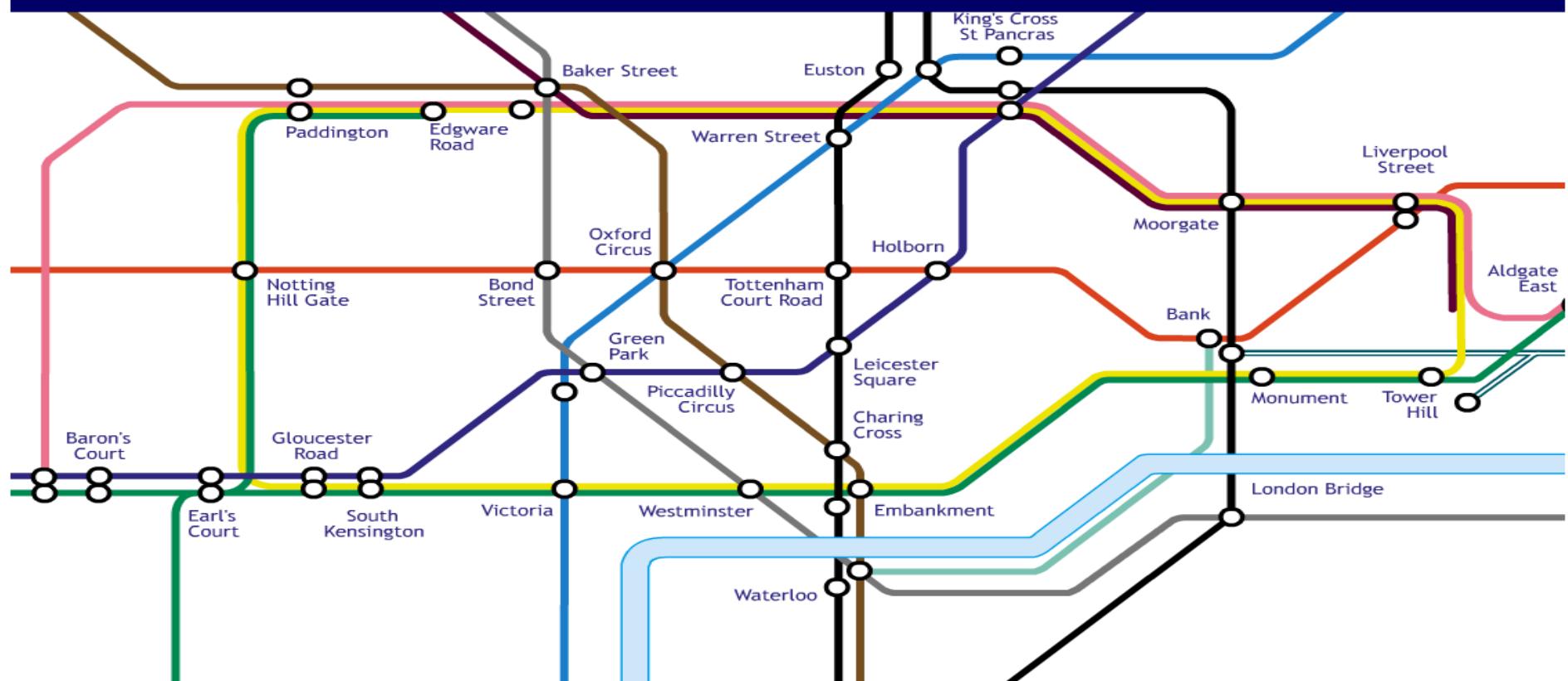
The Real Underground Map





The Real Underground
Morphing Map

The Modern Underground Map



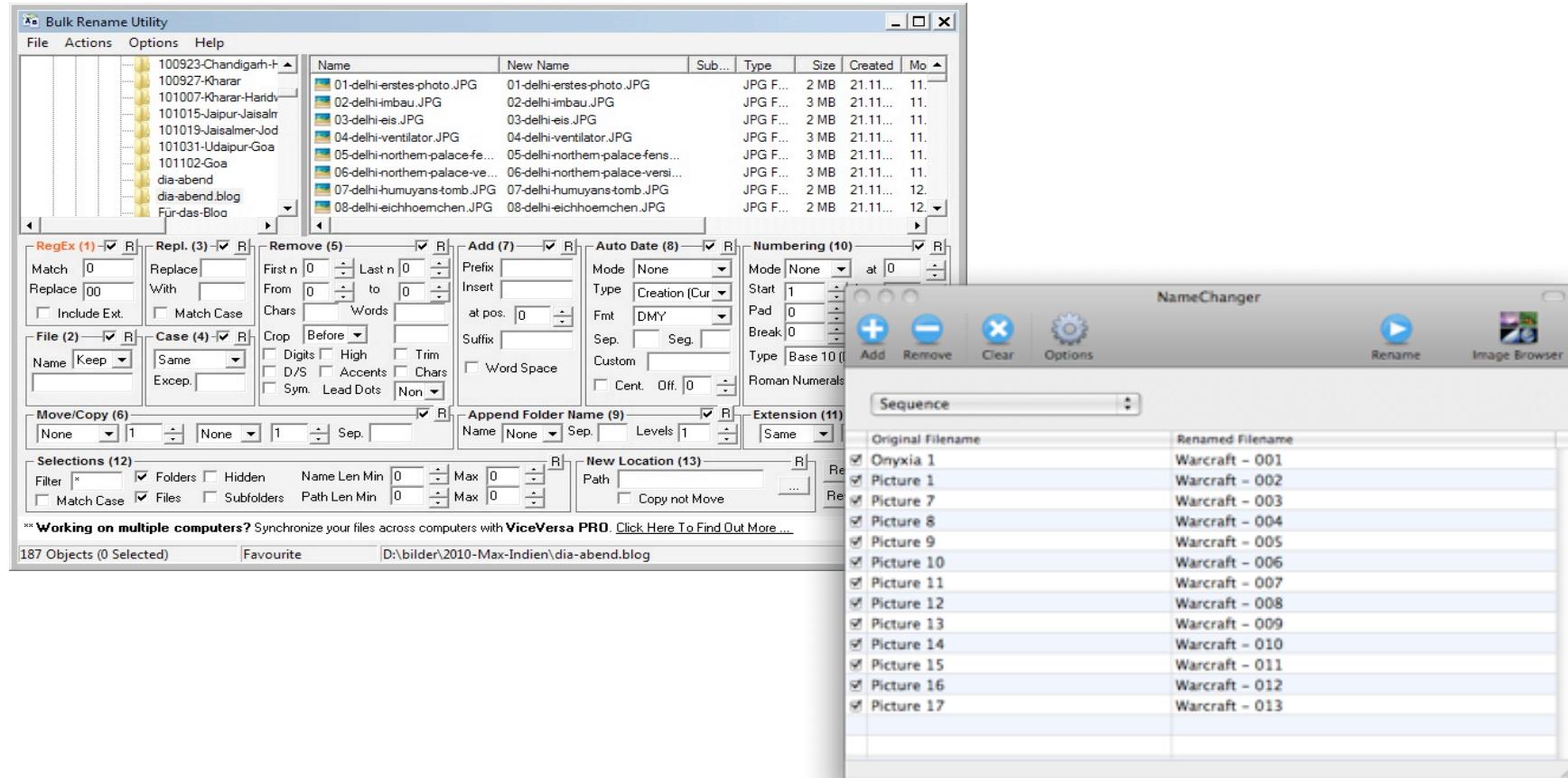
Go to: [Real Underground Map](#)

| [Modern Map](#)

| [Beck's Map](#)

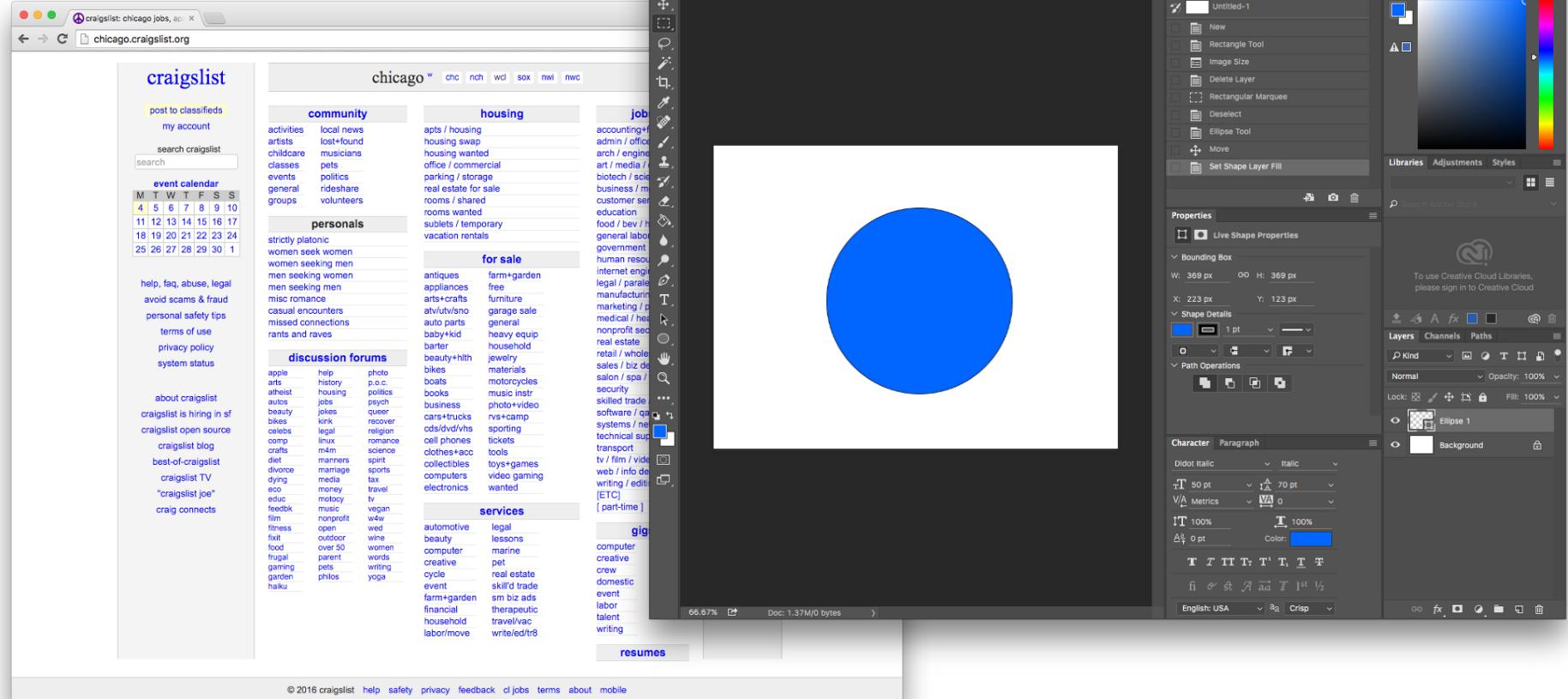
Show/Hide: [Stations](#)

Only Absolute Essentials



Know Your Audience

- “Essential” can conflict with “simple” (e.g. expert-users, or specialized interfaces)



<https://m.signalvnoise.com/why-i-love-ugly-messy-interfaces-and-you-probably-do-too-edff4a896a83#.hgzhhzuf8>

How to Achieve Simplicity?

- Reduce, reduce, reduce
- Reduce some more
- Reduce until it hurts

Organization and Structure

Gestalt Principles

- Structure doesn't occur naturally, it must be explicitly created, designed.
- People will find order and structure, even if none was intended.
 - Don't just throw elements into a UI!
- You need to explicitly create the structure.
 - Consciously consider what placement and arrangement communicates to the user.
- Gestalt principles can help with this.

Gestalt Principles

- Theories of visual perception that describe how people tend to organize visual elements into groups or unified wholes, when certain principles are applied.
- Clues about how the brain groups raw visual input

**Proximity
Similarity**

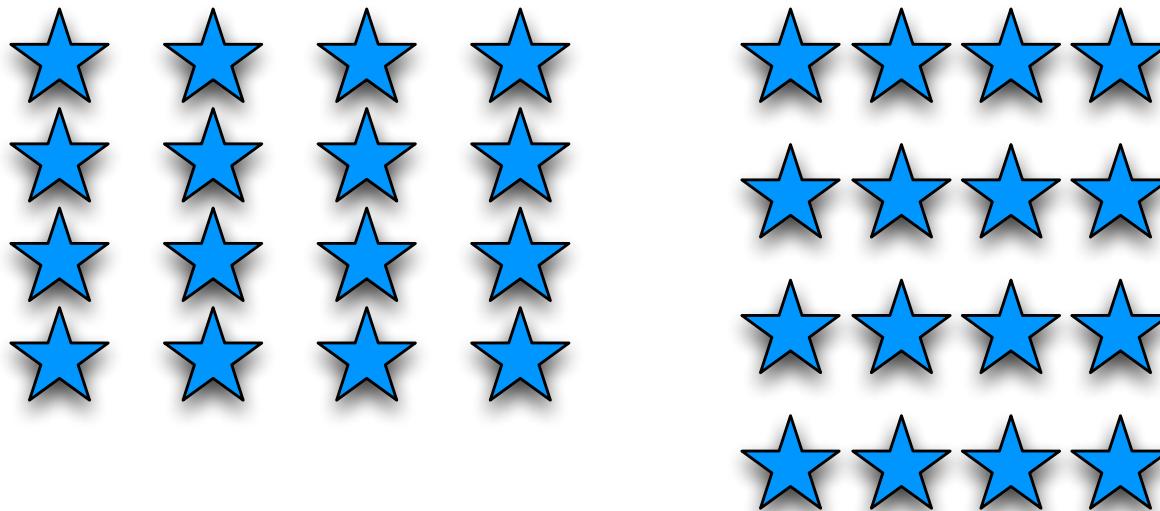
**Good Continuation
Closure
Figure/Ground
Law of Prägnanz**

**Uniform Connectedness
Alignment**

pronunciation: <http://www.howjsay.com/index.php?word=gestalt>

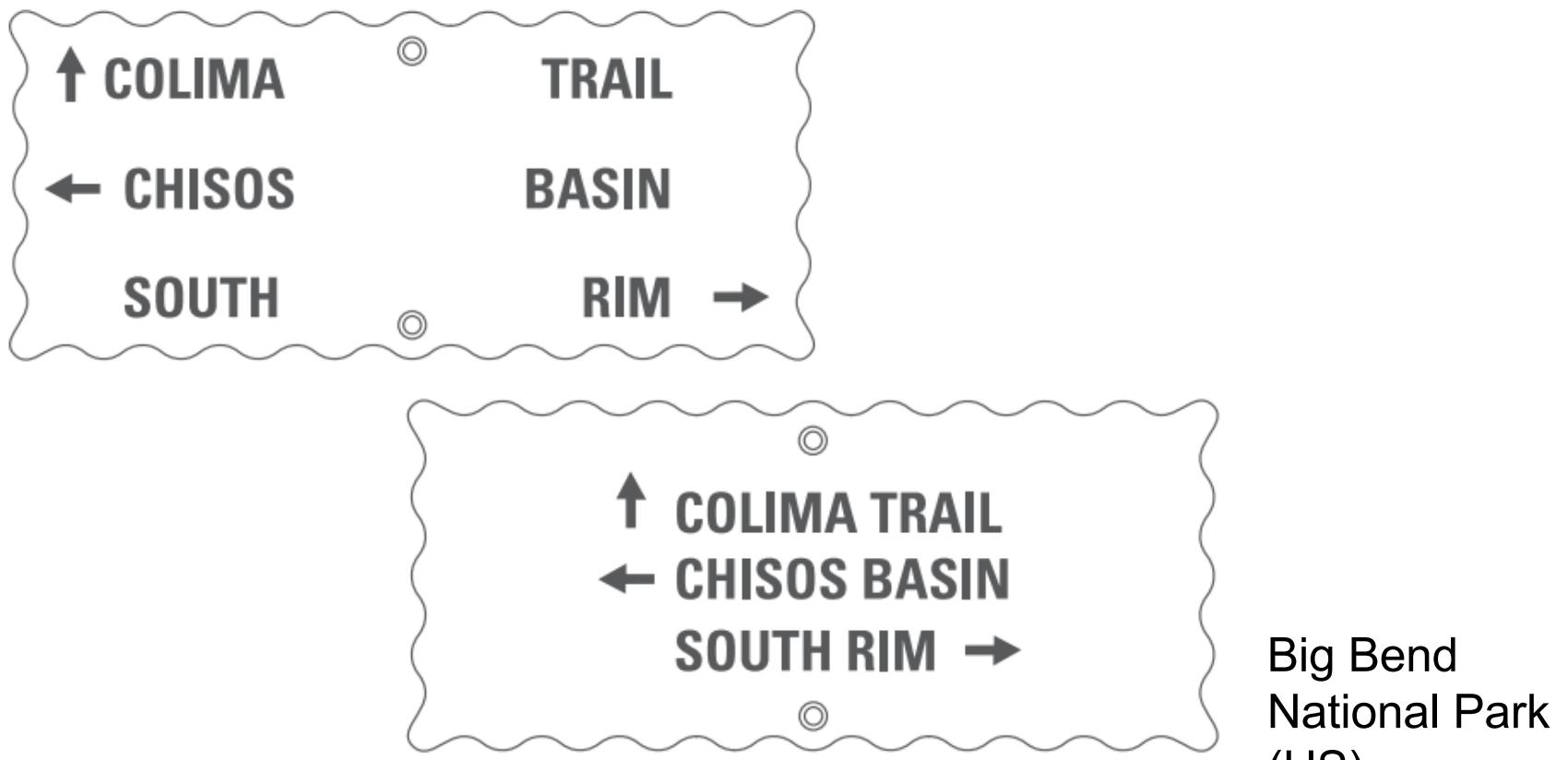
Proximity

- Individual elements are associated more strongly with nearby elements than with those further away.
 - Spacing stars more closely vertically gives an impression of columns; spacing more closely horizontally gives an impression of rows.



Proximity

- Individual elements are associated more strongly with nearby elements than with those further away



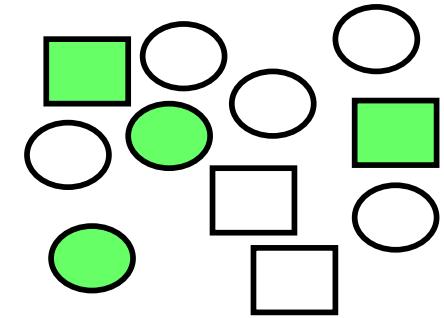
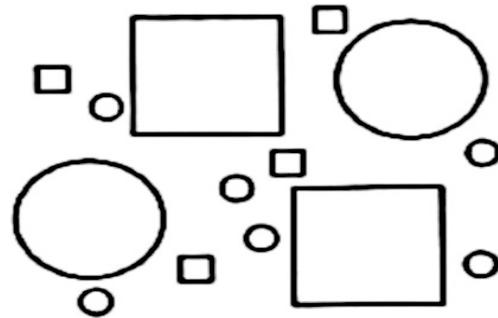
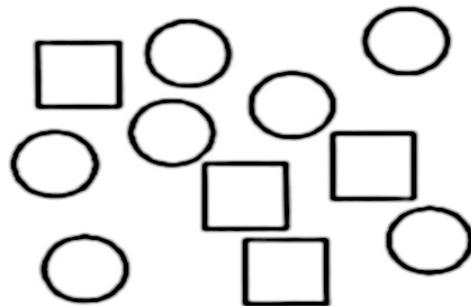
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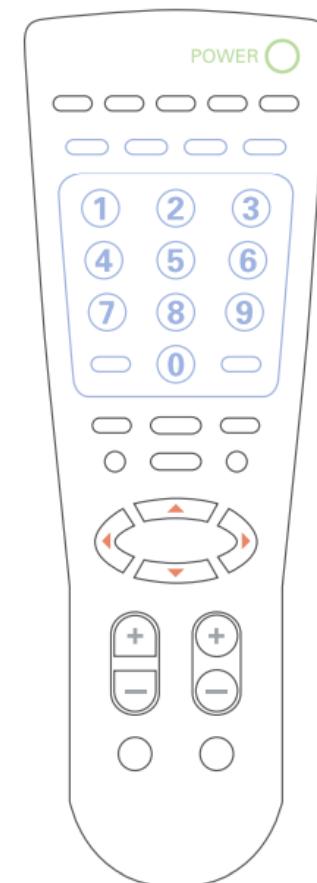
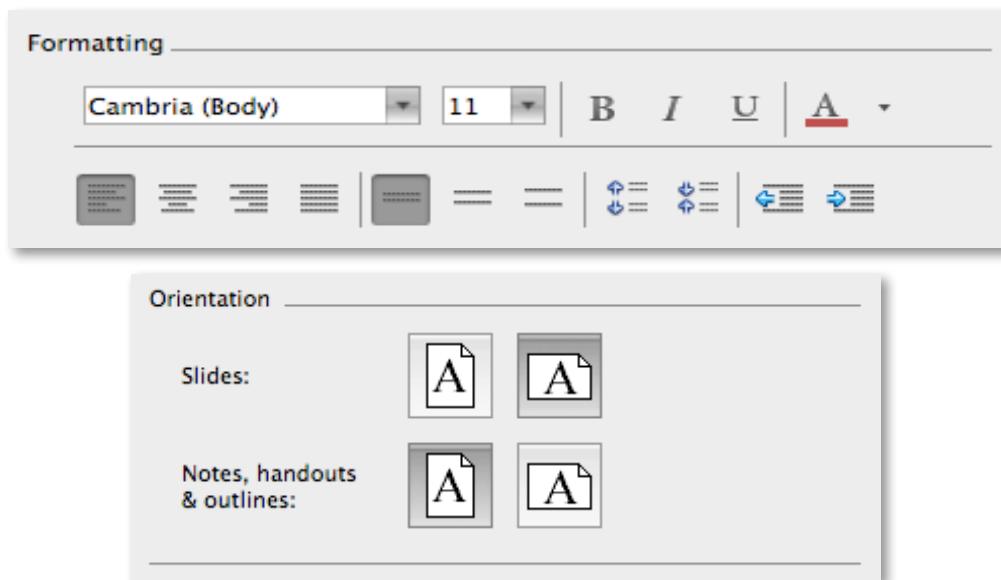
Similarity

- Elements associated more strongly when they share basic visual characteristics, such as:
 - Shape
 - Size
 - Color
 - Texture
 - Orientation



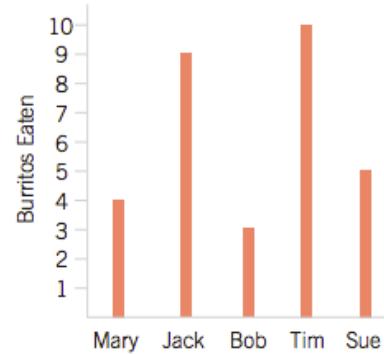
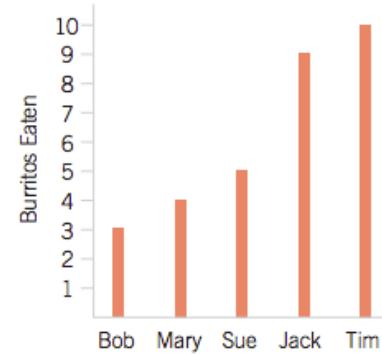
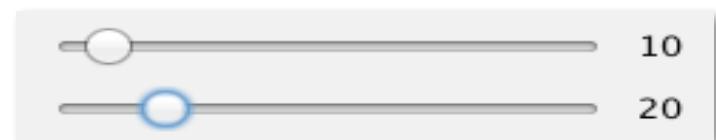
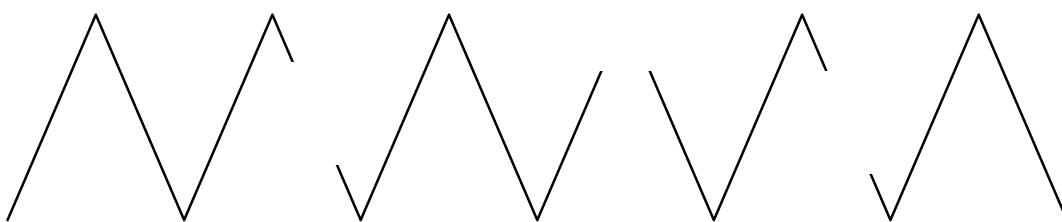
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 - Color

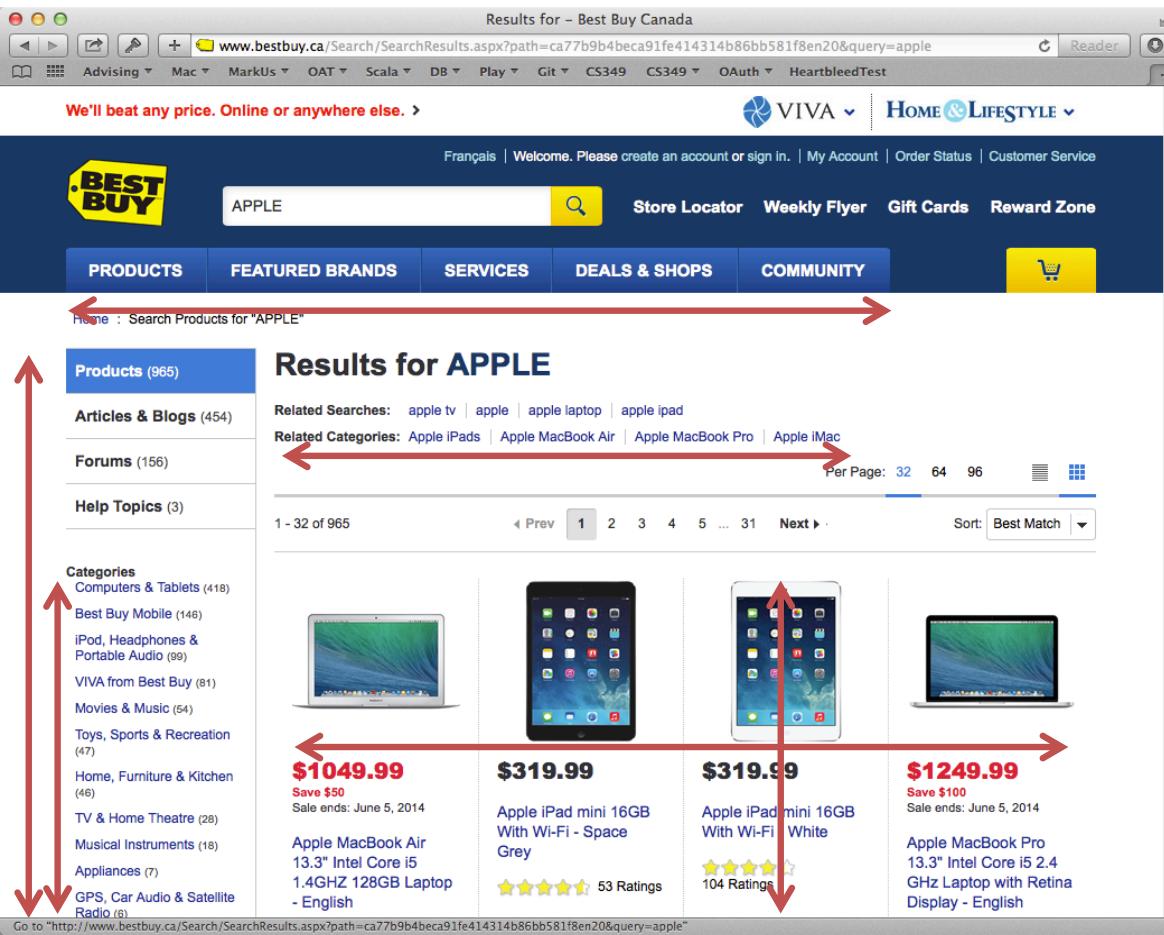


Good Continuation

- Our visual system is biased to perceive continuous forms rather than disconnected segments.
- Elements arranged in a straight line or a smooth curve are perceived as being more related than elements not on the line or curve.



Good Continuation



Good Continuation

Quality.

Best Solutions for Your Business

Like us? Click "like" above.

Good

solutions for your
business!

MORE DETAILS

<http://www.templatemonster.com/facebook-templates/38346.html>

Grouping vs. Ambiguity

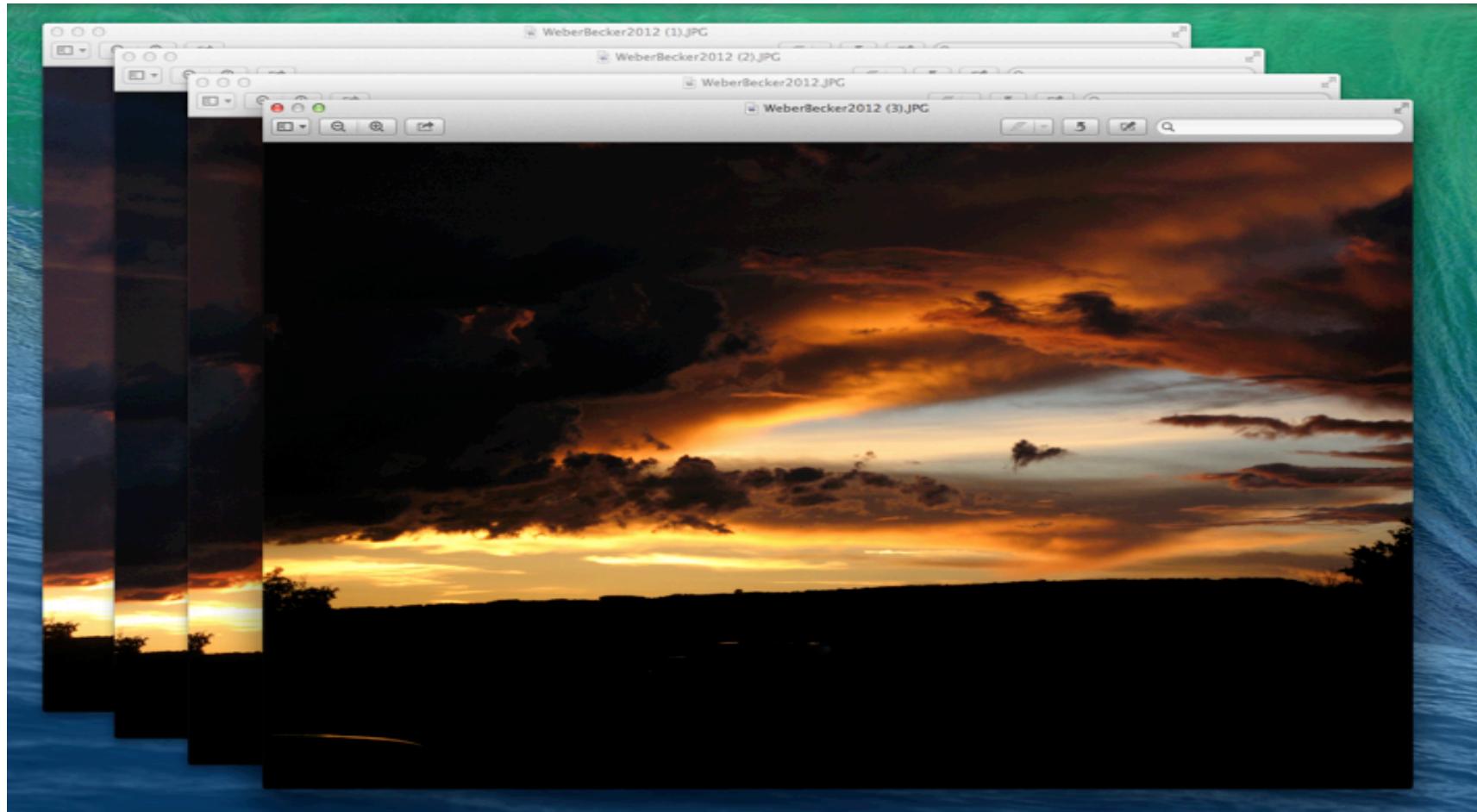
- Proximity, Similarity and Good Continuation describe how we group objects.
- The next set of Gestalt Principles describe how we deal with ambiguity and fill in missing data.

Closure

- The principle of closure applies when we tend to see a complete figure even when part of the information is missing. We tend to perceive a set of individual elements as a single, recognizable pattern, rather than multiple individual elements.



Closure



Figure/Ground (aka Area)

- Our mind separates the visual field into the figure and the ground.
 - Figure is the visual element that is interpreted as being the object of interest.
 - Ground is the area on which it rests (and everything else).



Slides Outline

23 Continuity Quality Good

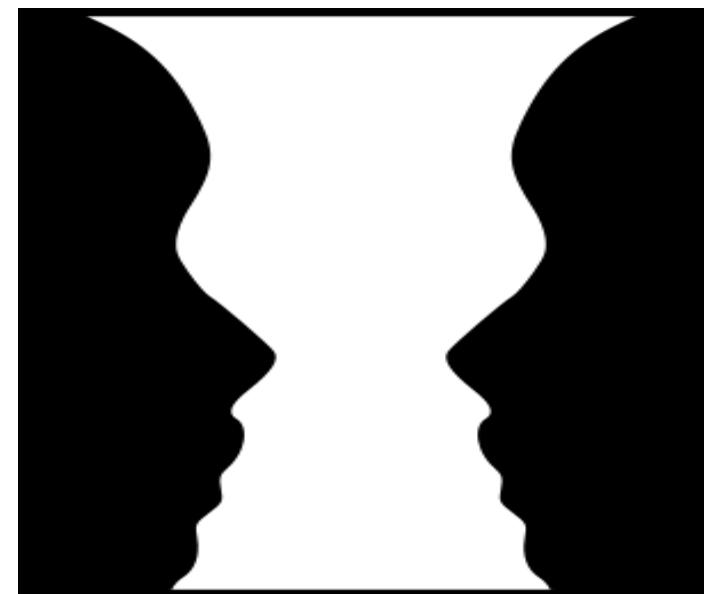
24 Closure • The principle of closure applies when we perceive areas of incomplete figures as closed when they are not. We tend to perceive a set of individual elements as a single, recognizable pattern, rather than as a collection of individual elements.

25 Closure

26 Figure/Ground (aka Area) • Our mind separates the visual field into the figure (the object of interest) and the ground (the area on which it rests). • Figure—the visual element that is interpreted as being the object of interest. • Ground—the area on which it rests (and everything else). • Examples: • This area is the figure. • This area is the ground. • Watermark and crop marks.

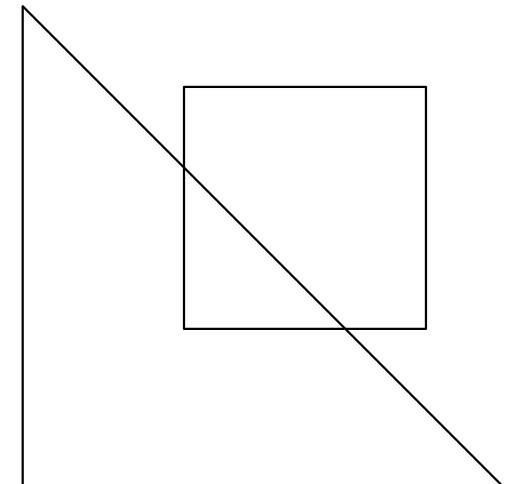
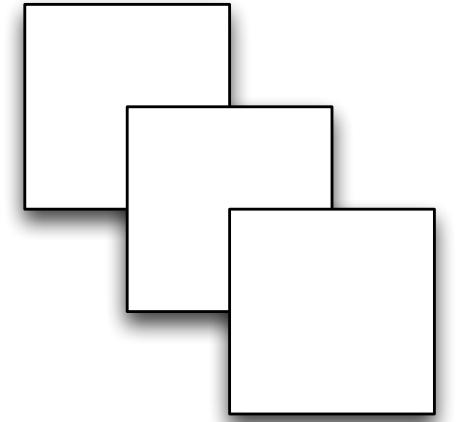
Figure/Ground (aka Area)

- Ambiguity
- Visual Cues can help resolve this
 - The figure has a definite shape, ground is shapeless.
 - The ground continues behind the figure.
 - The figure seems closer with a clear location in space.
 - Elements below the horizon
are more likely to be perceived
as figures



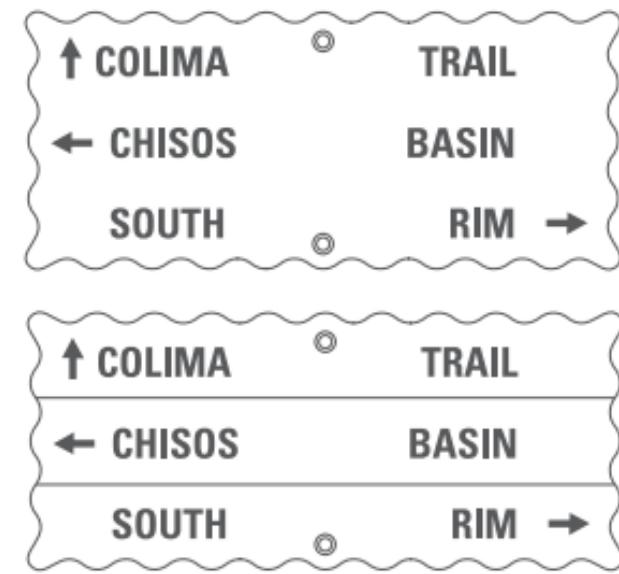
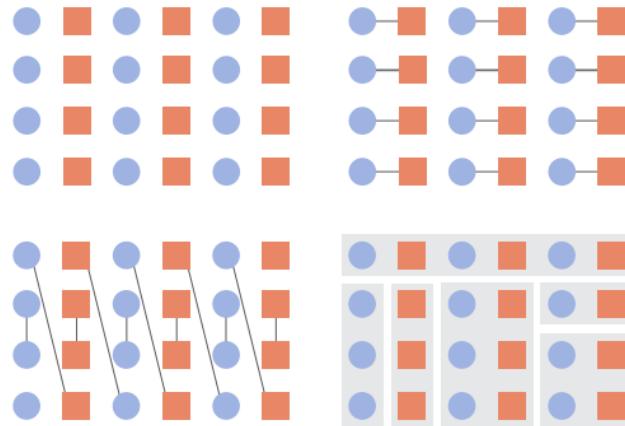
Law of Prägnanz

- We tend to interpret ambiguous images (images that can be interpreted in more than one way) as simple and complete, versus complex and incomplete.
- Images recalled from memory as simplified (e.g. countries on a map are recalled as more aligned than they really are)
- Design:
 - Minimize the number of elements
 - Symmetrical composition perceived as simpler

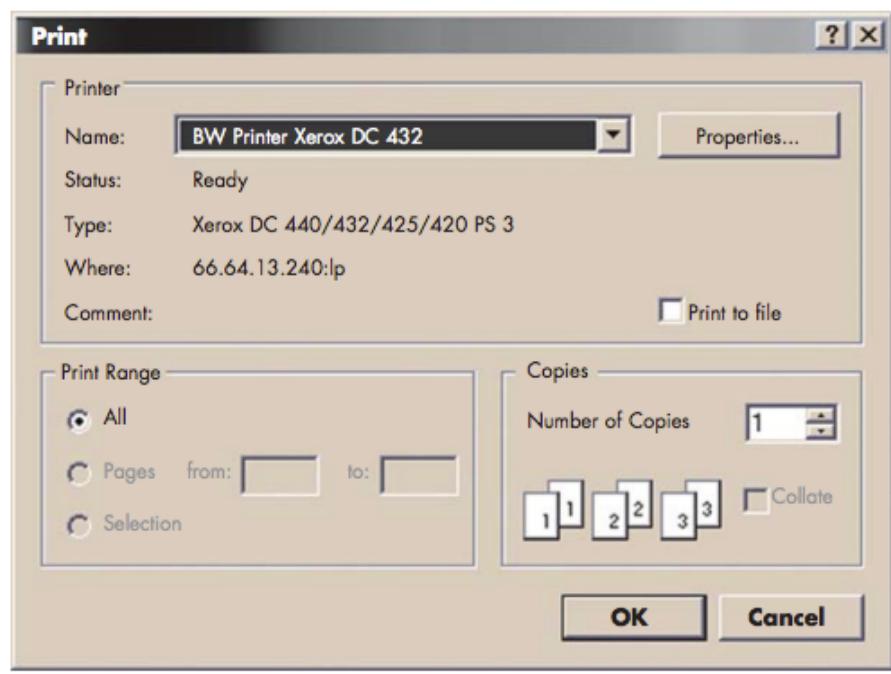


Uniform Connectedness

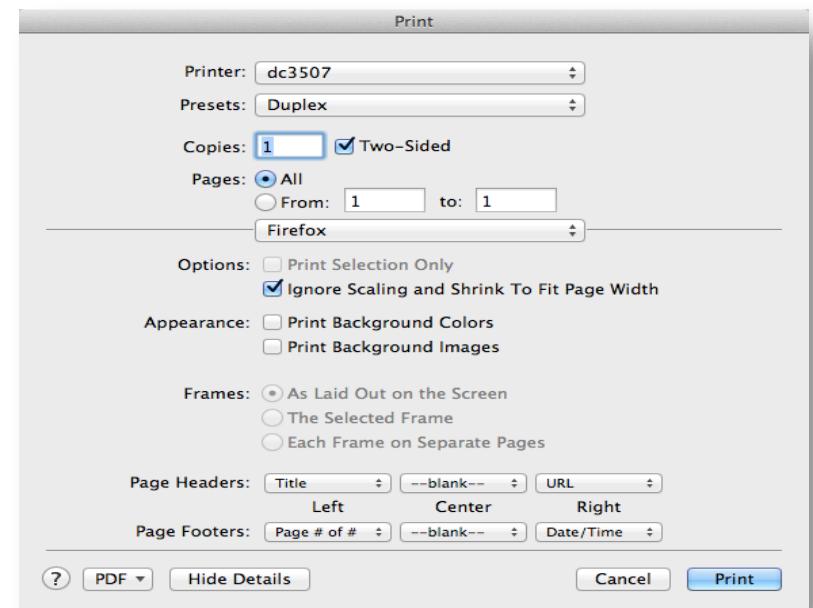
- Elements connected to one another by uniform visual properties are perceived to be more related than elements that are not connected
- Two typical strategies:
 - connecting lines
 - common regions



Uniform Connectedness



Uniform Connectedness



Proximity, Similarity

Alignment?

- Is “alignment” a Gestalt principle?
 - It’s a powerful organizing tool
 - Some folks in the design community include it (search the web)
 - Doesn’t appear to be in the original literature, but many rules were added over a span of time
- Personal opinion:
 - It should be
- For exams:
 - It is!

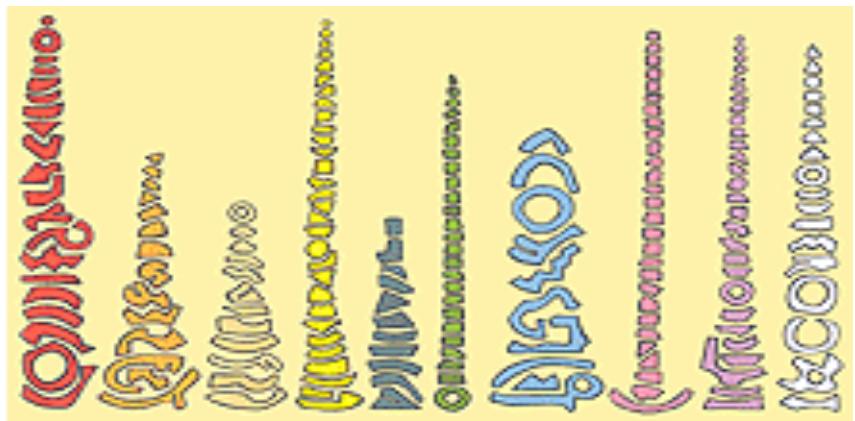
Gestalt Principles

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(pronunciation: <http://www.howjsay.com/index.php?word=gestalt>)



Ursus Wehrli tidies up art

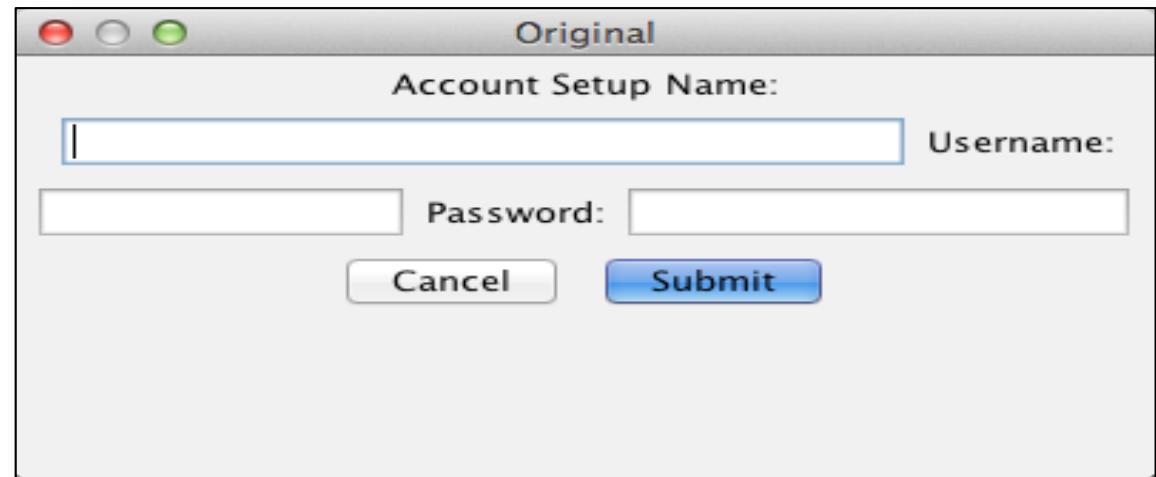
– http://www.ted.com/talks/ursus_wehrli_tidies_up_art.html

Pleasing Layouts

Gestalt principles applied to user-interface layout

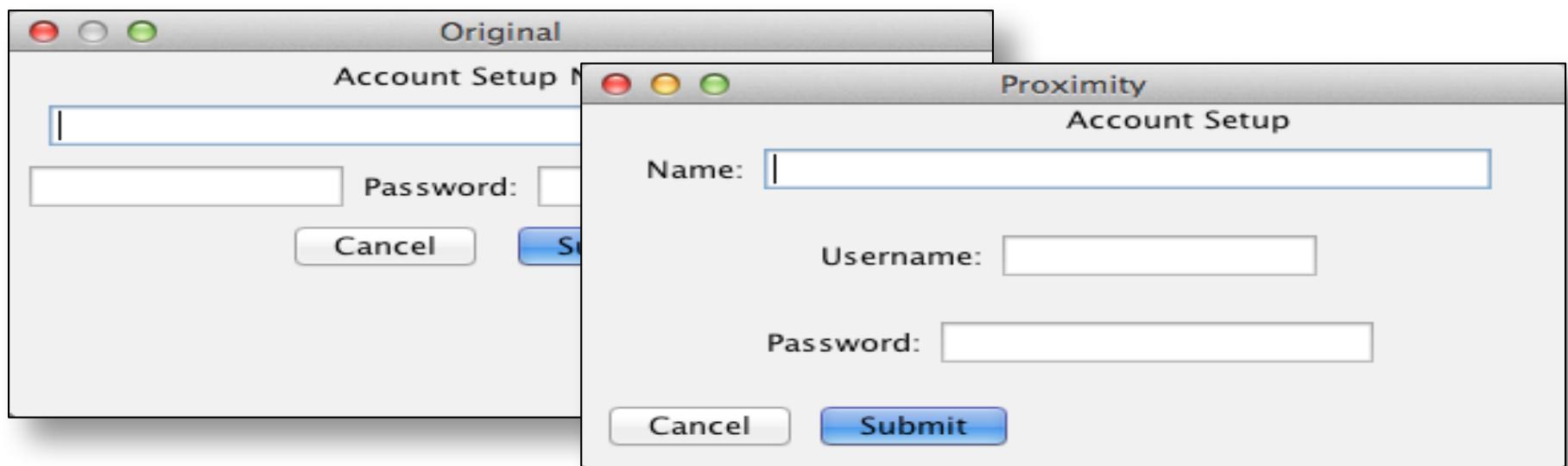
Pleasing Layouts

- Lots in common with graphic design
- Easy reference: The Non-Designer's Design Book: Design and Typographic Principles for the Visual Novice by Robin Williams
- Four Principles:
 - Proximity
 - Alignment
 - Repetition
 - Contrast



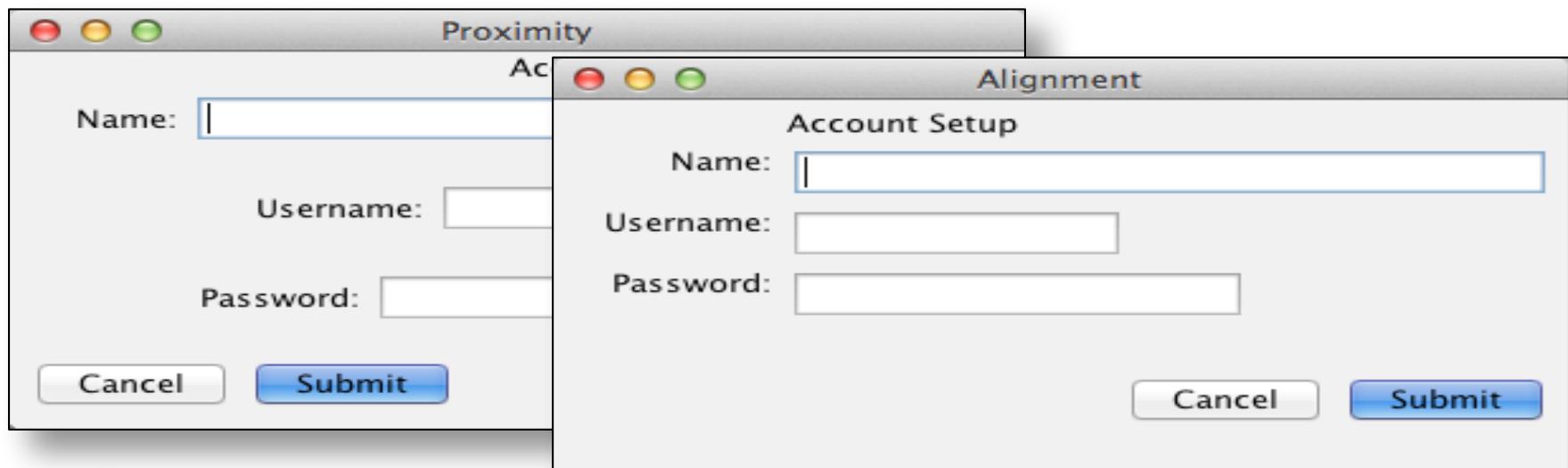
Proximity

- “Items relating to each other should be grouped close together. When several items are in close proximity to each other, they become one visual unit rather than several separate units. This helps organize information and reduces clutter.” (Williams, p. 14)



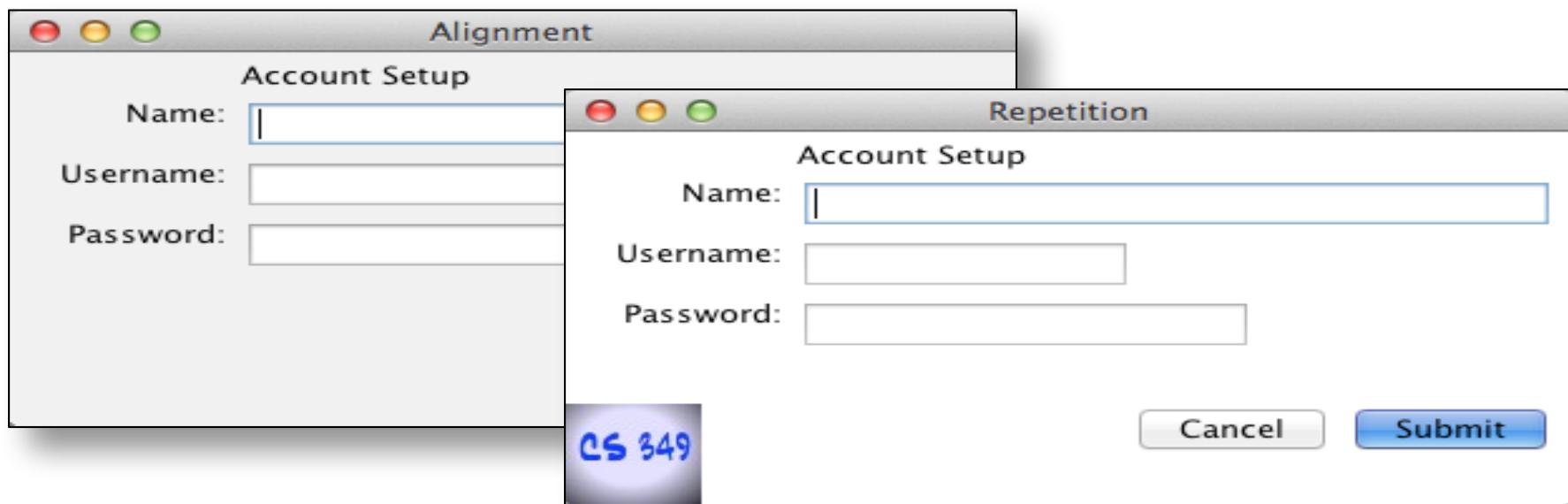
Alignment

- “Nothing should be placed on the page arbitrarily. Every element should have some visual connection with another element on the page. This creates a clean, sophisticated, fresh look.” (Williams, p. 14)
- Edge alignment
- Centre alignment



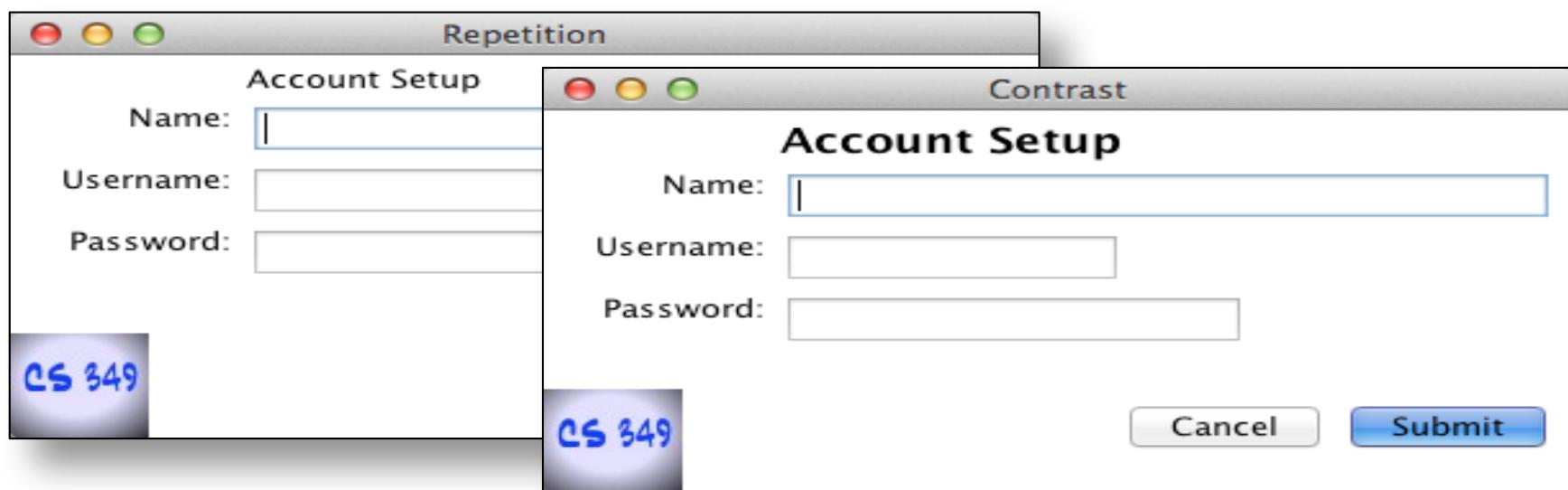
Repetition

- “Repeat visual elements of the design throughout the piece. You can repeat color, shape, texture, spatial relationships, line thicknesses, sizes, etc. This helps develop the organization and strengthens the unity.” (Williams, p. 14)



Contrast

- “The idea behind contrast is to avoid elements on the page that are nearly similar. If the elements (type, color, size, line thickness, shape, space, etc) are not the same, then make them very different. Contrast is often the most important visual attraction on the page.” (Williams, p. 14)



Applying Concepts

Common Mistakes

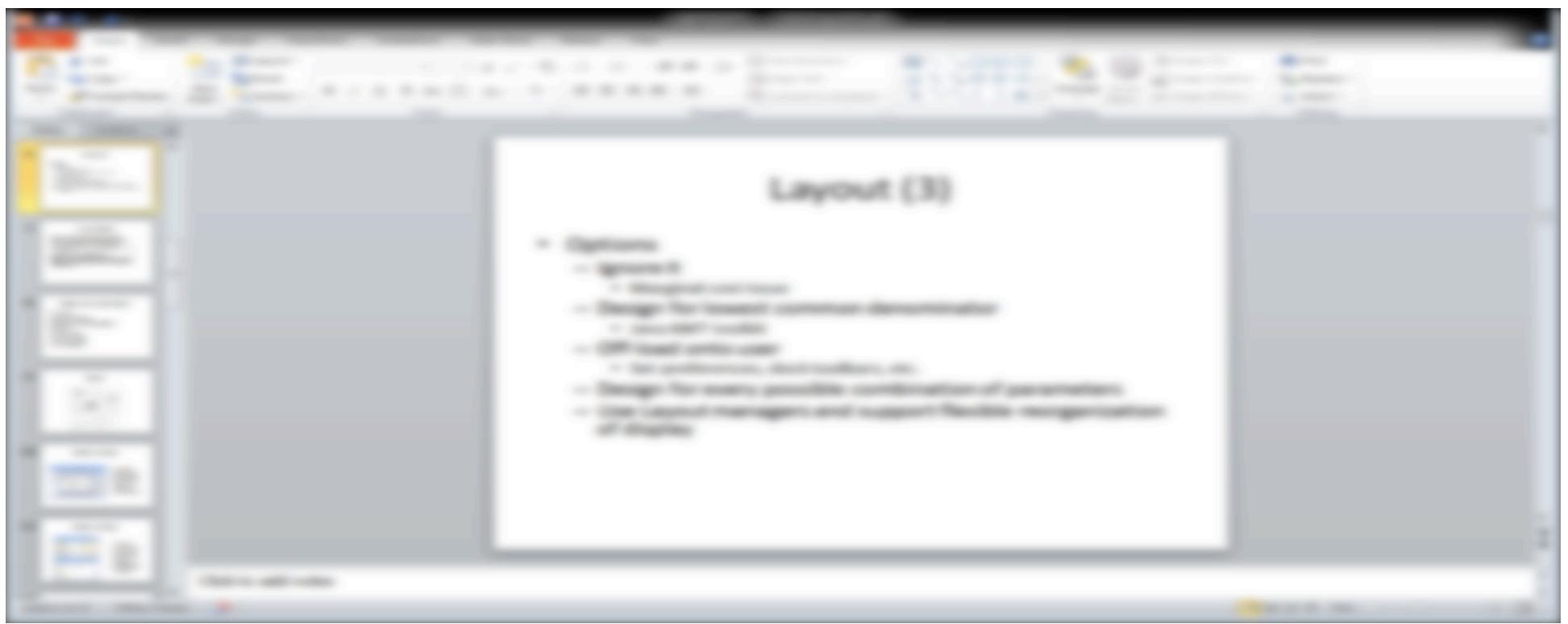
- Haphazard layout (no explicit design)
- Aligning labels, not controls
- Bounding boxes create clutter and compete for attention
(use white space instead)

Screenshot of a user interface with three input fields labeled "Surname:", "Family name:", and "Phone:" arranged vertically. Below the fields are two buttons: "Submit" and "Cancel". The layout is haphazard and lacks alignment.

Screenshot of a user interface showing the same three input fields ("Surname:", "Family name:", "Phone:") aligned horizontally to the left. The "Submit" and "Cancel" buttons are now aligned horizontally to the right of the input fields, creating a clear visual flow.

Testing it Out

- Show it to someone else
 - Don't ask if they like it (why?)
 - Try to get first impressions
- Use the squint test...
 - Mimics early portion of visual recognition system

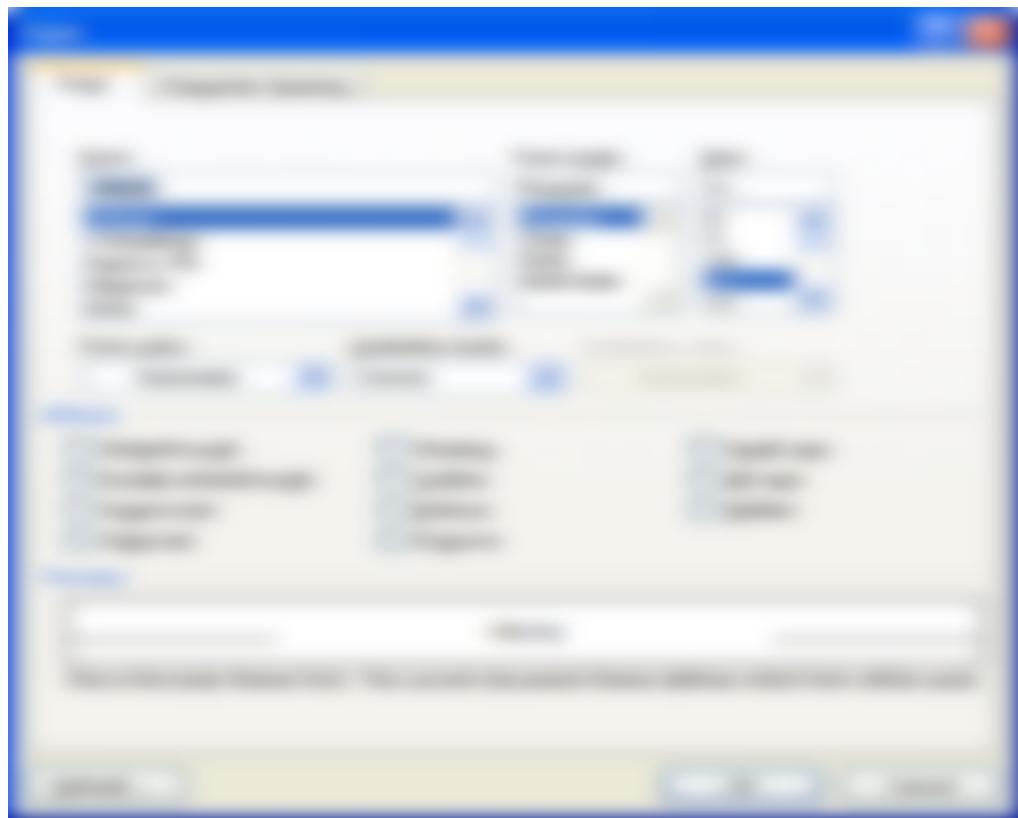


21.Layout.pptx - Microsoft PowerPoint

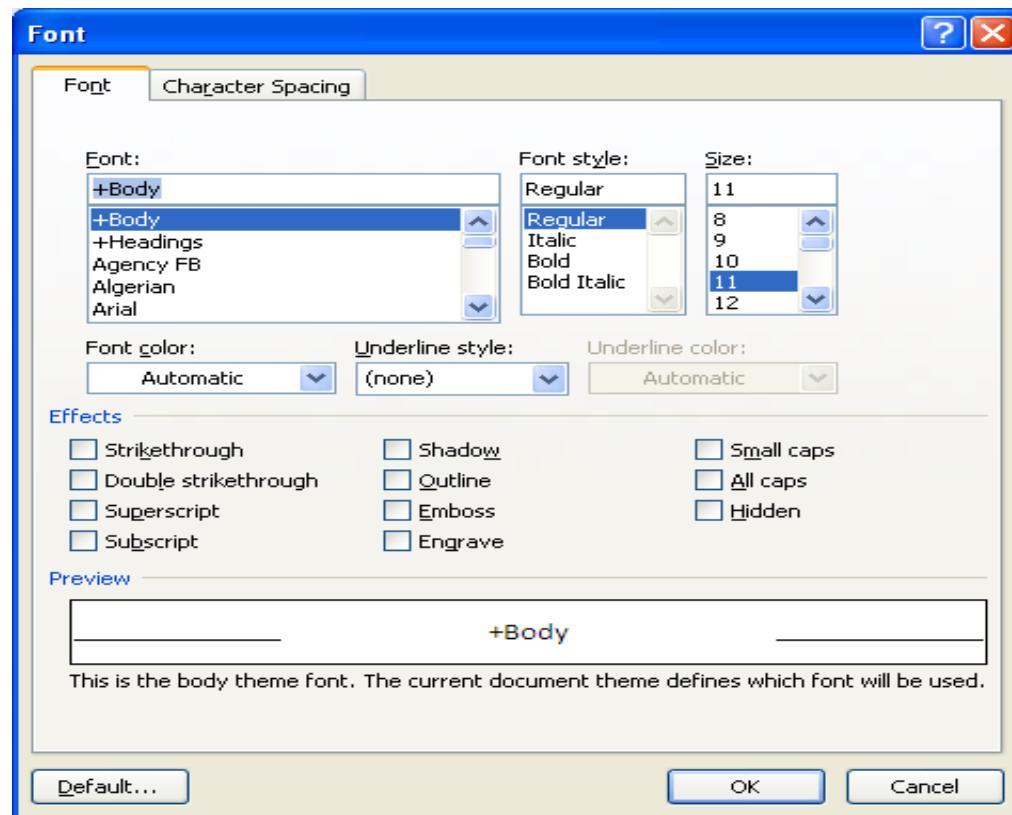
The screenshot shows a Microsoft PowerPoint presentation titled "21.Layout.pptx". The current slide is slide 6, titled "Layout (3)". The slide content is a bulleted list of options for layout design:

- Options
 - Ignore it
 - Marginal cost issue
 - Design for lowest common denominator
 - Java AWT toolkit
 - Off-load onto user
 - Set preferences, dock toolbars, etc.
 - Design for every possible combination of parameters
 - Use Layout managers and support flexible reorganization of display

The left sidebar shows the outline of the presentation, listing slides 6 through 11. Slide 6 is highlighted. The ribbon at the top includes tabs for File, Home, Insert, Design, Transitions, Animations, Slide Show, Review, and View. The Home tab is selected. The ribbon also contains various icons for clipboard operations (Cut, Copy, Paste, Format Painter), layout (New Slide, Reset, Section), font (Font, Paragraph), drawing (Arrange, Quick Styles, Shape Effects), and search (Find, Replace, Select, Editing).



|



Impact

- Good visual design can reduce human processing time
- Tullis redesigned lodging information screens (1984)
 - 5.5 vs. 3.2 sec avg search times

Pennsylvania

Bedford Motel/Hotel: Crinoline Courts (814) 623-9006 S: \$18 D: \$20
Bedford Motel/Hotel: Holiday Inn (814) 623-9006 S: \$29 D: \$36
Bedford Motel/Hotel: Midway (814) 623-8107 S: \$21 D: \$26
Bedford Motel/Hotel: Penn Manor (814) 623-8177 S: \$18 D: \$25
Bedford Motel/Hotel: Quality Inn (814) 623-5188 S: \$23 D: \$28
Bedford Motel/Hotel: Terrace (814) 623-5111 S: \$22 D: \$24
Bradley Motel/Hotel: De Soto (814) 362-3567 S: \$20 D: \$24
Bradley Motel/Hotel: Holiday House (814) 362-4511 S: \$22 D: \$25
Bradley Motel/Hotel: Holiday Inn (814) 362-4501 S: \$32 D: \$40
Breezeewood Hotel/Hotel: Best Western Plaza (814) 735-4352 S: \$20 D: \$27
Breezeewood Hotel/Hotel: Hotel 78 (814) 735-4385 S: \$16 D: \$18

South Carolina

City	Motel/Hotel	Area Code	Phone	Rates	
				Single	Double
Charleston	Best Western	803	747-0961	\$26	\$39
Charleston	Days Inn	803	881-1800	\$18	\$24
Charleston	Holiday Inn N	803	744-1621	\$36	\$46
Charleston	Holiday Inn SW	803	556-7100	\$33	\$47
Charleston	Howard Johnsons	803	524-4140	\$31	\$36
Charleston	Ramada Inn	803	774-8281	\$33	\$40
Charleston	Sheraton Inn	803	744-2401	\$34	\$42
Columbia	Best Western	803	796-9400	\$29	\$34
Columbia	Carolina Inn	803	799-8200	\$42	\$48
Columbia	Days Inn	803	736-0000	\$23	\$27
Columbia	Holiday Inn NW	803	794-9440	\$32	\$39
Columbia	Howard Johnsons	803	772-7200	\$25	\$27
Columbia	Quality Inn	803	772-0270	\$34	\$41
Columbia	Ramada Inn	803	796-2700	\$36	\$44
Columbia	Vagabond Inn	803	796-6240	\$27	\$30

- Strive for simplicity!
- The Gestalt principles provide insights into the pre-attentive processes in the brain.
- Use the principles to structure a visual design by:
 - Grouping visual information into higher-level units.
 - Establishing relationships between related elements.
- Don't leave visual design up to chance! Think about your design, and test it out.