

Visual Structure



Goals of this Presentation



- Describe four principles of Gestalt Psychology
 - Gestalt -> form
- Give examples - good and bad - of visual design and explain how they follow - or don't follow - the principles of Gestalt Psychology
- Explain how those principles apply to good visual design of user interfaces:
 - **Use Visual Structure to Reinforce Logical Structure**

Four Gestalt Psychology Principles



1. Proximity
2. Similarity
3. Common Fate
4. Closure

Principle 1: Proximity



- Our eyes/brain logically group together visual elements that are “proximate” (close) to one another.
- Given the following image, do you see
 - Six squares?
 - Three groups of two squares?



- More will answer “Three groups of two squares”

Proximity Example



- Items close together appear to have a relationship
- Distance implies no relationship

Time:

Time:

Visual Structure (Proximity) Reinforces Logical Structure



- Proximity creates groups to reinforce alphabetization

ATE
BAT
BIT
CAT
DOG
EAT
FAR
FAT

GET
GOT
HAT
HIT
HOT
LAP
MAP
PAT

ATE BAT BIT CAT DOG EAT

FAR FAT GET GOT HAT HIT

HOT LAP MAP PAT

Visual Structure (Proximity) Opposes Logical Structure!



- Proximity counters alphabetization

Bad

ATE	BAT
BIT	CAT
DOG	EAT
FAR	FAT
GET	GOT
HAT	HIT
HOT	LAP
MAP	PAT

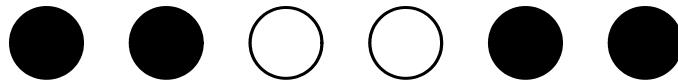
Worse!

ATE	BAT
BIT	CAT
DOG	EAT
FAR	FAT
GET	GOT
HAT	HIT
HOT	LAP
MAP	PAT

Principle 2: Similarity



- Our eyes/brain logically group together visual elements that are similar to one another.
- Given the following image, do you see
 - Six circles
 - Three groups of two circles



- More will answer “Three groups of two circles”

Similarity Example



- Given the following image, do you see
 - Six letter 'A's?
 - Three groups of two 'A's?

AA AAAA

- More will answer "Three groups of two 'A's"

Similarity Creates a Typographical Hierarchy



This is a level 1 heading

This is a level 2 heading

This is another level 2 heading

This is a level 3 heading

Yet another level 3 heading

Back up to level 2

Down to level 3

Still at level 3

Back to level 1

Principle 3: Common Fate



- Our eyes/brain associate elements that are similar to one another (not same as similarity for grouping).
- What associations do you see here?

Lines are not vertically aligned
=> do not have common fate
=> do not seem grouped together

Lines are vertically aligned
=> do have common fate
=> do seem grouped together

Grids Provide Structure Using Common Fate



- Grids are (hidden) horizontal and vertical lines
 - They help place graphic elements
- Alignment to same grid line creates logical grouping
 - Common fate
- Grids avoid disconcerting irregularities
 - That attract the eye

Grids Provide Structure Using Common Fate



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Grids Provide Structure Using Common Fate

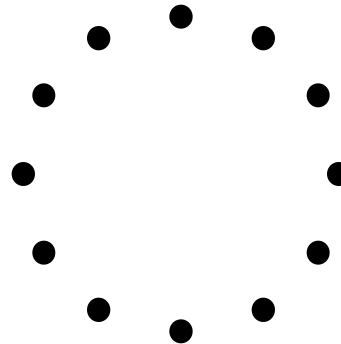


- Grids are (hidden) horizontal and vertical lines
 - They help place graphic elements
- Alignment to same grid line creates logical grouping
 - Common fate
- Grids avoid disconcerting irregularities
 - That attract the eye
 - Like this

Principle 4: Closure



- Our eyes/brain logically group together visual elements that approximate a closed shape, to form that closed shape
- Given the following image, do you see
 - Twelve dots?
 - A circle?

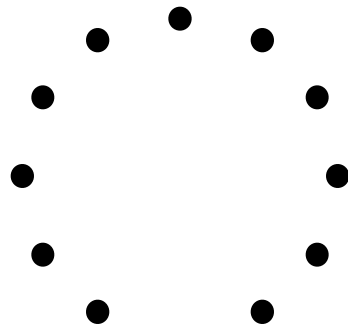


- More will answer "A circle"

Closure Example

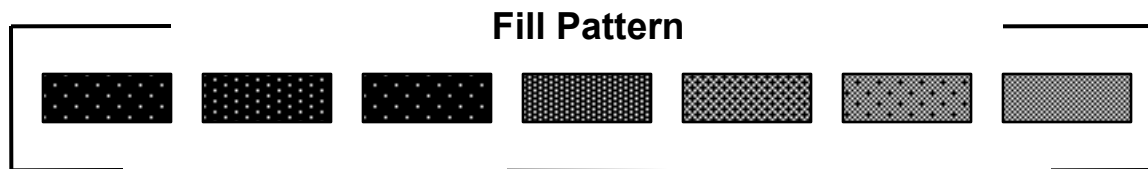
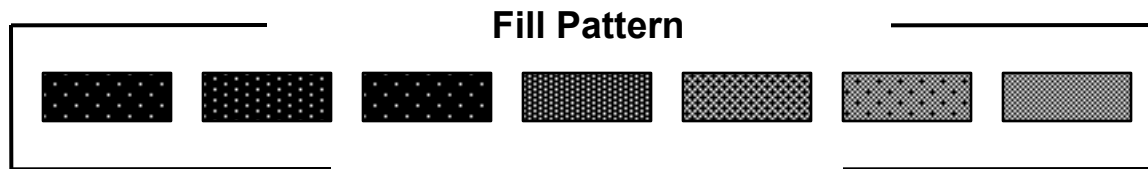
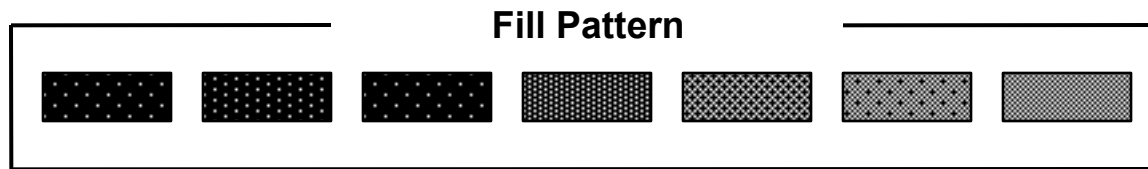


- Given the following image, do you see
 - Eleven dots?
 - A circle?



- More will answer "A circle" - despite the missing dot

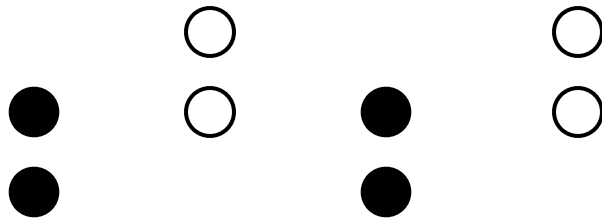
Closure Example – Each Palette Has Progressively Less Closure - and Works



Principles can be Combined



- Proximity and similarity \Rightarrow grouping



- Proximity and closure \Rightarrow grouping
[] []

- Proximity opposes closure
[[]

Combining Principles - Menu Example



No visual structure to reinforce logical structure

Rotate X
Rotate Y
Rotate Z
Zoom In
Zoom Out

Grouping created by

- Proximity within clusters
- Visual separation between clusters

Rotate X
Rotate Y
Rotate Z

Zoom In
Zoom Out

Hierarchy created by

- Indentation (common fate)

Rotate
X
Y
Z

Zoom
In
Out

Combining Principles – Web Example



Grouping defined by background (common fate) and by box (closure)

Grouping defined by background (common fate)

Grid (common fate)

The screenshot shows the Delta website interface. The top navigation bar includes links for HOME, TRAVEL, SKYMILES®, PROGRAMS & SERVICES, INSIDE DELTA, and CUSTOMER CARE. The main content area is divided into several sections:

- Round-Trip Reservations:** A form for booking flights, including fields for "leaving from", "Select departure date and time", "Going to", "Select return date and time", and "Passengers and preferred cabin". It also features a "GO" button.
- Customer Advisory:** A section with the date "Thursday, January 11, 2001" and a message about flight delays and cancellations.
- NEW from delta.com:** A banner for "Online Hotel Reservations" with the text "Book your ideal hotel, B&B, or resort worldwide".

Annotations on the image highlight specific design principles:

- An orange box points to the "Round-Trip Reservations" form, stating: "Grouping defined by background (common fate) and by box (closure)".
- An orange box points to the "Customer Advisory" section, stating: "Grouping defined by background (common fate)".
- An orange box points to the "Round-Trip Reservations" form, stating: "Grid (common fate)".

The bottom of the page shows a Windows taskbar with the text "Document: Done" and various system icons.

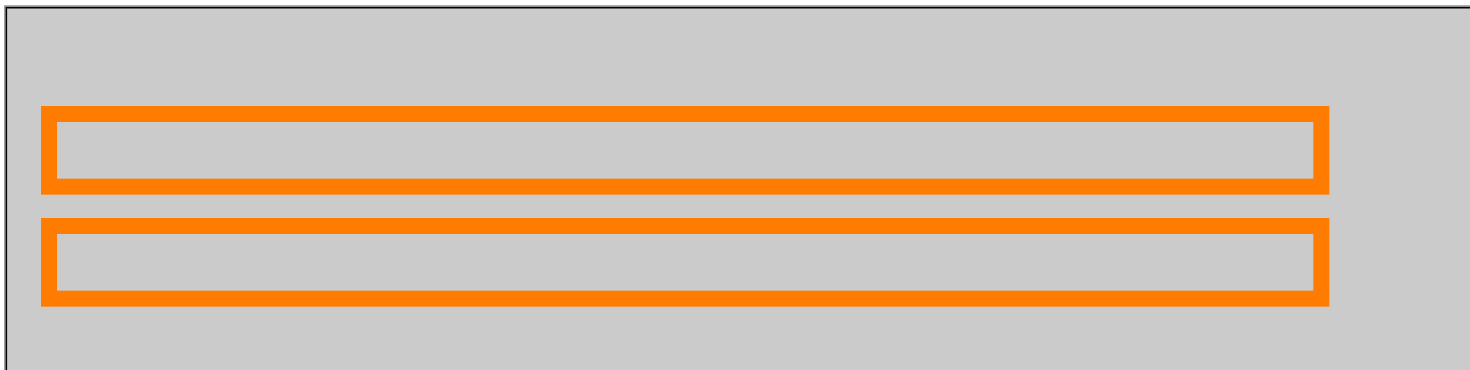
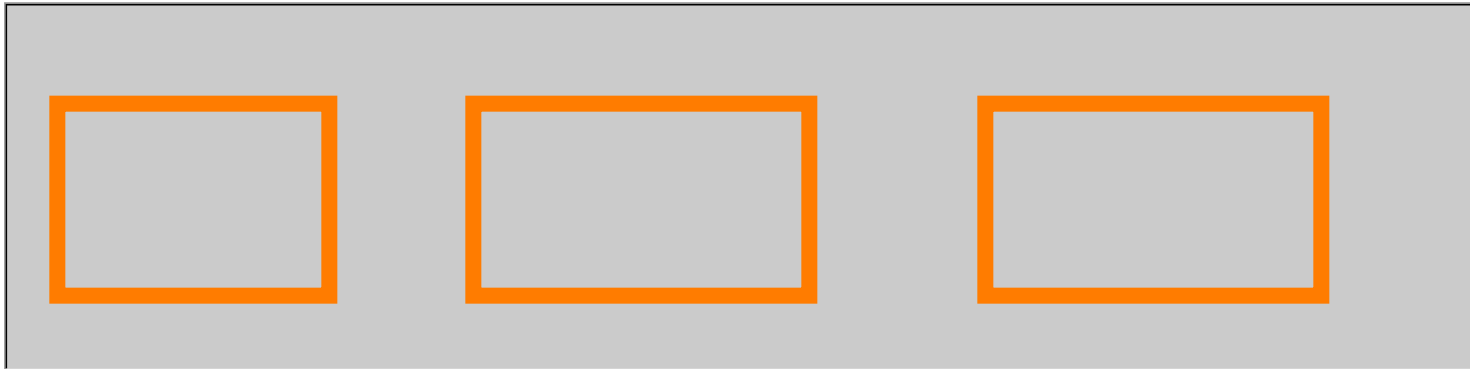
Grouping: Poor Dialogue Box Design



- Logical structure hard to understand – proximity problem



Which is the Logical Structure?



Grouping: Two solutions; Which is Better?



More vertical space
creates
less vertical proximity



Horizontal rule creates
two areas (closure) to
overcome proximity



Combine Similarity + Common Fate => Stronger Typographical Hierarchy



This is a level 1 heading

This is a level 2 heading

This is another level 2 heading

This is a level 3 heading

Yet another level 3 heading

Back up to level 2

Down to level 3

Still at level 3

Back to level 1

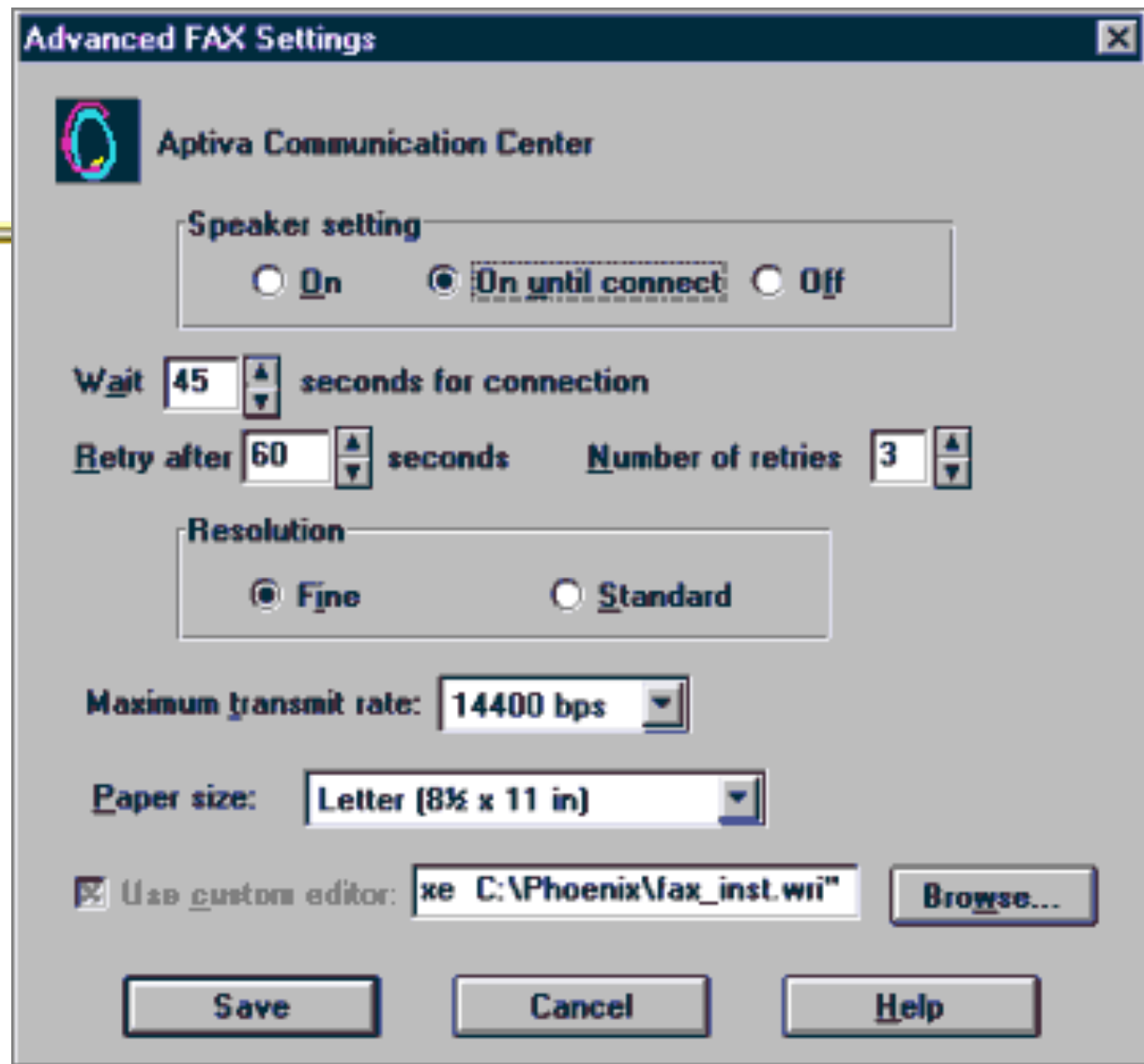
Using Gestalt Principles is REALLY, REALLY Important



- **Use visual structure to reinforce the underlying logical structure**

Bad Example

- No gridding
- Inconsistent use of visual cues for grouping
- Inconsistent space between label and data



Bad Example



Form Title -- (appears above URL in most browsers and is used by 'www' search engines)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk		000080
E-Mail responses to (will not appear on page)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!		
<< Prev Tab		Next Tab >>

- Hint: Yellow fields are labels
- So-so visual grouping
- So-so logical grouping

A Well-Designed Dialogue Box



Strong grid structure
(common fate)

Spelling			
Not in Dictionary:	a's		
Change to:	ax's	Resume	Ignore All
Suggestions:	ax's as	Change	Change All
		Add	Suggest
Add words to:	Custom Dictionary	AutoCorrect	Close

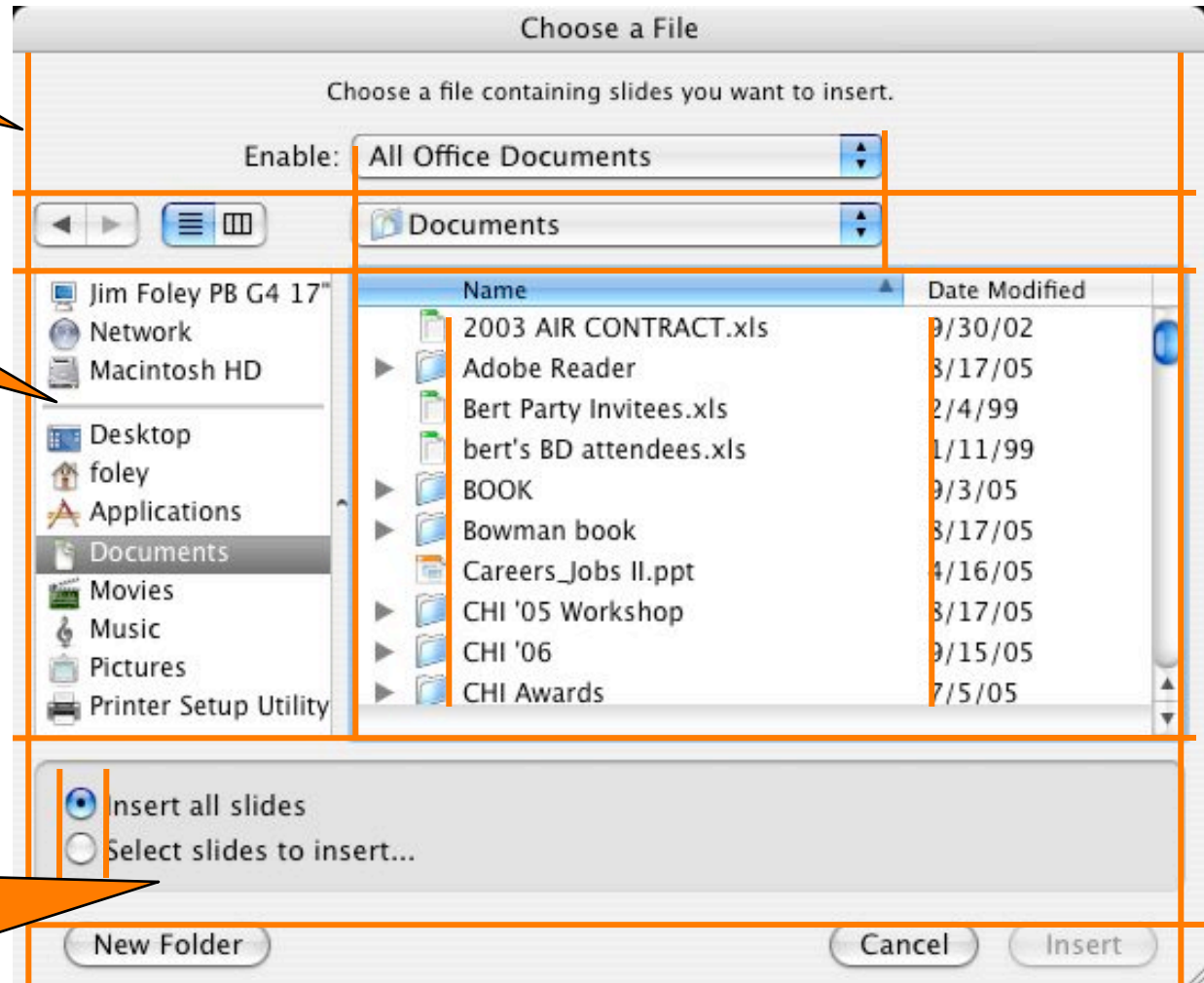
Another Well-Designed Dialogue Box



Strong grid structure
(common fate)

Horizontal line uses closure
to create two groups and
counter proximity

Box surrounding related
Items (closure)
Different background color
(common fate)



Thank You



for participating in this study!