visual design
visual design: layout

where else we’re covering it

by now (W11 pre-reading – Tidwell):
- considerations in layout: visual hierarchy and flow
- intro to gestalt principles

upcoming:
- in project part II: considering visual design when building your med-fi prototype
learning goals

• Explain why visual design is important and useful to consider when building interfaces

• Describe visual hierarchy, visual flow proximity and grouping, positive/negative space, and how they are related to one another

• List the gestalt principles of closure, continuation, similarity, and proximity, and briefly explain the differences between each

• Give examples of how all of the above can be achieved effectively using visual cues

• For a given design: identify examples of the above concepts and critique their effectiveness in that design
Ask yourselves…

What are the **goals** visual design?
\[i.e., \textit{what are we trying to do?}\]

What are the **acts** of visual design?
\[i.e., \textit{what are we actually doing?}\]
Acts of graphic design

**Typography**: manipulating type (i.e., fonts, characters, glyphs, etc.) for readability, emphasis, and aesthetic value.

**Illustration**: creating symbols and pictures to communicate a concept (can include photography).

**Layout**: arranging graphic elements (type, illustrations, lines, etc.) on a workspace (page, device, etc.).

**Animation**: setting the changing properties of graphic elements over time.

**Interaction**: animating with user input.
goals of visual design

Main goals: *to direct your user’s attention and communicate meaning.*

- **provide guidance:** by communicating structure, importance, and relationships
- **control pace:** by providing orientation, space to breathe, clean routes through content
- **express meaning:** by communicating style, feeling, message, emotion, engagement
questions to ask while doing visual design

Every graphic design is a kind of user interface, so ask yourself UX questions.

• practical considerations, e.g.,
  – is it readable?
  – understandable?
  – efficient?
  – what’s the experience of using it?

• aesthetic considerations, e.g.,
  – what feelings, emotions, etc. does the design evoke?
  – is it clean and/or nice to look at?
visual language

• A **visual language** is like a spoken language: it’s a set of signifiers that convey meaning.

• layout, typography, colour, all factors in visual language.
  – need to understand them to exploit them effectively

• a visual language is defined by:
  – tradition and culture
  – human perception and cognition

*Like spoken language, it’s really complicated and ever-changing. Not just one thing.*
layout
“Page layout is the art of manipulating the user’s attention on a page to convey meaning, sequence, and points of interaction.”


**Definition:** arranging graphic elements (type, illustrations, lines, etc.) on a workspace (page, device, etc.).

A good layout considers:

- visual hierarchy; visual flow; grouping & alignment; positive and negative space
**visual hierarchy**

**Definition:** the structure of information on a page that communicates order, emphasis, and relationship.

Communicating designer’s conceptual model:

- **Emphasize** what’s most important; **de-emphasize** what isn’t.

- start with structural hierarchy
  - how should the information be organized/grouped?
  - what’s the same? what’s different? what’s related?

→ communicate levels/differences in hierarchy with one or more **visual cues**
what’s in a hierarchy?
example: elements of a webpage

<table>
<thead>
<tr>
<th>Horizontal rule</th>
<th>Vertical rule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headline</strong></td>
<td><strong>How much wood could a woodchuck really chuck?</strong></td>
</tr>
<tr>
<td><strong>Deck</strong></td>
<td>A new critical study</td>
</tr>
<tr>
<td><strong>Byline</strong></td>
<td>By Robert Boberson</td>
</tr>
<tr>
<td><strong>Sidebar</strong></td>
<td><strong>Dropcap</strong></td>
</tr>
</tbody>
</table>

Ferspero officem estiasperios aliquid aut enhil incia cullendandae soluptatur, omnit mod estiropudam ra secatin vendips ustrum reperum ra nimus, core mo volectat volorer atiori dit et pellest porio. Ita amet pe repersp ellabor porehent, cumptam fugiae simolupta dento vol etur maximus arum ut et aut ernatem possimp orent.

Dantibusdae nem reic tet abore nis nonsequeas eatorum fugiand aepudae. Ut aut porerit faccusesdai parumquam et liti apidell ectota velecupurt, consent orempletia simus alis si verro il illatius. conseque corempe ilitaquo escucus evendus.

**Upitique magnissimus**

Repero tempe dellori berfre porum ipiciæ solupta turions edaescsiis re cust earci core et aut quiatempore venes vel is de num audam allatat pari?

<table>
<thead>
<tr>
<th><strong>Body text</strong></th>
<th><strong>Graphic</strong></th>
</tr>
</thead>
</table>

Dantibusdae nem reic tet abore nis nonsequeas eatorum fugiand aepudae. Ut orempletita simus alis si verro il illatius. conseque corempe ilitaquo escucus evendus.

Nicholas Nickerson Photo/Courtesy of the artist
what’s in a hierarchy?

example: elements of applications
visual cues

- **Definition**: sensory input via the eyes that are processed during visual perception—basically, *everything on the page*

- own every dot/line/pixel; be aware what you’re communicating by presence and absence

- use individual or combined cues, including (not limited to):
  - whitespace, groupings, indents and alignments
  - line breaks

  contrasting **fonts, weights, colours** or **SMALL/LARGE CAPS**

  graphics, lines, rules, bars, etc.
1. What elements are in this example?

2. What visual cues communicate this hierarchy?

<table>
<thead>
<tr>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TODAY</td>
<td>27</td>
<td>28</td>
<td>29</td>
</tr>
</tbody>
</table>

**ART**

‘An Opening of the Field: Jess, Robert Duncan, and Their Circle’ at Grey Art Gallery, New York University

**DANCE**

Ballet du Grand Théâtre de Genève at Joyce Theater

**JAZZ**

Toshiko Akiyoshi-Lew Tabackin Jazz Quartet at Dizzy’s Club Coca-Cola, Frederick P. Rose Hall, Jazz at Lincoln Center
visual flow

Definition: the order in which the eyes/attention naturally pass through page elements

• focal points: are deliberate visual cues to draw the viewer’s attention

• points of entry: where you start on the page

English speakers naturally read left-right, top-bottom
  – Consider the “Z”
  – focal points can counterattack this flow
  – is that good or bad? depends on what you’re going for
1. what’s the point of entry?
2. what visual cues manipulate the visual flow in this dialog?
gestalt: grouping and alignment

usually a question of “what goes with what”?

• grouping and alignment can be used intentionally to create hierarchy and visual flow

two ways to approach the problem:

• knowledge of human perception can help
  – e.g., gestalt principles

• grid systems

• smashingmagazine.com/2014/03/design-principles-visual-perception-and-the-principles-of-gestalt/
gestalt principles

examples of cognitive principles that explain how people interpret groupings and alignments

proximity: nearby things are perceived as related

similarity: things that are the same in size, shape, color etc. are perceived to be associated

redrawn from Tidwell. (2012). Designing Interfaces.
gestalt principles

closure: groups of things that create shapes/forms are often perceived as whole forms

continuation: users tend to perceive curved or straight lines caused by alignment

redrawn from Tidwell. (2012). Designing Interfaces.
activity: design critique

work in groups 2-3

• we will take up and discuss together
summary: gestalt

- many other principles that we haven’t discussed here
- and there’s lots more detail to know about the mechanisms of how they work, both
  - within the human perceptual system
  - and how to manipulate them
supporting alignment: grid systems

act as a framework to organize elements in a logical way

• origins in print media
• increasingly common in web frameworks

grids vary in complexity

• can be challenging to build a grid for complex layouts
• even simple grids are useful to layout major components of designs
grid system elements
grid system elements

graphic © Paul Bucci 2014; used with permission
grid system elements

Baseline grid
grid system elements

<table>
<thead>
<tr>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
</tr>
</thead>
</table>

Baseline grid

Margin  Gutter  Gutter  Gutter  Gutter  Gutter  Gutter  Margin

Row

Row
example of a print layout on this grid

Aborro qui audipicima dolorias

"Occaepro que doluptate dolorro eum fugitati."
### Baseline grid

<table>
<thead>
<tr>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
<th>Column</th>
</tr>
</thead>
</table>

**MyBrand** | News | About | Shop | Contact | TRENDING | ACTIVITY |

**PROFILE** | ROB LOBLAW LIKED THIS | | | | TRENDING | ACTIVITY |

**Etus doluptae si anisquas alitiuntus as comminem Hent lab ipidelest occusa**

Molanium digniment. Uple vore, voloresse exaquis elboea uaeactibus est om-pleatur simili, ille adi ditt impet aut veluptatini ratur, sed dus. Gise vendeae. Ratis mos per vietas sequi occuseci digemn igitracte explicit maxim ratur andae nesti blab ipetiat hilla sequam natura.

**WWW.THISMAG.COM**

**WWW.HEE.CA** | **WWW.CON.COM** | **WWW.ASDF.COM**

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**graphic © Paul Bucci 2014; used with permission**
breaking alignment

misaligning items on purpose can be very effective.

Compare:
breaking alignment cont.

but when not done carefully, it just looks off.

I have this really great grid layout. Grids make it easy to align two blocks of text along a shared baseline to create balance.

example inspired by Lupton (2004). Thinking with Type.
positive vs. negative space

**positive space:** the space your objects occupy

**negative space:** the space between and around your objects (often “whitespace”).

- defines the content in the positive space
- defines focal points

- one common philosophy is to strive for a balance
  - not too cluttered; not too empty
consider positive vs. negative space when applying other concepts

e.g., proximity only works to show what’s related if there is enough space between groups

e.g., good alignment, grid use, visual hierarchy, all work best with consistent application of white space
practicing good visual design

good design

• is invisible

• requires making tradeoffs

• is not just a matter of preference
  – there are right ways to approach the problem
  – you should be able to justify any element in your design

try to solve your design
as opposed to just creating a design
practicing good visual design

How do you know whether you’re design is successful?

just like everything else in this class . . .

- Self critique
- Post mortems
- Discount methods
- Usability studies
- Justification – can you explain to someone else WHY it’s set up a certain way?
Starting a visual design...

1. Make sure you know about all of the elements that need to go into the design
   • UI elements
   • Dimensions and abilities of your display system
   • Content

2. Make grid system on your page.

3. Distribute UI elements onto your page.

4. Rearrange grids and previous elements.
break
visual design II

*typography and color*

Part I: Activity
Part II: Typography
Part III: Color
learning goals

• describe basic typographic concepts
  • e.g., x-height, cap height, ascender, descenders, baselines, serif/san-serif, measure, line spacing

• explain and give examples of how these typographic concepts influence readability and legibility

• describe and give examples of some basic guidelines for choosing colors
some basic anatomy

A shiny manx cat

cap height
ascender height
x-height: height of the body of lower case letters (literally the height of a lower case x).

cap height
ascender height
x-height

baseline: where the letters sit.
important edge for alignments
descender height
effects of x-height on legibility

variation affects apparent size, space efficiency, visual impact

tall x-heights

• are often easier to read at small sizes
  – double story letters are less compressed (e.g., e, a, s)

• but look bulky when large in small spaces (denser)
  – letters with ascenders/descenders often suffer, because less differentiated from main body
legibility vs. readability

**legibility**: how well you can make out individual letters in a font
- largely influenced by the design of the font itself
- e.g., x-height, ascenders/descenders, serifs, ornament, etc.

**readability**: arrangement of whole groups of text
- influenced by the arrangement of whole groups of text
- e.g., line spacing, measure, serifs
serifs are the little handles on some fonts

sans-serifs: literally without the serifs

the following guidelines reflect common design wisdom…

BUT when to use which actually a heavily debated question!

- very few recent scientific studies
- many old studies now criticized as flawed
legibility on web vs. print

detailed rendering of serifs can be effected by low resolutions

⇒ so sans serif generally recommended for screens

graphic from www.urbanfonts.com
common arguments for serifs

guide the eye horizontally between letters

SERIFS give the eye something to hook onto ➔ see whole words easier

GUIDELINE: use serifs when you have a lot of body text to reduce reading fatigue
common arguments for sans serif

- easier to read at small sizes on screens
- better retains shape when blown up

GUIDELINE: use for \textit{emphasis} and headings, body text onscreen
point size

- measurement of point size is a historical precedent
  - from when type was set on lead blocks
digitally fonts are defined in a sort of imaginary box.

- what you should need to know: what maps to 12pt in one
  font will often varies for a different font

<table>
<thead>
<tr>
<th>Calibri</th>
<th>Helvetica</th>
<th>Courier New</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

point size: often defined as cap height to lowest
descender (but definition varies)
**typesetting**

**line spacing**

**line spacing (leading):** measured from baseline to baseline. Term ‘leading’ refers to the use of lead blocks to space letters in printing.

- standard spacing = 120% of point size
  - e.g., 10pt font would have 12pt spacing

- but different fonts at different sizes often needs adjustments

- And depending on the context and feeling you want to evoke ➔ may want to increase or decrease spacing
Designers play with line spacing in order to create distinctive layouts. Reducing the standard distance creates a denser typographic color – while risking collisions between ascenders and descenders. Expanding the line spacing creates a lighter, more open text block.

what is the effect of the different spacing?

Designers play with line spacing in order to create distinctive layouts. Reducing the standard distance creates a denser typographic color – while risking collisions between ascenders and descenders. Expanding the line spacing creates a lighter, more open text block.

text & example from: Lupton. (2004). *Thinking with Type*.
The measure of your text has implications for readability.

Shorter lines are generally easier to read than longer lines.

Because long lines break up the readers rhythm and they are more likely to lose their place when the eye starts the next line.

→ aim for something in the middle (that feels easy to read)

- for reading: ~65 characters (± 10)
- for headers: width to length ratio changes
legibility vs. readability
rules to remember

an illegible font, no matter how you set it, won’t be readable

poor setting can make a legible font completely unreadable
so which font do I use?

common heuristic: maximum 3 fonts

• use other visual cues to distinguish further, e.g.,
  – different sizes for different headings
  
  **HEADING 1**
  **HEADING 2**
  **HEADING 3**

  – mixing of CAPS and Sentence case

  – **bold** and *italic* for emphasis

  – color to communicate similarity and difference
so which font do I use?

consider your constraints

– what types of elements do you have?
– how much space do you have?
– what’s the context and/or technology (web vs. mobile)?

choose a font and typeset it to:

– balance good legibility / readability
– achieves the look / feel / personality you that want
consider the use of typography in the following examples:

• what feeling or mood do you think each is going for?
• what factors are in play that achieve this?

http://www.mcsweeneys.net/tendency

http://ballastmag.com/

http://www.theglobeandmail.com/
Part 2:

colour

color wheels, choosing and combining colours
colour in information design.
colour in visual design

colour has many uses in design, which include:

• creating visual cues and hierarchy
• conveying feeling, style
colour models

**Additive**: add light together (computers, RGB)

**Subtractive**: take light away (ink, CMYK)
super ultra basic colour theory

shades and tints

even though this shows discrete colours
. . . it’s really a continuous gradient (infinite colours from white to black)

image from Williams (2008). The non-designer’s design book
color relationships

- complementary colours: are a good place to start
  - work best in as a combination of main colour/accent
  - but are hard to read when used as text on background
if you’re interested

many other color relationships

• e.g., **triads**: a set of three equidistant colours
  – these tend to harmonize well

• color relationships are complicated, but very useful if you want to learn them
combinations of colors

- most colour combinations can look good together
  - the key is to vary the contrast to enhance readability
  - to increase contrast, you can adjust shade/tint of colours that bump into one another

this is pretty hard to see
this has some contrast
guidelines for choosing colors

• discussed in W11 reading (Tidwell)
  – use as broad guideline (not for specifics)
• limit your palette – use what you need;
• think about what you intend to communicate with color!
  you might use color to:
  – communicate information or hierarchy
  – evoke certain emotions or feelings
    – e.g., calm and warmth
    – e.g., edginess and tension
    – e.g., energy and excitement
guidelines for choosing colors

• use colour-blind safe colours
  – ALWAYS for critical information
  – when colour is the only way to distinguish the content

• less important to avoid common color-blind combinations
  if *multiple visual cues* distinguish same content

e.g., for showing changes in stock prices, which is best?

\[
\begin{align*}
0.08\% & \quad \uparrow 0.08\% & \quad \uparrow 0.08\% \\
0.90\% & \quad \downarrow 0.90\% & \quad \downarrow 0.90\%
\end{align*}
\]
choosing colours
resources

• color index books

• color blind simulators: http://www.vischeck.com/

• color advice for maps and data: http://colorbrewer2.org/
Advanced techniques
Advanced technique 1: make rules

Creating rules for yourself are a great way to populate your “design toolkit.”

e.g. ALWAYS put the visual centre higher than the mathematical centre.

e.g. NEVER trap white space
Advanced technique 2: break rules

Breaking your (and others’) rules intelligently is even better…but you should be ready to defend yourself!
Advanced design is about designing the design space

The design space is really, really big.

You need to filter it down.

A savvy designer spends their time working to reduce their work time later.

All of the following are techniques for making your choices later easy.
Stylesheets

Most design programs/paradigms allow you to define a style once, and use it many times.

A **stylesheet** is a list of definitions of UI element’s visual attributes, e.g., font sizes, line widths, colours.

*Think CSS, paragraph/character styles, etc.*

Every UI element should be associated with a named class.

The **power** of a style sheet is in redefining your elements: you can change the definition of a style and have all elements automatically update.
Libraries

Libraries are lists of modular, reusable UI elements that can be input into a design.

If you’re going to be designing a lot of things that share elements, create a library of commonly used items.
Masters

Similar to libraries, a master is a reusable layout template that can be used to initiate a design.

Similar to stylesheets, a master can be updated and all of the changes can cascade to every layout started with that master.
Colour palettes

A predefined set of colours that work well together.

Usually chosen for a particular aesthetic or function.

Helps to reduce the design space, create consistency, save time.
Design systems

Typically, visual designers don’t design a single product; instead, they design a series of products that *work together*.
Design systems

Design systems are composed of:

• Stylesheets
• Libraries
• Masters
• Colour palettes
• Grid systems
• Assets such as logos
• A set of guidelines on how to use the above (see brand.ubc.ca for an example)