24 Anthropomorphic and Geometric Aesthetics

Wednesday, April 5, 2017

Today:

- Announcements
- Sketching horizontal cylinders
- Anthropomorphic Effects
  - Uncanny Valley
  - Top down lighting bias
- Geometric Aesthetics (if there's time)
  - Symmetry
  - Area Alignment
  - Rule of Thirds
  - Fibonacci
  - Golden Ratio

Consider displaying your projects at an Expo:

ATLAS Expo

Subject	**Class projects to ATLAS Expo - due 4/7**
From	Stephanie Wanek
To	
Sent	Wednesday, April 03, 2019 11:38 AM

I believe there are likely students in your class with projects heading to ATLAS Expo.
Please note that we are requesting applications due by Sun 4/7 so we can curate and select.
Interested students should be encouraged to apply soon!!

The EXPO cometh

- **ATLAS Expo** comes on Thurs 4/25 but the work starts now! Expo is a showcase of **astounding** and **outstanding** student projects – like yours.
- **Apply by 4/7** to have your work be considered for Expo. Students can submit works here.
- **Project Curation** Annie Bruns will be the faculty project curator and can help you refine your projects.
- **How to Expo like a Pro** Annie's offering 2 workshops to help you present your work, including at Expo. Reach out to Annie and sign up for her workshops here.

Stephanie

Stephanie Wanek
ATLAS Assn't Director, Operations
Roser ATLAS Bldg, Rm 215
303.735.0797

ATLAS INSTITUTE
http://atlas.colorado.edu/
Explore our world of creative technology, computing & design
University of Colorado **Boulder**

Subject	Spring 2019 Expo Registration
From	Christina Marie Oerter
To	geen1400-instructors@lists.colorado.edu
Sent	Wednesday, April 03, 2019 4:10 PM

Hi all,
The Expo registration form is up. The link is https://itll.link/expo The deadline for teams to register is Friday, April 12th. Please have one student from each team fill out the registration. We highly recommend you look over the registration form before they submit it, to ensure the

ITLL Expo

The Expo registration form is up. The link is https://itll.link/expo The deadline for teams to register is Friday, April 12th. Please have one student from each team fill out the registration. We highly recommend you look over the registration form before they submit it, to ensure the students have included all the pertinent information. If you want me to come in and talk to your class about registration, let me know.
Please let me know if you have any questions or I can help with anything.
Cheers,
~Christina

Academic Program Associate
ITL and Engineering Plus Programs
College of Engineering and Applied Science
University of Colorado Boulder | ITLL 1B40
Christina.Oerter@colorado.edu
T: 303 492 2172

Friday, April 26

Student Networking Event: 2 to 3:30 p.m.
Open to Public: 2 to 4:45 p.m.
Awards to follow

Indoor Practice Facility
Corner of Folsom Street and Stadium Drive, Boulder

colorado.edu/engineering/expo

Sketching

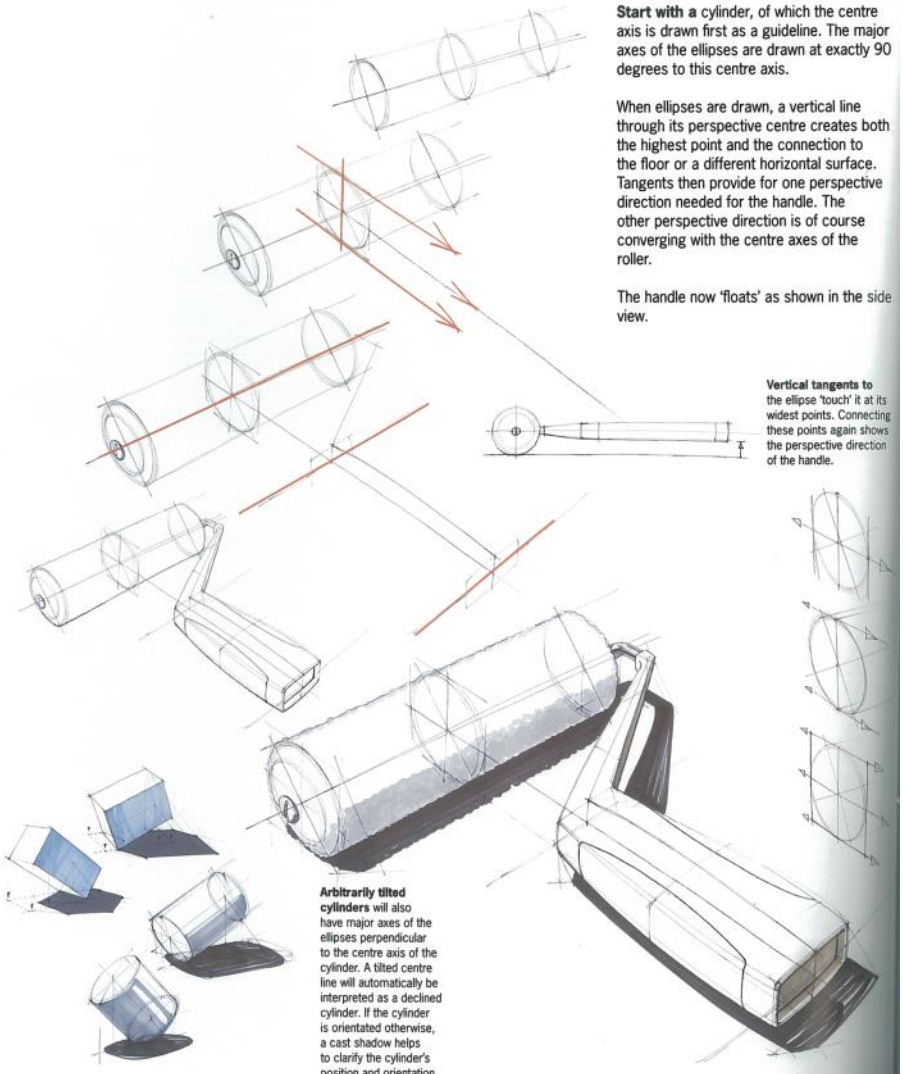
2.5 HORIZONTAL CYLINDERS

Start with a cylinder, of which the centre axis is drawn first as a guideline. The major axes of the ellipses are drawn at exactly 90 degrees to this centre axis.

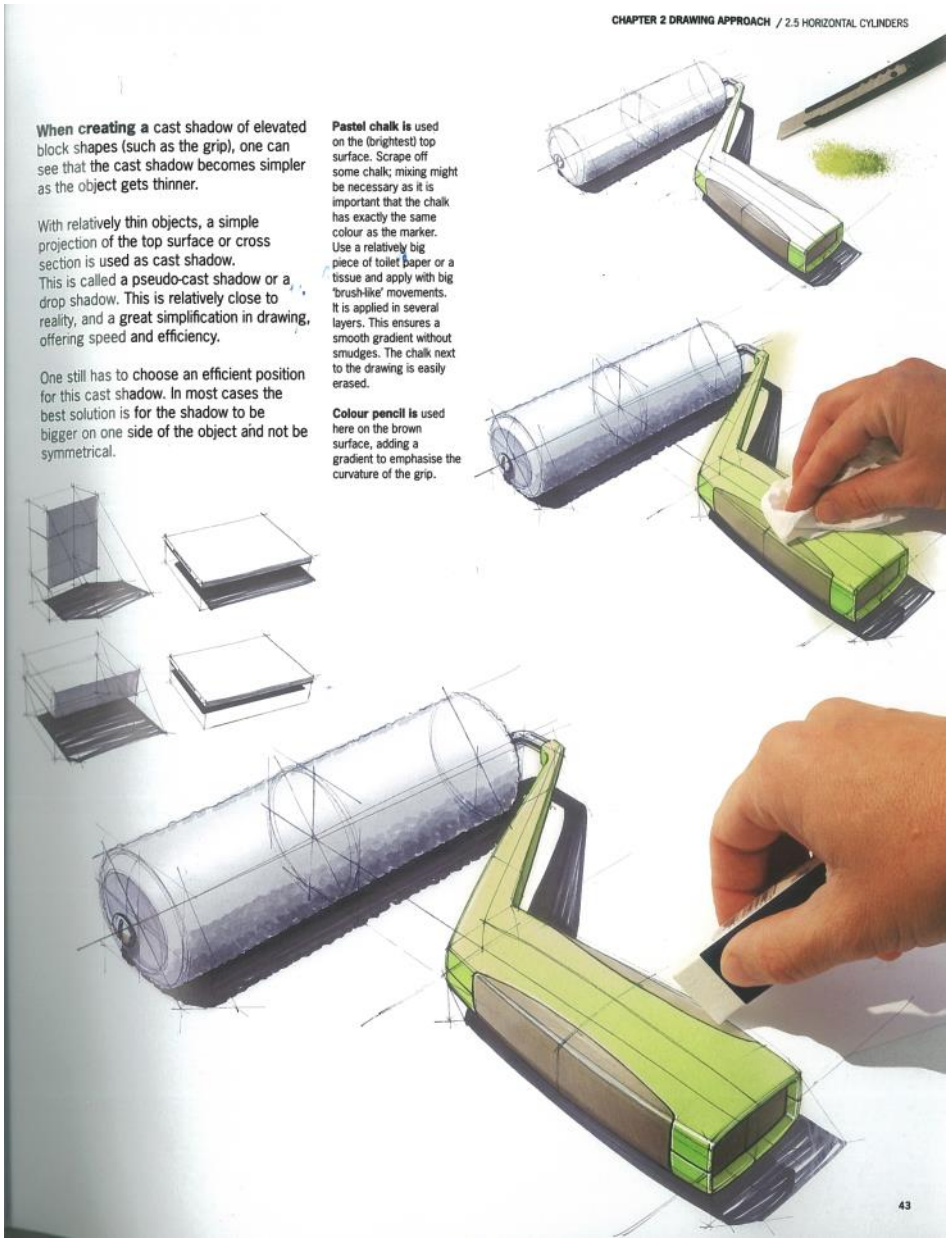
When ellipses are drawn, a vertical line through its perspective centre creates both the highest point and the connection to the floor or a different horizontal surface. Tangents then provide for one perspective direction needed for the handle. The other perspective direction is of course converging with the centre axes of the roller.

The handle now 'floats' as shown in the side view.

Vertical tangents to the ellipse 'touch' it at its widest points. Connecting these points again shows the perspective direction of the handle.



Arbitrarily tilted cylinders will also have major axes of the ellipses perpendicular to the centre axis of the cylinder. A tilted centre line will automatically be interpreted as a declined cylinder. If the cylinder is orientated otherwise, a cast shadow helps to clarify the cylinder's position and orientation.



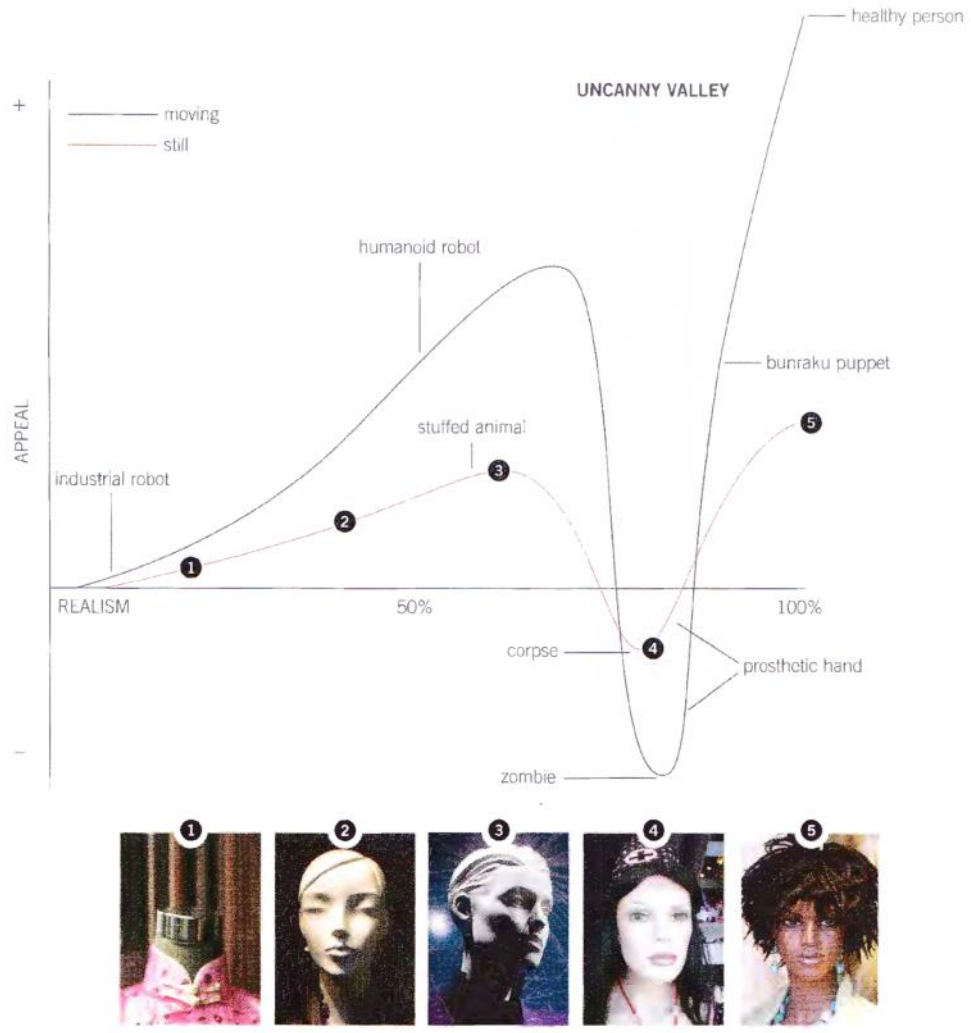
Anthropomorphic Aesthetics

26 Anthropomorphic Form last time

34 Baby-Face Bias (video) https://www.lynda.com/Higher-Education-tutorials/Baby-face-bias/193717/478055-4.html

242 Uncanny Valley

240 Top-Down Lighting Bias (video) https://www.lynda.com/Higher-Education-tutorials/Top-Down-Lighting-Bias/193717/426774-4.html



Masahiro Mori's classic graph plots familiarity or appeal of an anthropomorphic form against its degree of realism. The uncanny valley resides to the right of the continuum, dipping sharply just before the likeness of a genuine healthy person. The mannequin images illustrate the benefits of abstraction and total realism in depicting human likenesses, as well as the perils of the uncanny valley.

https://www.polygon.com/2017/4/6/15207502/mass-effect-andromeda-patch-eyes-comparison

Uncanny Valley

Anthropomorphic forms are appealing when they are dissimilar or identical to humans, but unappealing when they are very similar to humans.

Applies to other natural forms; flowers, plants etc.

Anthropomorphic forms are generally appealing to humans. However, when a form is very close but not identical to a healthy human—as with a mannequin or computer-generated renderings of people—the form tends to become distinctly unappealing. This sharp decline in appeal is called the "uncanny valley," a reference to the large valley or dip in the now classic graph presented by Masahiro Mori in 1970.[1] Though some have disputed the existence of the effect altogether, attributing any negative affective response to a simple lack of familiarity with artificial and rendered likenesses, more recent empirical research suggests the uncanny valley is a real phenomenon. The cause likely regards innate, subconscious mechanisms evolved for pathogen avoidance—that is, detecting and avoiding people who are sick or dead.[2]

Although a full understanding of the variables required to take an anthropomorphic likeness into the uncanny valley has not yet been realized, some conditions have been identified. The strength of the negative reaction seems to correspond to the fidelity of the likeness—a highly realistic likeness that is identifiable as artificial will evoke a stronger negative reaction than a less realistic likeness. Abnormally proportioned or positioned facial features, asymmetry of facial features, subtleties of eye movement, and unnatural skin complexions are all sufficient conditions to trigger uncanny valley effects.

Although the uncanny valley is generally observed by animators and roboticists, there are plenty of examples where the caveats of the principle are not abided. For example, director Robert Zemeckis decided to depict computer-generated characters with a high degree of realism for the movie *The Polar Express*. The resulting effect was both impressively realistic and eerie. The movie raised awareness of what is called "dead eye syndrome," where the lack of eye movements called *saccades* made the characters look zombielike, taking the Polar Express straight through the uncanny valley. Another example is found in retail contexts. There is a general perception among retailers that the effectiveness of mannequins is a function of their realism. However, barring a mannequin that is indistinguishable from a real person, the uncanny valley suggests that retailers would be better served by more abstract versus highly realistic mannequins.

Consider the uncanny valley when representing and animating anthropomorphic forms. Opt for more abstract versus realistic anthropomorphic forms to achieve maximum acceptance. Negative reaction is more sensitive to motion than appearance, so be particularly cognizant of jerky or unnatural movements when animating anthropomorphic bodies and faces.

See also Anthropomorphic Form, Threat Detection, and Top-Down Lighting Bias.

[1] The seminal work on the uncanny valley is "Bukimi No Tani [The Uncanny Valley]" by Masahiro Mori, *Energy*, 1970, vol. 7(4), p. 33–35.

[2] See, for example, "Too Real for Comfort? Uncanny Responses to Computer Generated Faces" by Karl MacDorman, Robert Green, Chin-Chang Hoa, et al., *Computers in Human Behavior*, May 2009, vol. 25(3), p. 695–710; and "The Uncanny Valley: Effect of Realism on the Impression of Artificial Human Faces" by Jun'ichiro Seyama and Ruth Nagayama, *Presence*, Aug. 2007, vol. 16(4), p. 337–351.

Strangbeest

https://en.wikipedia.org/wiki/Jansen's_linkage

https://www.youtube.com/watch?v=LewVEF2B_pM

Geometric Aesthetics

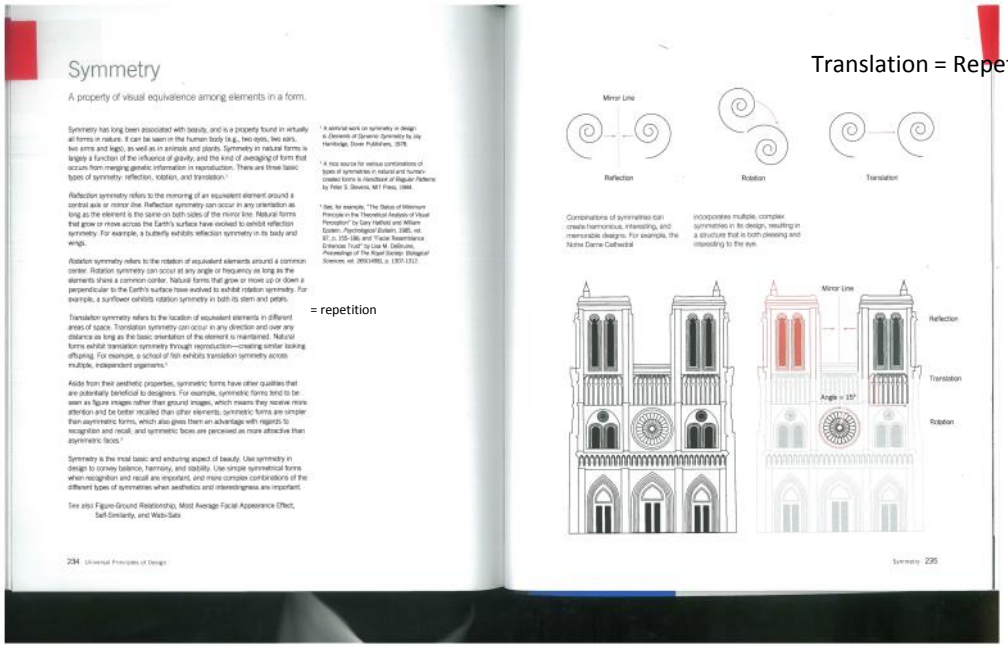
Classical Composition

Much comes from classical painting composition, dating far back. These rules are made to be broken. Rules are empirical, not supported by science.
https://en.wikipedia.org/wiki/Composition_%28visual_arts%29

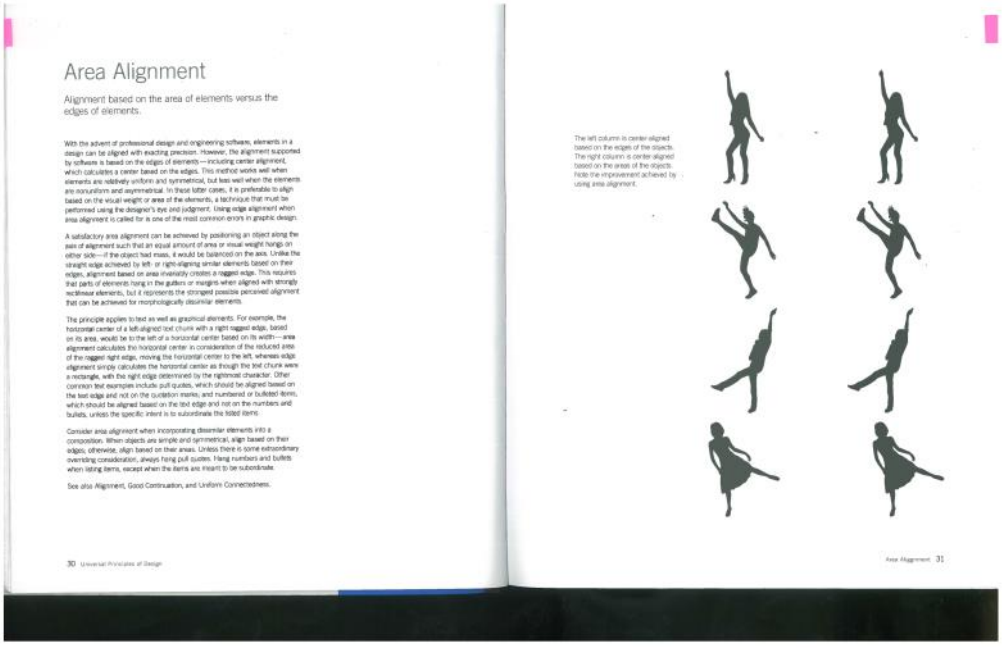
Leading the audience's attention;
what to touch first, what second?

Modern implementation in 2D graphic design, part of **Human-Computer Interface (HCI)** research
Ware, Colin. *Visual Thinking For Design*. Morgan Kaufmann, 2010. Whole pdf in our AesDes Zotero library
Table of contents: http://www.amazon.com/Visual-Thinking-Kaufmann-Interactive-Technologies/dp/0123708966#reader_0123708966

Universal Principles of Design topics



Good symmetry works. Asymmetry works. Broken symmetry is tricky.



Area Alignment

Alignment based on the area of elements versus the edges of elements.

With the advent of professional design and engineering software, elements in a design can be aligned with exacting precision. However, the alignment supported by software is based on the edges of elements — including center alignment, which calculates a center based on the edges. This method works well when elements are relatively uniform and symmetrical, but less well when the elements are nonuniform and asymmetrical. In these latter cases, it is preferable to align based on the visual weight or area of the elements, a technique that must be performed using the designer's eye and judgment. Using edge alignment when area alignment is called for is one of the most common errors in graphic design.

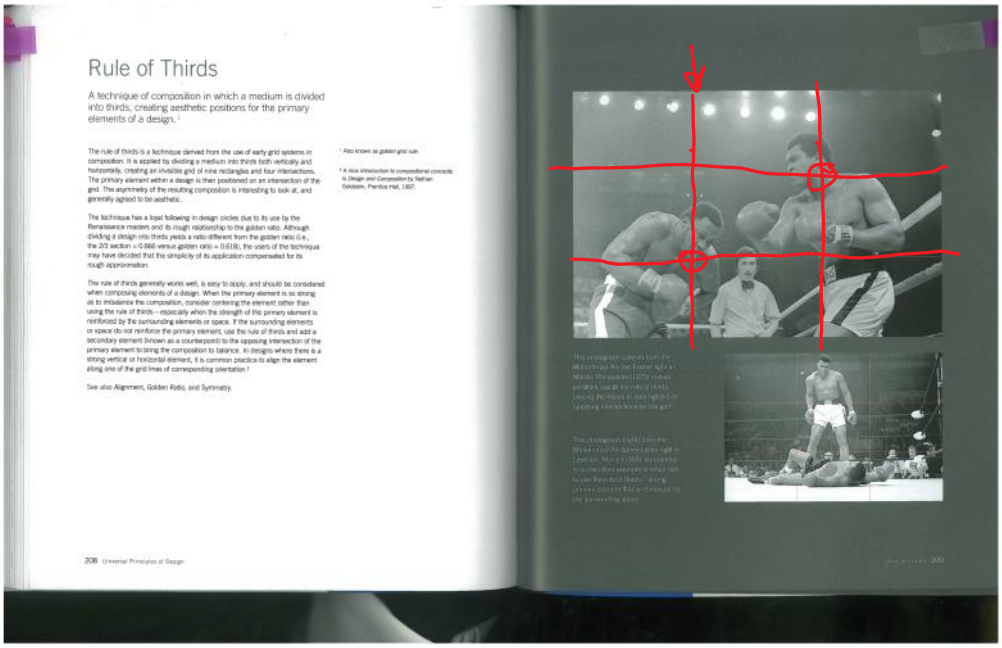
A satisfactory area alignment can be achieved by positioning an object along the axis of alignment such that an equal amount of area or visual weight hangs on either side—if the object had mass, it would be balanced on the axis. Unlike the straight edge achieved by left- or right-aligning similar elements based on their edges, alignment based on area invariably creates a ragged edge. This requires that parts of elements hang in the gutters or margins when aligned with strongly rectilinear elements, but it represents the strongest possible perceived alignment that can be achieved for morphologically dissimilar elements.

The principle applies to text as well as graphical elements. For example, the horizontal center of a left-aligned text chunk with a right ragged edge, based on its area, would be to the left of a horizontal center based on its width—area alignment calculates the horizontal center in consideration of the reduced area of the ragged right edge, moving the horizontal center to the left, whereas edge alignment simply calculates the horizontal center as though the text chunk were a rectangle, with the right edge determined by the rightmost character. Other common text examples include pull quotes, which should be aligned based on the text edge and not on the quotation marks, and numbered or bulleted items, which should be aligned based on the text edge and not on the numbers and bullets, unless the specific intent is to subordinate the listed items.

Consider area alignment when incorporating dissimilar elements into a composition. When objects are simple and symmetrical, align based on their edges, otherwise, align based on their areas. Unless there is some extraordinary overriding consideration, always hang pull quotes. Hang numbers and bullets when listing items, except when the items are meant to be subordinate.

See also Alignment, Good Continuation, and Uniform Connectedness.

The left column is center aligned based on the edges of the objects. The right column is center aligned based on the areas of the objects. Note the improvement achieved by using area alignment.



Rule of Thirds

A technique of composition in which a medium is divided into thirds, creating aesthetic positions for the primary elements of a design.[1]

The rule of thirds is a technique derived from the use of early grid systems in composition. It is applied by dividing a medium into thirds both vertically and horizontally, creating an invisible grid of nine rectangles and four intersections. The primary element within a design is then positioned on an intersection of the grid. The asymmetry of the resulting composition is interesting to look at, and generally agreed to be aesthetic.

The technique has a loyal following in design circles due to its use by the Renaissance masters and its rough relationship to the golden ratio. Although dividing a design into thirds yields a ratio different from the golden ratio (i.e., the 2/3 section = 0.666 versus golden ratio = 0.618), the users of the technique may have decided that the simplicity of its application compensated for its rough approximation.

The rule of thirds generally works well, is easy to apply, and should be considered when composing elements of a design. When the primary element is so strong as to imbalance the composition, consider centering the element rather than using the rule of thirds—especially when the strength of this primary element is reinforced by the surrounding elements or space. If the surrounding elements or space do not reinforce the primary element, use the rule of thirds and add a secondary element (known as a counterpoint) to the opposing intersection of the primary element to bring the composition to balance. In designs where there is a strong vertical or horizontal element, it is common practice to align the element along one of the grid lines of corresponding orientation.[2]

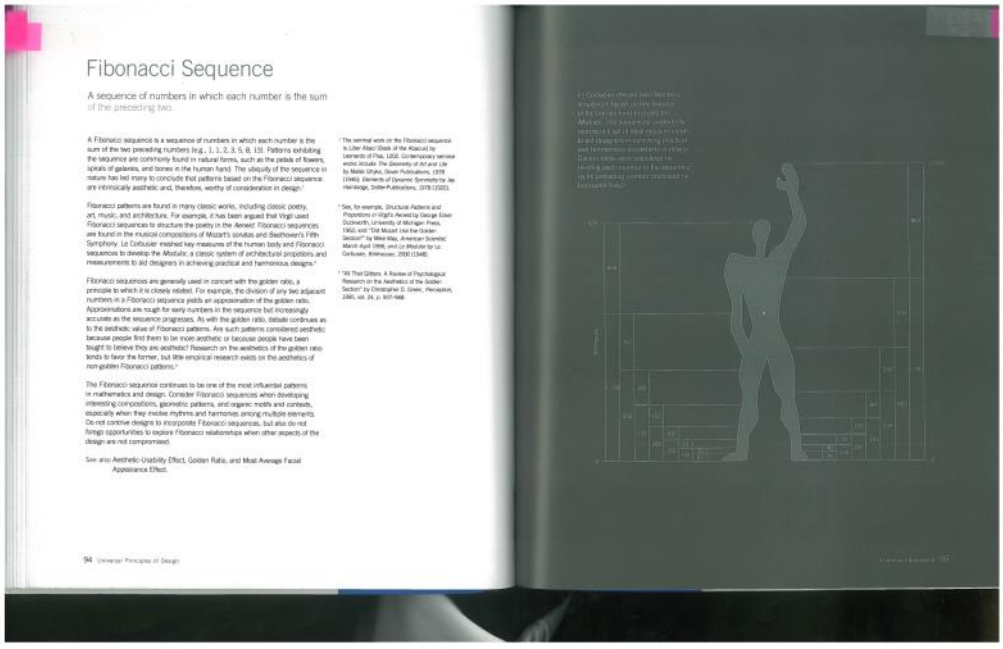
See also Alignment, Golden Ratio, and Symmetry.

[1] Also known as golden grid rule.

[2] A nice introduction to compositional concepts is *Design and Composition* by Nathan Goldstein, Prentice-Hall, 1997.

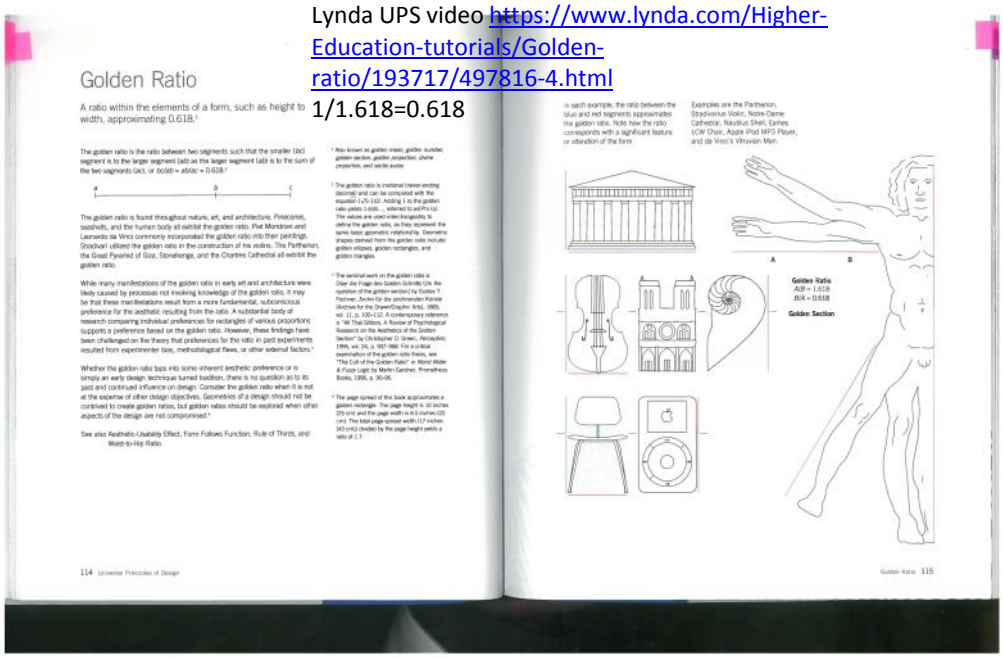
https://en.wikipedia.org/wiki/Rule_of_thirds#/media/File:RuleOfThirds-SideBySide.gif

The rule of thirds was first written down by John Thomas Smith in 1797.



https://soundcloud.com/robertinventor/fibonacci-rhythm-no-bar
https://www.facebook.com/david.canright.1/videos/vb.1534748873/10205137603829769/?type=2&theater Music with both pitches and rhythm determined by Fibonacci series

https://www.youtube.com/watch?v=RjM8AaNSjhA&index=1&list=PLC1VCzU4q6ohKrlZAscdjylx-gjmPuI2x How to draw a Fibonacci spiral



Lynda UPS video https://www.lynda.com/Higher-Education-tutorials/Golden-ratio/193717/497816-4.html
1/1.618=0.618