26 Geometric Aesthetics

Monday, April 17, 2023

Today:

David Whisnant Sheet metal working aesthetics Shreya pradeep sekar TBD

Geometric Aesthetics

Symmetry

Area Alignment

Rule of Thirds

Fibonacci

Golden Ratio

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.

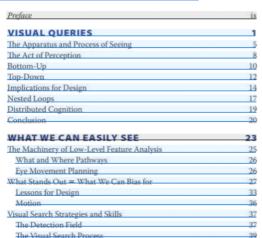
https://en.wikipedia.org/wiki/Composition %28visual arts%29

Contents [hide] 1 Elements of design 1.1 Line and shape 1.2 Colour 2 Principles of organization 2.1 Viewpoint (leading the eye) 3 Compositional techniques 3.1 Rule of thirds 3.2 Rule of odds 3.3 Rule of space 3.4 Simplification 3.4.1 Shallow Depth of Field 3.5 Geometry and symmetry 3.6 Creating movement 3.7 Other techniques 4 Example 5 See also 6 References 7 Further reading

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Modern implementation in 2D graphic design, part of Human-Computer Interface (HCI) research UX design 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



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Universal Principles of Design topics

183 Symmetry

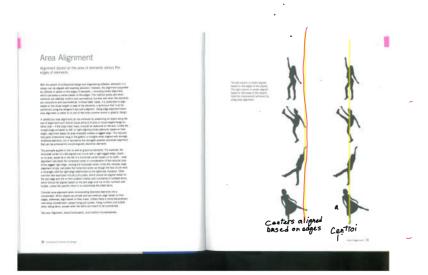
A property of similar or exact correspondence between the configuration of elements.

A property of similar or exact correspondence between the configuration of elements.

Symmetry is the motivation and elements of the six in a state of the s



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









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.

Koliska, Michael, and Klive (Soo-Kwang) Oh. "Guided by the Grid: Raising Attention with the Rule of Thirds." *Journalism Practice* 17, no. 2 (February 7, 2023): 354–73. https://doi.org/10.1080/17512786.2021.1916402.

41 participants, 24 news images. Likert scale for liking, and text for main subject ID.

Visual system takes in a lot of information. Selection process filters that, i.e. attention is the filter. Shapes in the image can guide filters too; reductionist.

"Research shows that attention is closely connected to valence (Lane, Chua, and Dolan 1999; Morris, Leclerc, and Kensinger 2014)," (Koliska and Oh, 2023, p. 360)

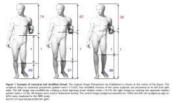
"Valence perceptions can thus be considered as an expression of information processing, reflecting a level of attention or how salient the main message of an image may be. We posit that measuring and comparing valence perceptions of images that are compliant and noncompliant with the RoT can thus indicate how the RoT aides image information processing." (Koliska and Oh, 2023, p. 360) RoT = Rule of Thirds

So valence = yuck to yum \sim aesthetics.

Using RoT for overall image composition increased liking of image, and if image topic was positive RoT made it more positive. If image was negative subject, RoT made it more negative.

 $Putting \ main \ subject \ at \ RoT \ grid points \ made \ subject \ easier \ to \ identify.$





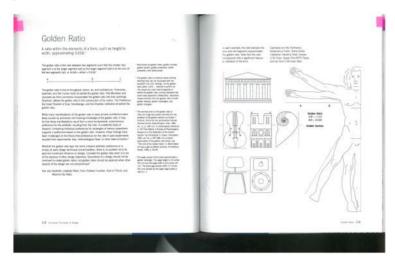
Dio, Cinzia Di, Emiliano Macaluso, and Giacomo Rizzolatti. "The Golden Beauty: Brain Response to Classical and Renaissance Sculptures." PLOS ONE 2, no. 11 (November 21, 2007): e1201. https://doi.org/10.1371/journal.pone.0001201.

fMRI study. Distorted images were measured as ugly by brain activation area, and they conclude Golden Ratio was the reason.

But any human would judge a distorted human form as problematic...

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

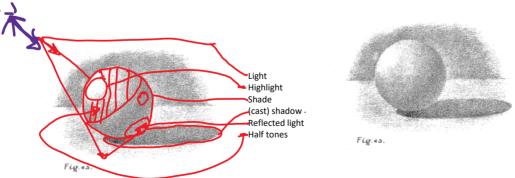
https://www.youtube.com/watch?v=RjM8AaNSjhA&index=1&list=PLC1VCzU4q6ohKrlZAscdjylx-gimPu12x How to draw a Fibonacci spiral



UPS video https://www.linkedin.com/learning/universal-principles-of-design/golden-ratio?u=42275329 1/1.618=0.618

Sketching: Shade and Shadow

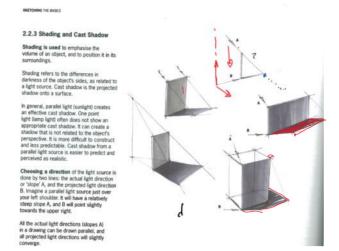
We've covered some of the basics:



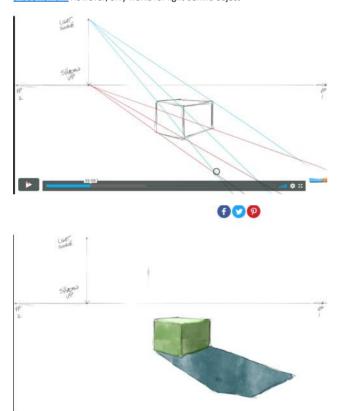
Shadow in 2 point perspective

Three levels of rigor:

- 1) Assume diffuse light, and shade undersides. Guess at shadow outline, fade edges of shadow.
- 2) Assume sunlight, parallel light. Draw parallel lines from each corner, guess at intersection with ground plane (Sketching: The Basics method). Violates 2 point perspective, however.



3) Do the geometry rigorously for each light source:
Construct Shadow Vanishing Point: https://thevirtualinstructor.com/how-to-draw-paint-cast-shadows.html However, only works for light behind object



After you have the geometry, still have to consider light reflected from surroundings. Will lighten the shadow far from the object, will fall onto shade sides of object and then onto shadow, etc.