20 Universal Principles of Design

Friday, February 14, 2020 3:18 PM

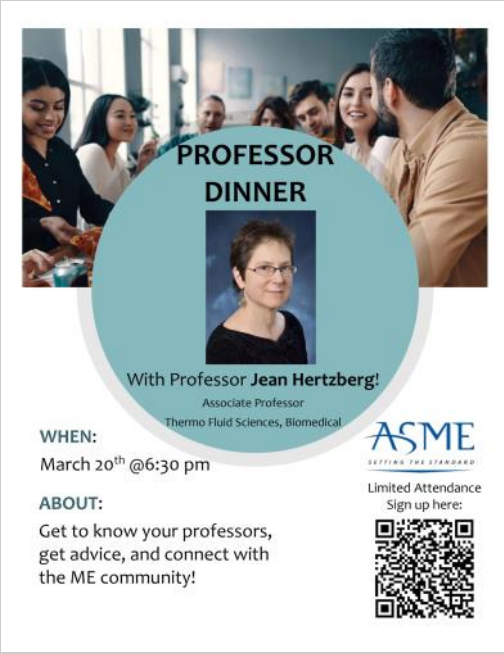
Today

- Universal Principles of Design (UPD)
  - Contour Bias
  - Aesthetic-Usability Effect

START ZOOM recording

Admin.

- Grad presentations
Ethan Street	Stradivarius	Abhishek Raut	Gordon Murray
- For your main project: Don't get too caught up in functionality or manufacturability. Keep those parts simple and focus on aesthetics.



Universal Principles of Design (UPDes)

Book and video series, available on Linked In Learning /Lynda.com

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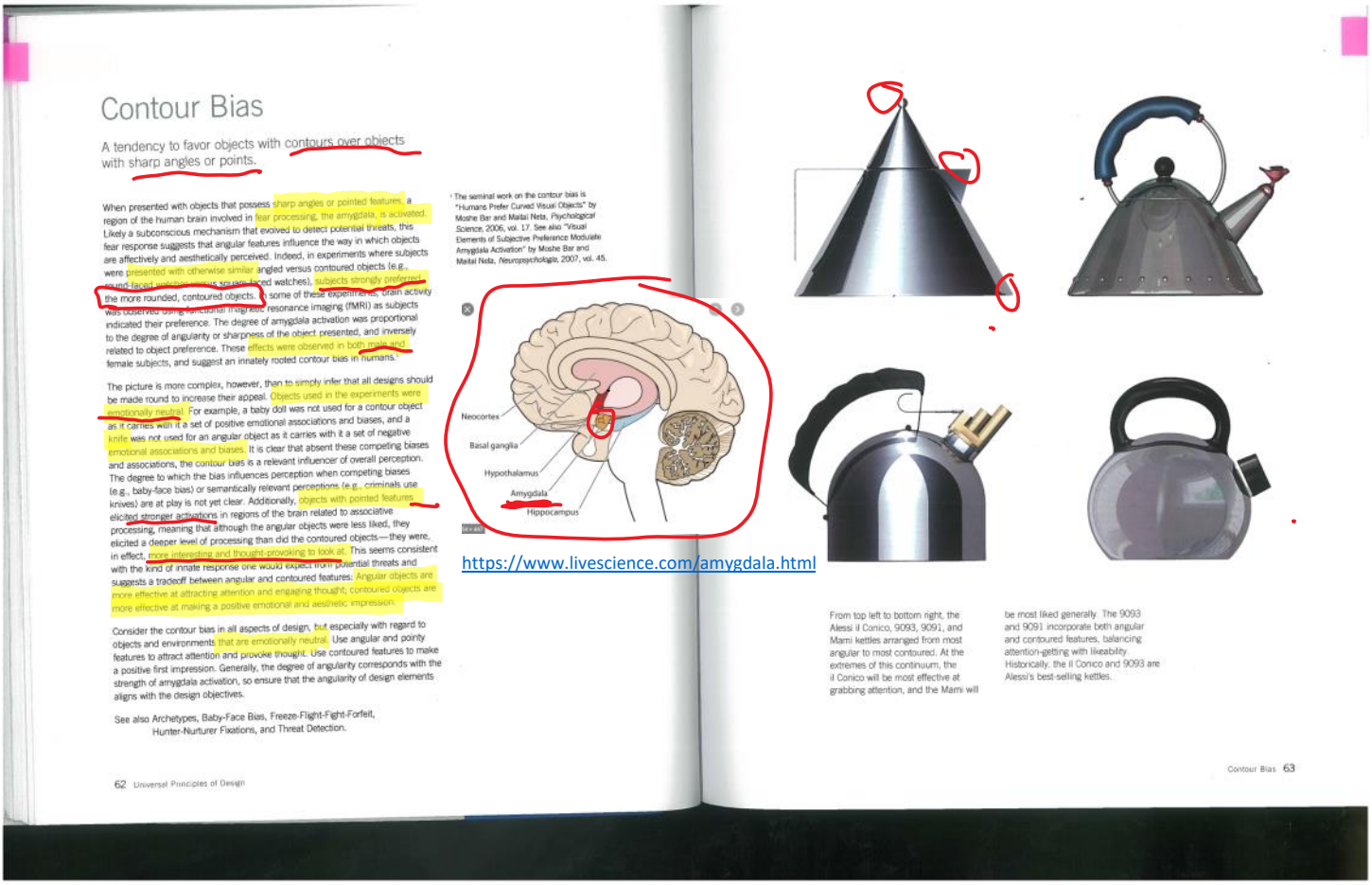
- After logging in, click the **CU Resources** dropdown menu.
- Select **Training**.
- Click the **LinkedIn Learning** tile.

Lidwell, William, Kritina Holden, and Jill Butler. *Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions,*. Rockport Publishers, 2010.
$17 paperback or Kindle

Many good functional design rules, based on ergonomics, psychology, market research; what do people do when they interact with designs? Text has references that video omits.
And some good aesthetics rules, based on Western research on human likes/dislikes.

Today, Contour Bias (no LIL video available)



Contour Bias

A tendency to favor objects with contours over objects with sharp angles or points.

When presented with objects that possess sharp angles or pointed features, a region of the human brain involved in fear processing, the amygdala, is activated. Likely a subconscious mechanism that evolved to detect potential threats, this fear response suggests that angular features influence the way in which objects are affectively and aesthetically perceived. Indeed, in experiments where subjects were presented with otherwise similar angled versus contoured objects (e.g., round-faced watches versus square-faced watches), subjects strongly preferred the more rounded, contoured objects.[1] In some of these experiments, brain activity was observed using functional magnetic resonance imaging (fMRI) as subjects indicated their preference. The degree of amygdala activation was proportional to the degree of angularity or sharpness of the object presented, and inversely related to object preference. These effects were observed in both male and female subjects, and suggest an innately rooted contour bias in humans.

The picture is more complex, however, than to simply infer that all designs should be made round to increase their appeal. Objects used in the experiments were emotionally neutral. For example, a baby doll was not used for a contour object as it carries with it a set of positive emotional associations and biases, and a knife was not used for an angular object as it carries with it a set of negative emotional associations and biases. It is clear that absent these competing biases and associations, the contour bias is a relevant influencer of overall perception. The degree to which the bias influences perception when competing biases (e.g., baby-face bias) or semantically relevant perceptions (e.g., criminals use knives) are at play is not yet clear. Additionally, objects with pointed features elicited stronger activations in regions of the brain related to associative processing, meaning that although the angular objects were less liked, they elicited a deeper level of processing than did the contoured objects—they were, in effect, more interesting and thought-provoking to look at. This seems consistent with the kind of innate response one would expect from potential threats and suggests a tradeoff between angular and contoured features: Angular objects are more effective at attracting attention and engaging thought; contoured objects are more effective at making a positive emotional and aesthetic impression.

Consider the contour bias in all aspects of design, but especially with regard to objects and environments that are emotionally neutral. Use angular and pointy features to attract attention and provoke thought. Use contoured features to make a positive first impression. Generally, the degree of angularity corresponds with the strength of amygdala activation, so ensure that the angularity of design elements aligns with the design objectives.

See also Archetypes, Baby-Face Bias, Freeze-Flight-Fight-Forfeit, Hunter-Nurturer Fixations, and Threat Detection.

[1] The seminal work on the contour bias is "Humans Prefer Curved Visual Objects" by Moshe Bar and Maital Neta, *Psychological Science*, 2006, vol. 17. See also "Visual Elements of Subjective Preference Modulate Amygdala Activation" by Moshe Bar and Maital Neta, *Neuropsychologia*, 2007, vol. 45.

From top left to bottom right, the Alessi il Conico, 9093, 9091, and Mami kettles arranged from most angular to most contoured. At the extremes of this continuum, the il Conico will be most effective at grabbing attention, and the Mami will be most liked generally. The 9093 and 9091 incorporate both angular and contoured features, balancing attention-getting with likeability. Historically, the il Conico and 9093 are Alessi's best-selling kettles.

https://www.livescience.com/amygdala.html

Pointy objects are scary, they activate the amygdala, the part of the brain that processes fear (flight vs fight)
Pointy objects command attention and provoke thought

Rounded objects are more liked.

Bar, Moshe, and Maital Neta. "Humans Prefer Curved Visual Objects." *Psychological Science* 17, no. 8 (August 1, 2006): 645–48. https://doi.org/10.1111/j.1467-9280.2006.01759.x.
Article available in our Zotero library: https://www.zotero.org/groups/259954/aedes/items

Where do you see this play out? Come up with contrasting example images. Consider in real life and in movies etc, historic, contemporary, futuristic

What do you want for your main project: Is your project emotionally neutral? Do you want it to be liked or be thought provoking?
Small group discussion, breakout rooms

20 Aesthetic-Usability Effect https://www.linkedin.com/learning/universal-principles-of-design/aesthetic-usability-effect?u=42275329 Form = Function? Maybe it's better to break the law!

Small group discussion: Is your project governed only by function? What about the form?