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Tools for the UX Architect: Laws of Interaction Design

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As User Experience practitioners we often have to justify our decisions related to interface design recommendations. Are you pulling answers out of thin air, or following one of the common laws of Interaction Design?

Fitts's Law

The time to acquire a target is a function of the distance to and size of the target.

- Place main navigation elements on the top or left edge of the screen. The screen edge presents a natural boundary and is more easily accessible (more applicable to desktop design)
- Create a larger target area for clickable elements. For example, use a whole button vs. just text name. For mobile design try and make tapable elements at least 44x44 pixels
- For search results and paging make sure font and spacing used for paging doesn't make completing this task more complicated

F-Shaped Pattern for Reading (Gutenberg Diagram)

Users normally scan a screen horizontally from left to right and then move down the screen for a second, smaller pass from left to right before viewing the left content vertically (Jakob Nielsen, http://www.useit.com/alertbox/reading_pattern.html (http://www.useit.com/alertbox/reading_pattern.html)).

- Users will skim a page
- The first two paragraphs are the most important
- Start content with meaningful words

Gestalt Principles of Form Perception

"The whole is greater than the sum of it's parts" (David Hothersall: History of Psychology, chapter seven,(2004)).

Gestalt principles refer to the concepts of how people tend to organize visual elements into a "unified whole".

- Closure – the mind supplies the missing pieces in a composition
- Continuance – the eye continues the direction it's going
- Similarity – what an item looks like compared to others
- Proximity – where items are located in relation to each other
- Alignment – lining up objects to organize and form groups

Mads Soegaard offers a good explanation of some of these principles as they relate to Interaction Design.

Soegaard (http://www.interaction-design.org/references/authors/mads_soegaard.html), Mads (2010). *Gestalt principles of form perception*. Retrieved 31 October 2012 from http://www.interaction-design.org/encyclopedia/gestalt_principles_of_for... (http://www.interaction-design.org/encyclopedia/gestalt_principles_of_form_perception.html)

Hick's Law

The number of choices determines the time it takes to make a decision, but don't consider a group of choices one by one. Users will more quickly chose from one menu of 10 items than from two menus of 5 items each.

The formal definition of Hick's Law:

(1) $H = \log_2(n + 1)$.
(2) $H = \Sigma\ p_i \log_2(1/p_i + 1)$.

H = the information-theoretic entropy of a decision.
n = the number of equally probable alternatives.
pi = the probability of alternative i for n alternatives of unequal probability.

Retrieved 31 October 2012 from http://www.usabilityfirst.com/glossary/hicks-law/ (http://www.usabilityfirst.com/glossary/hicks-law/)

George Miller's Magical Number Seven

The human mind best remembers information in chunks of seven plus or minus two, but screens allow users to see information and not have to remember it. Don't make users carry over large chunks of memory from page to page.

http://www.musanim.com/miller1956/ (http://www.musanim.com/miller1956/)

Tesler's Law of the Conservation of Complexity

Some things are just complicated, and Tesler's Law refers to the sharing of complexity between the software and user. Tesler believed that the product team should take on as much of the burden of complexity as possible without passing it on to your user.

- Provide users with a consistent navigation design
- Use JavaScript and CSS frameworks to save development time
- Every process has some inherent level of complexity

Poka-Yoke Principle

Created by Japanese quality guru Shigeo Shingo – translates to mistake proofing (yokeru) and avoiding inadvertent errors (poka). Prevent problems before they occur, such as using a progressive enhancement approach to front-end development. These principles also apply to graceful validation and entry error prevention during form design.

Pareto Principle

Most people have heard of the 80/20 rule, and it really applies broadly. In relation to Interaction Design, you can think of the Pareto Principle in regards to 80% of effects are from 20% of the causes. Small improvements in design – such as making a button a little bigger or helping it stand out a little more can generate the greatest benefits (conversions).

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