Mimicry

The act of copying properties of familiar objects, organisms, or environments in order to realize specific benefits afforded by those properties.

In nature, mimicry refers to the copying of properties of familiar objects, organisms, or environments in order to hide from or deter other organisms. For example, katydids and walking sticks mimic the leaves and branches of plants to hide from predators, and the viceroy butterfly mimics the less tasty monarch butterfly to deter predators. In design, mimicry refers to copying properties of familiar objects, organisms, or environments in order to improve the usability, likeability, or functionality of an object. There are three basic kinds of mimicry in design: surface, behavioral, and functional.[1]

Surface mimicry is defined as making a design look like something else. When a design mimics the surface aspects of a familiar object, the design implies (by its familiar appearance) the way it will function or can be used. An example is the use of computer software icons that are designed to look like folders and documents.[2]

Behavioral mimicry is defined as making a design act like something else (e.g., making a robotic dog act like a real dog). Behavioral mimicry is useful for improving likeability, but should be used with caution when mimicking complex behaviors from large repertoires. For example, mimicking behaviors like smiling generally elicit positive responses, but can give the impression of artificiality or deceit if inconsistent with other cues (e.g., a baby doll that smiles when touched—or spanked).[3]

Functional mimicry is defined as making a design work like something else. Functional mimicry is useful for solving mechanical and structural problems (e.g., mimicking the keypad of an adding machine in the design of a touch tone telephone). Significant insights and rapid progress can be achieved by mimicking existing solutions and design analogs. However, functional mimicry must be performed with caution since the physical principles governing function may not transfer from one context to another or from one scale to another (e.g., early attempts at human flight by flapping wings).[4]

Mimicry is perhaps the oldest and most efficient method for achieving major advances in design. Consider surface mimicry to improve usability, ensuring that the perception of the design corresponds to how it functions or is to be used. Consider behavioral mimicry to improve likeability, but exercise caution when mimicking complex behaviors. Consider functional mimicry to assist in solving mechanical and structural problems, but also consider transfer and scaling effects that may undermine the success of the mimicked properties.

See also Affordance, Anthromorphic Form, Baby-Face Bias, Convergence, Savanna Preference, and Scaling Fallacy.

[1] The history of mimicry in design likely predates the development of tools by early humans. The seminal work on mimicry in plants and animals was performed by Henry Bates and Fritz Muller in the late 1800s.

[2] See, for example, *The Design of Everyday Things* by Donald Norman, Doubleday, 1990.

[3] See, for example, *Designing Sociable Robots* by Cynthia L. Breazeal, MIT Press, 2002; and "The Lovable Cat: Mimicry Strikes Again" in *The Throwing Madonna: Essays on the Brain* by William H. Calvin, iUniverse, 2000.

[4] See, for example, *Biomimicry: Innovation Inspired by Nature* by Janine M. Benyus, William Morrow & Company, 1998; and *Cats' Paws and Catapults: Mechanical Worlds of Nature and People* by Steven Vogel, W. W. Norton & Company, 2000.

Mimicry is an effective strategy to begin exploring a design problem, but it should not be assumed that mimicked solutions are correct or best. For example, the early design of the phone keypad mimicked the keypad of adding machines. Usability testing by researchers at Bell Laboratories suggested that an inverted keypad layout was easier to master. Bell decided to abandon the mimicked solution and establish a new standard for telephones.

The Sony AIBO mimics many key canine behaviors—barking, wagging tail—leveraging the positive feelings many people have for dogs to make the design more appealing.

The Mimic Octopus is capable of both surface and behavioral mimicry, in this case changing its pattern and texture, and hiding all but two legs in order to mimic the highly poisonous Sea Snake.


Trash


Recycle Bin


Documents


Work


Document


Data.txt

Surface mimicry is common in the design of software icons and controls. Even to those unfamiliar with the software, the familiar appearance of these objects hints at their function.