

Norman (2002)

The Design of Everyday Things

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How do people know how to
operate the thousands of objects
that surround them?

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Part of the answer is related to:

1. How the mind works
 - How we're built, cognitive limits, etc.
2. The features of the object itself
3. The knowledge people have of objects
[interaction of 1 & 2]

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- If we understand 1-3, we can design objects that fit with people's expectations and are therefore easy to use.
- If we understand how people learn, we can help them learn to use objects that are difficult to design for easy use.
 - Other applications of CogSci

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Two Principles of Good Design

1. Provide a good conceptual model
 - A mental model of how an object works
 - Formed by interpreting the visible structure of an object and its perceived actions.
 - Shaped by experience, training, instruction, etc.

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Two Principles of Good Design

- 2a. Make information visible (Part I: the object)
 - Affordances (Gibson)
 - Perceived and actual properties of an object that determine how it could be used.
 - Flat, horizontal surface affords “support”
 - Flat, vertical surface prevents movement
 - Constraints
 - Limits to the number of possible actions
 - 9-volt vs. AA, AAA, C & D batteries

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Two Principles of Good Design

- 2b. Make information visible (Part II: the user)
 - Mappings
 - Relationship between control and reaction in the world.
 - Natural mapping takes advantage of physical analogies and cultural standards.
 - Avoid arbitrary mappings & controls with multiple functions
 - Feedback
 - Information provided to the user about what his action has accomplished.
 - Telephones (now with visual display)

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By understanding how the mind works, how we perceive the features of an object, and how we interact with objects we can design objects that are easy to use, require little training, lead to few errors, etc.

- Commercial showing Mom & Dad at a chic hotel

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Why is good design so hard?

- Designer has to serve many masters
 - User, manufacturer, service, fashion, etc.
- Technology and complexity follow a U-curve
 - New device is hard to use (it's NEW).
 - After some time the object is easy to use.
 - Once the object is easy to use, more features are added.
 - Smartphone = telephone/PDA/MP3 player/Web Interface/Video Game/text message/GPS

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If good design fails...

...resort to learning (train, practice, rehearse, etc.)

How do we improve learning?

Research from Cognitive Science has much to say about this question, too.

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