
LUT
University

Mental models

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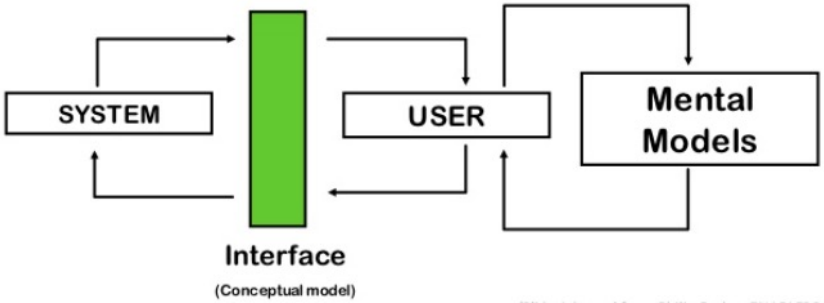
Mental models and conceptual models

(Norman 1998)

- **Mental models:** The understanding and knowledge that we possess of something
  - Perform actions other than by rote
  - Know why something went wrong

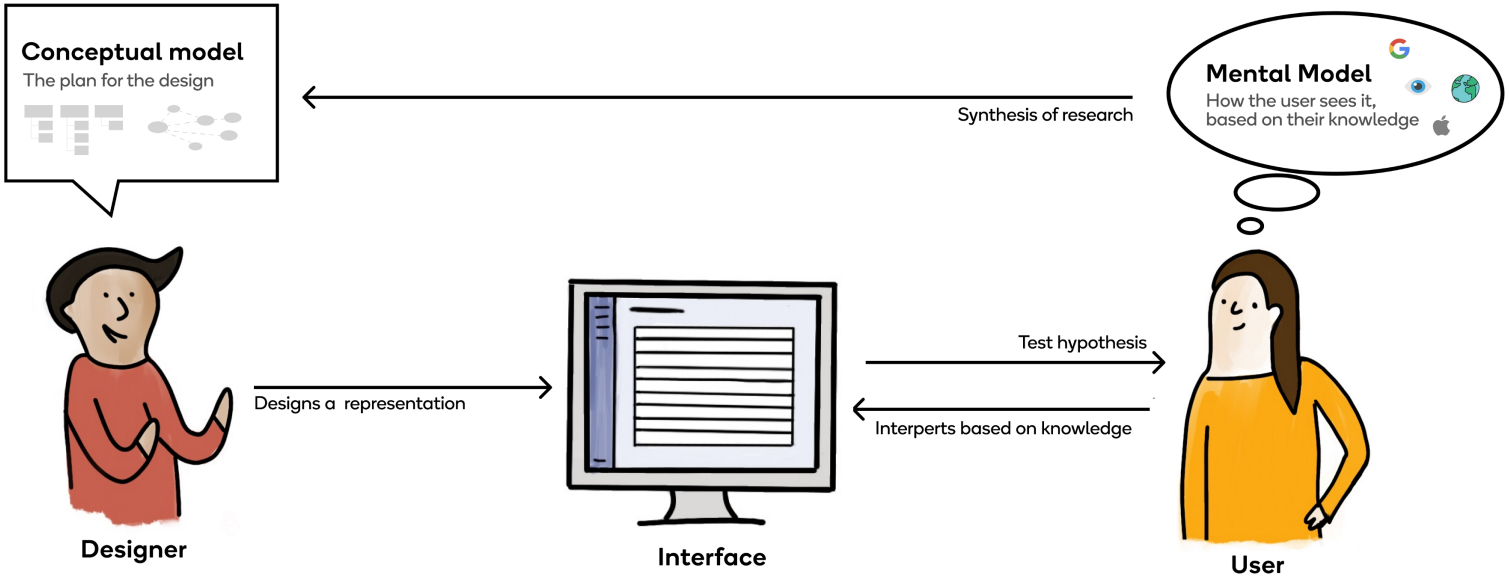
A key design principle is to design things so that people will form correct and useful mental models of how they work and what they do.



Mental model: user's underlying expectations about how something should work

Conceptual model: designer's high-level plan for how the product will work and fit together (and what kind of affordances it will display)

Mental models and conceptual models

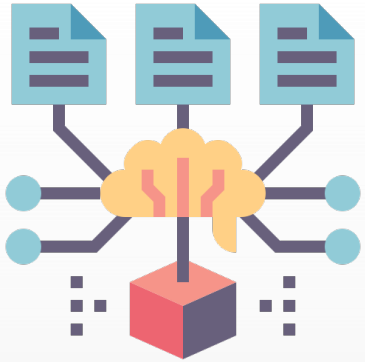


https://uxdesign.cc/understanding-mental-and-conceptual-models-in-product-design-7d69de3cae26

Developing a mental model

- People **develop** mental models through
  - interacting with systems,
  - observing the relationship between their actions and the behaviours of the system
  - reading any manuals or other forms of explanation that come with a system
- Mental models are incomplete and unstable (forgetting)
- Mental models do not have firm boundaries

So, it is important that designers provide sufficient information in the interface (and any accompanying documentation) for people to form an accurate mental model.



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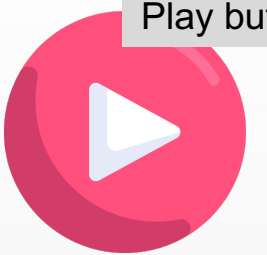
Affordances and mental models

- Design things so it is clear what they are for

  Make buttons look like buttons so people will press them

- **Affordance** refers to the properties that things have (or are perceived to have) and how these relate to how the things could be used.
  - **Example**: Buttons afford pressing,
  - chairs afford sitting on
  - post-it notes afford writing a message on and sticking next to something else.
- Affordances are culturally determined.

Play button?



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Example: Affordances

Shared mental models

- Shared mental model: A mental model that is shared among humans, e.g. in a team or group

"Shared understanding"

Team

- Tackling a design challenge or problem together can help build a shared mental model
- Visualization, such as concept modeling, in a team can increase a shared mental model

That's why you involve your users and have multidisciplinary teams

Icons by flaticon.com

Siemon et al. (2017). Forming Virtual Teams-Visualization with Digital Whiteboards to Increase Shared Understanding, Satisfaction and Perceived Effectiveness. ICIS Proceedings

Summary and thoughts

- Designers have a conception of the system they have produced

This may or may not be the same as what the system actually does.

- Design is teamwork: Designers and implementers have different mental models
- Designers can express their mental models through the interface, the behaviours of the system and any documentation
- People interact with the system image and from this have to derive their conception (their ‘mental model’) of what the system is and what it does.

Creating a system together, through visualization, can help build a shared mental model