Human-Computer Interaction Design COGS120/CSE170 - "Intro. HCI" Instructor: Philip Guo Week 4 - Mental Models (2016-10-18) some slides adapted from Scott Klemmer's Intro. HCI course

Learning Objective user's mental model in mind when designing.

Outline

- Mental models: what are they? - Helping users form accurate mental models - Work on A3 Heuristic Evaluations in class

to make products easier to use by keeping the

What is a mental model?

How your mind thinks that something works (my personal definition)

Wow, that was a vague definition!

You can form mental models about all sorts of things ...







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Mental models are abstract representations







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Mental models let you make predictions





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Let's make some predictions now:

What happens to the refrigerator when you turn the left

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Slides adapted from Edward Lank (University of Waterloo), which was adapted from The Design of Everyday Things.

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What happens to the refrigerator when you turn the left dial up to to "colder"? What happens to the freezer?

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Mismatch between designer's and user's mental models!

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Refrigerator

Freezer

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Mental model mismatches lead to slow performance, frustration, and errors

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Mental model mismatches lead to slow performance, frustration, and errors

Two main kinds of errors:

Slips - you have correct mental model but mess up in performing the action (you're distracted by groceries, so turn the wrong dial)

Mistakes - you perform the action you intended (turn what you think is the right dial), but have wrong mental model

Mental model mismatches lead to slow performance, frustration, and **errors**

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How designers can prevent the two main kinds of errors:

Slips - [easier] prevent by having better visual/tactile aesthetics, larger hit targets, more salient spatial layouts

Mistakes - [harder] prevent by better conveying the designer's mental model to the user

Designer's mental model` Designer

As a designer, you want to use the system's UI to accurately convey your mental model of the system to the user.

The DESIGN of EVERYDAY THINGS

DON NORMAN

Designer's mental model Designer

Why is this hard? Because the designer is often way too familiar with their own system to empathize with what users don't know.

The **DESIGN** of EVERYDAY THINGS

DON NORMAN

The system's Ul is all that you have. You can't directly talk to the user!

These designers must've thought that their mental model was the "obvious" one ...

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How can you close the gap between the designer's and user's mental models?

One good way: test on real users, and get them to convey their mental models to you.

Also, good design principles can more faithfully convey the designer's mental model to the user.

One example: intuitive spatial mappings

Mercedes S500 Car Seat Controller

Source: http://www.lilviv.com/motoring/cars/s500/seatcont.jpg

Control should mirror real-world Which is better for dashboard speaker front / back control?

Dashboard

Which set of stovetop controls are the most intuitive?

Another example: tasteful use of real-world metaphors

... but don't take real-world metaphors too far

Source: http://glasscanopy.com/flat-design-vs-skeuomorphism-pros-cons/

Here's a fun interactive infographic by Edward Korcheg.

As a designer, you want to use the system's UI to accurately convey your mental model of the system to the user.

During user testing, pay attention to the user's mental model and how it (mis-)matches with your own.

Learning Objective to make products easier to use by keeping the user's mental model in mind when designing. TODS after class - Work on your A3 Heuristic Evaluations - Exam I in class next Tuesday; closed-notes

OK YOUR TURN! WORK ON YOUR A3 HEURISTIC EVALUATION ASSIGNMENT IN CLASS