UI & UX Design

SWE 4833

Don Norman’s Principles

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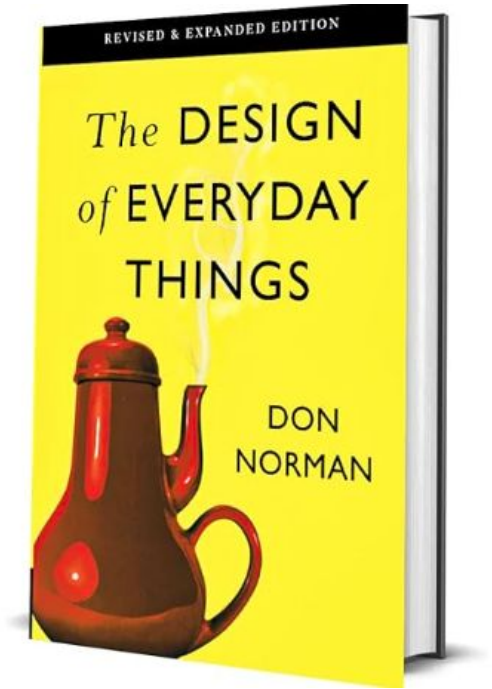
The Design of Everyday Things by Donald Norman is a powerful primer on how and why some products satisfy customers while others only frustrate them. It was first published in 1988.



"Design is really an act of communication, which means having a deep understanding of the person with whom the designer is communicating." — Don Norman.

In this lecture, we'll be looking at:

- Seven important questions of user interaction
- Seven fundamental design principles
- Principles in practice (examples)

Seven important questions of user interaction

Norman describes these questions as "**basic checklist of questions to ask.**"

1. **The goal:** What do I want to accomplish and why?
2. **Plan:** How can I do it?
3. **Specify:** What options do I have?
4. **Perform:** What can I do now?
5. **Perceive:** What just happened?
6. **Interpret:** What does it mean?
7. **Compare:** Is this okay? Have I accomplished my goal?

Seven fundamental design principles

To help determine the answers to his seven questions, Norman has devised a list of **seven fundamental design principles**.

1. **Discoverability**
2. **Feedback**
3. **Conceptual model**
4. **Affordance**
5. **Signifiers**
6. **Mapping**
7. **Constraints**

Discoverability

Discoverability is about helping users easily identify what actions are possible. Users should be able to see what they can do at a glance. It's how they navigate new content on a streaming service, filter through hundreds of shoes on a website or check the delivery status of an order.

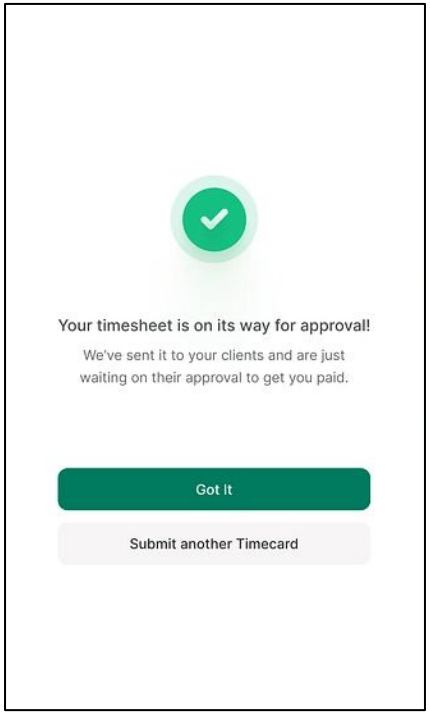
Example, while a hamburger menu organises lengthy navigation lists, it can hide essential content and key possibilities out of sight.

Discoverability

Feedback

Norman describes feedback as “some way of letting you know that the system is working on your request.”
He also explains that feedback must be **immediate, informative, discreetly planned,** and **prioritised.**

Feedback


Your timesheet is on its way for approval!
We've sent it to your clients and are just waiting on their approval to get you paid.
Got It
Submit another Timecard

Conceptual model

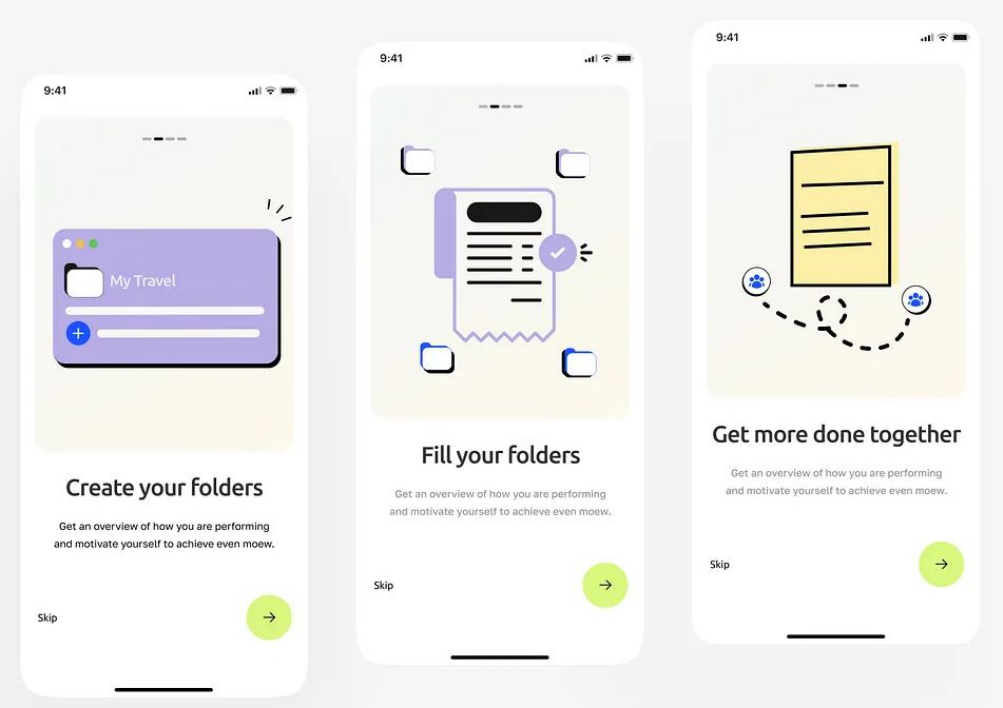
Can users understand how the system works?

Using a new product, like a new website, can initially take considerable effort. However, a strong **conceptual model**, built on familiar design elements and clear explanations, simplifies decision-making and encourages confident use.
A conceptual model doesn't need to be complex; it just needs to convey what's possible in a way users can easily understand.

Design good conceptual models by:

- Aligning with familiar metaphors and mental models.
- Using consistent language, symbols, and structures.
- Offering step-by-step onboarding or contextual hints.

Conceptual model

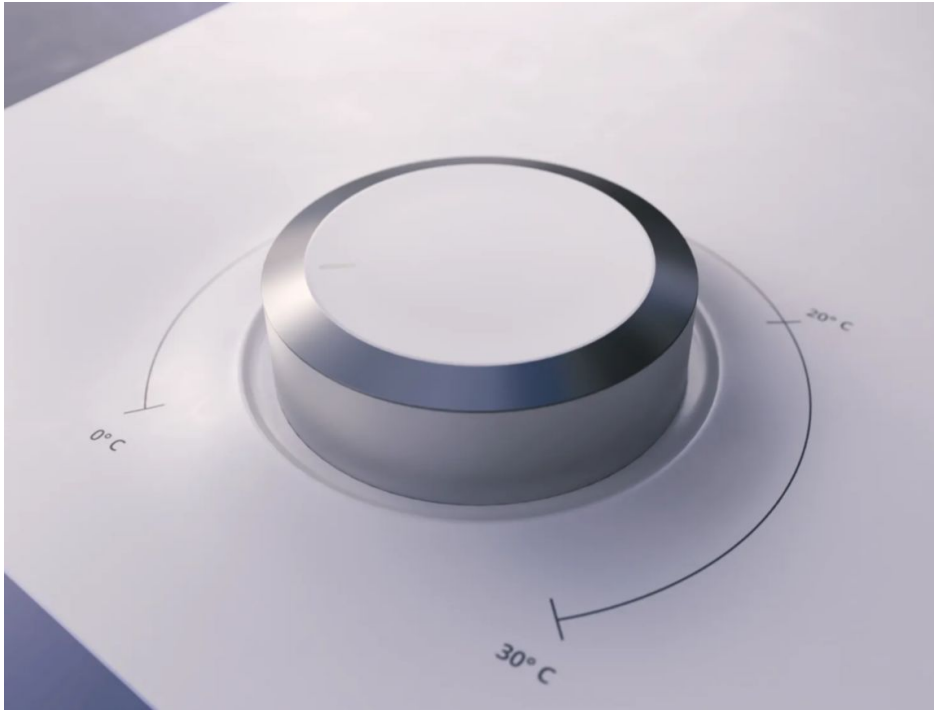


Affordance

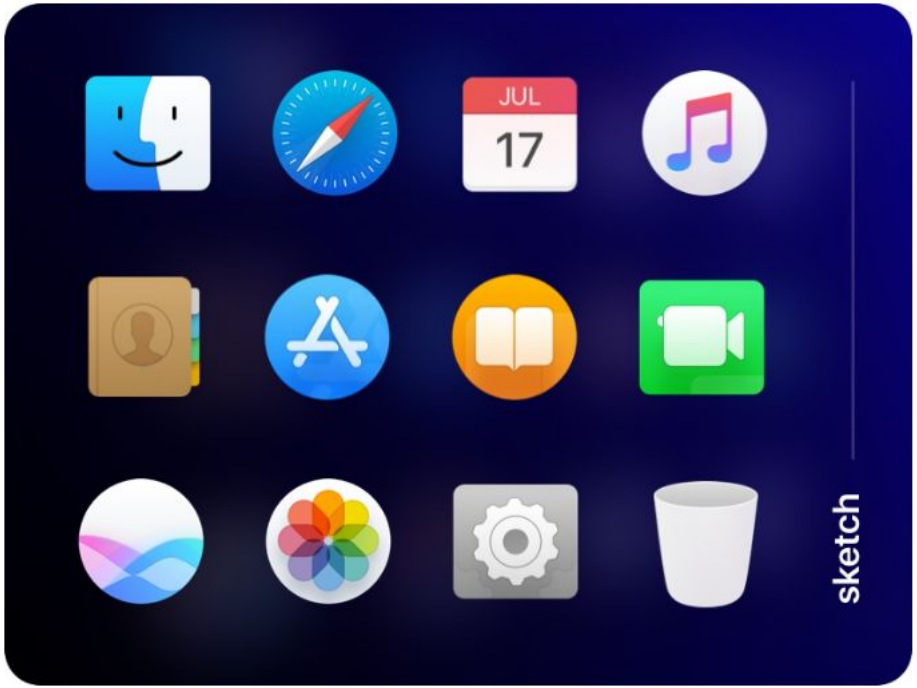
Norman identifies affordance as an essential design principle and describes it as “the relationship between a physical object and a person.” Affordance relies on knowledge in the head (what we already understand) and cultural relevance (what we socially expect).

For example, a coffee mug has high affordance because you instantly know how to hold it just by looking at it.

Affordance



Affordance



Signifiers

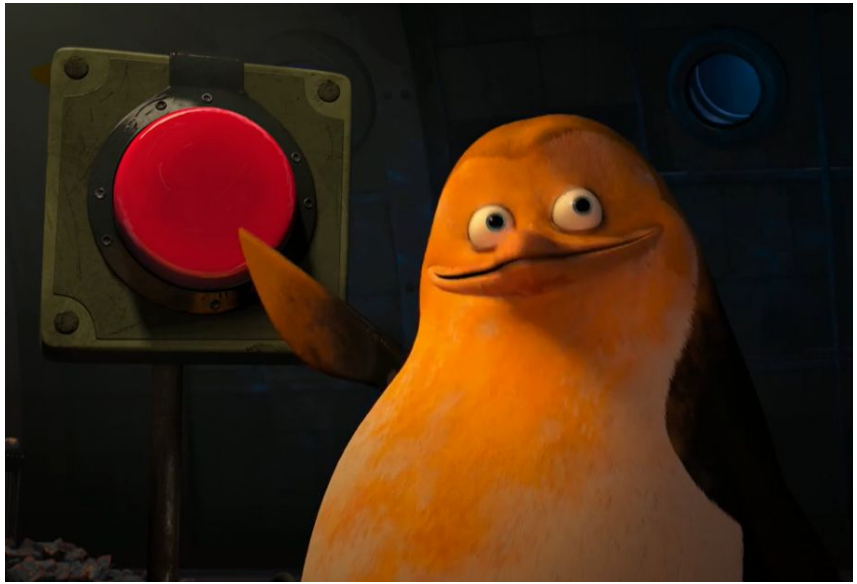
A signifier communicates where an action should take place.

"If affordances aren't obvious, use signifiers!" — Don Norman.

A button label tells us precisely what action the corresponding control takes. But without a clear written or visual cue, the implied action becomes obsolete. A big red button usually indicates that it will perform a critical action, such as an emergency exit. However, colour-coded controls rely on cultural knowledge.

Signifiers

The video basically shows what may happen when you use something without knowing!



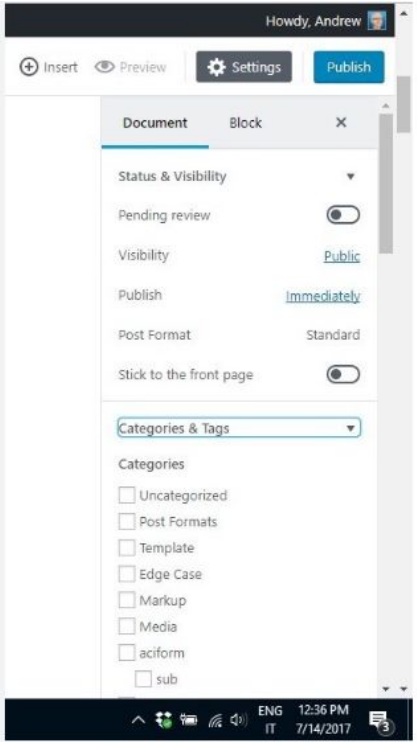
https://www.youtube.com/watch?v=kNz91co_zVg

Mapping

Does the relationship between controls and their effects feel natural?

Mapping deals with being able to map out actions in relation to how they work in the real world. Mapping must feel natural, so users don't have to think too hard about how each control affects their environment.
For example, randomly flicking light switches to see which one works is a sign of poor mapping. In contrast, stove controls arranged to match the layout of their corresponding burners offer a much clearer, more logical experience.

Mapping


Howdy, Andrew
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Constraints

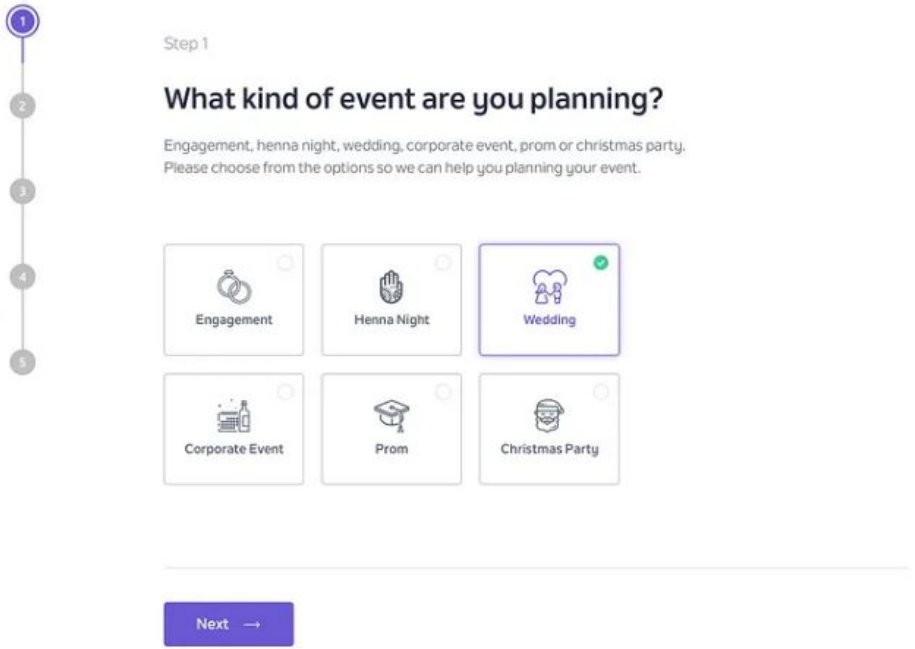
How does the design prevent errors or limit misuse?

Constraints help limit user interactions with both physical and digital systems.
For example, instead of overwhelming users with long forms, we can progressively disclose fields in manageable steps, reducing distractions and easing the cognitive load.

Different types of constraints:

1. **Physical constraints** limit what actions are physically possible; for example, we can't move a mouse cursor beyond the edges of the screen.
2. **Semantic constraints** rely on meaning; for instance, the shape of a plug and socket suggests how and where to insert it.
3. **Cultural constraints** rely on learned conventions, like a progress bar indicating something is happening, much like waiting our turn in a physical queue.
4. **Logical constraints** use reasoning to narrow options, such as knowing to scroll down to view more content on a page.

Constraints



Summarizing the whole thing

1. **Discoverability**: Can users find what actions are possible?
2. **Feedback**: Do users get clear responses to their actions?
3. **Conceptual Models**: Can users form a clear mental model of how it works?
4. **Affordances**: What does the design allow users to do?
5. **Signifiers**: What signals show users where to act?
6. **Mapping**: Is there a natural relationship between control and result?
7. **Constraints**: How does the design prevent misuse or confusion?

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References

1. https://uxdesign.cc/ux-psychology-principles-seven-important-questions