

# Knowing What To Do: Constraints, Discoverability, and Feedback

The Design of Everyday Things by Don Norman  
Chapter 2

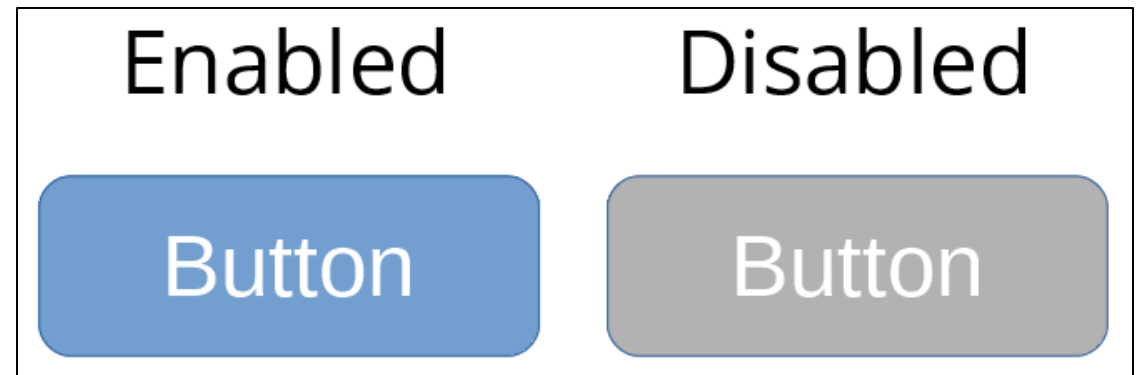
Presenter: Drew Guarnera

# The Four Kinds of Constraints

- Physical
- Cultural
- Semantic
- Logical

# Physical Constraints

- Tangible barriers limiting possible actions.
- It should be visible and easy to interpret.



# Cultural Constraints

- Set of allowable actions based on social situations.
  - Cultural norms, conventions, or standards
- Situation dependent.
- Likely to change over time.



Website Localizations:

<https://www.yahoo.com/>

<https://www.yahoo.co.jp/>

# Semantic Constraints

- It is based on our understanding of our current situation and the world.
- It can also change with time.



# Logical Constraints

- A logical relationship between spatial or functional layouts of components and the things they affect or things that affect them.



# High-level Interactions

- Activity-centered controls
  - It can provide a simple interface for a complex series of actions.
  - The interface transitions from one state to another.
  - Provides precise and consistent states.
  - Lacks support for exceptional cases or unique states.

# Ensuring Desired Behavior

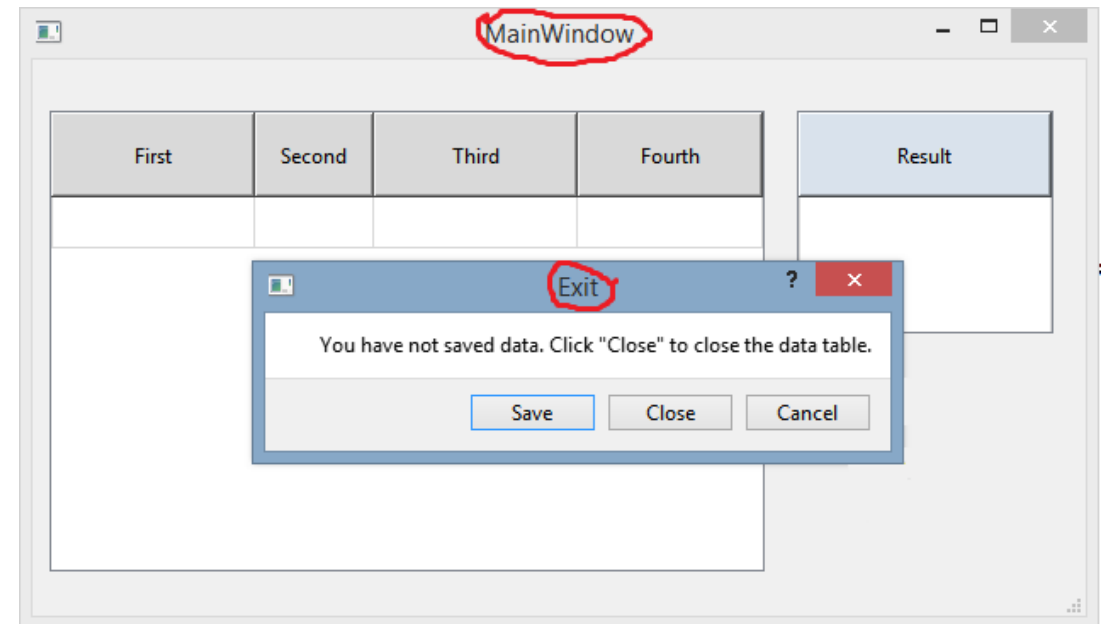
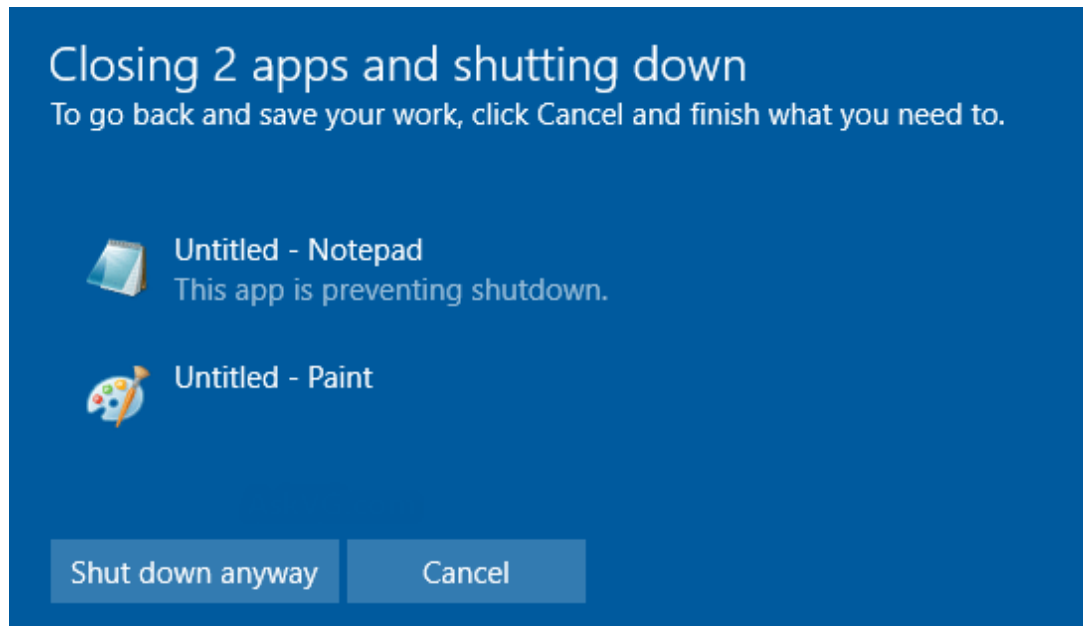
- Forcing Functions
  - An extreme form of physical constraints.
  - Failures at any stage of interaction prevent following interactions.
  - Requires careful use to prevent annoyance and attempts to bypass.
- Three Types
  - Interlocks
  - Lock-Ins
  - Lockouts

# Interlocks

- Forces operations to occur in a proper sequence.
- Prevents action until desired operations are complete.
- Examples:
  - Consider ordering online
    1. Put items in the cart.
    2. Proceed to checkout with the items
    3. Complete...
      - Shipping Info
      - Billing Info
    4. Place Order
  - Course prerequisites

# Lock-Ins

- Keep an operation active to avoid prematurely stopping it.

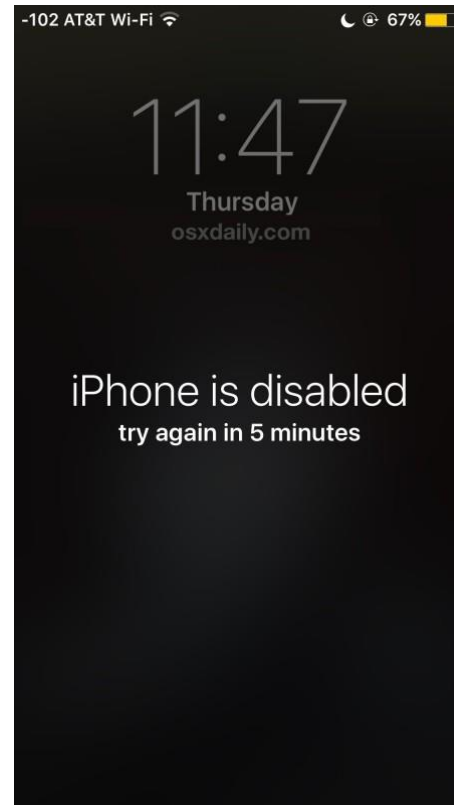


# Lockout

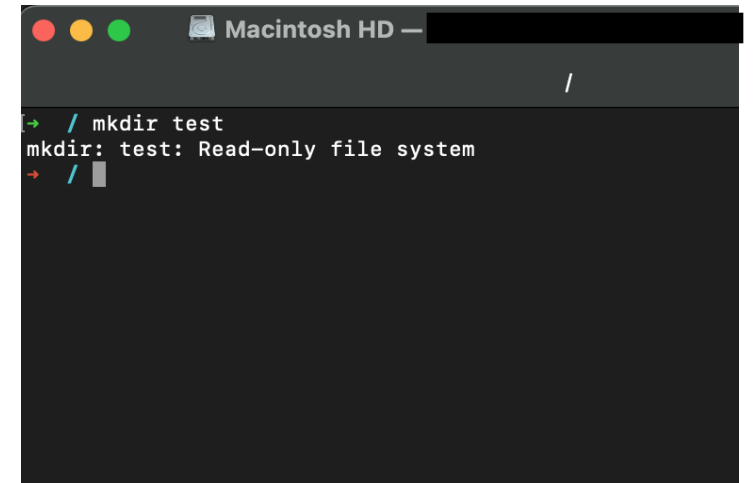
- Prevents an event, access, or action to occur.



1/29/2025



DOET Chapter 4



11

# REMEMBER!

- Discoverability needs:
  - Affordances
  - Signifiers
  - Constraints
  - Mappings
  - Feedback
  - Conceptual Models
- The presence and interplay between these design/psychological concepts form the System Image.

# Sound: The Non-Visible Signifier

- Not everything can be seen
- Things may not afford visibility to everyone
- The use of sound in design:
  - attracts our attention
  - informs us where something is taking place
  - may notify the state of an object
  - avoids impeding other senses
  - can annoy and distract attention

# Better Design is Possible!

## What's stopping us?!

- The Legacy Problem
  - A long-lived standard used by many products
- Few things happen in isolation
  - The world is complex, with multiple moving parts and interactions.
- Design changes may have a significant "ripple effect."
  - If one product's design changes, other products may need to be modified to support it.
  - If the other products refuse to change with you, the design's support and viability will collapse.

# How does this impact our designs?

- Conventions are cultural constraints
  - "Culture" exists at many levels
  - People are accustomed to "their" way of doing things
  - It can be contextually sensitive
- When in doubt, consistency is a **safe** choice
- Transitioning from old to new
  - Skeuomorphic design can hide change with a familiar "look ."
- Change requires ***motivation AND adoption .***

# Apple vs. Headphones

- Headphones attached by wires were invented in 1910
- **106 years later, Apple removed the 3.5mm headphone port from the iPhone**
- How did they get away with that?!
- Why did they do this?!

# Apple vs. Headphones: Cultural Shift

- They started with just the iPhone 7 (2016).
  - The device was the one most often regularly as smartphones were mainstream
  - They included an adapter to allow for the use of wired headphones
  - Wireless headphones were adopted mainstream around 2010
- That same year...they sold a solution...AirPods!
  - Convenient, small, and aesthetically pleasing (No wires at all!)
  - Integrate into the environment effortlessly
- 2018, they removed it from the other devices
  - Others followed suit now that the “convention” was established
- Following that, wireless earbuds are now some of the most popular headphones.