Chapter 20. Affordances Demystified
What is an “affordance”? 

• “To afford” means to offer, yield, provide, give, furnish, help, or aid

In HCI/UX, an affordance is something that helps, aids, or makes it possible for a user to do something
Types of affordances in interaction design

- Cognitive affordances
- Physical affordances
- Sensory affordances
- Functional affordances
- Emotional affordances

... but wait there is one more!
Cognitive affordances

• A cognitive affordance is a design feature that helps, aids, supports, facilitates, enables, or makes it possible for users to do their cognitive actions

• Thinking
• Deciding
• Learning

• Understanding
• Remembering
• Knowing about things
Cognitive affordances

- Play a starring role in interaction design
  - Especially for less experienced users
  - Who need help with understanding and learning
- Key for users to know what to do and how
- Example, a clear and concise error message as feedback
- Depend on shared conventions of meaning (e.g., meanings of icons)
False cognitive affordances misinform, mislead
False cognitive affordances misinform, mislead
False cognitive affordances
misinform, mislead
Cognitive Affordance

• What do you think when you see this error message?
Cognitive Affordances

• What does this tell you about the internals of MS Excel?

• How does that clash with your knowledge of your file system?
Physical affordances

• A physical affordance is a design feature that helps, aids, supports, facilitates, enables, or makes it possible for users to do their physical actions
  – Clicking, touching, pointing, gesturing, and moving things
  – In non-computer designs, it is about handles, levers, gripping, turning, moving things
• Have to do with real physical actions upon physical objects
• Are associated with “operability” characteristics of user interface artifacts
Fitts’ law

• Governs certain kinds of physical movement during interaction
  – Cursor movement for object selection
  – Dragging and dropping objects
  – Any movement from initial position to target at terminal position
  – About object distance, size, and proximity
Fitts’ law

• Empirically based mathematical formula predicts user performance
  – Reckoned in terms of time and errors

• Time to make movement is:
  – Proportional to $\log_2$ of distance
  – Inversely proportional to $\log_2$ of cross-section of target normal to direction of motion
Physical Affordances

iPad calendar looks like a book with pages. What physical affordances does it have?
Flip pages...
Sensory affordances

• A sensory affordance is a design feature that helps, aids, supports, facilitates, enables, or makes it possible for users to sense things

  – Seeing, hearing, feeling (and tasting and smelling) something

• Are associated with “sense-ability” characteristics of user interface artifacts

• Used in supporting role to help user sense

  • Cognitive affordances and Physical affordances
Sensory affordance design issues

- Include visibility, noticeability, discernability, legibility (of text), audibility (of sound)
- Include features or devices associated with haptic/tactile sensations
- Example, legibility of button label text supported by
  - Adequate size font
  - Appropriate color contrast between text and background
Functional affordances

- Connect physical user actions to invoke system (back-end) functionality
- Link usability to usefulness
- Add purpose to physical affordance
  - For example, it’s the reason a users clicks on a button
  - Help users do real work (and play)
  - Help users use system to get things done
How do I use this thing?

- Simple app, capture your gas expenditures
- Day, gallons, price per gallon, done... right?
- What does this interface (affordances) tell you?
User-created affordances as wake-up calls to designers

• Post-it™ notes added to computer monitor or keyboard

• Trails blazed with user-created artifacts
  – In wake of spontaneous “formative evaluation”

• Messages to designers about how user would have liked the design
User-created affordances
User-created affordances
User-created affordances
User-created affordances

STATIONERY:

UPSIDE-DOWN,

FACE UP
User-created affordances

- Tactile screw-head added to distinguish alarm clock shutoff button by feel
User-created affordances
User-created affordances

WARNING:

If you are using a Muppets cup, or any other regular-sized mug, and you’re making a latte or cappuccino (sp?) or anything that uses 2 little thingies, DO NOT put it on the big mug setting. You WILL make a mess. I learned this the hard way.

—your friendly neighborhood teenager
Emotional affordances

• An emotional affordance is a design feature that helps, aids, supports, facilitates, enables, or makes possible a quality emotional impact

• Features or design elements that make an emotional connection with users

• Example, the ambiance inside Ikea stores
Affordances as an alliance in UX design

- The different types of affordances work together, connected in design
- To accomplish usage goals, user must sense, understand, and operate user interface objects
Social Affordances?

- What is a “social affordance”?

The quality of an artifact in any space which invites and facilitates social actions by the participants in that space.

from Sameer Ahuja’s MS Thesis
Consider Social Networking Sites...

- We want to support (social features)...
- Sharing Content
- Social Browsing
- Social Search
- Interaction (with others)
- Collaboration

But how do they do that?

Thursday, April 25, 13
How? Through Social Actions

- Social Actions
- Tagging
- Activity Streams
- User Profiles + relationships (i.e. friends, follow)
- Comments
- Ratings/Votes
Twitter (my page)

- Sharing Content
- Social Browsing
- Social Search
- Interaction (with others)
- Collaboration
Facebook

Thursday, April 25, 13
Social Features x Social Actions

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from Sameer Ahuja’s MS Thesis
In class activity

- Explore VTS (http://vts.cs.vt.edu) for 15 minutes
- Discuss its social affordances
  - What are the social features you see?
  - What social affordances do you recognize?
  - How can it be improved?