

**Week 2: Second Wave HCI (Part 1)**  
**From Cognition to Experiences of Bodies**

**Chunk 2: Affordances**

Definitions of affordances

Types of affordances

Implications for design

Week 2: Second Wave HCI (Part 1)  
From Cognition to Experiences of Bodies

## Chunk 2: Affordances

### **Definitions of affordances**

Types of affordances

Implications for design

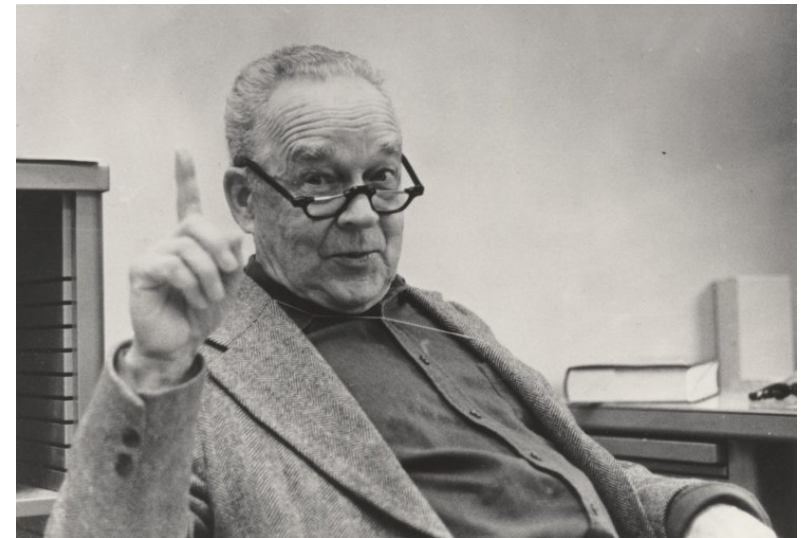
# Ecological Psychology

Developed by James J. Gibson (1904-1979)

A view of psychology as the study of interaction between humans and their environment

Focus on **how structures in the environment relate to human perception and action**

Adopted by HCI to study how people interact with technology



# Affordance

Attributes of an object, which allows a person to perform an action

*“all action possibilities”*, Gibson (1979).

Apparent and perceptible without a need for reflection or investigation

E.g. a handle *affords* pulling



# Affordance in HCI

Don Norman used the notion of affordances in HCI in 1988

A range of everyday objects:  
doors, switches, chairs, etc.

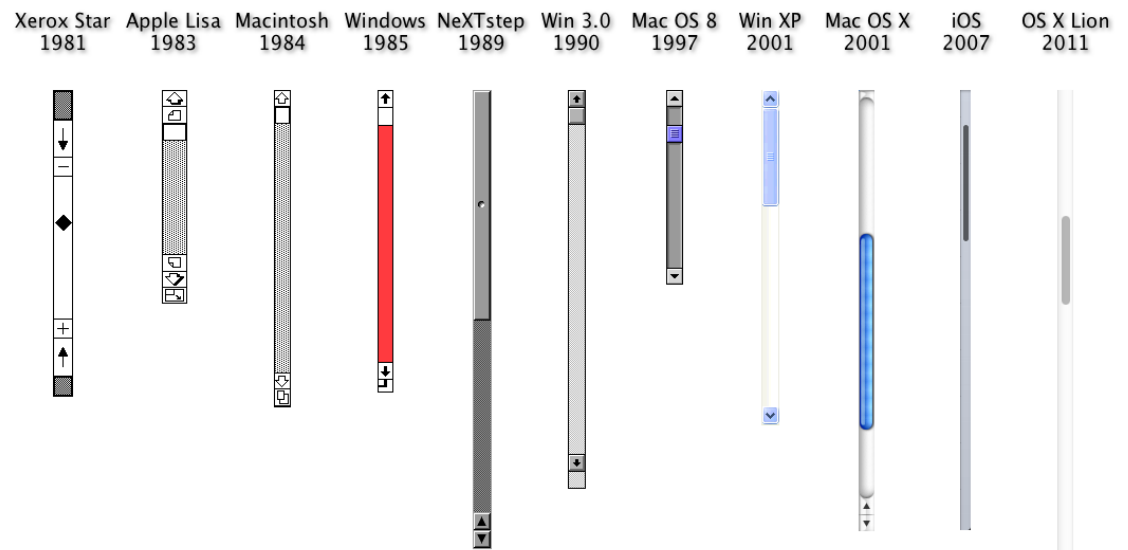
An affordance demonstrates to users what to do with interface elements.



# Affordance in HCI

Interfaces elements should be designed to have **explicit clues** about how a person can use them

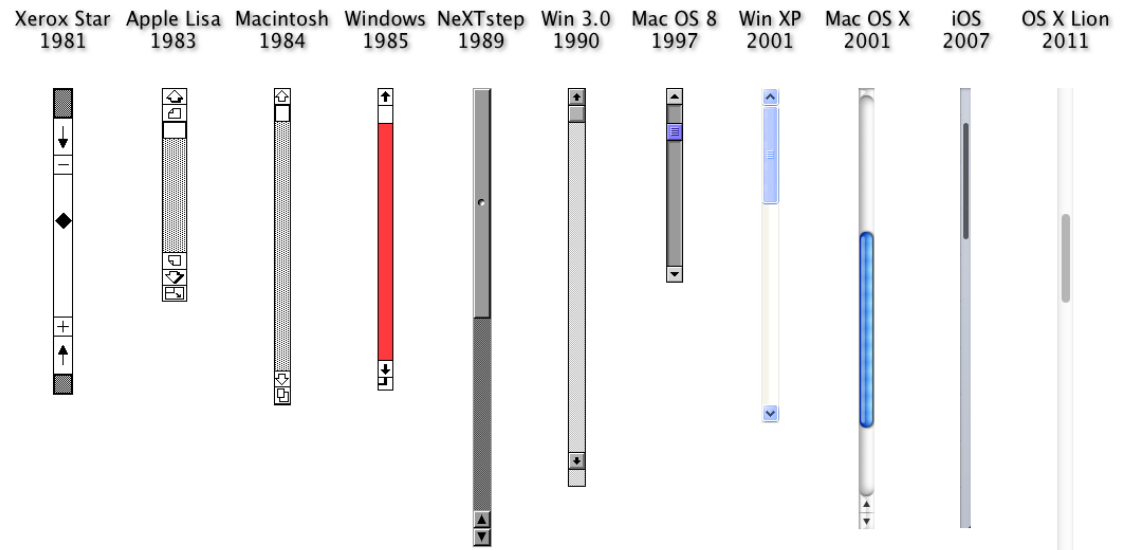
E.g.: Buttons afford clicking, scrollbars afford moving..



# Affordance in HCI

Affordance can be used as a tool to critique interface designs:

E.g. to what extent does it provide **instantly perceptible** or **misleading** function



Week 2: Second Wave HCI (Part 1)  
From Cognition to Experiences of Bodies

**Chunk 2: Affordances**

Definitions of affordances

**Notions of affordances**

**Implications for design**

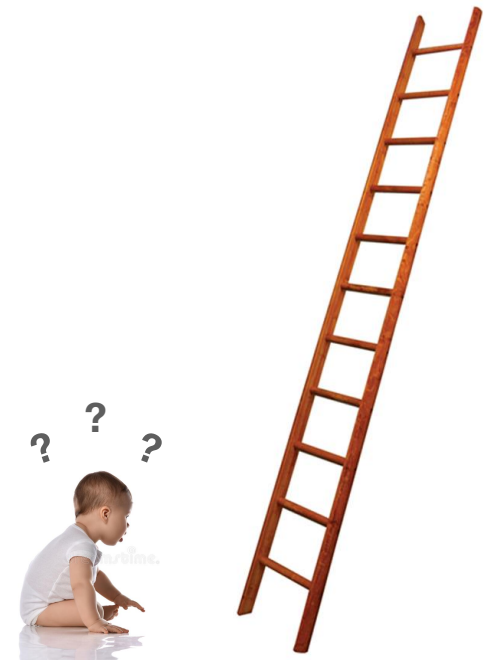


# Gibson's notion of affordances

An affordance is:

- Latent in the environment
- Objectively measurable
- Independent of an agent's ability to recognise it...but
- Dependent on their abilities and motivation

An affordance is: the relationship between an agent and the action possibilities afforded by elements in the agent's environment



# Norman's notion of affordances



Real

Vs.

Perceived



Physical objects

User can manipulate objects  
Use/function is perceptually obvious  
Identified through physical characteristics

Virtual objects

User learns function  
Identified through convention

# Norman's notion of affordances



## Real



**Stronger link:** actionable properties of tangible objects are directly perceived from physical properties and linked to what we can do with them

Vs.

## Perceived



**Weaker link:** Input devices afford physical actions (e.g. clicking, typing), but the functions they control in the virtual world are programmed

# Norman's notion of affordances

Where do perceived affordances come from?



## Perceived

### Cultural constraints

Conventions learned from computer use, e.g. icons should be double clicked

### Physical constraints

Physical parameters of computer I/O devices



**Weaker link:** Input devices afford physical actions (e.g. clicking, typing), but the functions they control in the virtual world are programmed

### Logical constraints

Limitations imposed on the users by the rules of actions

Recall “constraining” in external cognition?

# Norman's notion of affordances

## Four principles for interface design



1. **Consistency:** *“Follow conventional usage, in choice of images and allowable interactions”*
2. **Explicit instructions:** *“Use words to describe the desired action”*
3. **Metaphors:** *Use metaphors with explicit links between representation and corresponding action*
4. **Coherence:** *“Follow a coherent conceptual model, so that once part of the interface is learned, the same principles apply to other parts”*

Recall “constraining” in external cognition?

# Gaver's notion of affordances

Separating affordances from the information available about them



| Perceptual information? | Affordance?       |             |
|-------------------------|-------------------|-------------|
|                         | No                | Yes         |
| Yes                     | False             | Perceptible |
| No                      | Correct rejection | Hidden      |

Recall “explicitness” and visibility in external cognition?

# Gaver's notion of affordances

Separating affordances from the information available about them



## Perceptible affordance

The interface element offers information about how it may be acted upon

E.g. hyperlinks, buttons with depth to conveying click ability

# Gaver's notion of affordances

Separating affordances from the information available about them



## Hidden affordance

The affordance isn't available until an action has been taken to reveal it

E.g. Hovering over a button to see whether or not it's clickable (hiding 'clickability')

Dropdown menu (hiding navigation options)



# Gaver's notion of affordances

Separating affordances from the information available about them



## False affordance

Conveying the impression that an interface element does something, but does something unexpected instead

E.g. Clicking a logo that leads to nowhere on a webpage

A placebo button

# Gaver's notion of affordances

Separating affordances from the information available about them



## Correct rejection

*“people will usually not think of a given action when there is no affordance for it nor any perceptual information suggesting it”*

# In summary...

A shift of view of cognition to **how structures in the environment relate to human perception and action**

Affordance: an alternative account of interaction design

the relationship between an agent and the action possibilities  
afforded by elements in the agent's environment

Affordances in HCI & Design implications

Consistency, Explicitness, Metaphors, Coherence

Distinguishing false, hidden and perceptible affordances for ease of use

# Next...

**Week 1: Second Wave HCI Part 1 From  
Cognition to Experiences of Bodies**

**Chunk 3: Phenomenology**