

CSC13112 – Thiết Kế Giao Diện

Graphic Design – Part 1

7/2022

Outline

- Graphic design
 - Affordance
 - Affordance in HCI design
 - Visible constraints

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Graphic design

- **Graphic design:** refers to artistic and professional disciplines which focus on **visual communication** and **presentation**
- In UI, it refers the **look and feel** portion of an interface
 - initially encountered by users
 - eye catching
 - conveys an impression, mood, beauty, etc.
 - facilitates finishing the task at hand
 - suggests trust



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What are these items?



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Affordance

- "Perceived and actual properties of a thing that determine how the thing could be used" – *Don Norman*
- An **affordance** is a quality of an object that allows an individual to perform an action
 - Related to **look and feel** of an object



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Affordance (cont'd)

- Two types of affordance
 - Perceived affordance
 - design invites people to take possible actions
 - Actual affordance
 - the actual actionable properties of the product



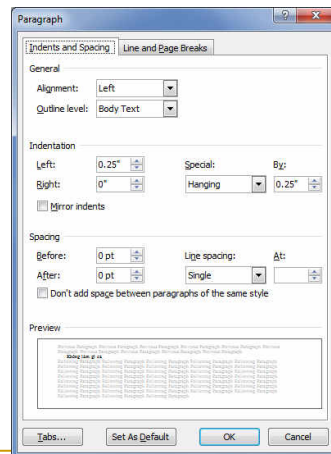
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Perceived affordance

- Is the perceived properties of the object that suggest how we could use it
 - buttons for pressing
 - switches for toggling



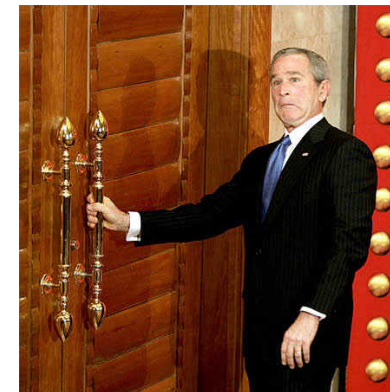
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Perceived affordance (cont'd)

- Poor affordances
 - Pull or Push?



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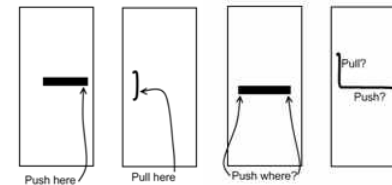
Perceived affordance (cont'd)

- Affordance can be dependent on
 - Experience
 - Knowledge
 - Culture of users



Perceived affordance (cont'd)

- Door handle – a classic affordance problem



- Vertical bar → pull
- Horizontal bar or flat surface → push
- Knob or handle → grab and twist
- Bar or handle location
→ door opens to the left or right



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Perceived affordance (cont'd)

- Affordance can be dependent on the
 - Context
 - Layout
 - Locations of the objects placed

Perceived affordance (cont'd)

- Perceived affordance (perception) can differ from real affordance
 - the paper-made chair has a perceived affordance for sitting
 - but it doesn't actually afford sitting: it collapses under your weight



Paper-made chairs

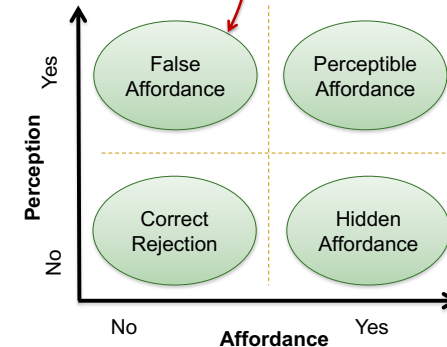
Perceived and real affordance

- **Affordance**
 - Perceived affordance (perception)
 - design invites people to take possible actions
 - Actual affordance
 - the actual actionable properties of the product
- Problems occur when
 - these are not the same
 - people's perceptions are not what the designer expects



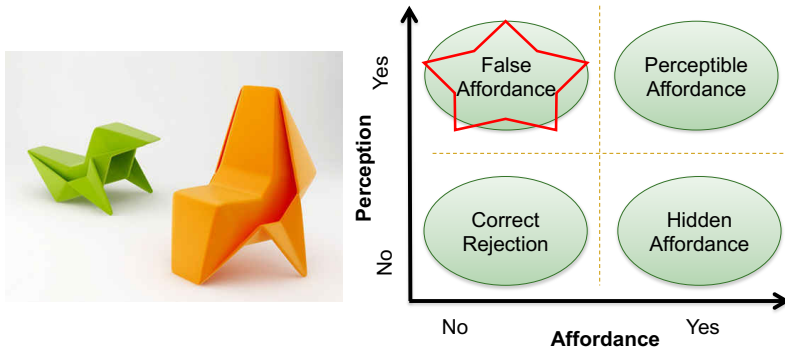
Perceived and actual affordance (cont'd)

- A **false affordance** exists when there is no action offered but the information that specifies it is
 - E.g., paper-made chairs



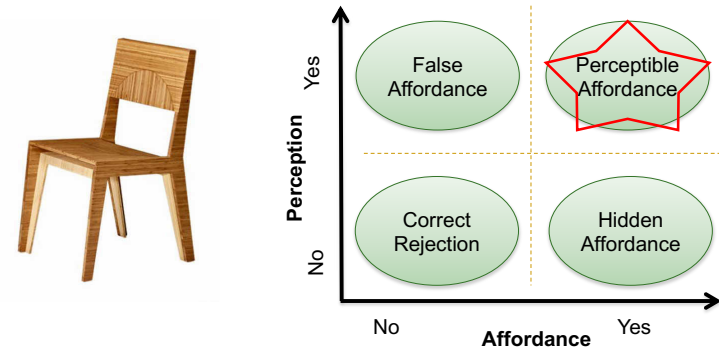
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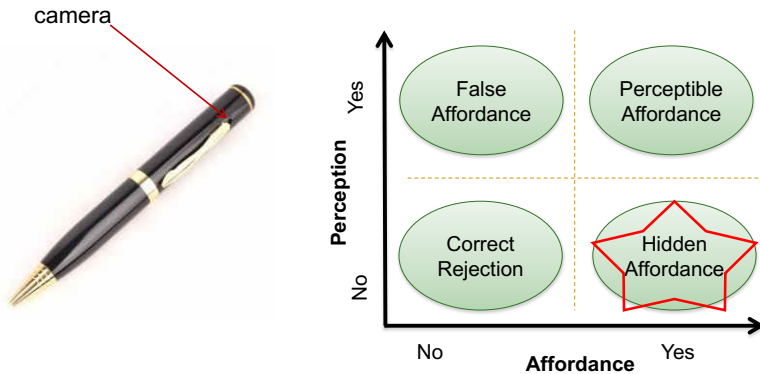
Perceived and actual affordance (cont'd)

- **Perceptible affordance – real affordance**



Perceived and actual affordance (cont'd)

Hidden affordance



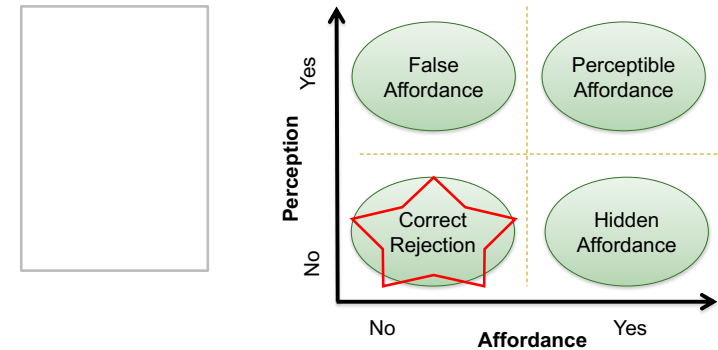
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Perceived and actual affordance (cont'd)

Correct rejection



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Signifiers

- An **affordance** is a quality of an object that allows an individual to perform an action
- A **signifier** is a thing that communicates the affordance of an object
- A signifier can be labels, instructions, shapes, colors, layouts, sound, videos, animations, mouse shapes, etc.

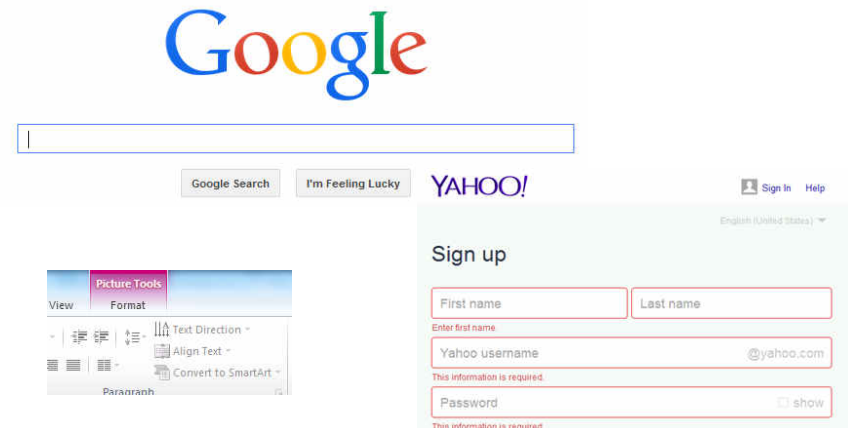
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Signifiers (cont'd)

- What are signifiers in the following?



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Affordance in HCI design

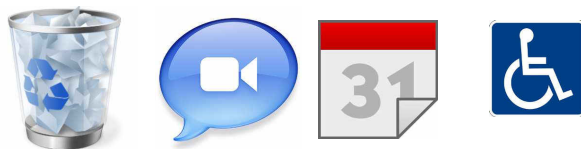


Affordance in HCI design (cont'd)

- In HCI, interfaces are virtual and do not have affordances like physical objects
- It does not make sense to talk about interfaces in terms of 'real' affordances - *Norman*
- Interfaces are better conceptualized as 'perceived' affordances
- In graphical, screen-based interfaces, the designer can control over perceived affordances
 - Display screen, pointing device, selection buttons, keyboard
 - Actions including touching, pointing, looking, clicking on every pixel of the display

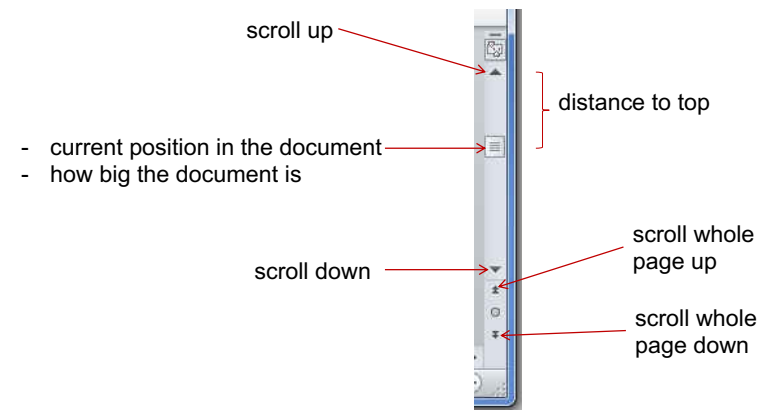
Affordance in HCI design (cont'd)

- GUI design
 - perception only through visuals
 - designer creates appropriate visual affordances via
 - familiar idioms
 - metaphors



Affordance in HCI design (cont'd)

- Windows' scrollbar affordance (MS Word)



Affordance in HCI design (cont'd)

- Cognitive considerations

- Perceived affordances

- ➔ □ Constraints

- Feedback
 - Mapping
 - Mental Models
 - Conceptual models

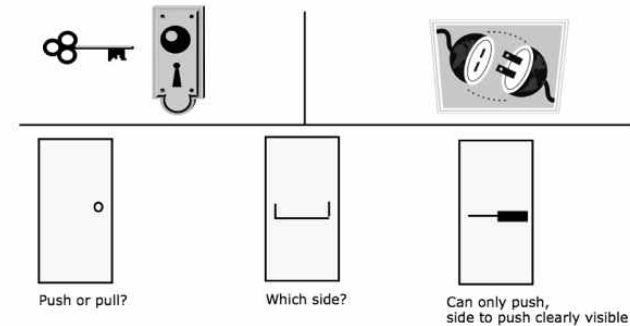
Source: Don Norman's book, *The Psychology of Everyday Things*



Visible constraints

- Limitations of the actions possible perceived from object's appearance

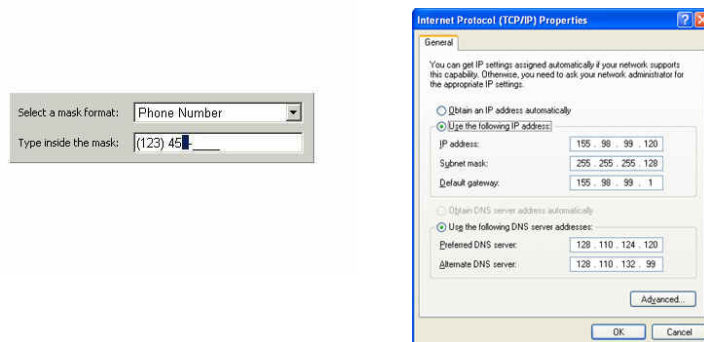
- provides people with a range of usage possibilities



Visible constraints (cont'd)

- The more constraints, the less opportunity for error

- particularly important for managing user input



Visible constraints (cont'd)

- Benefits

- Restricting user actions to valid actions
 - Helps prevent from selecting incorrect options
 - Eliminate need for perfect knowledge
 - Recognition over recall

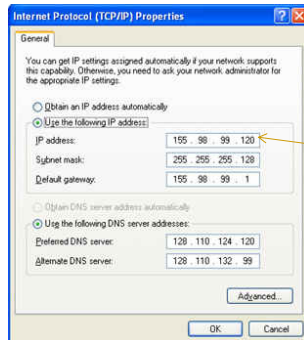
- The more constraints, the less opportunity for error

- But too much constraint, less flexible and less efficient
 - E.g., Expert users prefer typing than clicking to select choices



Visible constraints (cont'd)

■ Constraints vs. flexibility and efficiency



One has to click to set focus to enter IP at each part



Visible constraints (cont'd)

■ Three main types (Norman, 1999)

- physical
- cultural
- Logical

■ Physical constraints

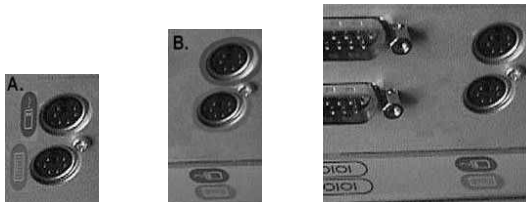
- refer to the way physical objects restrict the movement of things
- E.g. how many ways can you insert a CD or DVD disk into a computer?



Visible constraints (cont'd)

■ Logical constraints

- Exploit people's everyday common sense reasoning about the way the world works
- E.g., the logical relationship between physical layout of a device and the way it works



Visible constraints (cont'd)

■ Cultural constraints

- Groups of people learn idioms
 - red = danger, green = go
- But these differ in different places, e.g.,
 - Colors
 - Red is not at all danger (preferable) in many countries
 - Light switches
 - America: down is off
 - Britain: down is on
 - Faucets
 - America: counter-clockwise is on



Summary of topics

- Graphic design
- Affordance
- Affordance in HCI design
- Visible constraints