




UNIVERSITY OF SCIENCE
HO CHI MINH CITY

CTT534 – Thiết Kế Giao Diện
HK II 2013 – 2014

Graphics Design – Part 1

14/4/2016

Outline

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

Graphic design

- **Graphic design:** refers to a number of 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



What are they?



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, or an environment, which allows an individual to perform an action
 - Related to **look and feel** of an object



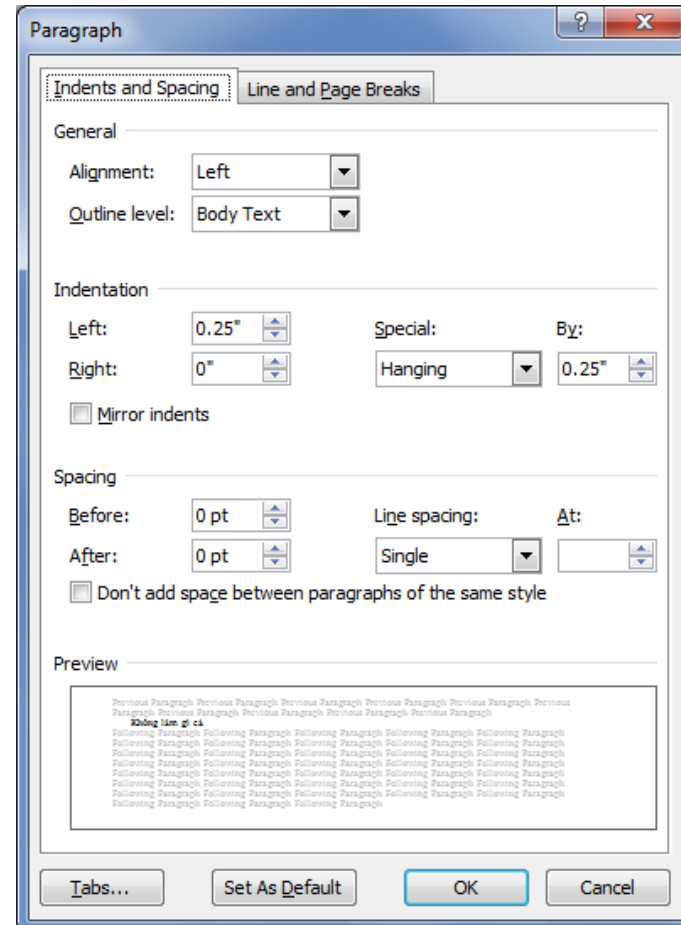
Affordance (cont'd)

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



Perceived affordance

- The perceived properties of the object that suggest how one could use it
 - buttons are for pressing
 - switch for toggling



Perceived affordance (cont'd)

- Poor affordances
 - Pull or Push?



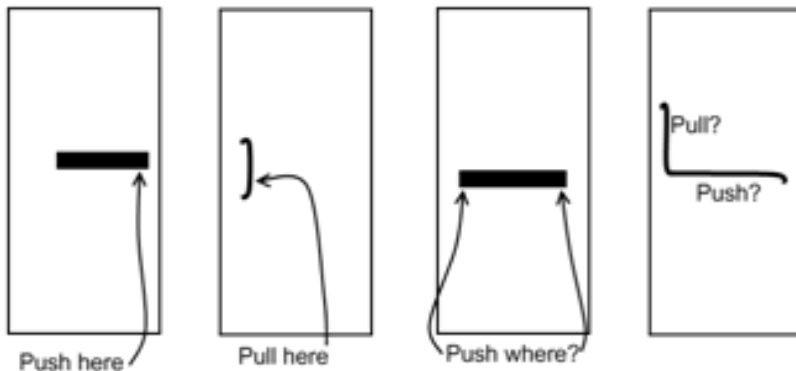
Perceived affordance (cont'd)

- Affordance can be dependent on the
 - Experience
 - Knowledge
 - Culture of the actor



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



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

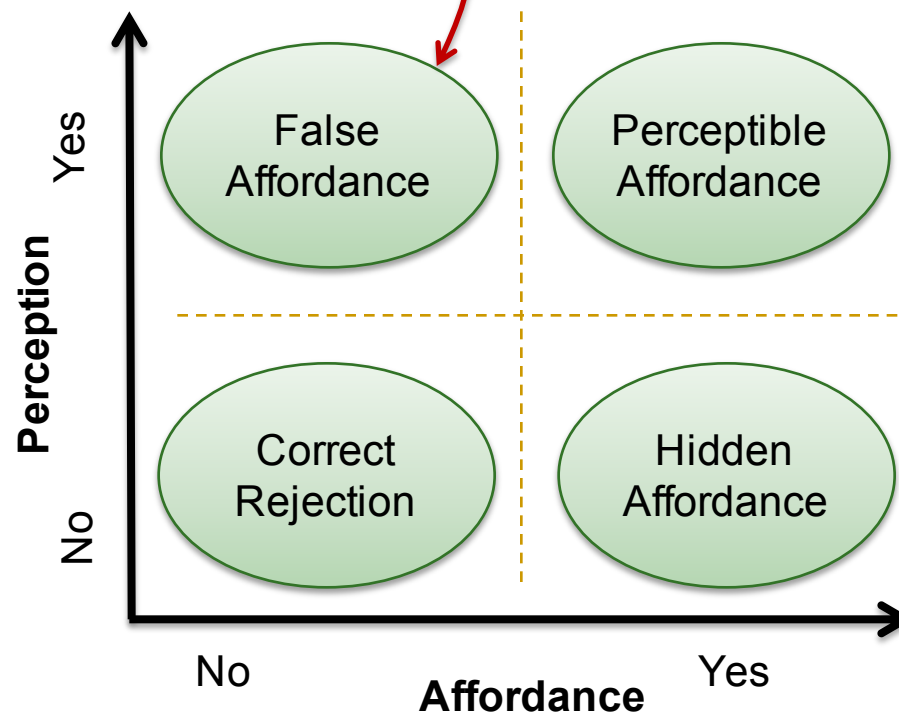
- ❑ Perceived affordance (perception)
 - design invites people to take possible actions
- ❑ Actual affordance
 - the actual actionable properties of the product

■ Problems occur when

- ❑ these are not the same
- ❑ people's perceptions are not what the designer expects

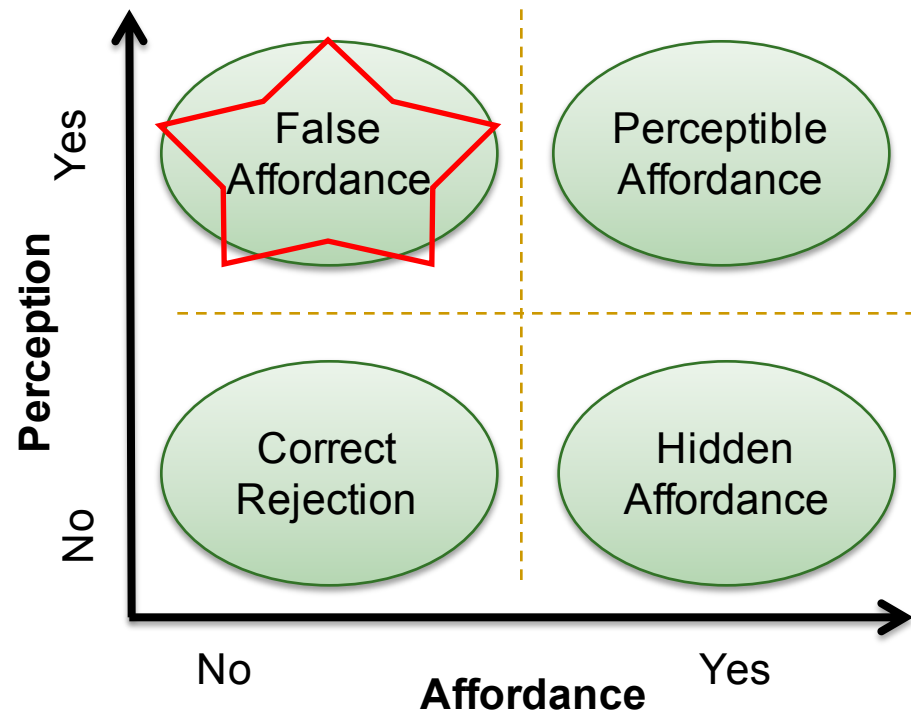
Perceived and actual affordance (cont'd)

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



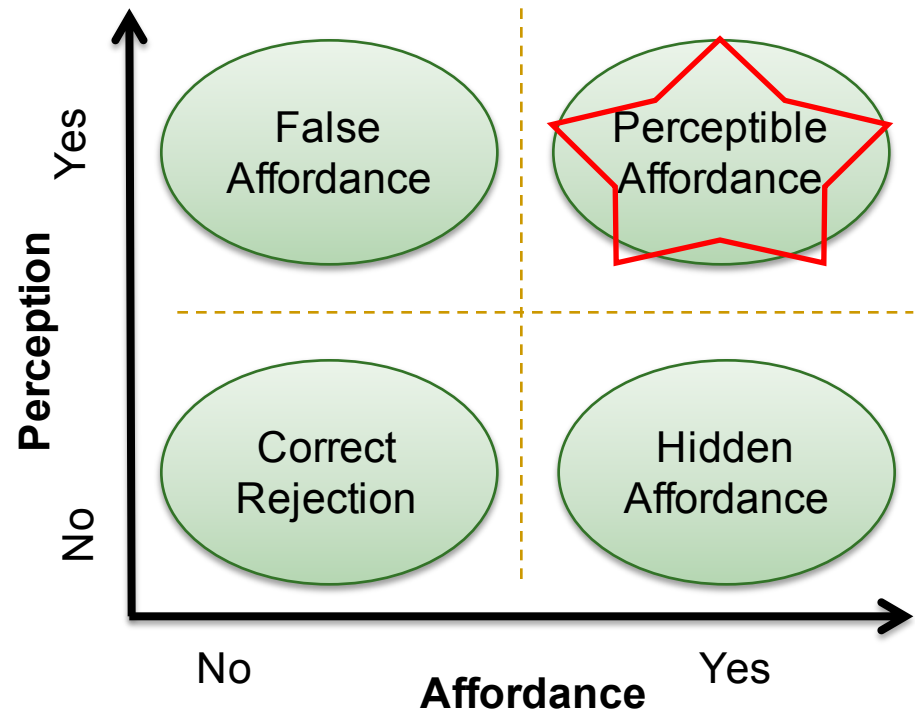
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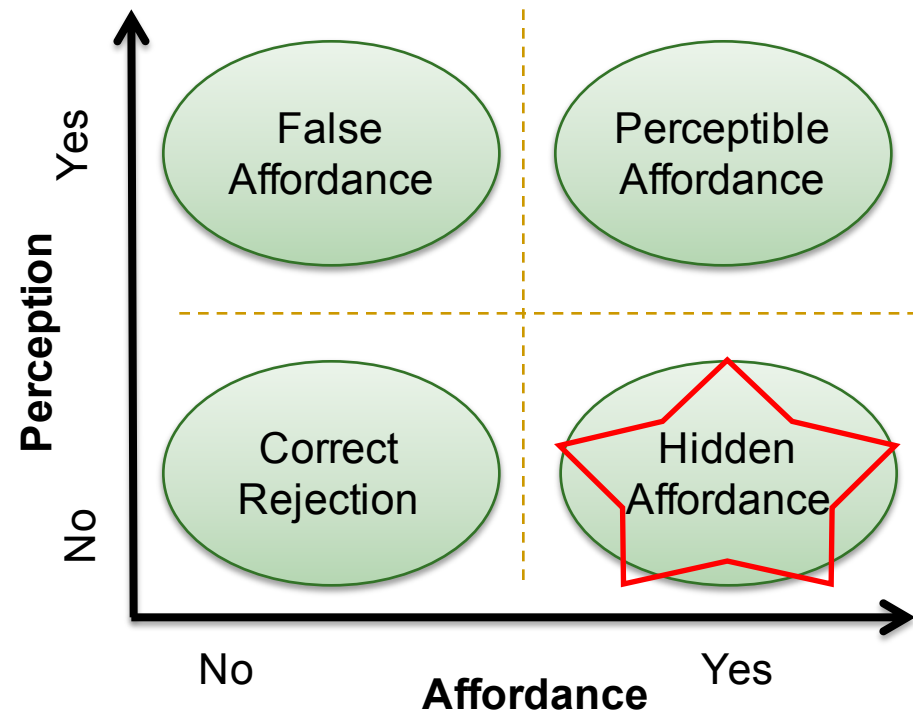
Perceived and actual affordance (cont'd)

■ Perceptible affordance – real affordance



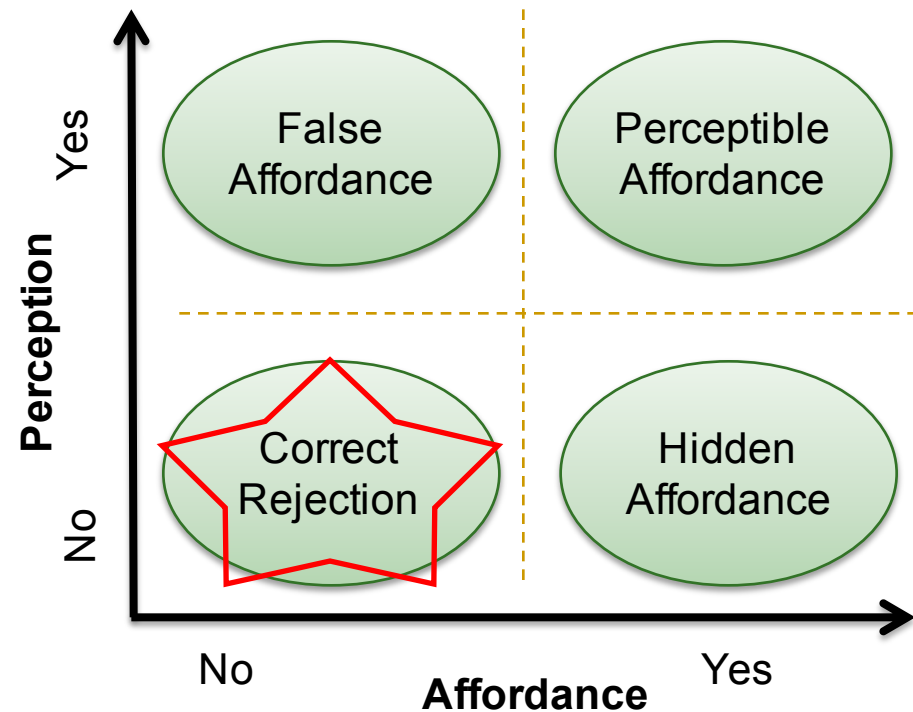
Perceived and actual affordance (cont'd)

■ Hidden affordance



Perceived and actual affordance (cont'd)

■ Correct rejection



Signifiers

- An **affordance** is a quality of an object, or an environment, which 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.
- In computer, we all use signifiers in design to communicate possible actions on UI

Signifiers (cont'd)

- What are signifiers in the following?

Google

Google Search

I'm Feeling Lucky

YAHOO!

 Sign In Help

English (United States) ▼

Sign up

First name

Last name

Enter first name.

Yahoo username

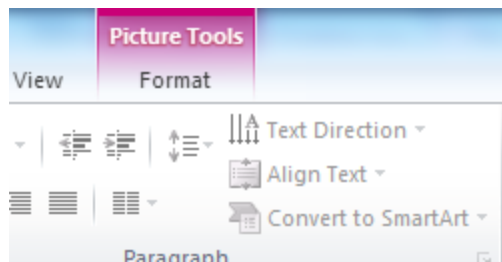
@yahoo.com

This information is required.

Password

☐ show

This information is required.



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

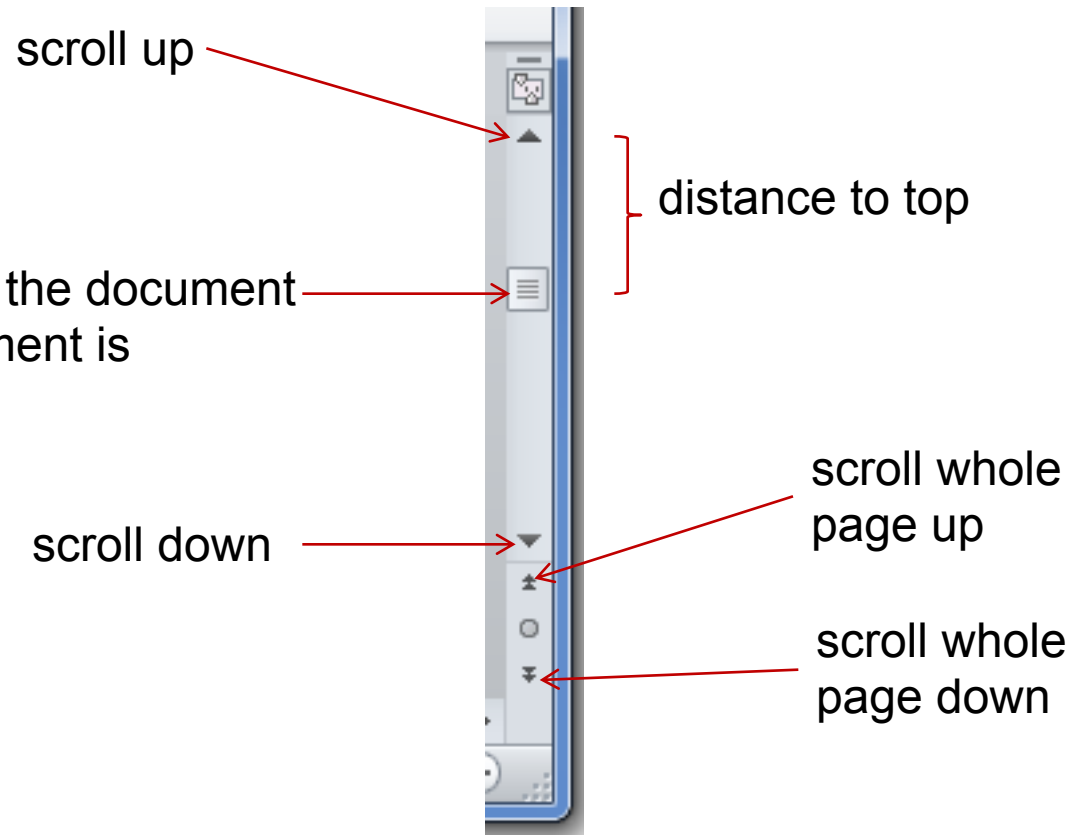
- perception only through visuals
- designer creates appropriate visual affordances via
 - familiar idioms
 - metaphors



Affordance in HCI design (cont'd)

■ Windows' scrollbar affordance (MS Word)

- current position in the document
- how big the document is



Affordance in HCI design (cont'd)

■ Cognitive considerations

- Perceived affordances

- □ Constraints

- Feedback

- Mapping

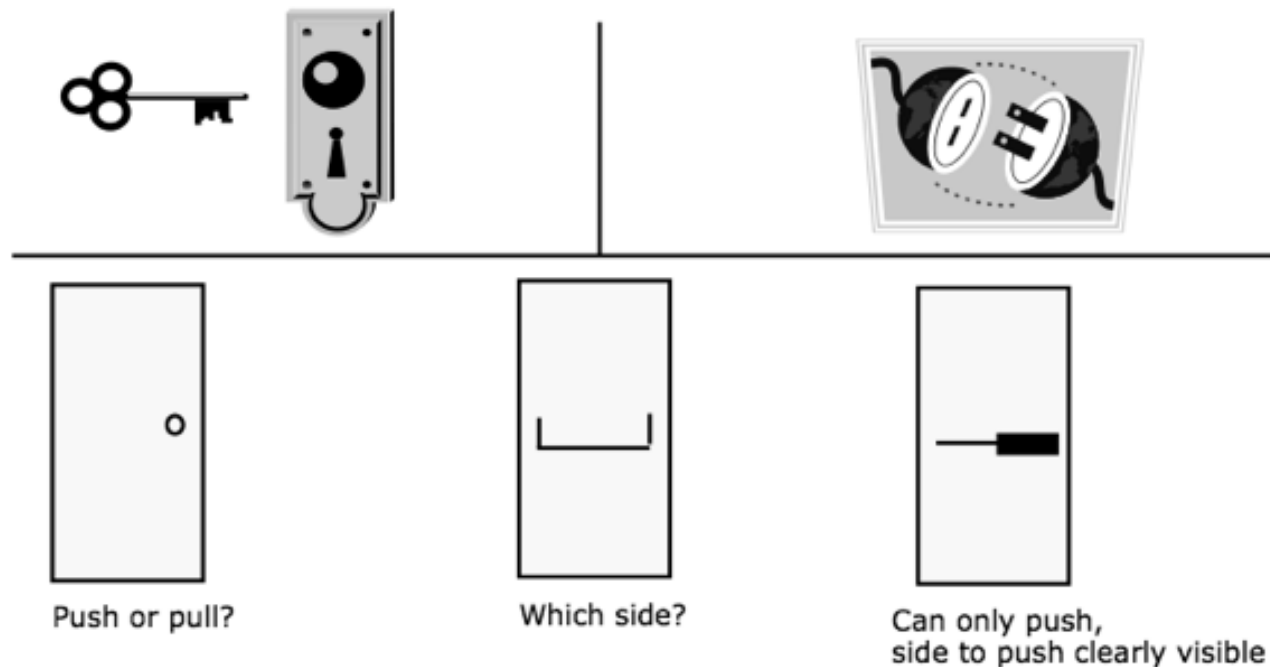
- Mental Models

- 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

Select a mask format: Phone Number

Type inside the mask: (123) 45-____

Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 155 . 98 . 99 . 120

Subnet mask: 255 . 255 . 255 . 128

Default gateway: 155 . 98 . 99 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 128 . 110 . 124 . 120

Alternate DNS server: 128 . 110 . 132 . 99

Advanced...

OK Cancel

Visible constraints (cont'd)

■ Benefits

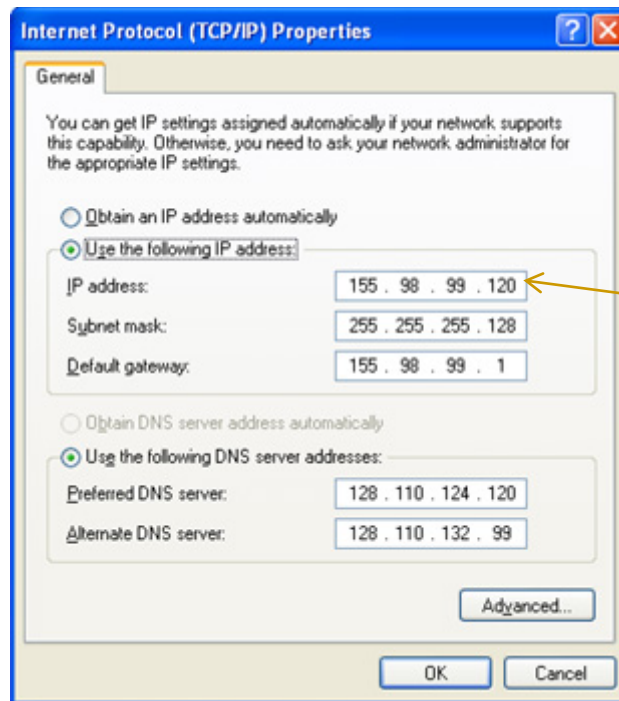
- ❑ Restricting user actions to valid actions
- ❑ Helps prevent from selecting incorrect options
- ❑ Eliminate need for perfect knowledge
- ❑ Recognition over recall

■ 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)

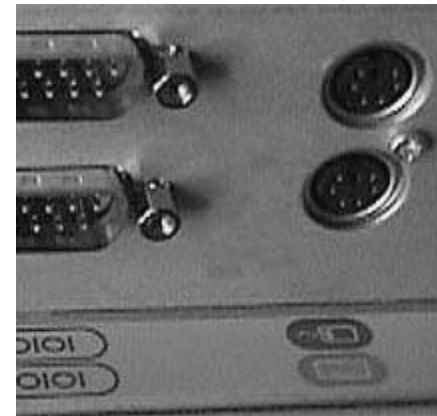
- Three main types (Norman, 1999)
 - physical
 - cultural
 - Logical

- 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