

## Interaction styles

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## Interaction styles

### Conversational

Command language  
Dialog imposed by the system

```
% date
Fri February 11
%
```

### Menus, forms

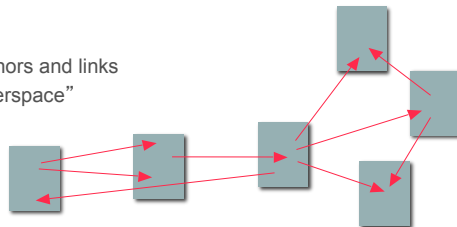
The system guides the user  
Dialog controlled by the system

```
Name : ..... 1 - search
Surname : ..... 2 - create
CPR Number : ..... 3 - delete
```

## Interaction styles

### Navigation

Nodes, anchors and links  
“lost in hyperspace”



### Direct manipulation

Physical, “direct” actions on (representations of) the objects  
Inspires all current “first person” interfaces

## Direct manipulation

Shneiderman (1983)

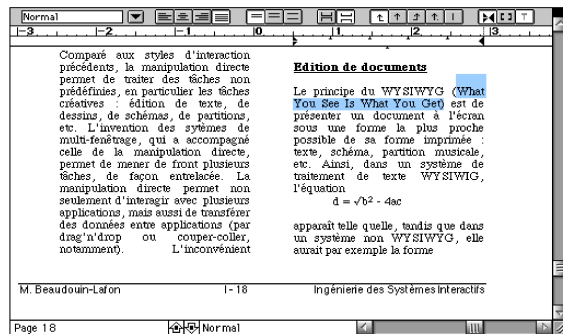
### Four principles

1. Continuous representation of the objects of interest
2. Physical actions rather than complex syntax
3. Quick, incremental, reversible operations whose effect on the objects of interest is immediately visible
4. Layered approach to facilitate learning

## Direct manipulation

### Document editing

Interaction controlled by the user



WYSIWYG

What  
You  
See  
Is  
What  
You  
Get

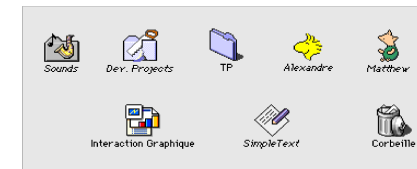
## Direct manipulation

### Iconic interaction

Generic interface

Metaphorical approach

Drag-and-drop



## WIMP interfaces: the current standard

### Presentation

Windows

Icons (and other graphical representations)

### Interaction

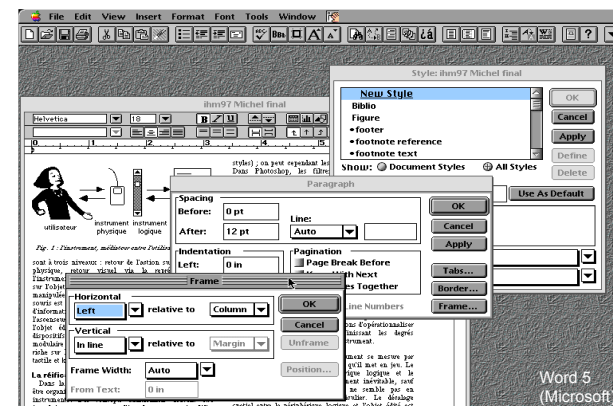
Menus,

Dialog boxes, Input fields, Scrollbars, etc.

### Input

Pointing, Selection, Gestures

## WIMP interfaces



## Interaction styles: gesture-based interaction

### Pen-based



PDA (Palm Zire)



TabletPC (HP)



Whiteboard(Smart)

### Touch-based



PLATO (Buxton, 1972)



Multitouch (Jeff Han)



iPad (Apple)

## Interaction styles: gesture-based interaction

### 3D gestures



VideoPlace (Krueger, 1983)



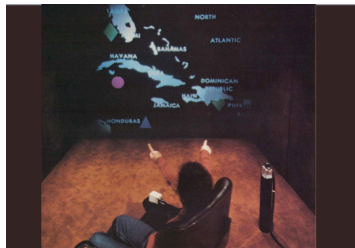
Charade (Baudel, 1993)



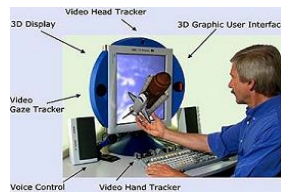
Kinect (Microsoft)

## Interaction styles: multimodal interaction

### Combine speech + gesture



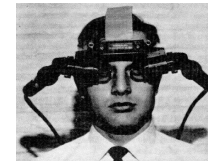
Put-that-there (Bolt, 1980)



Minority Report (movie)

## Interaction styles: Virtual reality

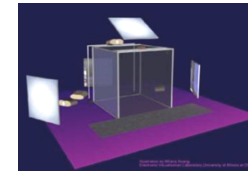
### Immersion of the user



Sutherland (1968)



Cybermind



CAVE

## Interaction styles: mixed and augmented reality

Augmented reality (later renamed Mixed reality):

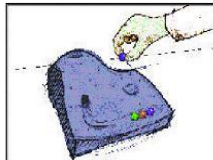
Augment physical object with computational capabilities

Tangible interaction:

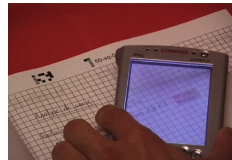
Use physical objects for interaction



Digital Desk  
Pierre Wellner



Marble answering machine  
Durrell Bishop



A-book  
Wendy Mackay

## What next?

Brain-computer interfaces?



Emotional agents



Robots



Your idea?