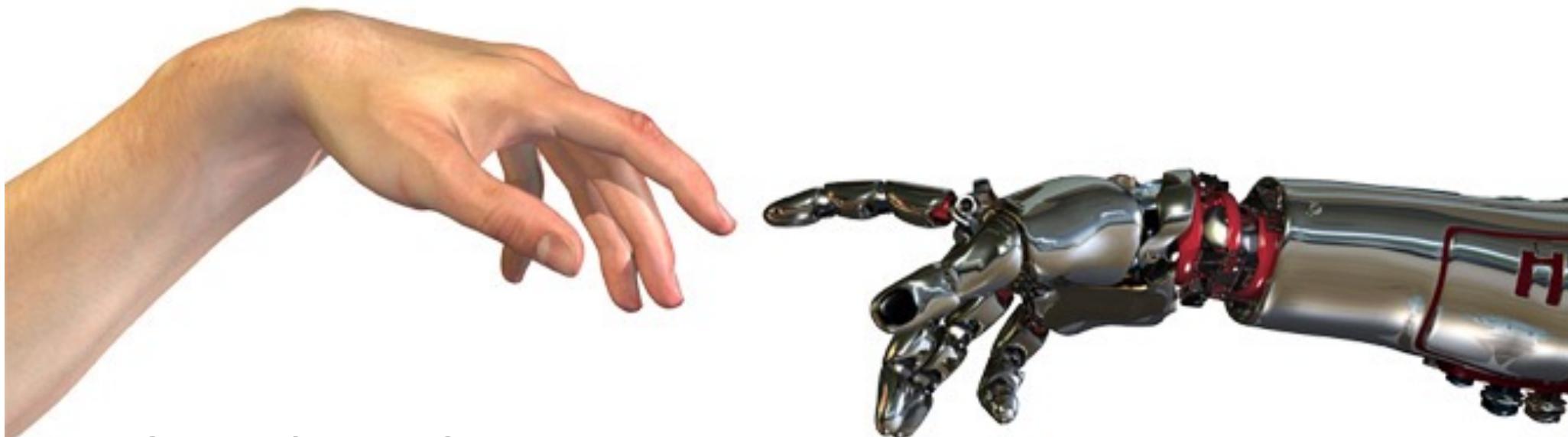


HUMAN-COMPUTER INTERACTION

UNIVERSAL PRINCIPLES OF HUMAN-COMPUTER INTERACTION DESIGN



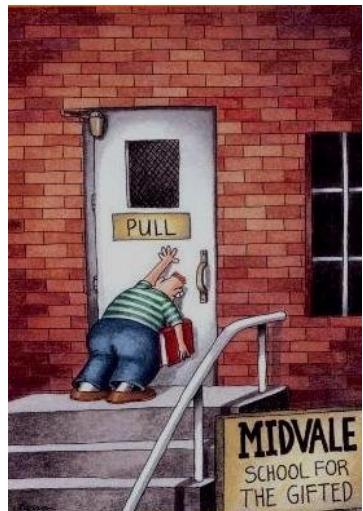
OBJECTIVES

- 1.) *Affordance*
- 2.) *Alignment*



Affordance

- Affordance is a property of the object. They provide strong clues to the operation of things.
- Suggest how the object should be used...



Simply by adding a knob, the user immediately knows that it opens from left to right.



buttons
are for
pressing



switch for
toggling



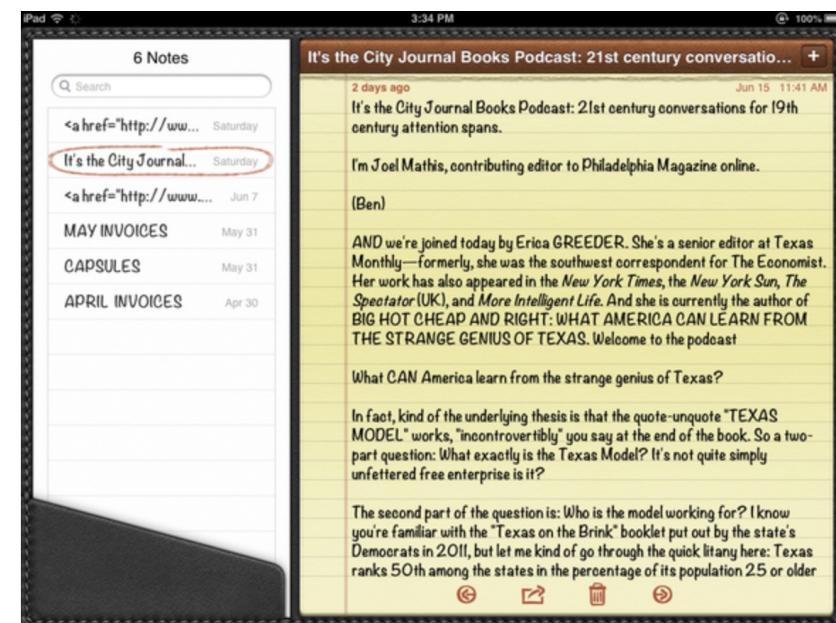
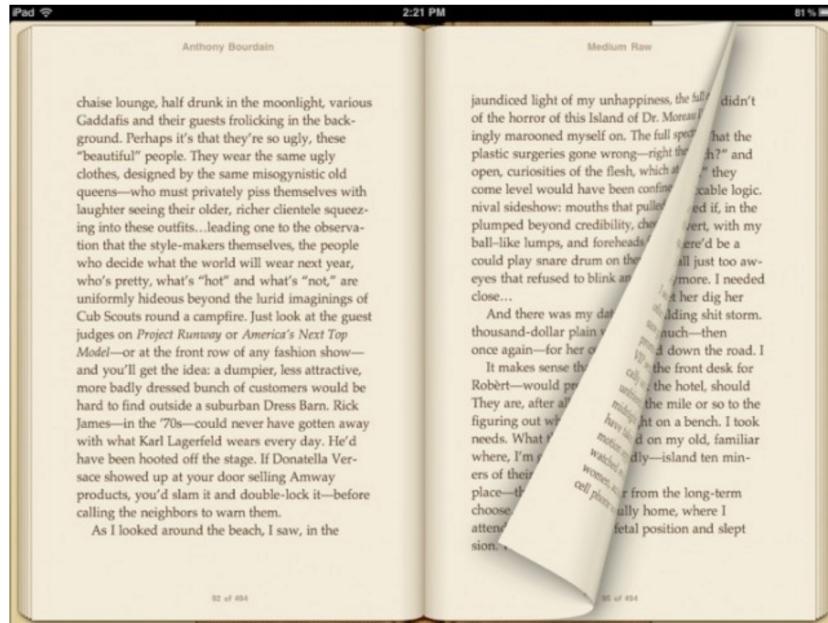
knobs are
for turning



Perceived Affordance in UX/HCI Design



Perceived Affordance -- Skeuomorphism is the design concept of making items represented resemble their real-world counterparts



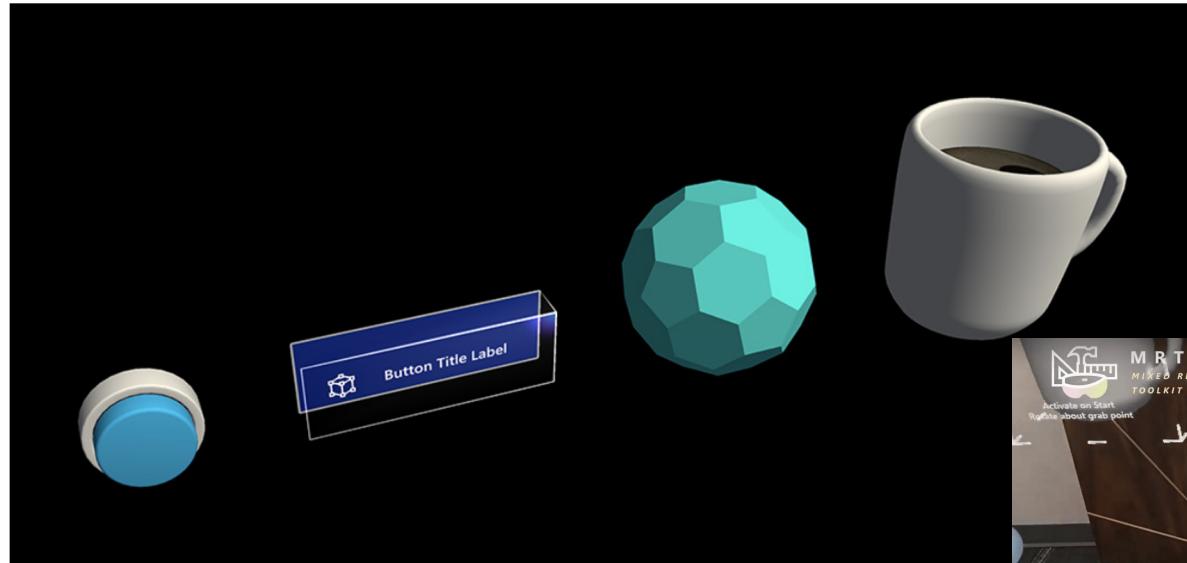
To use Skeuomorphism or not to use Skeuomorphism – the grand debate!

Perceived Affordance in UI Design

– The good and bad



MIXED & VIRTUAL REALITY AFFORDANCES



Cre8ivepark. (n.d.). Interactable object - Mixed Reality, from <https://docs.microsoft.com/en-us/windows/mixed-reality/design/interactable-object>



SOME RELATED MIXED REALITY WORK BEING DONE HERE IN MY HUMAN INTERACTION LAB....



Home Current Projects & Media AMELIA (NSF Project) IPAL (NSF Project) Publications For Students

- Using Mixed Reality in Collaborative Robotics
- Can you spot affordance applications here?



https://www.youtube.com/watch?time_continue=56&v=zkRMMP7msCs&feature=emb_logo



ALIGNMENT (GONE BAD!)

- The placement of elements such that edges line up along common rows or columns, or their bodies along a common center.

(REPUBLICAN) GEORGE W. BUSH - PRESIDENT DICK CHENEY - VICE PRESIDENT	3 ➔	
(DEMOCRATIC) AL GORE - PRESIDENT JOE LIEBERMAN - VICE PRESIDENT	5 ➔	
(LIBERTARIAN) HARRY BROWNE - PRESIDENT ART OLIVIER - VICE PRESIDENT	7 ➔	
(GREEN) RALPH NADER - PRESIDENT WINONA LaDUKE - VICE PRESIDENT	9 ➔	
(SOCIALIST WORKERS) JAMES HARRIS - PRESIDENT MARGARET TROWE - VICE PRESIDENT	11 ➔	
(NATURAL LAW) JOHN HAGELIN - PRESIDENT NAT GOLDHABER - VICE PRESIDENT	13 ➔	
		(REFORM) PAT BUCHANAN - PRESIDENT EZOLA FOSTER - VICE PRESIDENT
		(SOCIALIST) DAVID McREYNOLDS - PRESIDENT MARY CAL HOLLIS - VICE PRESIDENT
		(CONSTITUTION) HOWARD PHILLIPS - PRESIDENT J. CURTIS FRAZIER - VICE PRESIDENT
		(WORKERS WORLD) MONICA MOOREHEAD - PRESIDENT GLORIA La RIVA - VICE PRESIDENT
		WRITE-IN CANDIDATE To vote for a write-in candidate, follow the directions on the long stub of your ballot card.

OFFICIAL BALLOT, GENERAL ELECTION
PALM BEACH COUNTY, FLORIDA
NOVEMBER 7, 2000

REPUBLICAN GEORGE W. BUSH - PRESIDENT AND DICK CHENEY - VICE PRESIDENT	3 ➔	
DEMOCRATIC AL GORE - PRESIDENT AND JOE LIEBERMAN - VICE PRESIDENT	4 ➔	
LIBERTARIAN HARRY BROWNE - PRESIDENT AND ART OLIVIER - VICE PRESIDENT	5 ➔	
GREEN RALPH NADER - PRESIDENT AND WINONA LaDUKE - VICE PRESIDENT	6 ➔	
SOCIALIST WORKERS JAMES HARRIS - PRESIDENT AND MARGARET TROWE - VICE PRESIDENT	7 ➔	
NATURAL LAW JOHN HAGELIN - PRESIDENT AND NAT GOLDHABER - VICE PRESIDENT	8 ➔	
REFORM PAT BUCHANAN - PRESIDENT AND EZOLA FOSTER - VICE PRESIDENT	9 ➔	
SOCIALIST DAVID McREYNOLDS - PRESIDENT AND MARY CAL HOLLIS - VICE PRESIDENT	10 ➔	
CONSTITUTION HOWARD PHILLIPS - PRESIDENT AND J. CURTIS FRAZIER - VICE PRESIDENT	11 ➔	
WORKERS WORLD MONICA MOOREHEAD - PRESIDENT AND GLORIA La RIVA - VICE PRESIDENT	12 ➔	
WRITE-IN CANDIDATE To vote for a write-in candidate, follow the directions on the long stub of your ballot card.		

A

OFFICIAL BALLOT, GENERAL ELECTION
PALM BEACH COUNTY, FLORIDA
NOVEMBER 7, 2000

1 - R

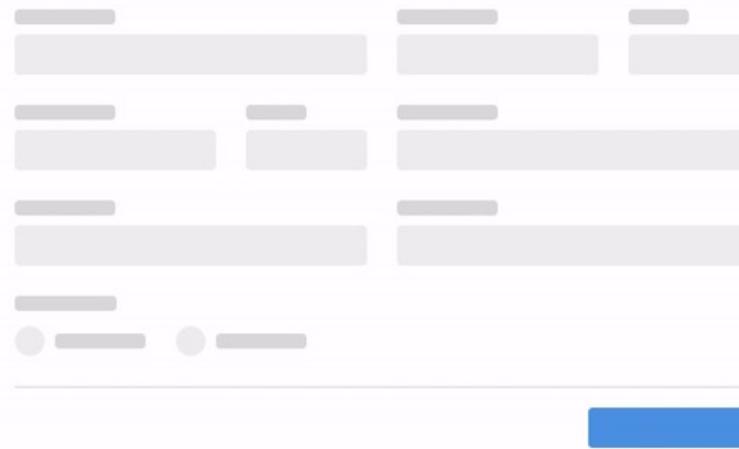
ELECTORS
FOR PRESIDENT
AND
VICE PRESIDENT

(A vote for the candidates will
actually be a vote for their electors.)

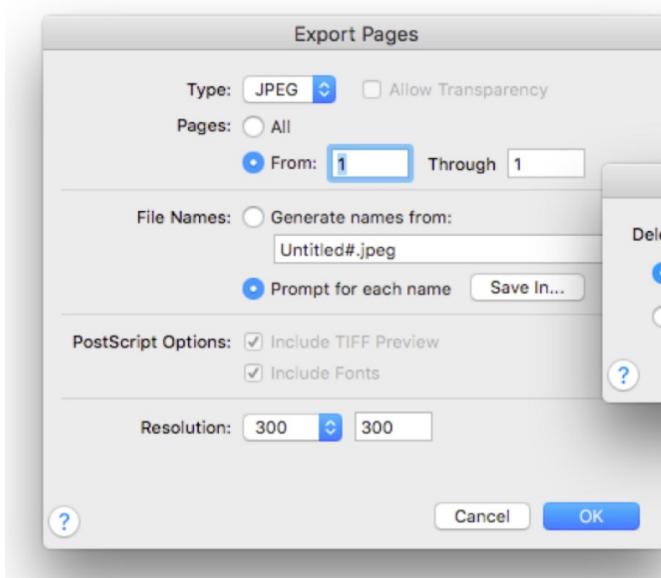
(Vote for Group)

TURN PAGE TO CONTINUE VOTING ➔

ALIGNMENT



Example of appropriate usage of aligns right. Red circles represent user focus



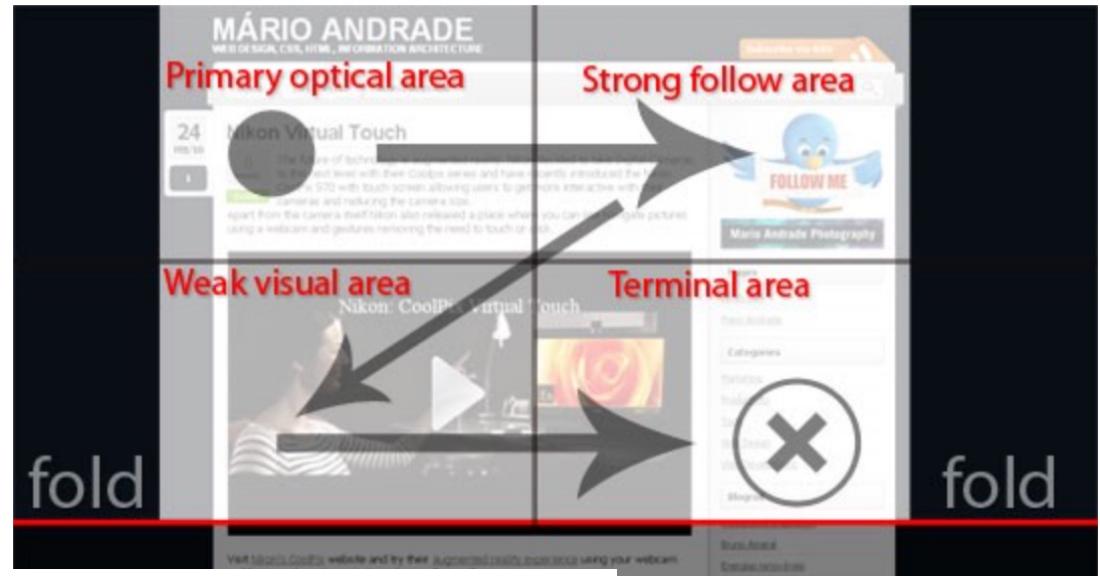
Invoice w/ proper alignment		Invoice w/ left alignment	
Item Description	Price(USD)	Item Description	Price(USD)
Clay Pot	100.54	Clay Pot	100.54
Sharpie	5.00	Sharpie	5.00
Pencil	24.24	Pencil	24.24
Key Chain	24.00	Key Chain	24.00
Eraser	4.99	Eraser	4.99
Sub Total:		Sub Total:	
158.77		158.77	
Tax:		Tax:	
0.00		0.00	
Grand Total:		Grand Total:	
158.77		158.77	

Observe how the invoice with right-aligned price figures is easy to scan.

Button placement according to Gutenberg Diagram (or Z-pattern) on the example of Mac OS dialogs

...MORE ON GUTENBURG DIAGRAM (AND WHY WE CARE!)

- The Gutenberg Rule is used to show a user behavior known as **reading gravity**, the western habit of reading left-to-right, top-to-bottom



Jacob Nielsen F-Shaped Reading Pattern

F