an invention is not a product

2.009 Product engineering processes
2.009 Product engineering processes

today

product form organizing a product, making it understandable, making it coherent

thinking about designing

part 3
2.009 Product engineering processes today

products that are pleasing

unlike this!
but first...

another mini quiz

list 4 design-for-manual-assembly guidelines
Assembly review

overview

digital submission 11 PM, Tuesday October 29 (red, green, blue, yellow)
digital submission 11 PM, Thursday October 31 (pink, orange, purple, silver)
images (up to 10), CAD files, list of who-did-what, product contract
product variations
storyboards, circuit designs, etc.
Assembly review

Overview

10 minute presentations/discussion
Wednesday October 30 (red, green, blue, yellow)
Friday November 1 (pink, orange, purple, silver)

project your contract (or large mounted poster)

show your most current work
not a homework assignment!

can work in pairs, everyone must contribute
no make work!
avoid meaningless detail
keep working to understand user needs
keep doing tests
Assembly review

presentation tips

focus the design
(product use cycle/storyboard, design vision variants, design details for the variants)

contact should be clearly visible throughout but spend your time on the design

use your own computers. Please make sure you have adaptors. Test 8-9 AM Wednesday and Friday 8-9 AM in 10-250

it is a discussion, not a canned 10 minute talk. It is not about selling us on the product. Annotated example is linked on the home page

think about where you would like to have input

link to upload assembly files is on home page
Form and usability

form follows function: Louis Sullivan

“form instructs user”
Form and usability

form follows function: Louis Sullivan

“form instructs user”
form follows function!
form is function!

it’s part of making it work for users
Form and human use
form is function

obvious articulation avoids damage

circles, positive and negative forms imply motion
Form and human use

form is function

obvious articulation avoids damage!
Form and human use
form is function

positive and negative forms imply motion
Form and human use

form is function

positive form

negative form
Form and human use
form is function

objects separate on parting lines
obvious articulation avoids damage
parting lines are have design detail too!
Form and human use

form is function

direct metaphors in interfaces are better

understand color associations
Form and human use

form is function

direct metaphors in interfaces are better
Form and human use

form is function

understand ergonomic needs
Form and human use
form follows function

black recedes, conceals
Form and human use
form follows function

smooth invites touching

don’t touch nasty bits
Form and human use
form follows function

communicate value proposition
Form and human use
form follows function

think about possible misuse
Form and human use
form follows function

think about possible misuse
form is function
communication and affordances
how?

design strategies
KISnS
keep it simple, *NOT* stupid

manage communication and affordances
simplicity

unnecessary = more ways to go wrong!
Making products visually simple
perception and the principle of pragnanz
Making products simple
perception and the principle of pragnanz
Making products simple
perception and the principle of pragnanz
Making products simple
perception and the principle of pragnanz

so simple
Making products simple
perception and the principle of pragnanz

so complex
Principle of Pragnanz
it’s the tool for how to do it!

KISnS
keep it simple, NOT stupid
Principle of Pragnanz
once the template is established...
Principle of Pragnanz
once the template is established...

exceptions are accents!
Principle of Pragnanz

once the template is established…

exceptions are accents!

no arrow needed
it’s a parting line!
KIS\textsuperscript{nS}

manage communication and affordances

unnecessary = more ways to go wrong!
Form and simplicity
form is function

avoid mixed messages, arbitrary details
Making products simple
use invisible objects (and the principle of pragnanz)
Making products understandable
simplify with invisible objects
design example: the WWF
all does not need to be there!
all does not need to be there!
Making products simple
simplify by informing with negative space

foreground and background shift
Making products simple
positive/negative space
Making products simple
positive/negative space
Making products simple

positive/negative space
Making products simple
positive/negative space
mini me, you complete me
form is function
communication user
KISnS
pragnanz
2.009 Product engineering processes

*Wednesday and Friday*

assembly review!

you will receive feedback shortly after each class
form follows function — that has been misunderstood.
form and function should be one.

Frank Lloyd Wright
8 June 1867—9 April 1959, architect, designer