perfection is reached not when there is no more to add
but when there is no more to take away

Antoine de St. Exupéry
29 June 1900—31 July 1944, writer, aviator

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 this week
2.009 Product engineering processes today

products that are pleasing

unlike this!
but first...
words to avoid in a critique

- checking the ego
- insults
- judgmental
- sales
- my/mine/our
- you/yours
- dumb/stupid
- bad/awful
- fantastic, awesome
- good
but first…
what does G’DAY stand for?

giant dinosaur, all yell  emile
but first...

what does G’DAY stand for?
Mini quiz
drill reverse engineering
circuits with the desired behavior…
Mini quiz

drill reverse engineering
circuits with the desired behavior…

Jorge Gonzalez
Annie Zhang
Johnathon S. Li
Peter Sudermann
Tom Frejowski
Sarah Wu
Laura Yenchesky
Chris Goul
James Li
Sarrah Hua
Richard Moyer
Kyra Post
Marianne Olsen
Coby Nettleton

a chair is to sit on…
curiosity and design
Mini quiz

a pledge

I will remain intellectually curious
Mini quiz
yep, another one!

identify two types of product architectures

list one advantage and disadvantage of each architecture

what is an ethic?

what does *form follows function* mean?
Form and usability

form follows function: Louis Sullivan

“form instructs user”
Form and usability

*form follows function: Louis Sullivan*

“form instructs user”
Form and human use
form follows function

obvious articulation avoids damage

circles, positive and negative forms imply motion
Form and human use
form follows function

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

positive and negative forms imply motion
Form and human use

form follows function

positive form

negative form
Form and human use

form follows function

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

direct metaphors in interfaces are better

understand color associations
Form and human use
form follows function
direct metaphors in interfaces are better
Form and human use
form follows 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 follows function
communication and affordances
KISSnS
keep it simple, *NOT* stupid

manage communication and affordances
simplicity

unnecessary = more ways to go wrong!
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
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!
KISnS
manage communication and affordances

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

avoid mixed messages, arbitrary details
Making products simple
use invisible objects (and the principle of pragnanz)

Kanizsa illusion
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
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 follows function
instruct the user
KISnS
2.009 Product engineering processes
Friday
design for assembly

G’DAY!