

CSE 510: Advanced Topics in HCI

HCI as Design I

James Fogarty
Daniel Epstein

Tuesday/Thursday
10:30 to 12:00
CSE 403

“Do the Work” vs “Understand It”

HCI practice includes both

CSE 440 teaches an intense project sequence

Interjects higher-level understanding

Today will focus on conceptual material

Thursday will focus on a typical design process

Highly abridged presentation of this material

Ideation Rules

Defer judgement.

Encourage wild ideas.

Build on the ideas of others.

Stay focused on the topic.

One conversation at a time.

Be visual.

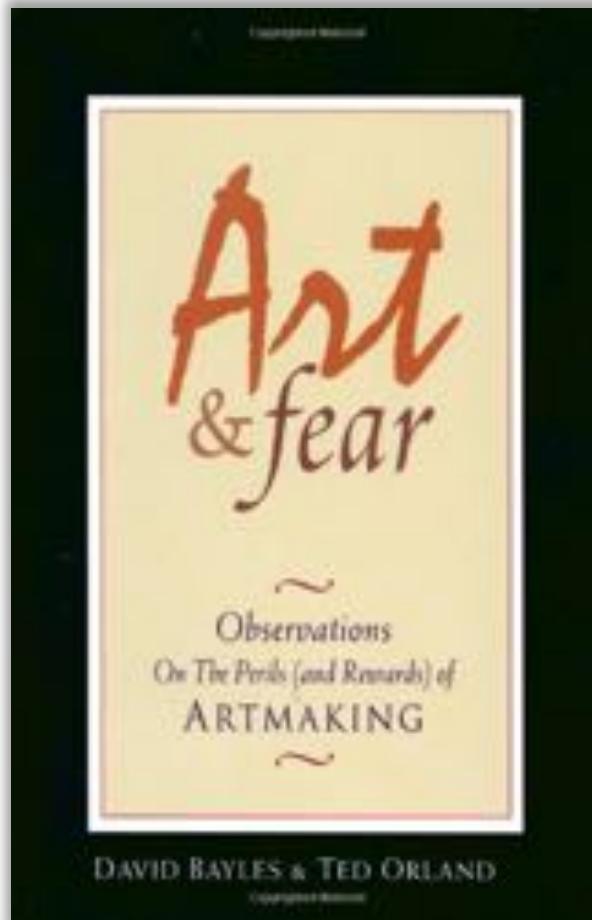
Go for quantity.



University of
Washington

From IDEO: <https://openideo.com/blog/seven-tips-on-better-brainstorming>

Quantity versus Quality



One class told they will
be graded on quality,
another on quantity

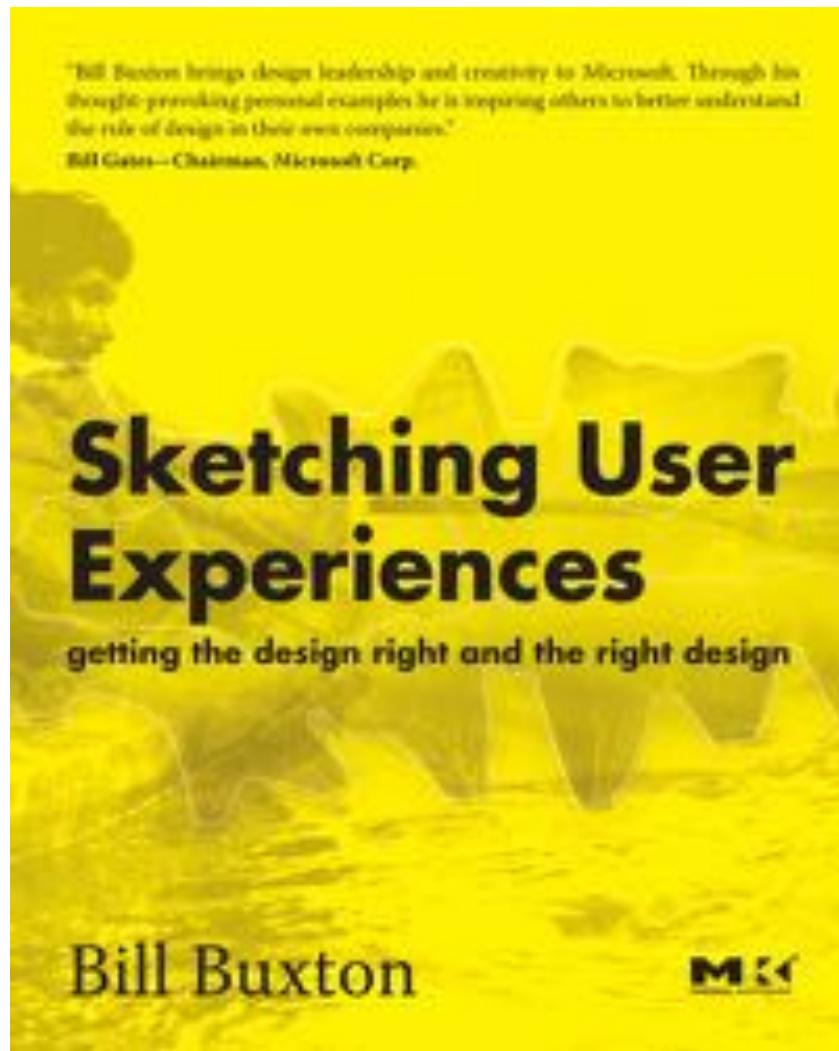


Quantity versus Quality

The quantity class produces better pots. Why?

“While the quantity group was busily churning out piles of work—and learning from their mistakes—the quality group had sat theorizing about perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay”

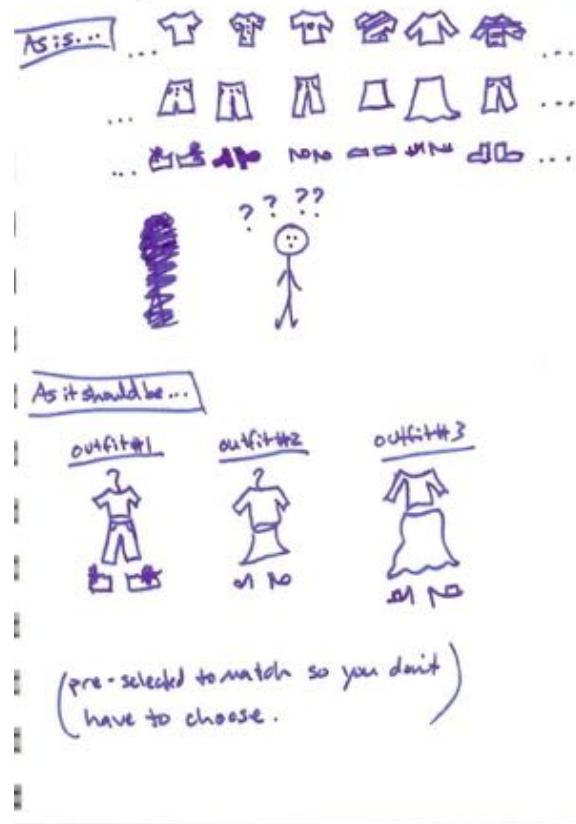
Sketching User Experiences



Sketching



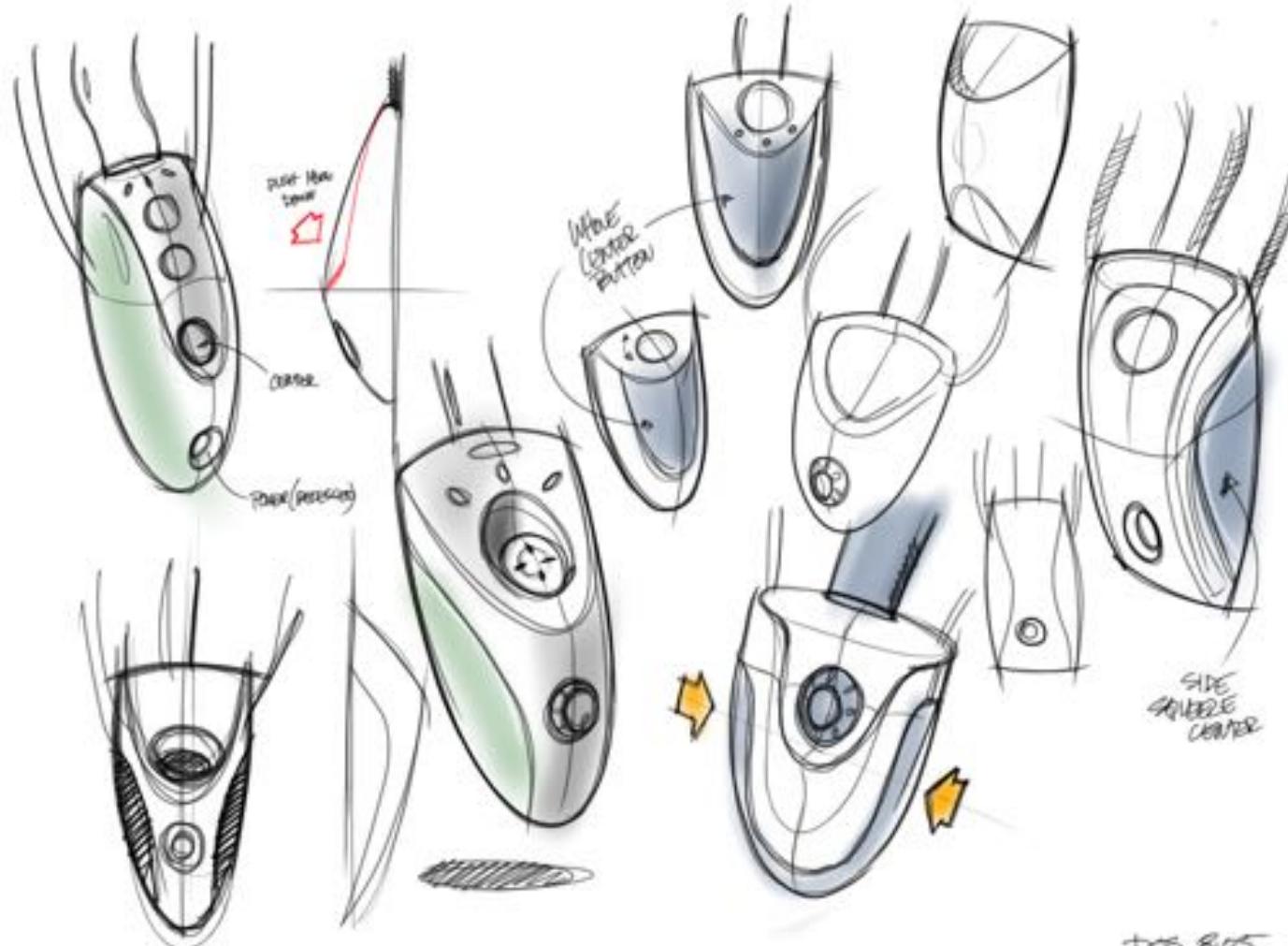
STORE FOR THE STYLE-CHALLENGED



Sketching

A process that enables you to
think through ideas and
convey design ideas to others
very early in the design phase

Quintessential Activity of Design



DES 805

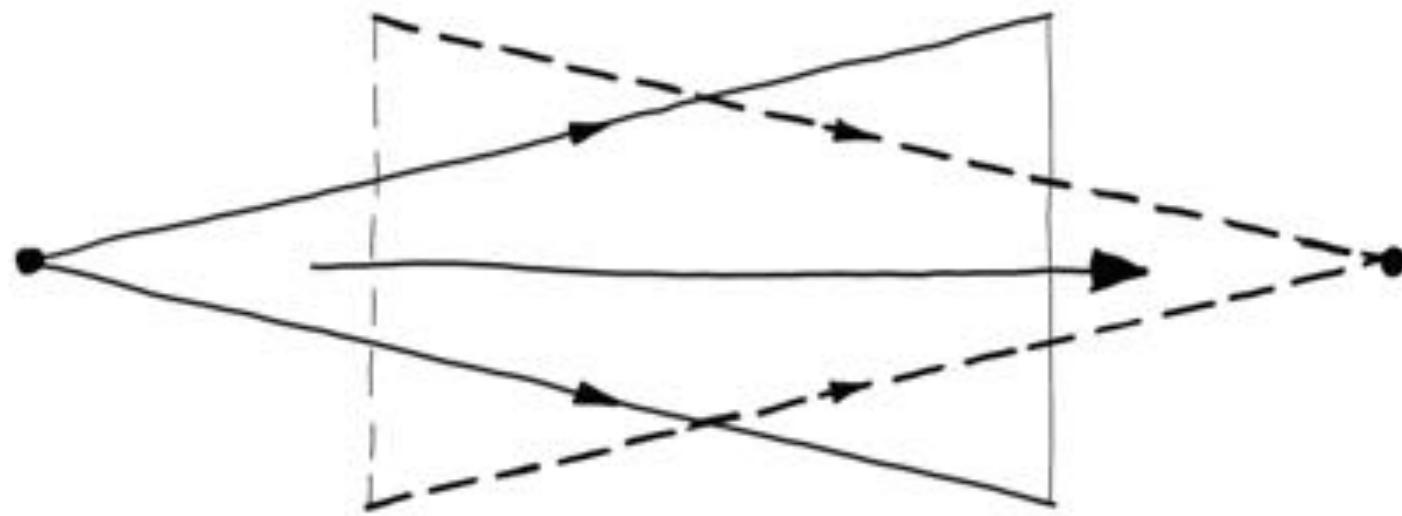
Design as Choice

Elaboration

palette of choices

Reduction

heuristics to choose



Design as Choice

Two openings for creativity

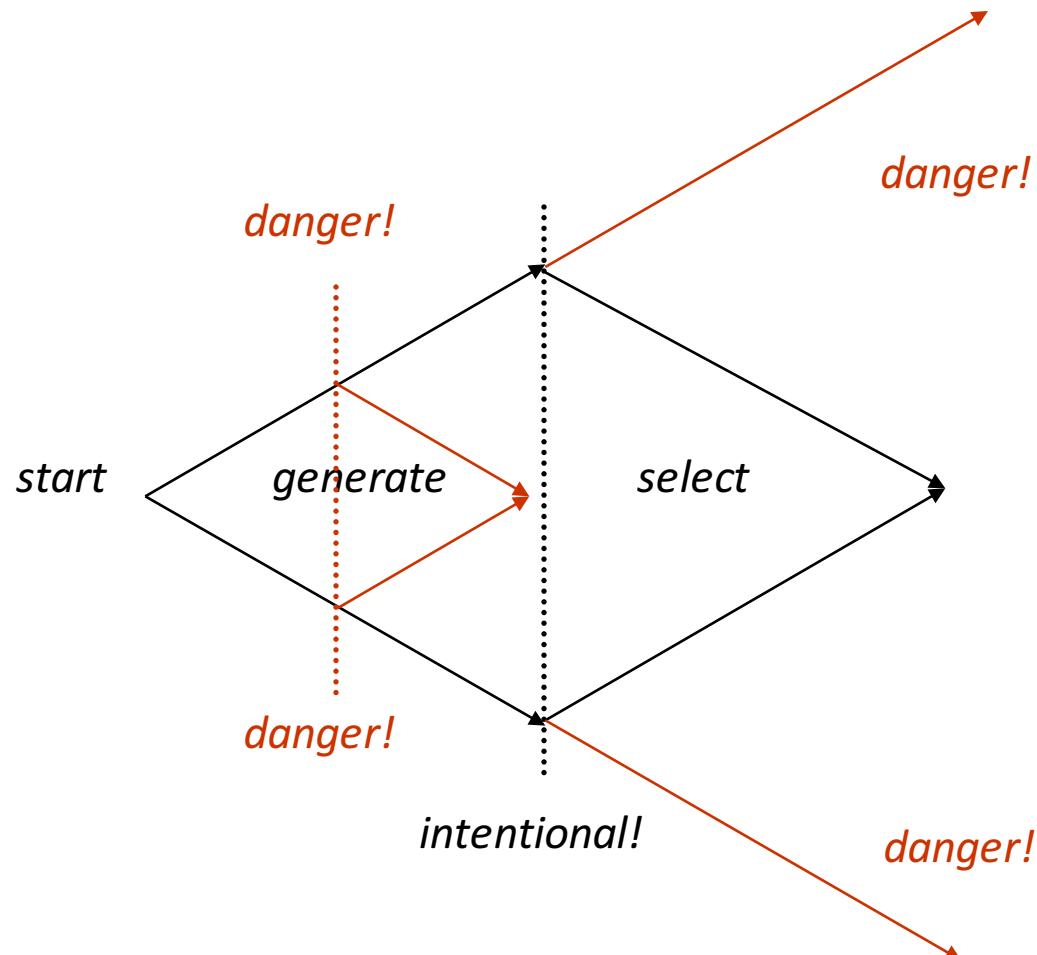
Palette of choices

Heuristics used to choose

Why is your contextual inquiry so important?

What you learn directly informs both of these,
shaping everything you do this entire quarter

The Design Diamond



Properties of Sketches

Quick

Distinct Gesture

Timely

Minimal Detail

Inexpensive

Appropriate Refinement

Disposable

Suggest and Explore

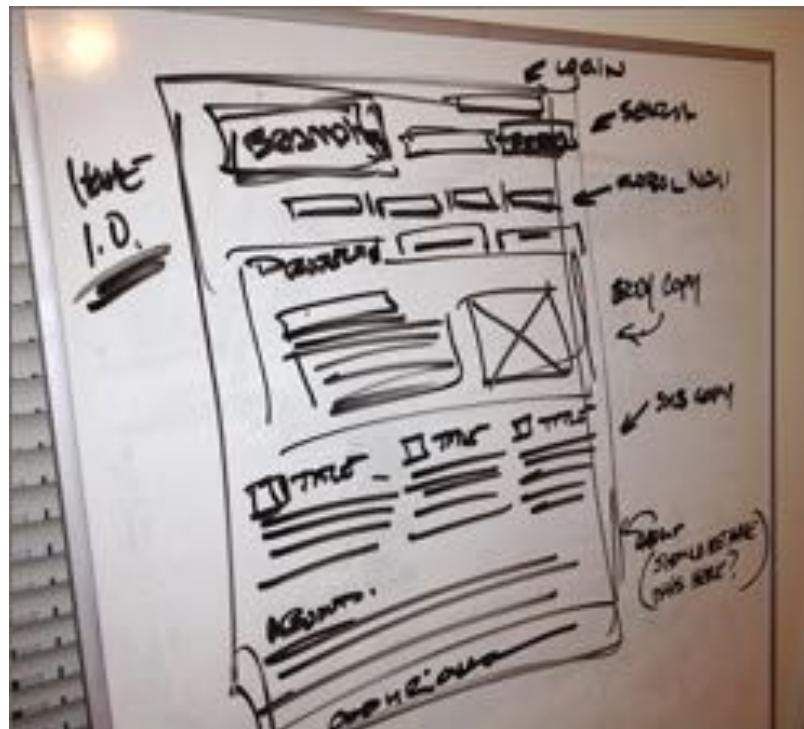
Plentiful

Ambiguous

Clear Vocabulary

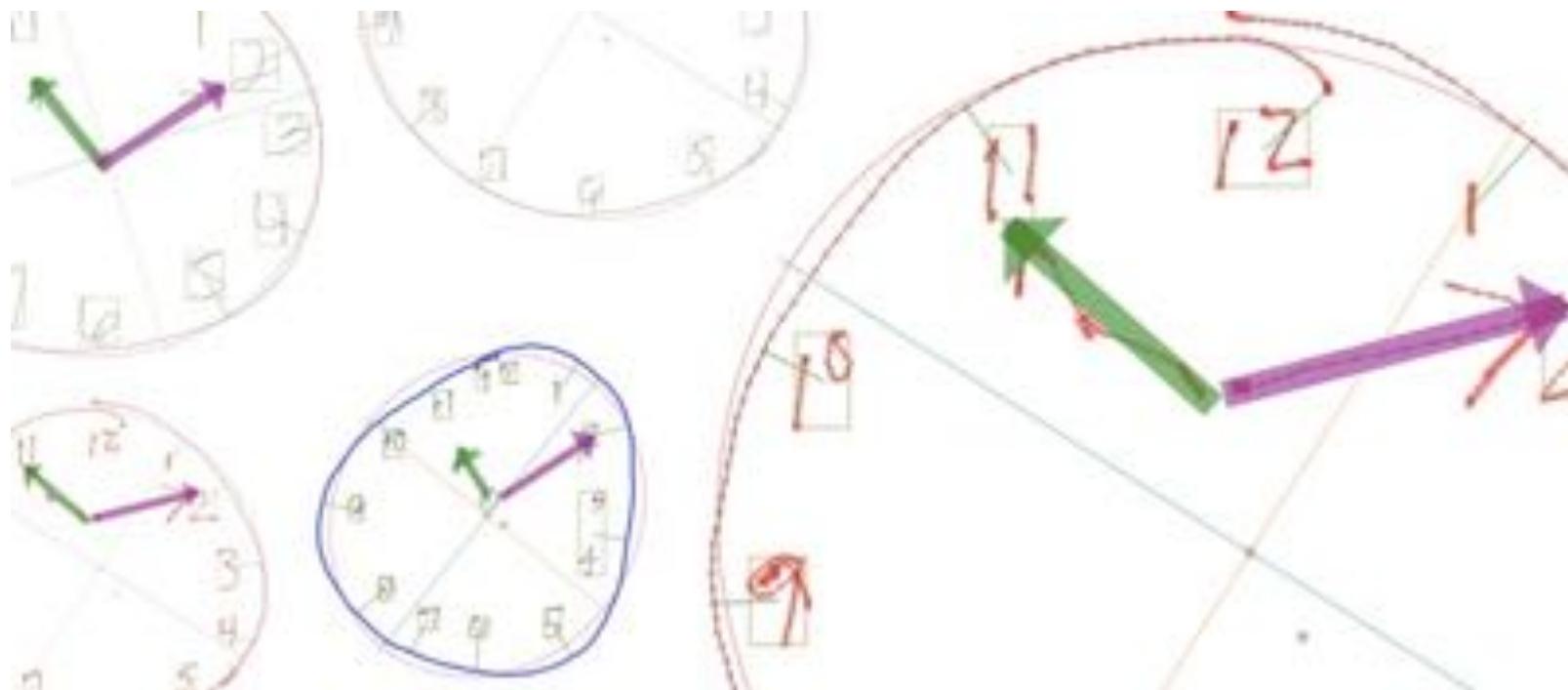
Quick

A sketch is quick to make,
or at least gives that impression



Timely

A sketch can be provided when needed



Inexpensive

Cost must not inhibit the ability to explore a concept, especially early in design



Disposable

If you cannot afford to throw it away,
then it is not a sketch

Investment is in the process,
not the physical sketch

But they are not "worthless"



Plentiful

Sketches do not
exist in isolation

Meaning and relevance
is in the context of a
collection or series

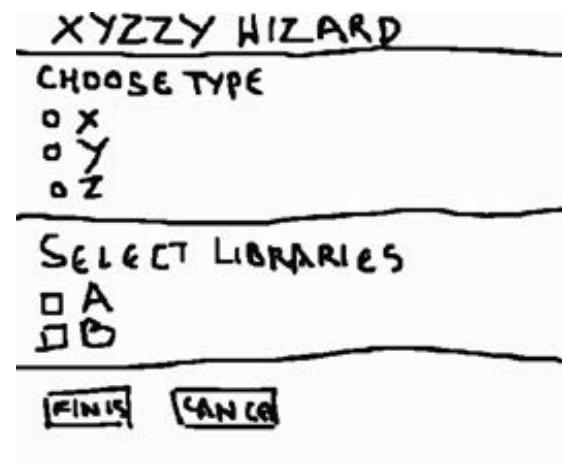


Clear Vocabulary

The way it is rendered makes it distinctive that it is a sketch (e.g., style, form, signals)

Could be how a line extends through endpoints

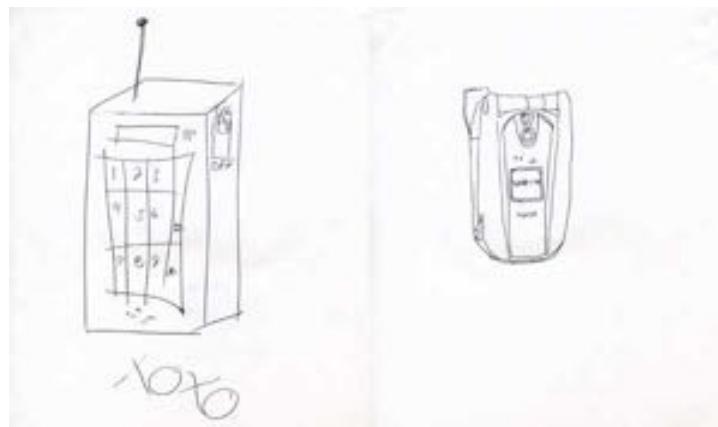
Physical sketches have their own vocabulary



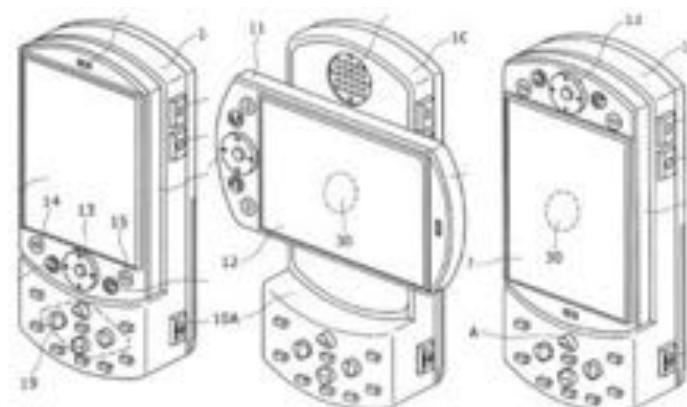
Distinct Gesture

Fluidity of sketches gives them
a sense of openness and freedom

Opposite of engineering drawing,
which is tight and precise



vs.



Minimal Detail

Include only what is required
to render the intended purpose or concept



Create JSP for this page

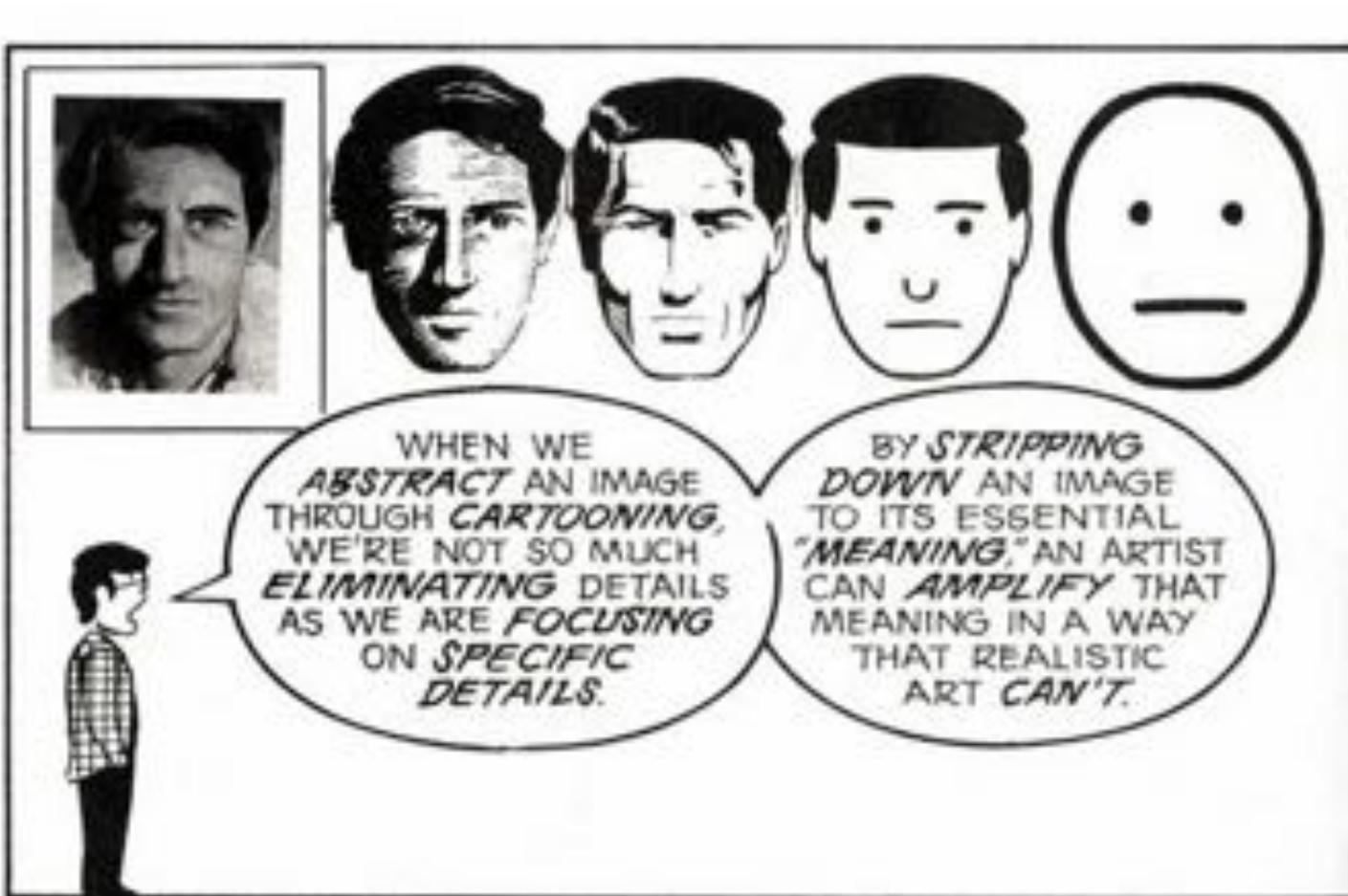
Name:

Number:

Category: Clothing

Price Range: 0.00 to 9,999.99

Minimal Detail

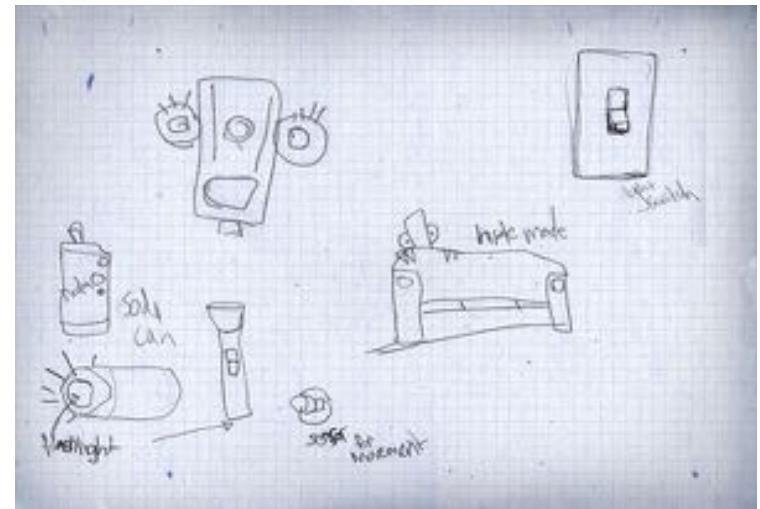


Appropriate Degree of Refinement

Make the sketch as refined as the idea

If you have a solid idea,
make the sketch look
more defined

If you have a hazy idea,
make the sketch look
rougher and less defined



Suggest and Explore Rather than Confirm

Sketch should act as a catalyst
to the desired and appropriate behaviors,
conversations, and interactions



Ambiguity

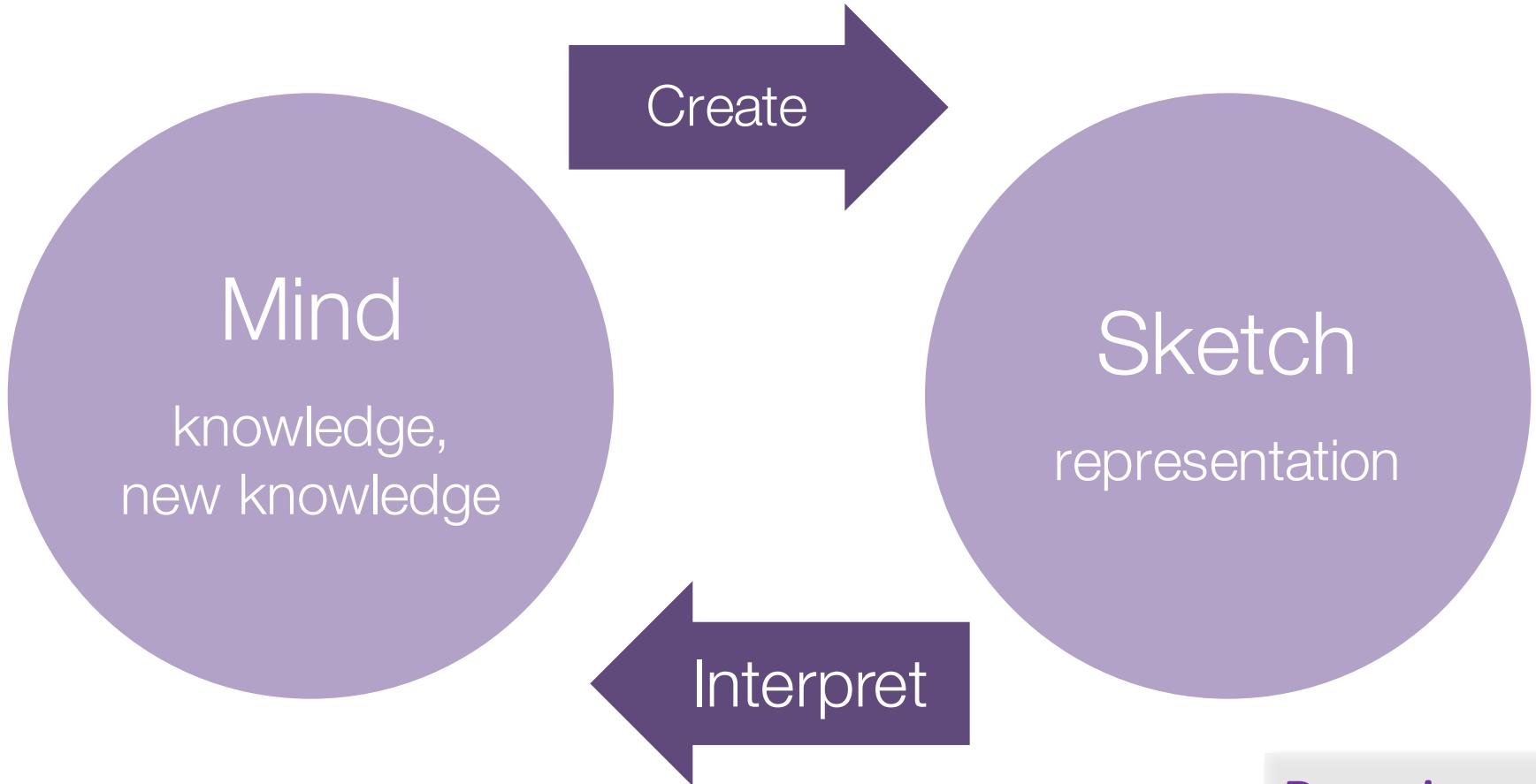
Intentionally ambiguous

Value comes from being able to be interpreted in different ways, even by the person who created them



Sketches have holes

Sketching as Conversation



Requires
ambiguity

Sketch vs. Prototype

Sketch	Prototype
Invite	Attend
Suggest	Describe
Explore	Refine
Question	Answer
Propose	Test
Provoke	Resolve
Tentative, non committal	Specific Depiction

The primary differences are in the intent

Sketching the Mouse



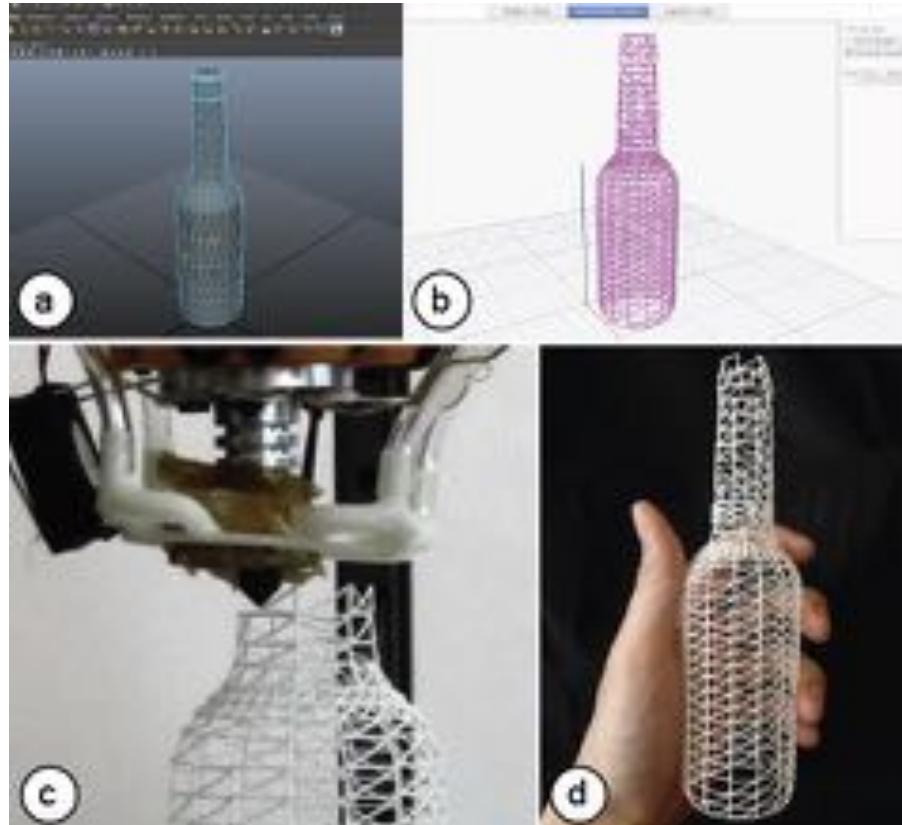
Sketching the Mouse



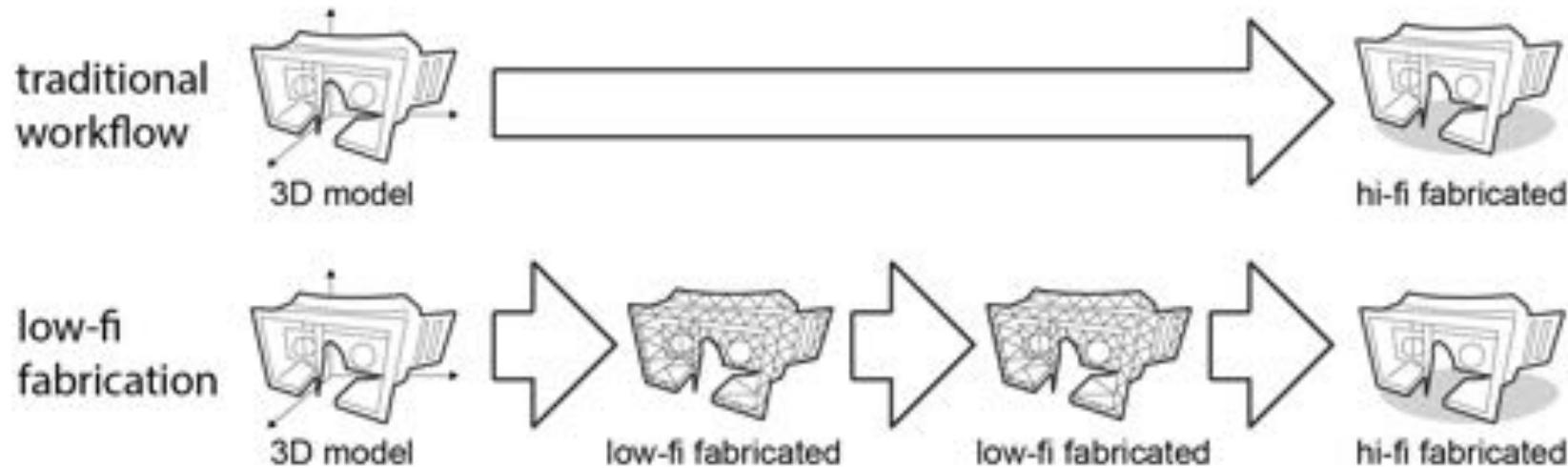
Physical Sketching



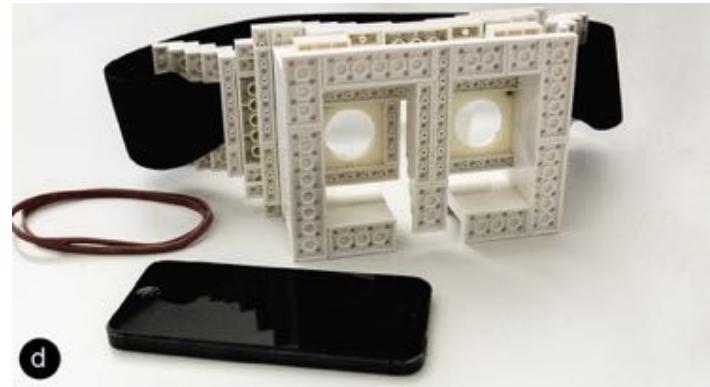
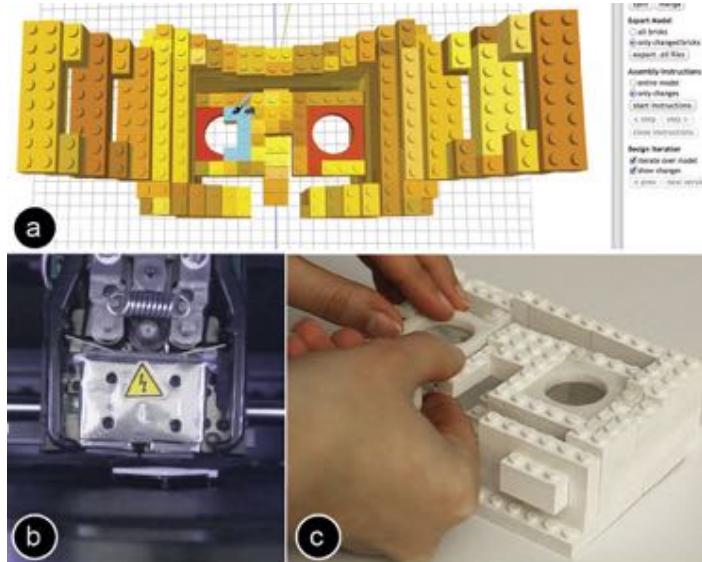
Physical Sketching



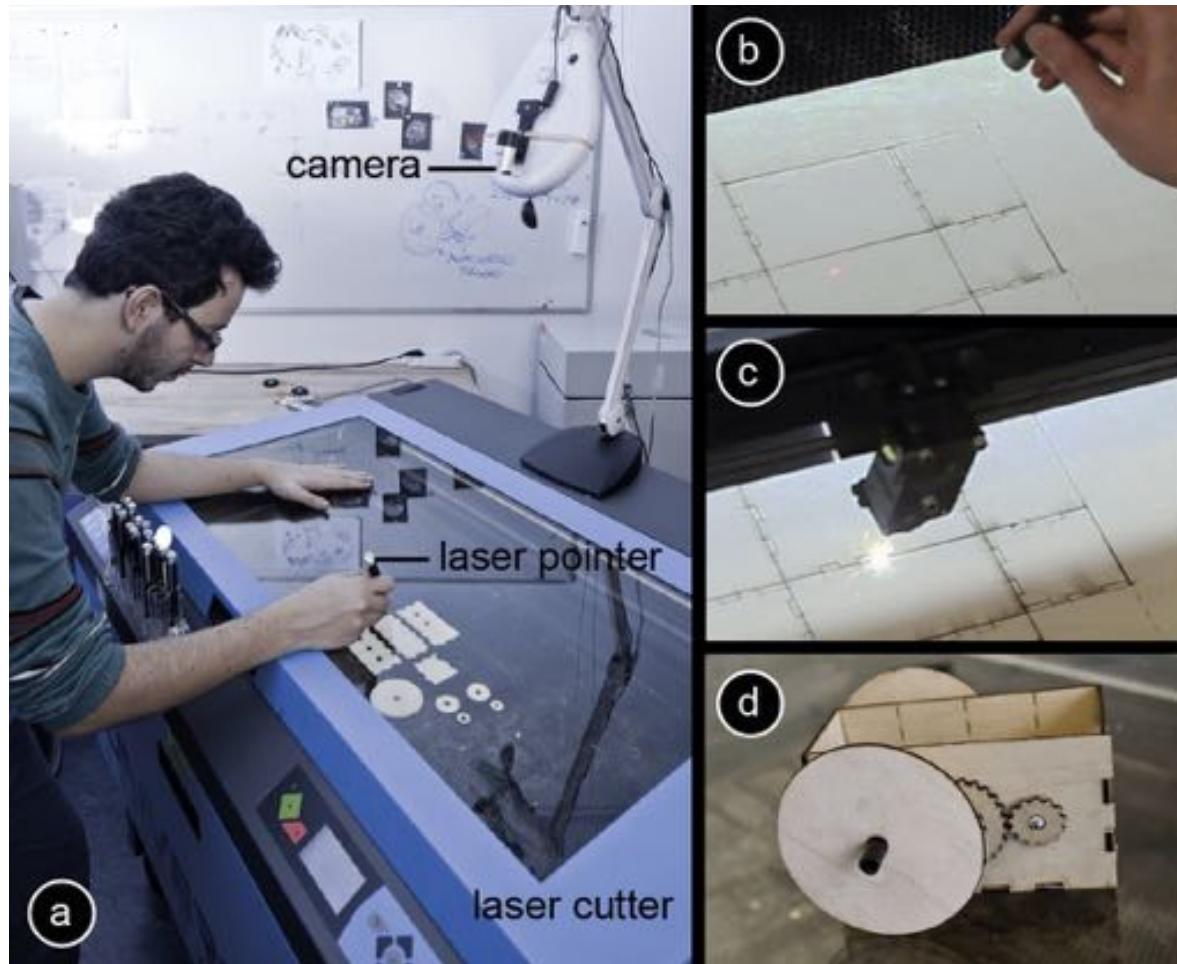
Physical Sketching



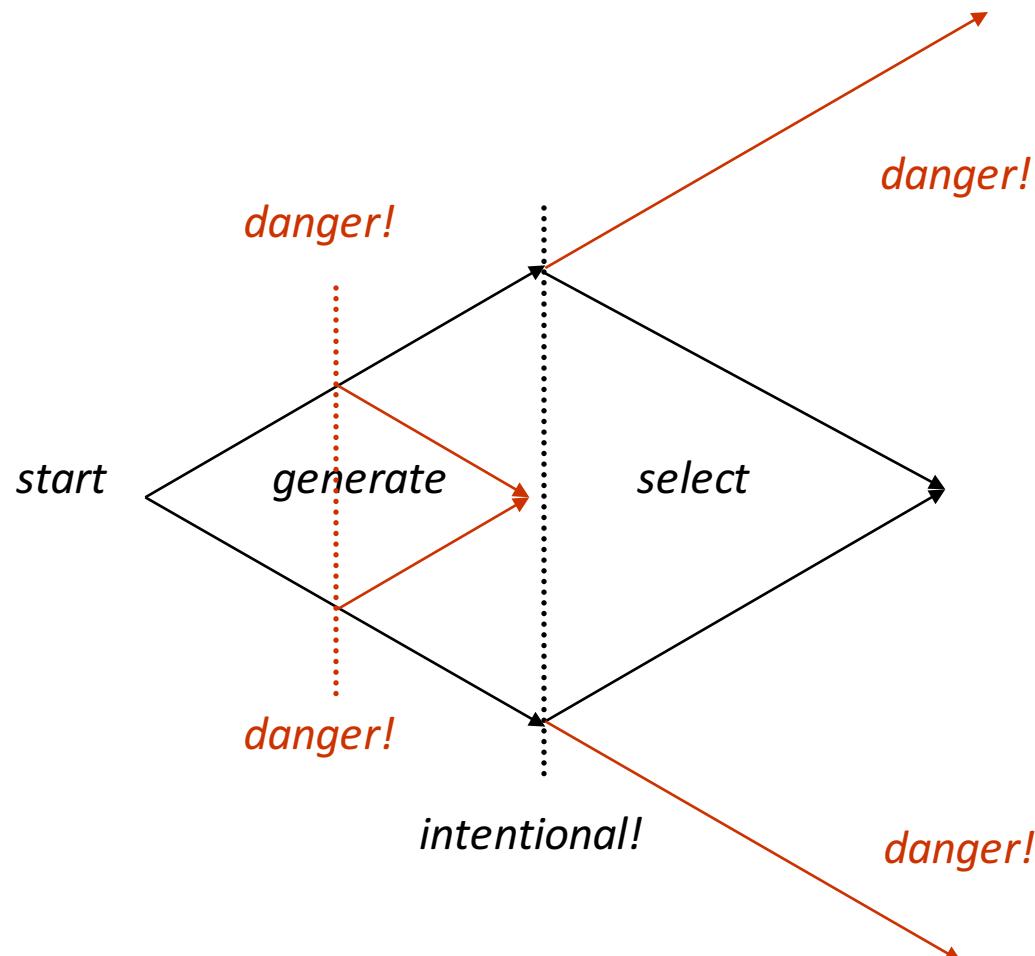
Physical Sketching



Physical Sketching



Idea Oscillation



Critiquing Sketches is Important

Ideas are both good and bad

Both are useful in design

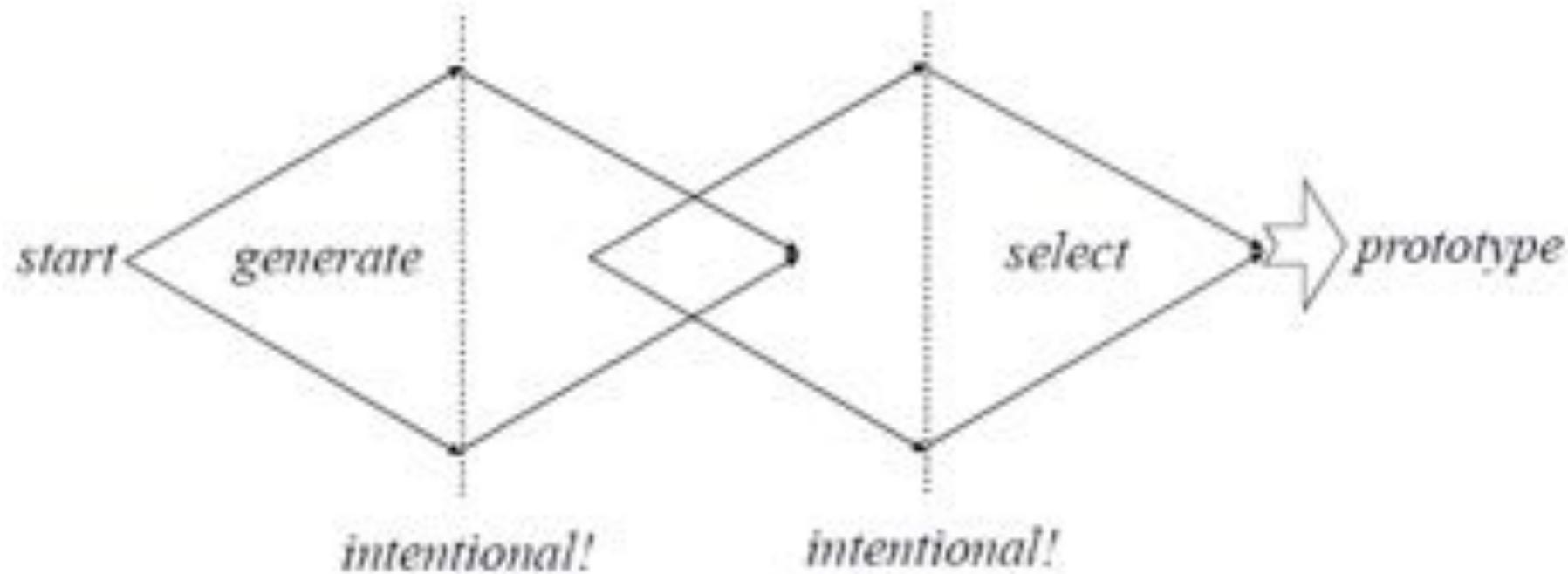
By making clear what is a bad design,
we can avoid actually implementing it

Bad ideas help you justify your good ideas

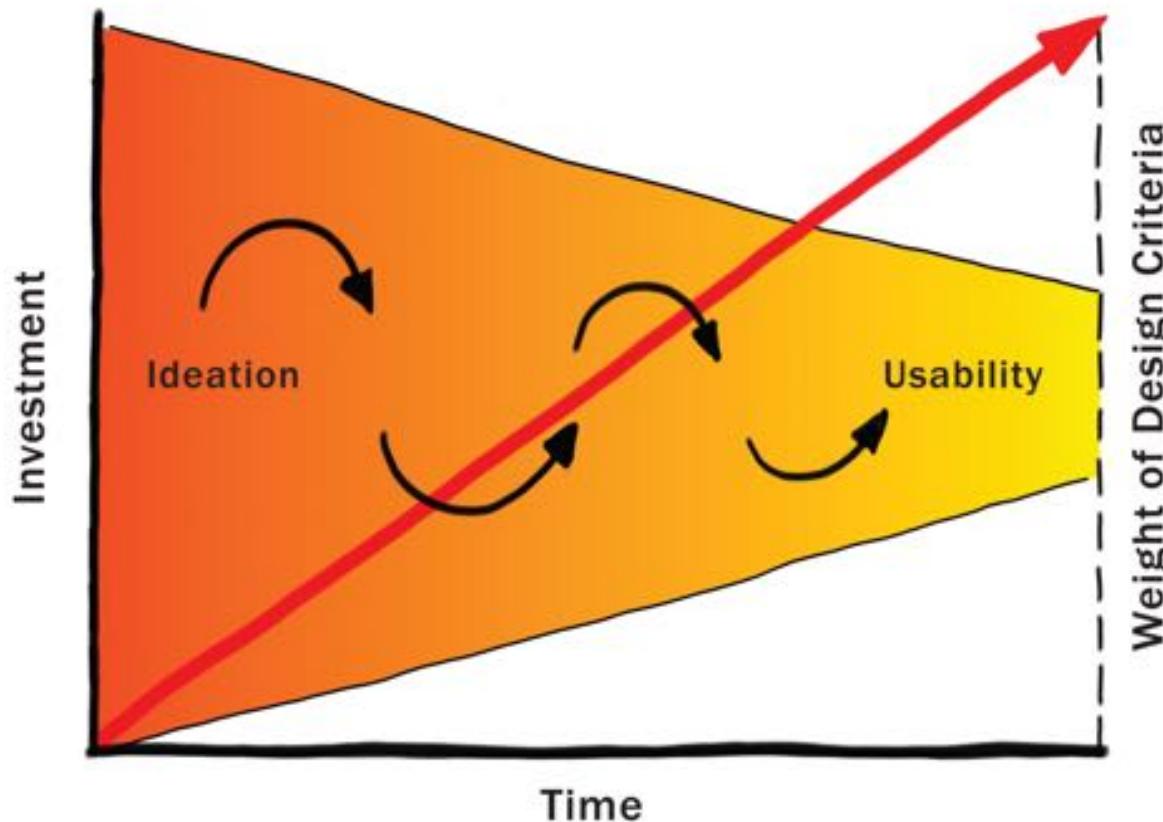
Feedback can turn a good idea into a great idea

Sketching generates too many ideas to implement

Idea Oscillation

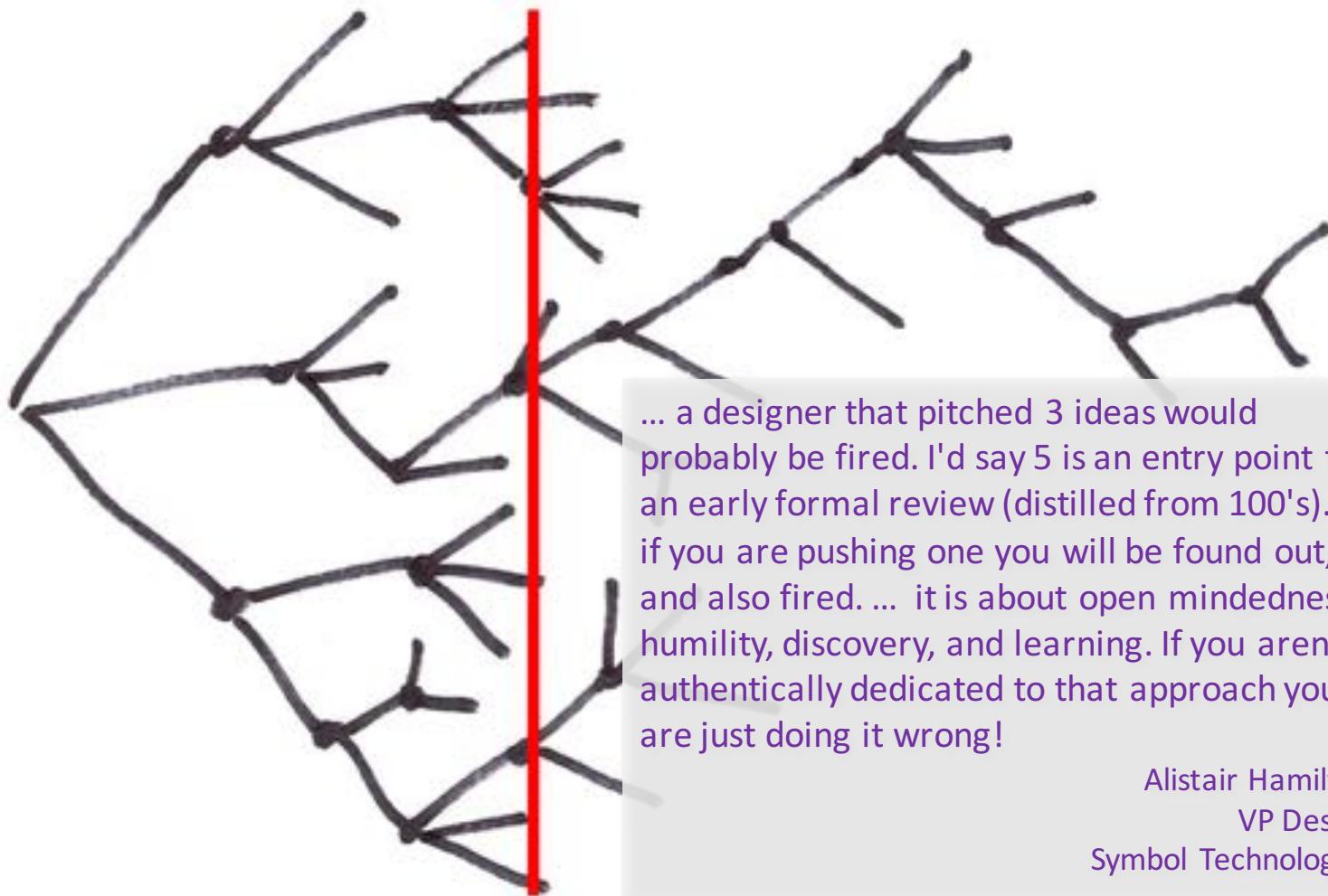


Iteration Toward a Design



- Sketch
- Prototype

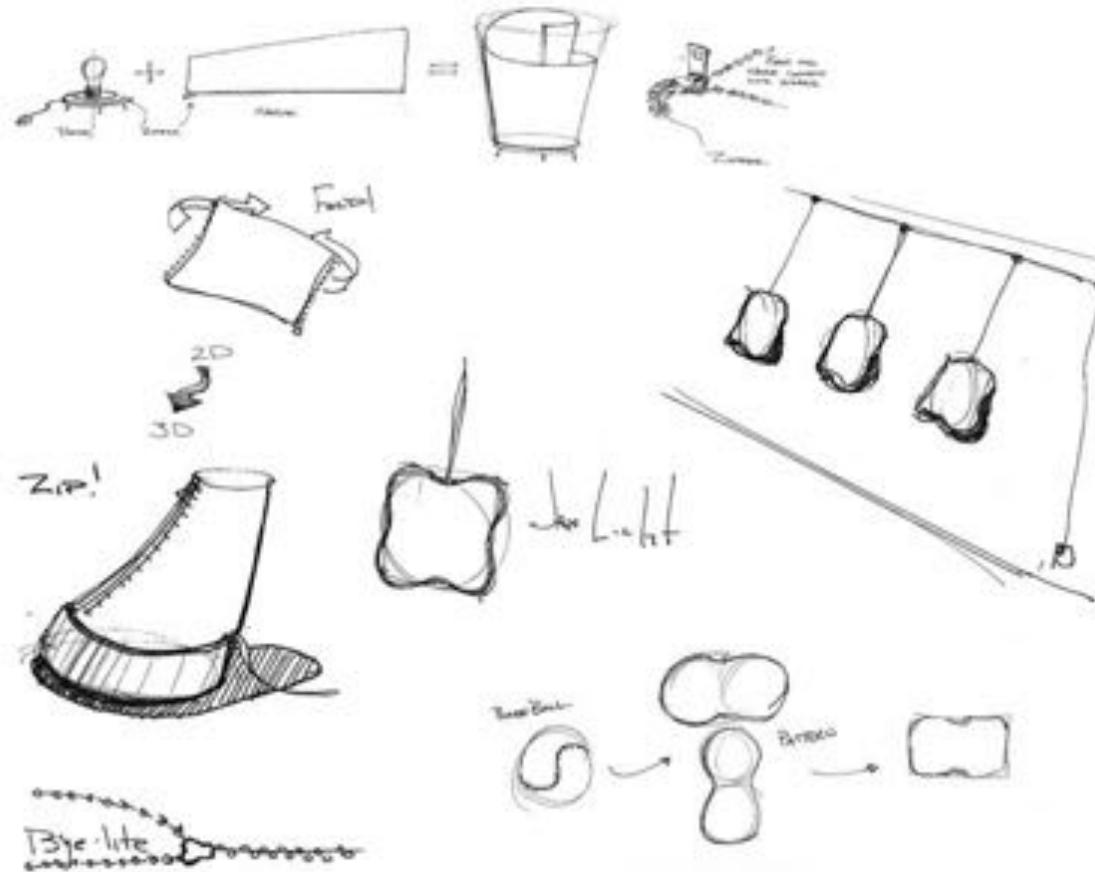
Exploration of Alternatives



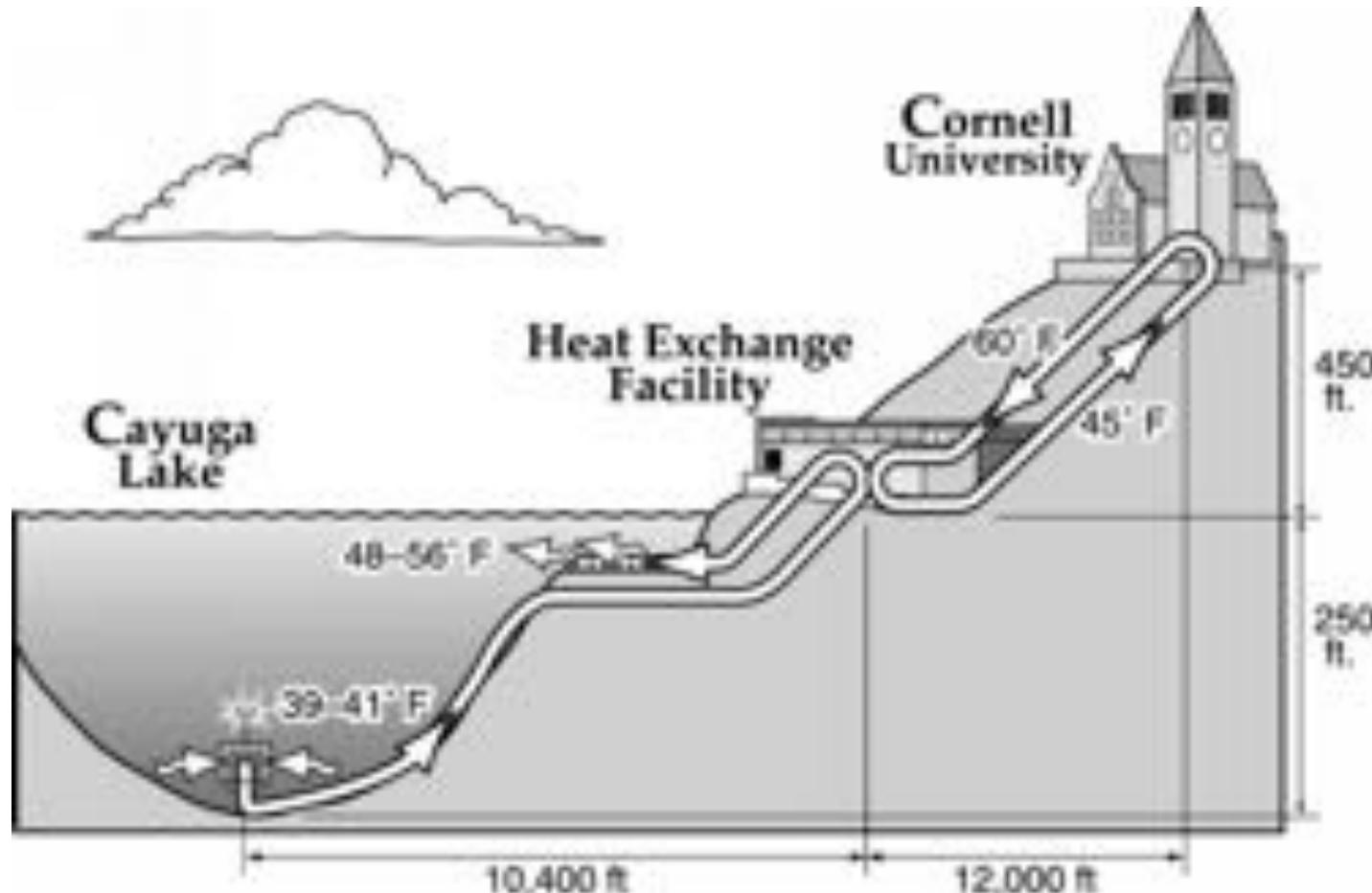
... a designer that pitched 3 ideas would probably be fired. I'd say 5 is an entry point for an early formal review (distilled from 100's). ... if you are pushing one you will be found out, and also fired. ... it is about open mindedness, humility, discovery, and learning. If you aren't authentically dedicated to that approach you are just doing it wrong!

Alistair Hamilton
VP Design
Symbol Technologies

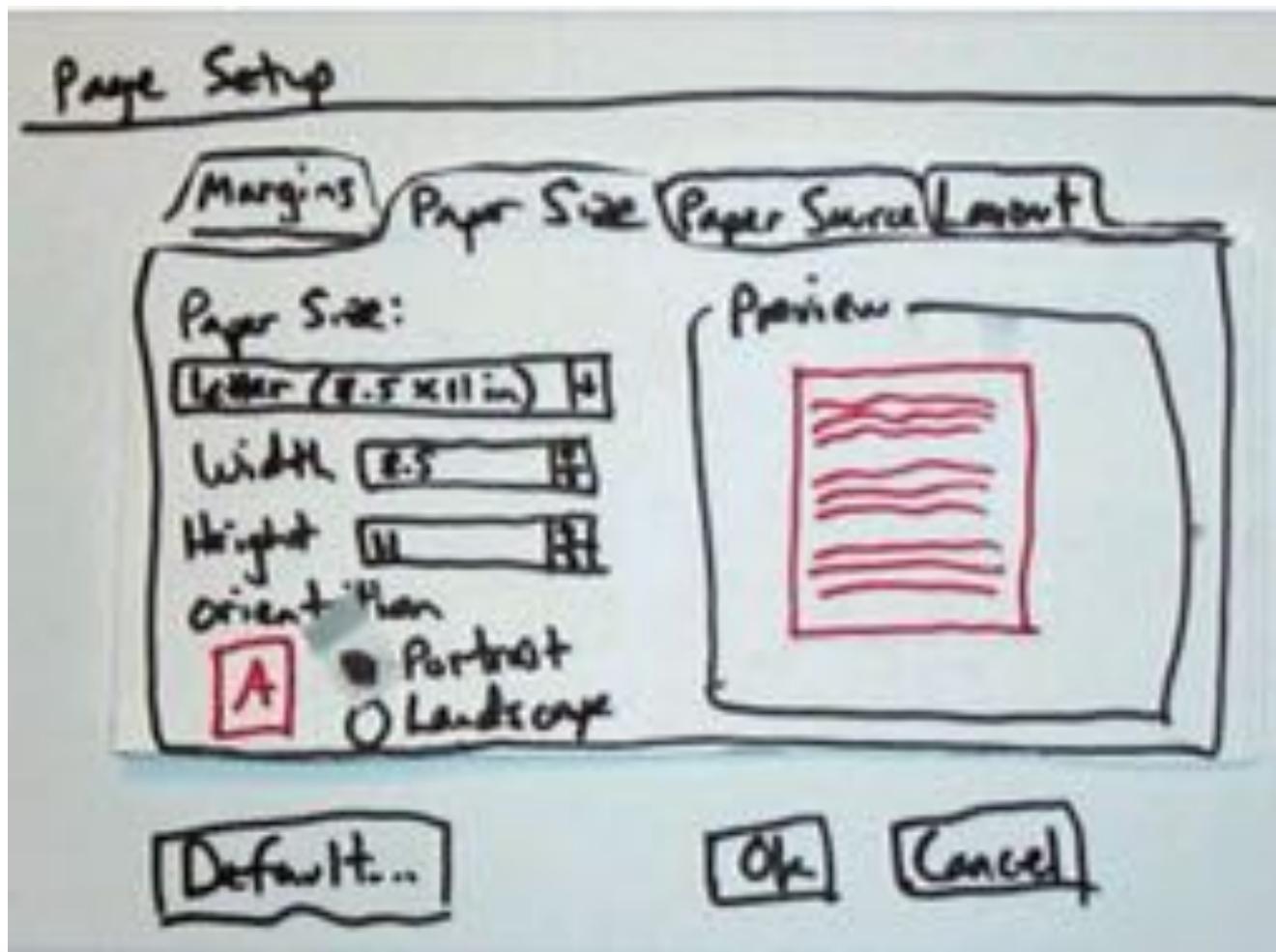
Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



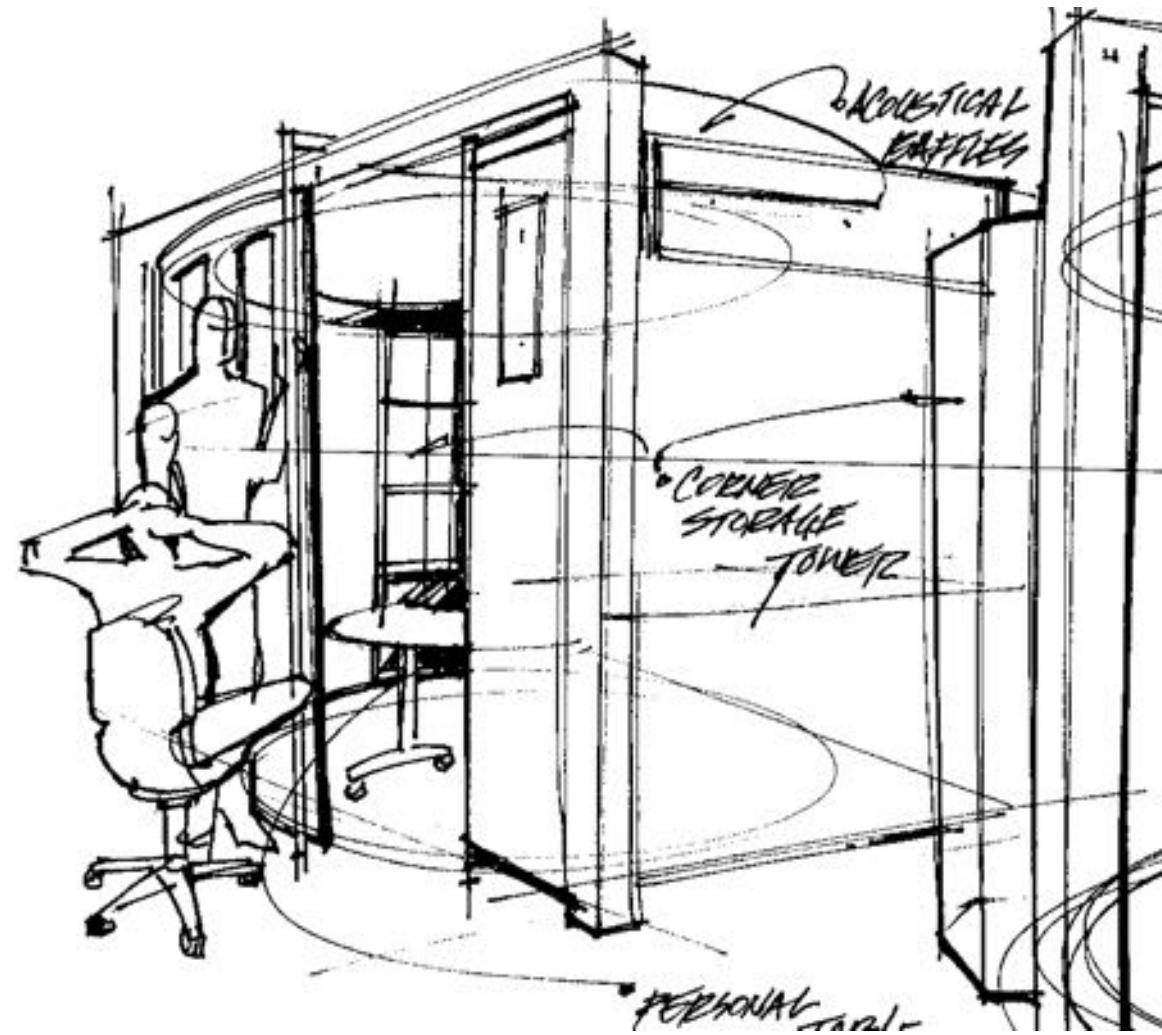
Is this a sketch? Why or why not?



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Is this a sketch? Why or why not?



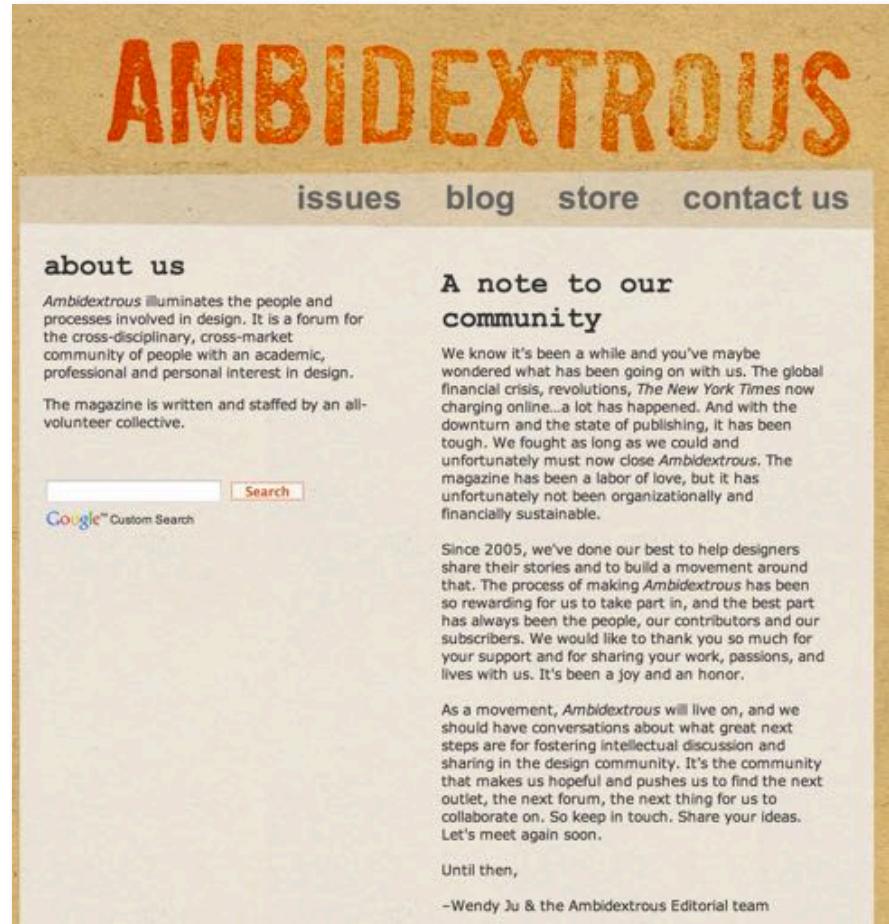
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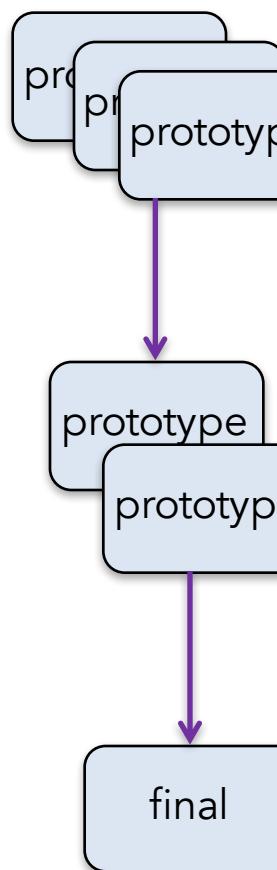
Some Evidence

Task:

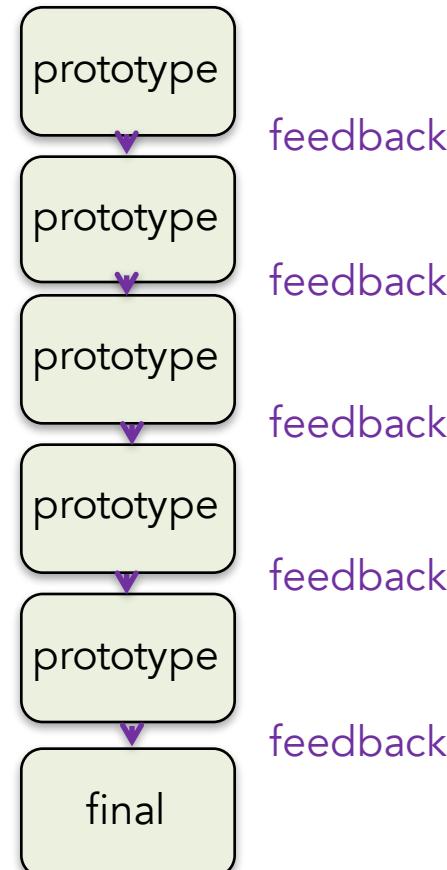
Create a web banner ad for Ambidextrous magazine.



Feedback in Parallel or Serial



Parallel condition



Serial condition

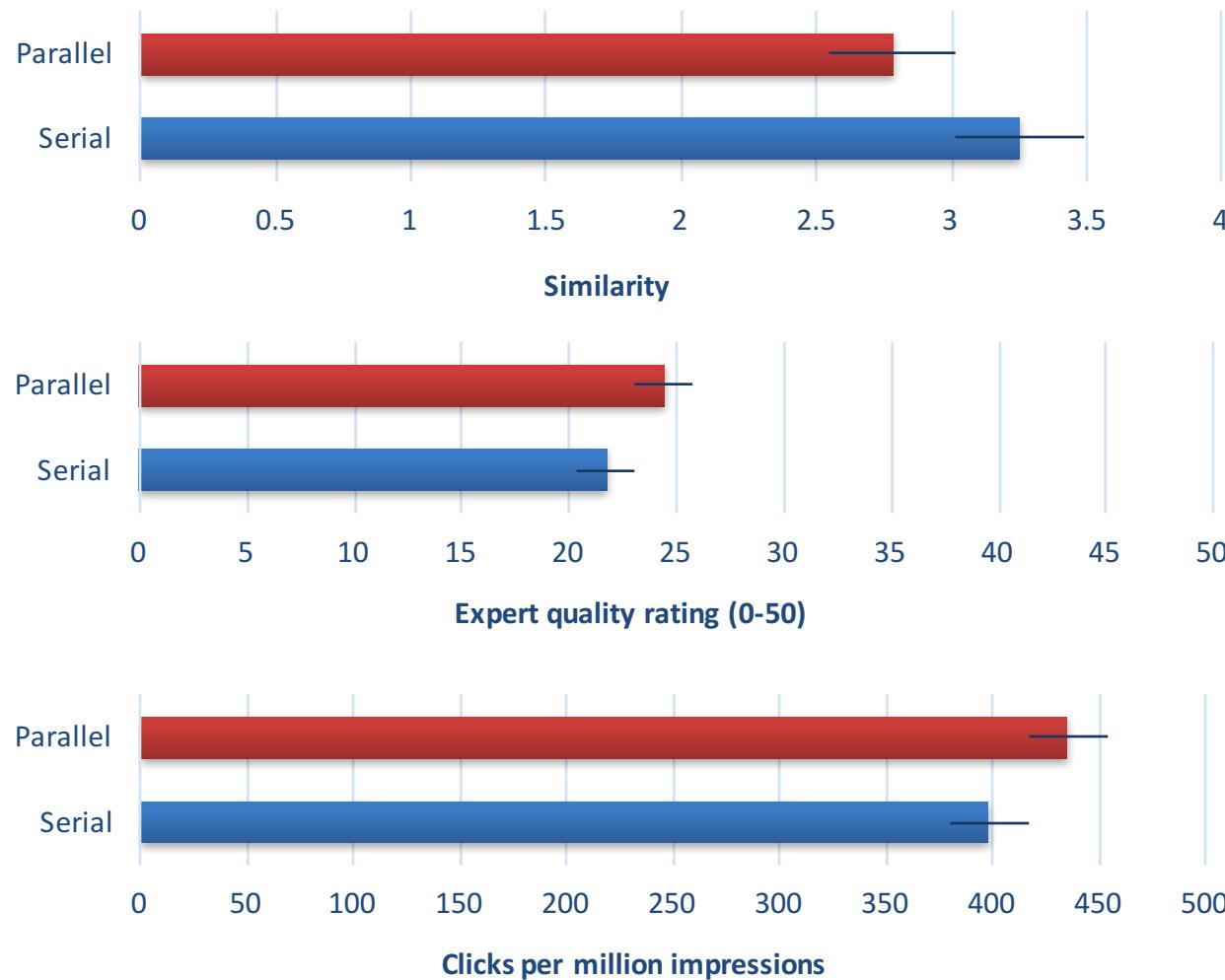
Procedure

serial
prototyping
condition

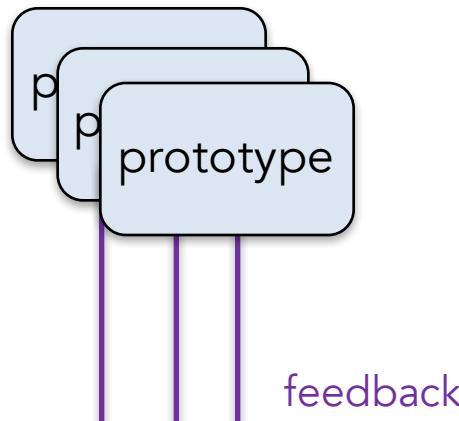
parallel
prototyping
condition



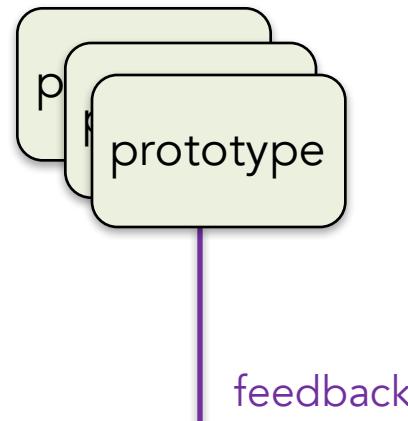
Parallel: more diverse, better, more clicks



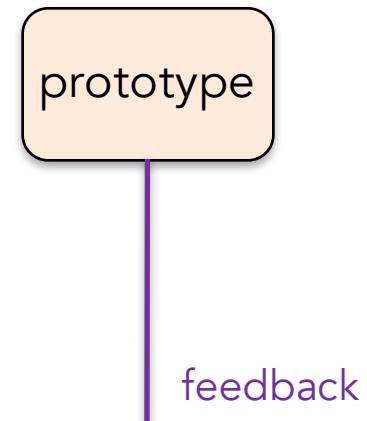
Share one or share your best?



Share multiple condition

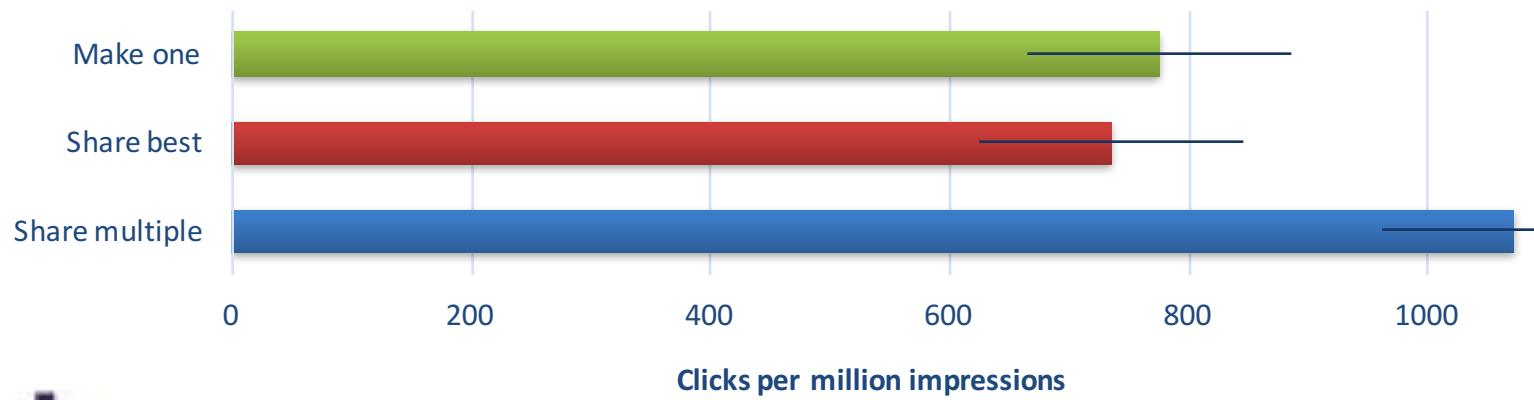
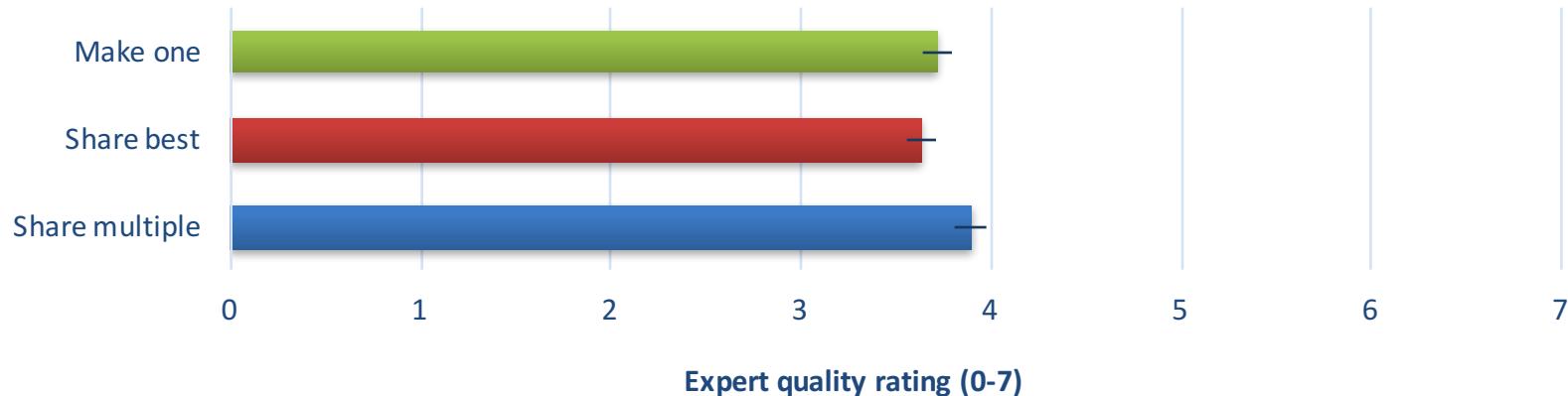


Share best condition



Make one condition

Share Multiple: better, more clicks



Some Evidence

Greater divergence in designs

- Prevents sticking with the first idea

- Allows mashing ideas together

Alternatives facilitate feedback

- Enable comparison

- Can improve tone of critique

Sketching and the Design Diamond

The design diamond is fundamental to understanding effective iteration in design

Much of your education, including in CSE,
has taught you to focus on having the right answer

Here it matters what you do long before the end

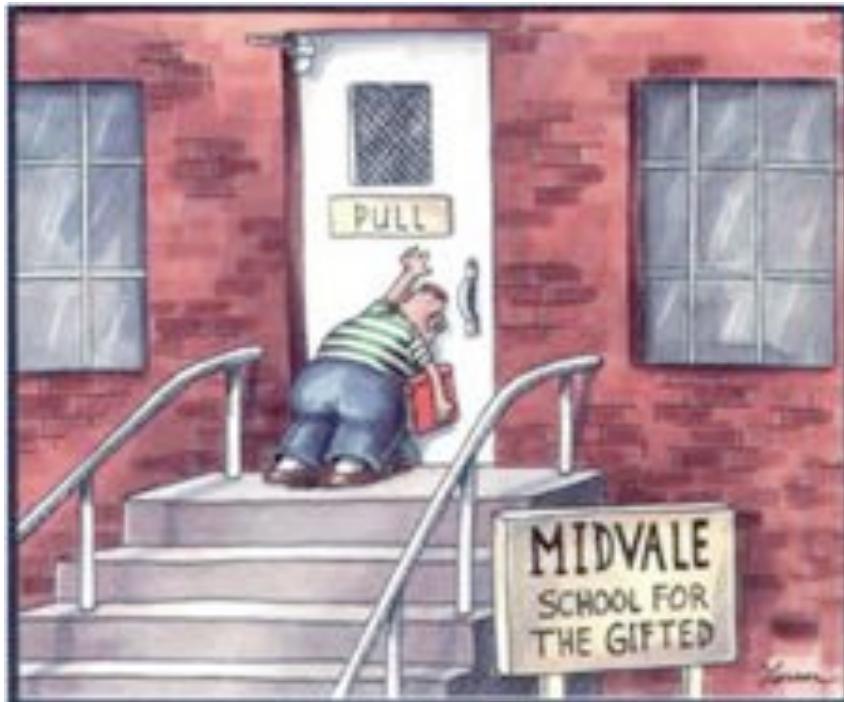
Most ideas get thrown out, including yours

Better ideas are great criticism, and frequently would never have come about otherwise

What Is This Course?

Time for a Door Quiz:

Say out loud what action
you use to open the door



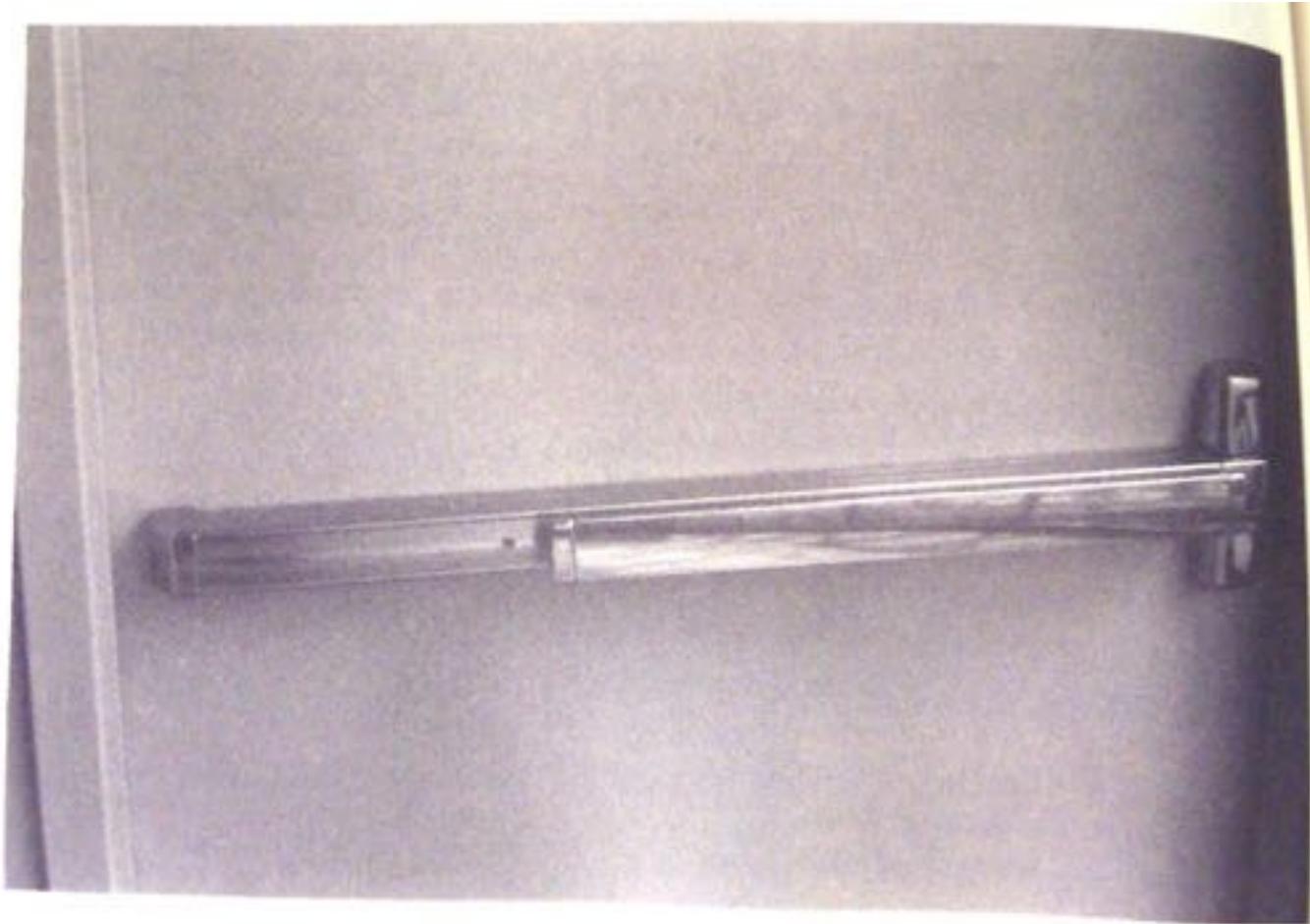
Push

Pull

Door Quiz



Door Quiz



Door Quiz



Door Quiz



Door Quiz



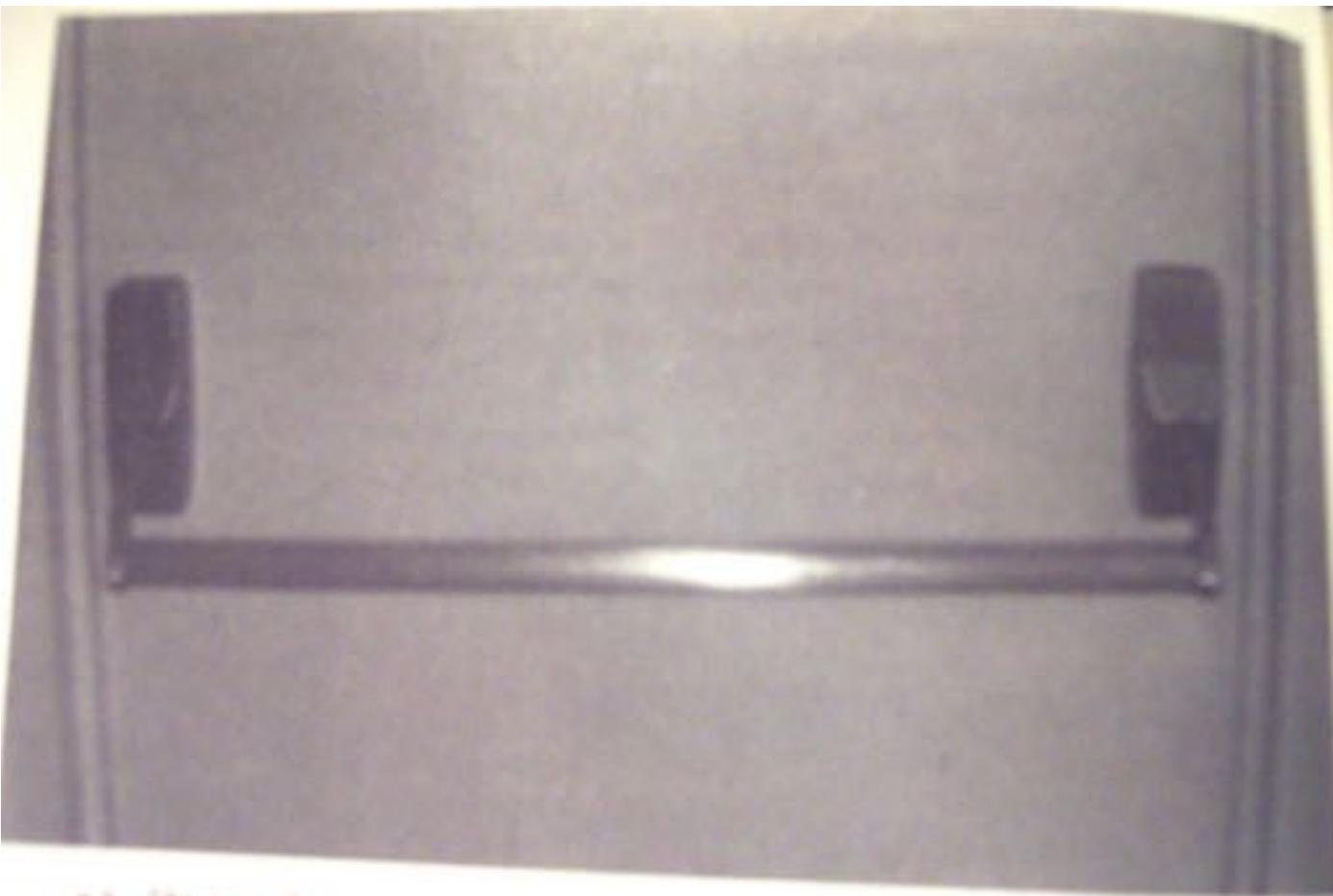
Door Quiz



Door Quiz



Door Quiz



Door Quiz



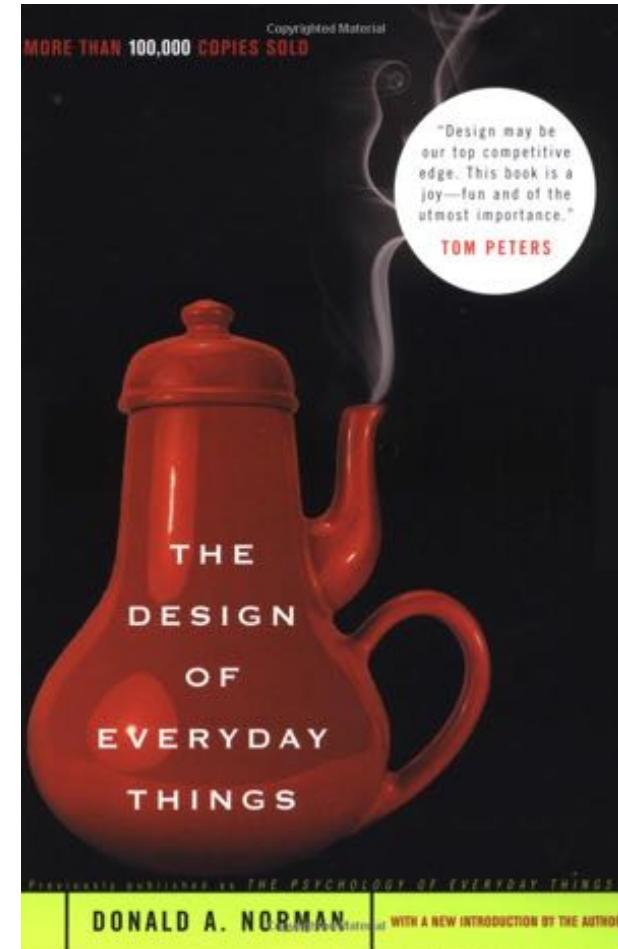
What is so Special about Computers?

Nothing! It is about good designs and bad designs

We all make push/pull decisions many times per day

We all encounter doors that do this badly

We all see signs that do not change what we do



What is so Special about Computers?

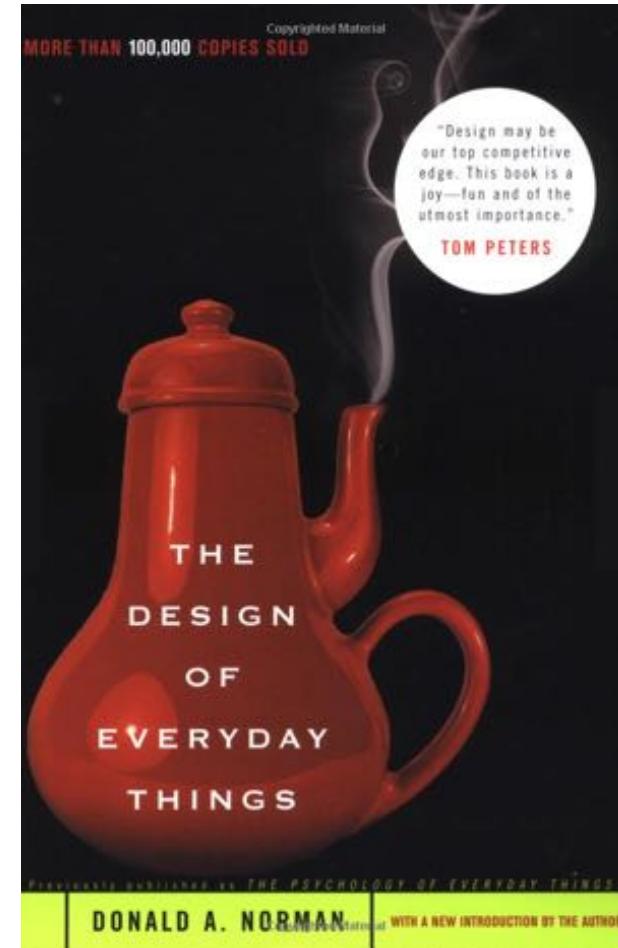
Yet we blame ourselves

Absolutely everything we encounter in the made world was designed

Too often poorly designed

Read this book

Be warned you cannot unread it, you become angry



Norman's Execution-Evaluation Cycle

1. Establish the goal.
2. Form the intention.
3. Specify the action sequence.
4. Execute the action sequence.
5. Perceive the system state.
6. Interpret the system state.
7. Evaluate the system state with respect to the goals and intentions.



Turning on the Light

1. Establish the goal

Increase light in the room

2. Form the intention

To turn on the lamp

3. Specify the action sequence

Walk to the lamp, reach for the knob, twist the knob

4. Execute the action sequence

[walk, reach, twist]

5. Perceive the system state

[hear “click” sound, see light from lamp]

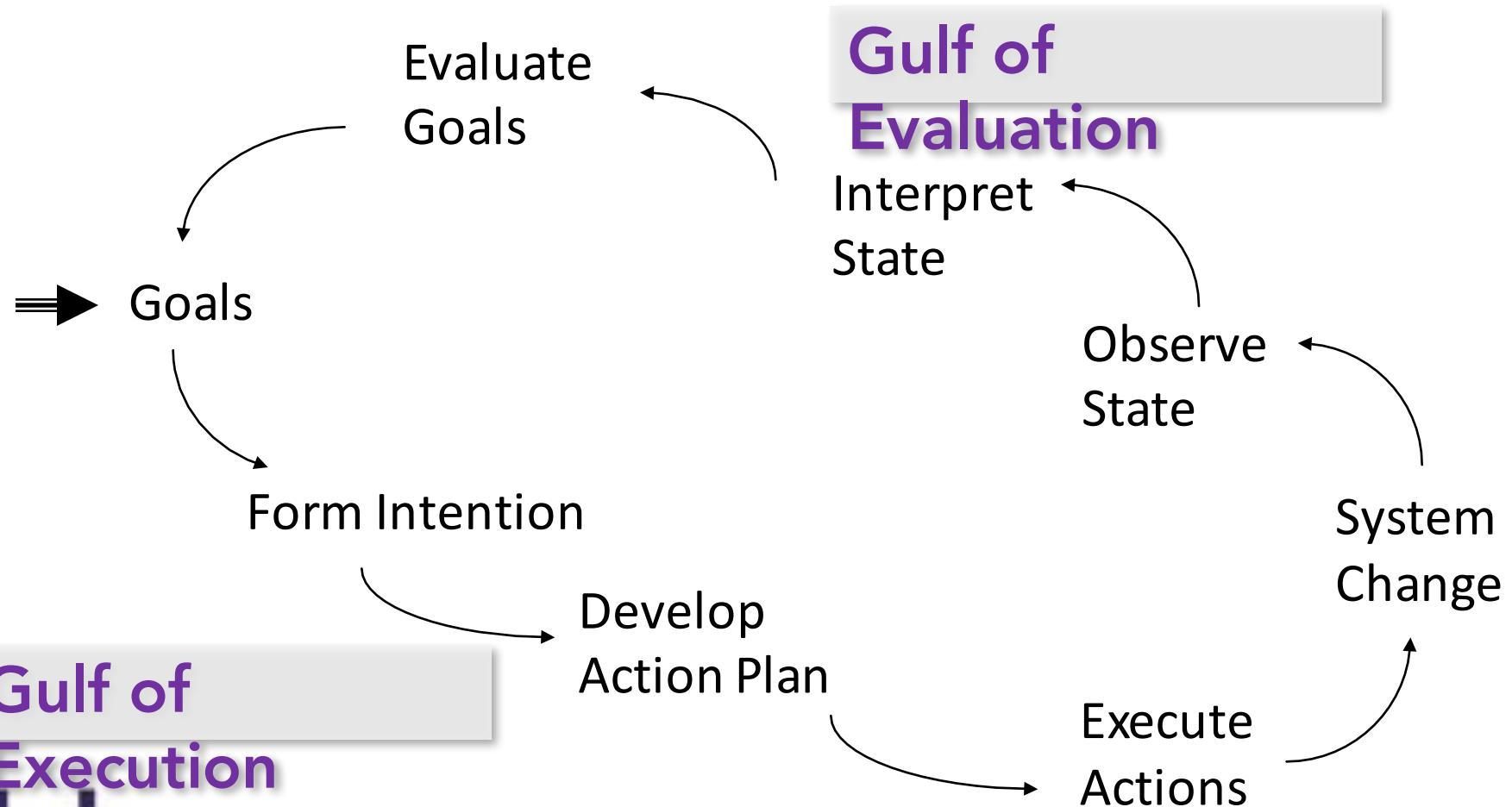
6. Interpret the system state

The knob rotated. The lamp is emitting light. The lamp seems to work

7. Evaluate the system state with respect to the goals and intentions

The lamp did indeed increase the light in the room [goal satisfied]

Norman's Execution-Evaluation Cycle



**Gulf of
Execution**

dub

University of
Washington

Bridging the Gulfs

Gulf of Execution: “How do I do it?”

Commands and mechanisms need to match the goals, thoughts, and expectations of a person

Gulf of Evaluation: “What does it mean?”

Output needs to present a view of the system that is readily perceived, interpreted, and evaluated

People build mental models to anticipate and interpret system response to their actions

What can I do?

How do I do it?

What result will it have?

What is it telling me?

Cooper's Mental Model Terminology



Implementation Model

How it works

(aka Design Model, Designer's Conceptual Model)



Manifest Model

How it presents itself

(aka System Image)



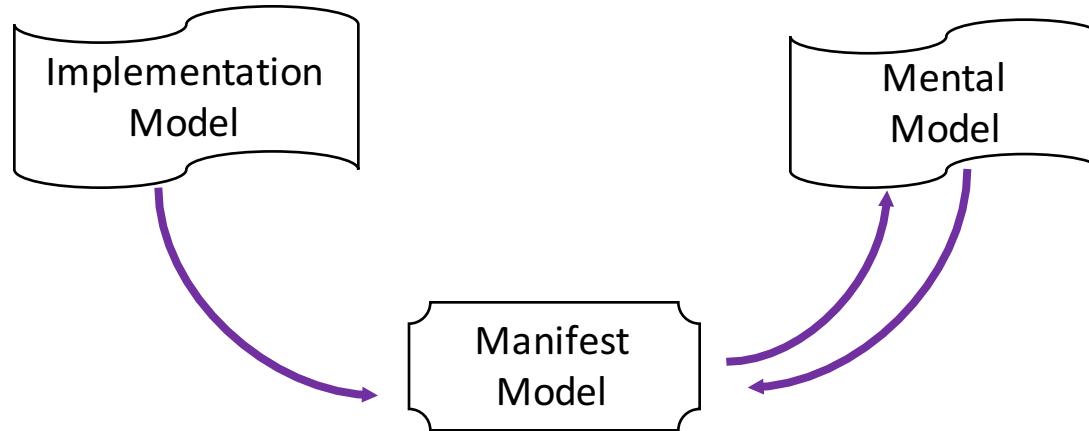
Mental Model

How a person thinks it works

(aka User Model, User's Conceptual Model)

These terms
are sloppy and
ambiguous
out in the
world

Manifest and Mental Models



Designer projects their model into an artifact

Person forms their model based on interaction

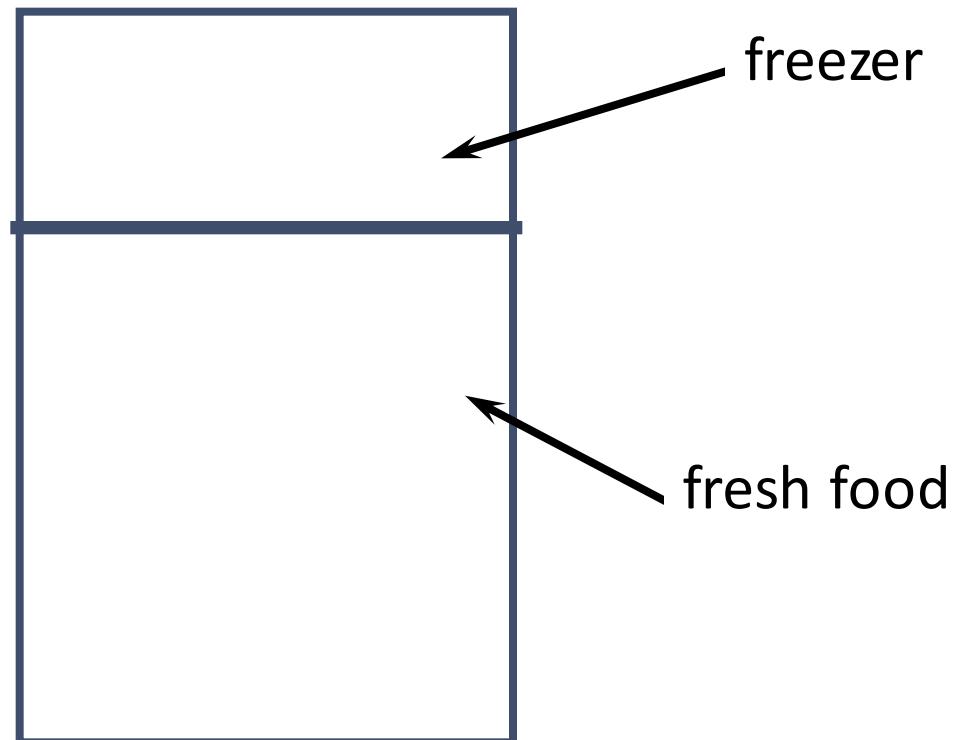
People struggle until model matches manifest model

Update mental model in response to breakdowns

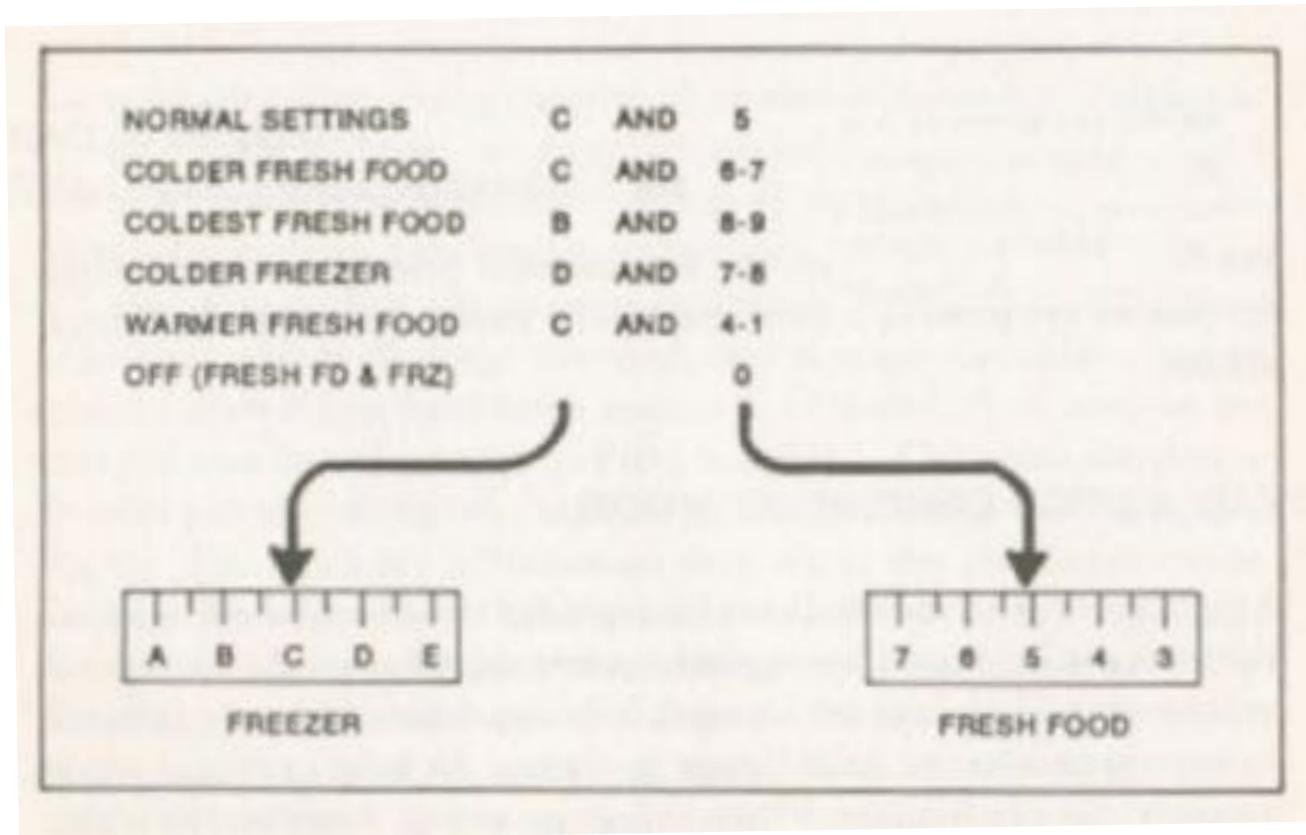
Not necessarily matching the implementation model

Mental Models

Problem: freezer too cold, fresh food just right

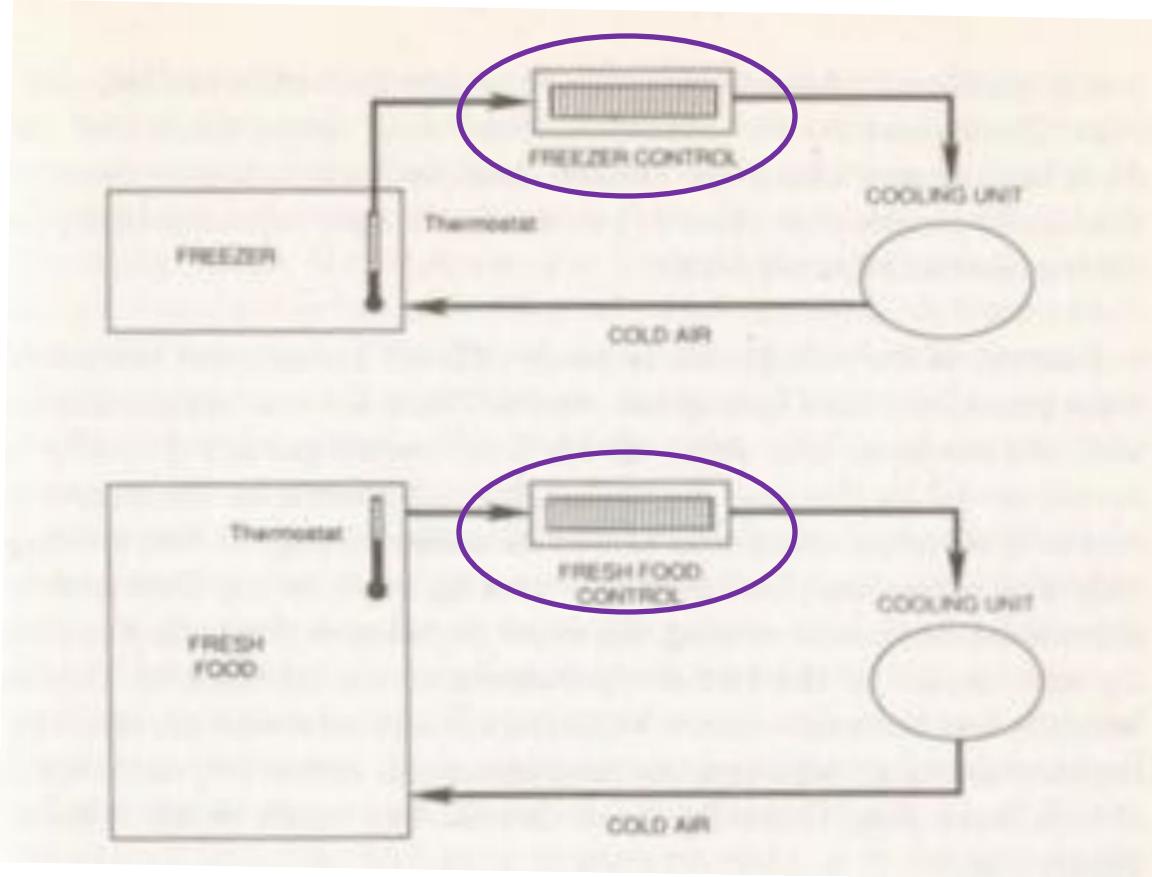


Manifest Model



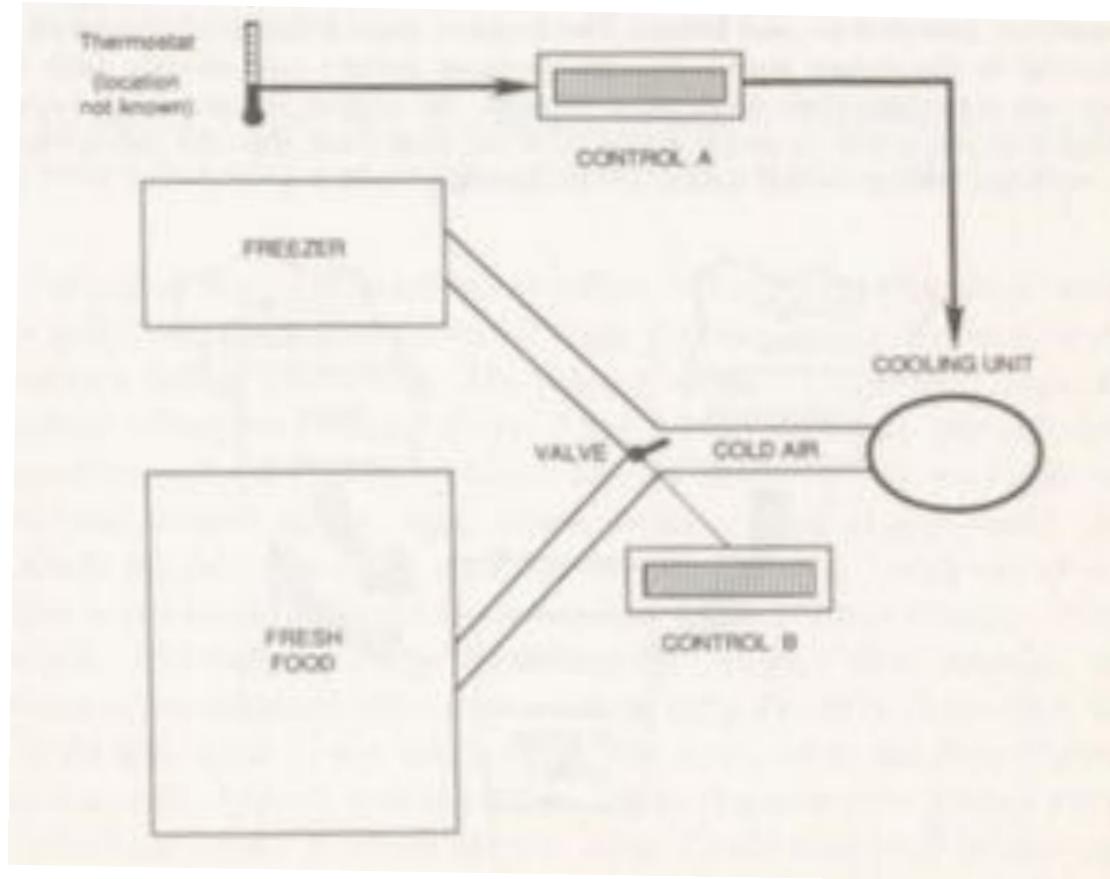
What if I want to make just the freezer warmer?

A Sensible Mental Model

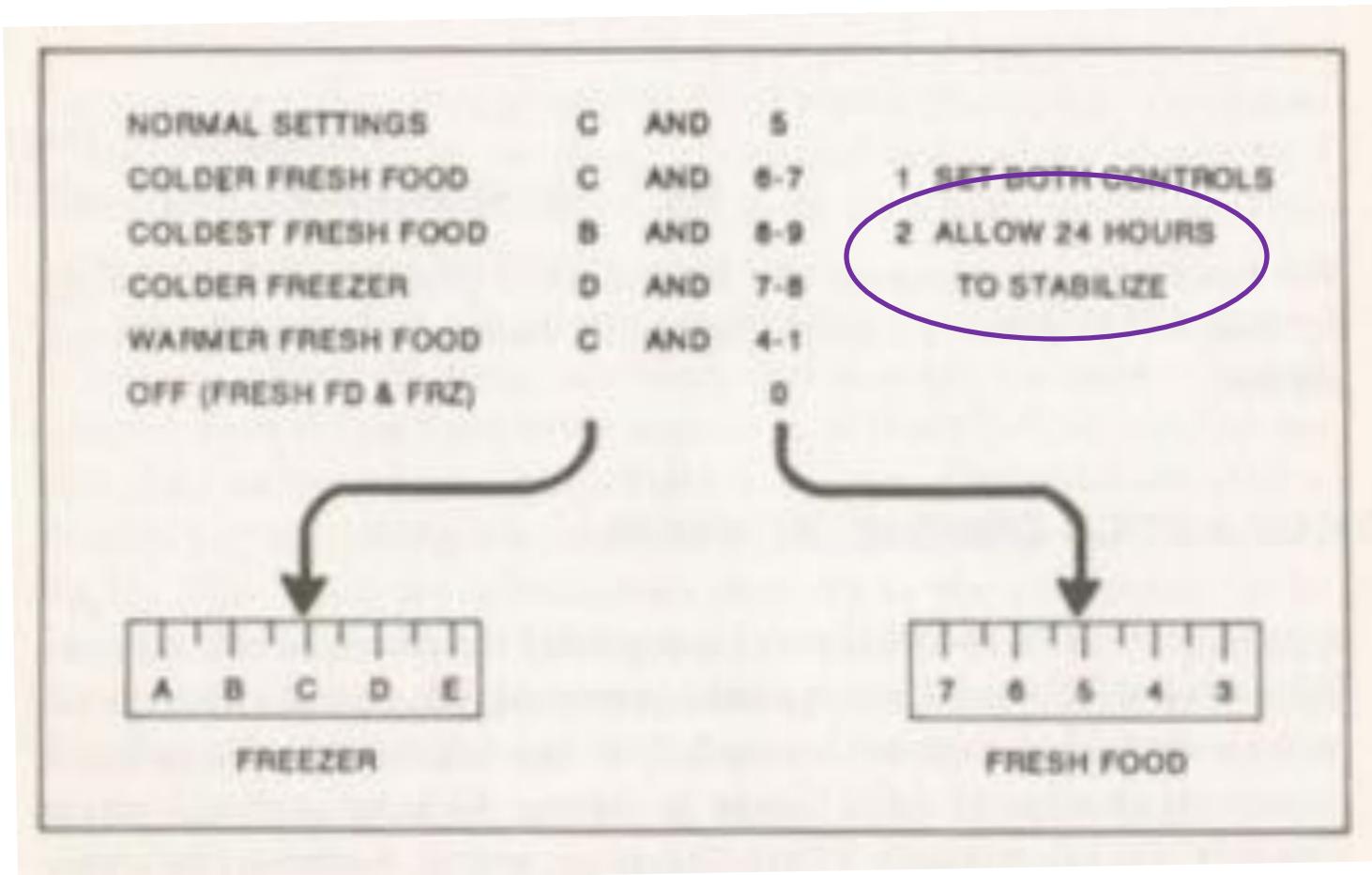


“The Freezer Control controls the freezer temperature and the Fresh Food Control controls the fresh food temperature”

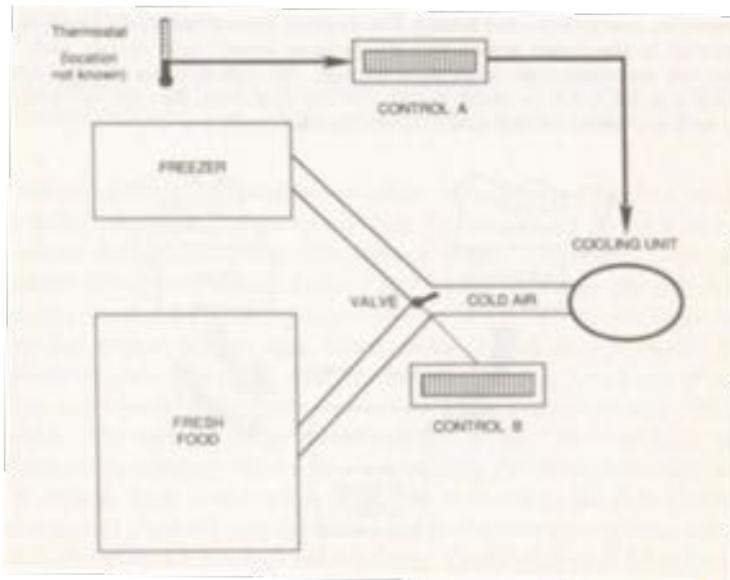
The Implementation Model



A Problem with Feedback



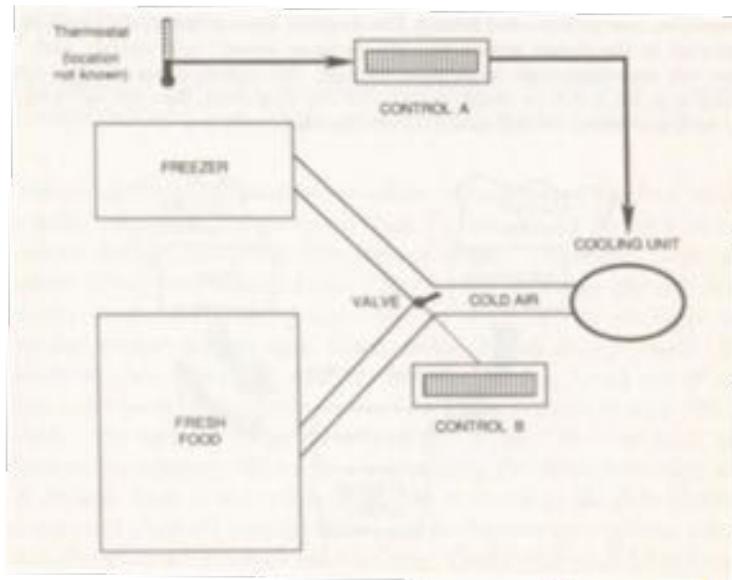
The Implementation Model



Why do we have a problem?

Can you fix the problem?

The Implementation Model



Why do we have a problem?

Cost constraints

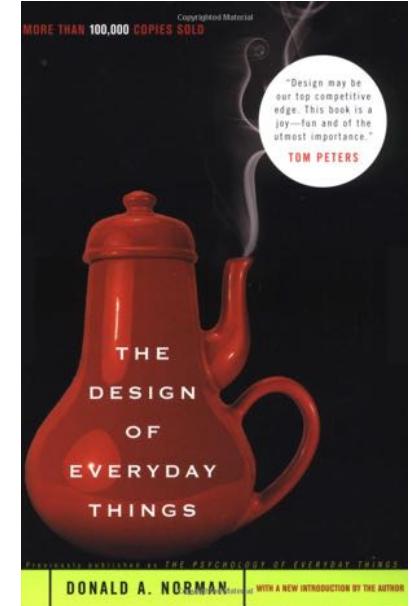
Can you fix the problem?

Make controls correspond to
a person's mental model

Make controls correspond to
the implementation model

Building the Right Model

Having the right model
helps people bridge the
Gulf of Execution and
the Gulf of Evaluation



How can we help people build the right models:

Affordances
Visibility
Constraints
Consistency

Metaphors
Knowledge in the World
Mapping
Modes

Affordances

Visual clue to interaction

knobs afford turning

levers afford moving

buttons afford pushing



Affordances

“The affordances of the environment are what it offers animals, what it provides or furnishes, for good or ill.”

Gibson, part of an ecological approach to psychology

“The term ‘affordance’ refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.”

Norman

What's the Affordance?



Affordances



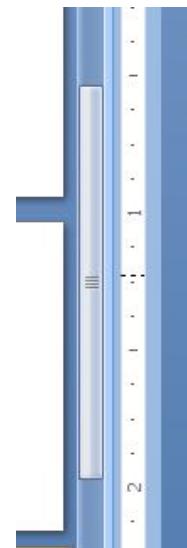
Affordances

Technology affordances are often based in affordances from the physical world



Affordances

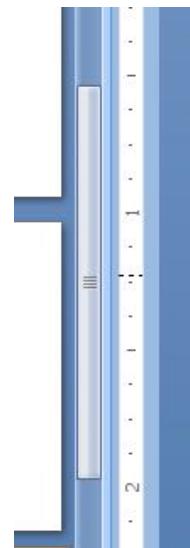
What is the affordance here?



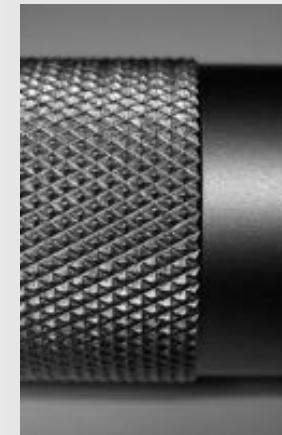
Where does it come from?

Affordances

What is the affordance here?



Knurling



Where does it come from?

Sequential Affordance

Acting on a perceptible affordance leads to information indicating new affordances

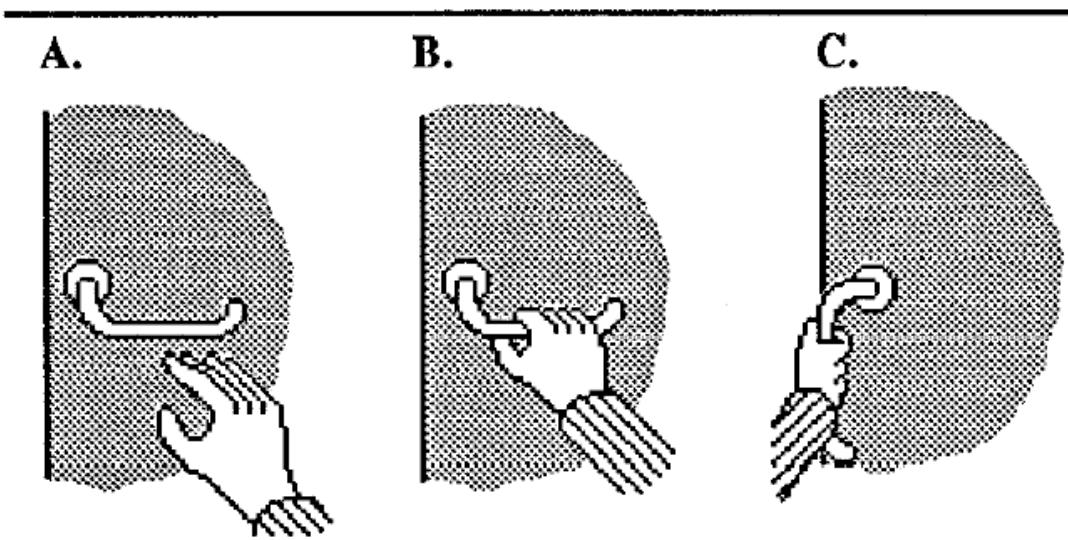


Figure 4. Sequential affordances: one affordance leads to another. Visual information indicates grasping (A & B); tactile information indicates turning (B & C).

Sequential Affordance

Acting on a perceptible affordance leads to information indicating new affordances

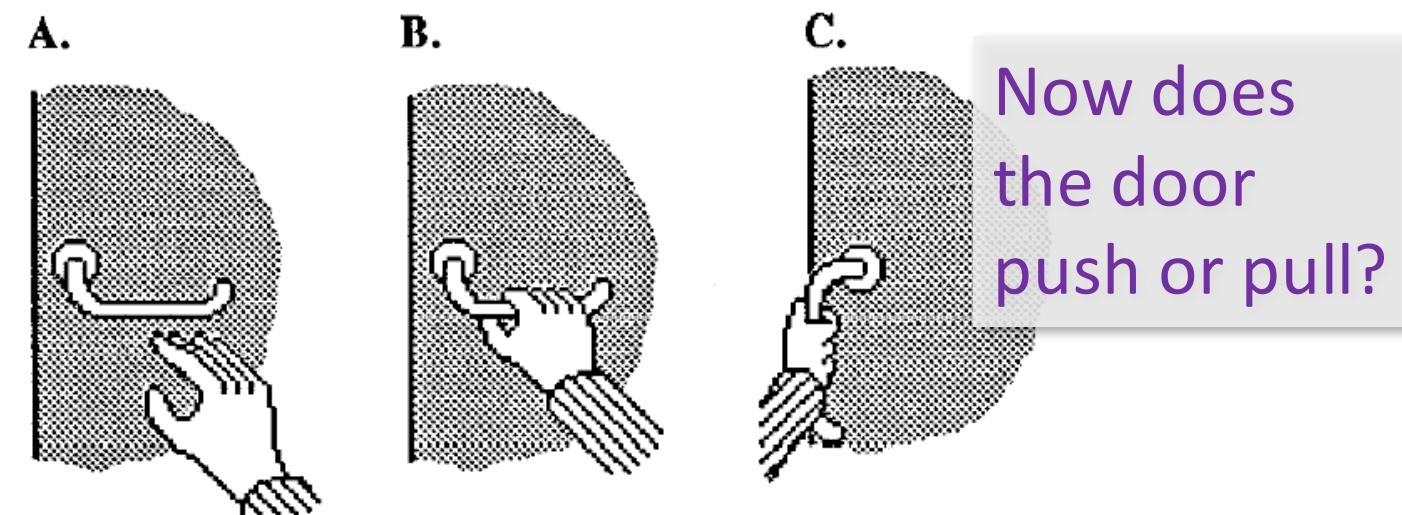
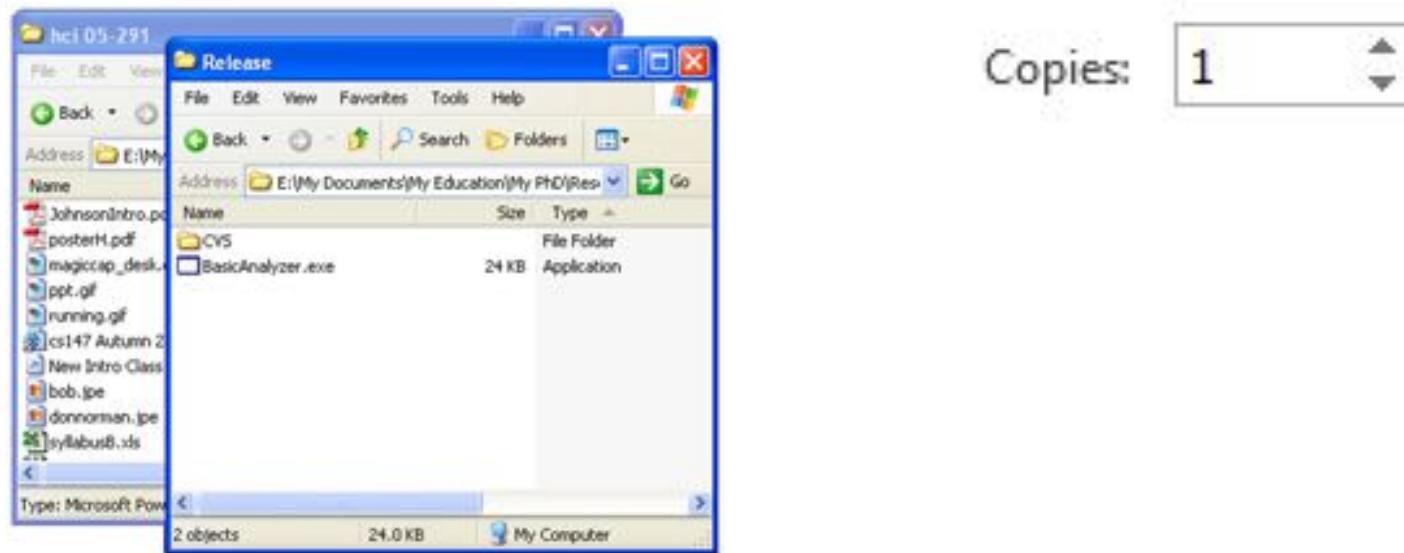


Figure 4. Sequential affordances: one affordance leads to another. Visual information indicates grasping (A & B); tactile information indicates turning (B & C).

Nested Affordances

Affordances due to spatial relationships
revealing what actions can be done

Proximate to, contained in, part of



In Other Words

An affordance is what a thing communicates about how it can be used, often by its appearance

“In general, when the apparent affordances of an artifact matches its intended use, the artifact is easy to operate. When apparent affordances suggest different actions than those for which the object is designed, errors are common.”

Gaver

Challenges arise if there is a mismatch between implied use versus intended use

False Affordances

When there is perceptual information suggesting an implied use that does not exist

OK

False Affordances



False Affordances



False Affordances

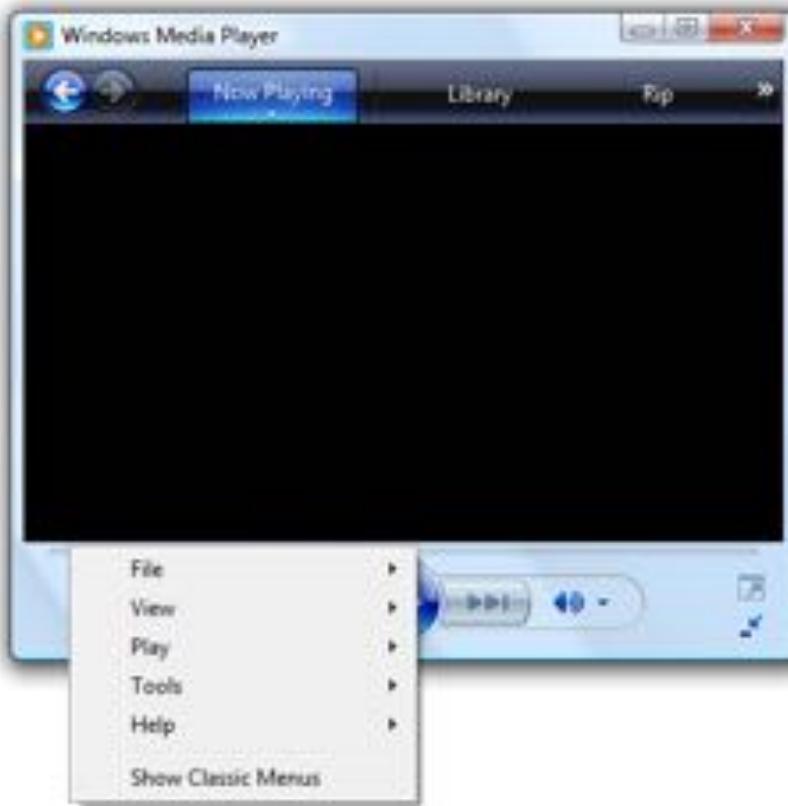


False Affordances



Hidden Affordances

When there is no perceptual information suggesting an actual intended use



Hidden Affordances



Hidden Affordances



Logos linking to home is a convention, but not afforded by the page

Confusion of the Term

“Note also that affordances are not intrinsic, but depend on the background and culture of users. Most computer-literate user will click on an icon. This is not because they go around pushing pictures in art galleries, but because they have learned that this is an affordance of such objects in a computer domain...”

Dix

Disagree. Icons do not afford “pushability” or “clickability” by their attributes. They do not give an indication of their intended use, except by convention.

Clarification on Convention

“Designers sometimes will say that when they put an icon, cursor, or other target on the screen, they have added an ‘affordance’ to the system. This is a misuse of the concept. ... It is wrong to claim that the design of a graphical object on the screen ‘affords clicking.’ ... Yes, the object provides a target and it helps the user know where to click and maybe even what to expect in return, but those aren’t affordances, those are conventions, and feedback, and the like. ... **Don’t confuse affordances with conventions.**”

Norman

Metaphors

Suggest an existing mental model

“horseless carriages”, “iron horses”, “wireless”

Desktop metaphor

Not an attempt to simulate a real desktop

Leverages knowledge of files, folders, trash

Explains why some windows seem hidden

Metaphors

Suggest an existing mental model

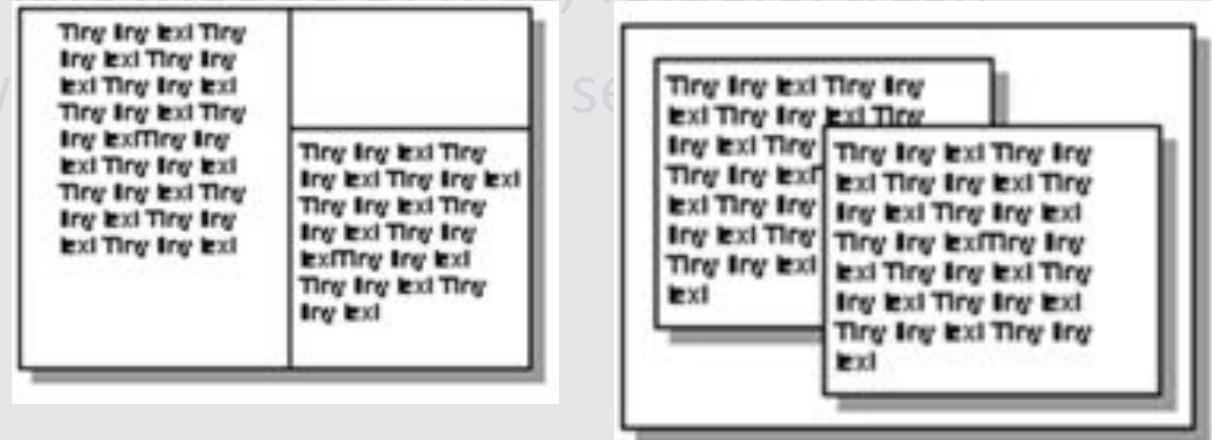
“horseless carriages”, “iron horses”, “wireless”

Desktop metaphor

Not an attempt to simulate a real desktop

Leverages knowledge of files, folders, trash

Explains why



Mail Metaphor

The screenshot shows the Microsoft Outlook interface for the "ACM Multimedia 2004" folder. The left sidebar displays a "Folder List" with various sub-folders under "mail.cs.ucl.ac.uk". The main pane shows a list of received emails, and the preview pane shows the details of the selected email.

Received Emails:

From	Subject	Received	Size
Rainer Lienhart	ACM MM04 Judges - Final versions of candidate papers	Wed 10/6/2004	4 MB
Weibin Zhao	Invitation for MM'04 Organizer Lunch	Wed 10/6/2004	3 KB
Rainer Lienhart	Invitation to join the best paper committee for ACM MM04	Mon 10/4/2004	19 KB
aniller@cs.columbia.edu	ACM MM 2004 Registration Confirmation	Wed 9/1/2004	3 KB
Dongge Li	RE: timing of session - session chair needs to know	Fri 8/27/2004	9 KB
Angela Sasse	content sessions	Tue 8/17/2004	1 KB
Angela Sasse	Session chair	Thu 8/12/2004	1 KB
Vidyarani D...		Wed 5/26/2004	2 KB
EDAS Admin...	Your EDAS password for a conference or journal	Tue 5/18/2004	2 KB
Angela Sasse	time to log in	Mon 5/3/2004	95 KB
Brian Bailey	RE: List of papers	Mon 5/3/2004	109 KB
Angela Sasse	List of papers	Fri 4/30/2004	4 KB
Hsiu-Ching ...	Invitation	Thu 4/29/2004	4 KB
Angela Sasse	TPC Members - introductions and first steps	Thu 4/29/2004	4 KB

Selected Email Preview:

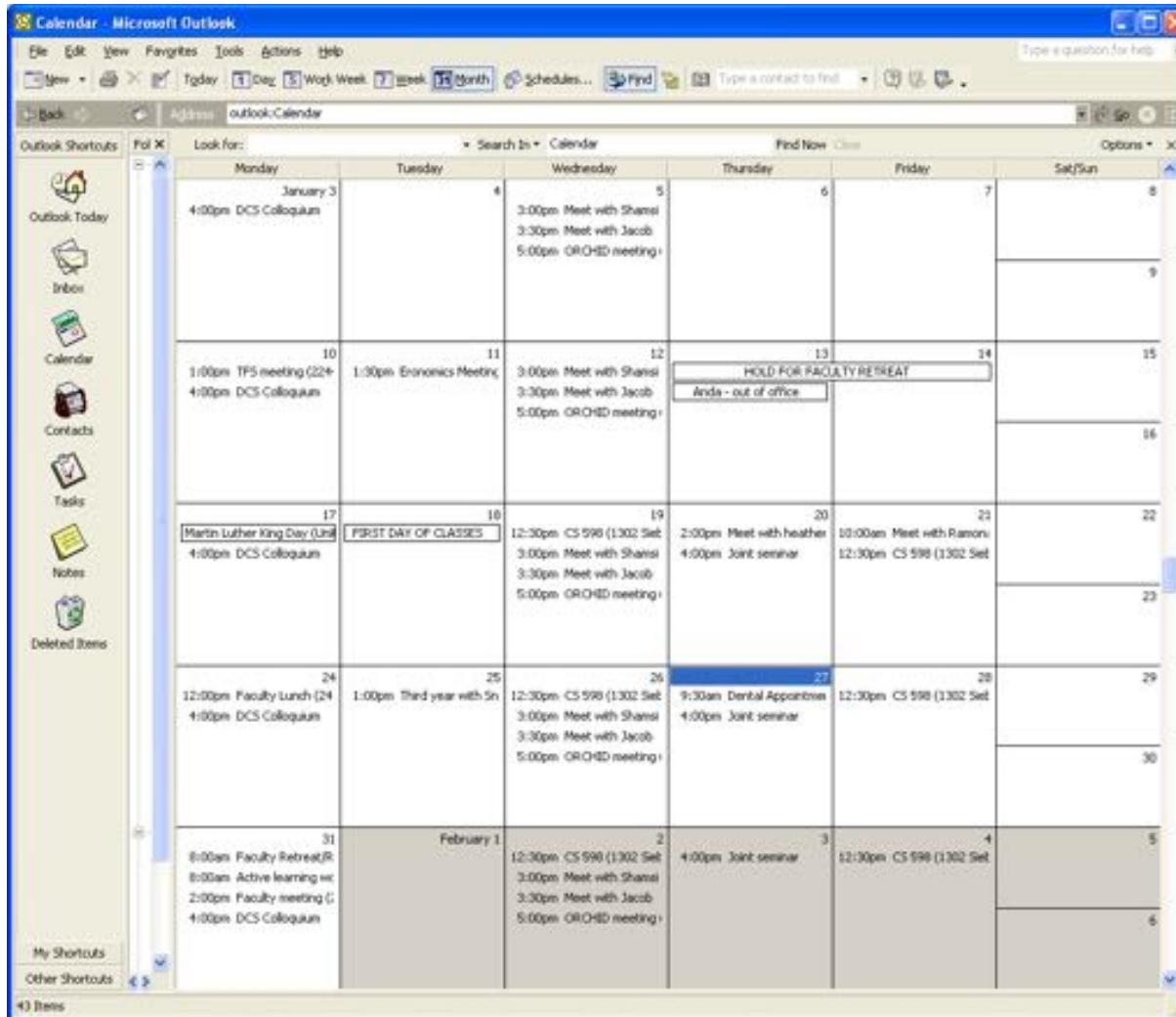
From: Weibin Zhao [weibin@cs.columbia.edu] <ccw> **To:** Henning Schulzrinne; Nevenka Dimitrova; Angela Sasse; Sue Moon; Rainer Lienhart; Yong Ru; Jon Crowcroft
Subject: Invitation for MM'04 Organizer Lunch **Cc:**

Dear MM'04 Organizers,

You are invited to attend the MM'04 organizer lunch on Tuesday, October 12, 2004. The schedule is as follows:

Time: 12:30-14:00
Location: Randolph Room (1st floor) of Faculty House at Columbia University
Map: <http://www.cs.columbia.edu/~weib/mm04-map.pdf>

Calendar Metaphor



Health Metaphor



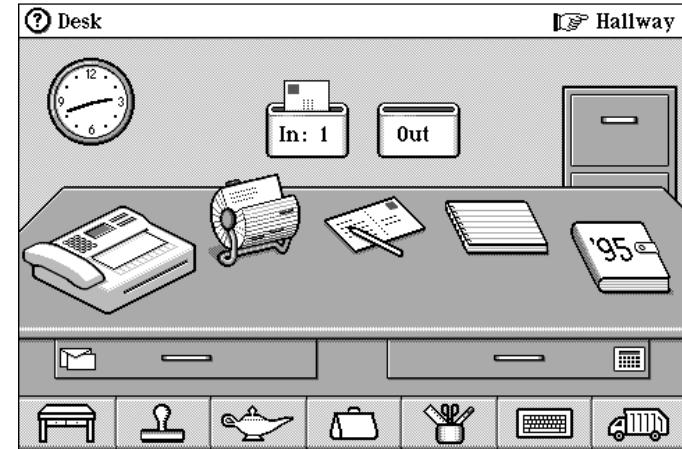
Shallow or Inappropriate Metaphors

Informs a small range of possibilities, or none at all



It is just a menu and a dialog box?

What does the living room add?



Magic Cap



Microsoft Bob

Mixed Metaphors

Two or more different metaphors coexist with some supposed relation

The desktop metaphor
Windows into content

Good? Bad?

Neither? Both?

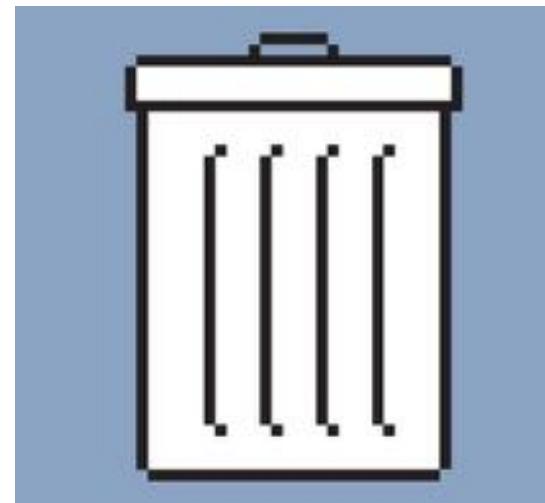
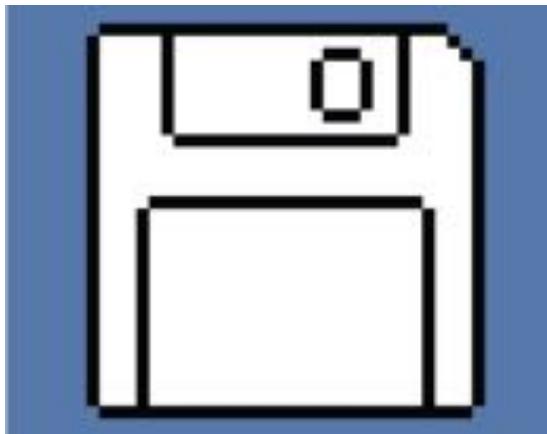
Windows are views into larger content regions

No desktop has windows



Broken Metaphors

Are not consistent, do not operate in every circumstance, or do not uphold things consistent with what the metaphor would suggest



Mechanical-Age Metaphors

Operate as their mechanical-age counterparts did, not taking advantage of the digital domain to escape the limitations of the original



Dead Metaphors

Lost the original imagery of their meaning

- Milk
 - Butter
 - Cheese
-

- Water
- Beer
- Wine

Metaphors versus Idioms

Idioms

rely on shared experience or custom
are learned, often early in life
are supported or revealed by context
become conventions
do not rely on metaphors

Idiomatic widgets
(e.g., screen splitter,
draggable title bar)

Single click
to select,
double click
to open

Hyperlinks

Metaphors and Affordances

Affordances “jump start” a model for interaction

Metaphors “jump start” a model of a system

But if designed poorly, both can be damaging

- Lead to an incorrect model, undermining interaction

- Can limit designer creativity

- Can reduce the advantages of software

- Can be “cute” at the expense of functional

Visibility

Phones

How do you
put somebody on hold
change volume



Visibility

Location of Controls



Display



(This display shows all of the possible configurations.)

0 15-30 During a conversation, the call duration is displayed.
(Example: 15 minutes, 30 seconds)

- The unit is in the programming mode (p. 9, 16, 20).
- The AUTO button was pressed while dialing or storing phone numbers for the Speed Dialer (p. 16, 19).
- └ The LOWER button was pressed (p. 21, 23).
- ⊗ The ringer is set to OFF (p. 10).
- ⊗ The MUTE button was pressed during a conversation (p. 24).
- ⊖ The dial lock mode is set. To cancel the mode, see page 27.
- F The FLASH button was pressed while storing phone numbers.
- P The PAUSE button was pressed while dialing or storing phone numbers.
- ↖ You pressed # while dialing or storing phone numbers in the TONE mode.
- ↖ You pressed # while dialing or storing phone numbers in the TONE mode.
- While storing a phone number in an UPPER memory location for the One-Touch Dialer, "□" will appear when you press a one-touch auto dial button (p. 20).
- While storing a phone number in a LOWER memory location for the One-Touch Dialer, "□" will appear when you press a one-touch auto dial button (p. 21).
- [-] The MUTE button was pressed as a secret button while storing phone numbers (p. 18, 22).
- While programming function items, such as the dialing mode, "□" will flash as a cursor.

Visibility

Changing Ringer Volume

Press “Program”

Press “6”

Set Volume

Low - Press “1”

Medium - Press “2”

High - Press “3”

Press “Program”

Visibility

Controls available on watch with 3 buttons?

Too many and they are not visible

Compare to controls on simple car radio

Number of controls \approx Number of functions

Controls are labeled and grouped together

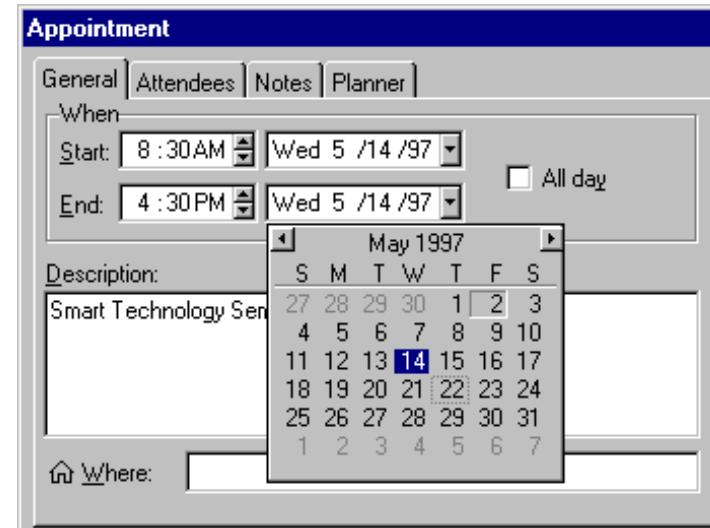
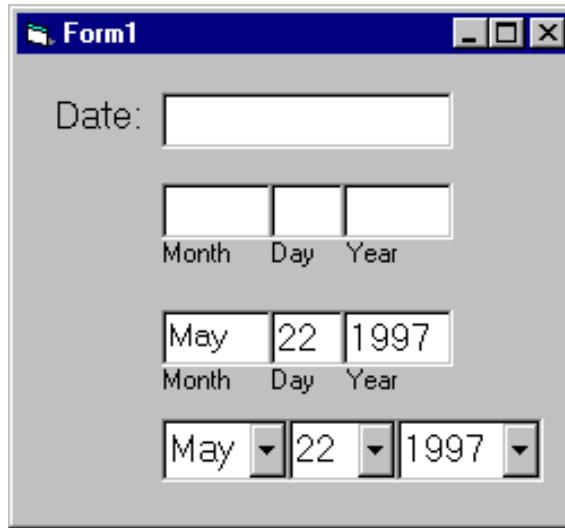


Knowledge in the World



Constraints

Prevent some actions while allowing others



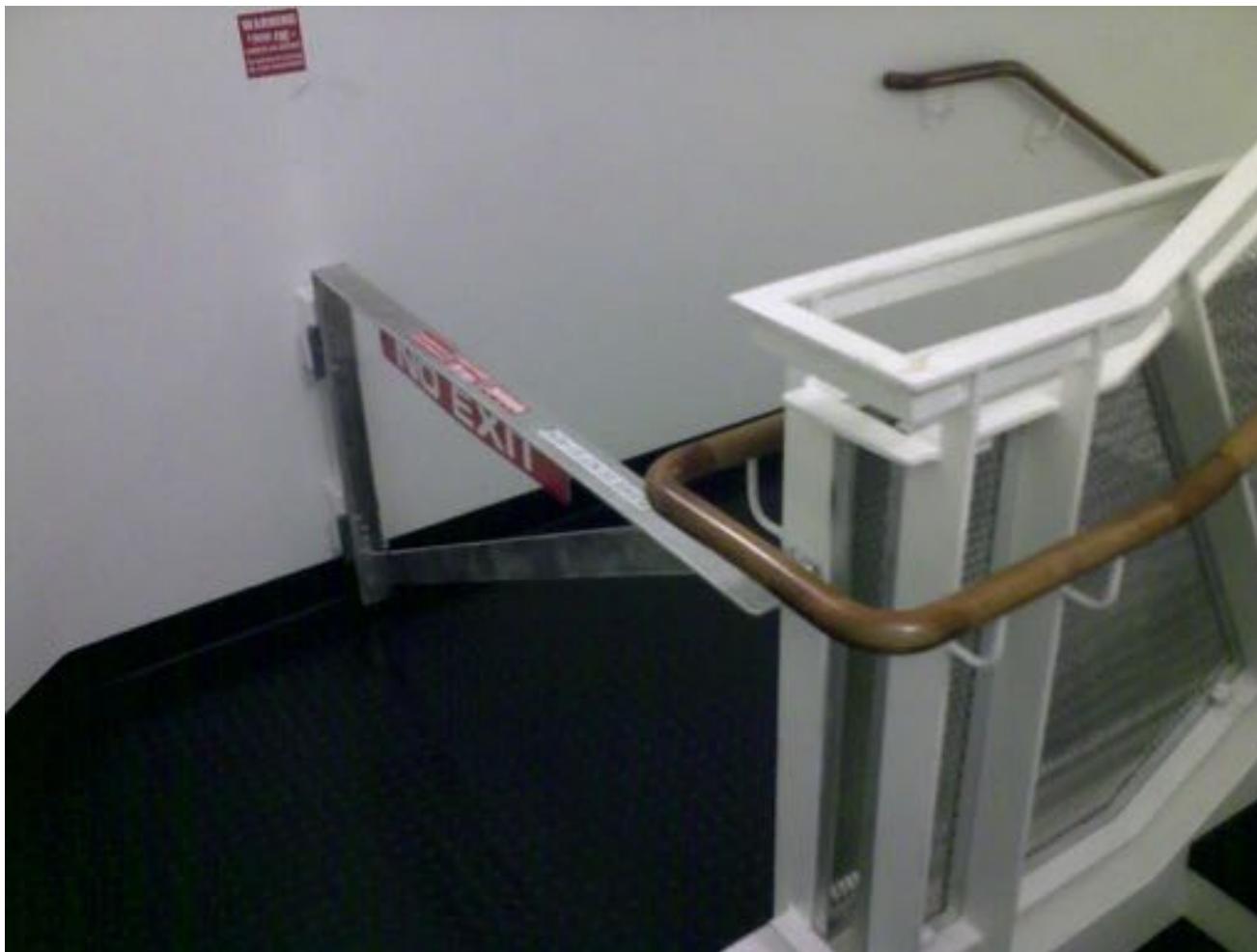
Prevent errors before they can happen

Disruptive error messages are a last resort

Constraints



Constraints



Constraints



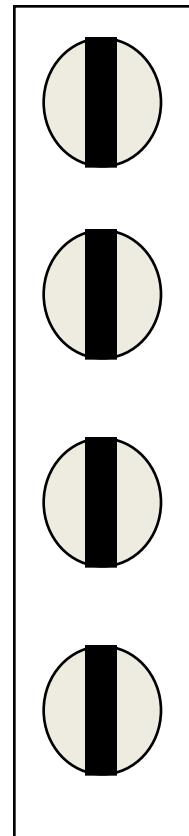
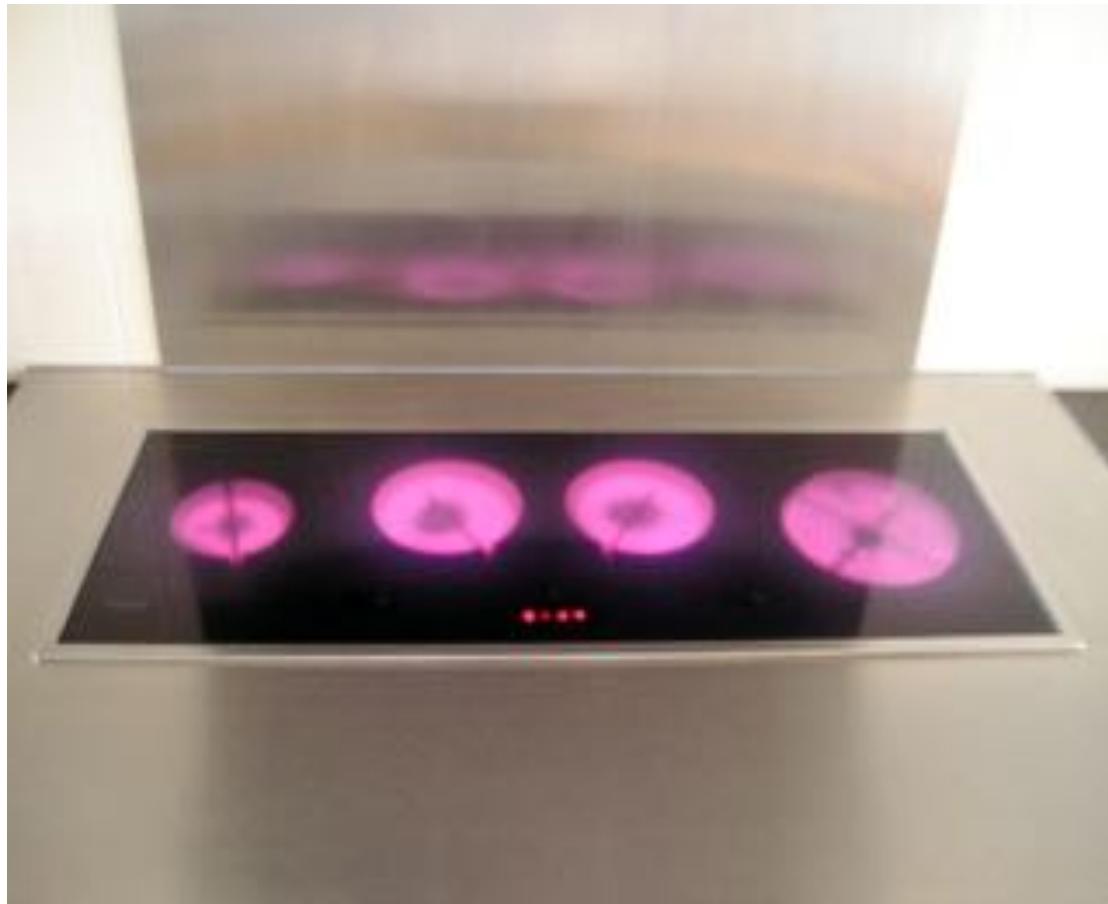
Mapping

Correspondence between an interface
and the corresponding action in ‘the world’

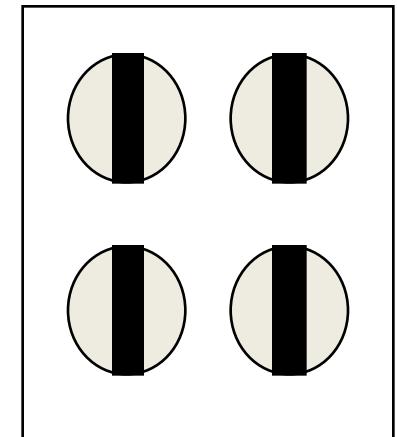
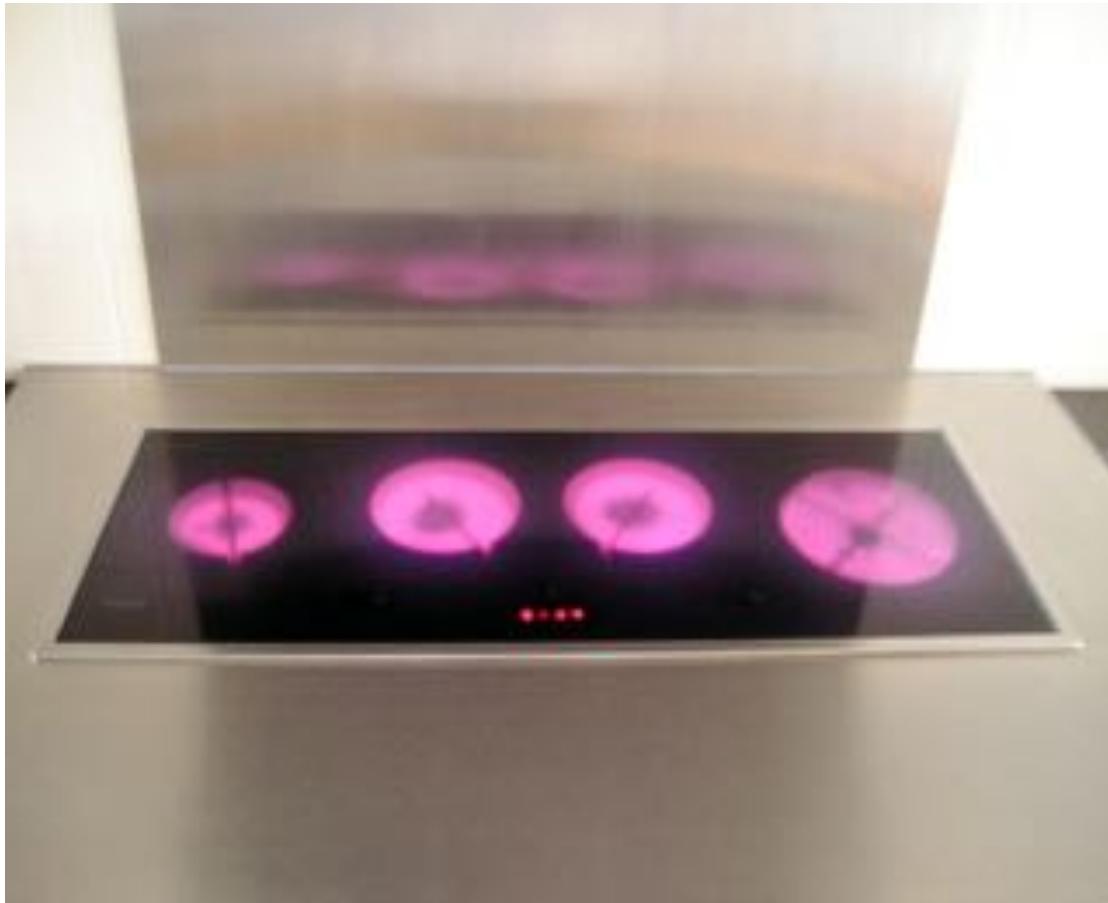
Minimize cognitive steps to
transform action into effect, or
perception into comprehension
(i.e., execution and evaluation)



Very Bad Mapping



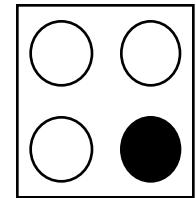
Slightly Better Mapping



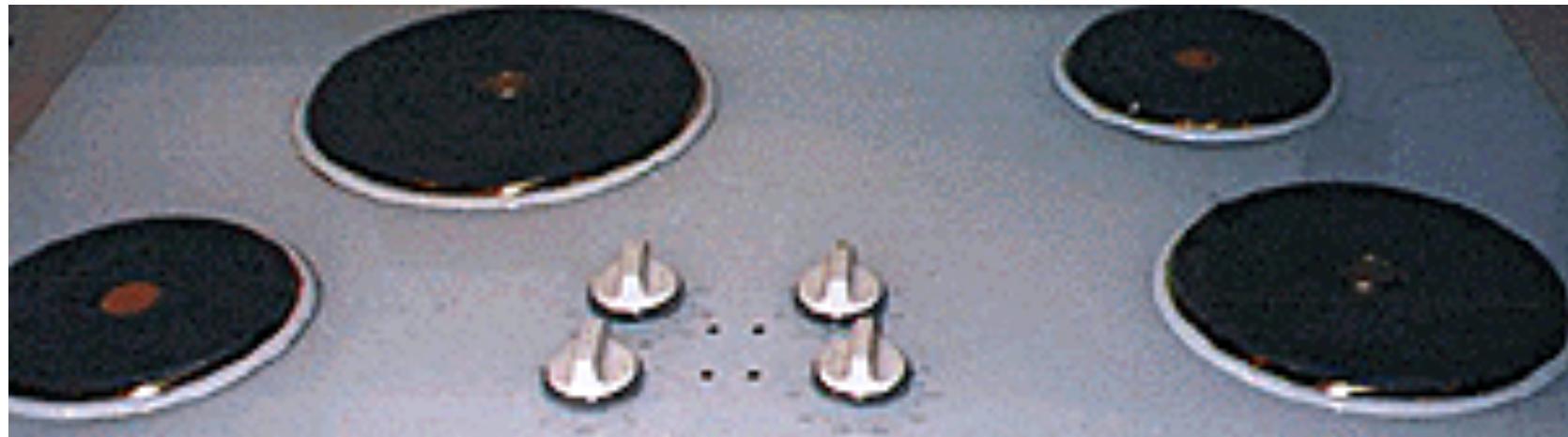
Good Mapping



Not this Stove



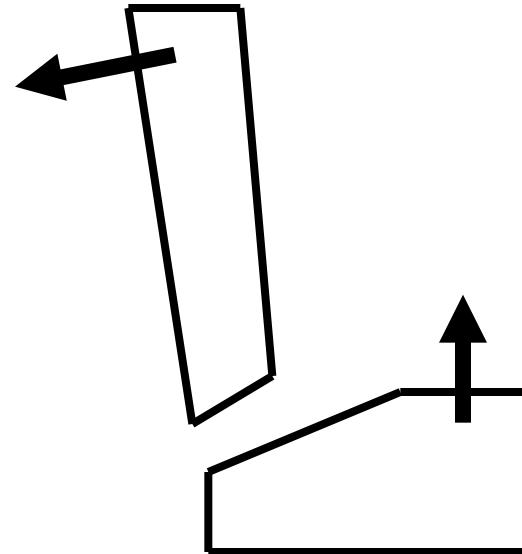
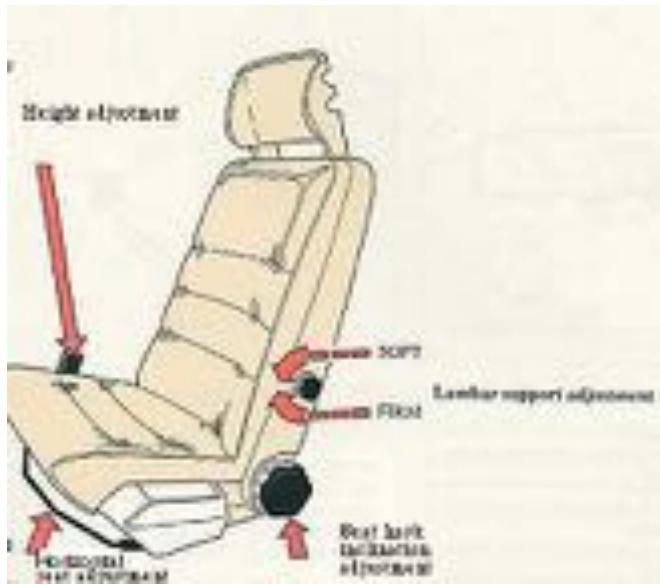
Great Mapping



Mapping

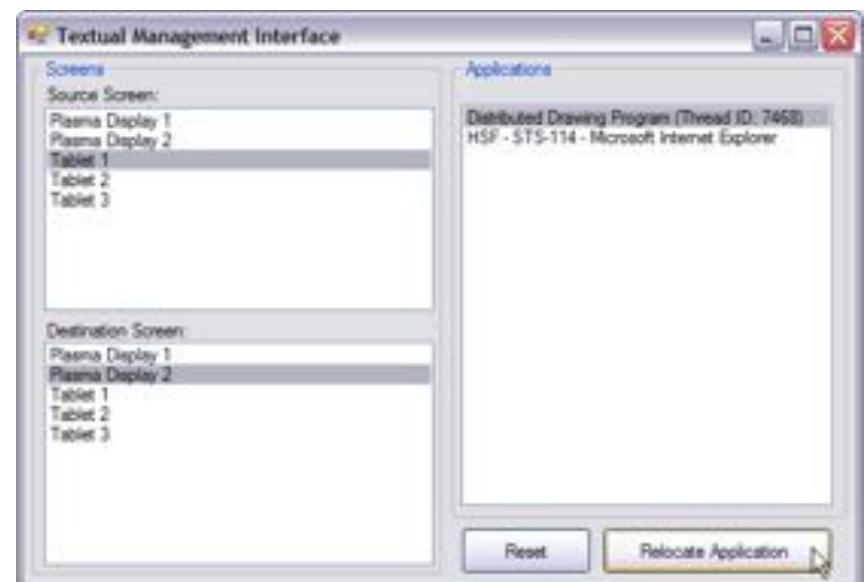


Mapping

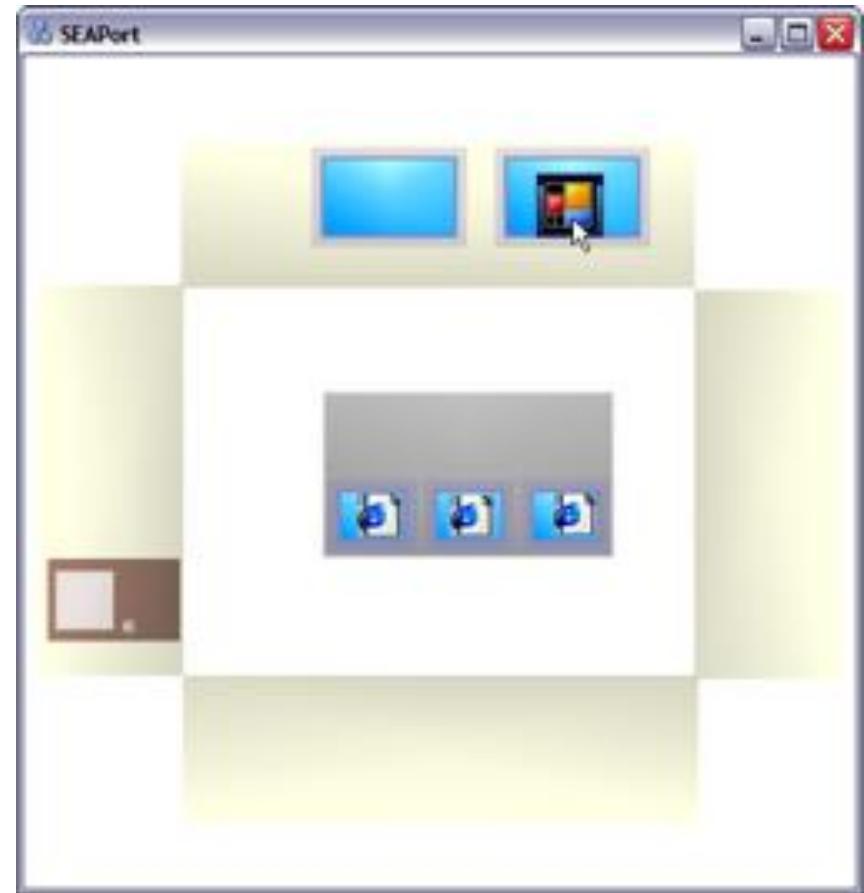


dub
University of
Washington

Mapping



Mapping



Consistency

Interfaces should be consistent in meaningful ways

Ubiquitous use of same keys for cut/copy/ paste

Types of consistency

Internal (i.e., within itself)

e.g., same terminology and layout throughout

External (i.e., with other applications)

e.g., common widget appearance

e.g., design patterns common across applications

Is Consistent Always Better?

Should “new” & “delete” be in the same place?



Is Consistent Always Better?

Should “new” & “delete” be in the same place?



New is common, delete is not

Is Consistent Always Better?

The image displays two side-by-side "Event Details" dialog boxes, likely from a calendar application. Both boxes show the same basic information: Time (12:00 pm - 1:00 pm), Date (Thu 6/24/99), Alarm (unchecked), and Private (unchecked). The first box on the left has a red circle around its repeat controls. It shows a dropdown menu with options: None, Day, Week, Month, Year. Below this is a field labeled "Every: ... week(s)" with a value of "1". Underneath is another dropdown labeled "End on: ▼ No End Date". At the bottom is a "Repeat on:" field containing the days S M T W T F S, with all days checked. The second box on the right also has a red arrow pointing to its "Repeat" field, which is set to "None".

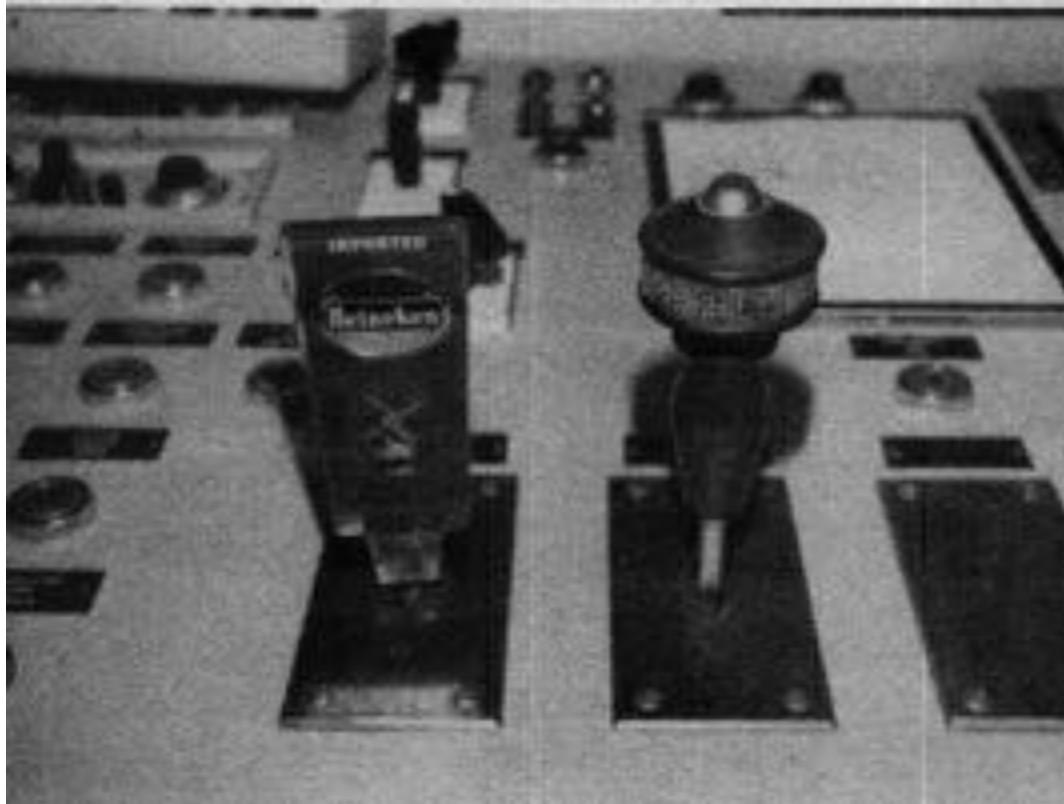
Repeat Options (Left Box)				
None	Day	Week	Month	Year
Every: ... week(s) 1				
End on: ▼ No End Date				
Repeat on: S M T W T F S				

Repeat Options (Right Box)				
Time: 12:00 pm - 1:00 pm				
Date: Thu 6/24/99				
Alarm: <input type="checkbox"/>				
Repeat: <input type="checkbox"/> None				
Private: <input type="checkbox"/>				

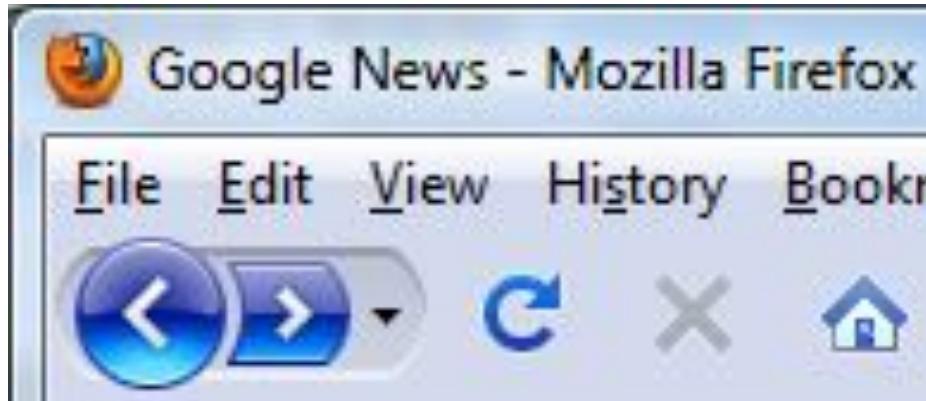
Is Consistency Always Better?



Is Consistency Always Better?

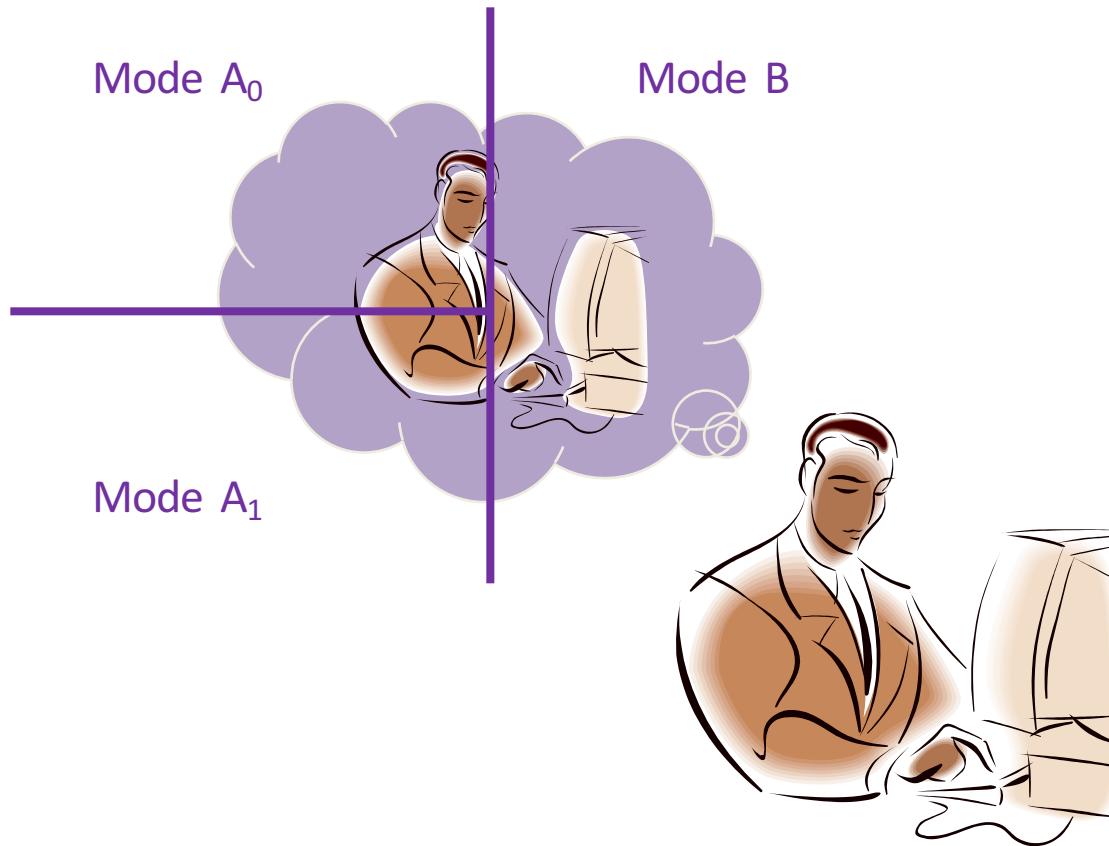


Is Consistency Always Better?



Modes

Modes force people to divide their model



Active versus Passive Modes

Active modes require constant action to maintain

Once that action has retired, so does the mode

e.g., Shift

Passive modes require action to set, and a separate action to unset, or to set again

e.g., CAPS LOCK

Active modes are generally preferred

Standardization

If all else fails, standardize

Fewer things to memorize

Reduced learning time

Adapt to new situations faster

e.g., keyboard layout not optimal, but standard

Norman's Seven Principles for Design

Use knowledge in the head and in the world

Simplify the structure of tasks

Making things visible

Get the mappings right

Exploit the power of constraints

Design for error

When all else fails, standardize

Limitations of Testing

Drives hill-climbing, but not overall design

A design may be better, but is it good?

Impossible for new designs to compete

Can be difficult to scale to many features

Design Equals Solutions

Design is about finding solutions

Designers often reinvent

- Hard to know how things were done before

- Why things were done a certain way

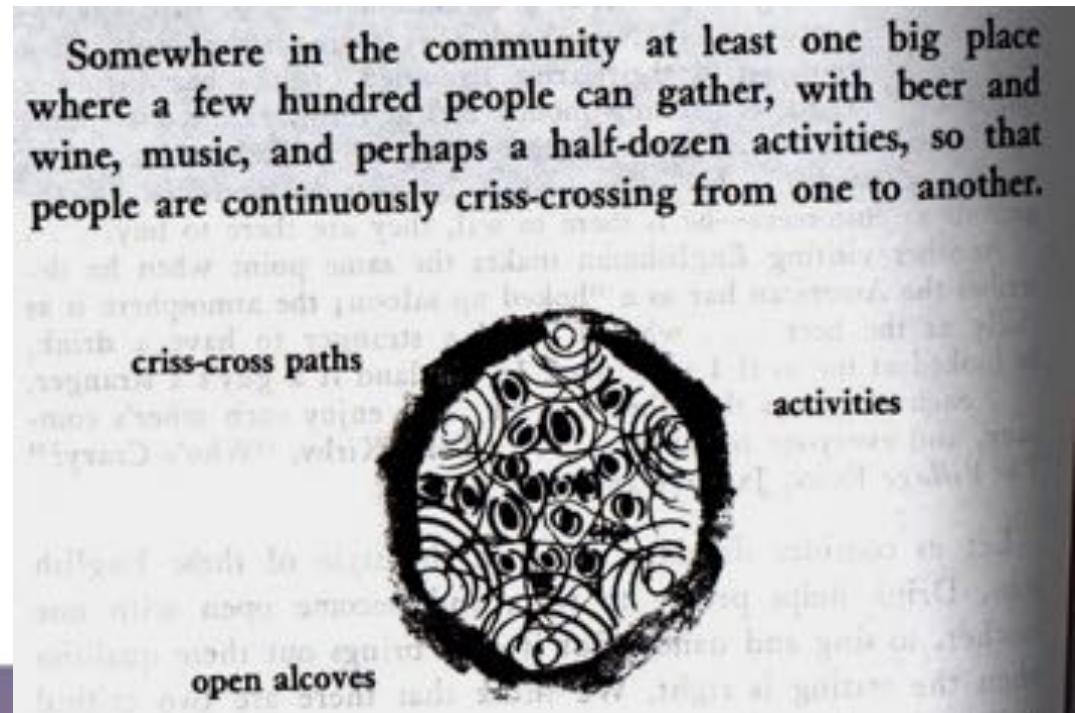
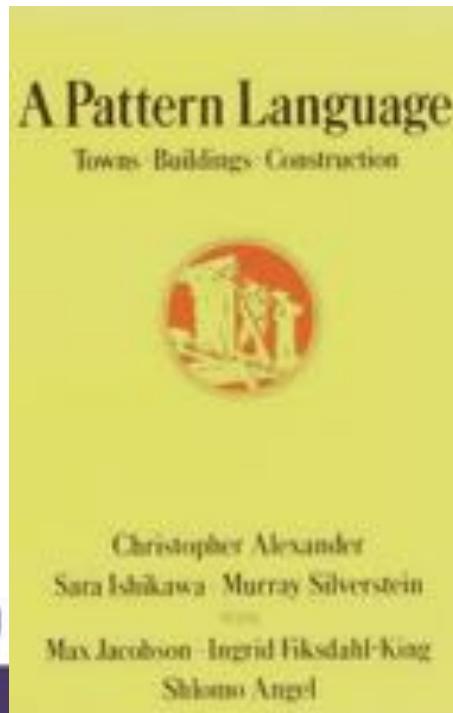
- How to reuse solutions

Design Patterns

Design patterns communicate common design problems and solutions

First used in architecture [Alexander]

How to create a beer hall where people socialize?



Using Design Patterns

Not too general and not too specific

use a solution “a million times over, without ever
doing it the same way twice”

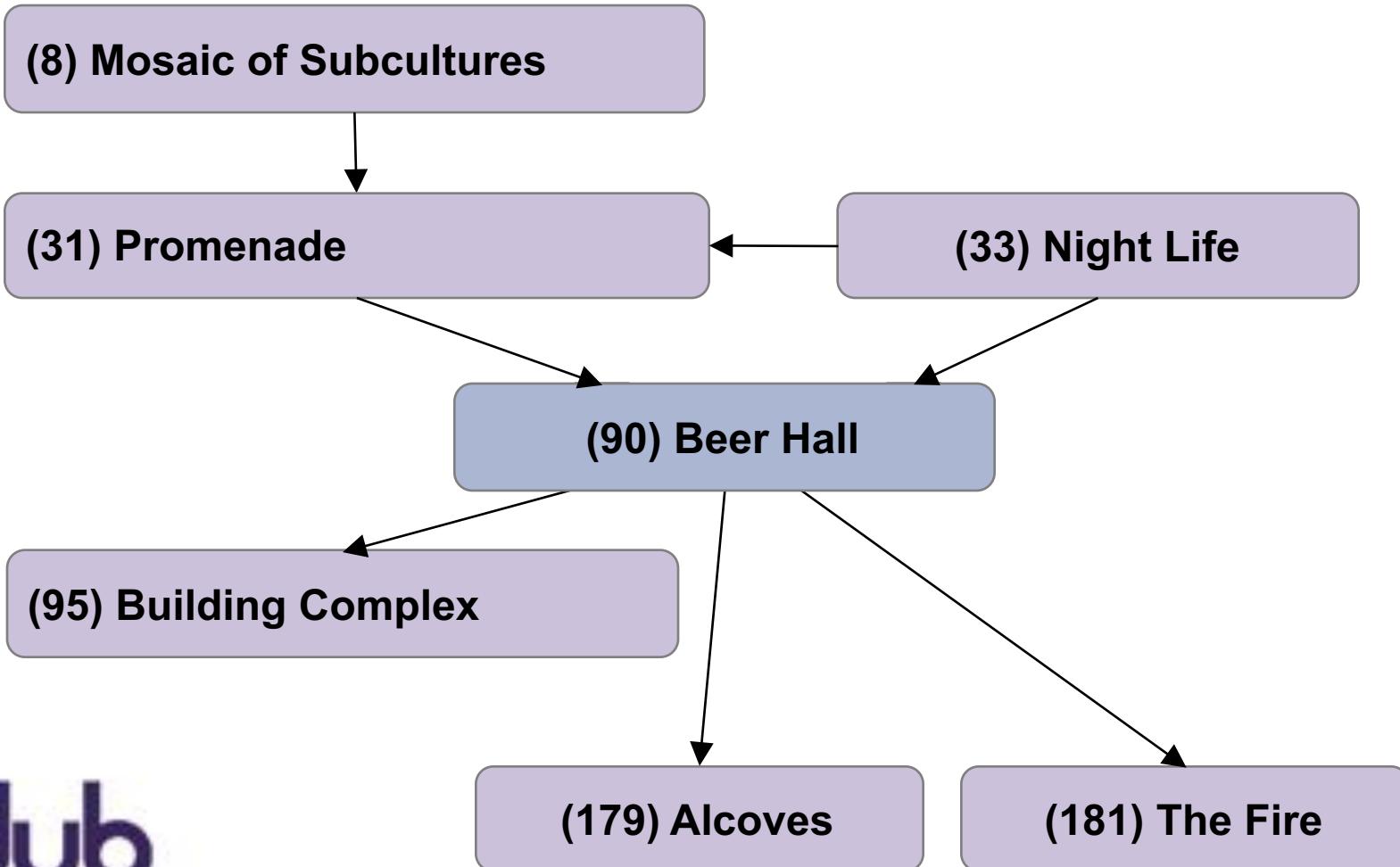
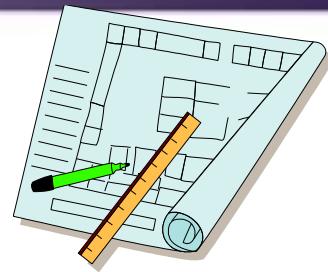
Design patterns are a shared language

for “building and planning towns, neighborhoods,
houses, gardens, and rooms”

Beer hall is part of a center for public life

Beer hall needs spaces for groups to be alone ALCOVES

A Web of Design Patterns



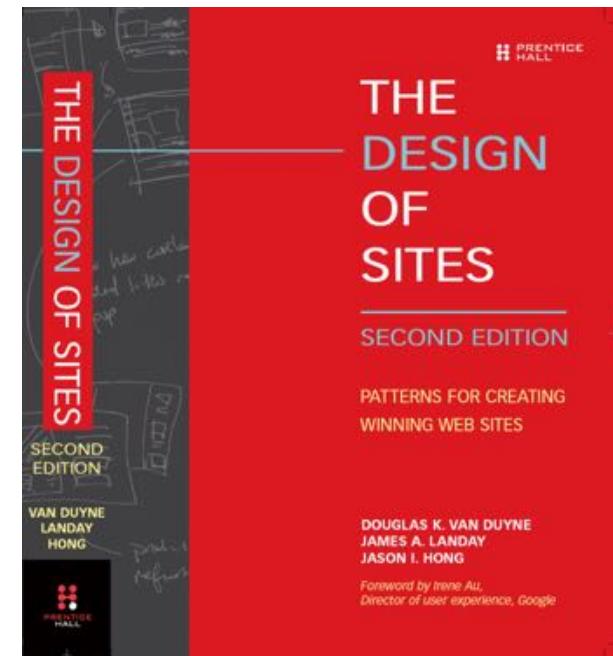
Web Design Patterns

Communicate design
problems & solutions

how to create navigation bars
for finding relevant content

how to create a shopping cart
that supports check out

how to make e-commerce sites
where people return & buy



NAVIGATION BAR (K2)

Problem: Customers need a structured, organized way of finding the most important parts of your Web site

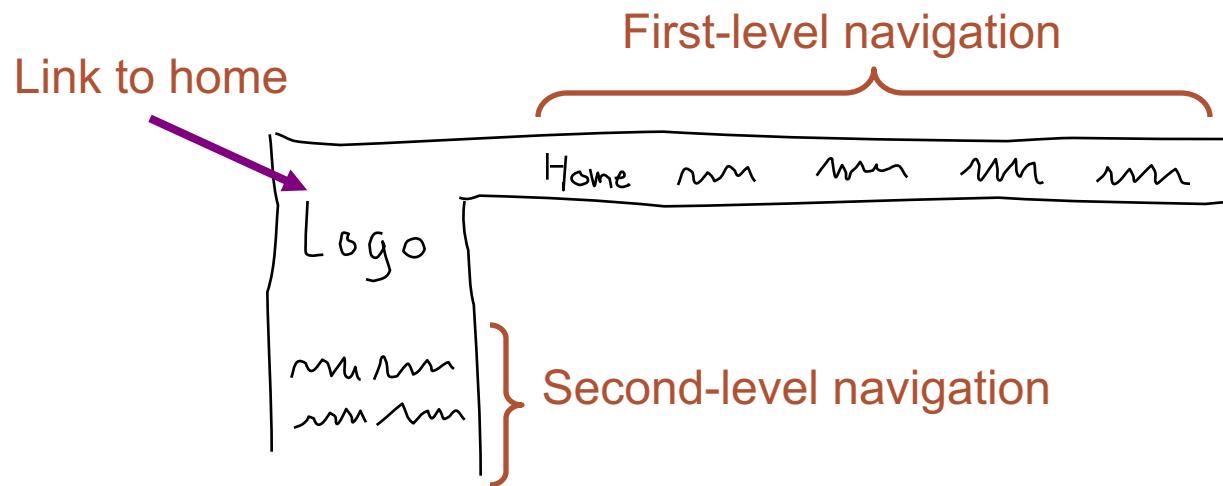
The image displays three different website interfaces, each featuring a prominent navigation bar or menu structure, highlighted by red boxes.

- Top Website:** A horizontal navigation bar at the top of the page. The bar is divided into colored segments: dark brown, yellow, and orange. It contains five links: "Home", "Projects", "People", "Publications", and "Links".
- Middle Website:** A sidebar menu on the left side of the page. The sidebar has a light gray background and contains several links: "DENIM and SILK", "Download Documentation", "Support", "Research", "Publications", and "More Projects".
- Bottom Website:** A dropdown menu for selecting a country. The menu has a blue header with the IBM logo and the text "Select a country". Below this, there is a dropdown menu labeled "Industries" with the following options:
 - Home / home office
 - Small business
 - Medium business
 - Government
 - Education

NAVIGATION BAR (K2)

Solution diagram

Captures essence on how to solve problem



Pattern Groups

Patterns organized by group

- | | | | |
|---|------------------------|---|-----------------------|
| A | Site genres | G | Advanced ecommerce |
| B | Navigational framework | H | Completing tasks |
| C | Home page | I | Page layouts |
| D | Content management | J | Search |
| E | Trust and credibility | K | Page-level navigation |
| F | Basic ecommerce | L | Speed |
| | | M | The mobile web |

PROCESS FUNNEL (H1)

Problem:

Need a way to help people complete highly specific stepwise tasks

Ex. Create a new account

Ex. Fill out survey forms

Ex. Check out

PROCESS FUNNEL (H1)

NEW! Counting Crows: Hard Candy \$11.98 Save 37%!

my account |  cart |  help |  eBay home | sign in

[Home](#) [Books](#) [Music](#) [DVDs/Movies](#) [Video Games](#) [Computers & Software](#) [Electronics](#) [Everything Else...](#)

[Gift Certificates](#) [Wish List](#) [Pre-Orders](#) [Sell Your Stuff](#) [New Users](#)

Search: 

People with similar tastes also enjoyed...

[!\[\]\(19ada9154727a4a63c33e190f4349b07_img.jpg\)](#)
Weezer (1994)
(CD, 1994)
Weezer
\$5.00
(Save \$6.97)

[!\[\]\(670350754413560f500eaa8fe6a01afc_img.jpg\)](#)
Pinkerton
(CD, 1996)
Weezer
\$6.00
(Save \$10.95)

[!\[\]\(d46d9804f272bf3bb0d55907d4e3e4e1_img.jpg\)](#)
All Killer No Filler (ECD)
(CD, 2001)

[Redeeming a Gift Certificate or Coupon?](#)

[Proceed to Checkout](#) 
[Speedy Checkout](#)

Shopping Cart

Weezer (2001) Weezer, Weezer (Music)
CD, Release Year: 2001
Seller: nazua@hotmail.com (39)
Condition: Like New • Notes: Perfect condition

Item: \$8.30
Media Mail: \$2.45
[Change Shipping Method](#)

[View in Wishlist](#) • [Remove from Cart](#) • [Find another one](#)

TOTAL: \$10.75

Gift Certificates and Coupons

Redeeming your Half.com Gift Certificate or Coupon is easy. Just enter your Claim Code in the box to the right and click "Redeem".

[Redeem](#)

[Proceed to Checkout](#) 
[Speedy Checkout](#)

PROCESS F

- What's different?

- No tab rows
- No impulse buys
- Only navigation on page takes you to next step

The screenshot shows a web browser window for the half.com website. At the top, there is a grey header bar with the half.com logo and a search bar. Below this is a yellow navigation bar with the word "Checkout" and three steps: "1 Shipping", "2 Billing", and "3 Place Order". A lock icon is also present on this bar.

The main content area has a light grey background. It starts with a red horizontal line labeled "Step 1 - Choose Shipping Address". Below this, the text "Ship my order to:" is followed by a form field containing the address: "Jason Hong, 387 Soda Hall Computer Science UC Berkeley, Berkeley, CA 94720". To the right of this field is a red "Use This Address" button. Below the address field, the text "OR" is followed by another section labeled "Enter a new shipping address:". This section contains input fields for "Name", "Street address", "City", "State" (with a dropdown menu), "ZIP code", and "Country" (with a dropdown menu showing "USA"). A note says "If U.S. Military, enter APO/FPO for City." and "If U.S. Military, select AE, AP or AA from bottom of list for State." At the bottom of this section is a red "Save Changes" button.

- What's the same?

- Logo, layout, color, fonts

PROCESS FUNNEL (H1)

Problem:

What if users need extra help?

PROCESS FUNNEL (H1)

[dell.com](#) About Dell Contact Search Support Order Status My Cart

DELL HOME & HOME OFFICE

Buy Online or Call
1-800-915-3355

Purchase Assistance
Payment Options
Tax & Shipping Info
Secure Shopping Guarantee
Privacy Policy

Recommended Systems

Click here for more Dimension 4100 recommended systems.

FEATURED SYSTEM

Featured Dimension 4100

The Dimension 4100 desktop offers you amazing power and flexibility at a price that won't break your budget.

- Intel® Pentium® III processor at 800MHz
- 40GB[†] Hard Drive
- 128MB SDRAM
- 32MB NVIDIA GeForce MX 400 AGP Graphics Card

Free Ground (3-5 day) shipping with purchase of any new Dell Home System. Offer ends 4/23/01. [Click Here for Details.](#)

Dimension 4100 [Compare this system to others](#) [Add](#)

Intel® Pentium® III processor at 800MHz

\$1,199

As low as \$30[‡] / mo. per month payment for 120 days (Click or scroll for details.)

[Customize It!](#)

Check any item(s) you wish to add to this system, then click Customize It.

3 Year On-Site Service [Add](#)
With on-site service, you don't have to leave your home or ship your computer to us should you have a problem.

[More Details](#)

Epson Stylus Color 800 Ink-Jet Printer [Add](#)
A creative and versatile printer that features instant print speeds.

[More Details](#)

Quake™ Keyboard

40GB Ultra ATA 100 Hard Drive (7200 RPM)

Epson 9400 Scanner [Add](#)

CONTEXT-SENSITIVE HELP (H8)

The screenshot shows a Dell product page for a Dimension 4100 computer system. A red arrow points from the 'Keyboard' link in the navigation bar at the bottom left to a context-sensitive help window titled 'Keyboards - Netscape'.

Keyboards
Great Keyboard Choices to Suit Your Needs:

- Choose from standard-size and "space-saver" designs
- Ergonomic design for added comfort
- Hot Keys provide quick, one-touch access to frequently used programs and Web sites
- USB ports allow for quick and easy access to USB peripherals, such as digital cameras, scanners and joysticks

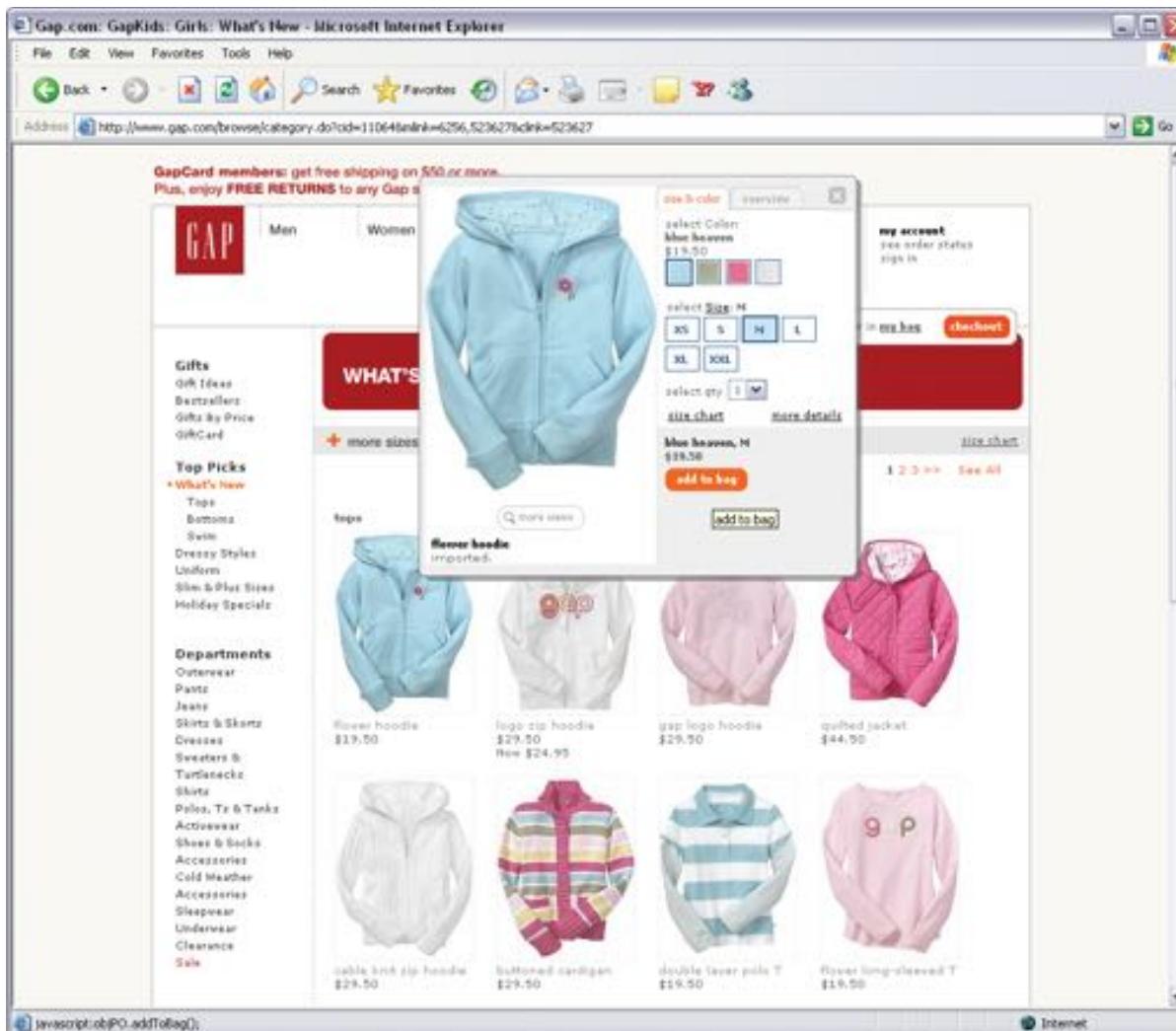
DELL GLOSSARY
Need a definition?
Click on a term.

Keyboard Type	Dell™ QuietKey	Microsoft® Internet Keyboard, Dell Edition	Dell™ Enhanced QuietKey	Dell™ Enhanced Performance
ZOOM! For a closer look.				
Benefits	<ul style="list-style-type: none">Quiet key responseSoft "rubberdome" touch	<ul style="list-style-type: none">10 Hot Keys for easy access to your internet and e-mailE-mail Hotkey	<ul style="list-style-type: none">3 programmable keysSoft "rubberdome"	<ul style="list-style-type: none">7 programmable keysBuilt-in 2 port USB HUB

FLOATING WINDOWS (H6)

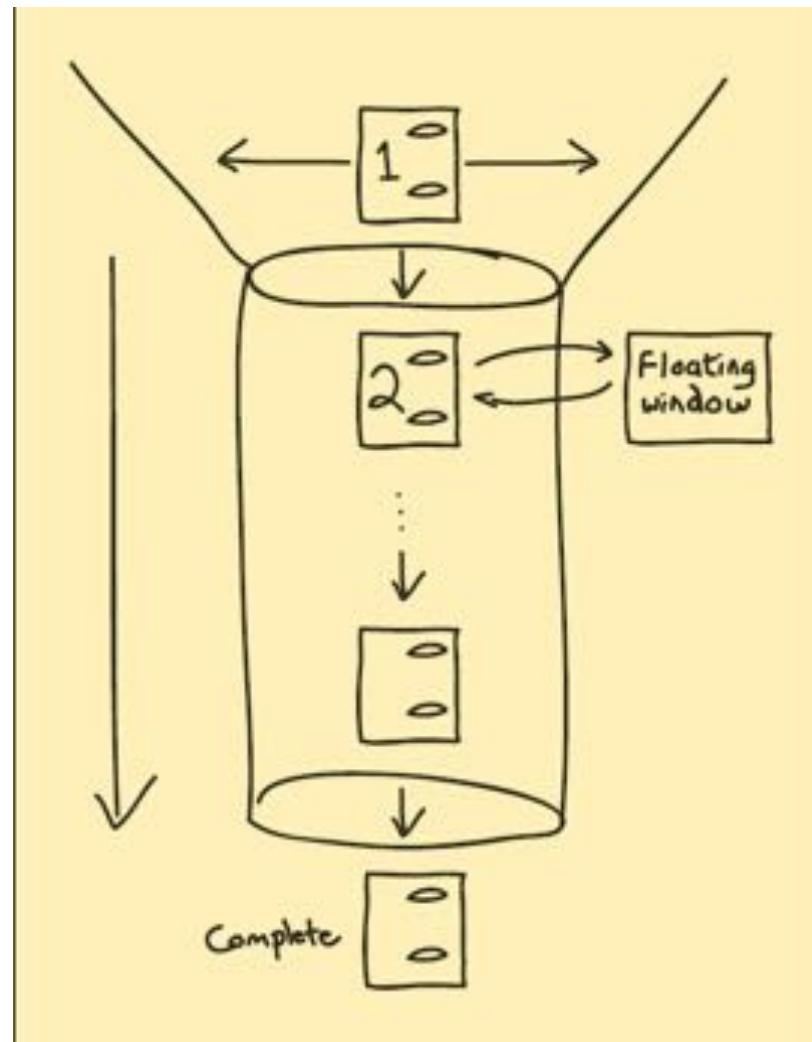
The screenshot shows the Netflix homepage with a floating window overlay. The main navigation bar includes 'Browse', 'Recommendations' (which is highlighted), 'Friends', 'Queue', and 'Buy DVDs'. Below the navigation, there are links for 'Get Recommendations (636)', 'Rate Movies', and 'Movies You've Rated (210)'. The main content area is titled 'Recommendations' with the subtitle 'Movie suggestions based on your ratings'. A red callout box highlights a recommendation for 'Gladiator: Extended Edition (2000)'. The box contains a thumbnail image of the movie cover, a 5-star rating icon with one star highlighted, and a 'Not Interested' button. The movie's plot summary starts with 'Fans of Gladiator's original theatrical release will appreciate this extended version of the epic Ridley Scott film, packed with 17 extra minutes of action footage and gripping dialogue. Featuring a strong supporting cast and an Oscar-winning performance from actor Russell Crowe as the dauntless Roman general Maximus, this big-budget Best Picture winner became an instant classic -- and helped elevate its leading man to icon status.' Below the summary are 'Read More' and 'Add' buttons. Another floating window for 'Samurai Champloo (7 seasons)' is partially visible at the bottom left, showing a similar layout with a thumbnail, 5-star rating, and 'Not Interested' button.

FLOATING WINDOWS (H6)

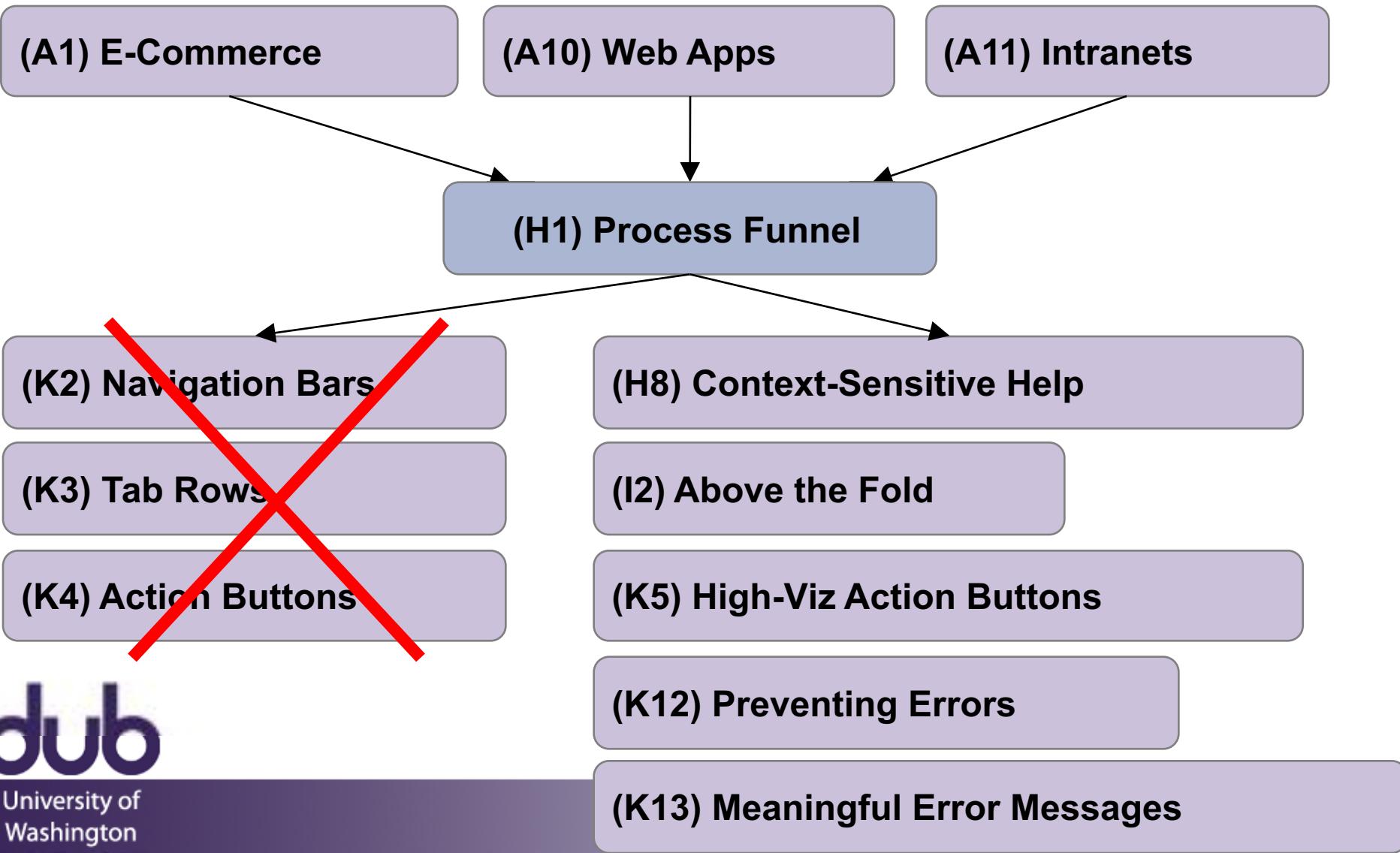


PROCESS FUNNEL (H1)

Solution Diagram



Related Patterns



Patterns Support Creativity

Patterns come from successful examples

sites that are so successful that lots of people
are familiar with their paradigms

interaction techniques/metaphors that work well
across many sites (e.g., shopping carts)

Not too general and not too specific

you need to specialize to your needs

Patterns let you focus on the hard,
unique problems of your design situation

Principles, Guidelines, Templates

Patterns help design without over-constraining

unlike principles, patterns are not too general

unlike guidelines, patterns discuss tradeoffs, show good examples, and tie to other patterns

unlike style guides, patterns not too specific, can be specialized to a design

unlike templates, patterns illustrate flows and relationships among different pages

Web Design Patterns

H1 PROCESS FUNNEL

The screenshot shows a sequence of three web pages from the Dell website. The first page is titled 'SELECT DELL SYSTEM' and shows a computer icon with options like 'Dell Inspiron 1525' and 'Dell Vostro 1500'. The second page is titled 'DELL - MORE INTEL PROCESSORS' and shows a list of processor options. The third page is titled 'DELL - MORE INTEL PROCESSORS' and shows a detailed configuration page for a specific system.

Figure 8.1.3
Dell uses a process funnel consisting of several logical steps that guide customers to quickly configure and purchase a personal computer. Information in a pop-up window shows additional details but keeps customers in the funnel so that they can continue to completion.

★ BACKGROUND
All Web applications that lead visitors through stepped tasks—PERSONAL E-COMMERCE (P2), HELP-SERVICE NAVIGATION (H4), WEB APPS THAT WORK (A10), and ENABLING INTRANETS (A11)—need ways to help people succeed at completing the tasks.

★ PROBLEM
Customers often need to complete highly specific tasks on Web sites, but pages with tangential links and many questions can prevent them from carrying out these tasks successfully.

People enjoy completing the tasks they start. Yet all kinds of distractions—including links that lead off the critical path, extra steps, and extra

Pattern Name and Number

Exemplar

Background

Problem Statement

Forces & Solution

Process Funnel

Dell uses a process funnel consisting of several logical steps that guide customers to quickly configure and purchase a personal computer. Information in a pop-up window shows additional details but keeps customers in the funnel so that they can continue to completion.

Required to Complete a Task • Customers need to go through many steps. A process funnel should have no more than two steps. Anything less than two steps is not a funnel. Anything more than eight steps is unmanageable. If there are more than eight steps, try to split the process into two or more separate process funnels, or try combining multiple steps into one page. However, this is not always a stable solution because one choice may precede another, and not every page can hold all the information that customers might need at certain points.

Provide a Progress Bar to Let Customers Know How Far They've Come • Showing a progress bar at each step lets customers know how much farther they have to go to complete the task. It is often not worth your time to make a progress bar clickable because doing so will detract from its benefit for customers.

Braille University Tasks and Content • Making the content related to the task at hand reduce the amount of content on the page, making it more likely that your customers will focus on the task. Remove all NAVIGATION BAR (K2), TABS (K3), SIDE COLUMNS (K6), and FOOTER LINKS (K7), LEARN MORE BUTTONS (K8) that help visitors reach their goals but are completely unrelated to the task.

Reinforce the Web site brand to minimize any disorientation customers might feel from sudden changes in navigation options. Use the same colors, fonts, and logo throughout the Web site so that no one knows they're still on the same site.

process funnel and how much farther they have to go.

Web Design Patterns

Use Pop-Up Windows to Provide Extra Information, without Leading Visitors Out of the Process Funnel • Sometimes customers need additional information that you have not provided on a page, such as extra help or product details. Provide a link to a pop-up window (B6) containing clear instructions (E2) (see Figure H1-D), context-sensitive help (H3), or information from the FREQUENTLY ASKED QUESTIONS (H7) page, to make the extra information less intrusive. Your challenge is to implement this extra content without detracting from the main purpose.

Make Sure the Back Button Always Works • Customers often use the Back button on browsers to modify answers they have typed in on previous pages. However, if the Web site is not implemented correctly, the information they have already entered may be lost when they hit the Back button, forcing them to type everything again. In the worst case, people get a cryptic error message saying that the posted information was lost. You can address this annoying problem by temporarily storing the information they type in on each page, redisplaying this information if customers hit the Back button, and then overriding the temporarily stored information on the page if it is changed.

Always Make It Clear How to Proceed to the Next Step • Some Web pages are longer than can be displayed on a customer's Web browser. The problem is that people sometimes get lost if the critical action arrow (K4), the one that takes them to the next step, is hidden below the fold. Place HIGH-VISIBILITY ACTION BUTTONS (K5) both high and low on the page, ensuring that at least one of the critical action buttons is visible without scrolling.

Prevent Errors Where Possible, and Provide Clear Error Messages When They Occur • People will always make mistakes. You can provide good customer support and sample input to help prevent errors, and provide ACCESSIBLE ERROR MESSAGES (K1) to help customers fix their mistakes.

* SOLUTION

Minimize the number of steps required to complete a task, keeping them between two and eight. Remove unnecessary and potentially confusing links and content from each page, while reinforcing the brand to maintain a sense of place. Use pop-up windows to provide extra information, without leading people out of the process funnel. Make sure the Back button always works so that customers can correct errors. Make it clear how to proceed to the next step.

Solution Summary

Bus Stops

Figure H1-3

A process funnel tells people to complete their goals by breaking down complicated tasks into a small number of steps, using pop-up windows for detailed information, and reducing the number of links to only the critical ones, so that people are never distracted.

Process Funnel

Solution Diagram

Related Patterns

* CONSIDER THESE OTHER PATTERNS

Many kinds of Web sites use process funnels, including sites for financial e-commerce (A1), self-service government (A4), Web apps that work (A10), and enabling humanity (A11). Customers use process funnels when they finalize purchases through quick-flow checkout (F1), when they create new accounts through one-click account (H2), and when they post new messages to a communication community (G4), to name some examples.

Remove navigation bars (K2), far bars (K3), irrelevant action buttons (K4), location break creams (K6), and anchored links (K7) to ensure that customers stay on their paths. However, keep strong site banners (H1) so that customers still know where they are.

Design process funnels to PREVENT ERRORS (K12), and provide MEANINGFUL ERROR MESSAGES (K13) when errors do occur.

Track your customers through PERSISTENT CUSTOMER SESSIONS (D5) to avoid problems with the Back button, and to save customer-entered information.

Move extra content, such as CONTEXT-SENSITIVE HELP (H3) and FREQUENTLY ASKED QUESTIONS (H7), to POP-UP WINDOWS (B6) to keep the main task page on the screen. Make the next action visible by keeping it above the fold (E2) and by using HIGH-VISIBILITY ACTION BUTTONS (K5).

dub
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H1 Patterns: Helping Customers Complete Tasks

Patterns: Helping Customers Complete Tasks

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Patterns

When you see advice, consider its depth

- Result of an individual study

- Pre-pattern based on some meta-analysis

- Established pattern

Be aware of misapplying patterns

- And be aware of anti-patterns

Touch and Microsoft Windows



2004

2012

Consistency vs. Specialization

Beware of simply copying a design language

Consistency is your friend until it is not your friend

Not limited to platform-level decisions

One “look” for your app

Or targeted at each device

Dark Patterns

A Dark Pattern is an interface that has been carefully crafted to trick people into doing things, such as buying insurance with their purchase or signing up for recurring bills.

Disguised Ads

Ads that are disguised as other kinds of content or navigation, in order to get users to click on them

Dark Patterns

A Dark Pattern is an interface that has been carefully crafted to trick people into doing things, such as buying insurance with their purchase or signing up for recurring bills.

Friend Spam

A site or game asks for your credentials, then goes on to publish content or send out bulk messages

Dark Patterns

The screenshot shows a web browser window displaying an article from [www.fastcodesign.com](http://www.fastcodesign.com/3031906/fast-lies/after-lawsuit-settlement-linkedins-dishonest-design-is-now-a-13-million-problem). The article title is "After Lawsuit Settlement, LinkedIn's Dishonest Design Is Now A \$13 Million Problem". Below the title, a sub-headline reads "HOPEFULLY, THIS WILL BE A LESSON TO OTHER COMPANIES WHO USE DARK UX PATTERNS TO TRICK THEIR USERS.". The main text discusses how LinkedIn used dark patterns in their user sign-up process, leading to a class-action lawsuit and a \$13 million settlement. To the right of the main content, there is a sidebar titled "EVID3NCE" which includes a sub-headline "WHAT THE SCIENCE HAS TO SAY ABOUT DESIGN, CREATIVITY, INNOVATION, AND VISIONAL CULTURE". It features a "READ MORE" link and two tabs: "FRESHING" and "HAPPENING NOW". Under "HAPPENING NOW", there is a list of five articles:

- Google Goes Analog With Its New Note-Taking Tools
- Will Flat Design Ever Die?
- This Note-Taking System Turns You Into An Efficiency Expert.
- 3 Radical Ideas To Totally Diversify Air Travel
- UI, UX: Who Does What? A Designer's Guide To The Tech Industry

Below the main article content, there is a large image of a smartphone displaying the LinkedIn sign-up page. The phone is shown from a slightly elevated angle, with its screen clearly visible against a dark background.

Presented in San Jose's U.S. District Court, the key issue in Perkins v. LinkedIn is spam. Namely, during the user sign-up process, LinkedIn claims that it "will not store your password or email anyone without your permission." Despite this, LinkedIn sends automated follow-up email reminders on a new user's behalf to any contacts harvested from their webmail accounts, which are presented in such a way as to appear as if they came directly from the user.

Under California law, the sitting judge says has deemed this illegal. Consequently, if you were a member of LinkedIn's "add connection" program between September 2011 and October 2014, you can submit a claim to get a refund.

CSE 510: Advanced Topics in HCI

HCI as Design I

James Fogarty
Daniel Epstein

Tuesday/Thursday
10:30 to 12:00
CSE 403



University of Washington