



# Sketching User Experiences: The Hands-on Course

Nicolai Marquardt  
University College London

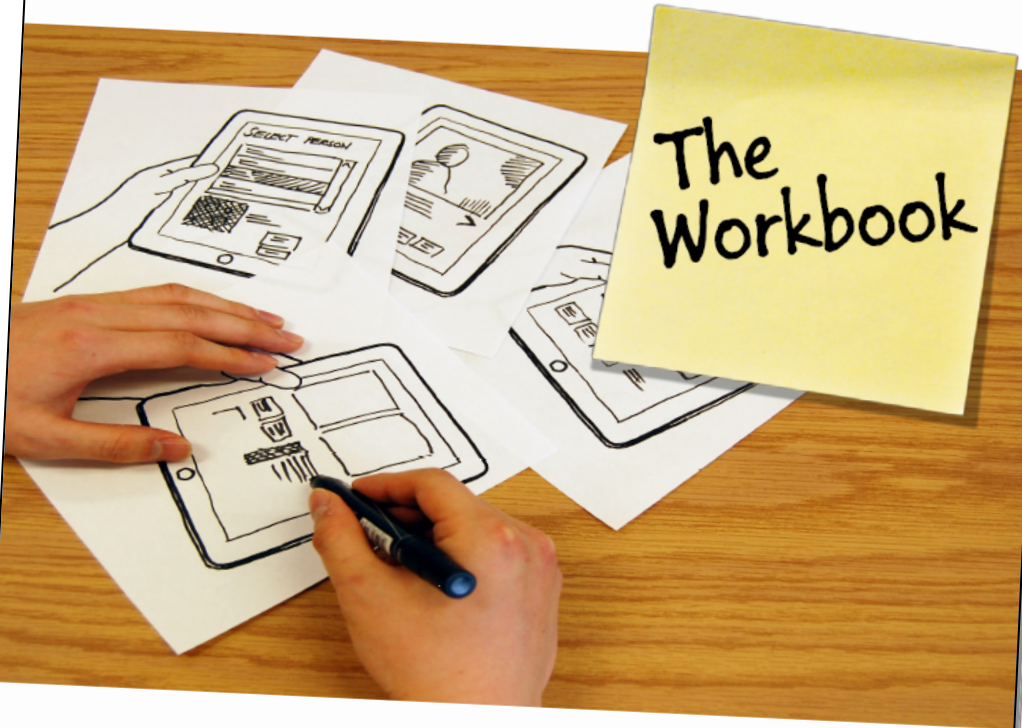
# **Sketching User Experiences:** The Hands-on Course







# Sketching USER EXPERIENCES



Saul Greenberg  
Sheelagh Carpendale  
Nicolai Marquardt  
Bill Buxton

MK  
MORGAN KAUFMANN



**Saul Greenberg**  
University of Calgary



**Sheelagh Carpendale**  
University of Calgary



**Bill Buxton**  
Microsoft Research

# What to expect?

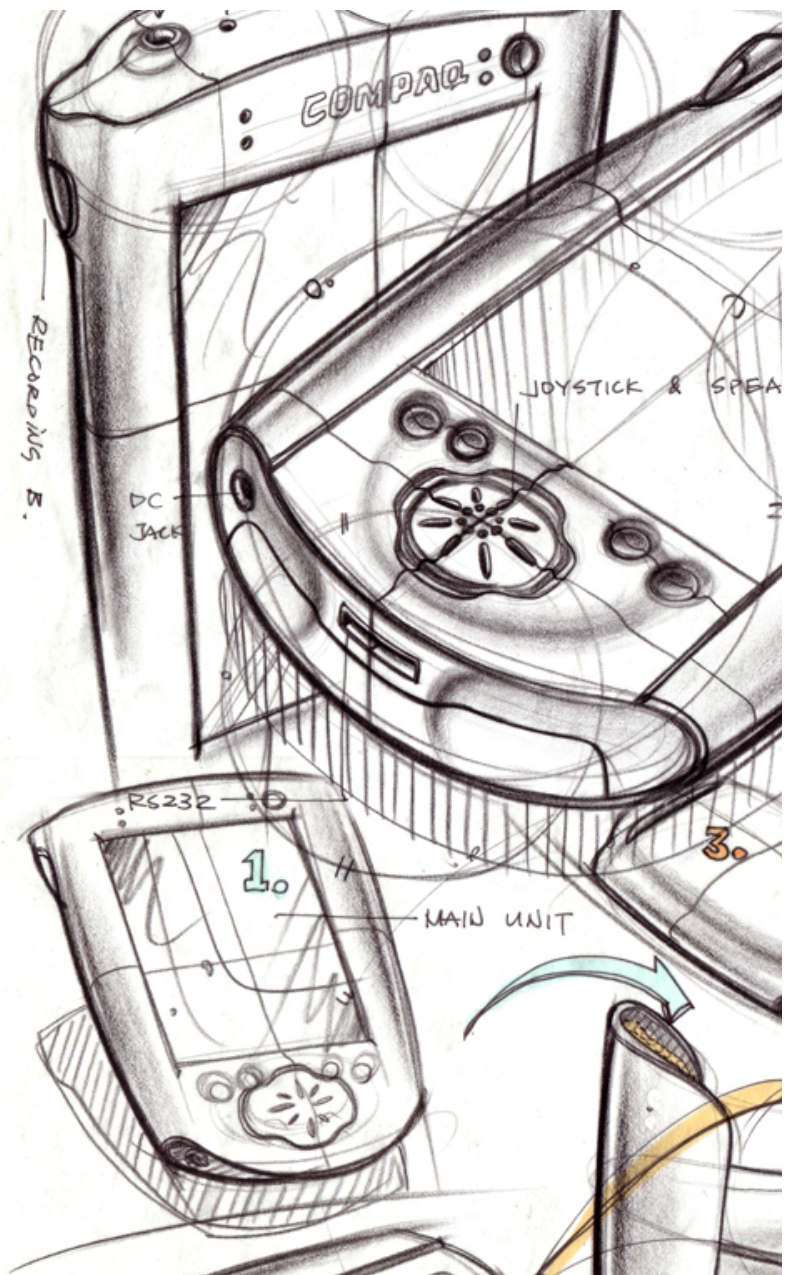
Techniques and hands-on activities around sketching for human-computer interaction research.

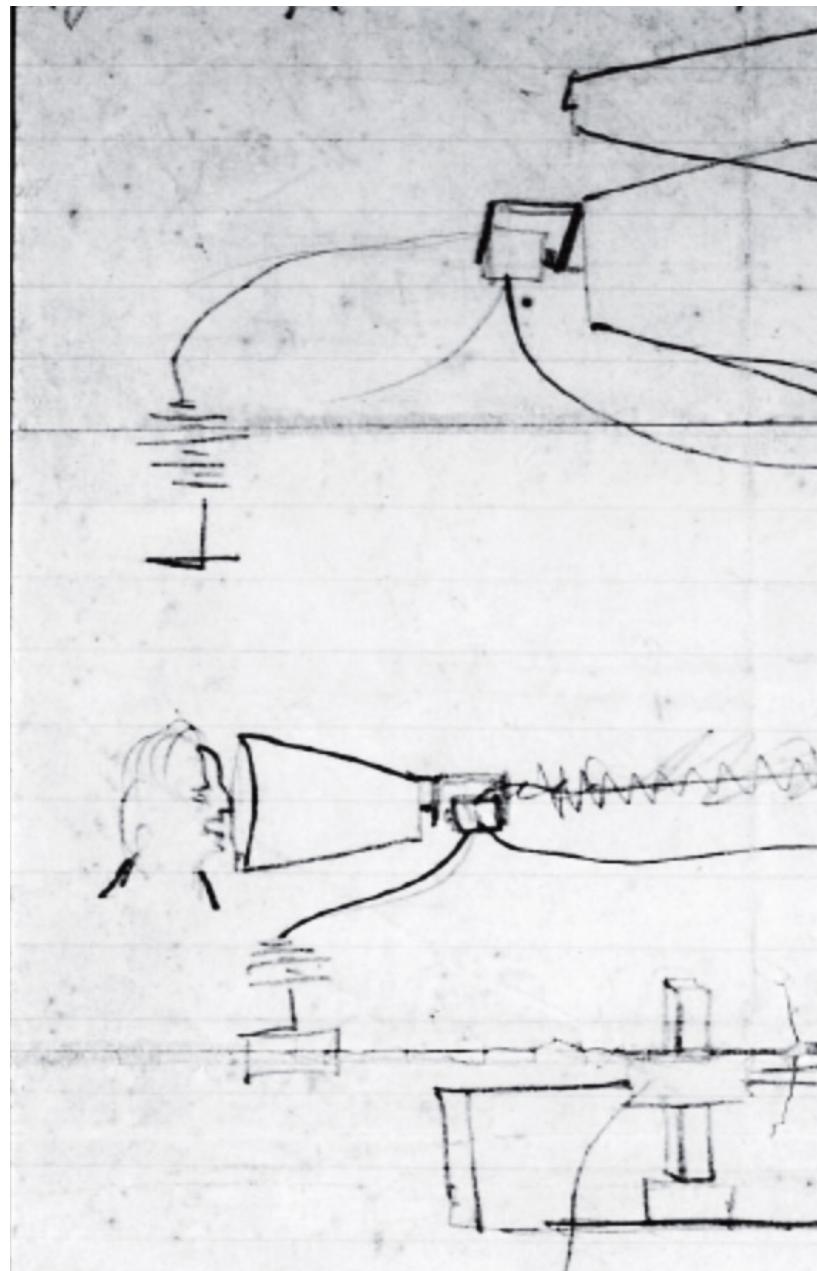
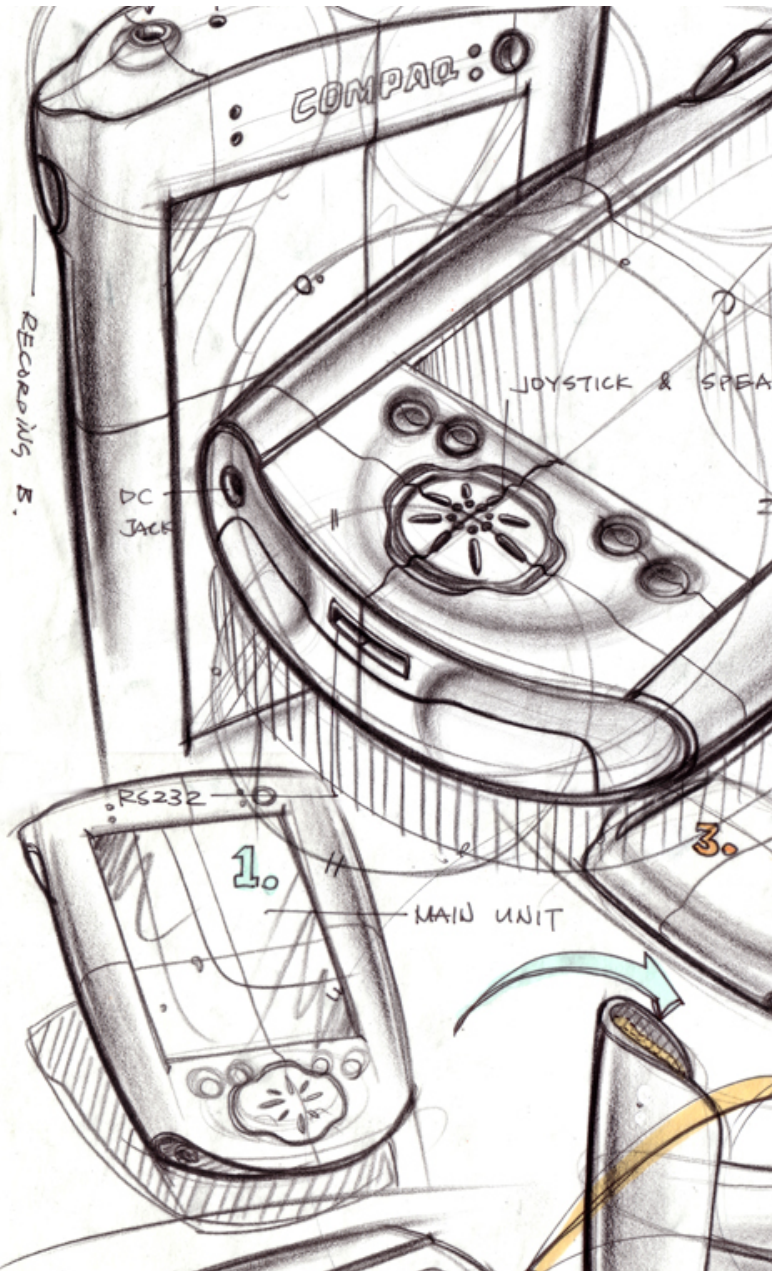
# What to expect?

Techniques and hands-on activities around sketching for human-computer interaction research.

- Part 1: **About Sketching**
- Part 2: **Getting Started with Sketching**
- Part 3: **Advanced Sketching Techniques**
- Part 4: **Visual Narrative and Storyboards**







# Introduction and warm-up activity





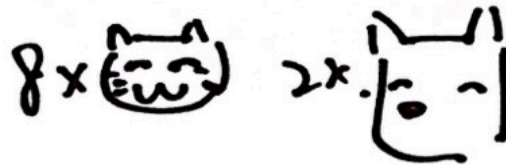
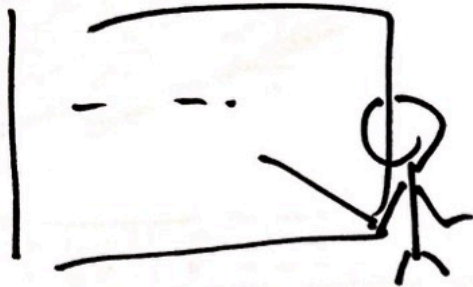
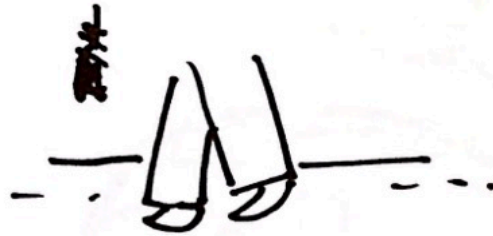
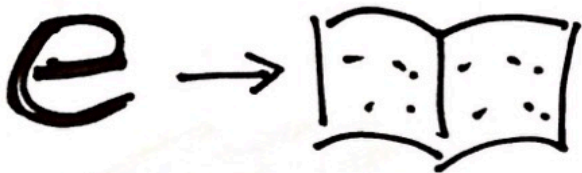
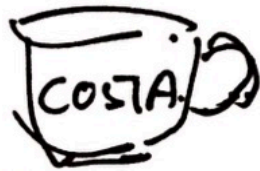
Introduce yourself to the person sitting next to you.

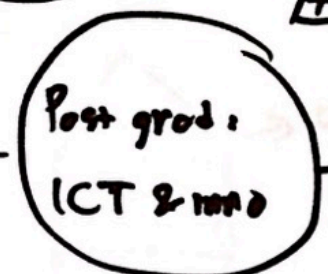
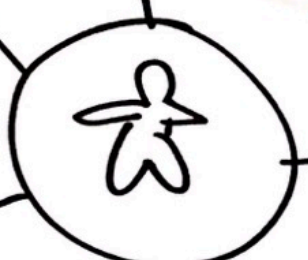
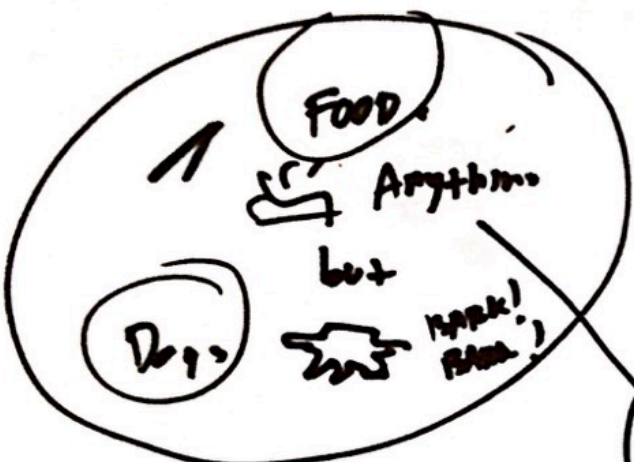
For 2 minutes, one of you is **introducing yourself**, the other person is **creating a quick sketch about** you while listening.

**After 2 minutes you switch roles.**



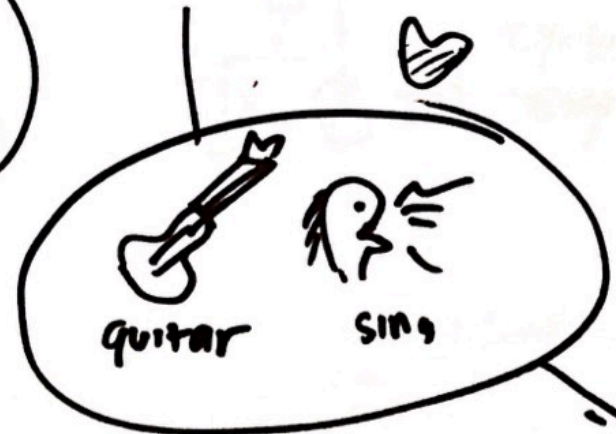
Handwritten scribbles





100 free chess

MINGHUI



↑ complicated

↓ hate programming

3 years is enough!



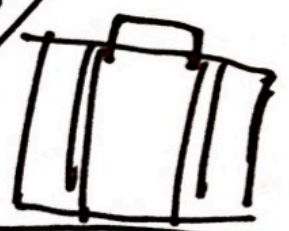


# MEET TOM LEE

TRAVELLED FOR 5 YEARS



ONE OF JOBS TO FUND THE TRAVELING



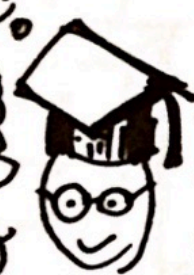
VISITED ALL

CONTINENTS

WANTS TO WORK WITH OLDER / ELDERLY PEOPLE AND UX



CAME BACK TO THE UK



TOM STUDIED  
PHILOSOPHY  
RELIGION &  
ETHICS

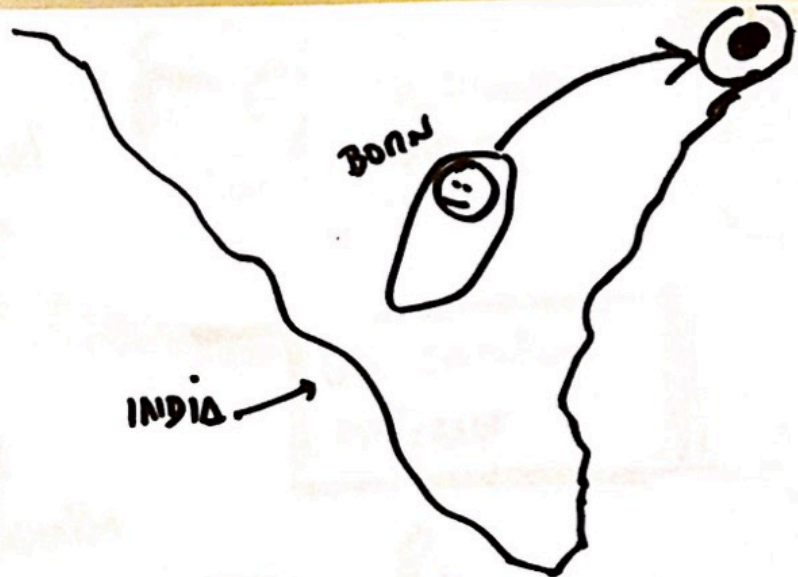
WORKED IN WEB DEVELOPMENT

- 
- 
-



ARINDRA

INDU GOD  
SAVION



INDIA

BACK GROUND



TELECOMMUNICATIONS



DESIGN  
PRODUCT



RUNNER.

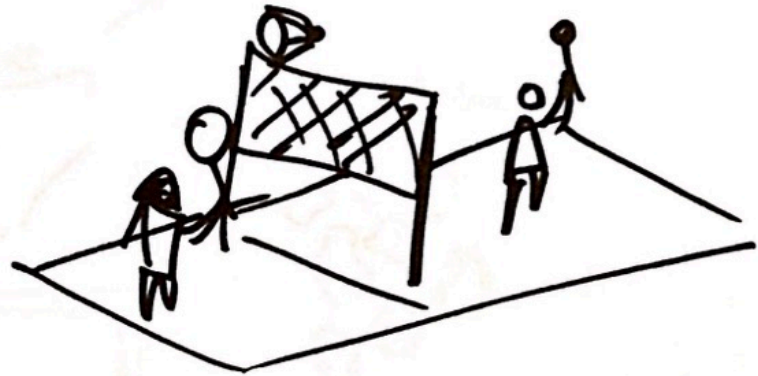
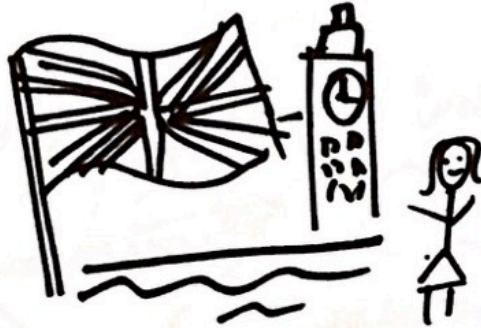
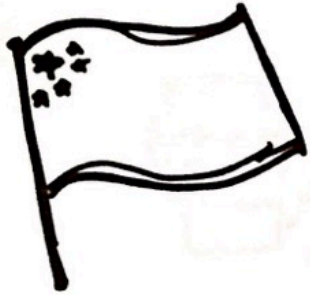
STARTUP



<COMP>  
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KEXIN LI ← ☺



STUDYING

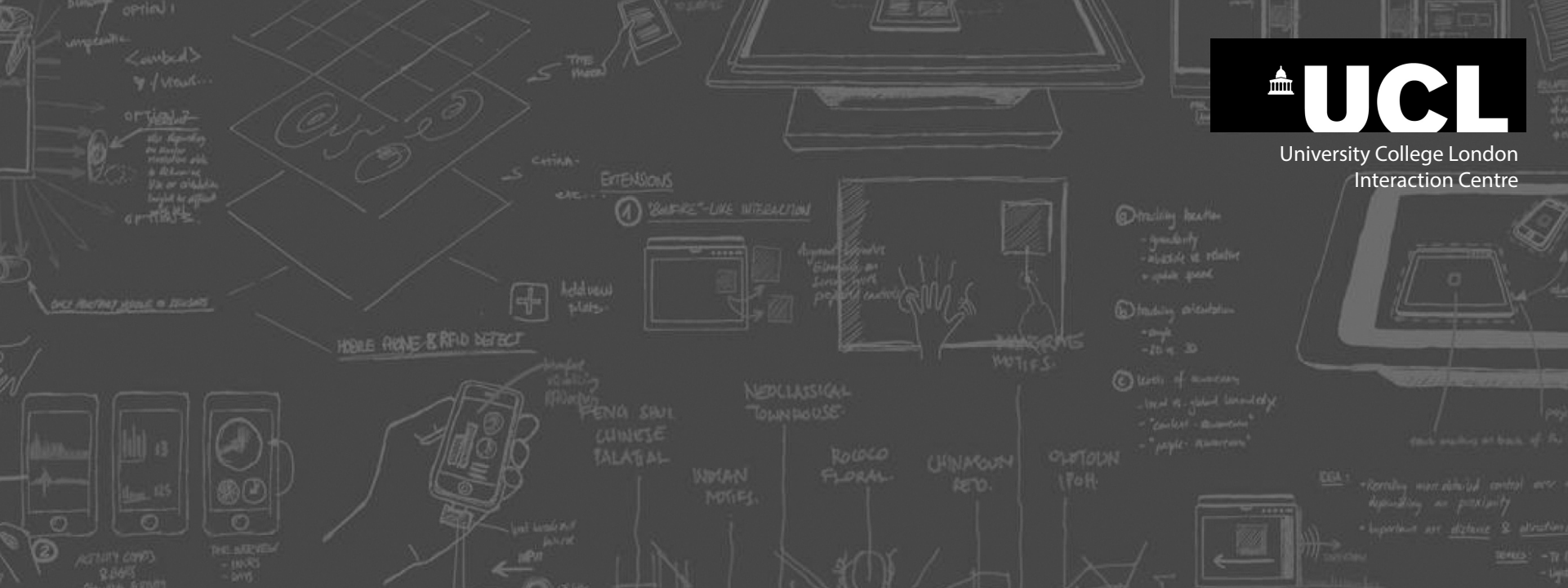




Introduce yourself to the person sitting next to you.

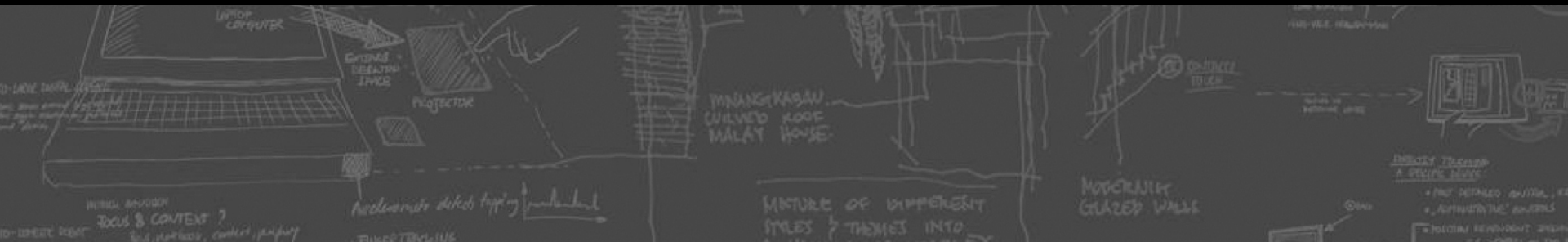
For 2 minutes, one of you is **introducing yourself**, the other person is **creating a quick sketch about** you while listening.

**After 2 minutes you switch roles.**



# PART I

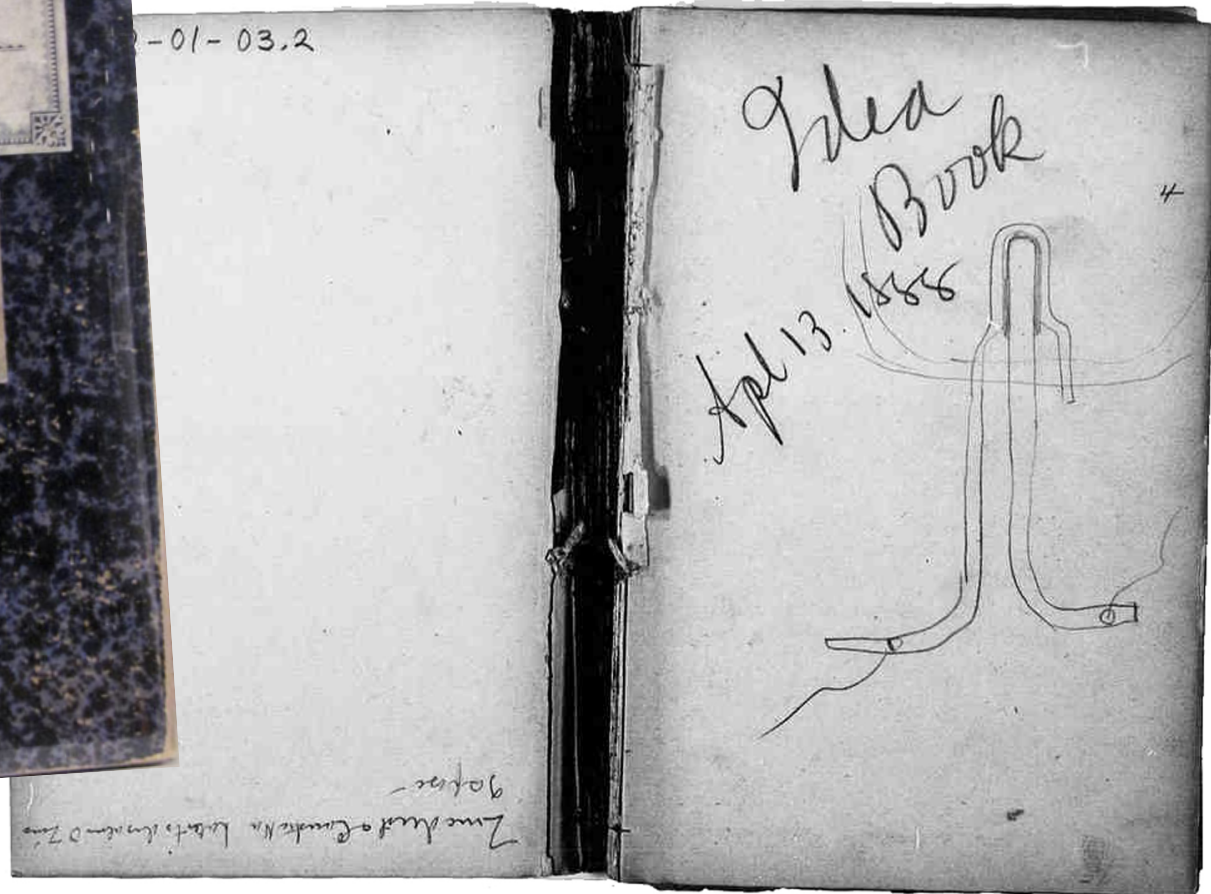
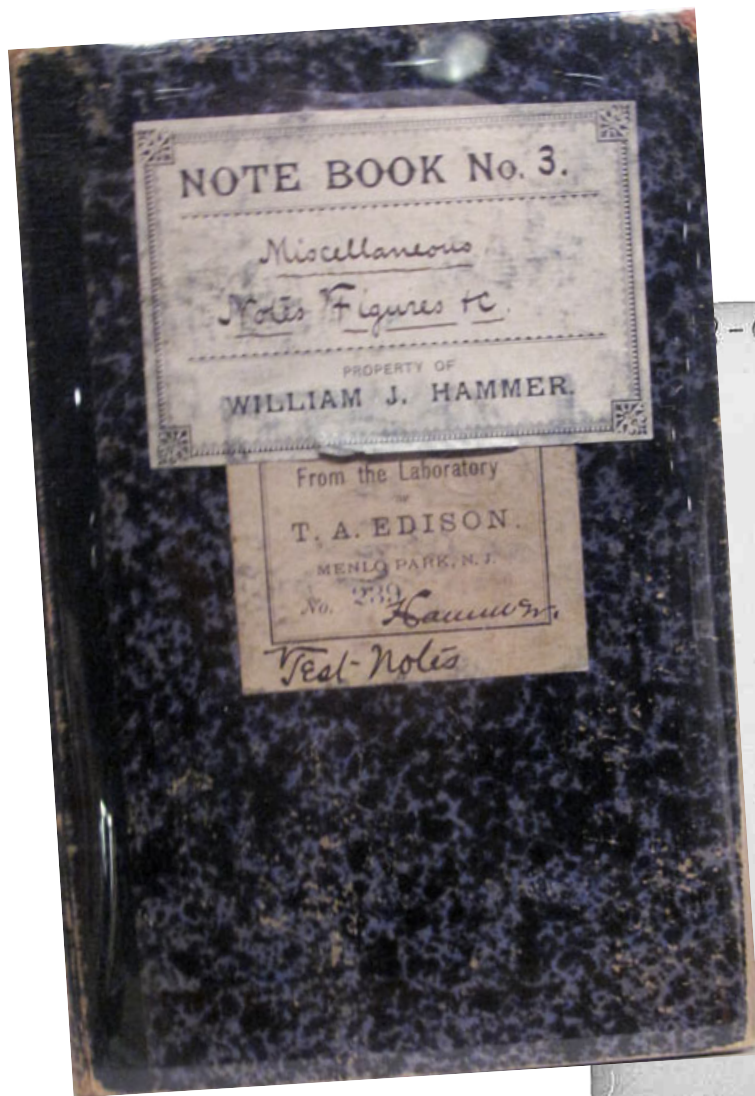
## ABOUT SKETCHING



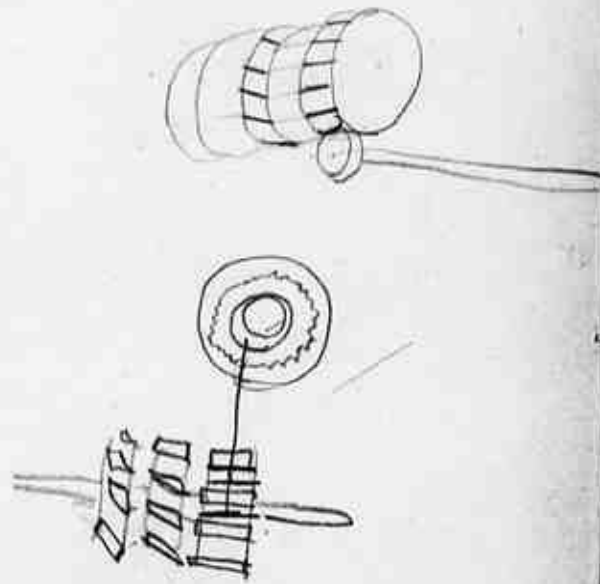
# Motivation: A short story about sketching



Thomas Alva Edison | Inventor

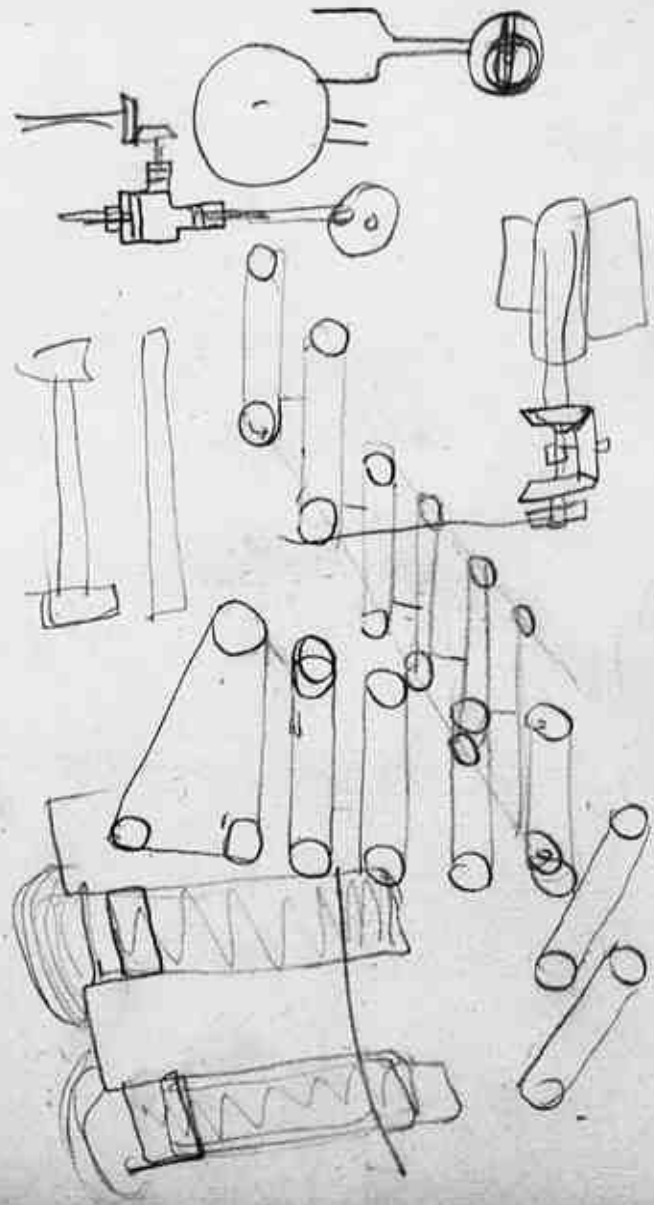




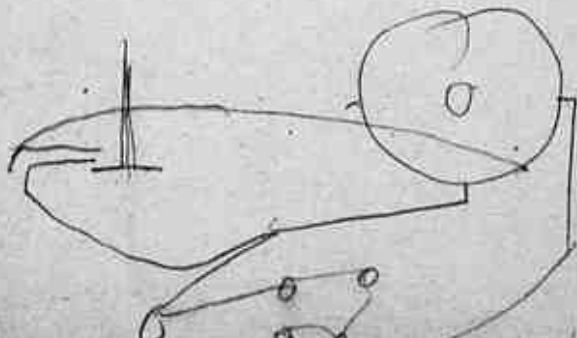
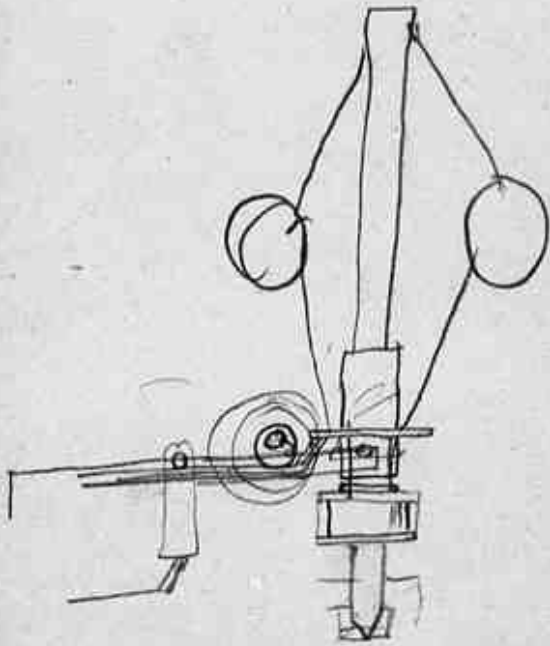


12  
238  
96

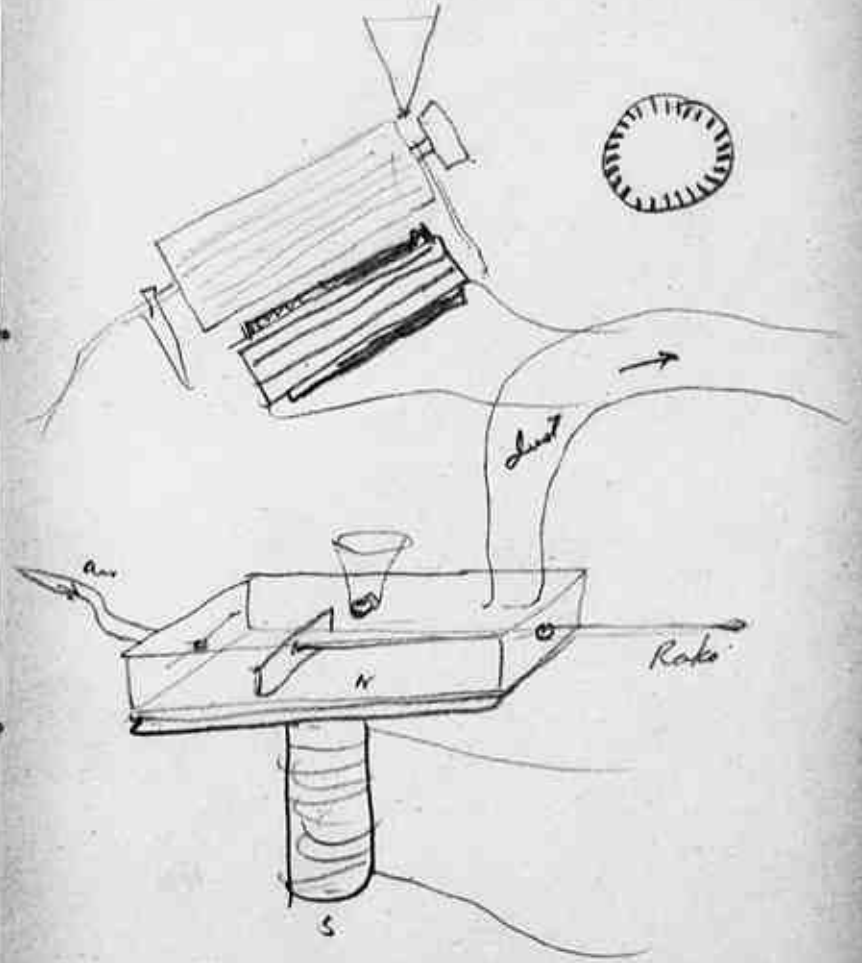
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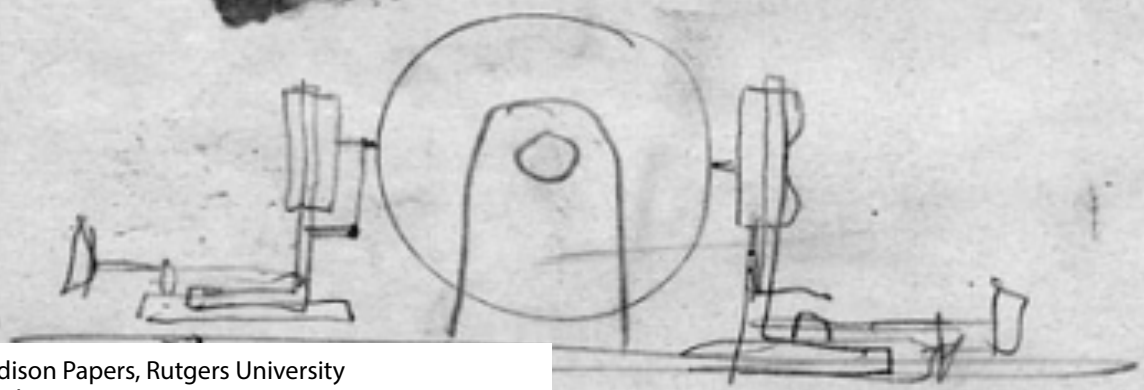
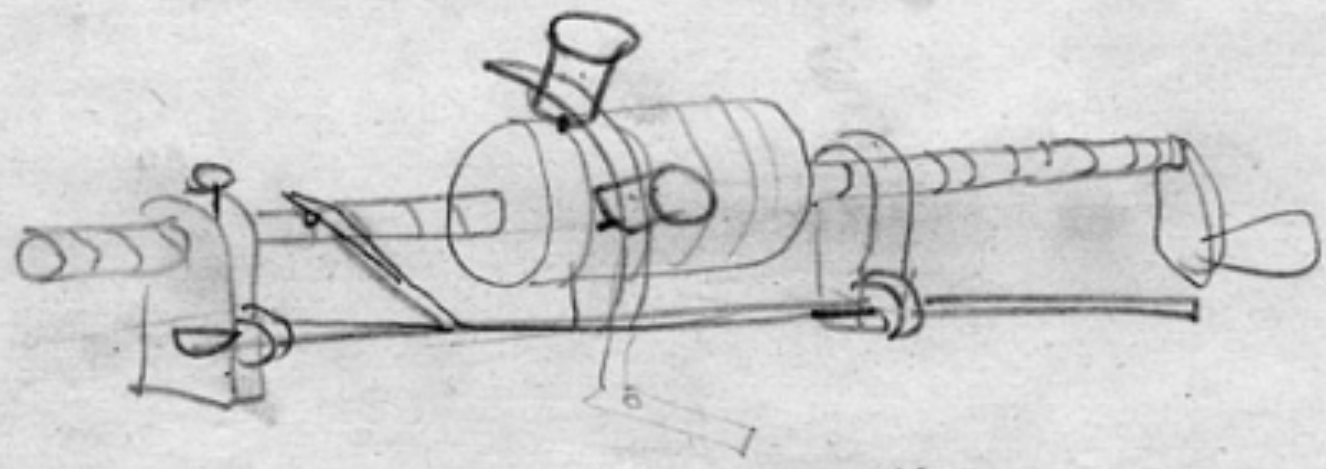
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Convent april 29, 89



Chas Batchelor  
J. Kruesi.

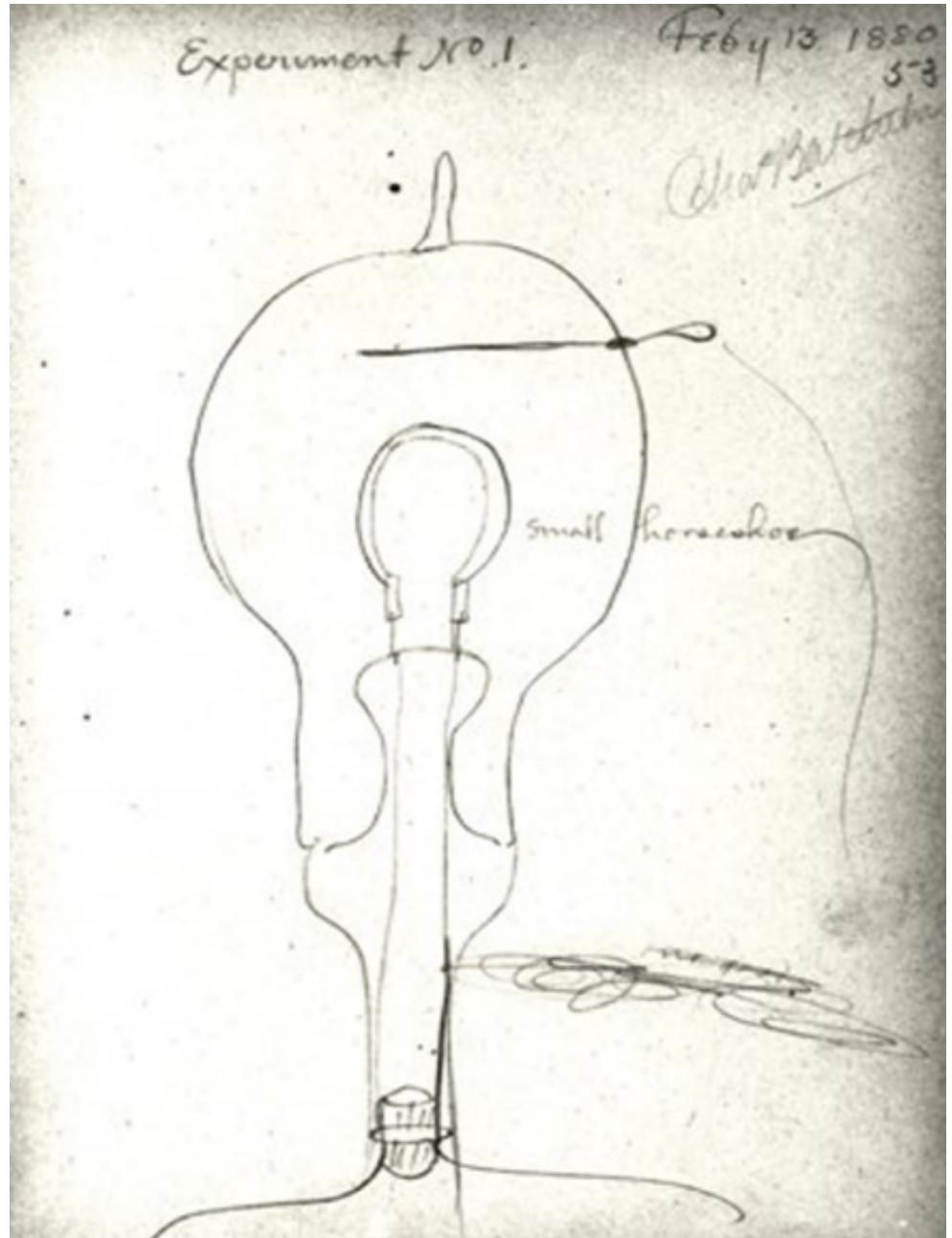
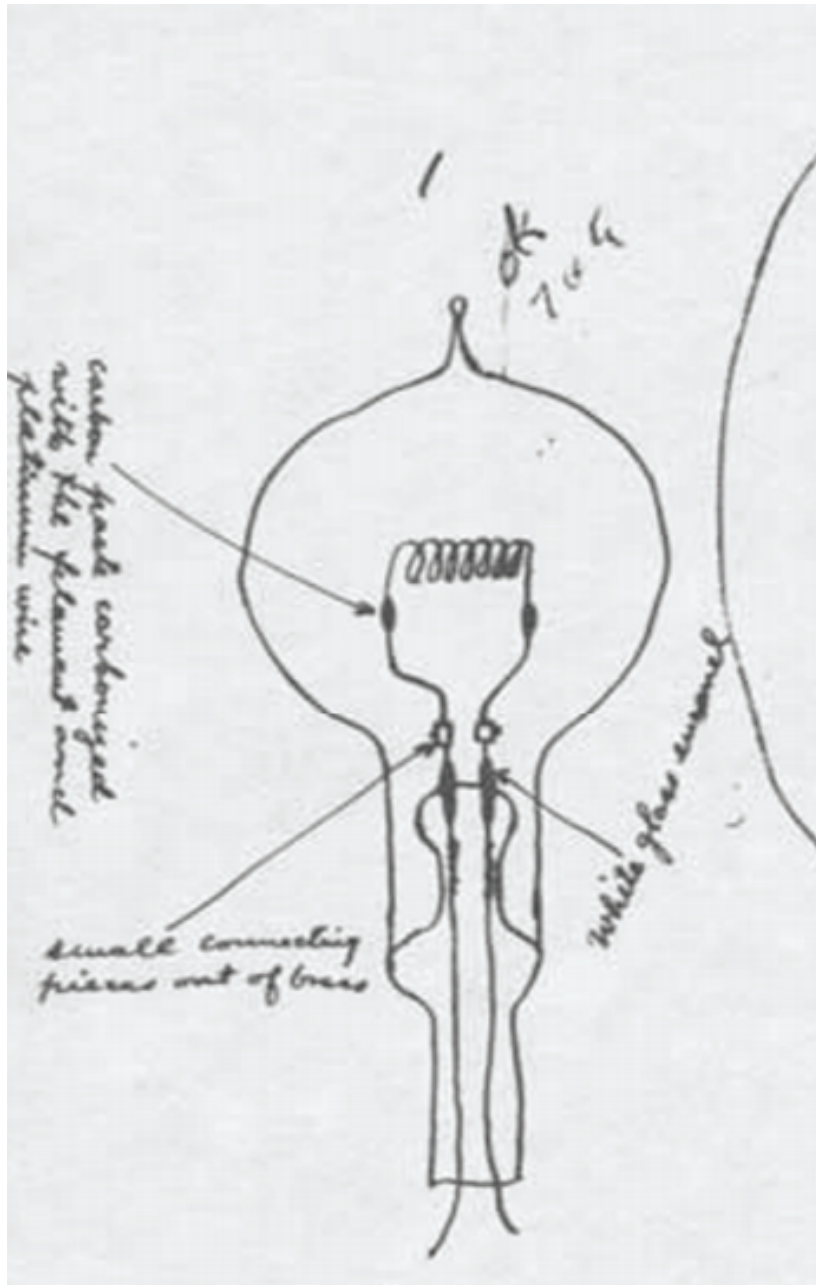






Source: The Thomas Edison Papers, Rutgers University  
<http://edison.rutgers.edu/>







Edison and his staff  
created over

**2500**

notebooks with  
200-300 pages each



# Why is sketching useful?

# Why is sketching useful?

- Early ideation
- Think through ideas
- Force you to visualize how things come together
- Communicate ideas to others to inspire new designs
- Active brainstorming

# getting the design right vs. getting the right design

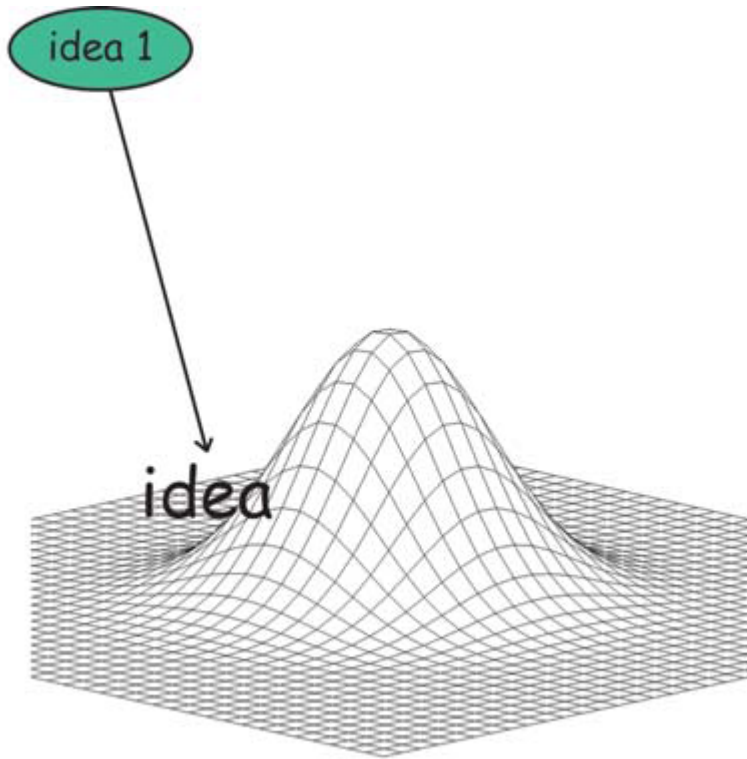


# getting the design right vs. getting the right design

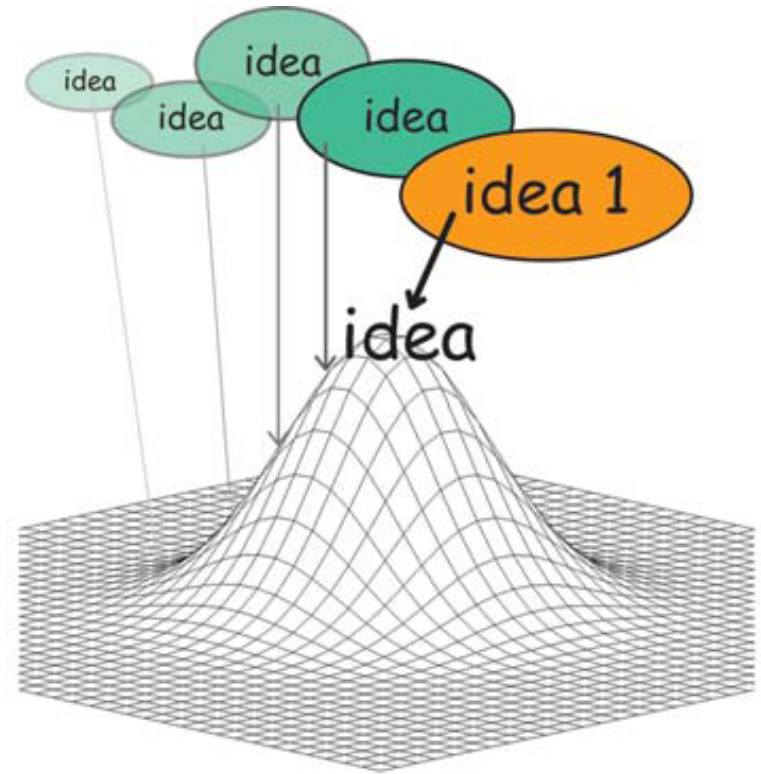
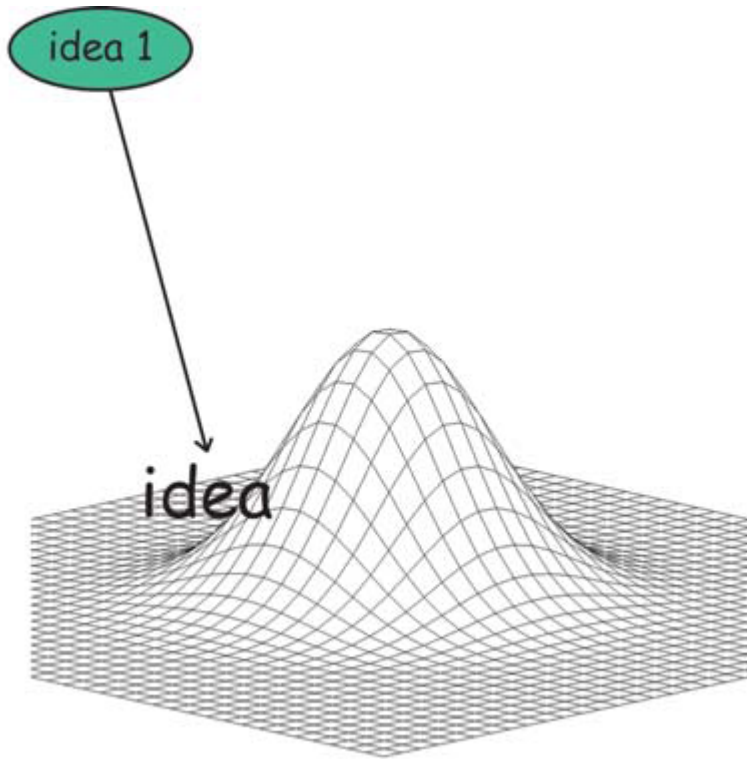
(Bill Buxton)



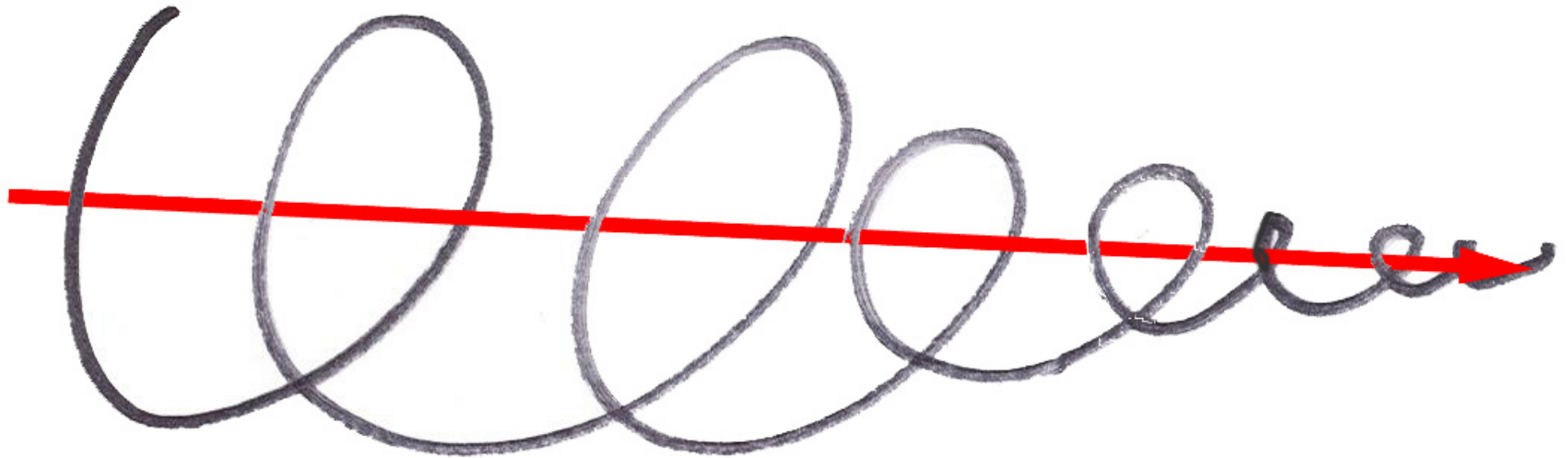
# Buxton - getting the design right



# Buxton - getting the design right

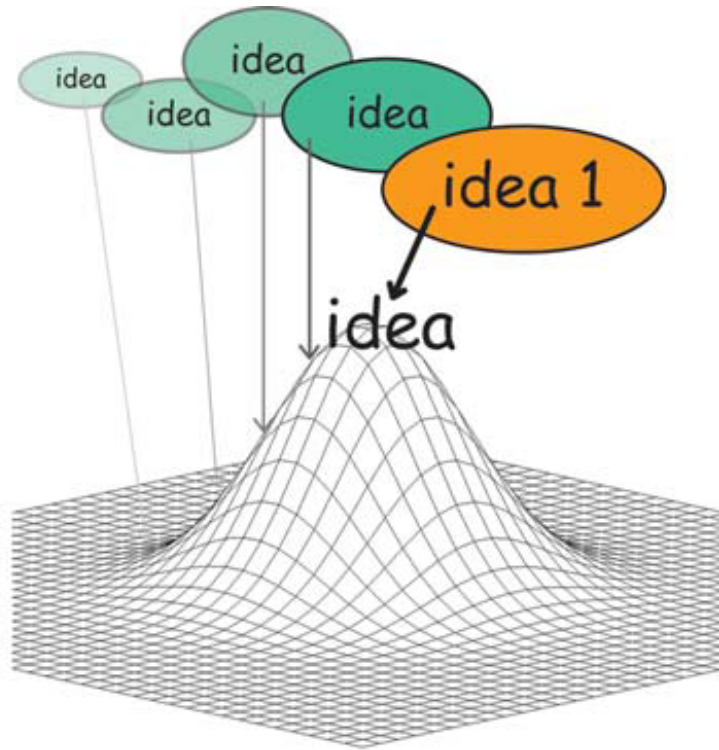


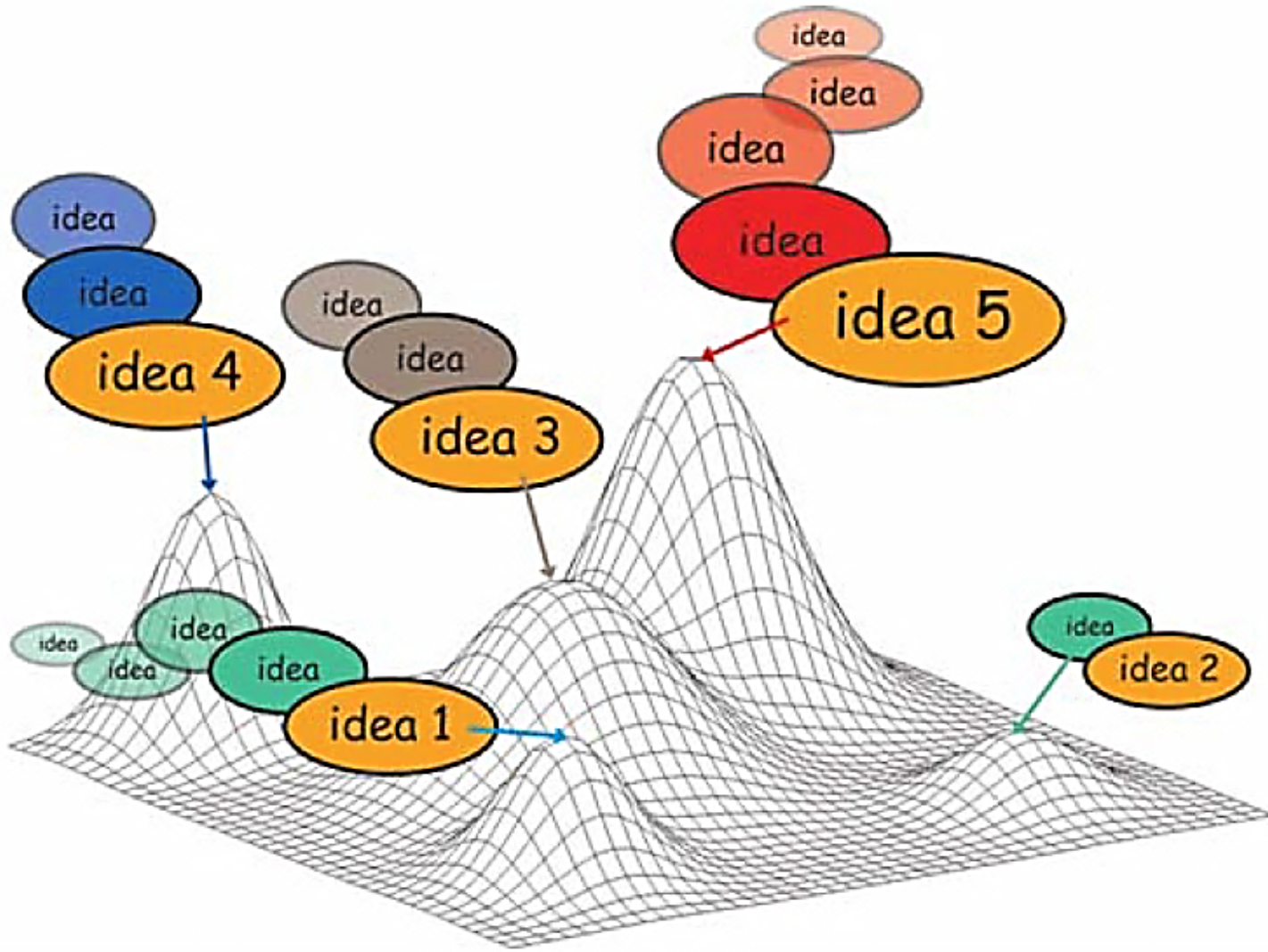
# Buxton - getting the design right

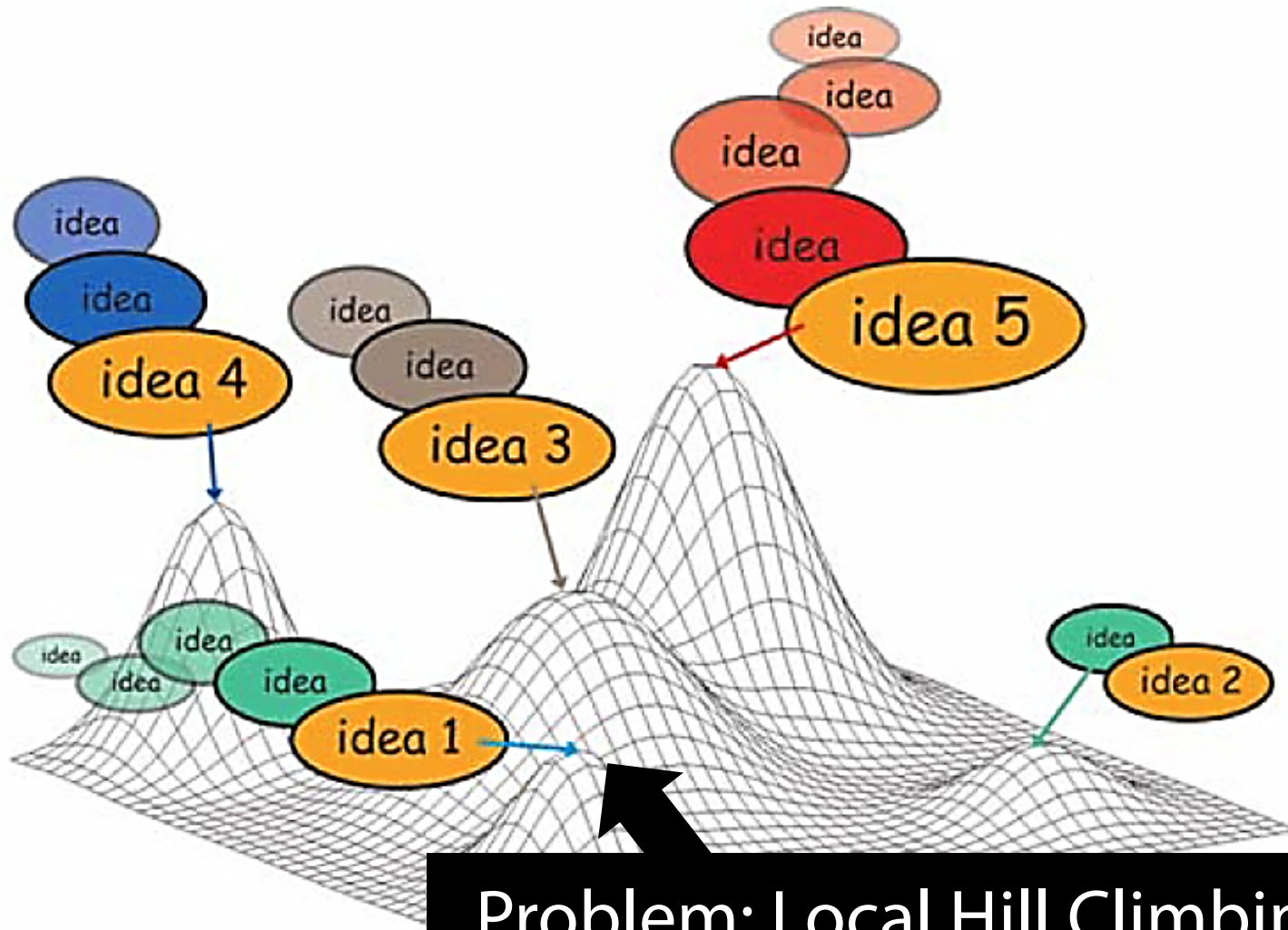




# Buxton - local versus global maxima

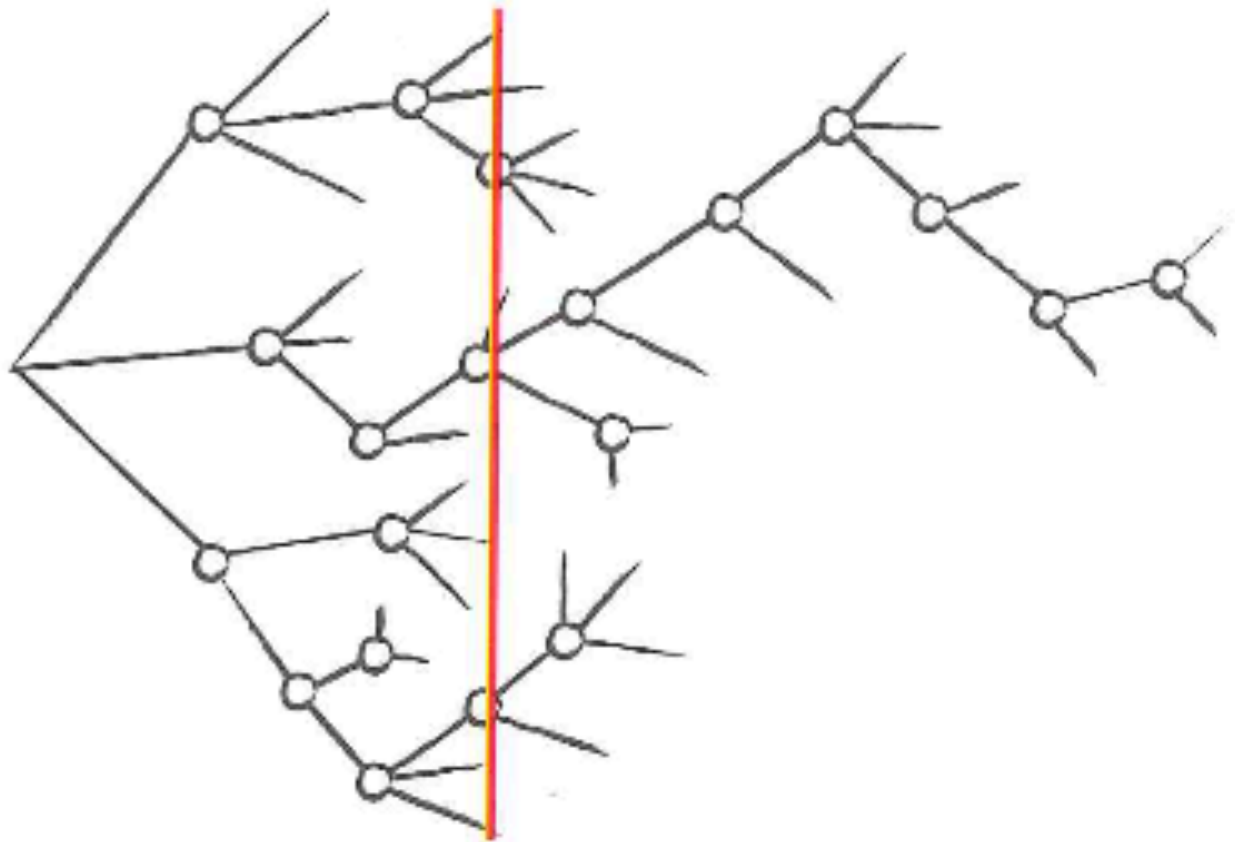




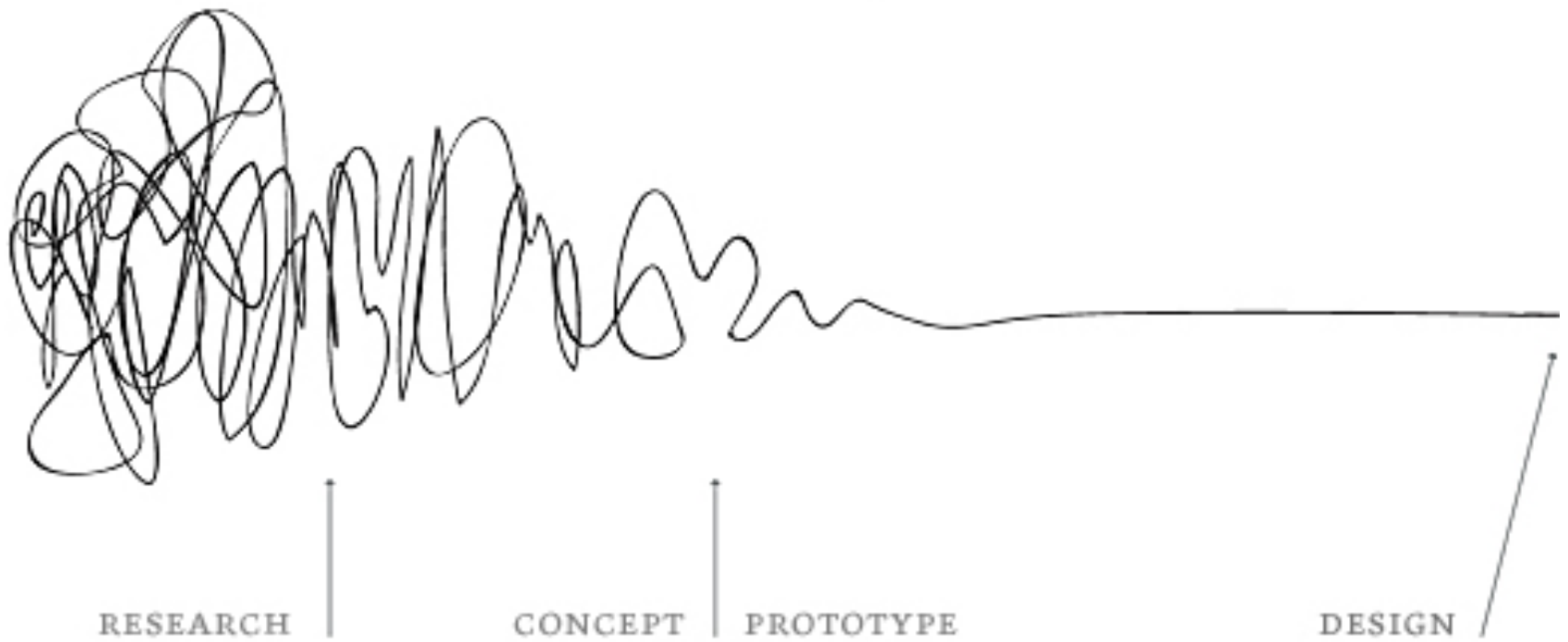


**Problem: Local Hill Climbing**

# Instead: Getting the **right design**







# Design is Choice

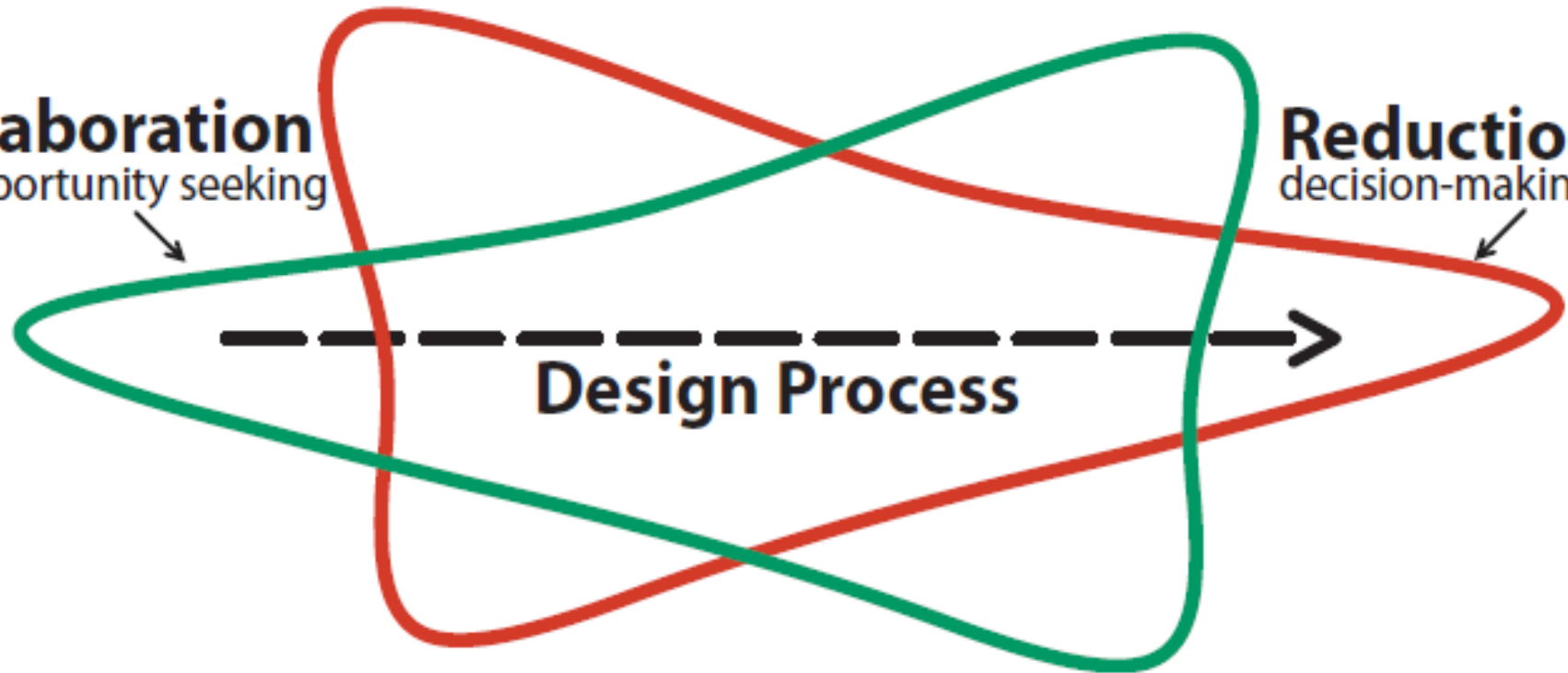
there are two places where there is room for creativity:

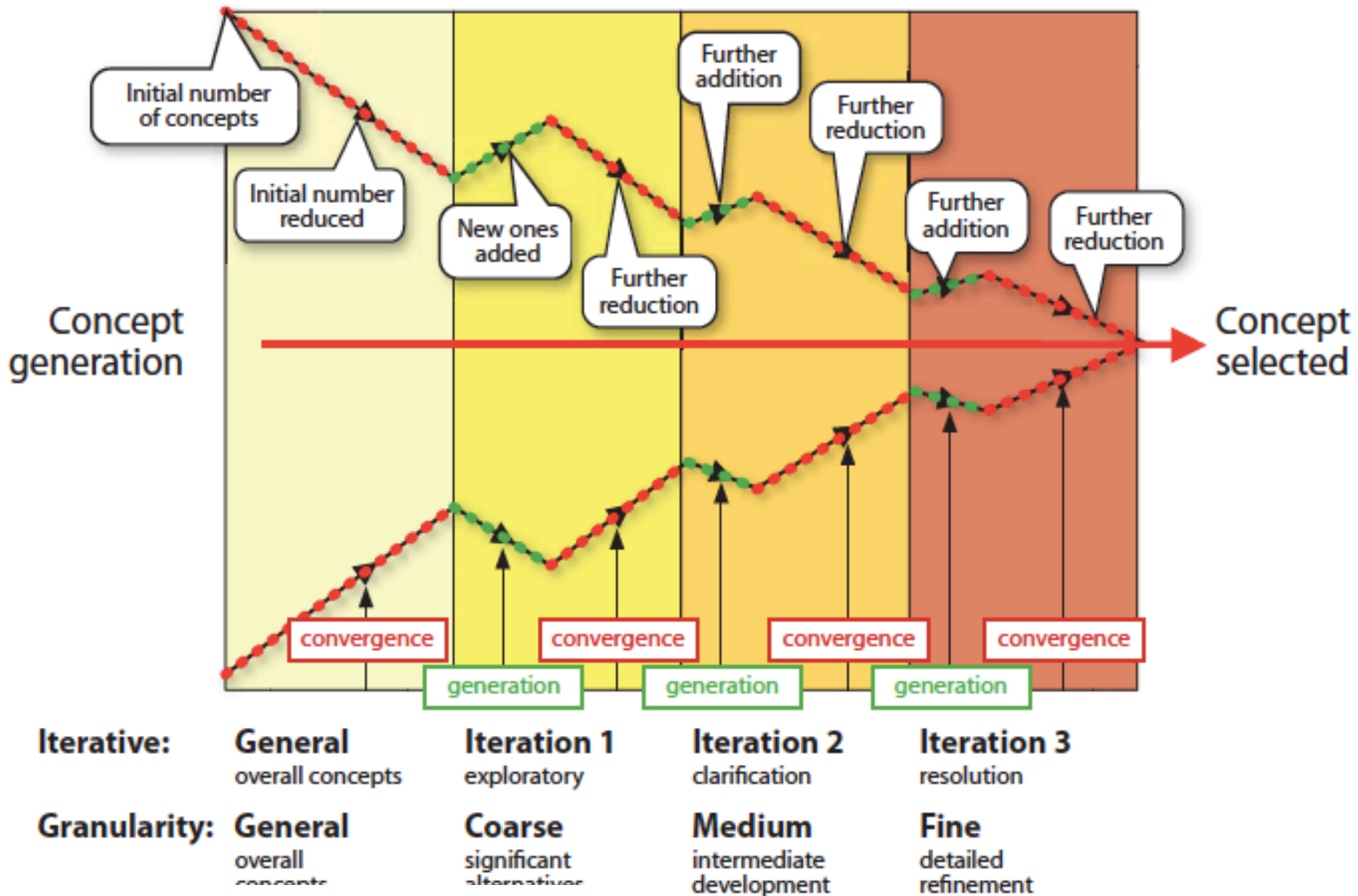
1. the creativity that you bring to enumerating meaningfully distinct options from which to choose
2. the creativity that you bring to defining the criteria, or heuristics, according to which you make your choices.

Bill Buxton

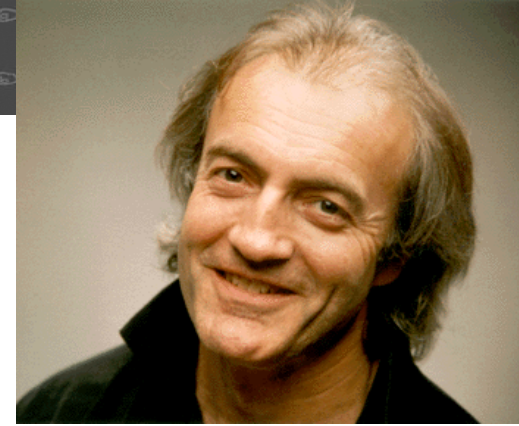
**Elaboration**  
opportunity seeking

**Reduction**  
decision-making









# Characteristics of Sketches



Clear vocabulary

Plentiful

Suggest and explore rather than confirm

Quick and inexpensive

Timely, when needed

Disposable

Minimal detail and distinct gesture

Ambiguous

Appropriate degree of refinement



**Toru Iwatani** | Designer

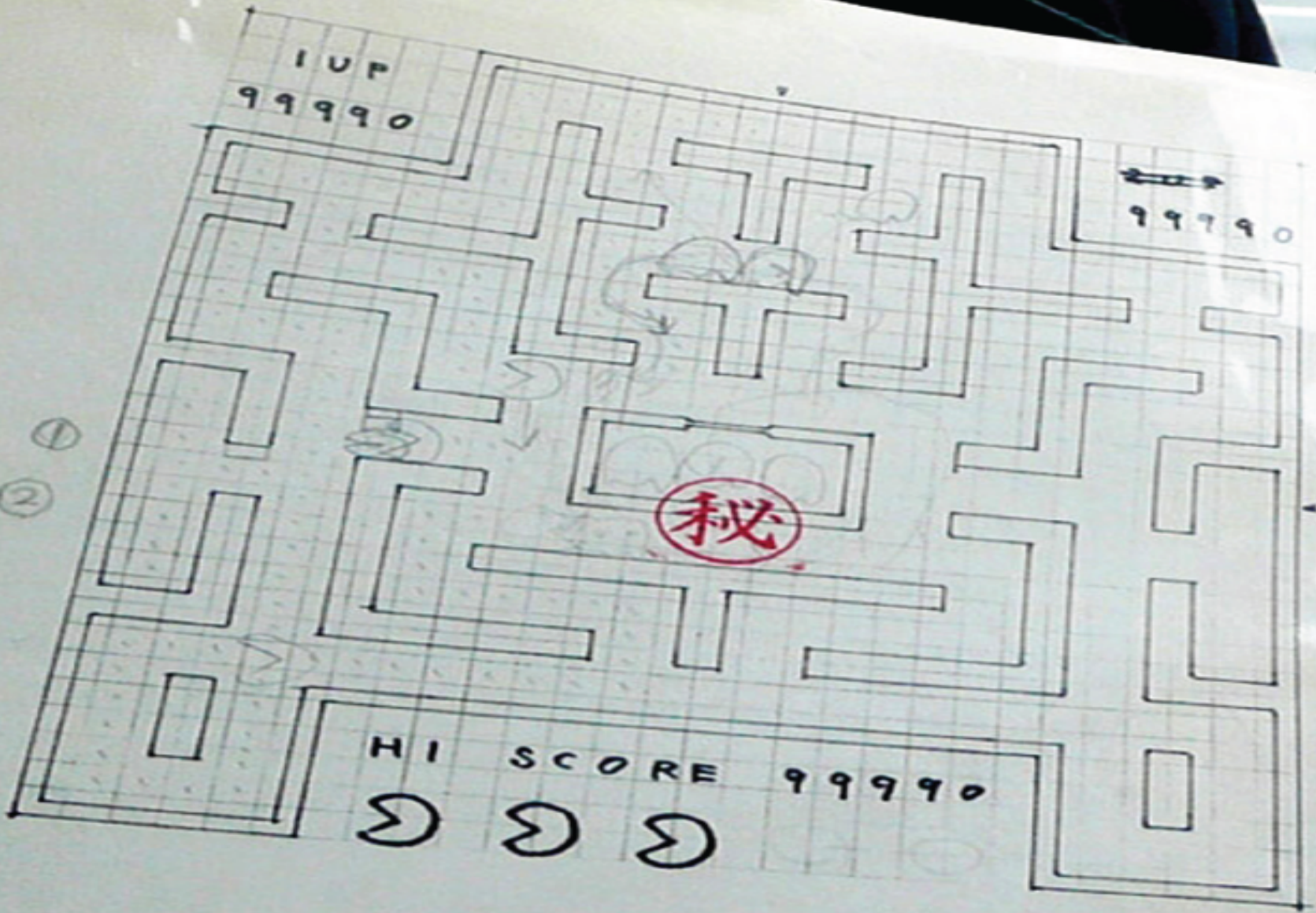


**Toru Iwatani** | Designer



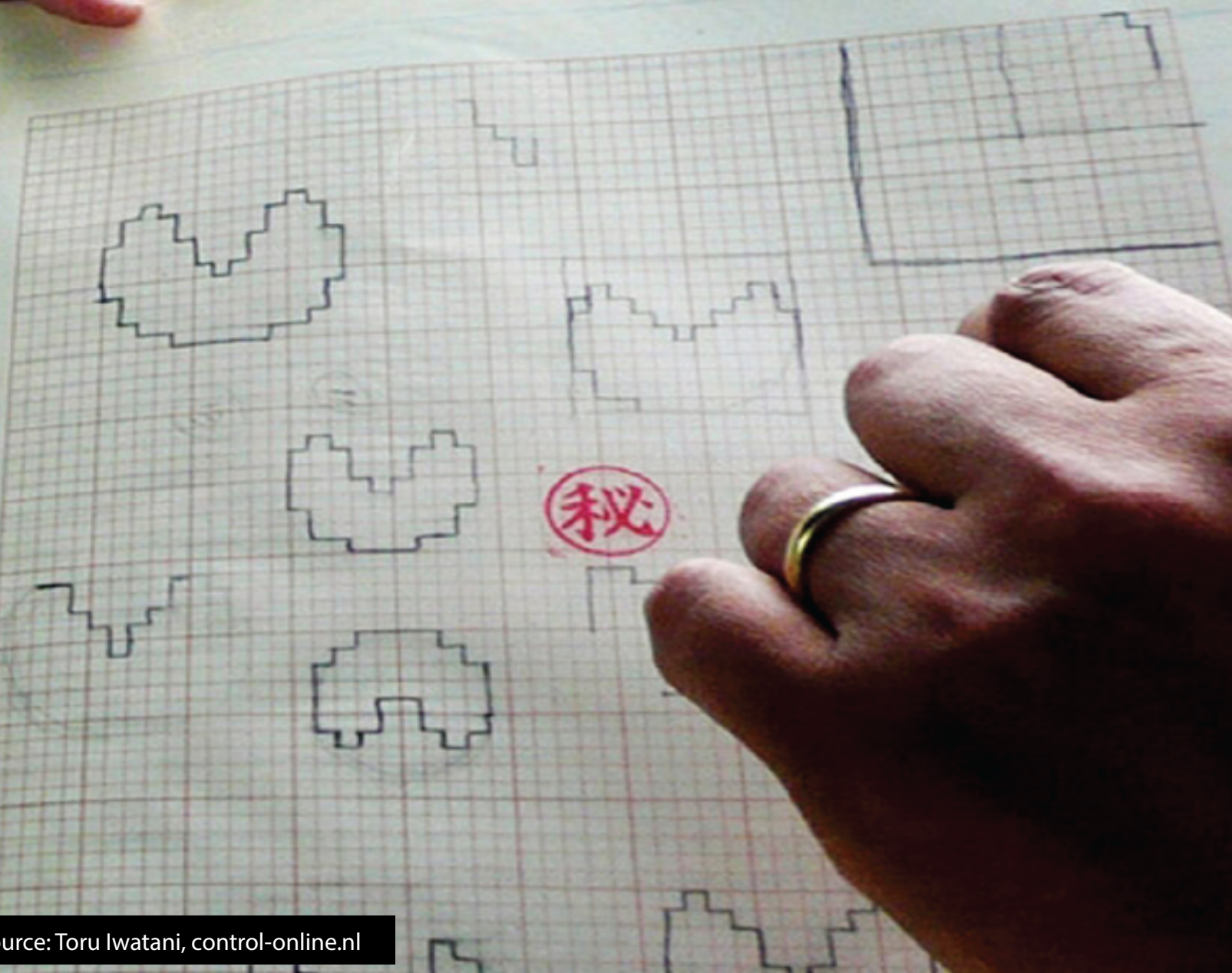








52. BOARDING PAGES





Clear vocabulary

Plentiful

Suggest and explore rather than confirm

Quick and inexpensive

Timely, when needed

Disposable

Minimal detail and distinct gesture

Ambiguous

Appropriate degree of refinement



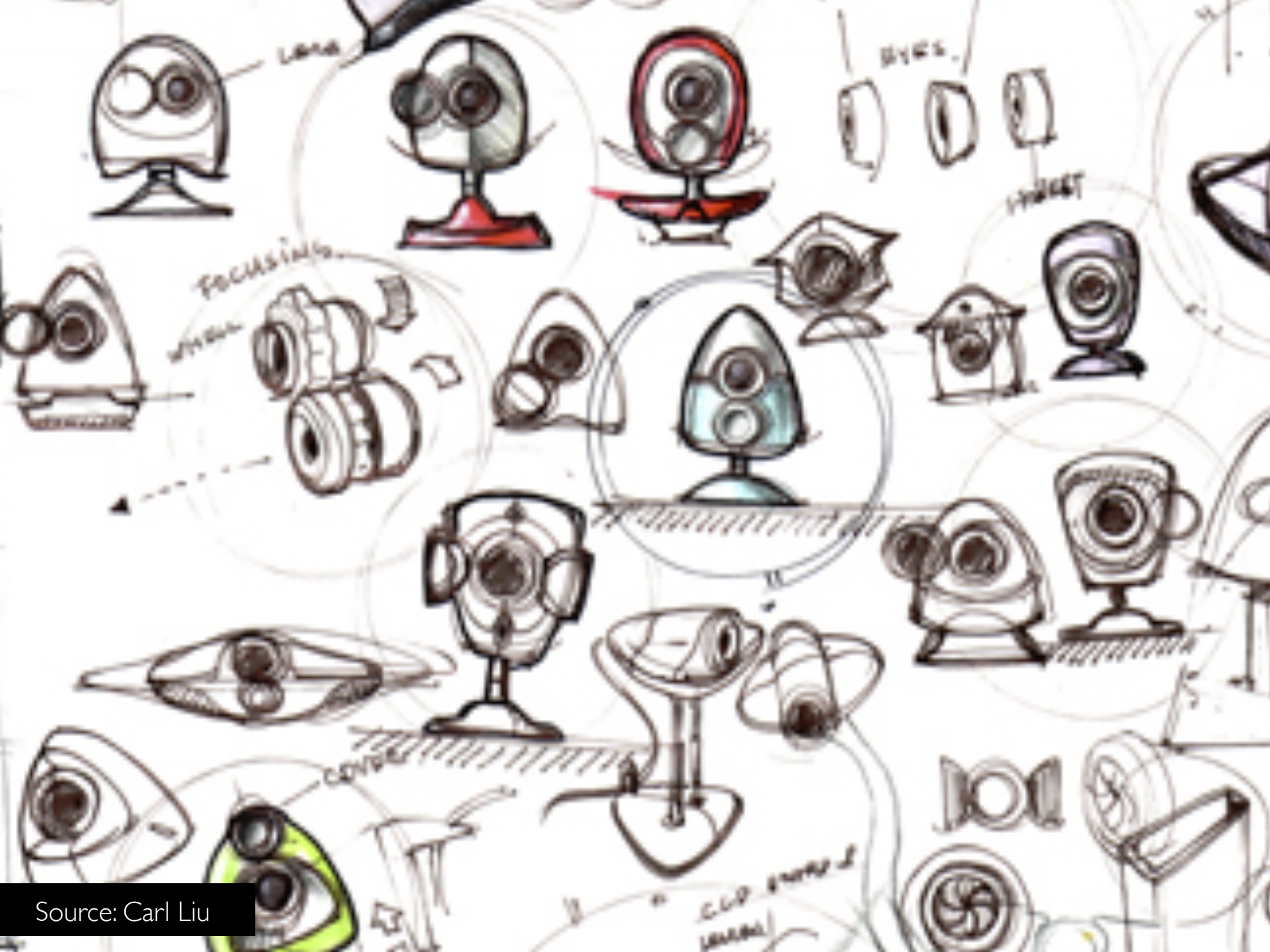
“The best way to have a good idea is to have lots of ideas.”

Linus Pauling



**Carl Liu** | Interaction Designer





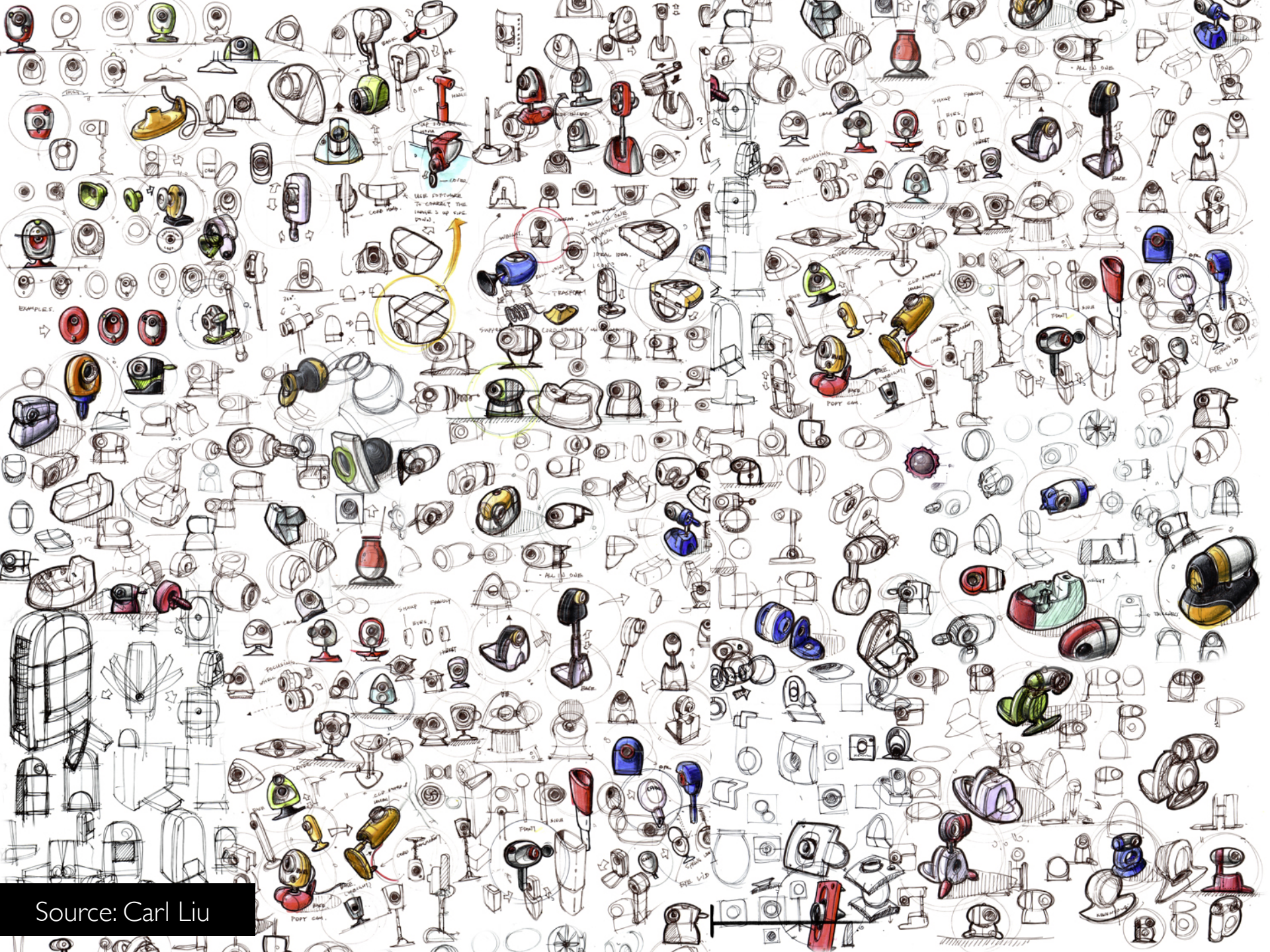




EXAMPLES.



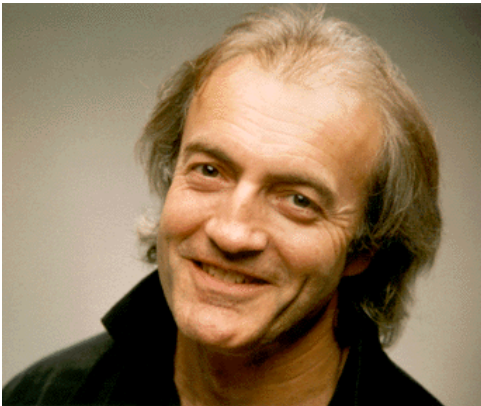


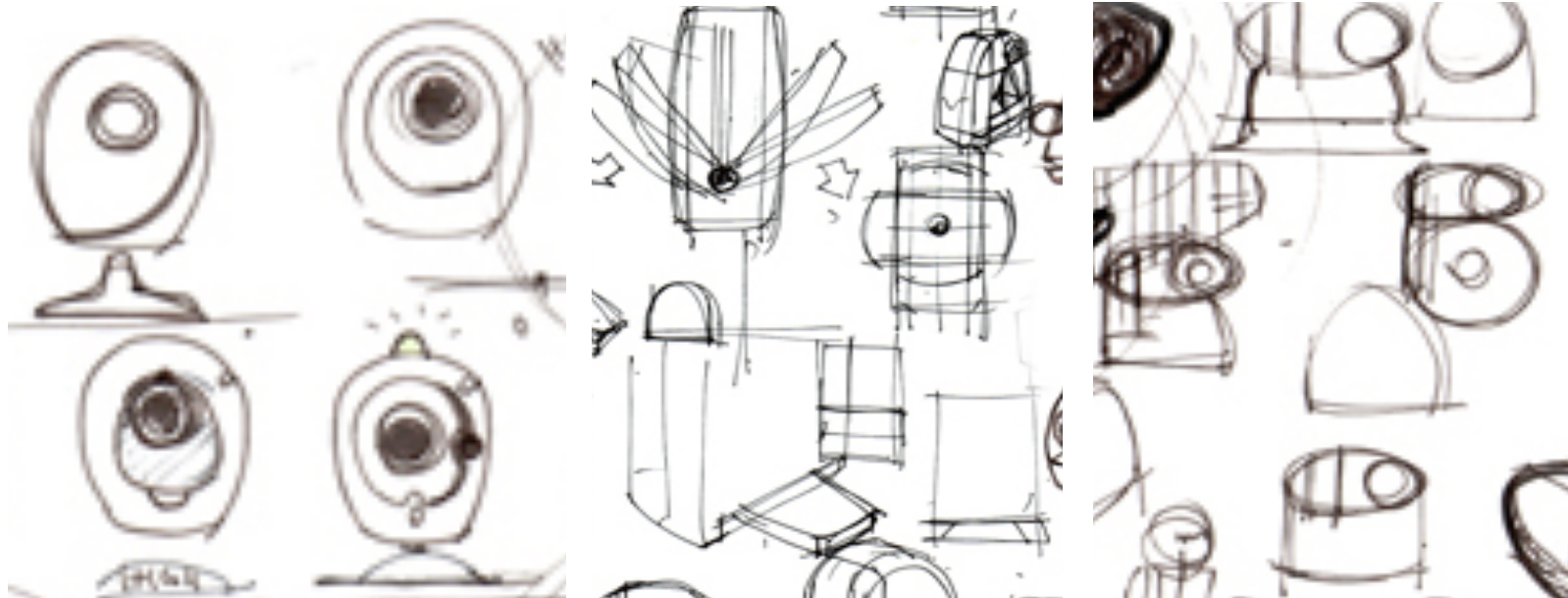


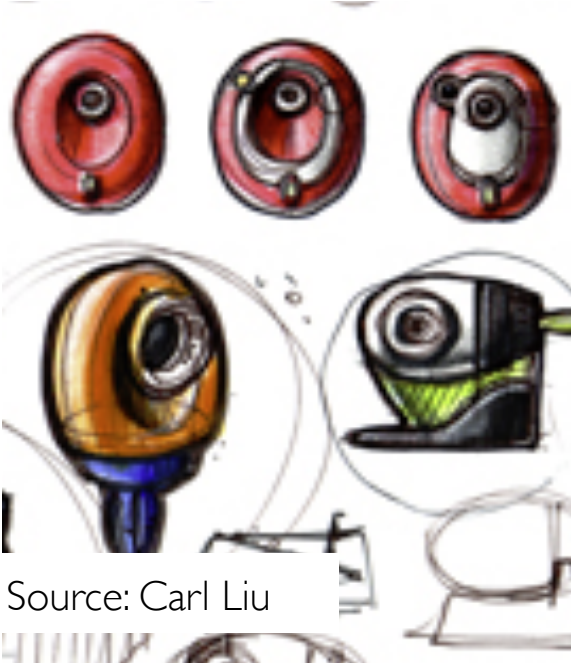
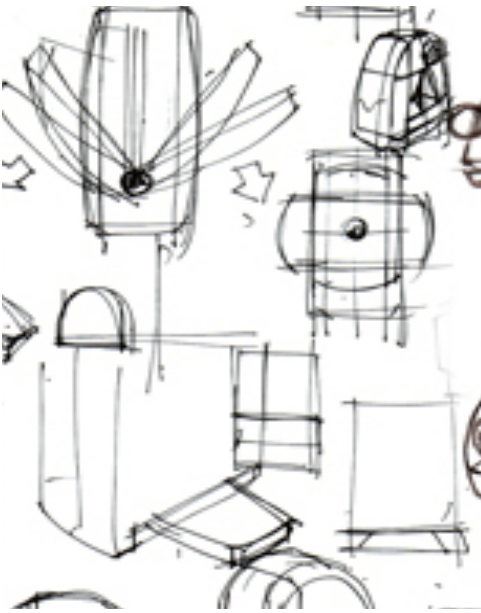
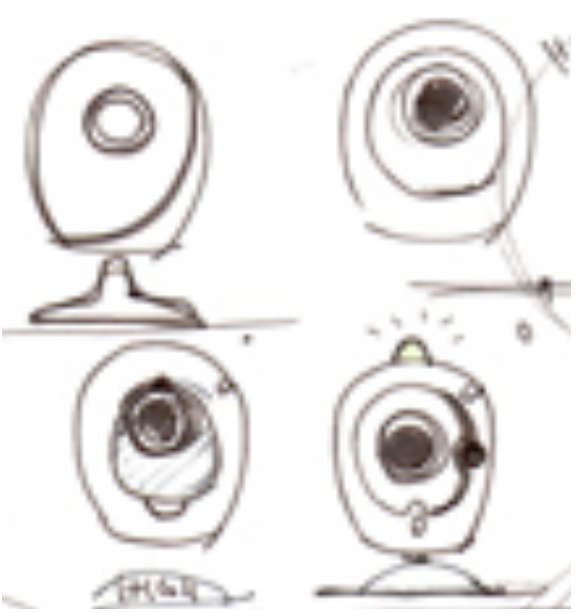
Source: Carl Liu



Quick, inexpensive  
and disposable

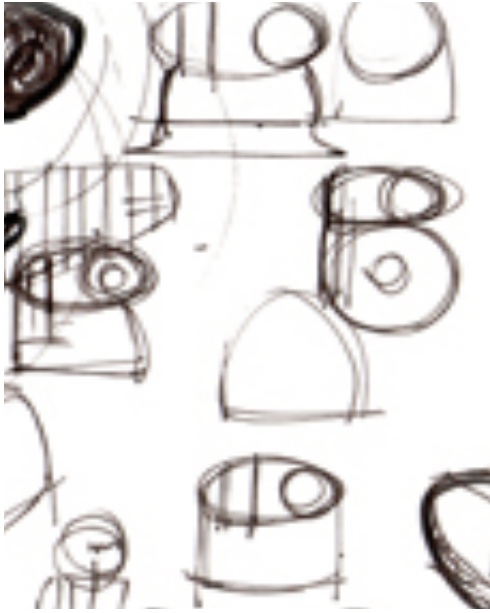
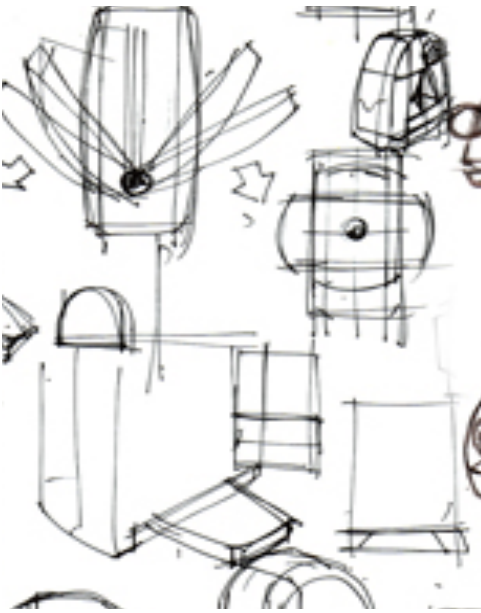
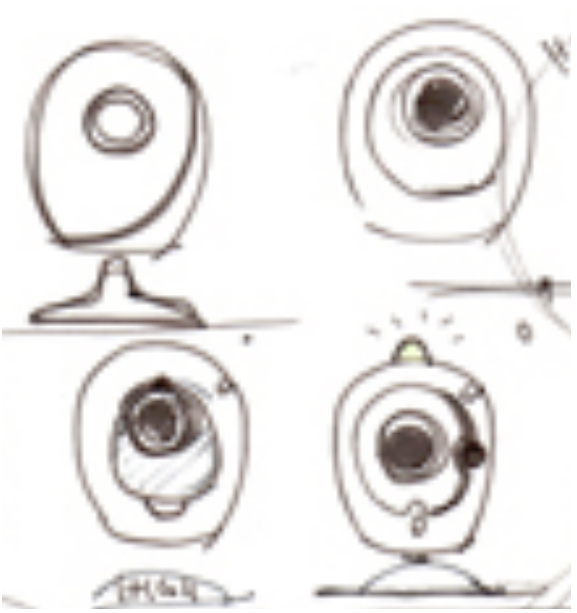






Source: Carl Liu





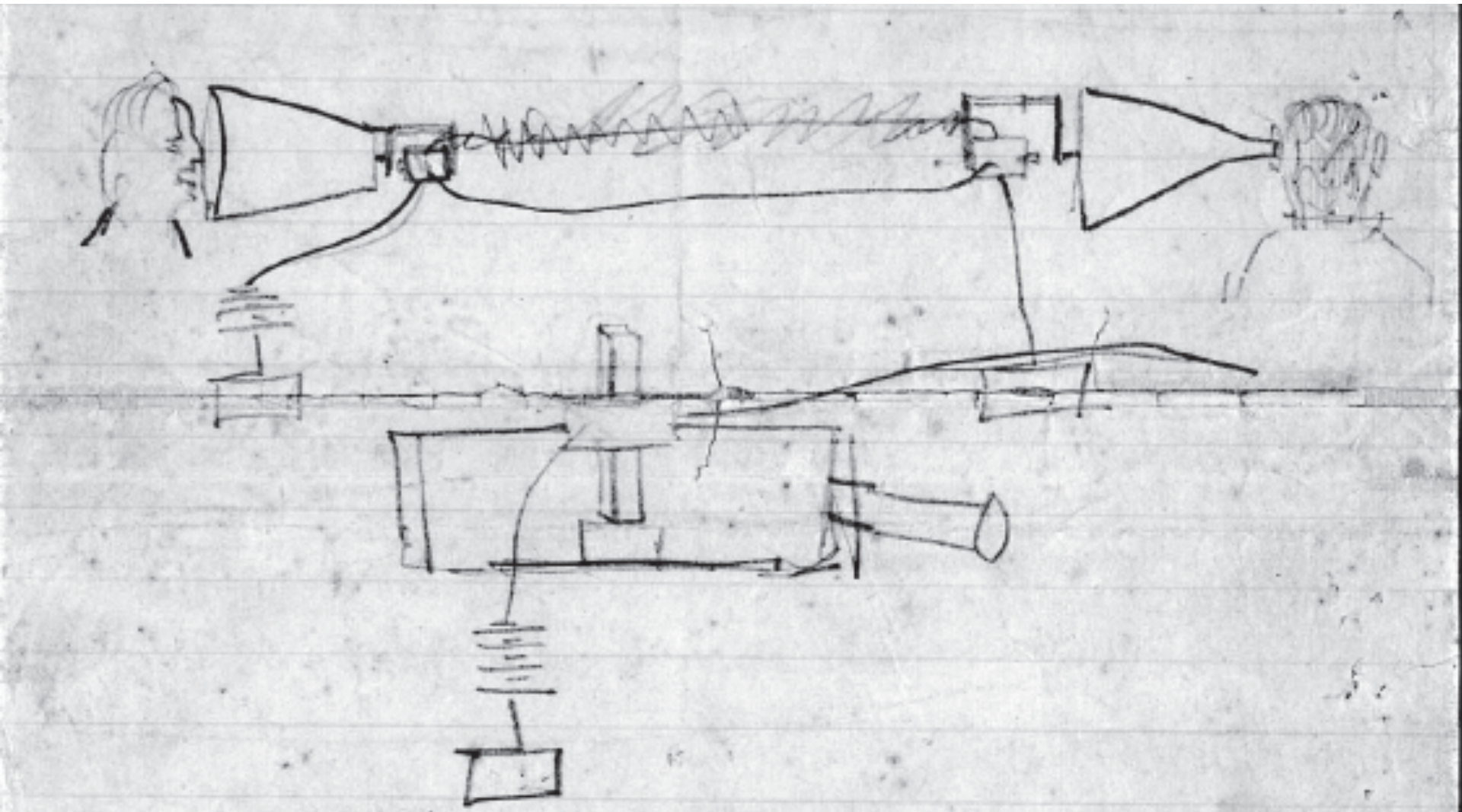
Source: Carl Liu



**But: “I can’t draw...”**

**“Sketches do not have to be pretty, beautiful, or even immediately understandable by others. However, you should be able to explain your sketches and ideas when anyone asks about them.”**

Saul Greenberg et al.





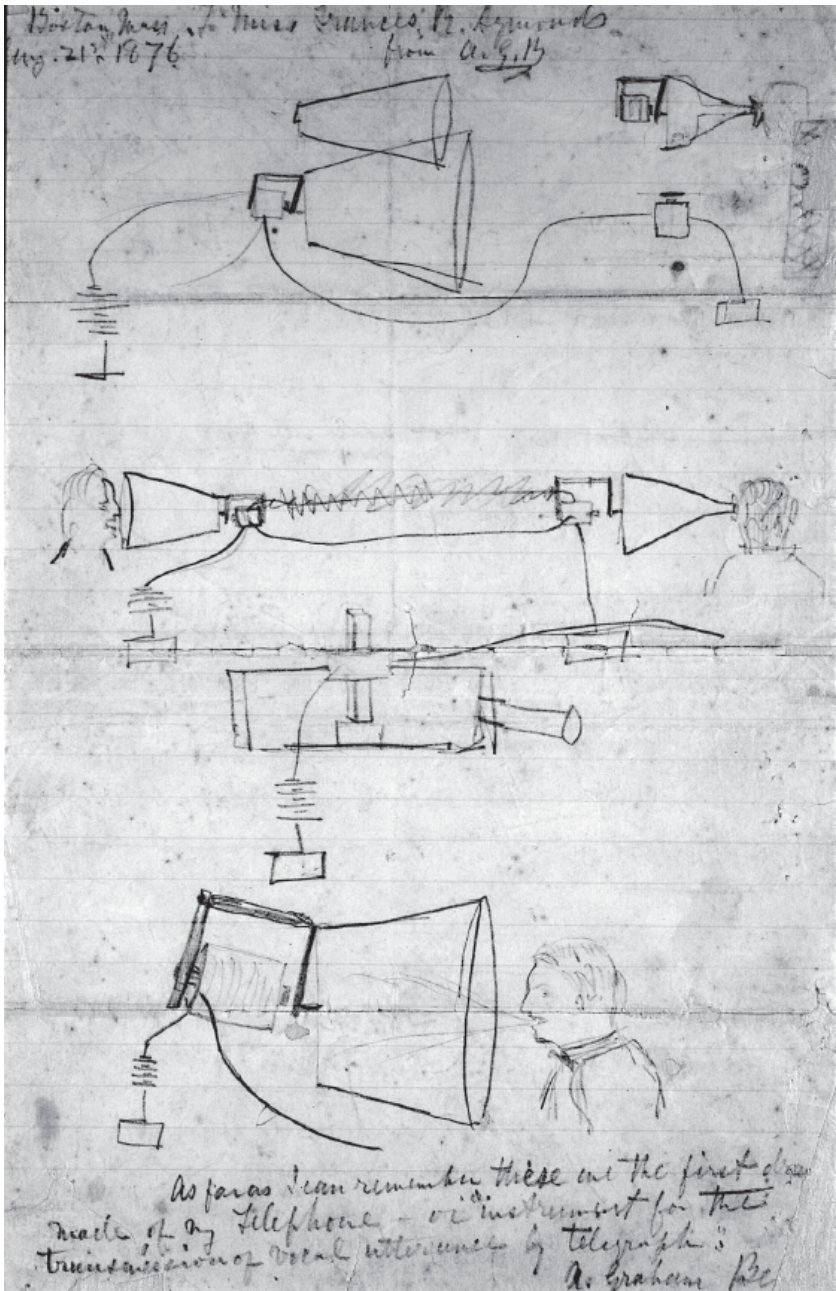
Alexander G. Bell | Engineer, Inventor



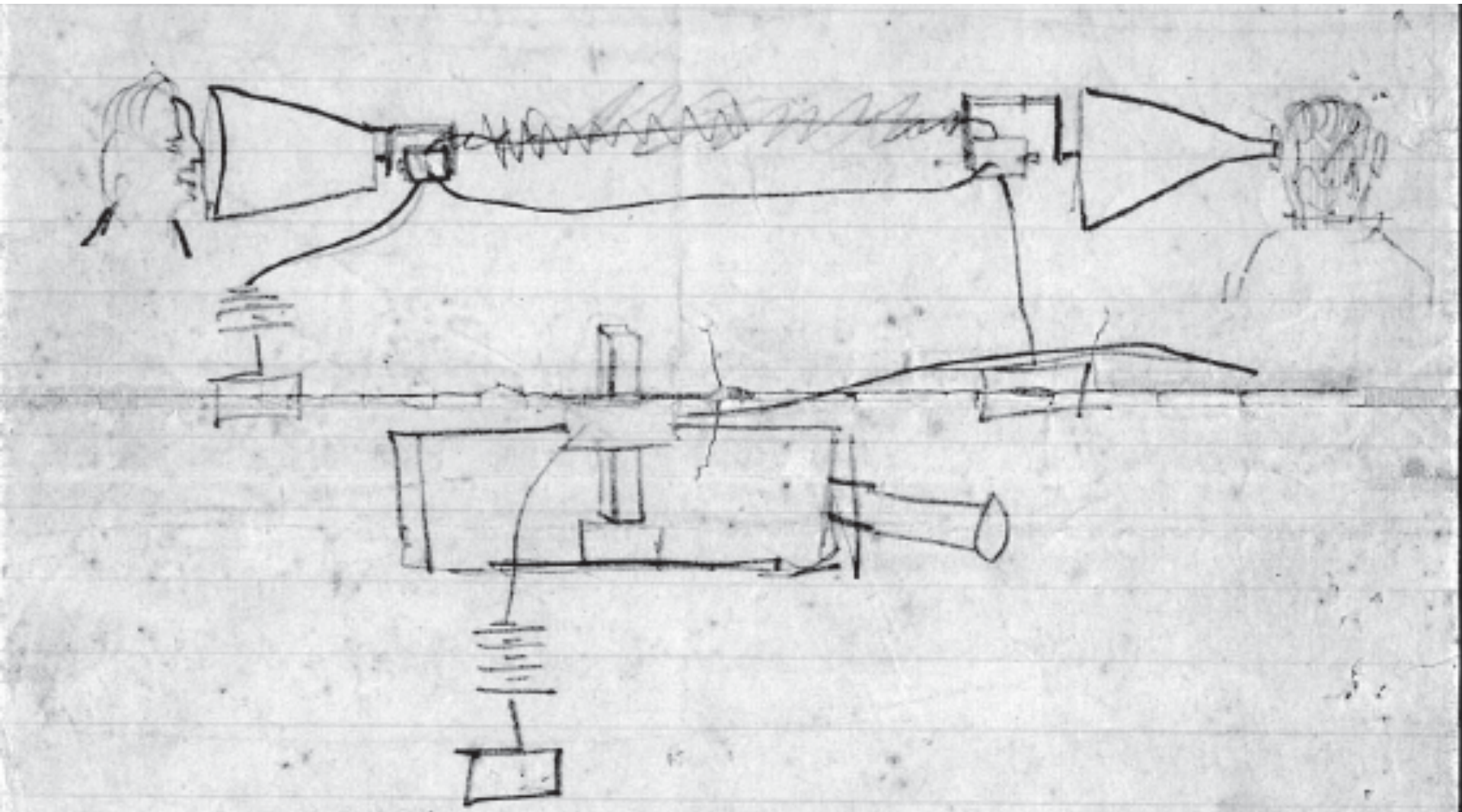


Source: The Library of Congress  
<http://memory.loc.gov/ammem/bellhtml/bellhome.html>





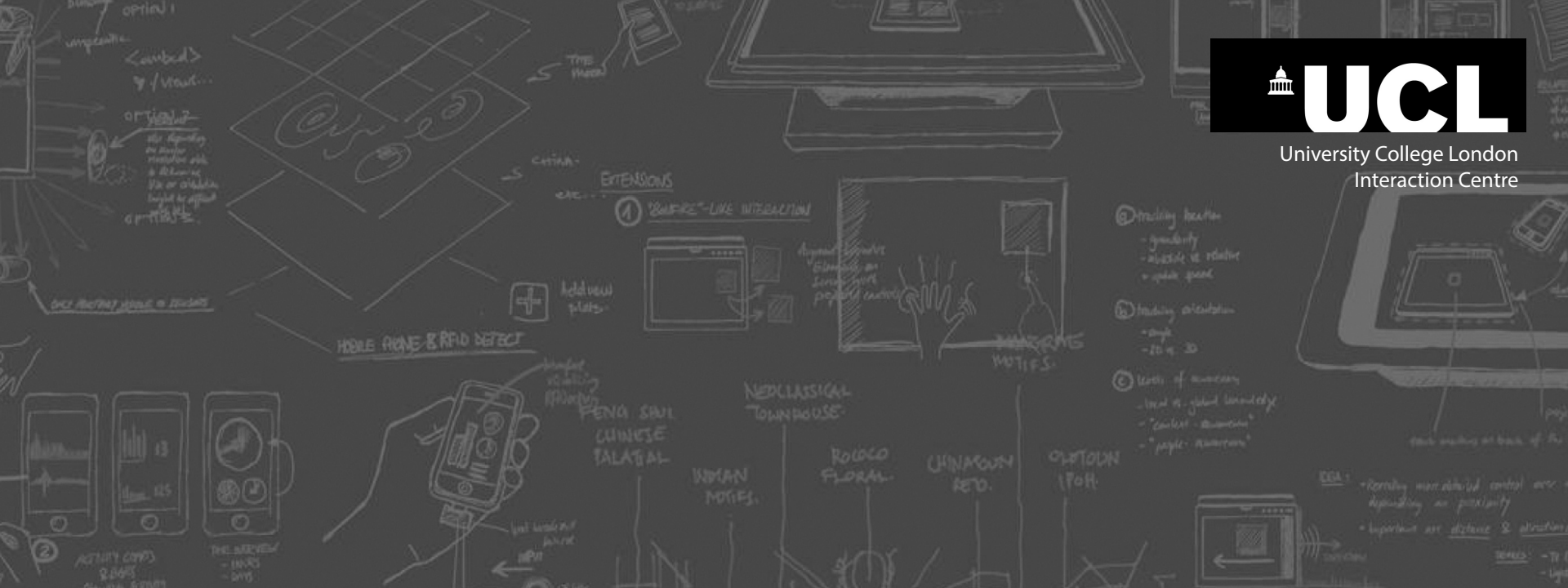
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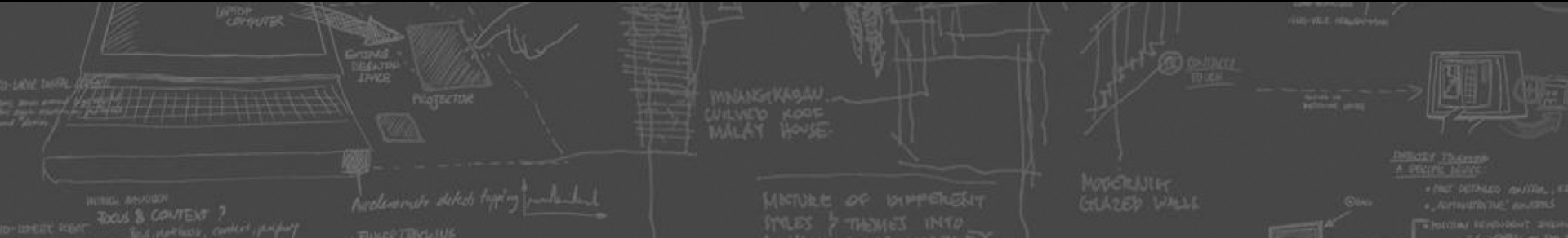
“The fidelity of the sketch should reflect the **depth of our thinking**”

Bill Buxton



# PART II

# GETTING STARTED WITH SKETCHING







# Sketching Tip 1:

Don't use pencils but pens and markers instead



**Sketching Tip 2:**  
Keep your mistakes,  
just keep going

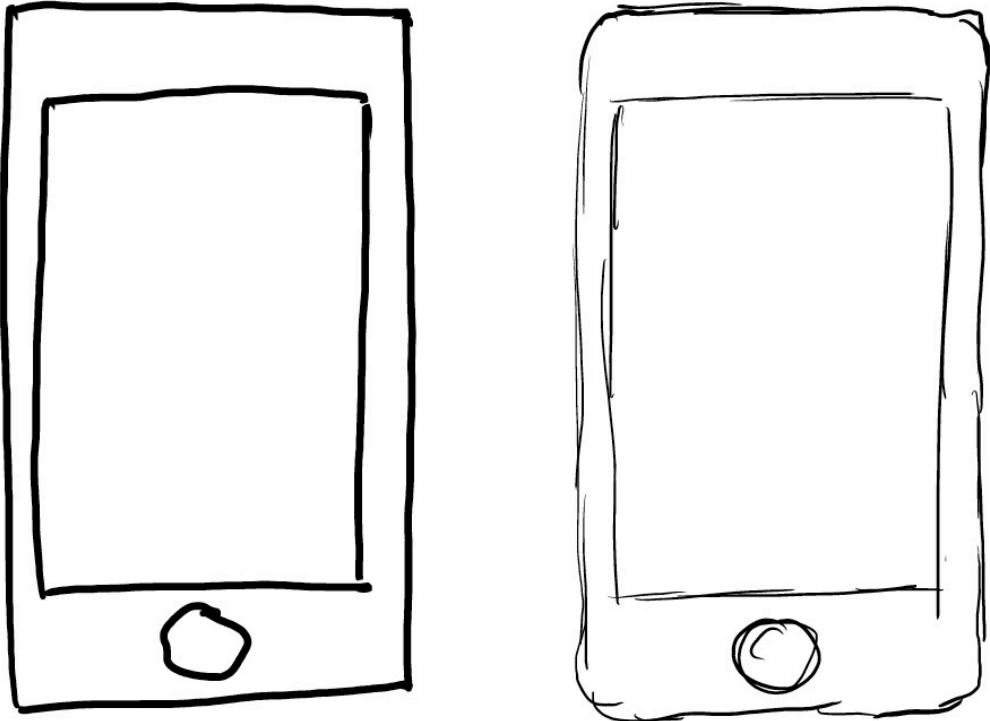
# Sketching Tip 3:

## Imitate sketching styles you like



# Sketching Tip 4:

Sketch with fast and long strokes  
(needs some practice)



**Sketching Tip 5:**  
Sketch *analog* (pen and paper)  
before *digital* (tablet)

**Sketching Tip 6:**  
Sketch in 2D –  
three dimensions are not  
necessary (most of the time)



# Drawing People





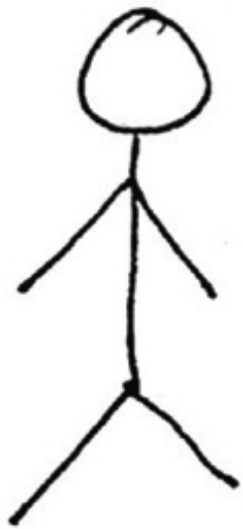


REALISTIC -----> ABSTRACT



PORTRAIT -----> IDEA

# Drawing stick figures

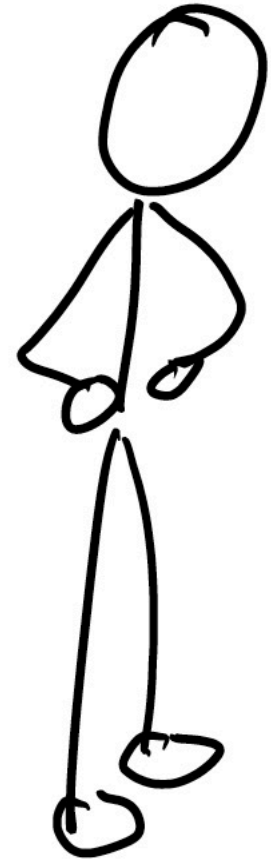
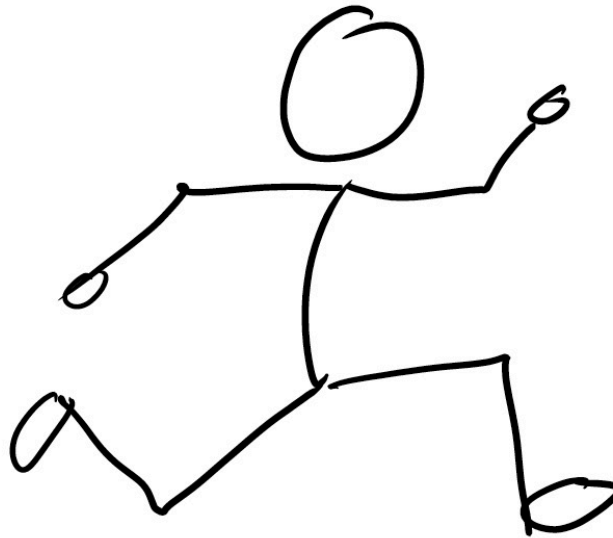
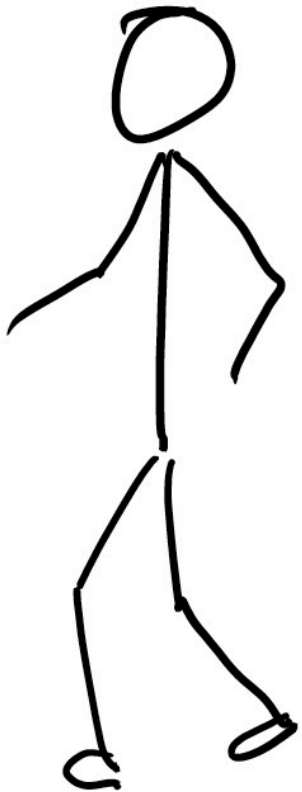




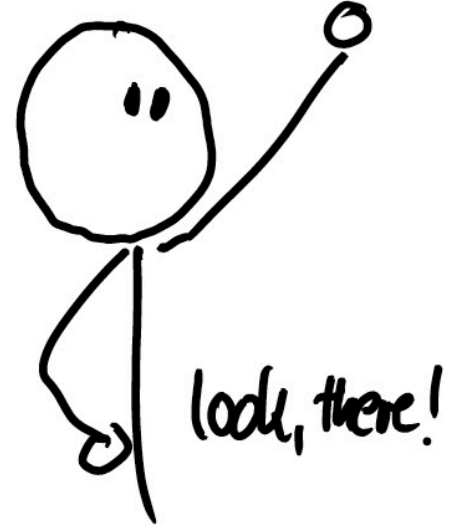
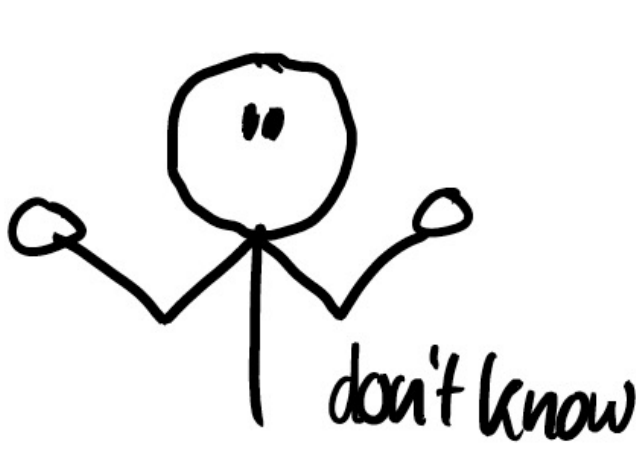
# Drawing stick figures



# Expressions



# Expressions



# ***Hands-on Sketching:***

## *Drawing people*



# Quickly sketch 10 different stick figures:



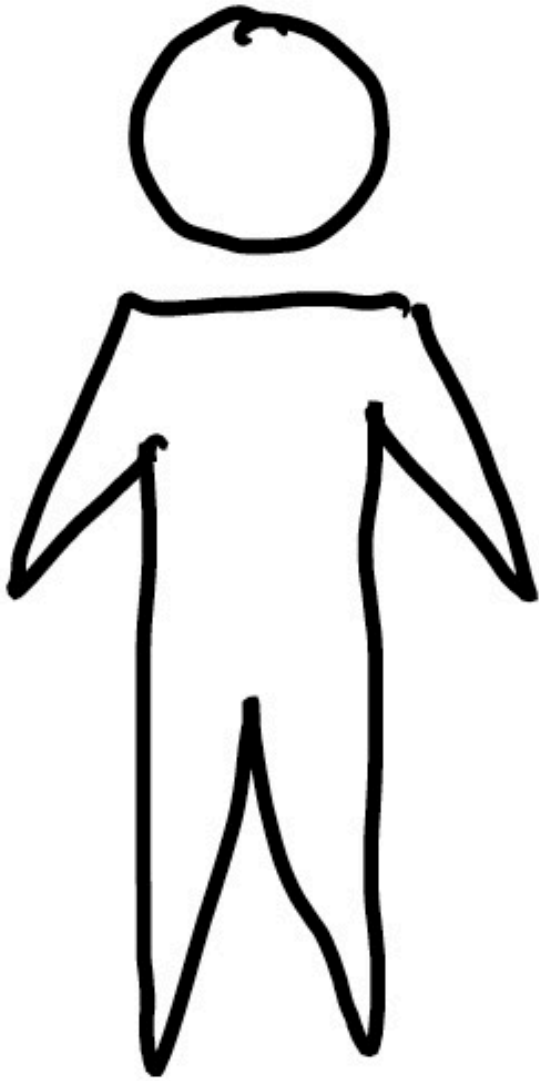
Share ideas about what to draw with your neighbor.

For example, draw a person pointing, running, picking up an object, ...



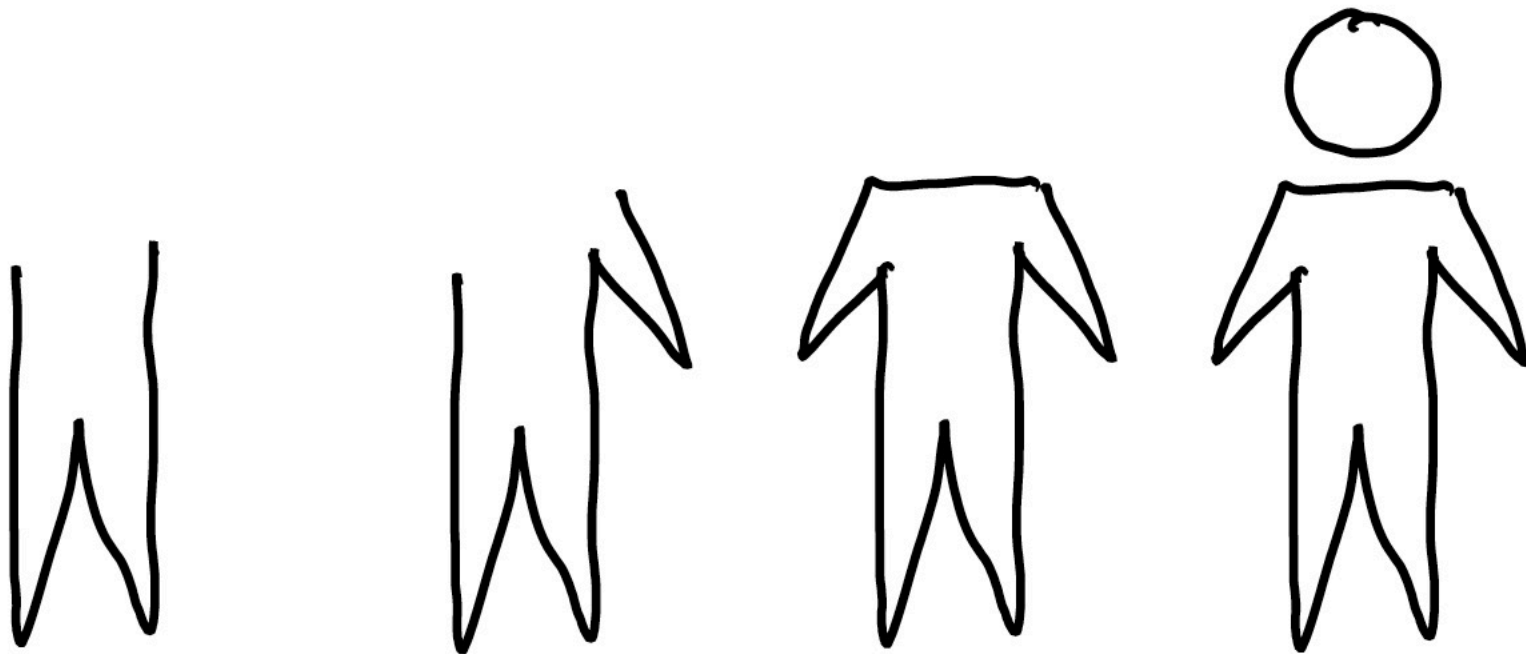


# Star People

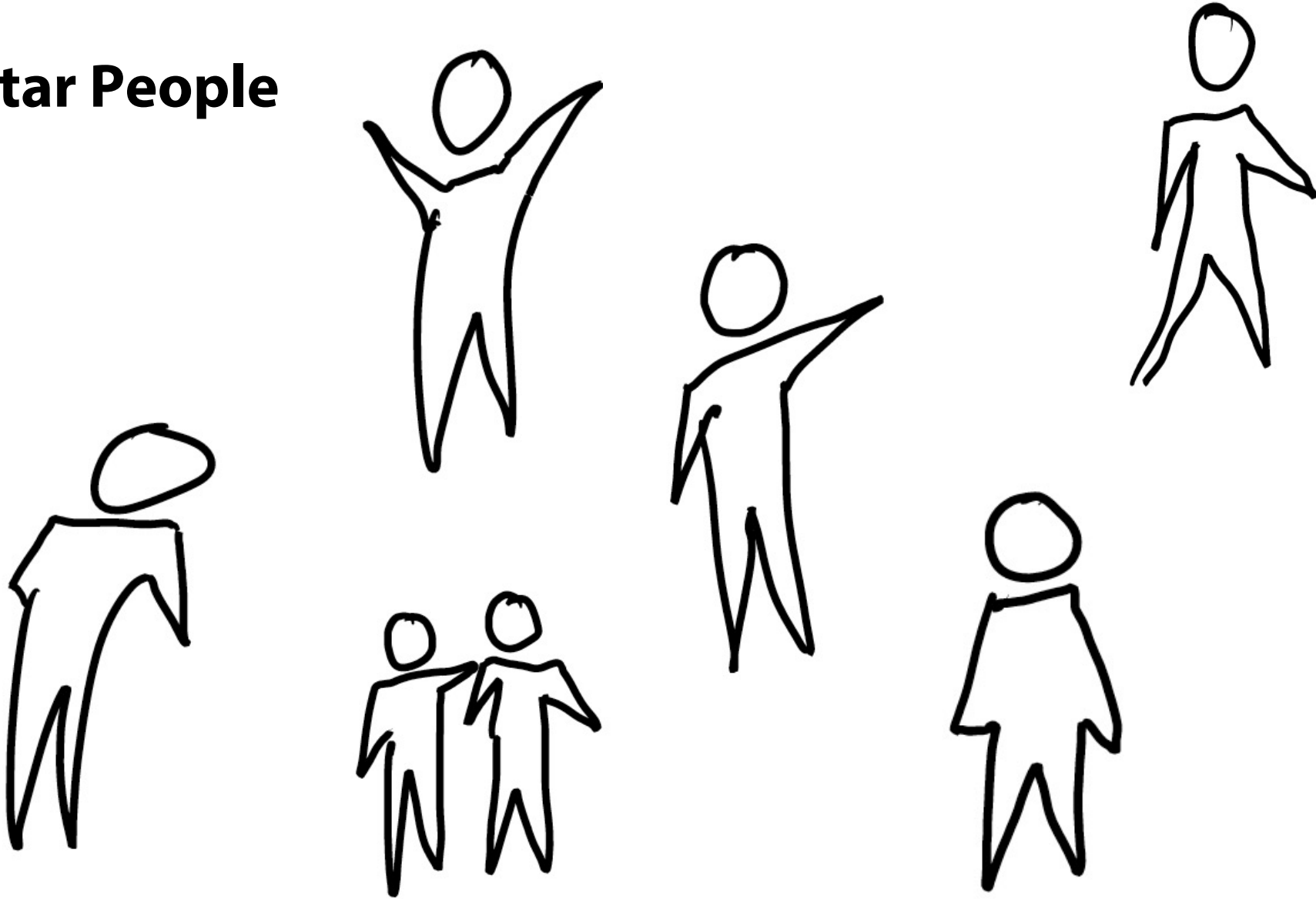




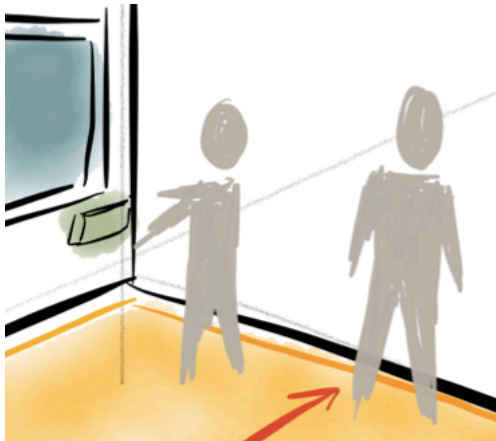
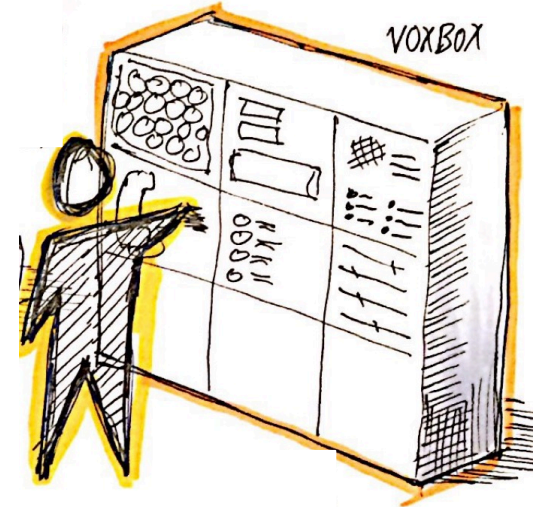
# Star People

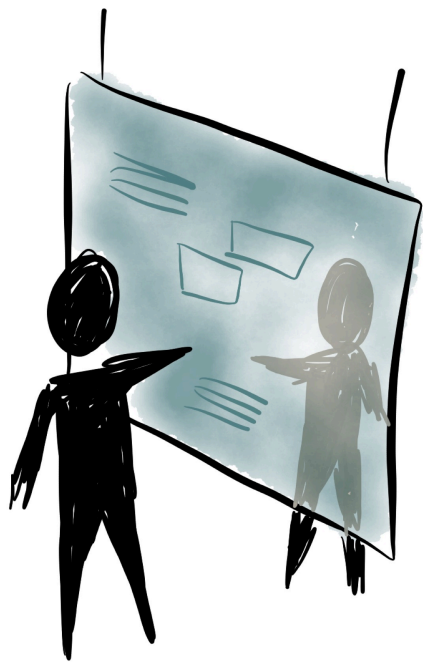
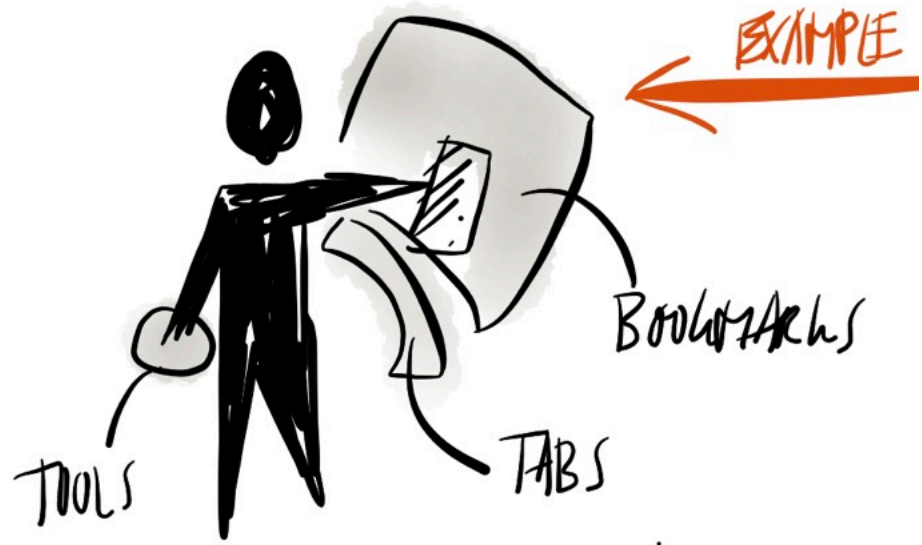
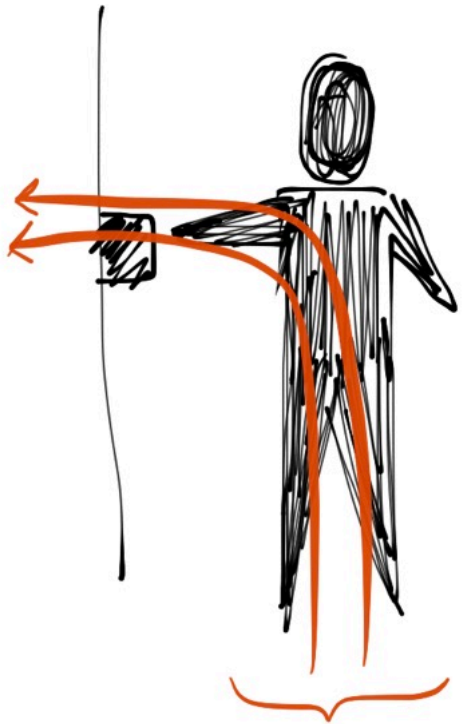


# Star People



# Star People





# Sketch 10 star people:

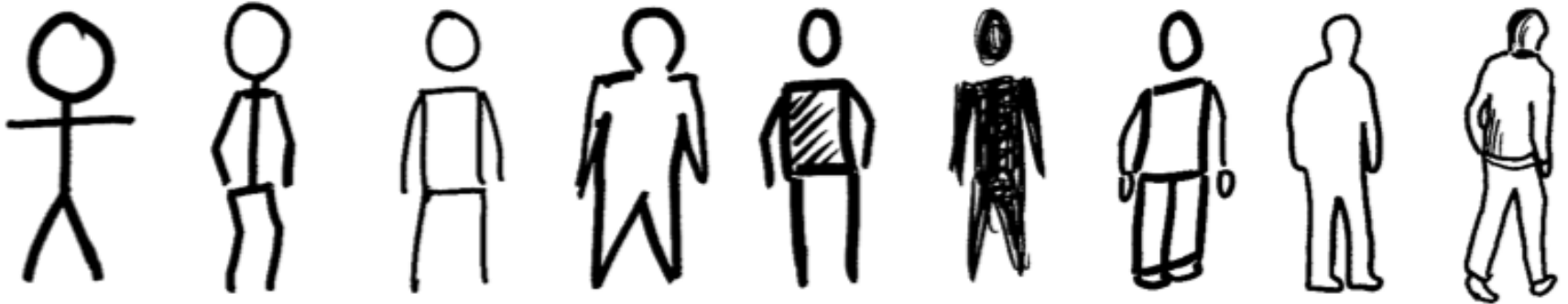


Different positions,  
actions, movements,  
size, ...



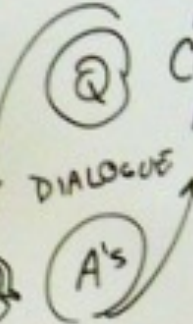
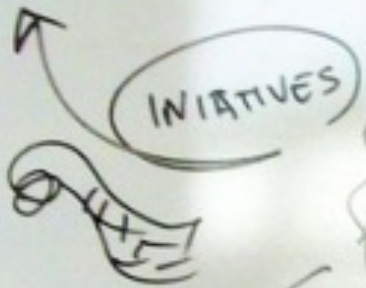




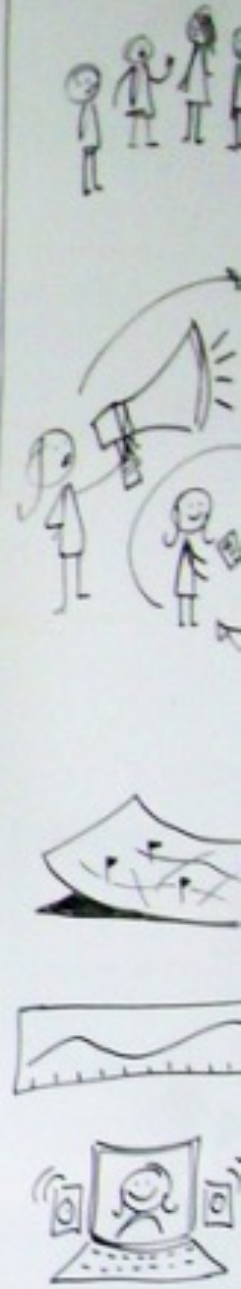




NEWS MEDIA

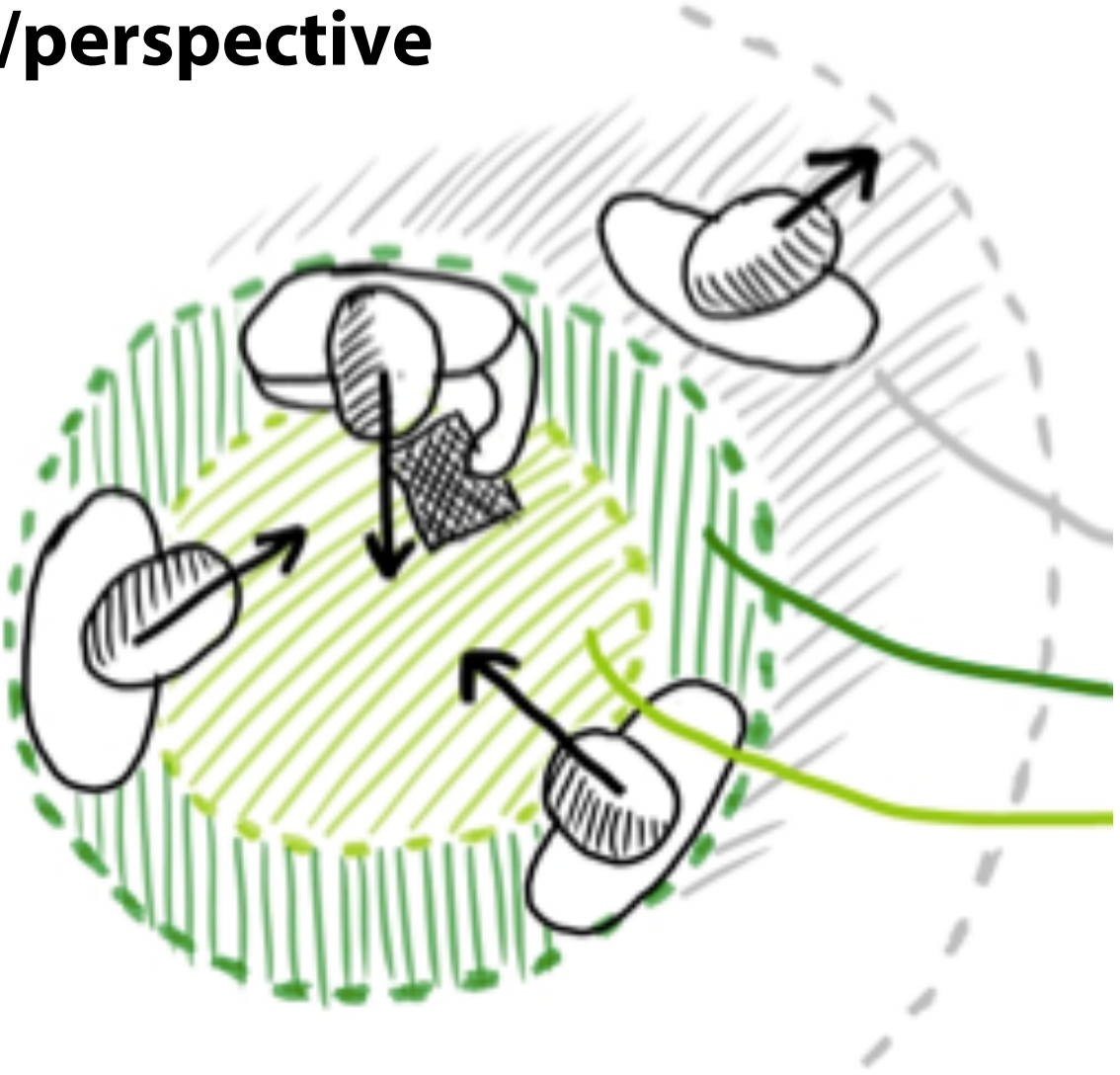


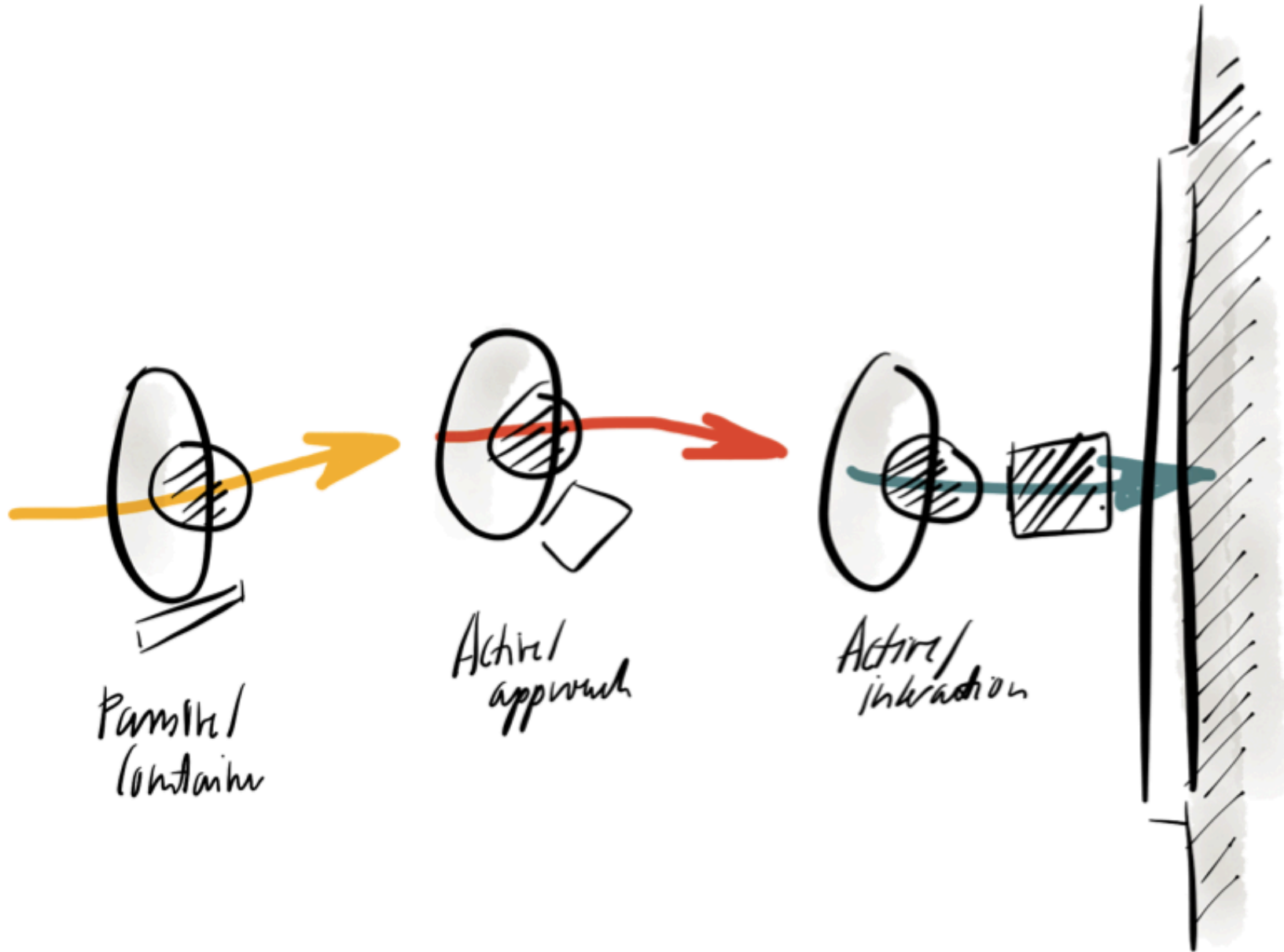
Full  
Pkt.





# Changing view/perspective

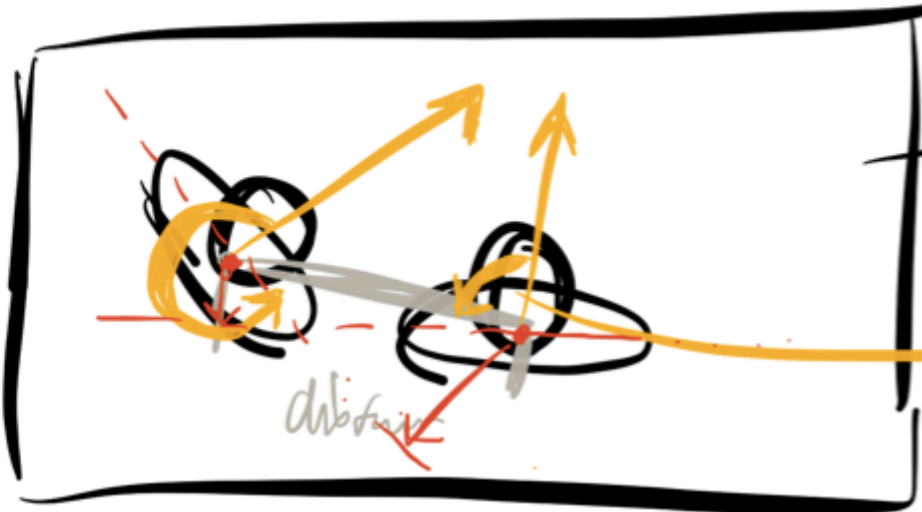






could be part of figure 2 (smaller!!)

detached formations



tolerance values

angles



# Sketching Faces and Emotions

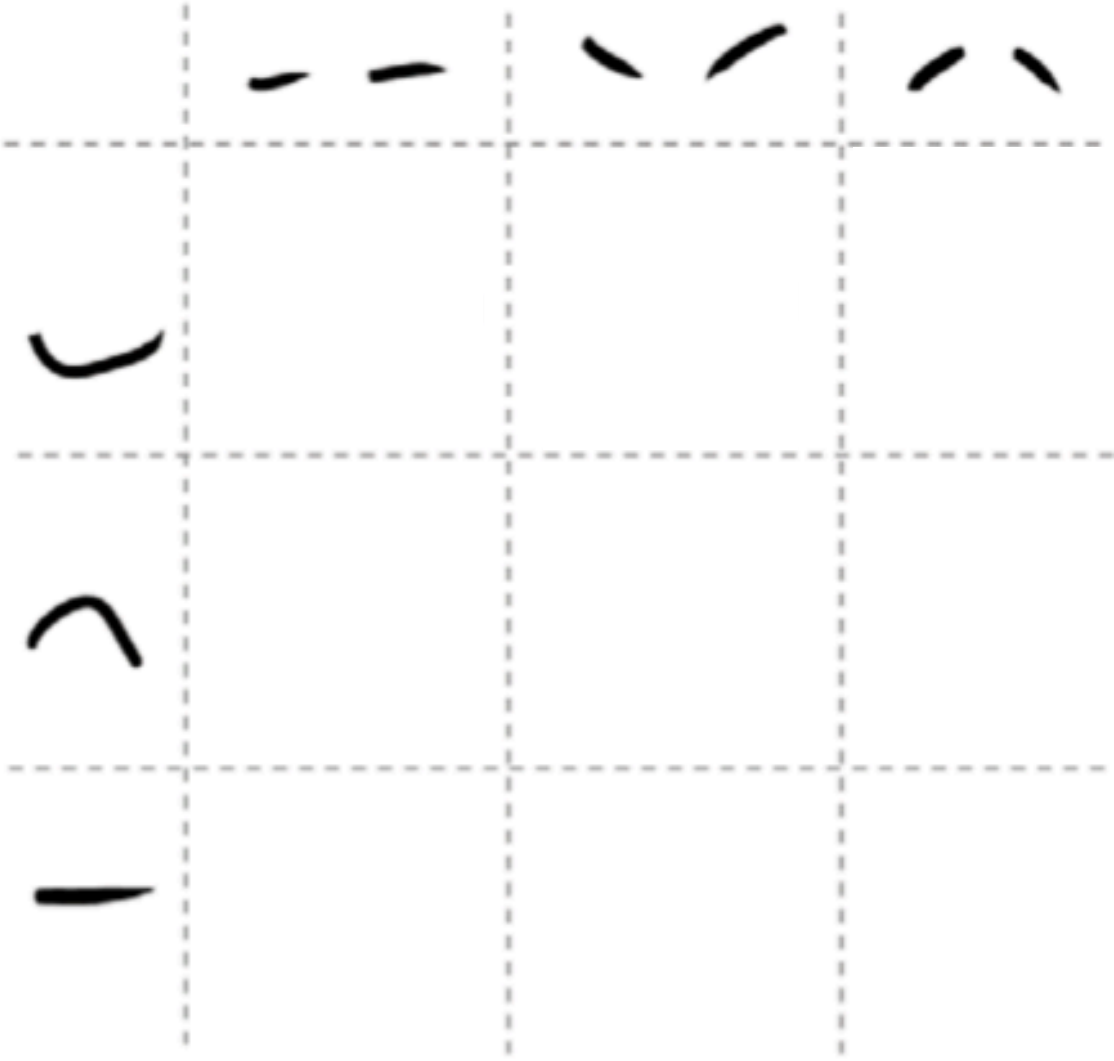






# Eyebrows

Mouth



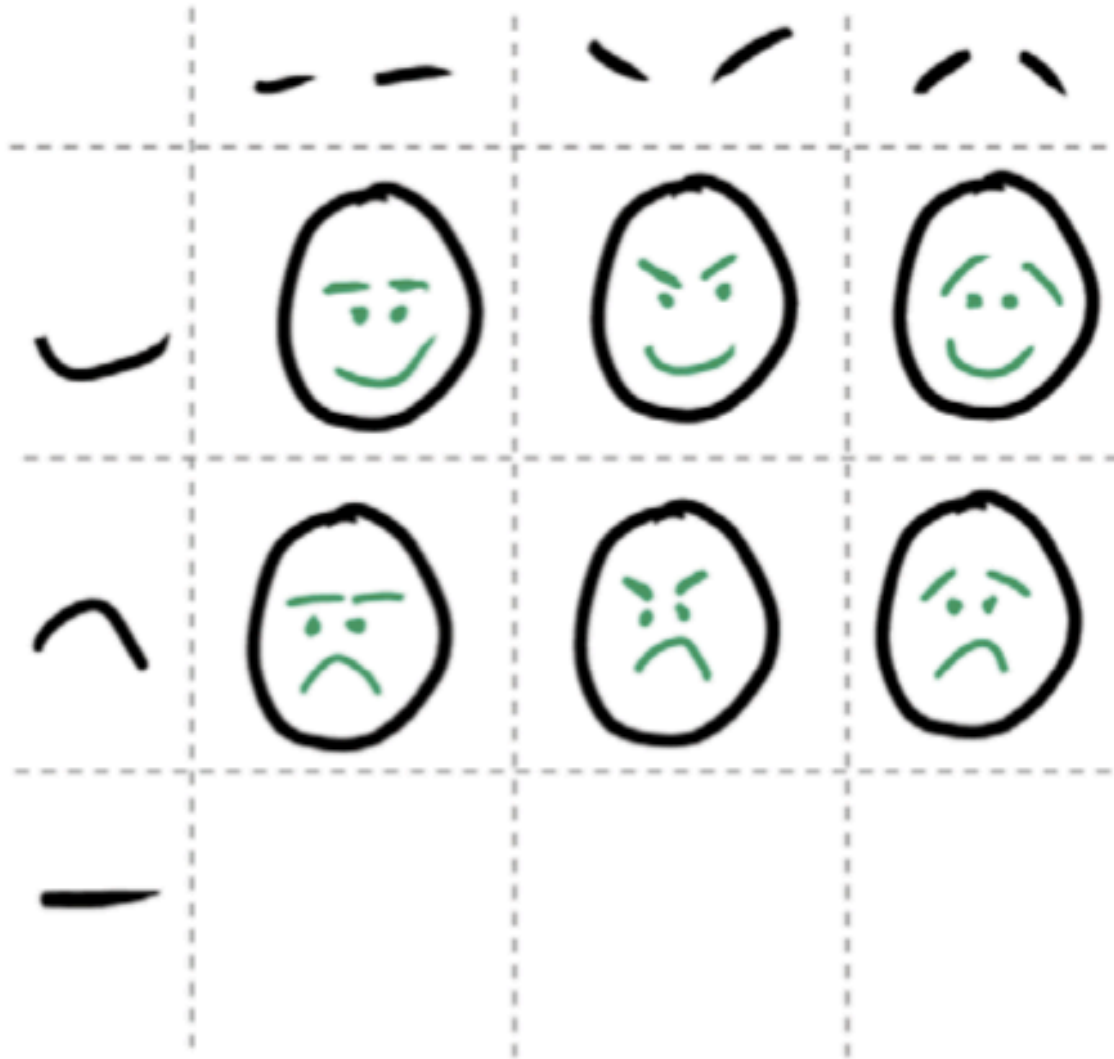
# Eyebrows

Mouth



# Eyebrows

Mouth

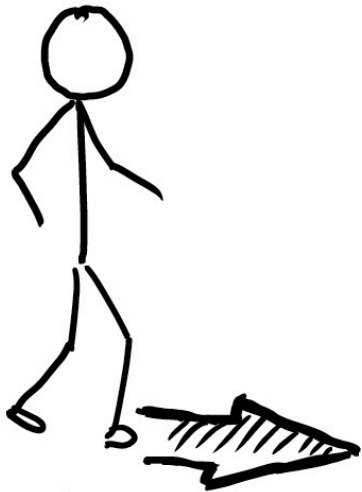


# Eyebrows

Mouth




# Sketching motion (1)



Arrows

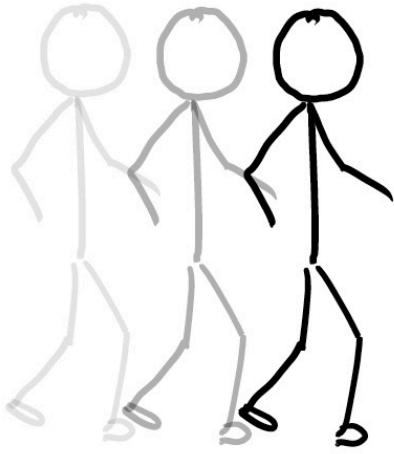
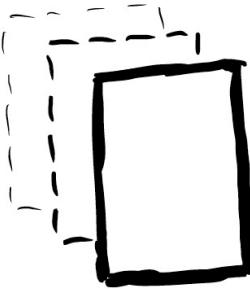
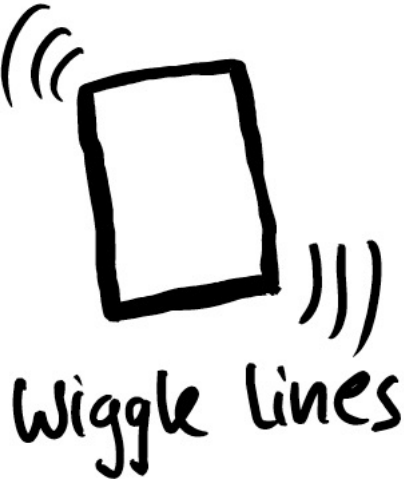


Motion path

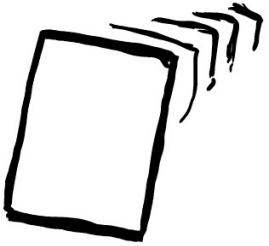


Motion lines

# Sketching motion (2)



Ghosting



***Hands-on Sketching:***  
*Drawing people, actions,*  
*emotions*

**Sketch 2 situations involving people** (use stick figures or star people, emotions, objects, actions).

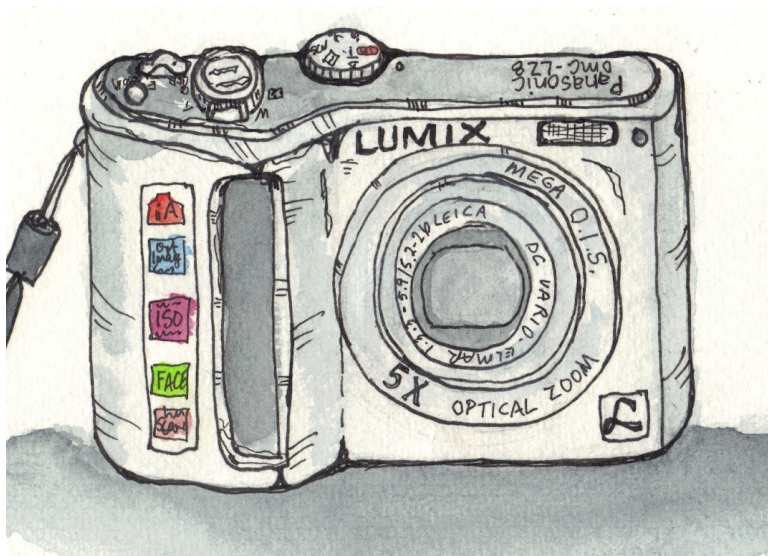
**Pair activity:** you tell your neighbor what situation to draw, then switch, then switch again, ...

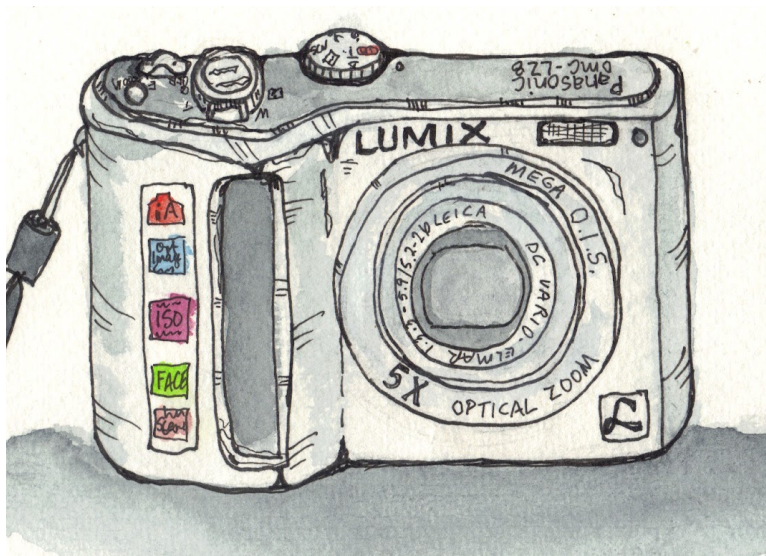


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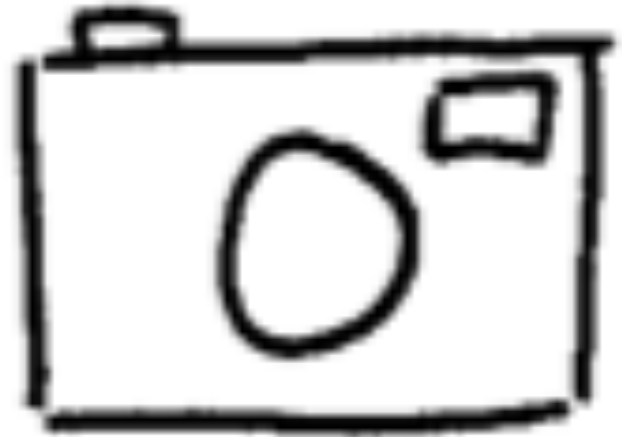
# Sketching Devices and Objects



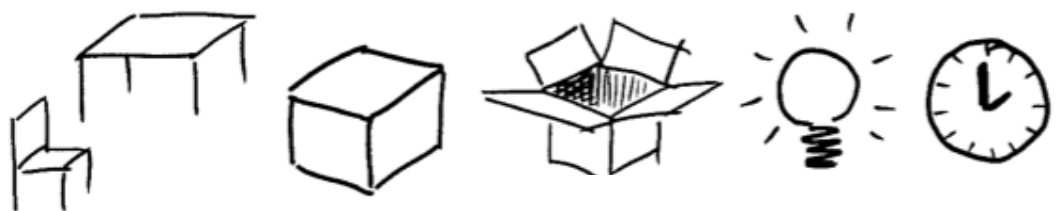


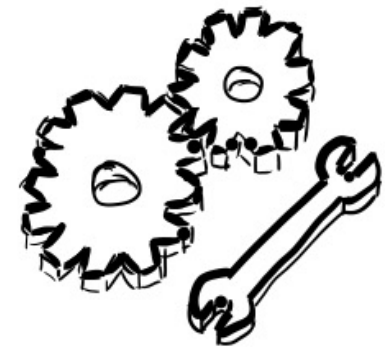
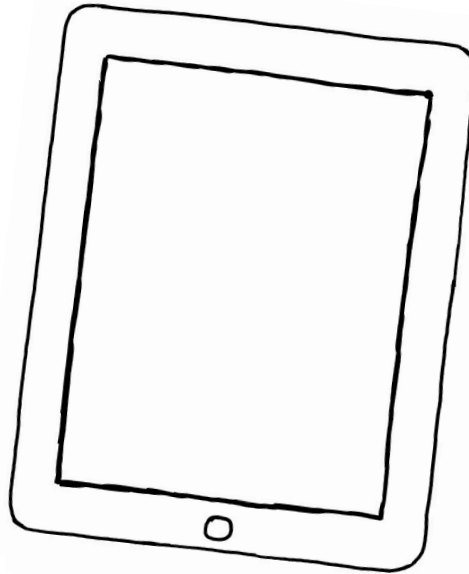


VS.

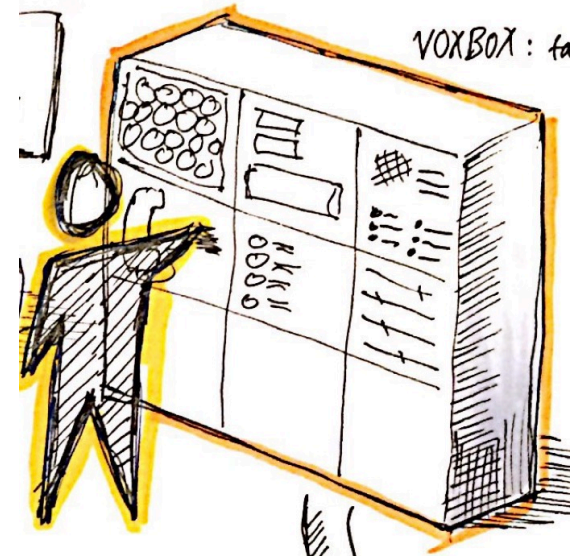


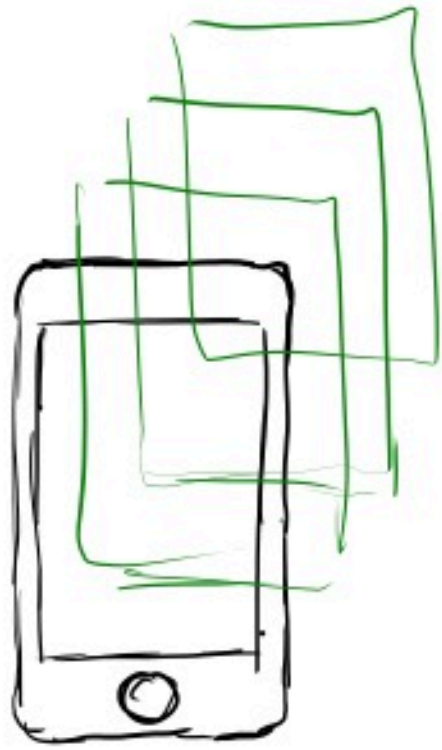
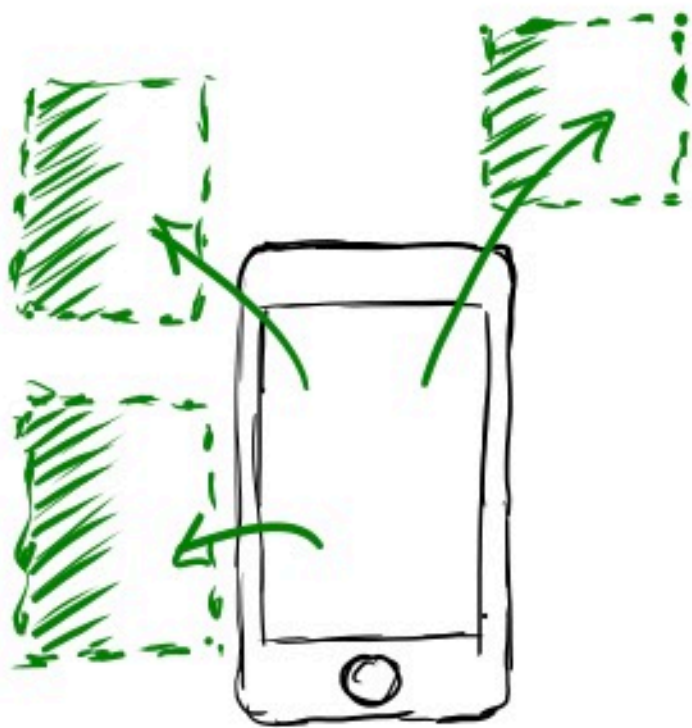






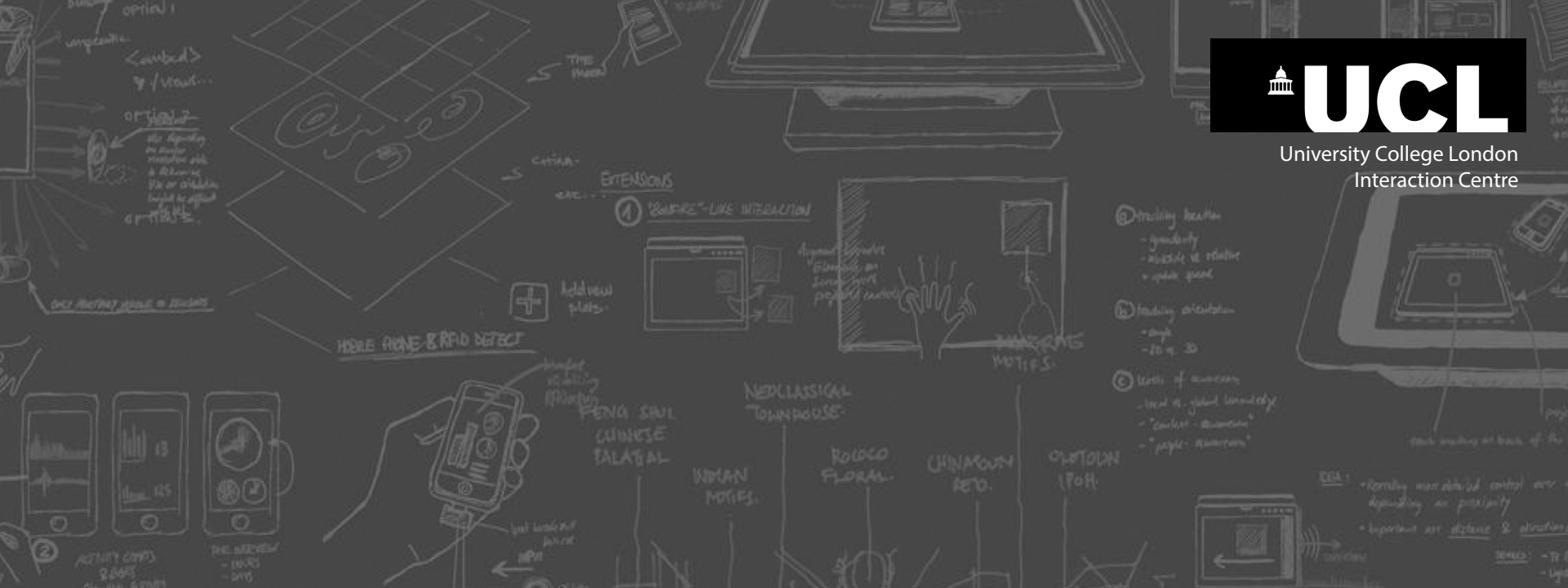






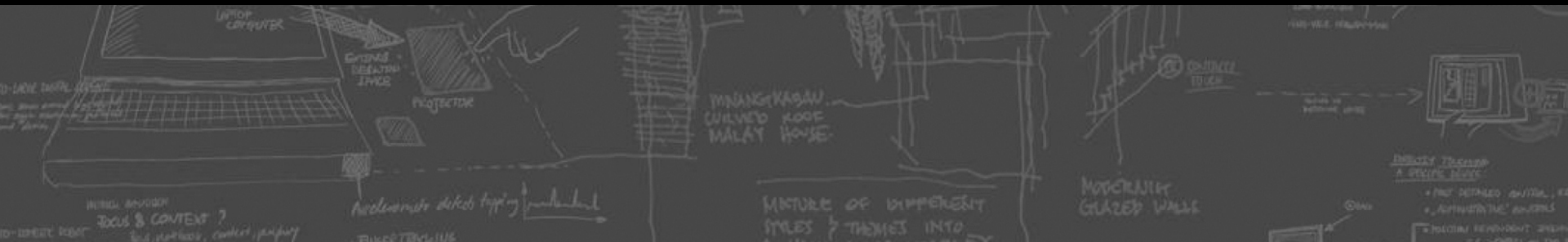


# ***Hands-on Sketching: Objects and Devices***



# PART III

# ADVANCED SKETCHING TECHNIQUES

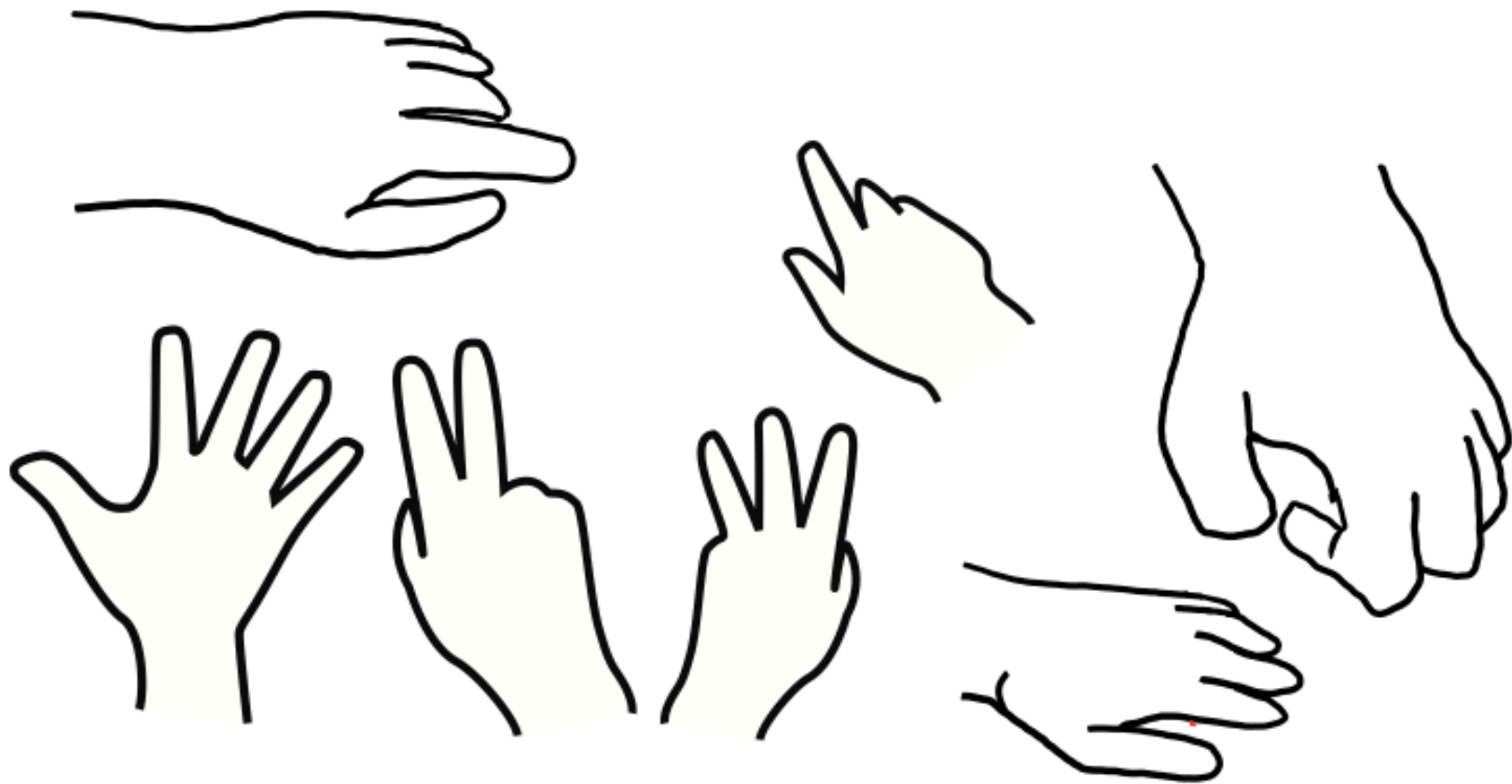




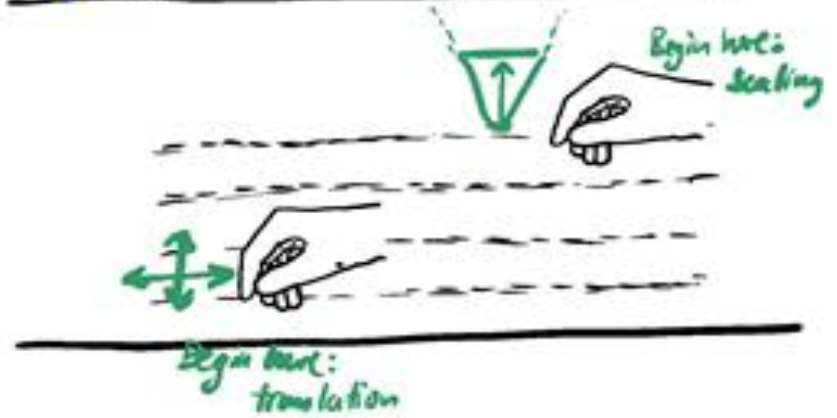
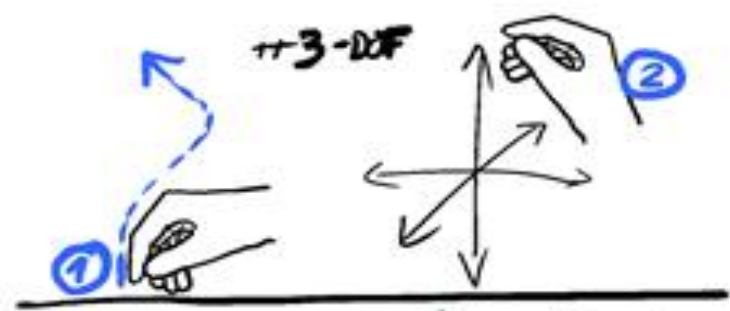


# Sketching Hands and Gestures



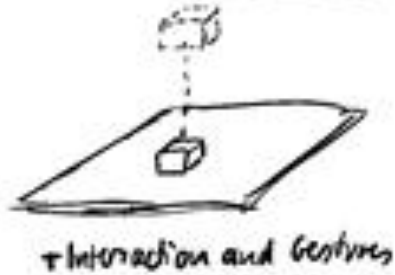


# CONTINUOUS INTERACTION SPACE

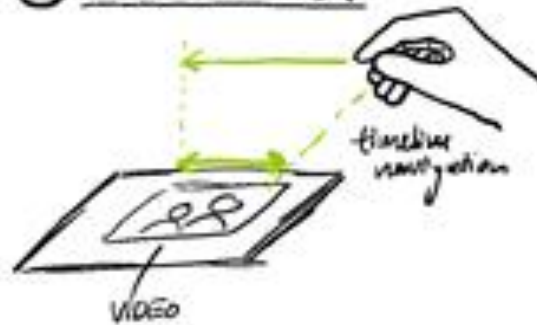


# SLICES ABOVE SURFACES

## ① 3D SIMULATION / INTERACTION



## ② INPUT PARAMETER



## ③ AWARENESS / FEEDBACK



## ④ 2.5D INPUT

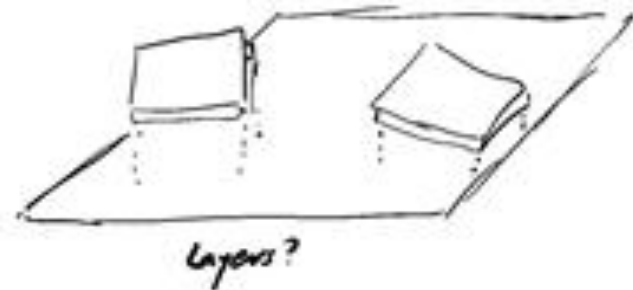


## ⑤ COMPLEX GESTURES

eg: handover? hand roll/yaw/pitch?



## ⑥ TOOL SPACE

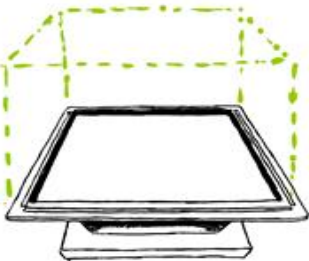
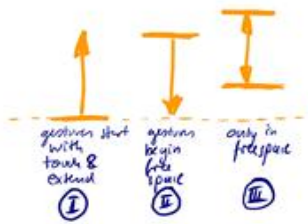




SPACE ABOVE SURFACES / THEMES

① UNIFYING TOUCHGESTURES WITH GESTURES ABOVE

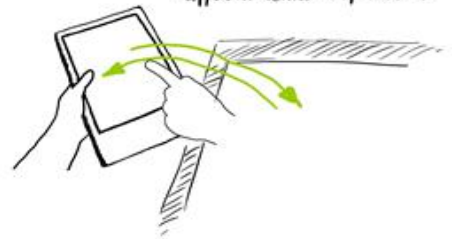
(most closely related to previous work)



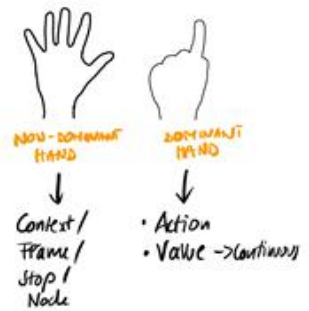
- QUESTIONS:
- Type of gestures:
    - ① mirrored (?)
    - ② extended continuous
    - ③ proximal
  - > needs revision in paper
  - > look up Grossman's paper of Taxonomy
  - Touch vs. space above
  - personal preferences
  - interaction regions

② GESTURES WITH 'TABLET' (Tablet as surface)

- which type of gestures?
- differences between surface and?

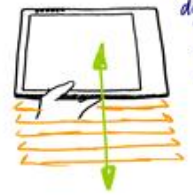


③ TWO HANDED INTERACTION



④ LAYERS

- Interaction with digital content layers
- Selection of layers
  - Activation
  - ① view
  - ② manipulate
  - ③ insert
  - ④ revealing layers of data (-> learn)



⑤ COLLABORATION

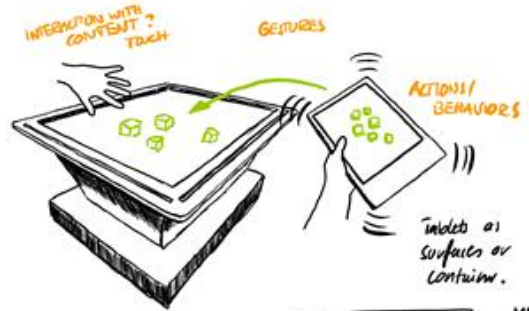


⑥ ORIENTATION

SPACE ABOVE SURFACES / THEMES

② 2.5D INTERACTION / PHYSICAL SIMULATION

- CONCEPT:
- Simulating natural behaviour of virtual objects on digital surfaces
  - Providing natural "free space" interaction with digital content



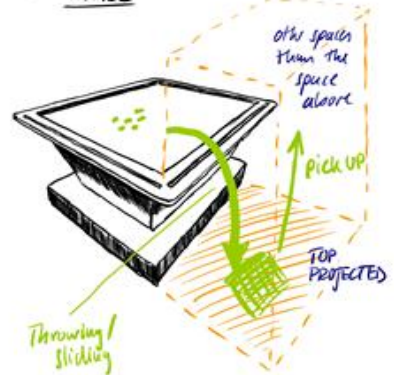
- Moving (tapping (cloning) digital content
- Types of content?
- Gestures to interact? swipe, drag, flick
- Behaviour of devices?

PHYSICS BEHAVIOR



EXTENSIONS:

② EXTENDED SURROUNDING SPACE



- Forms of interaction?
- Behaviour of data / content

③ PHYSICAL ARTEFACTS

- Trainers
- Boxes / Containers -> other objects?



- How to integrate?
- How to provide adequate feedback?
- Other tangible objects? Controls?

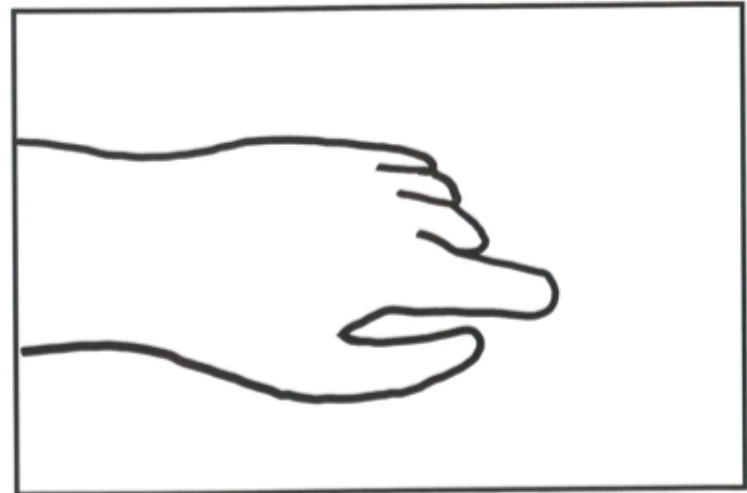
**But: “I really, really can’t draw hands...”**



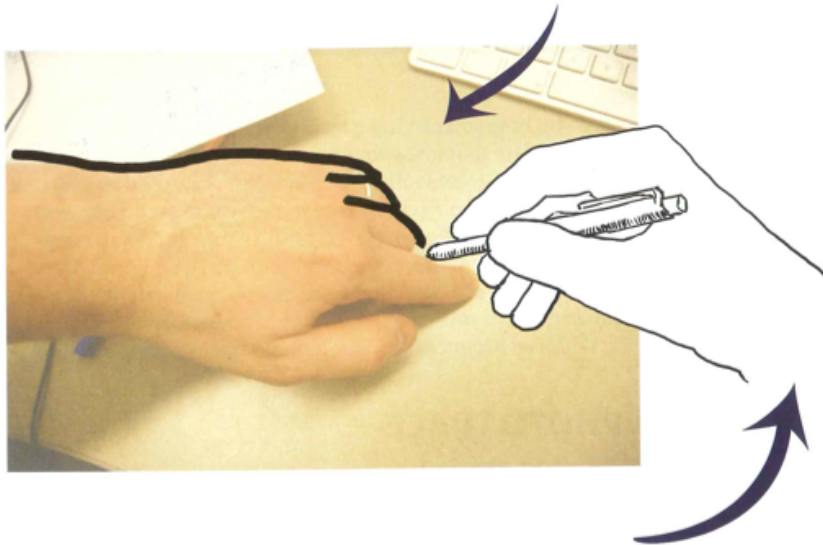
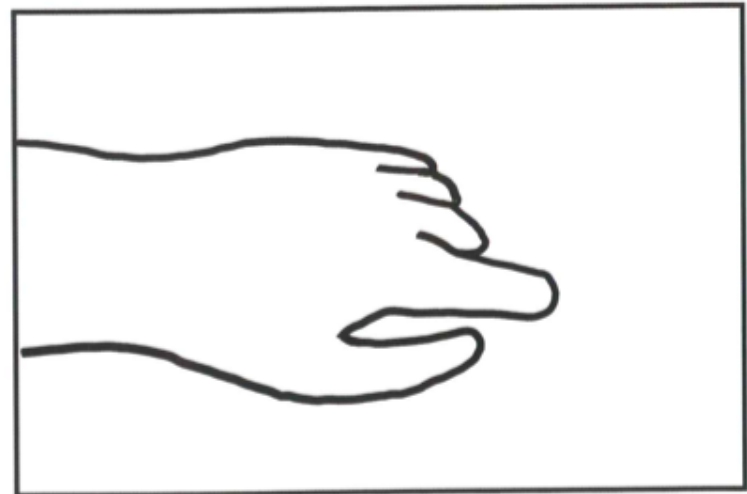
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# Sketching Technique: Photo Tracing

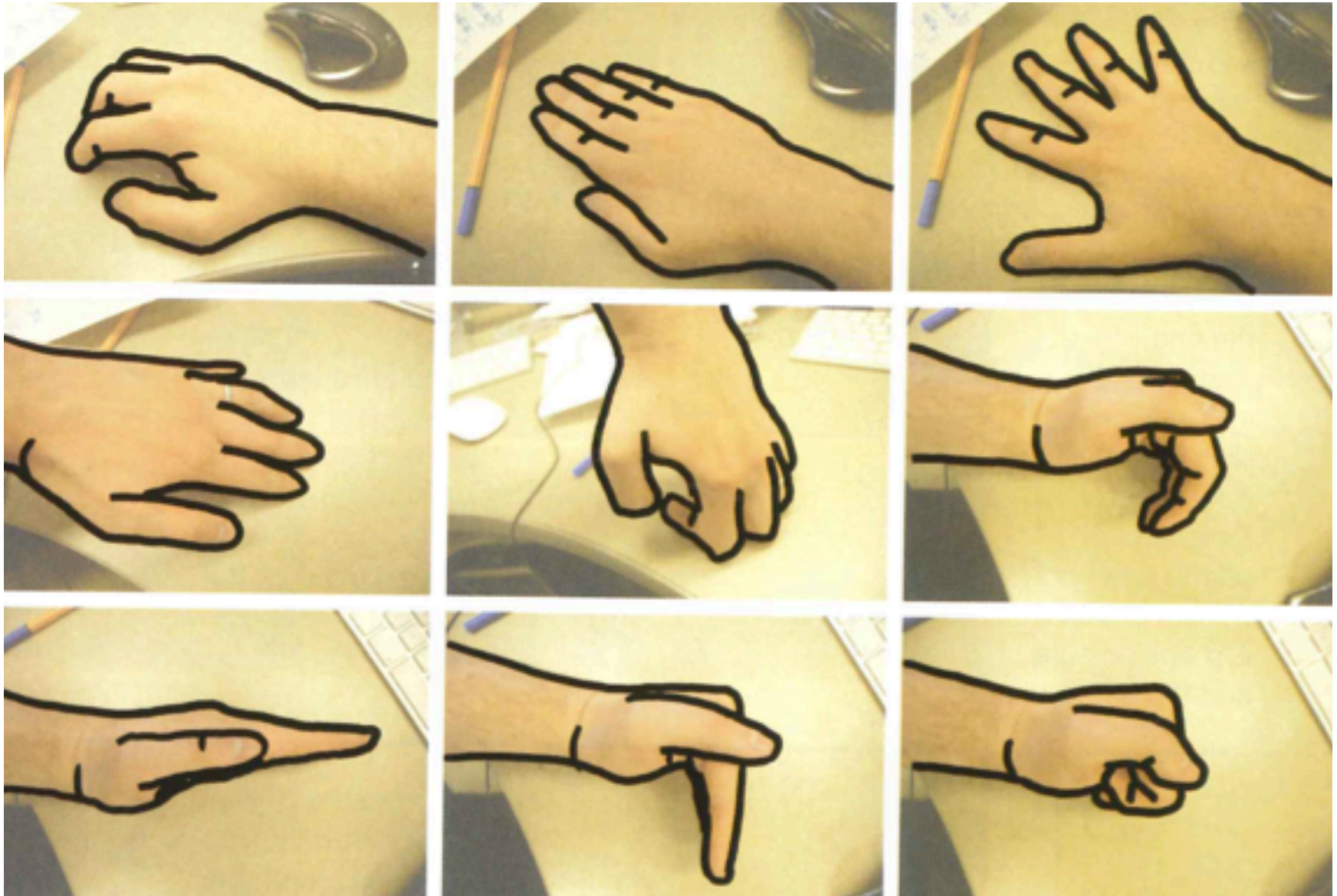
# Sketching Technique: Photo Tracing

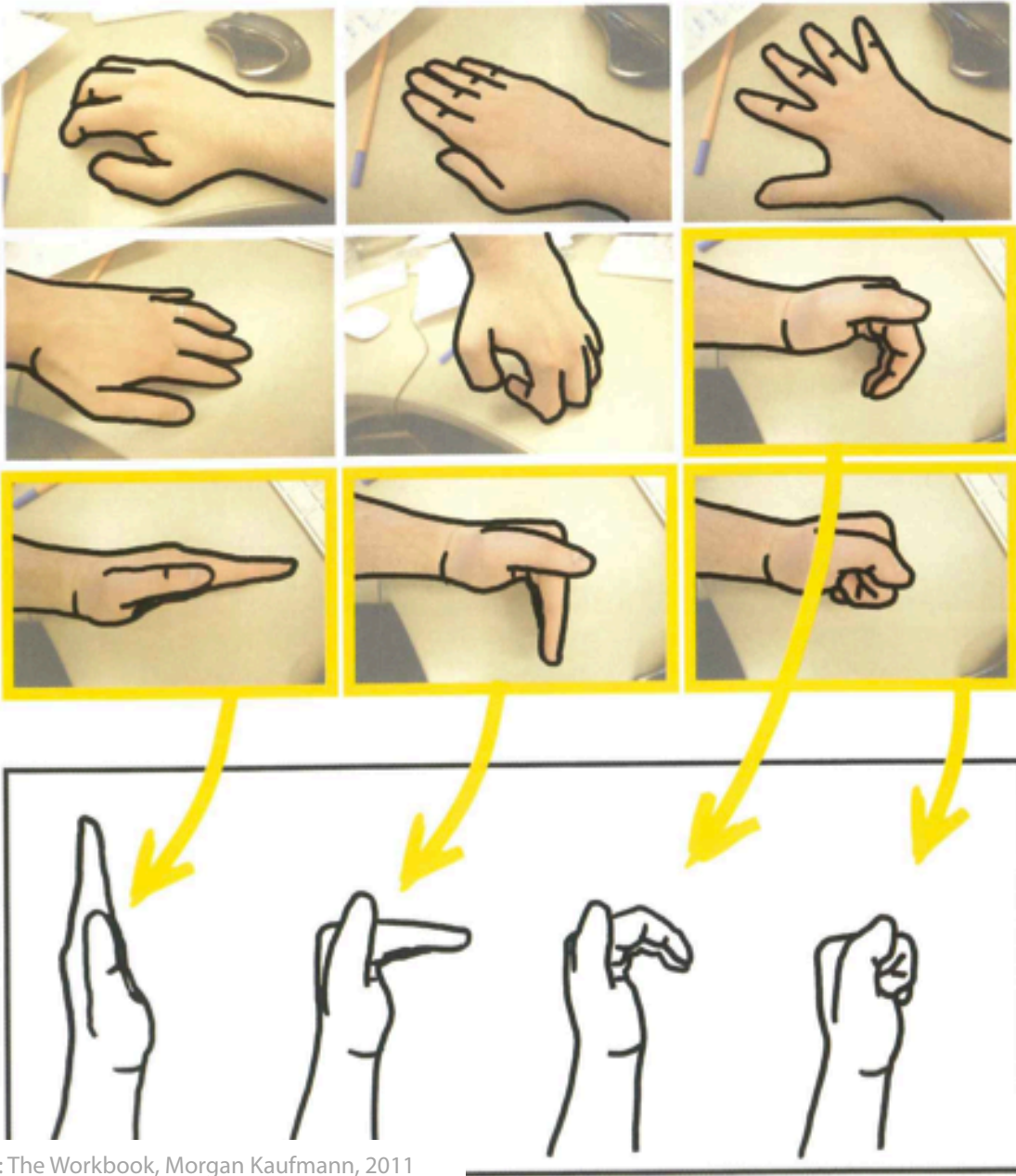


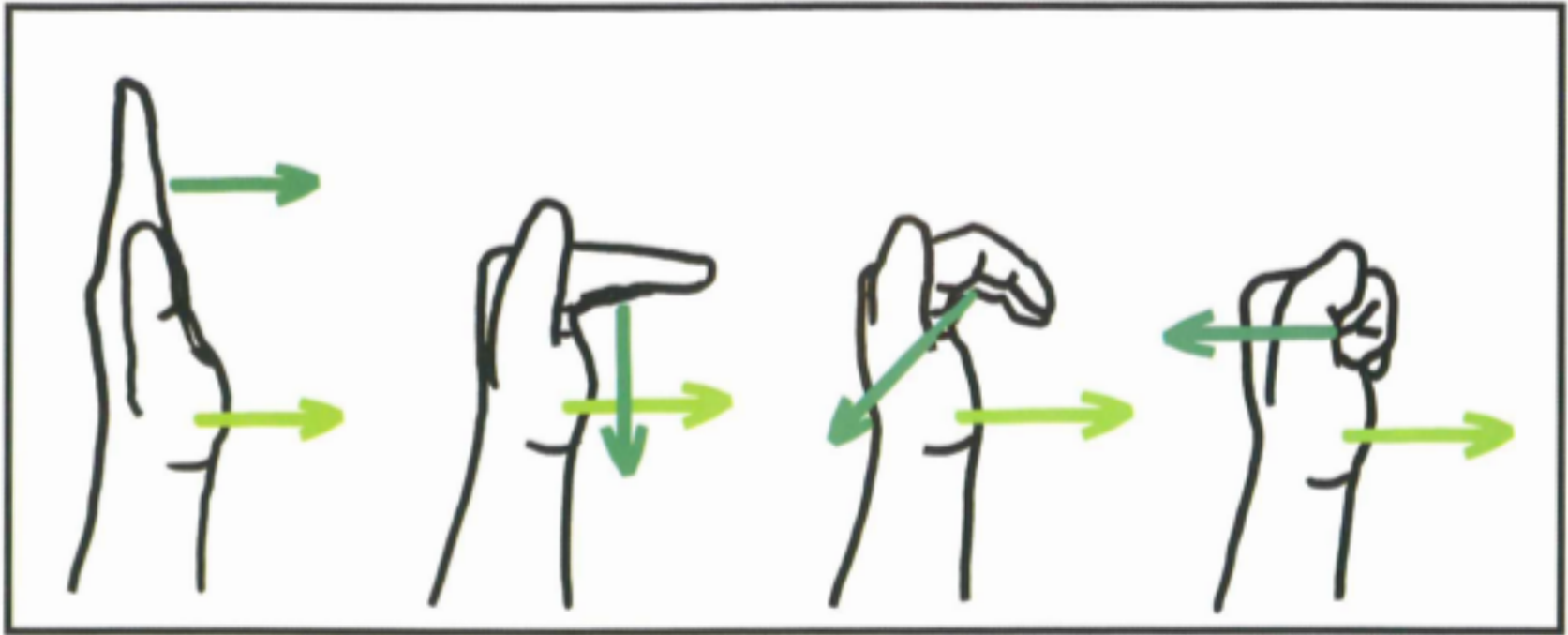
# Sketching Technique: Photo Tracing









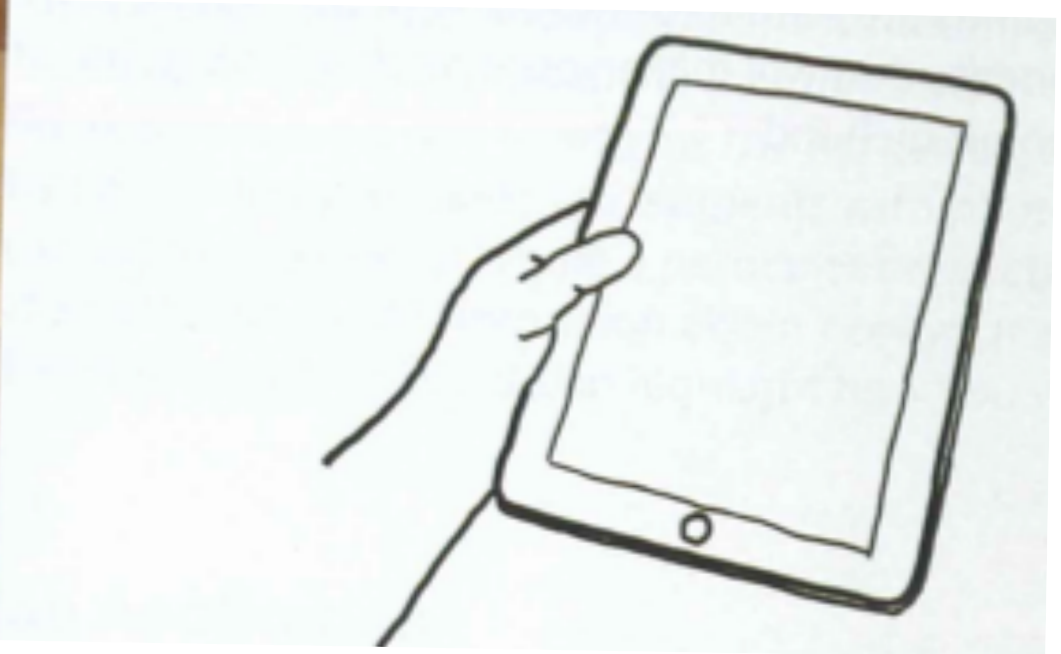


# Sketching Technique: Templates



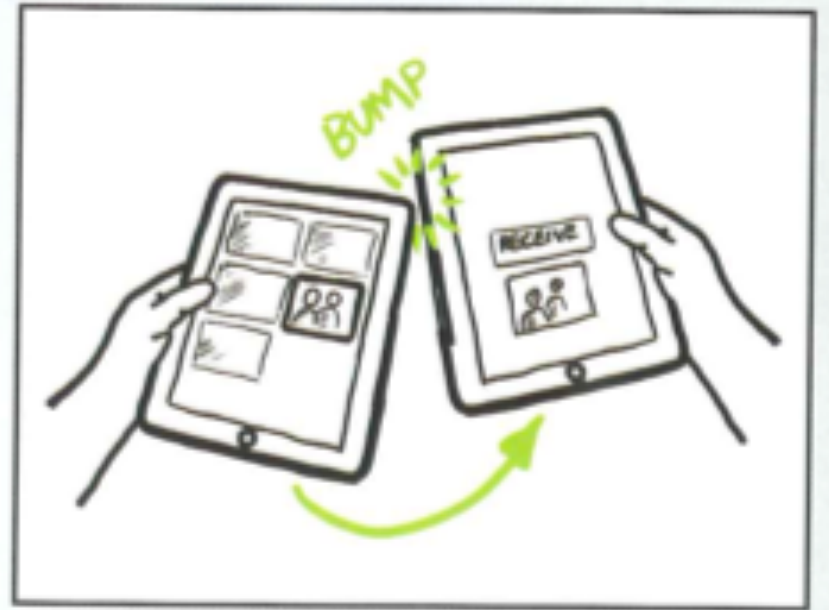
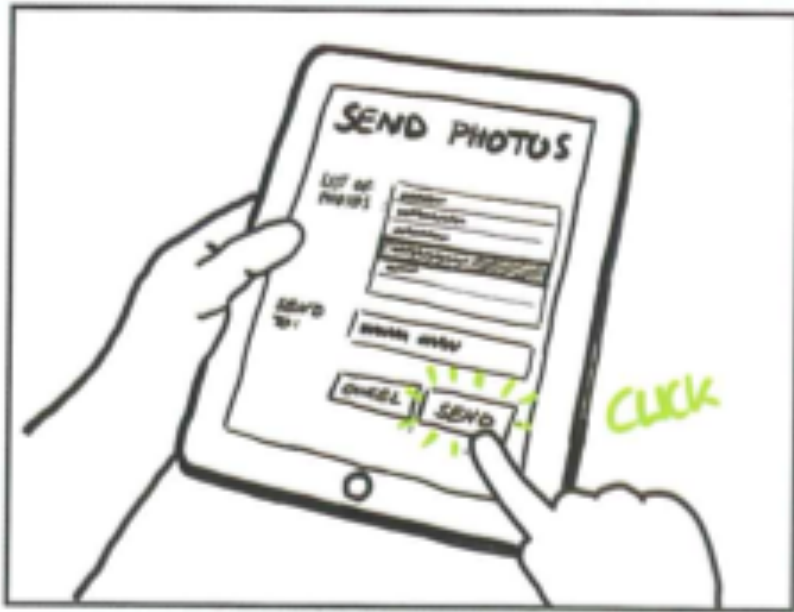


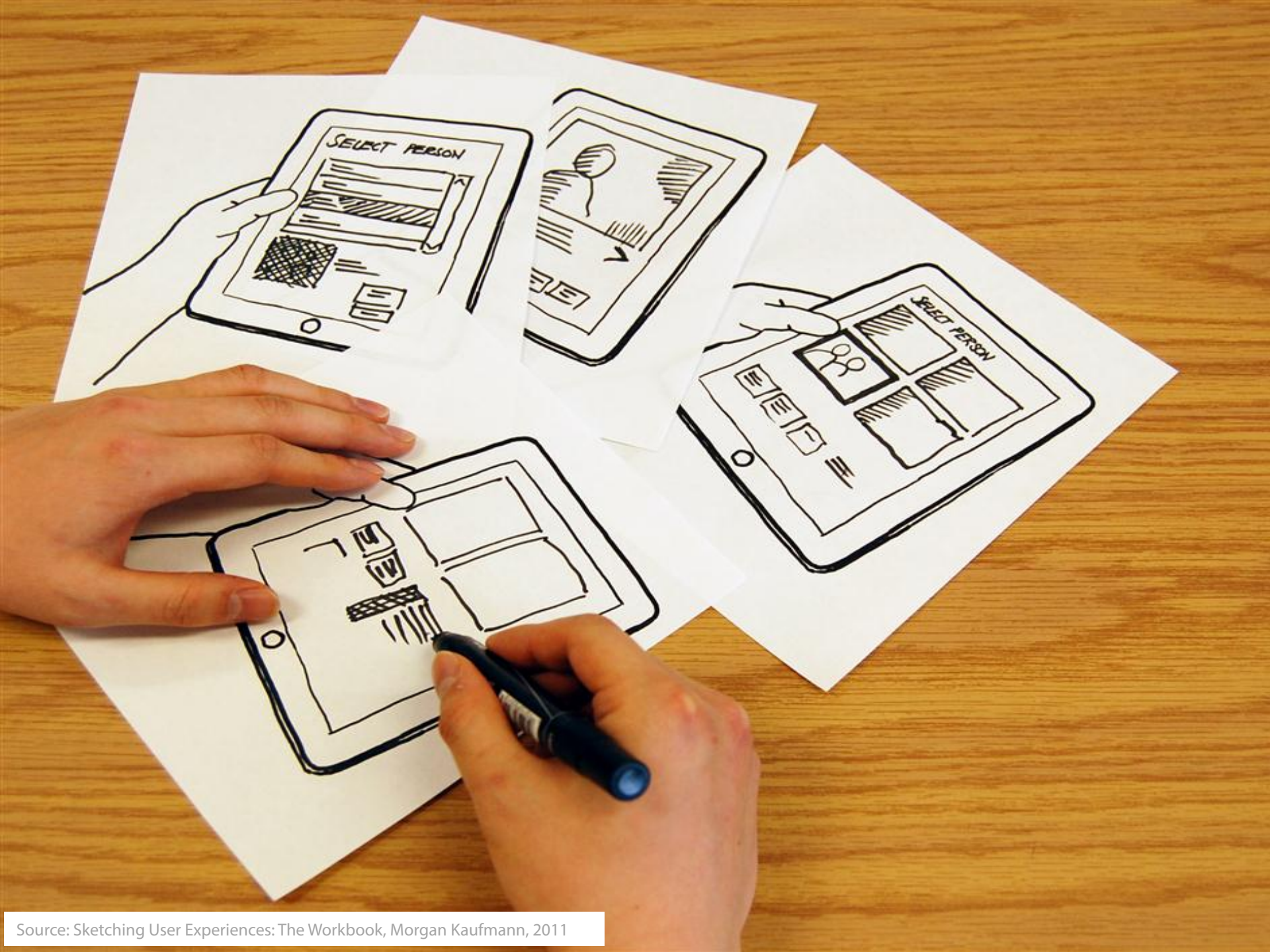
# Sketching Technique: Templates

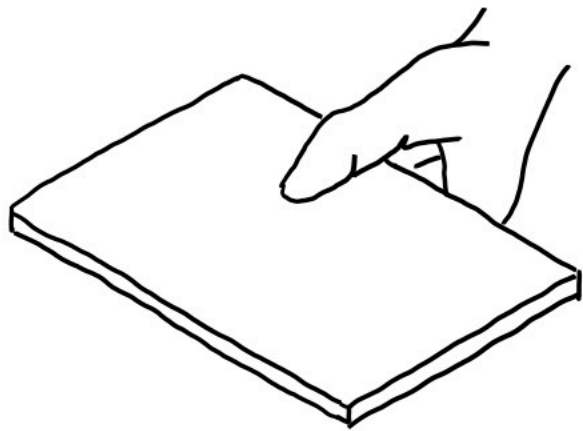


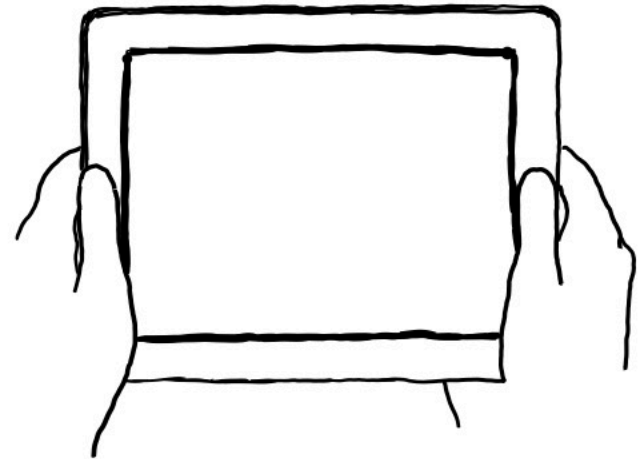
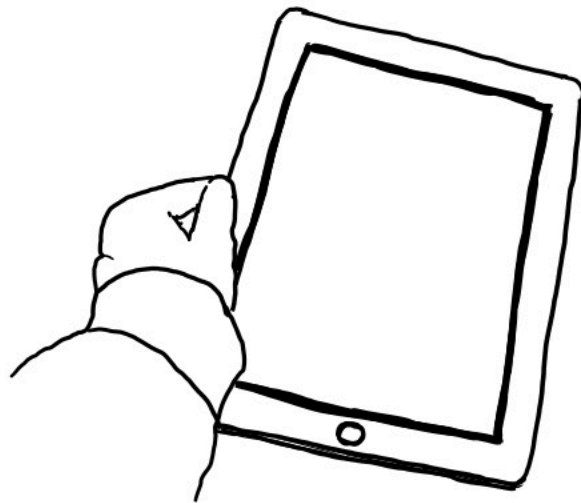
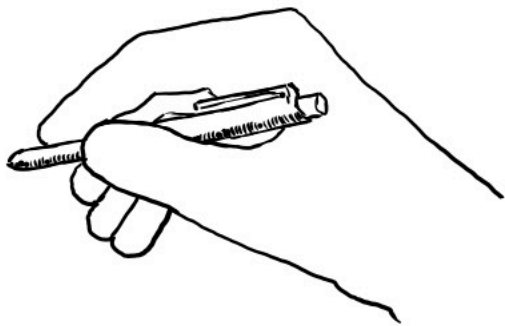
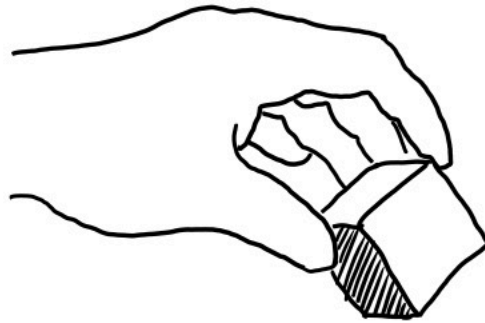
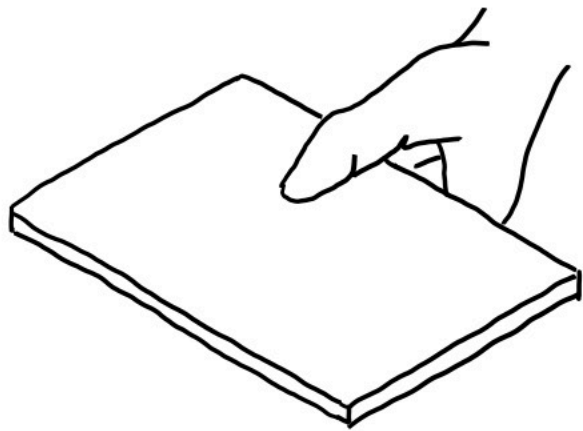


# Sketching Technique: Templates

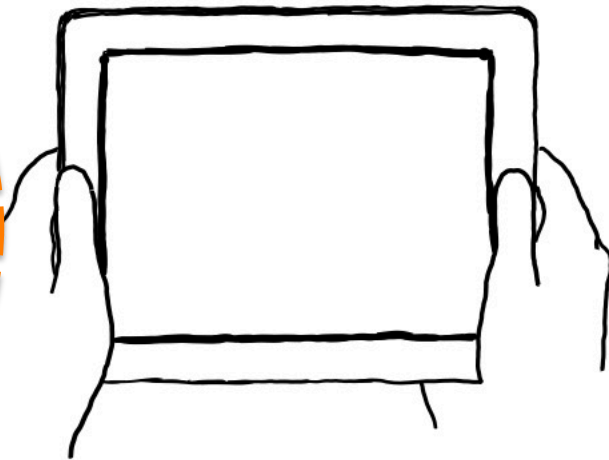
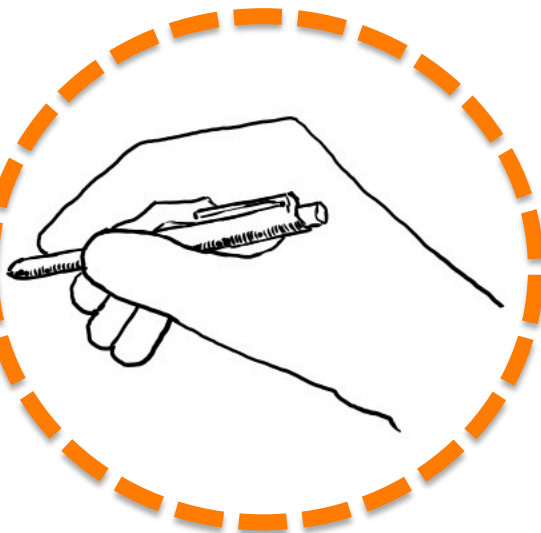
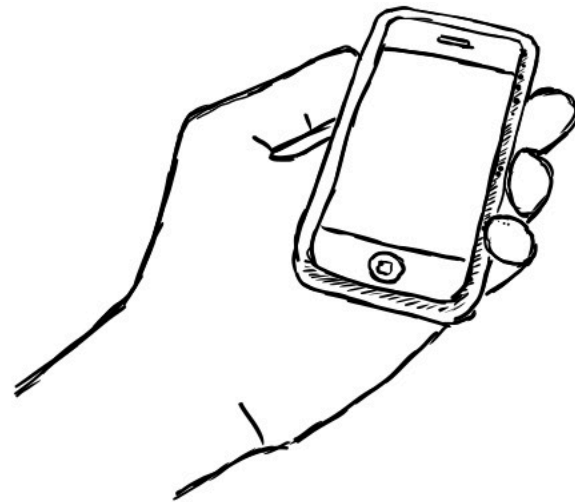
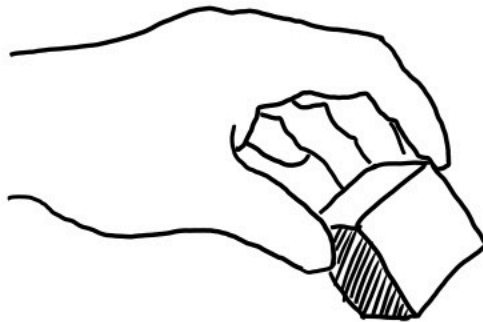
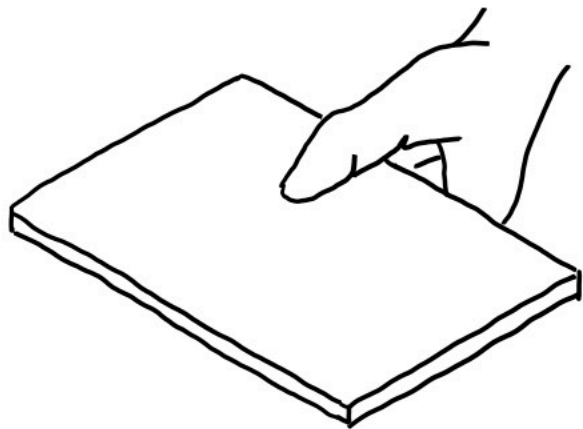




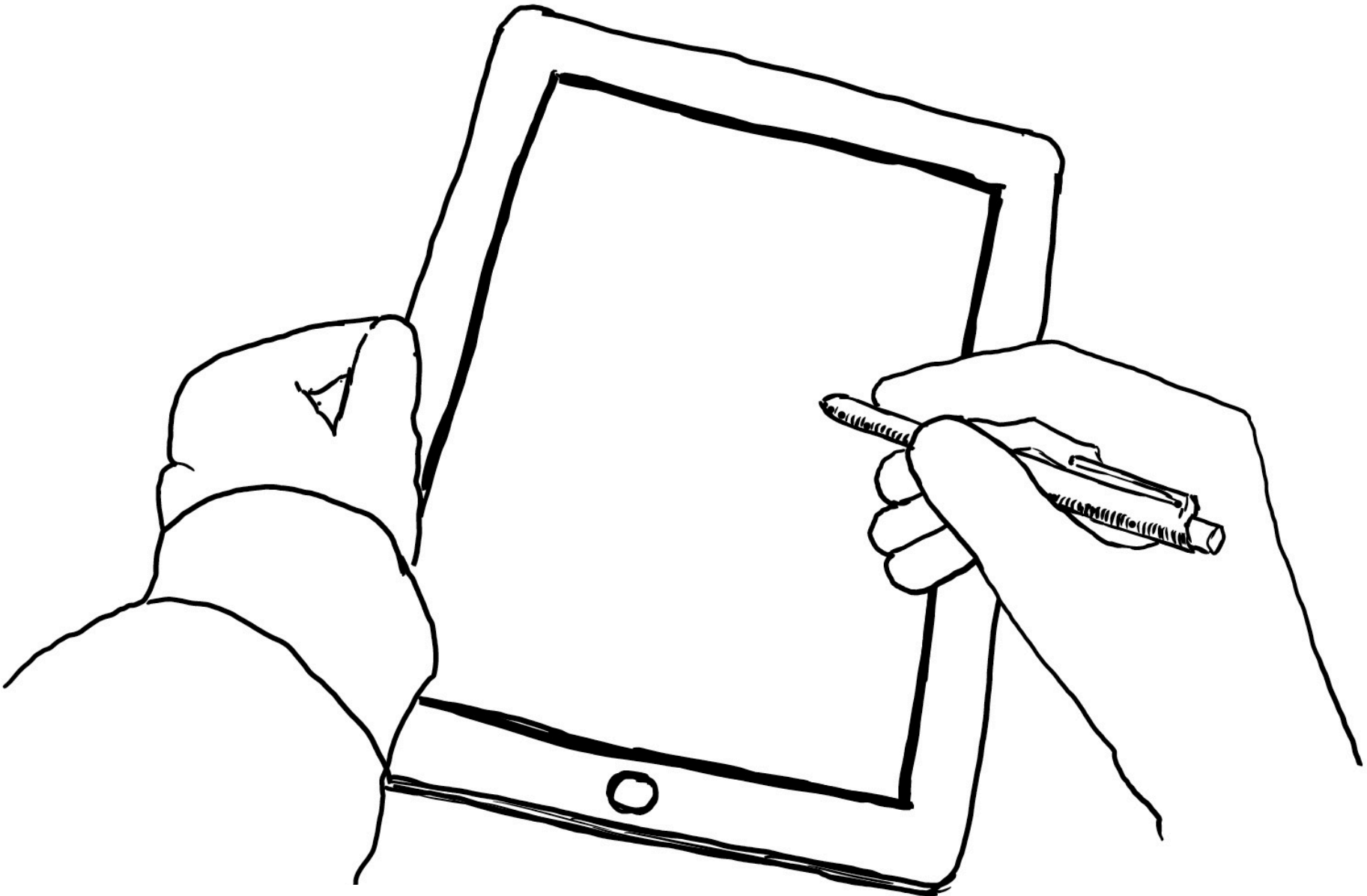




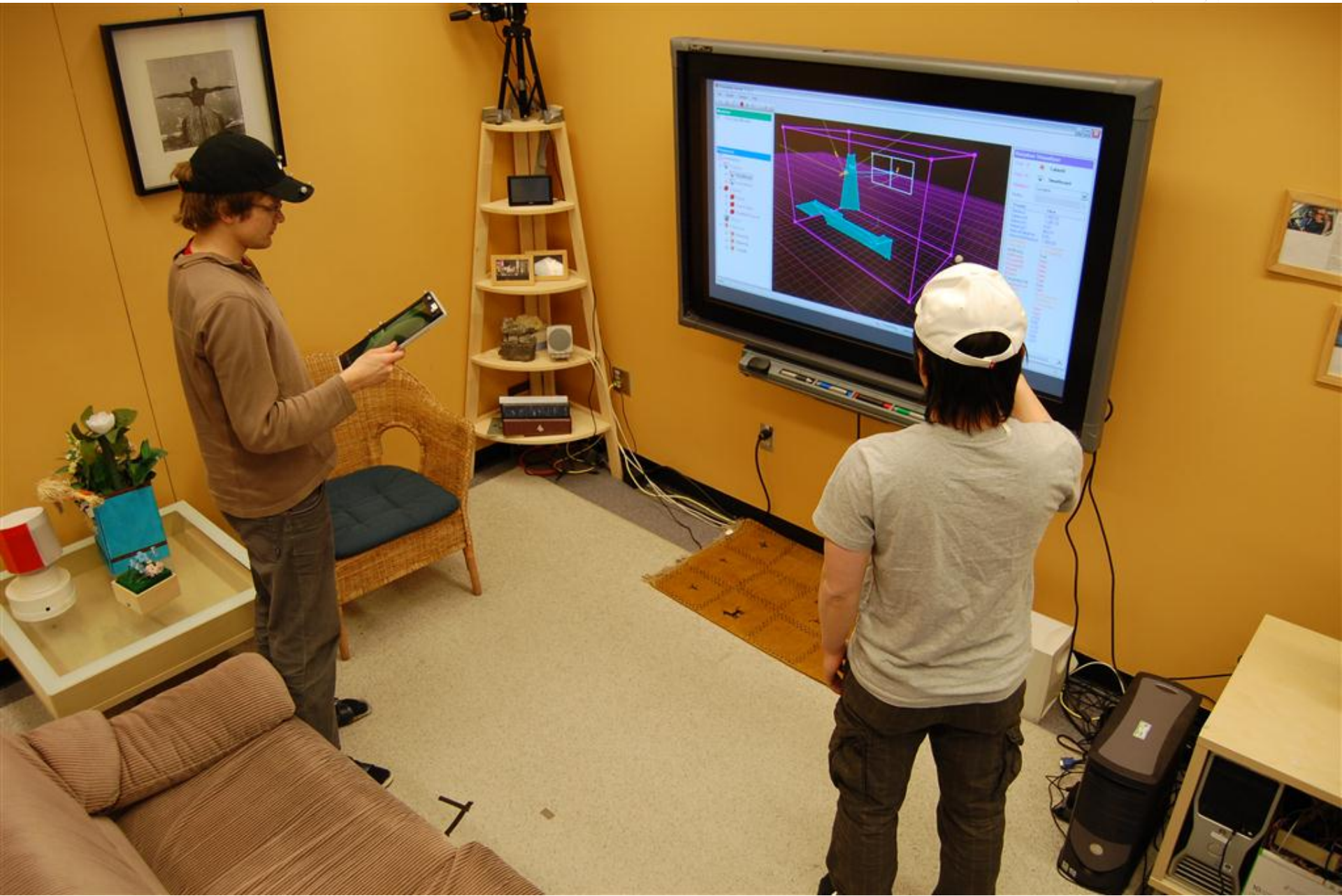


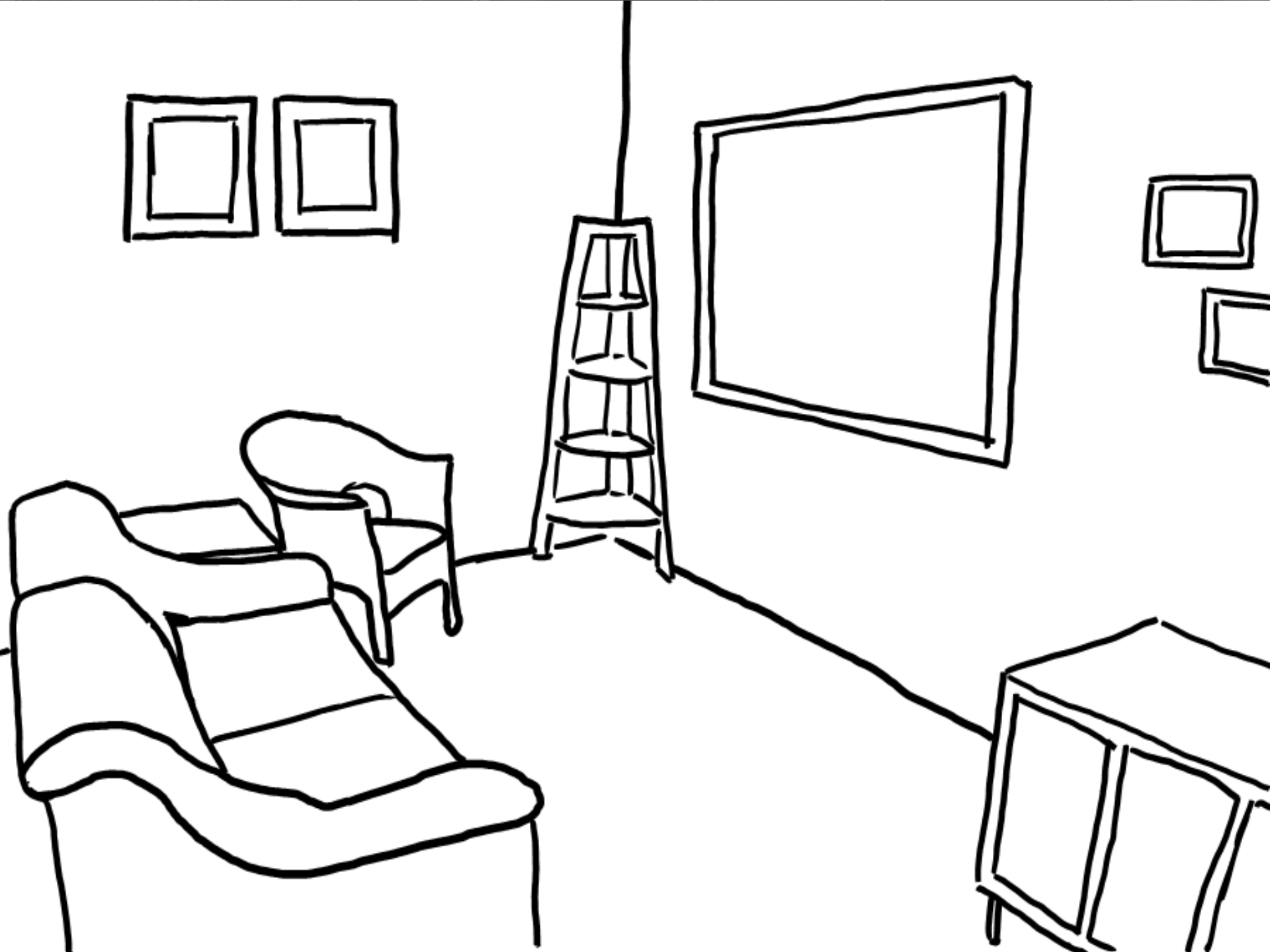


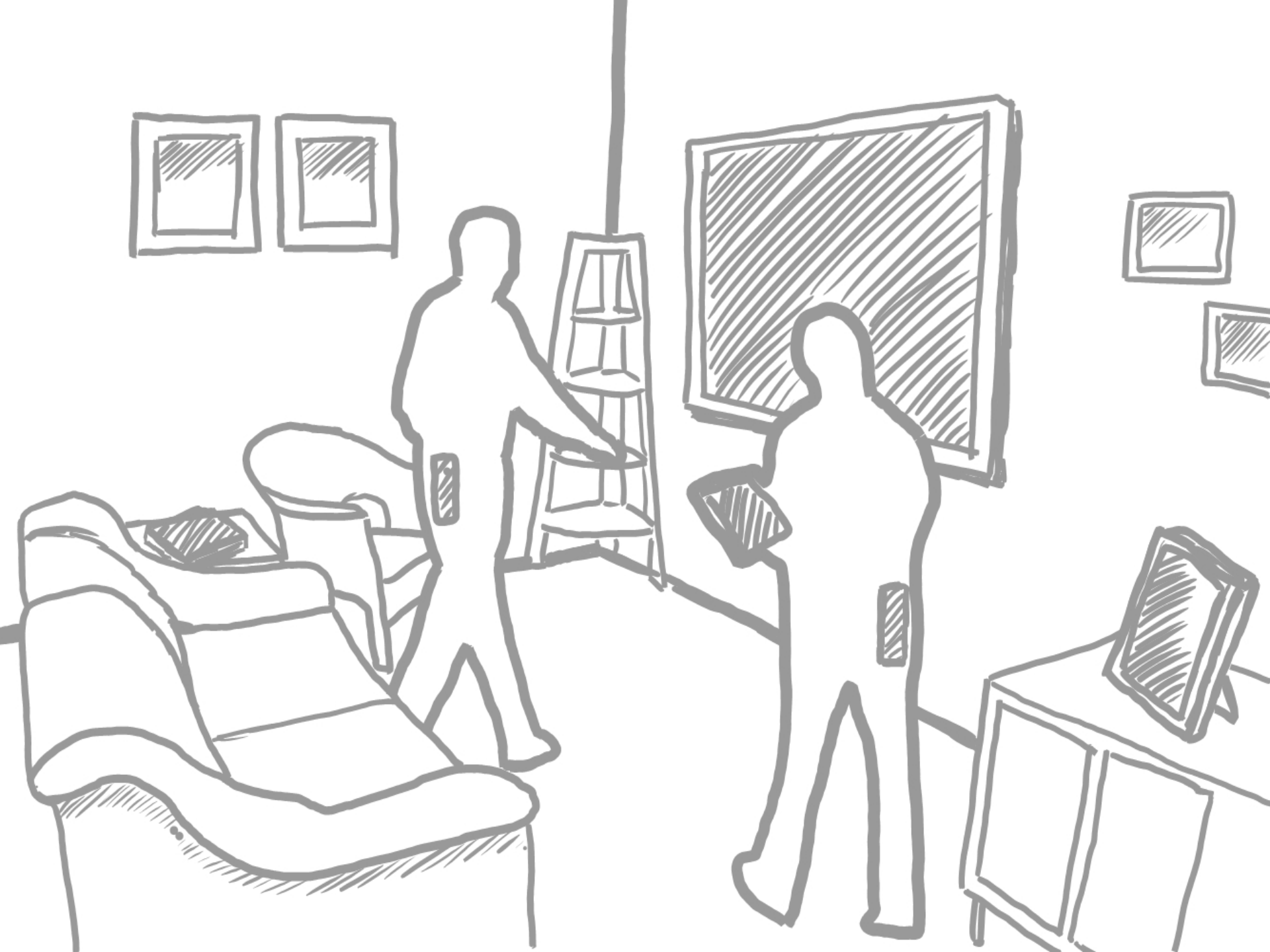


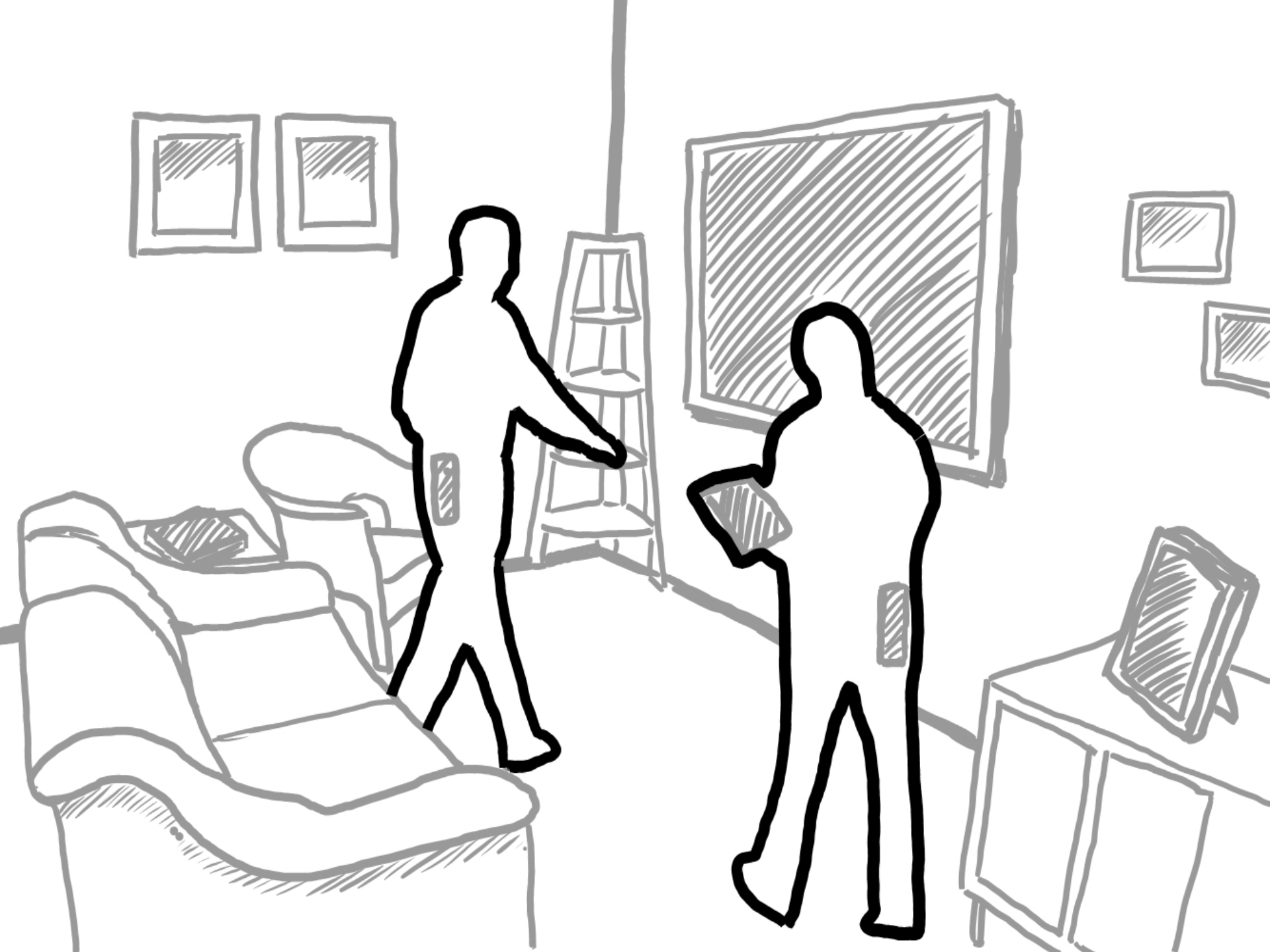


Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011



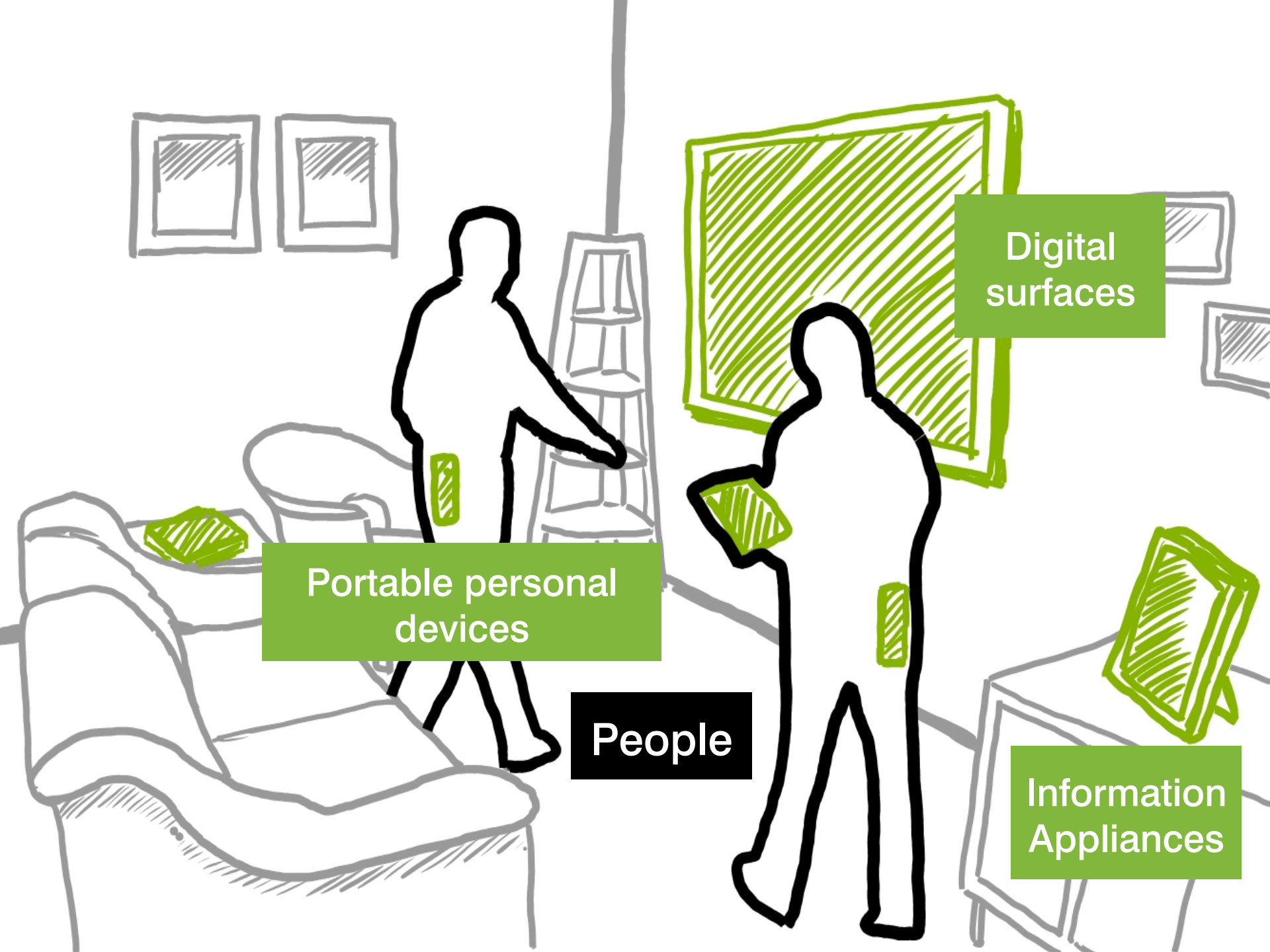












Portable personal devices

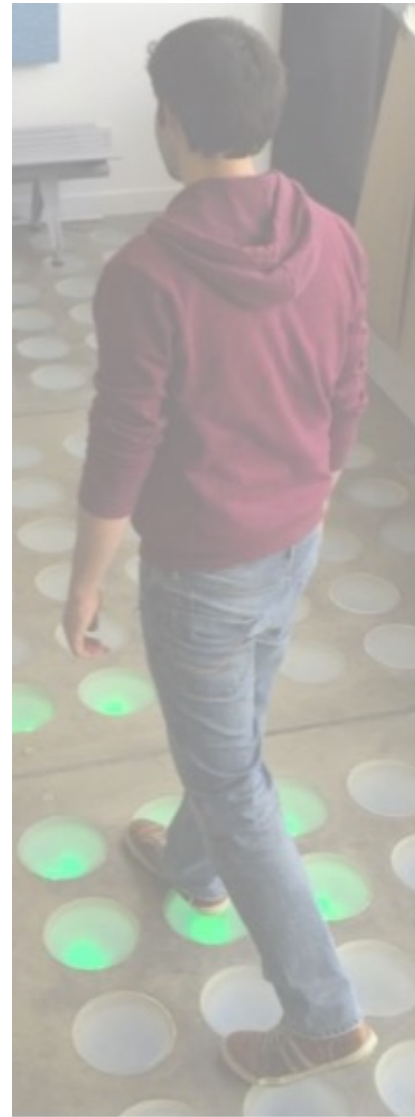
Digital surfaces

People

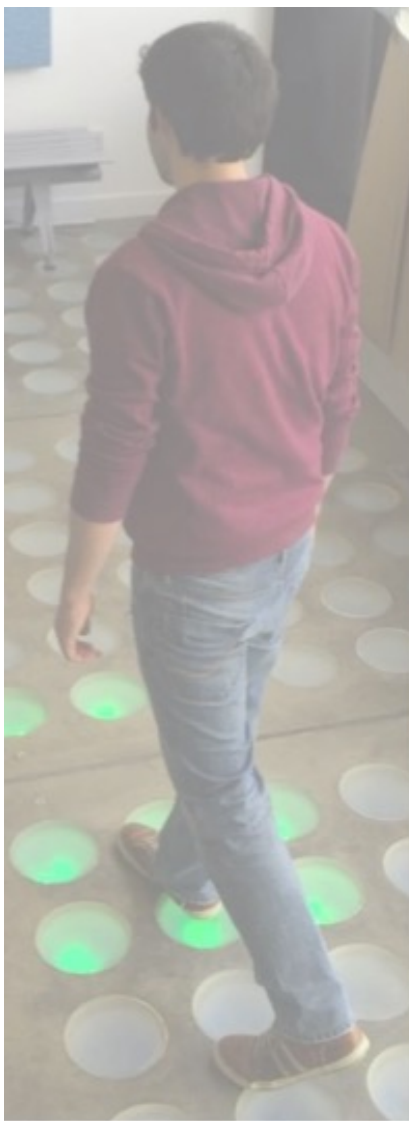
Information Appliances

# Tricks for photo tracing

Tricks for photo tracing:  
**Begin with major outline, then add minimal details**

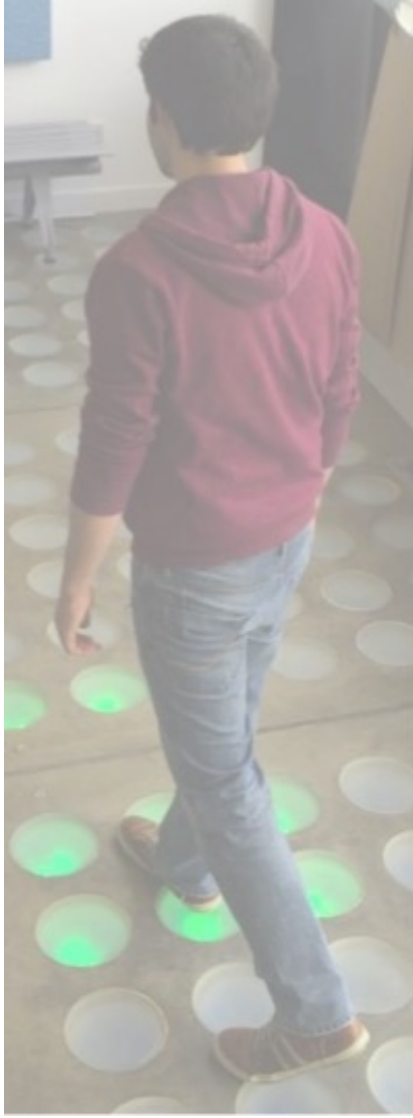


Tricks for photo tracing:  
**Begin with major outline, then add minimal details**

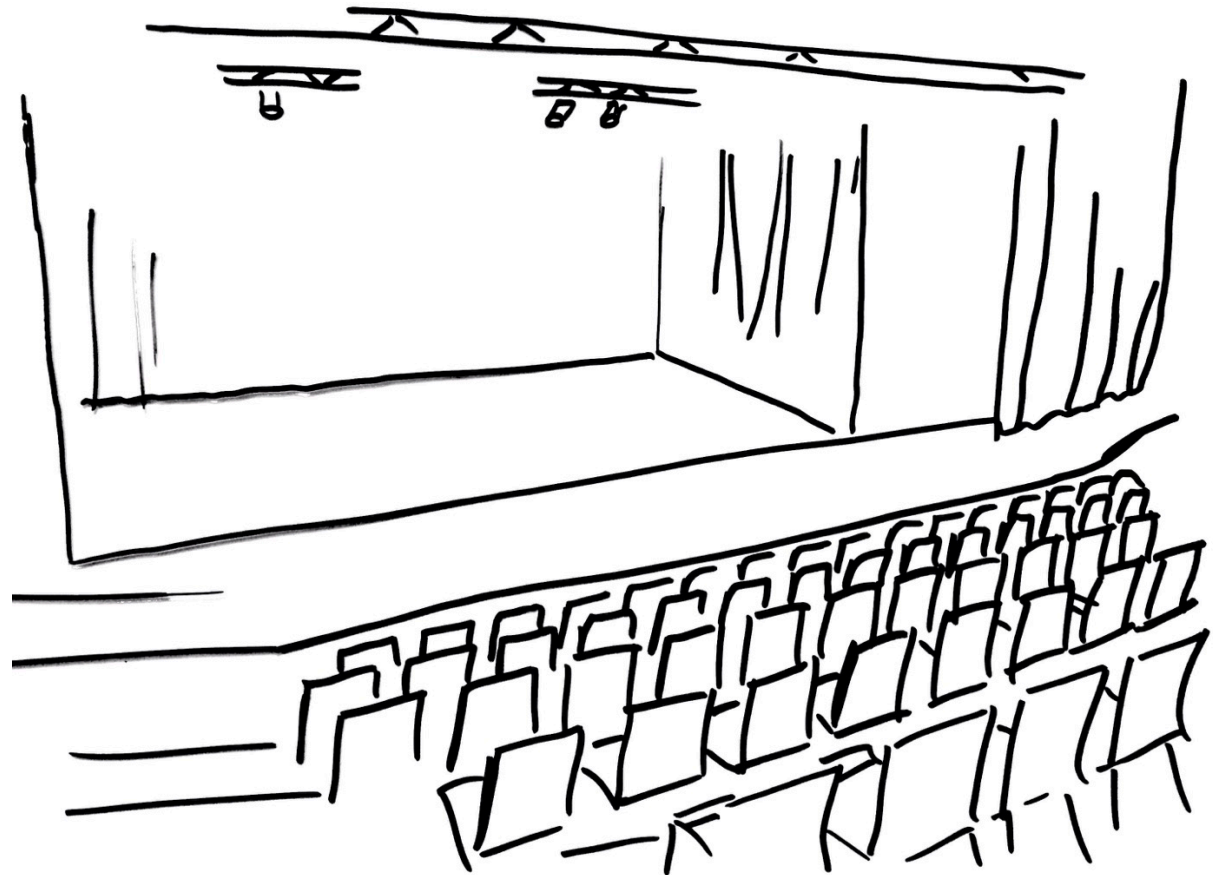




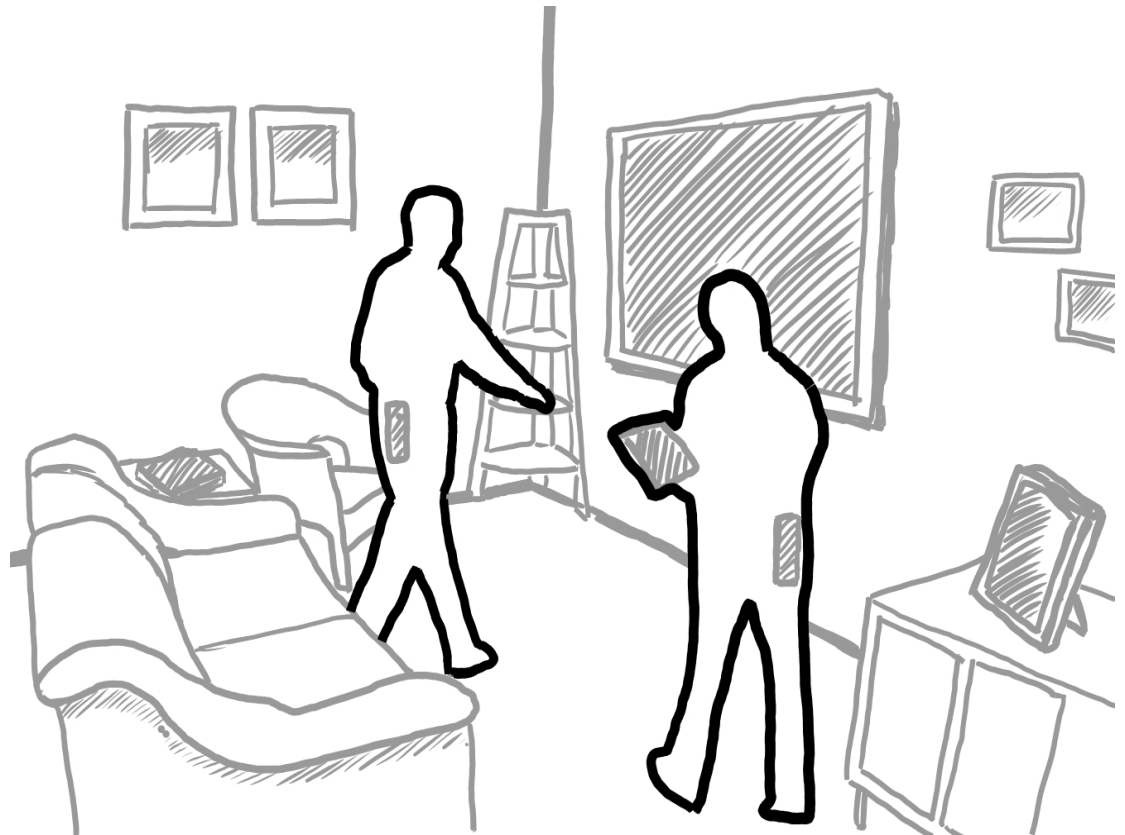
Tricks for photo tracing:  
**Begin with major outline, then add minimal details**



## Tricks for photo tracing: **Leave space for later sketching**



# Tricks for photo tracing: **Emphasize major elements through thicker lines**



Tricks for photo tracing:  
**Minimal details when drawing people's faces**

Tricks for photo tracing:  
**Minimal details when drawing people's faces**



vs.

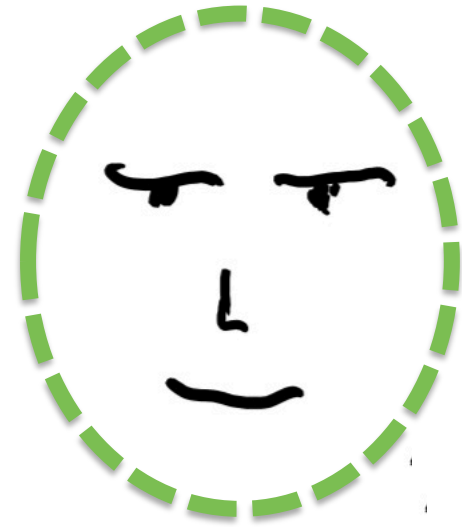




Tricks for photo tracing:  
**Minimal details when drawing people's faces**



vs.



# Tricks for photo tracing: **Drawing people's faces**



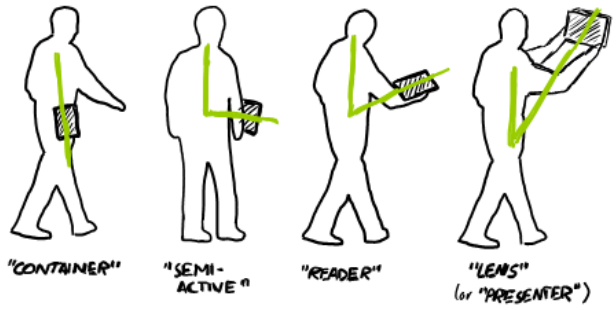
# ***Hands-on Sketching: Photo Tracing***



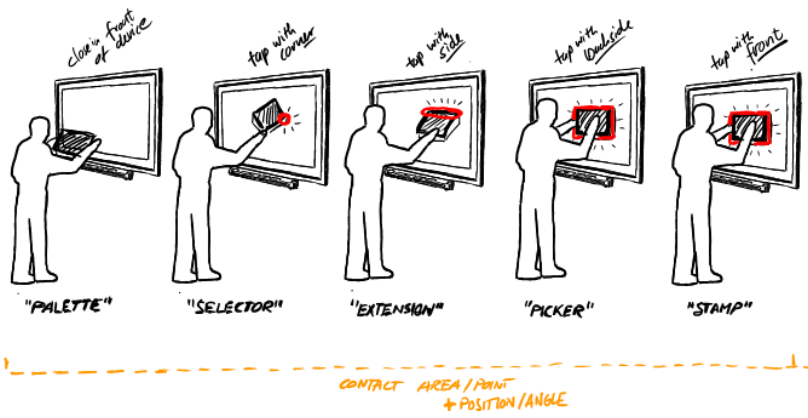
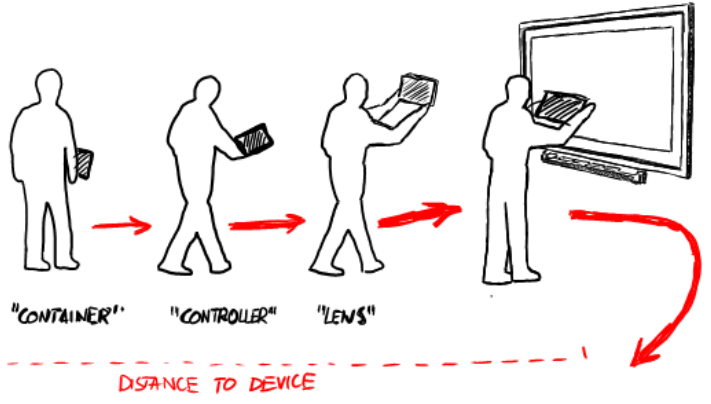
# Sketching Technique: More examples of templates and photo tracing

① DEVICE - TO - PERSON

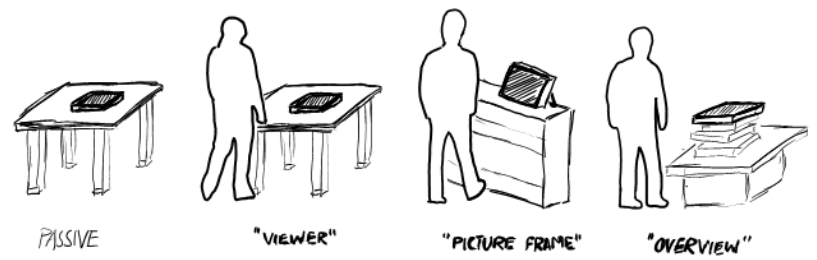
— relative orientation + distance to person



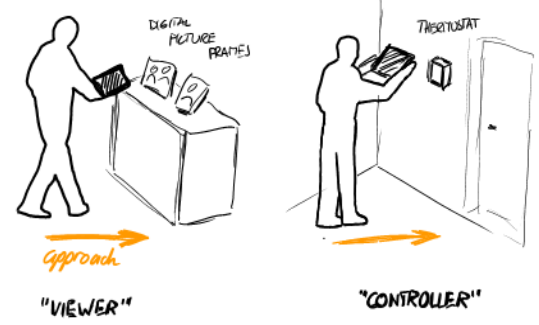
② DEVICE - TO - DEVICE



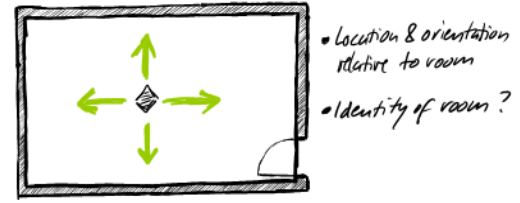
③ DEVICE - TO - NON DIGITAL OBJECTS / FIXED AND SEMIFIXED FEATURE SPACE



④ DEVICE - TO - INFORMATION APPLIANCES (subset of device-to-device?)



⑤ DEVICE - TO - FIXED FEATURE / ENVIRONMENT



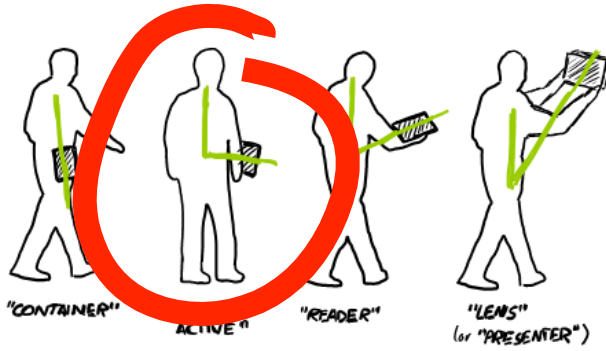
⑥ DEVICE PROPERTIES

- visible
- activity
- owner
- people around
- global orientation (aff + act + comp)

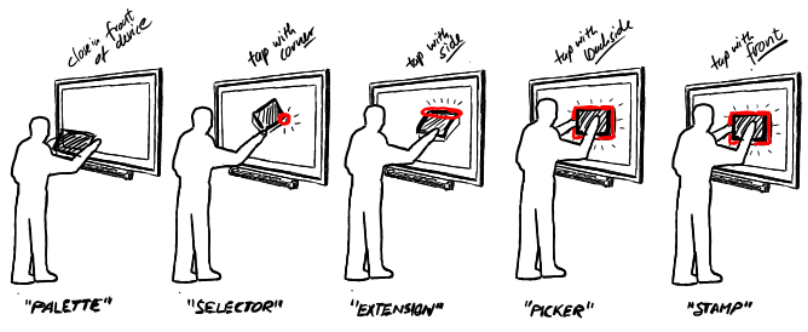
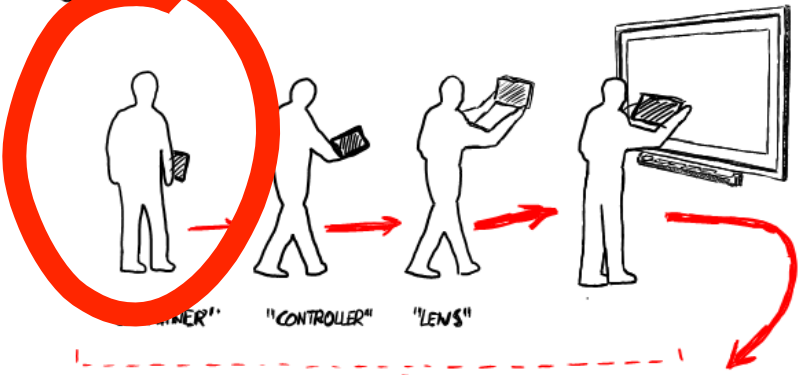


① DEVICE-TO-PERSON

— relative orientation  
+ distance to person

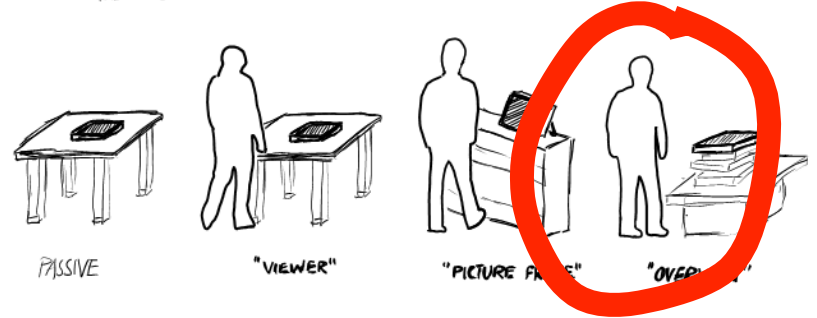


② DEVICE-TO-DEVICE

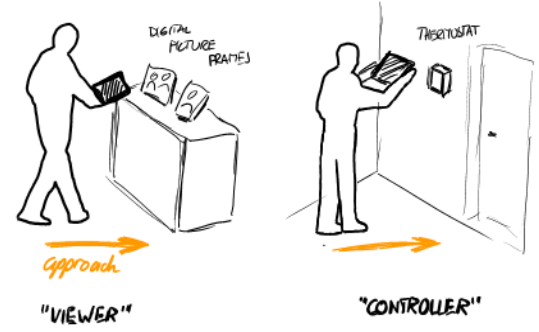


CONTACT AREA / POINT  
+ POSITION / ANGLE

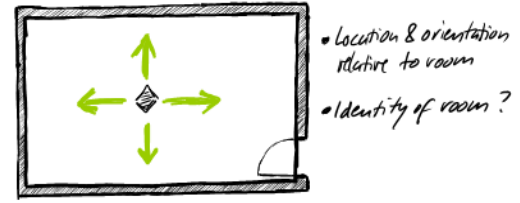
③ DEVICE-TO-NON DIGITAL OBJECTS / FIXED AND SEMIFIXED FEATURE SPACE



④ DEVICE-TO-INFORMATION APPLIANCES (subset of device-to-device?)

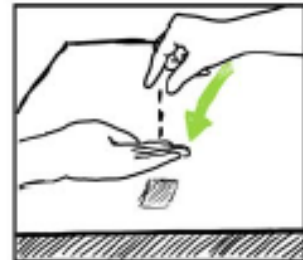
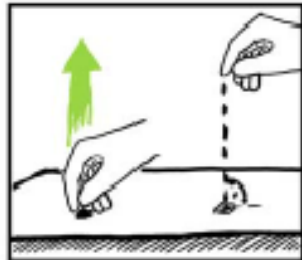
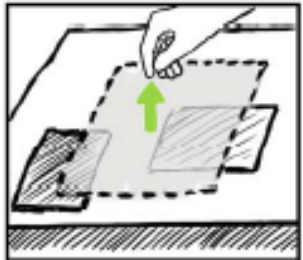
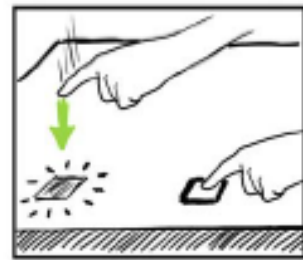
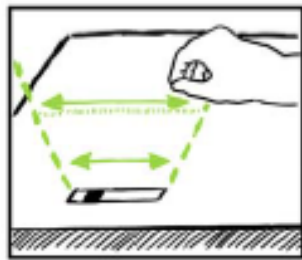
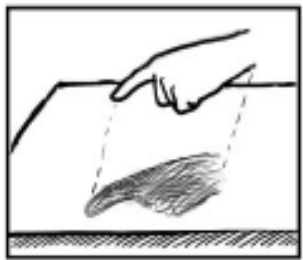
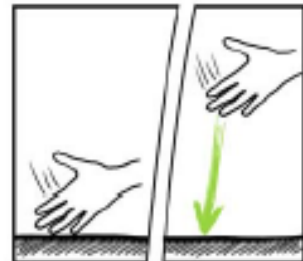
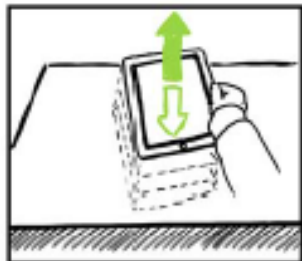
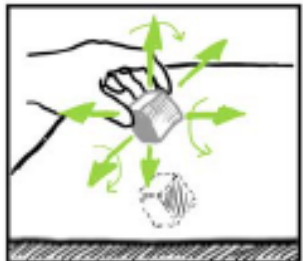
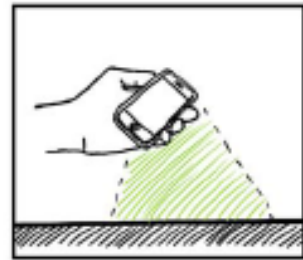
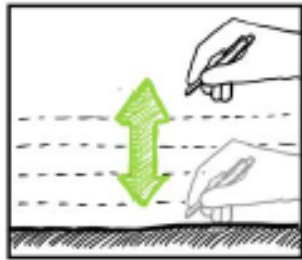
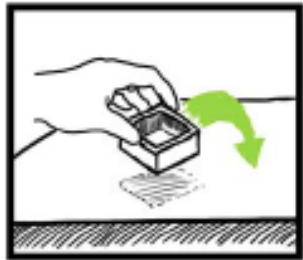
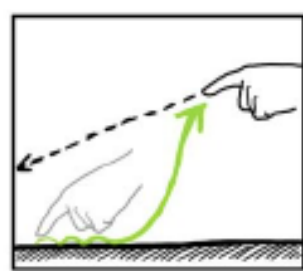
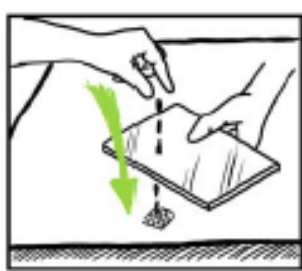
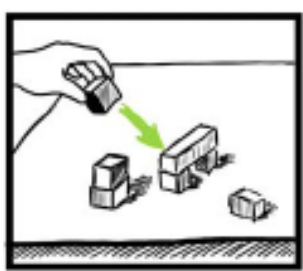


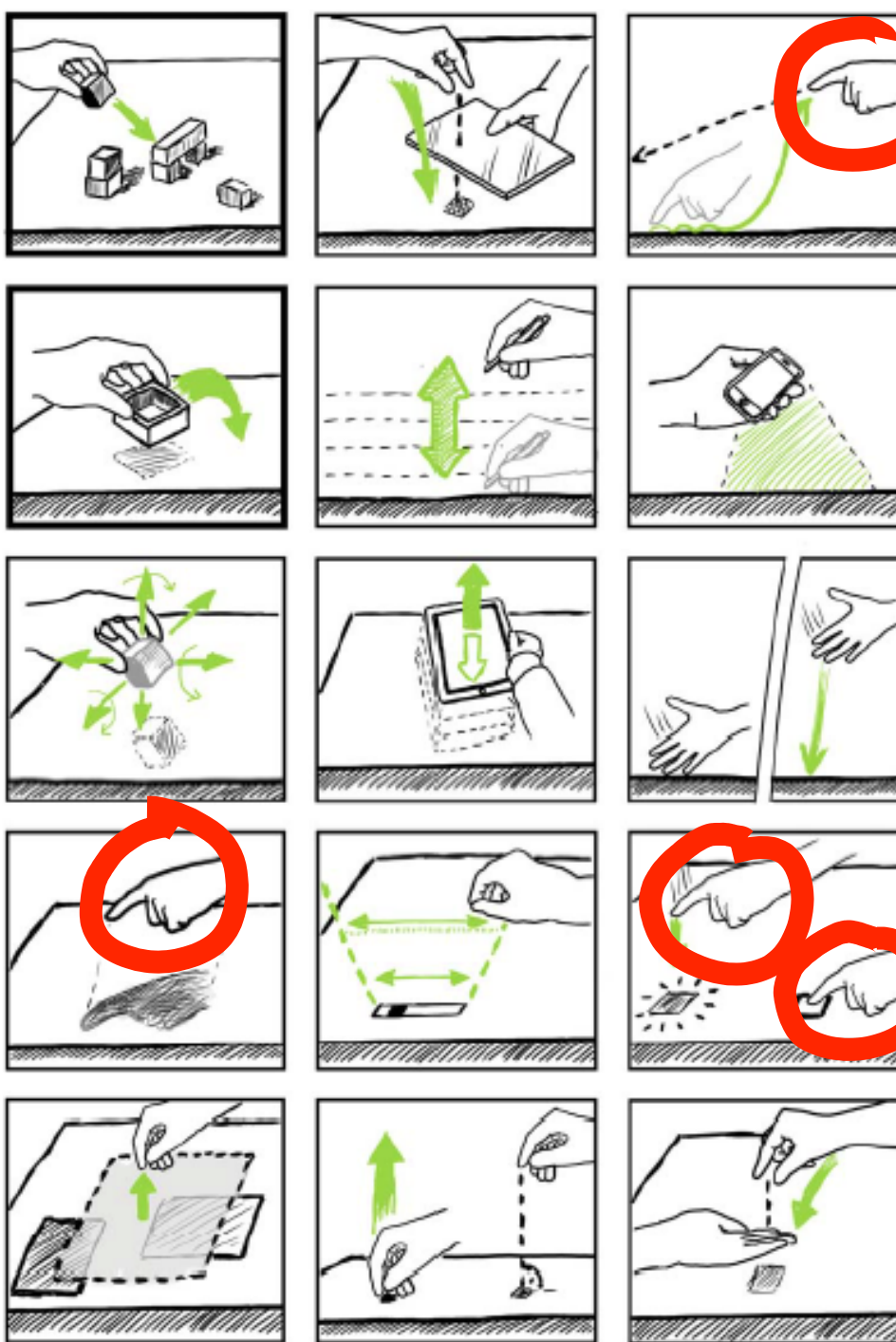
⑤ DEVICE-TO-FIXED FEATURE / ENVIRONMENT

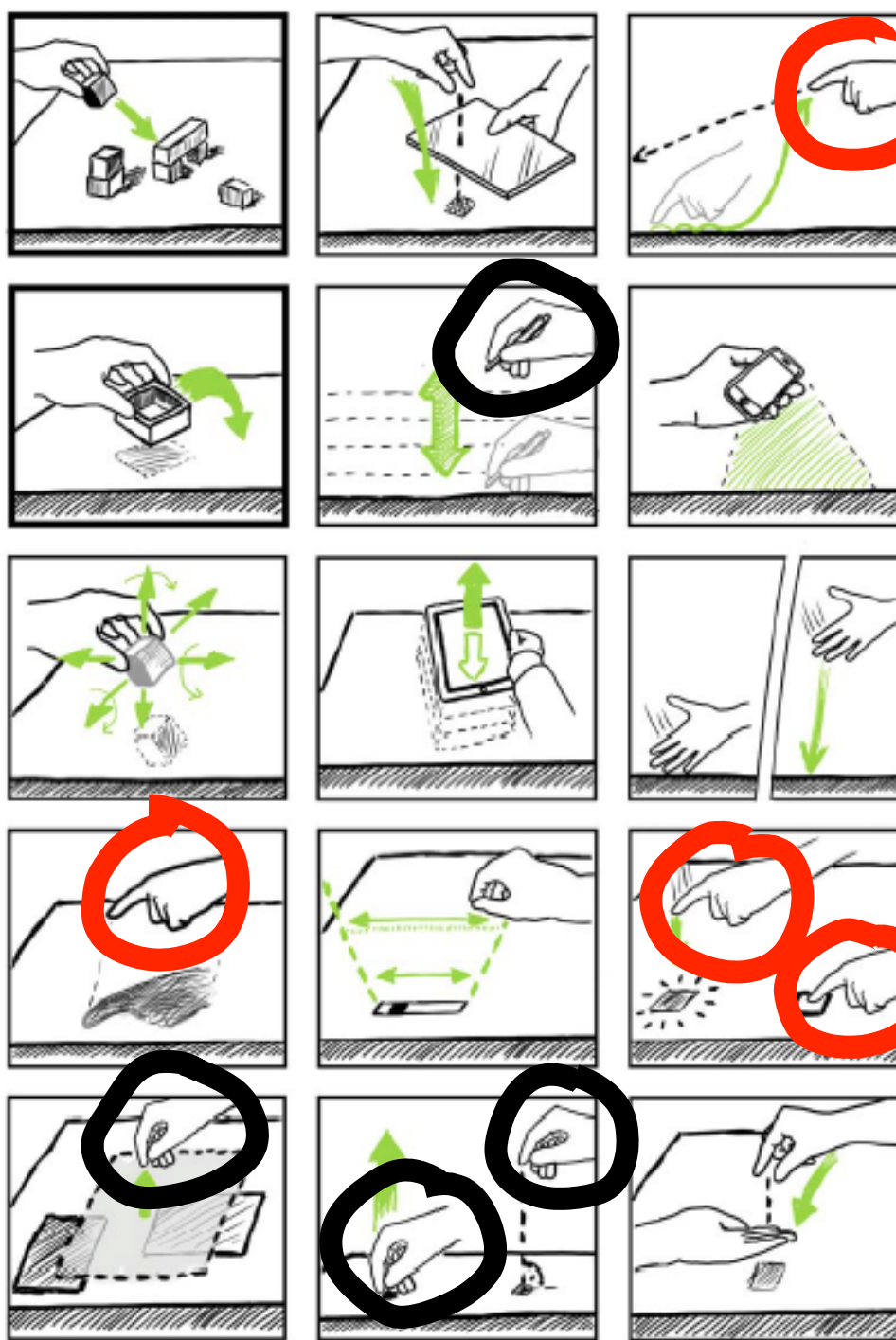


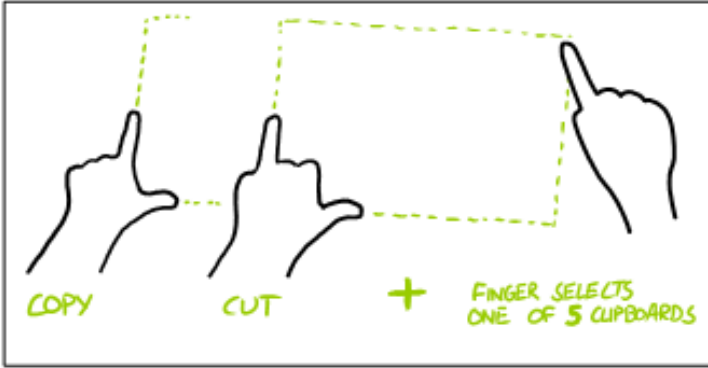
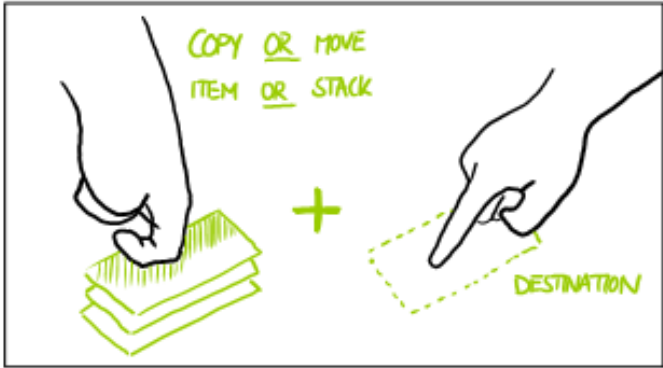
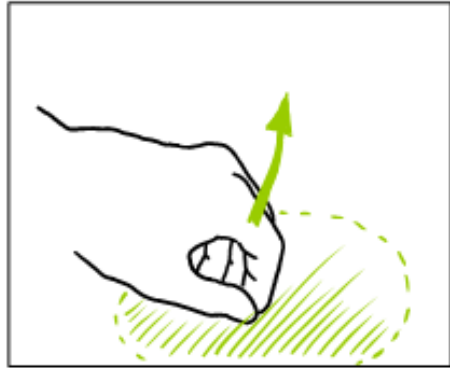
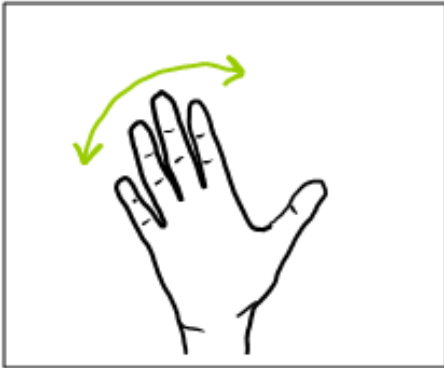
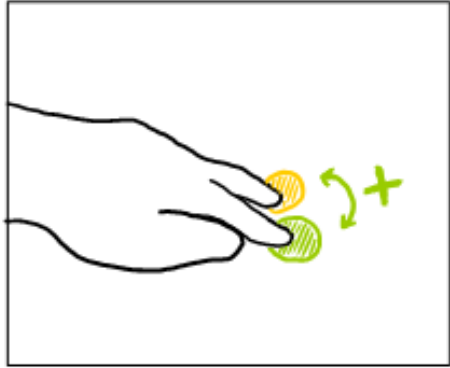
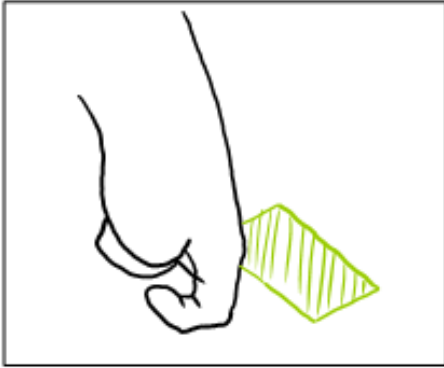
⑥ DEVICE PROPERTIES

- visible
- activity
- owner
- people around
- global orientation (aff + act + comp)

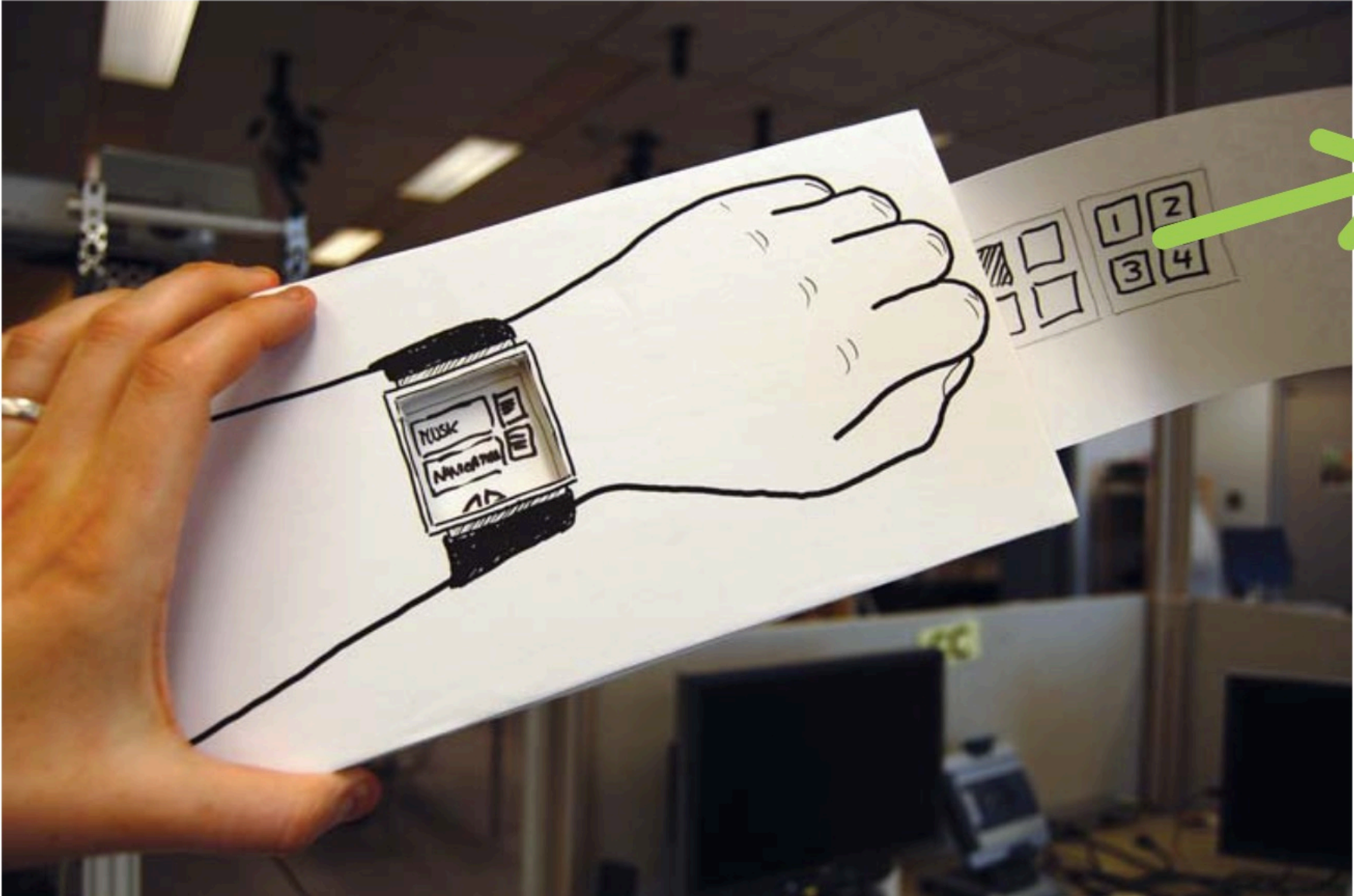






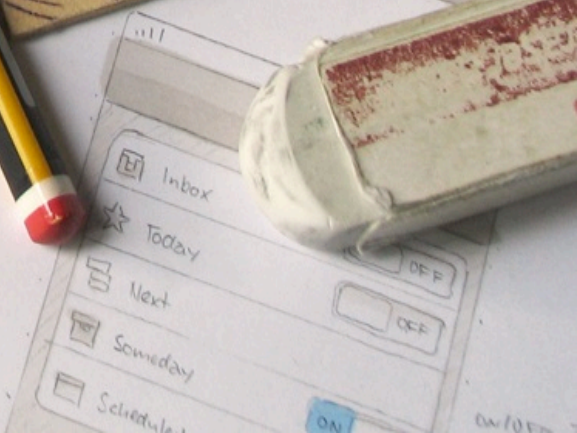
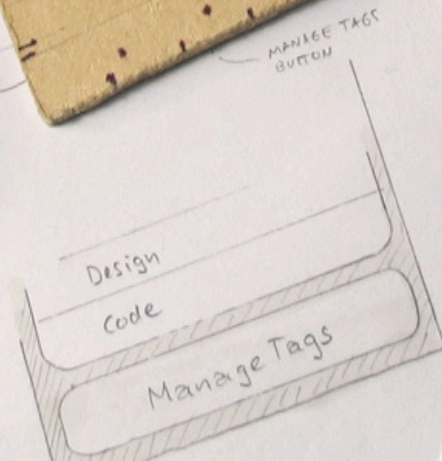
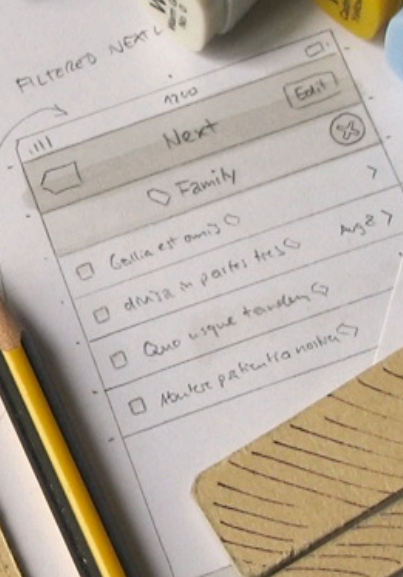
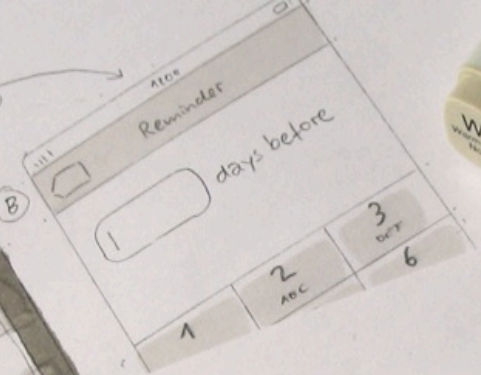
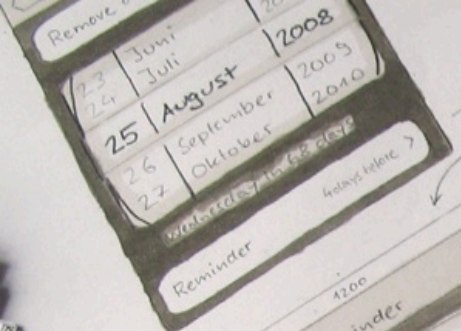




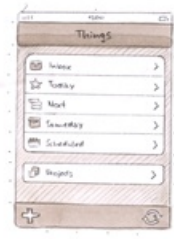
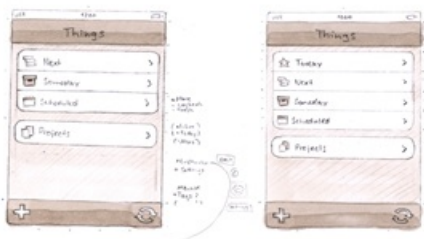


Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011





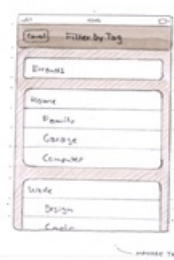




NEXT LIST



FRONT VIEW



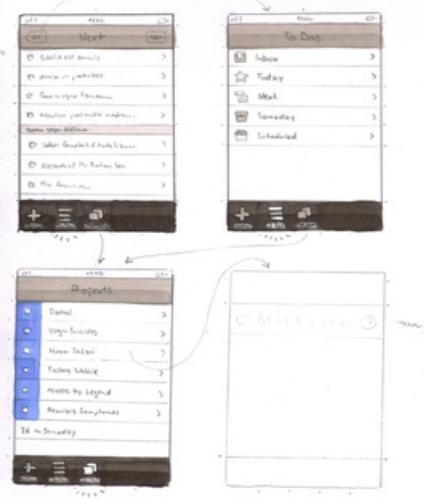
REAR VIEW



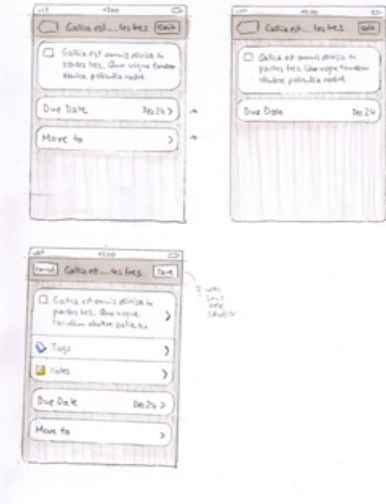
EDIT MODE



TAB-BAR SOLUTION



EDIT MODE



DATE DATE



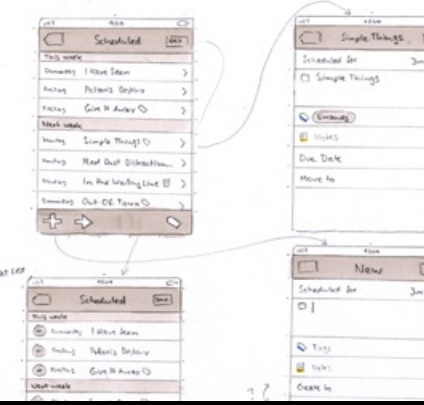
DATE CALENDAR



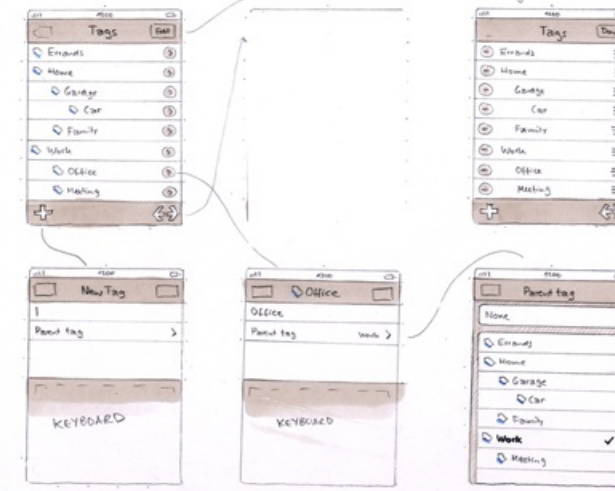
DATE CALENDAR



SCHEDULED

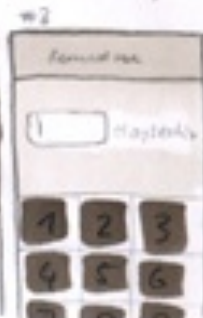
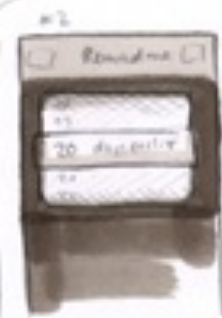
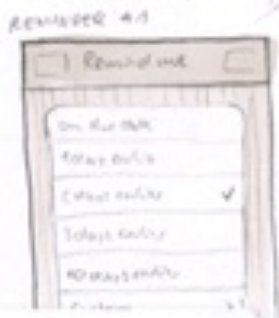
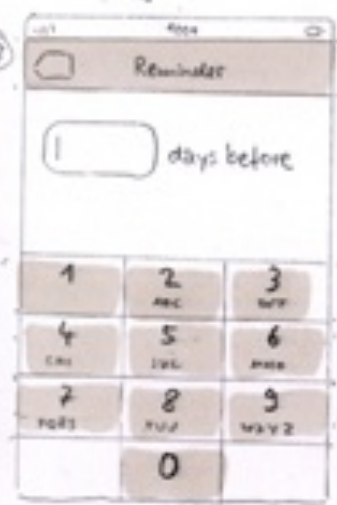


MANAGING TAGS



EDIT / NEW





EDIT / NEW



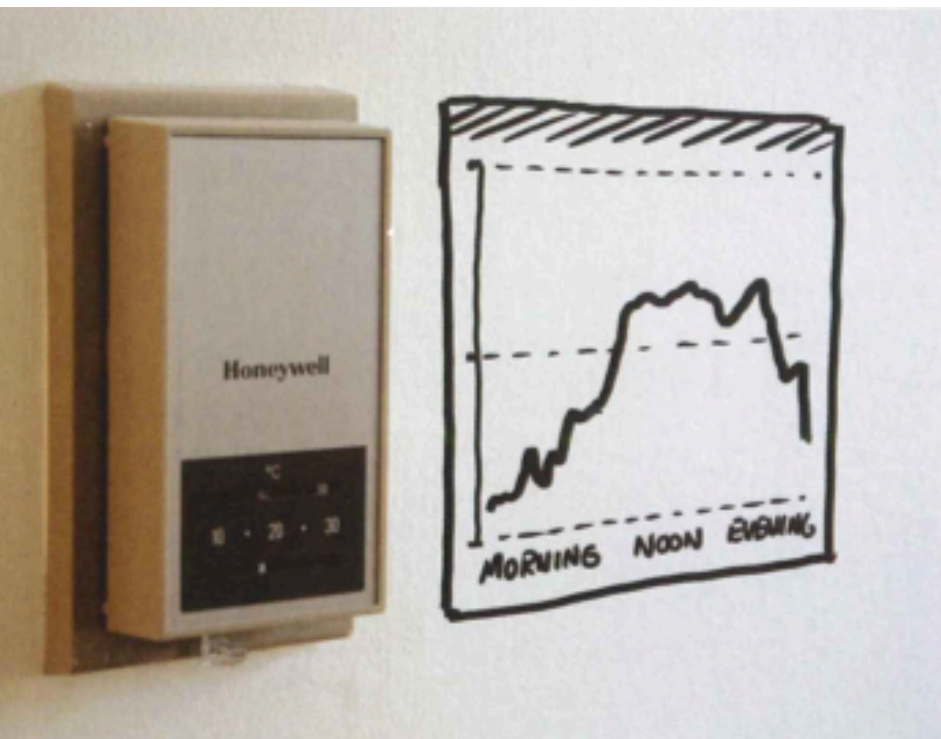
# Sketching Technique: Hybrid Sketches



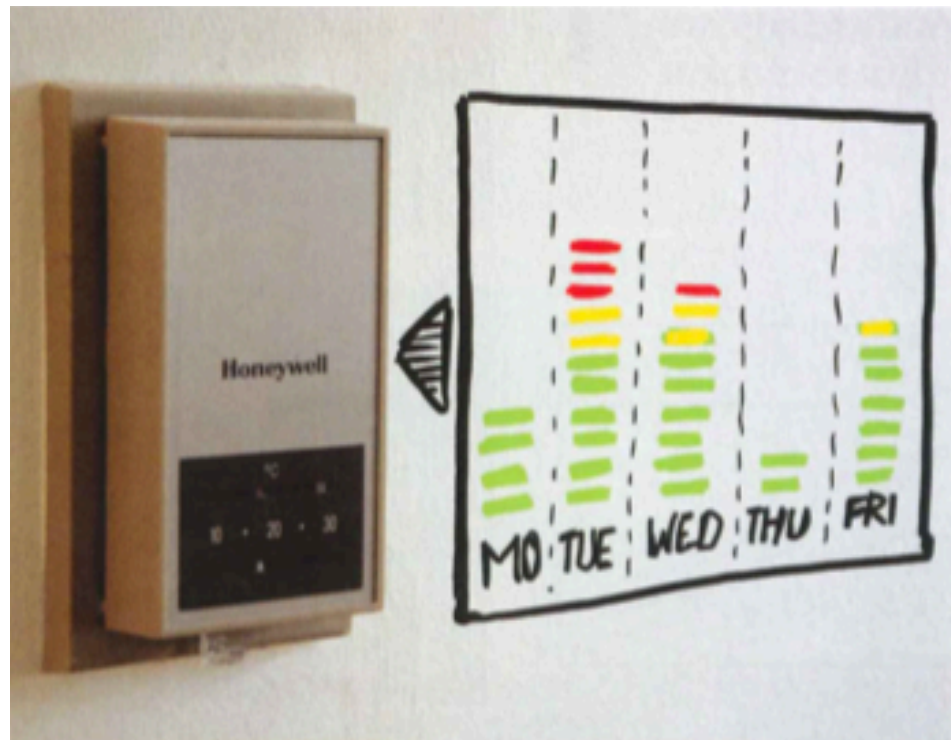
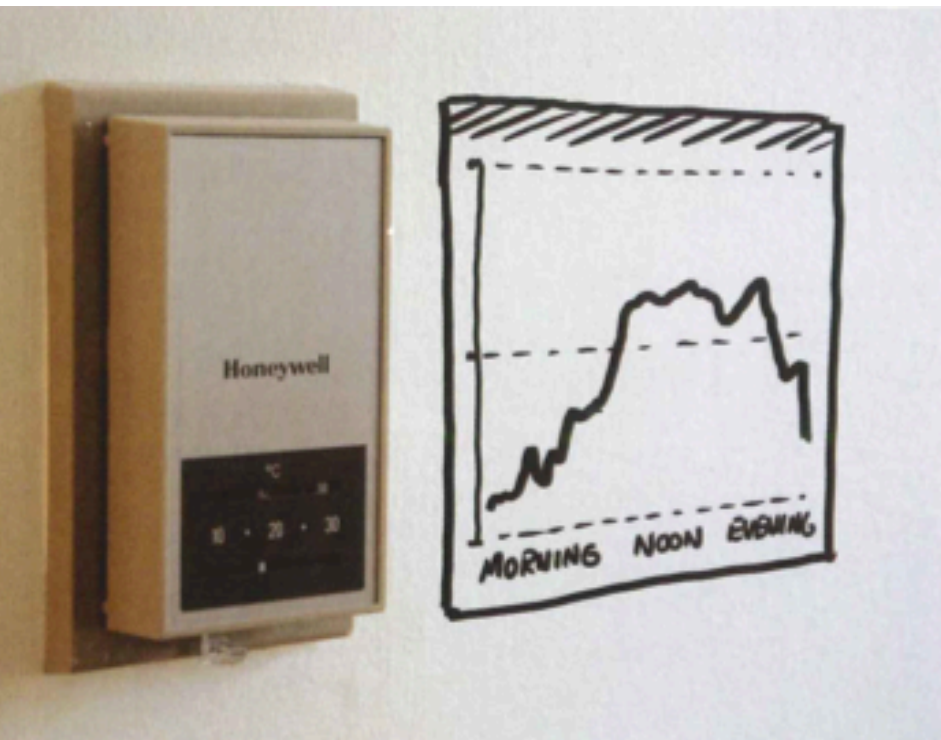




# Sketching Technique: Hybrid Sketches



# Sketching Technique: Hybrid Sketches





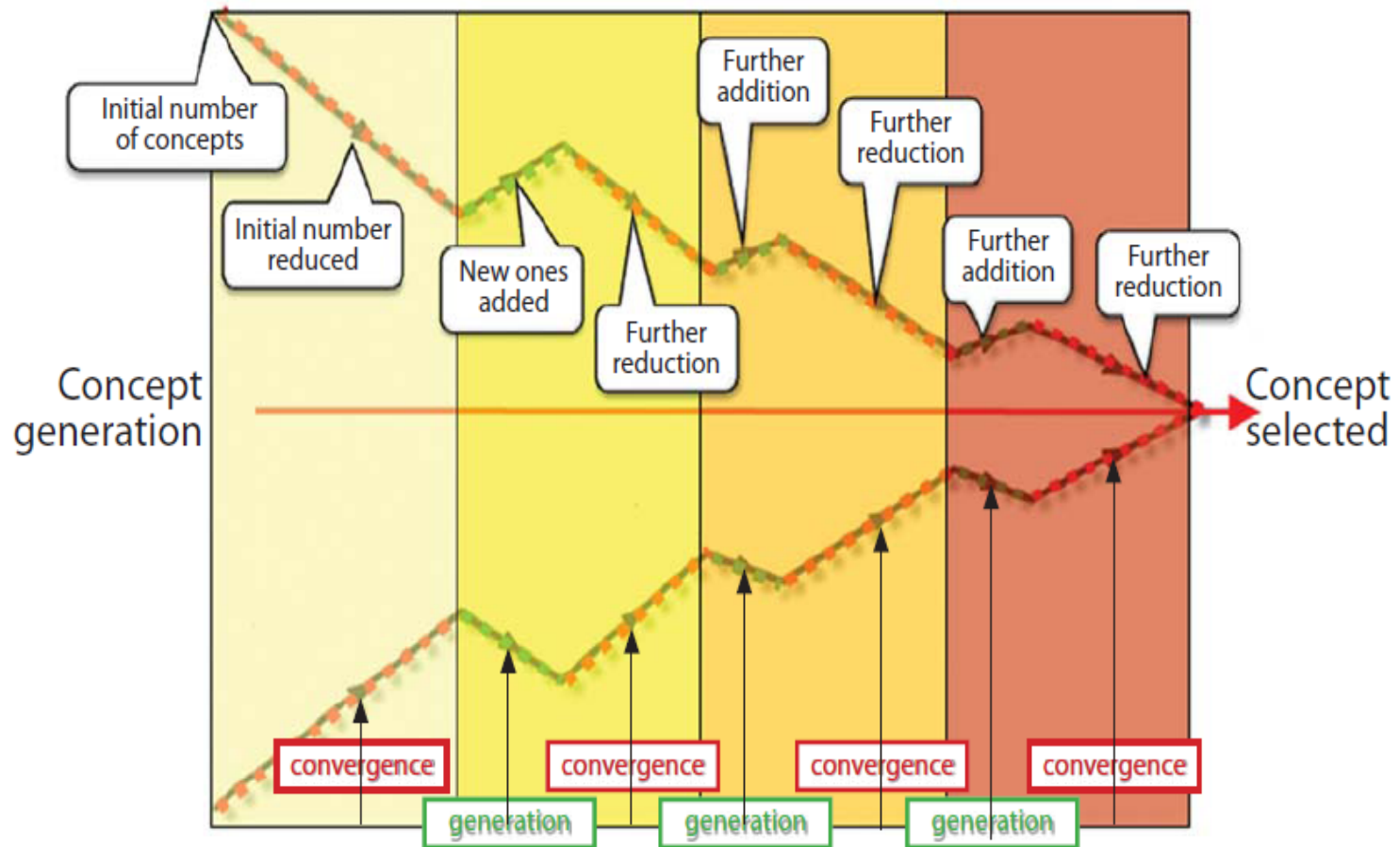


# Sketching Technique: **10 plus 10**



# Technique: 10 plus 10

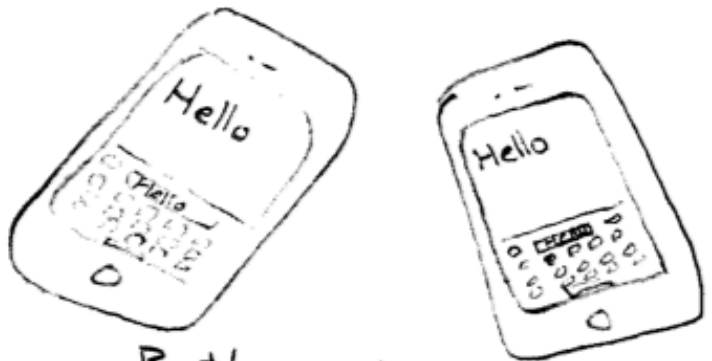
- 1) State the design challenge
- 2) **Generate 10 different designs** – as creative and diverse as possible
- 3) Reduce the number of design concepts
- 4) Choose the most promising designs as a starting point
- 5) **Sketch 10 details and/or variations of design concepts**
- 6) Present ideas to a group
- 7) As your ideas change, sketch them out



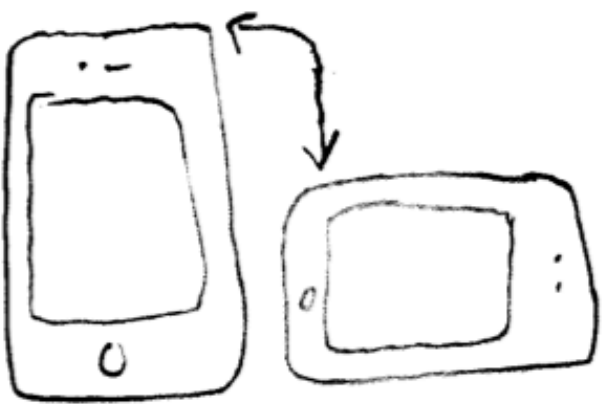
<b>Iterative:</b>	<b>General</b> overall concepts	<b>Iteration 1</b> exploratory	<b>Iteration 2</b> clarification	<b>Iteration 3</b> resolution
<b>Granularity:</b>	<b>General</b> overall concepts	<b>Course</b> significant alternatives	<b>Medium</b> intermediate development	<b>Fine</b> detailed refinement

# Technique: 10 plus 10 - Example

# Technique: 10 plus 10 - Example

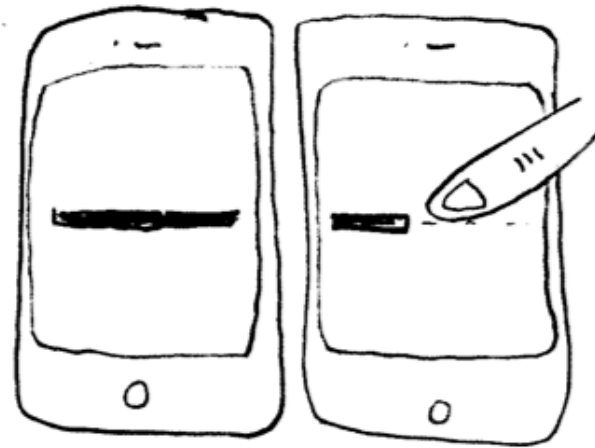


Both people type a word chosen by them

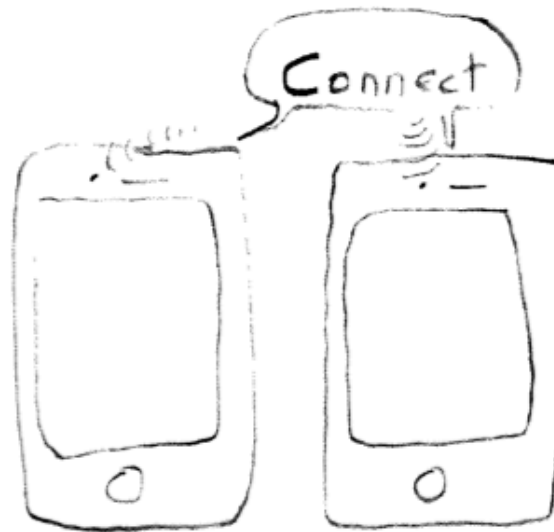


Rotate in a pattern, where other person has to mimic it (accelerometer)



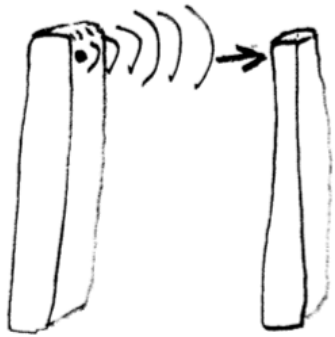


Synchronous gesture  
Trace a line across both side by side devices as a single stroke

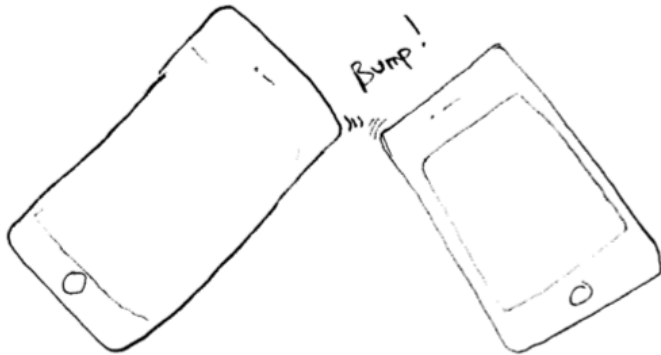


Microphones pick up spoken command at similar volume

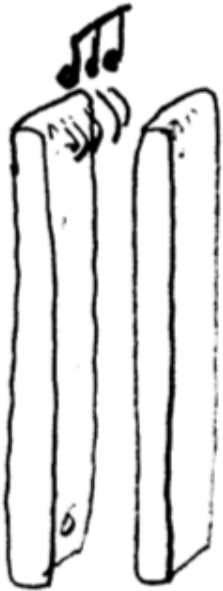




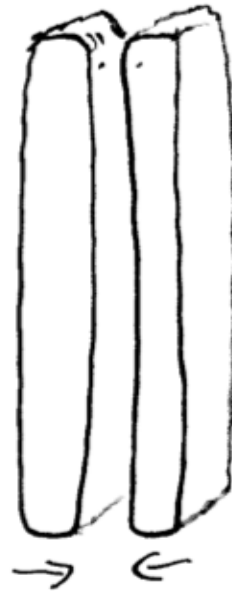
LED strobe  
pattern captured  
by camera



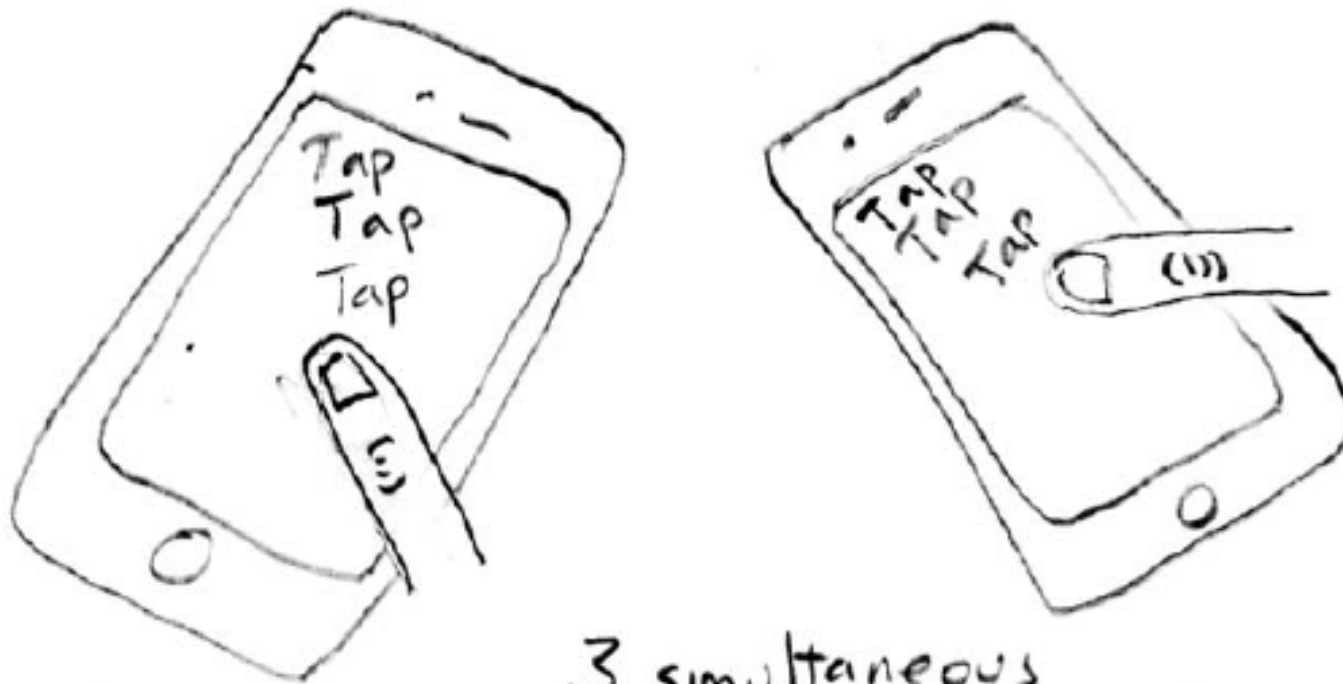
Bump. Accelerometer matches  
bump vibrations



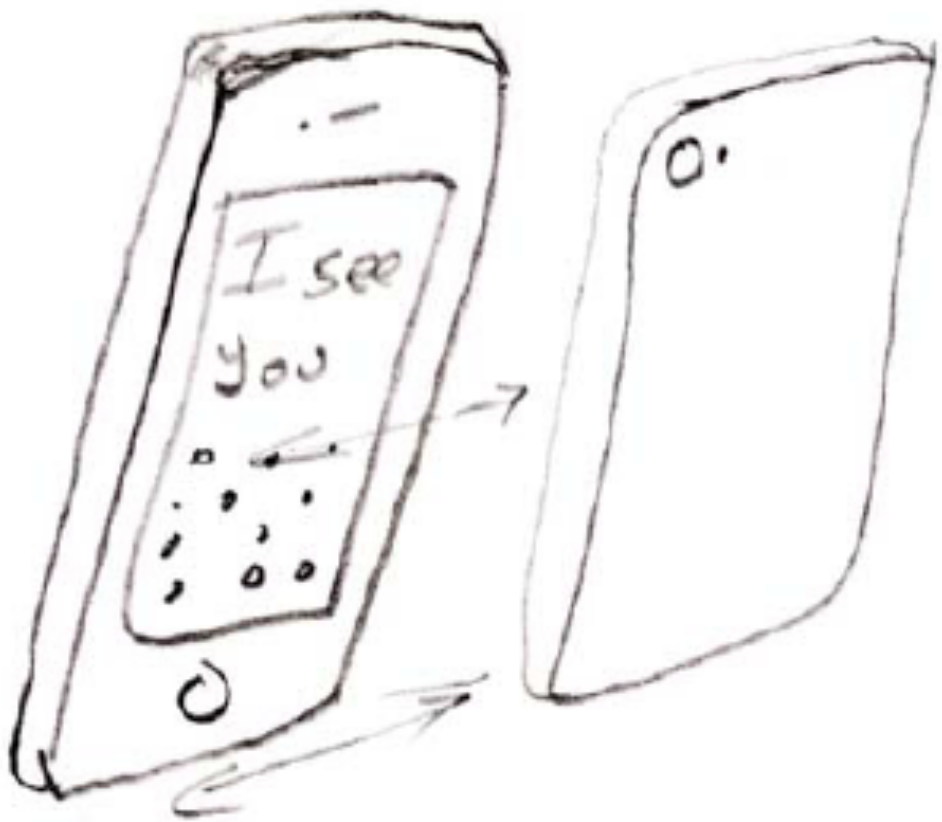
Faint musical  
sound played  
on one device  
picked up by  
the other  
device



Ambient  
light  
sensor  
Touch  
surfaces  
together  
in a pattern;  
Both detect  
same light/  
dark pattern



3 simultaneous  
taps on both  
phones



mutual  
video/photos  
captures  
identifying  
images such  
as tags via  
camera

# Technique: 10 plus 10

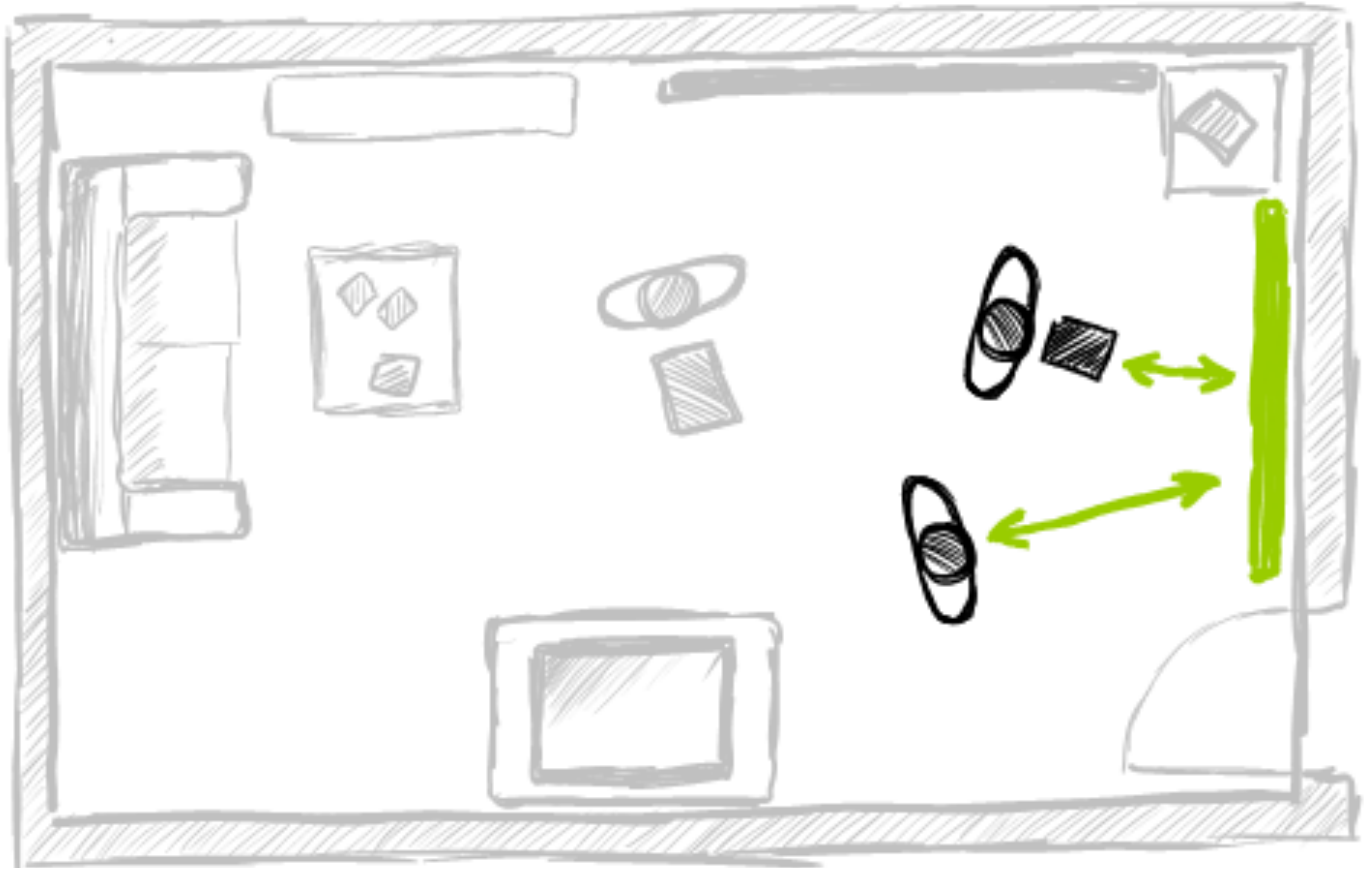
Then: Choose & Refine Sketches:

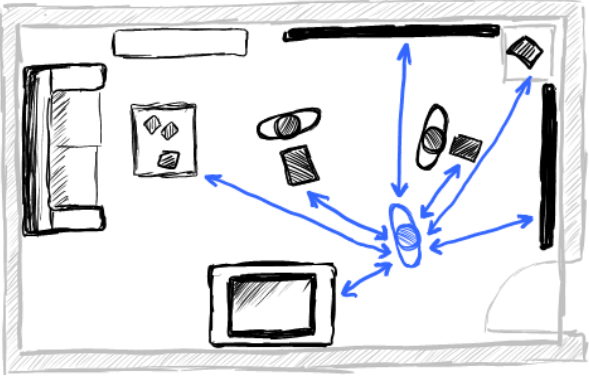
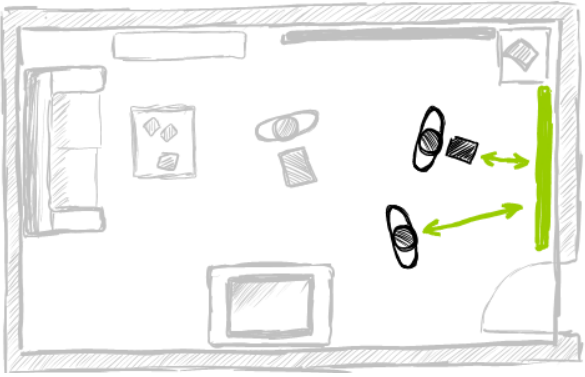
Choose the most promising designs as a starting point

Sketch 10 **details and/or variations** of design concepts



# Another example of 10+10

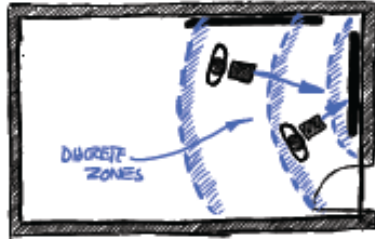






**PERSON-TO-LARGE DIGITAL SURFACE**

Continuous measurements to discrete periodic zones



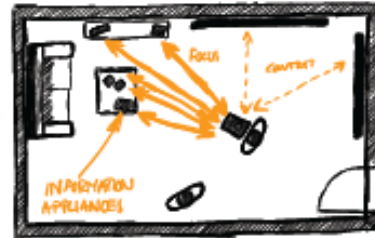
**DEVICE-TO-LARGE DIGITAL SURFACE**

Proxemic zones around large digital surface trigger reactions on portable personal devices.



**PERSON-TO-DOMESTIC ROBOT**

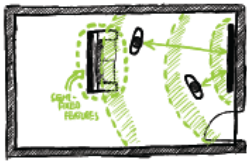
Proximity - same environment, same space, different time (asynchronous)



**DEVICE-TO-DEVICES (MULTIPLE, LARGE QUANTITIES)**

orientation and physical distance are filter for device selection





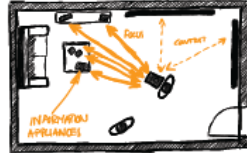
**PERSON-TO-LARGE DIGITAL SURFACE**  
 Continuous measurements to direct personal zones



**DEVICE-TO-LARGE DIGITAL SURFACE**  
 Discrete zones around large digital surface trigger reactions on portable personal devices.



**PERSON-TO-DOMESTIC ROBOT**  
 Proximity - some development, some gear, affordance (shape, colour)



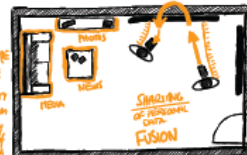
**DEVICE-TO-DEVICES (MULTIPLE, LARGE QUANTITIES)**  
 orientation and physical distance as filter for device selection



**PERSON-TO-DEVICE-TO-DEVICE**  
 orientation (angle pointing) + distance  
 device velocity to person + device orientation  
 "PAIRING" EXAMPLE

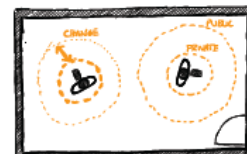


**PERSON-TO-LARGE DIGITAL SURFACE (HORIZONTAL TABLETOP)**  
**DEVICE-TO-LARGE DIGITAL SURFACE**  
 Related to "lean the surface" paper

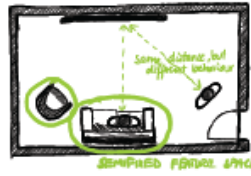


**PERSONAL PORTABLE DEVICE-TO-DEVICE**  
 LINE INTERACTIVE SURFACE AS MEDIUM - FEEDBACK  
 CONTINUOUS INPUT TYPED TO CONTINUOUS OUTPUT (MOVING ARE VISIBILITY) AVAILABLE ITEMS

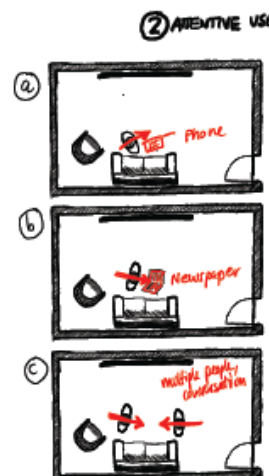
FACE FEATURE SPACE  
 • Security  
 • Location  
 • Privacy  
 • Type of input



**PERSONAL PORTABLE DEVICE-TO-DEVICE (PROXIMITY-AWARE RFID TAGS)**



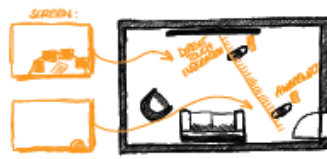
**1 SEMI-DEFINED FEATURE SPACE**  
 Different to...  
 "Should I pick up the phone when I'm sitting at the table, but not when I'm standing?"



**2 ALTERNATE USER INTERFACE**  
 ORIENTATION + OBJECT OR PERSON  
 -> difficult to produce alternate user interfaces - what object is it?



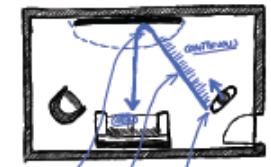
**3 PHYSICAL TOKENS TO MEDIANE EXPLICIT INTERACTION**  
 Different from...  
 - pointing devices  
 - touch controls  
 - gesture interfaces  
 Plans to play with this in particular orientation and distance to a person



**4 AWARENESS TO INTERACTION**  
 CONTINUOUS: + SIZE OF VIEW + INTERACTION + LOCATION ON SCREEN  
 DISCRETE: ONE IN CLOSE DISTANCE TO SCREEN, FIXED SIZE



**Different from**  
 - Cellulian's RESALE  
 -> Dynamic size, increasing information  
 -> from awareness to interaction



**5 CONTINUOUS KNOWLEDGE OF...**  
 a) DISTANCE  
 - size of position  
 - awareness zones of devices  
 Check  
 - about touch interaction  
 - early / least semi-fixed feature  
 b) ORIENTATION  
 - facing towards face display  
 - facing towards other person  
 Check (continuous)!!  
 - fine position  
 - reach orientation  
 c) IDENTITY  
 - Who?  
 -> show pass - physical token  
 -> authentication  
 -> show individual media library  
 -> adapt volume  
 -> security / release  
 -> deletion  
 -> integration  
 -> security of device full device  
 d) VELOCITY  
 -> motion?  
 -> motion / object  
 -> position & selection

**6 HOME MEDIA PLAYER APPLICATION**  
 VS. - Aggregated table-top (X)  
 - Table Ambient Display (Oyay)  
 +> "personal information can regulate both implicit and explicit interaction"



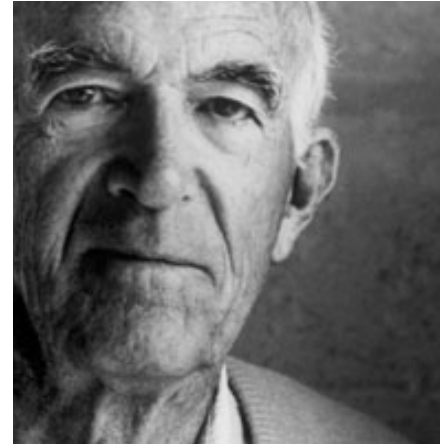
- OVERRIDE MECHANISMS**
- 1) Skip track, increase distance
  - 2) Turn around
  - 3) Explicit gesture (with hand device)
  - 4) Timeout ("ignore")
  - 5) Disable command
  - 6) Settings
  - 7) "blacklist" for devices



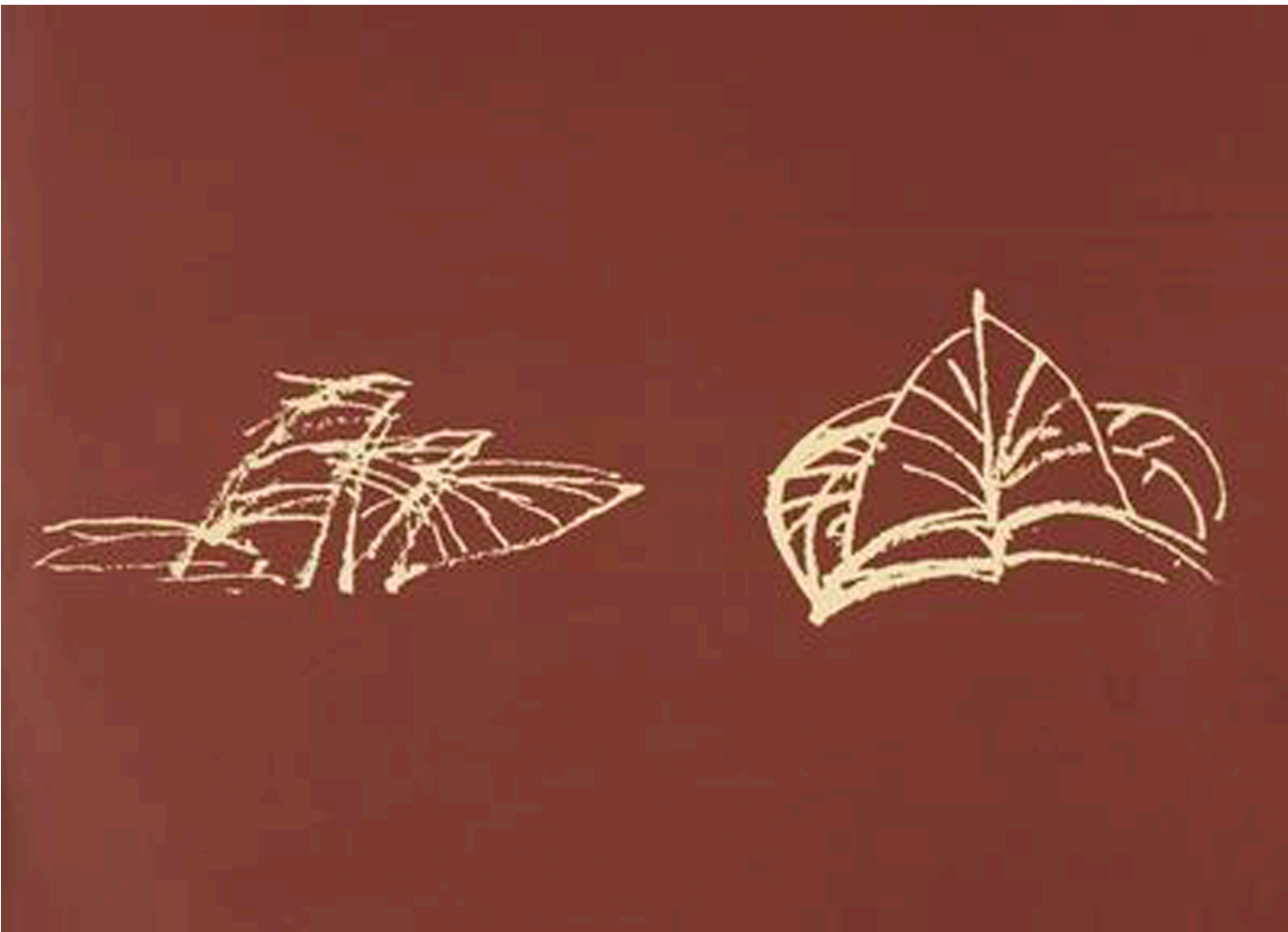
University College London  
Interaction Centre

# Sketching Technique: Reducing to Essentials

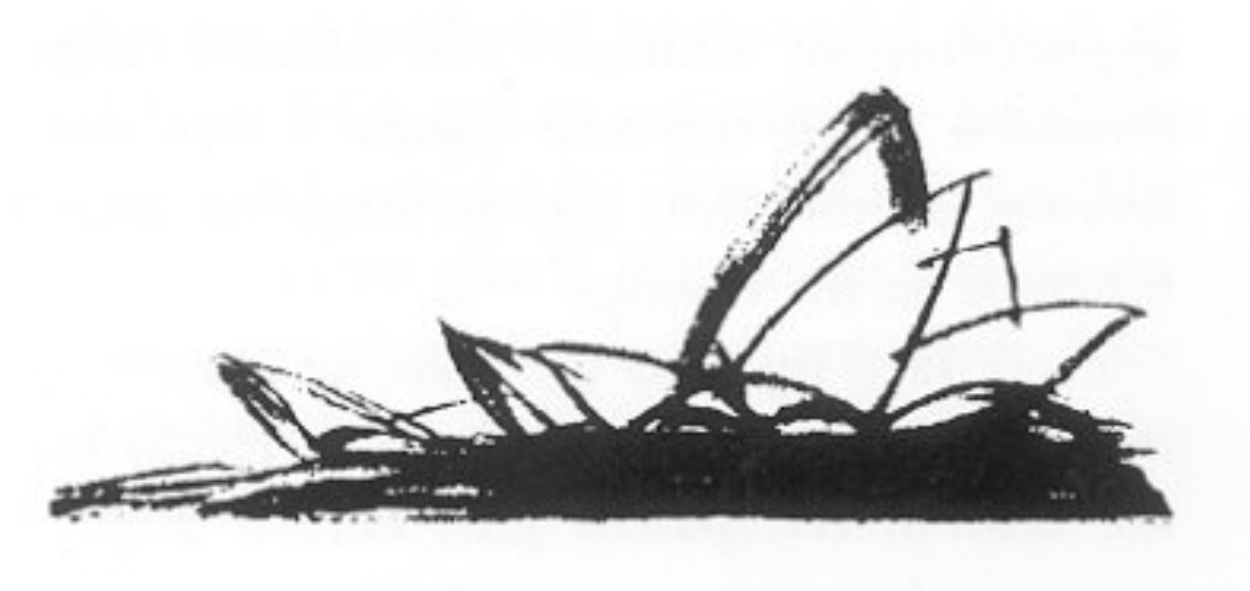




Jørn Utzon | Architect

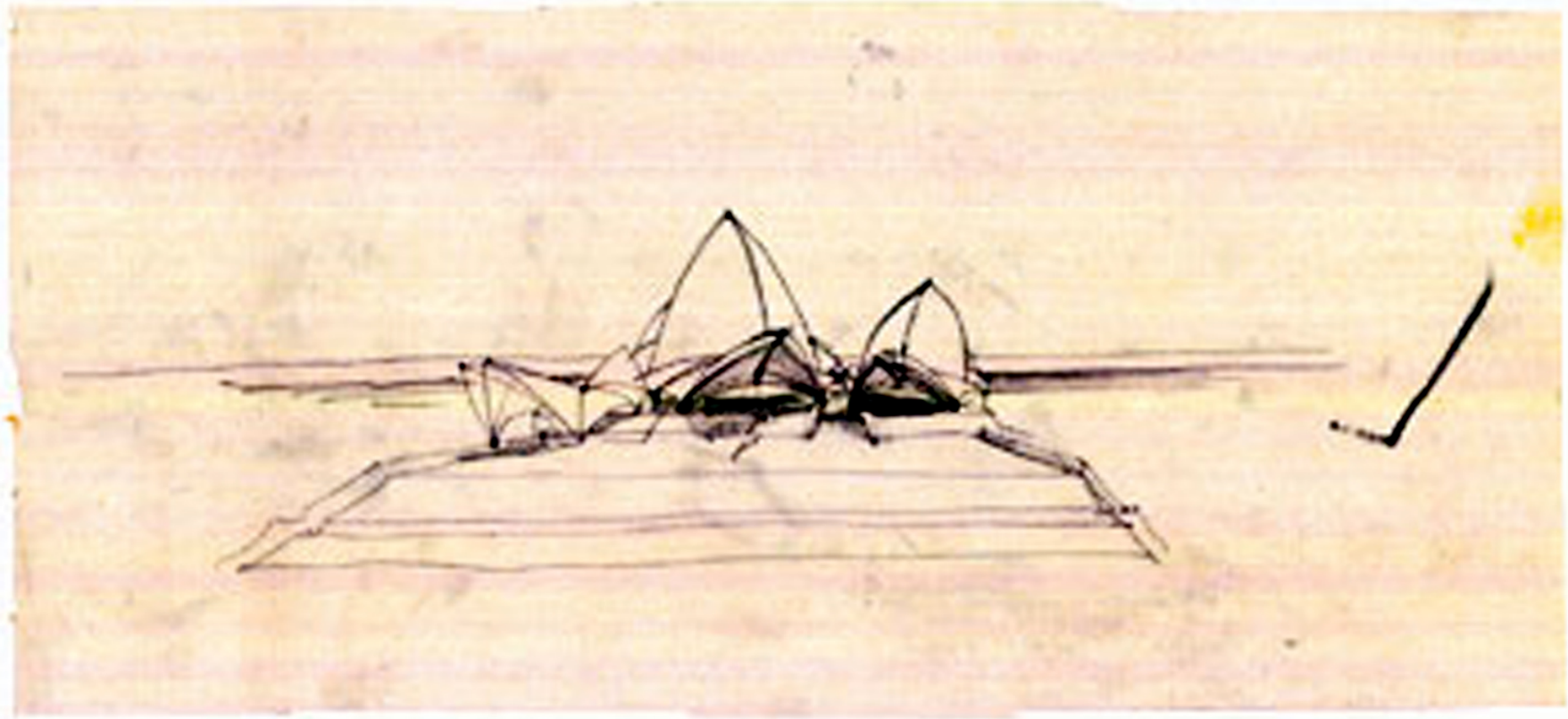


Source: Jørn Utzon





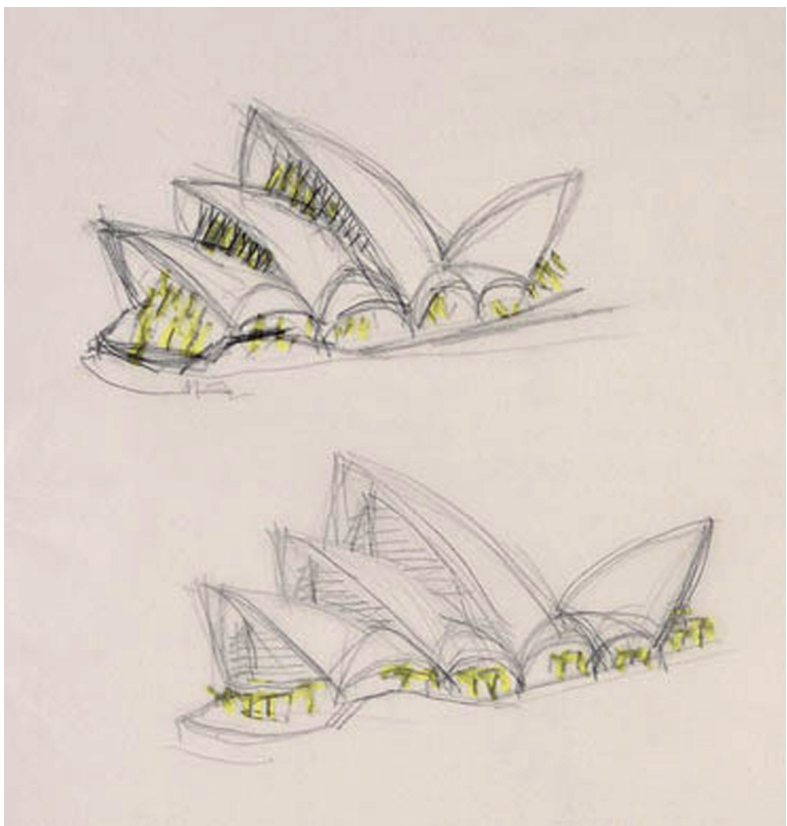
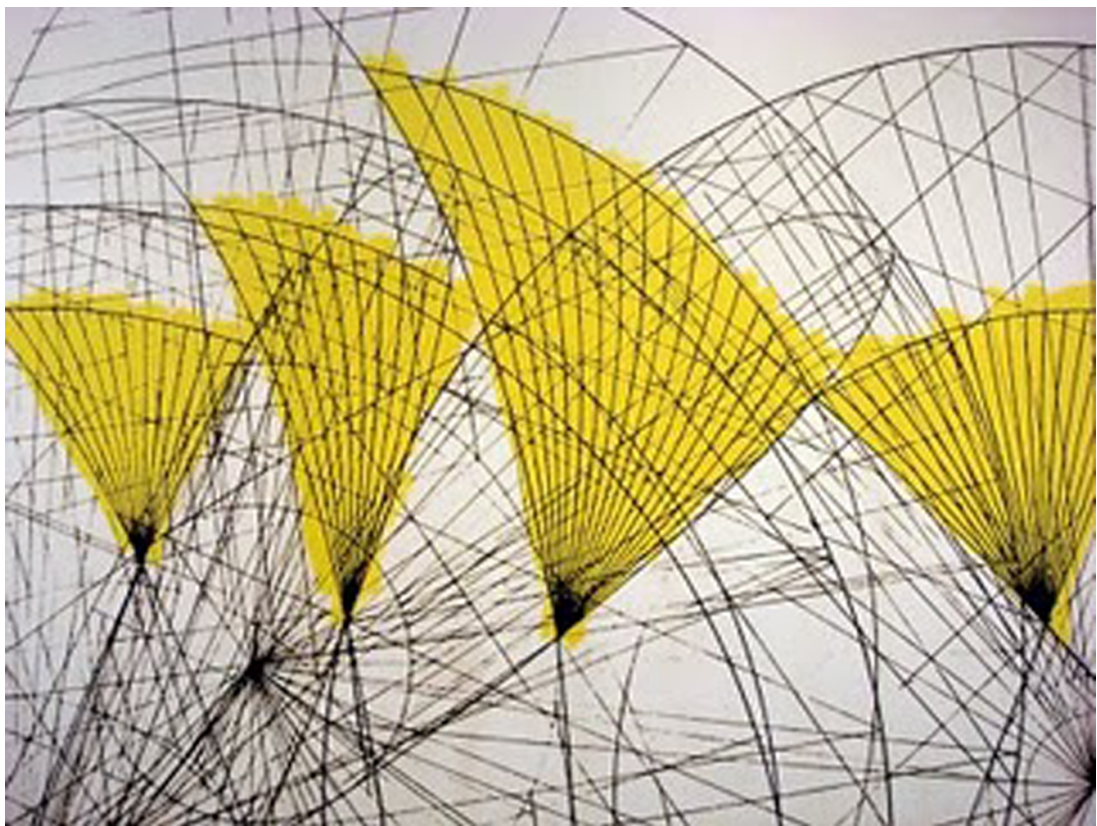




Source: Jørn Utzon



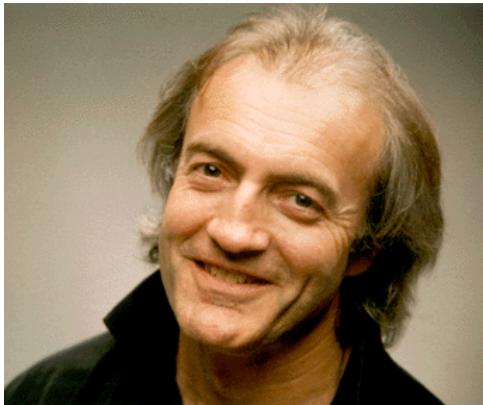




Source: Jørn Utzon

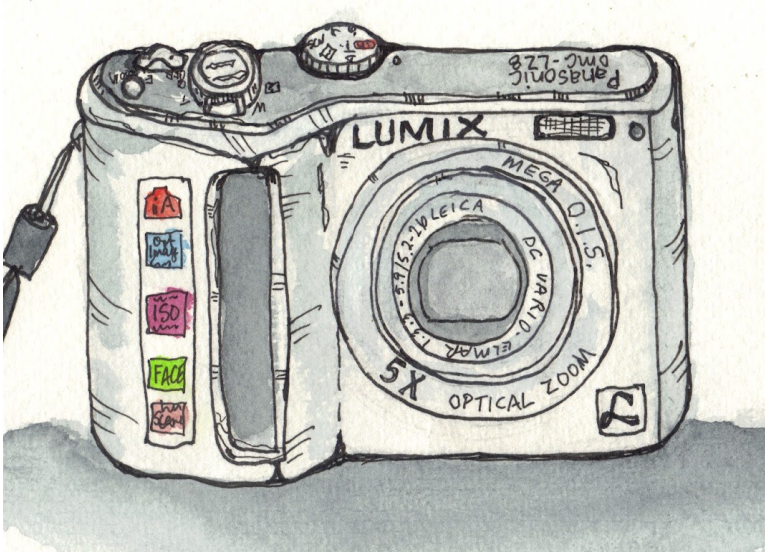


# Minimal detail and distinct gesture



# Sketching Technique: Reduce to essentials

# Sketching Technique: Reduce to essentials



VS.

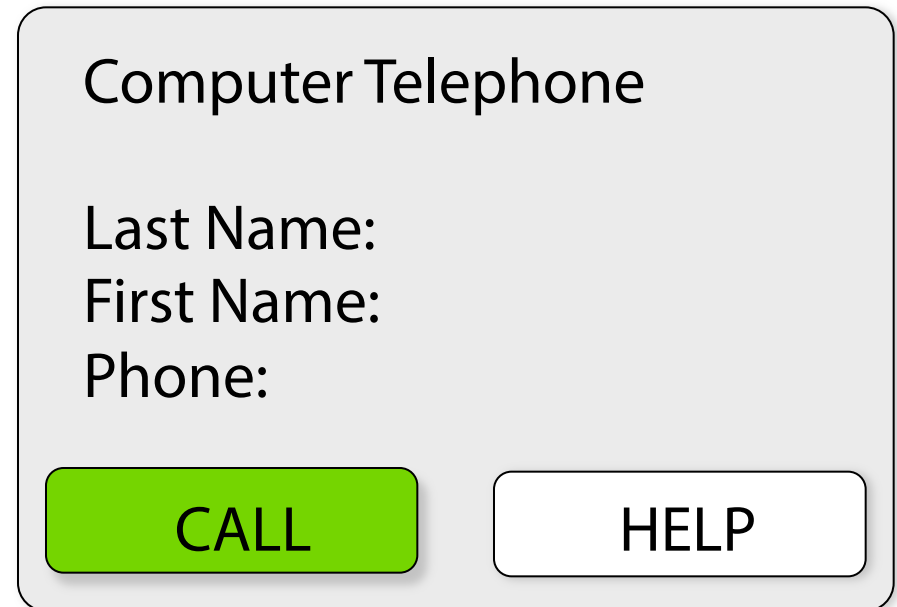
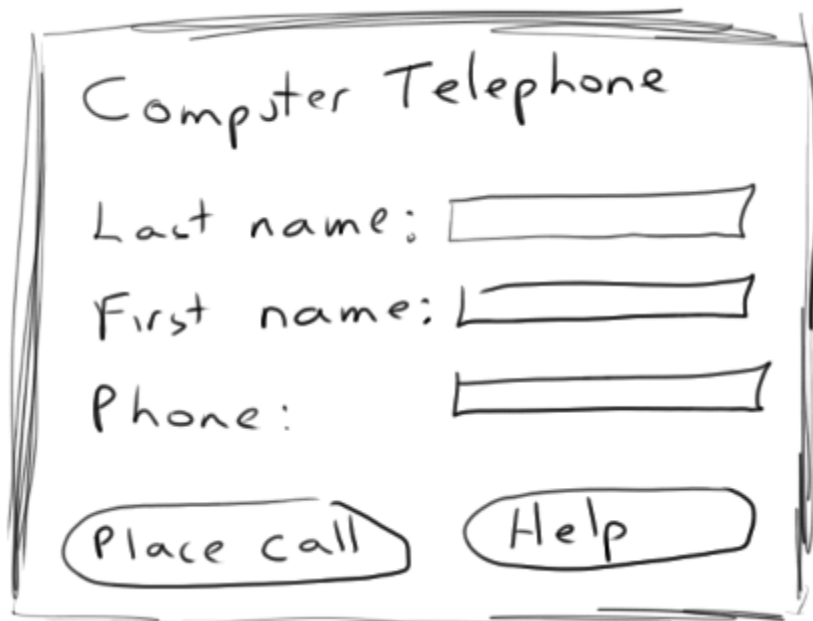




# Sketching Technique: Reduce to essentials



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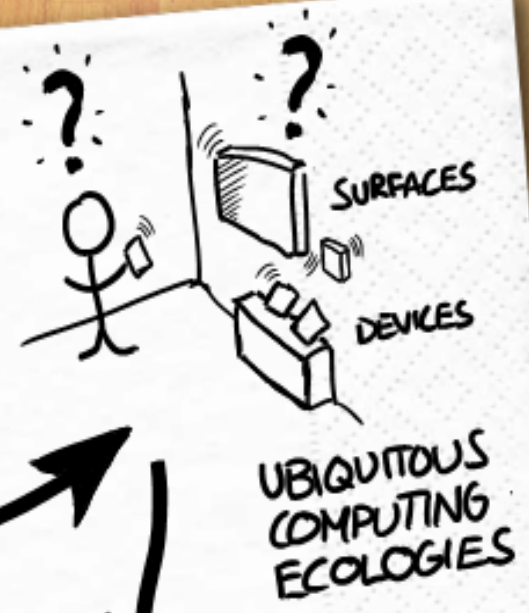




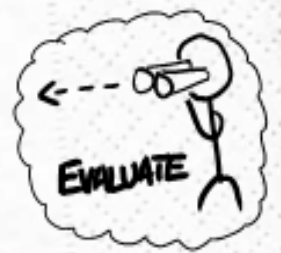
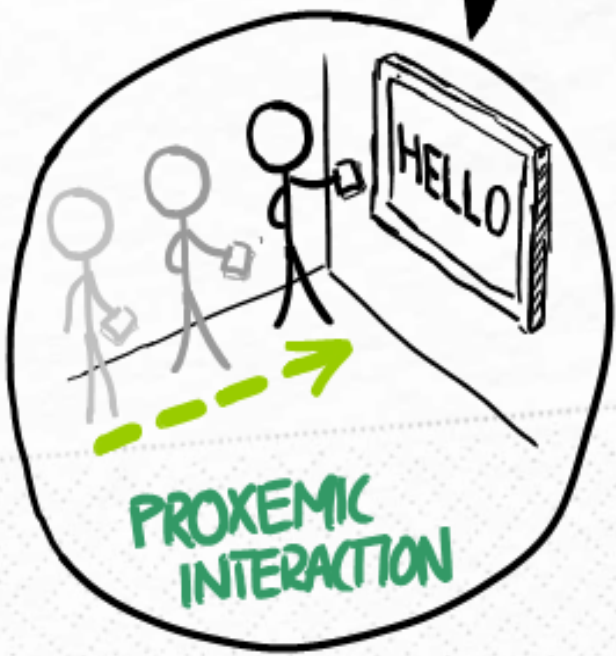




VS.



- DISTANCE *(tends to extend and contract)*
- ORIENTATION  $\alpha$
- MOVEMENT  $\rightarrow$
- IDENTITY A B C

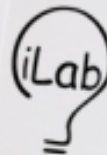
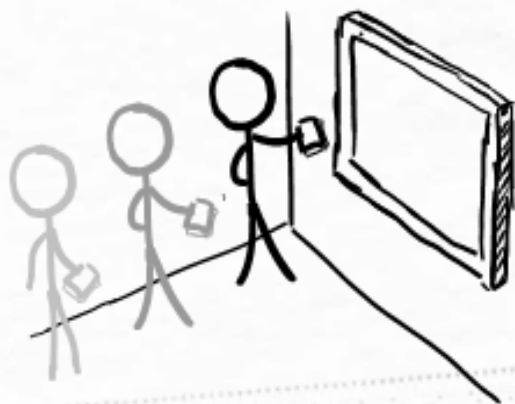


iLab

UNIVERSITY OF CALGARY

NICOLAI MARQUARDT





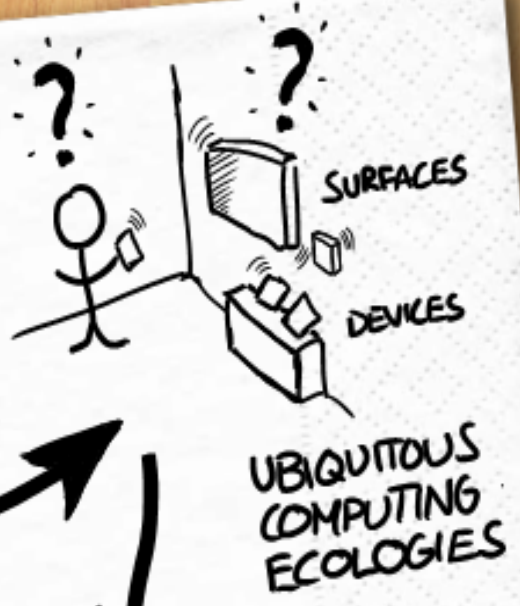
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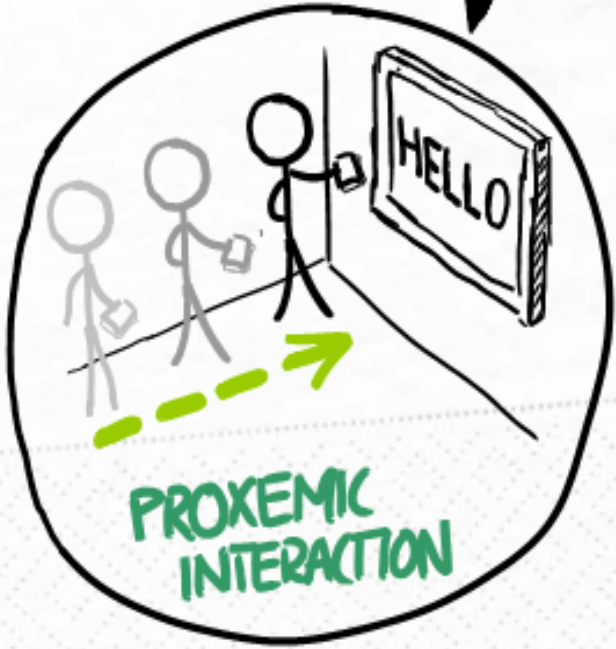




VS.



- DISTANCE  
*trends natural and artificial*
- ORIENTATION  
 $\alpha$
- MOVEMENT  
○ → ●
- IDENTITY  
A B C

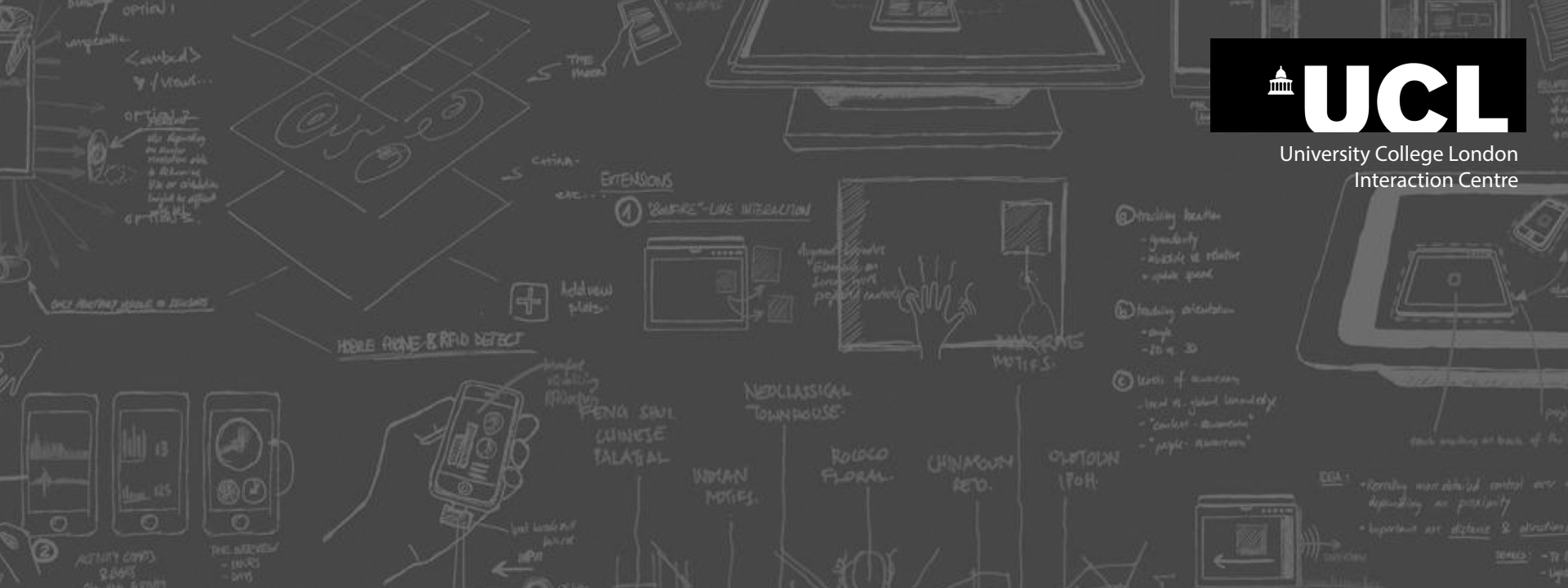




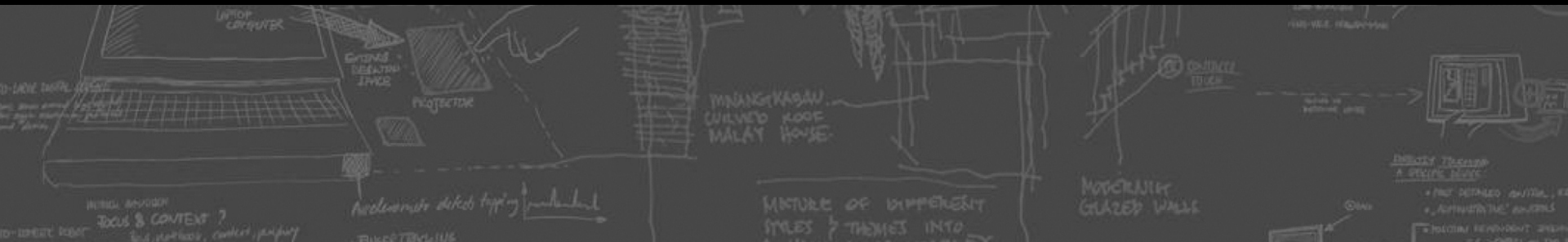
“If you want to get the most out of a sketch, you **need to leave big enough holes.**”

There has to be enough room for the **imagination.**”

Bill Buxton



# PART IV: VISUAL NARRATIVE AND STORYBOARDS



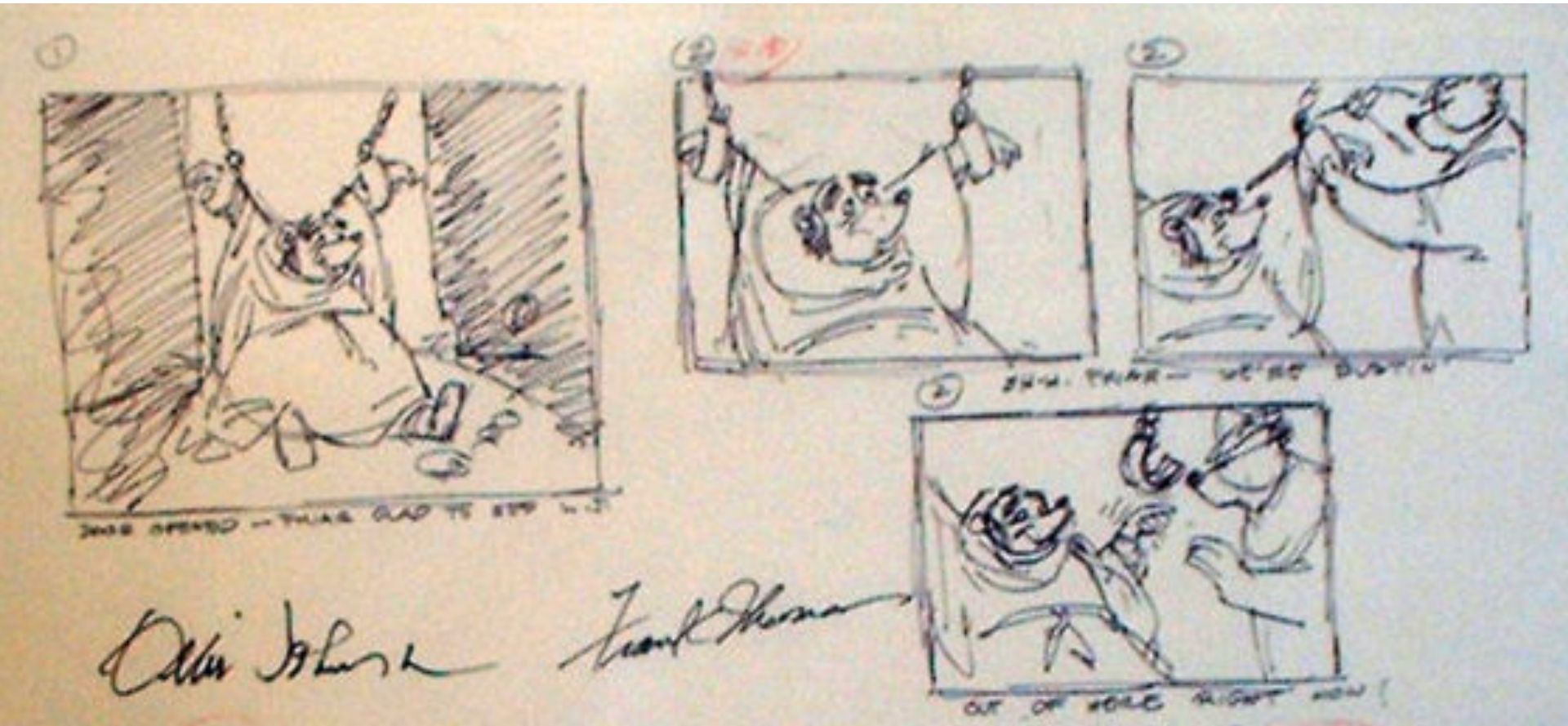


# From single sketch to storyboard

The interface only at a **single moment** in time



# Storyboards: A Long Tradition in Animation







Source: Disney





1 NOW I WONDER



2 WHO LIVES HERE...



3 MARY ANN!  
MARY ANN!



4 THE RABBIT!  
OH DRAT THAT  
GIRL!



5 WHERE COULD SHE  
HAVE PUT THEM?



6 MARY ANN!



7 NO USE -  
CAN'T WAIT -  
OH ME OH MY -



8 SO LATE -  
SO VERY VERY  
LATE!



9 EXCUSE ME  
SIR...



10 BUT I'VE BEEN  
TRYING TO...



11 --- I'M VERY LATE!



12 BUT LATE FOR  
WHAT?  
THAT'S JUST  
WHAT I...



13 GO! GO!  
GO-GO-GO!  
GET MY GLOVES!  
AT ONCE!



14 HO-HO!  
BLEE-EE-EEP!



15 DO YOU HEAR?



16 GOODNESS -  
I SUPPOSE I'LL  
BE...



17 ...TAKING ORDERS  
FROM DINAH NEXT.



18 HM'M - NOW  
LET ME SEE...



19 IF I WERE  
A RABBIT



20 WHERA WOULD I  
KEEP MY GLOVES?



21 (HUMMING) -



22 OOH!



23 (GASP) -  
OH NO - NO!  
NOT AGAIN!



24 OH - THIS  
IS TERRIBLE!



25 I MUST GET OUT -  
QUICK!



26 ...OF ALL THE  
BRAINLESS,  
BUNGLING  
BLUNDERING...



27 OOH!



28 OH MY FUZZY  
PUG AND WHISKERS!



29 H-E-L-P!



30 BL-EE-EE-EEP!



31



32



33



34



35



36



37



38



39



39 OH DEAR -



40 WHAT'LL I DO?



41 A M-MONSTER!  
A MONSTER, DODO -  
---IN MY HOUSE,  
DODO!



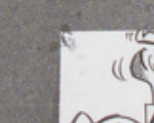
42 OH MY DEAR LITTLE  
SITTY HOUSE -  
D-STEADY - STEADY  
CAR CRAP -



43 CAN'T BE AS BAD  
AS ALL THAT, YOU  
KNOW -  
R- OH MY TERRIBLE ANG -



44 THERE IT IS!



45 BY GOVE!



46 IT JOLLY WELL  
IS - ISN'T IT?



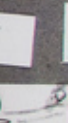
47



48



49



50



50



51



52



53



54



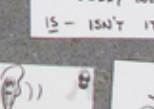
55



56



57



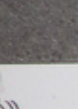
58



59



60



61

# Key Elements: Annotations



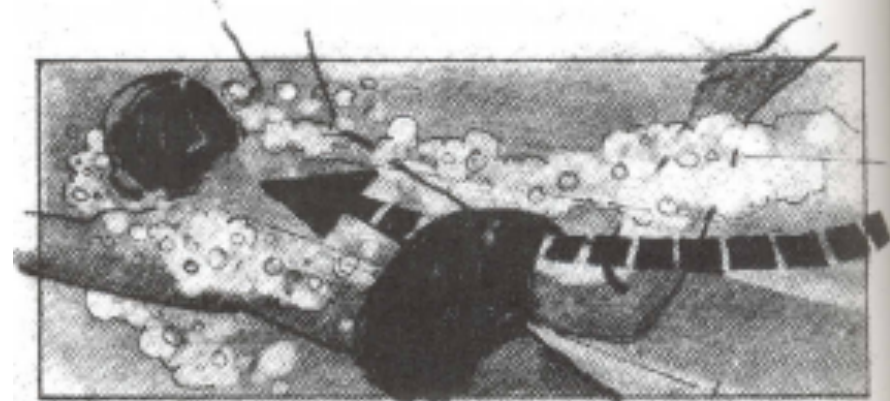
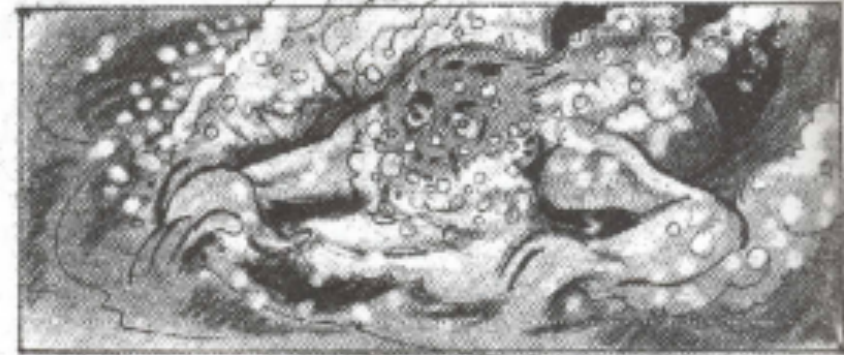
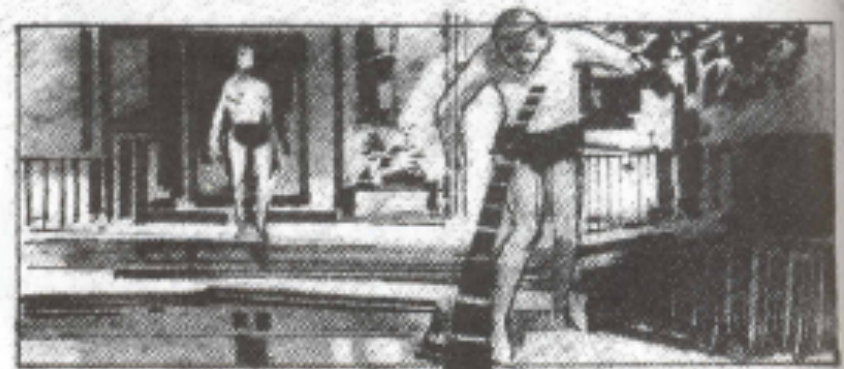


# Key Elements: Annotated Actions



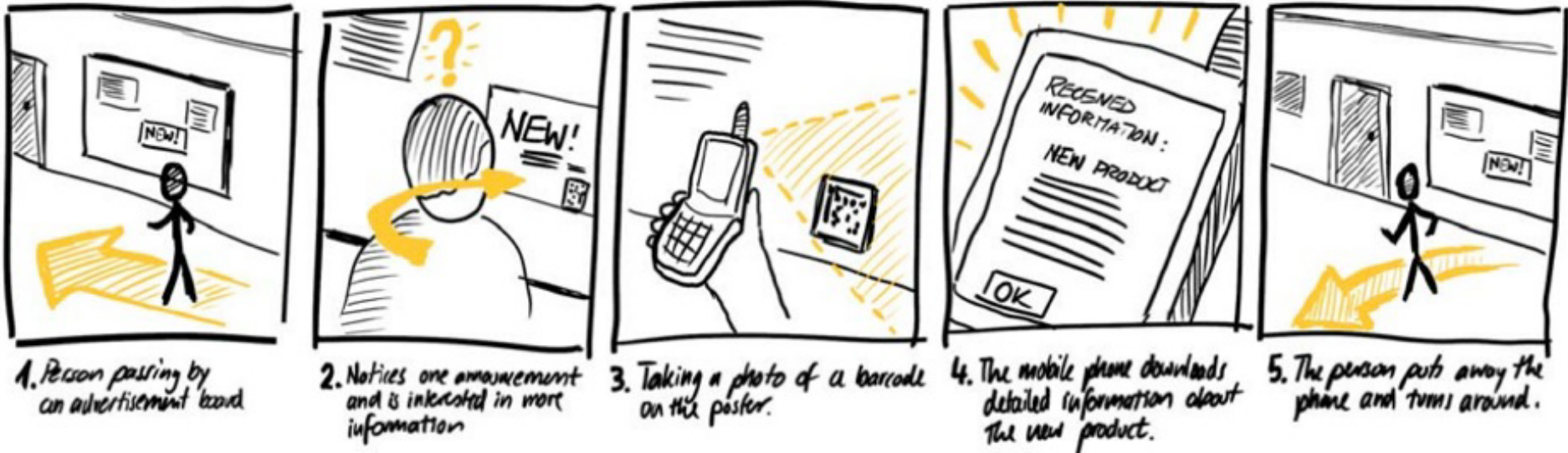


# Key Elements: Transitions

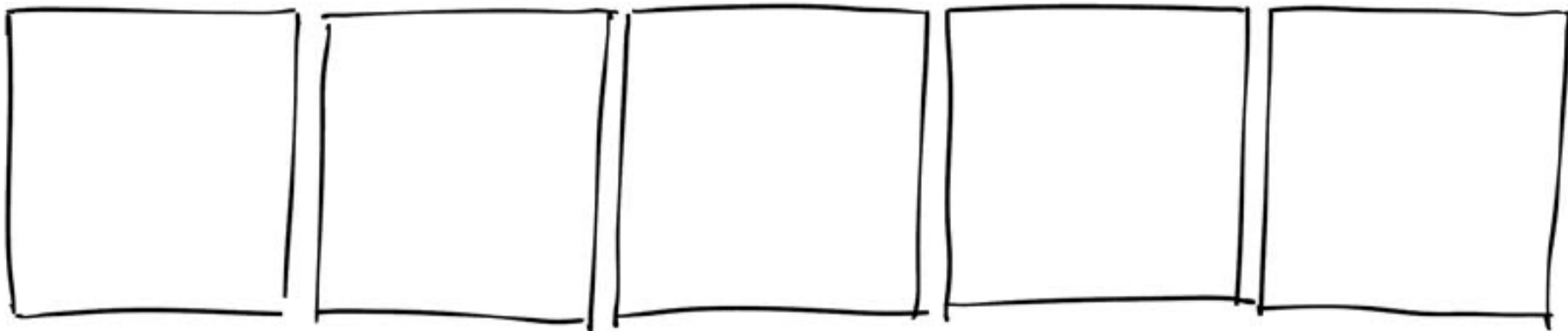




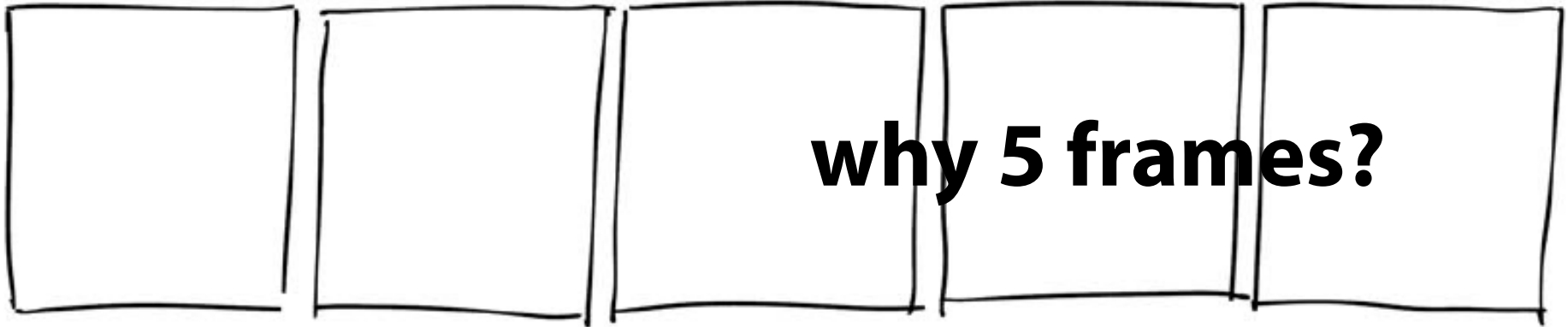
# The goal



# Begin with 5 empty frames

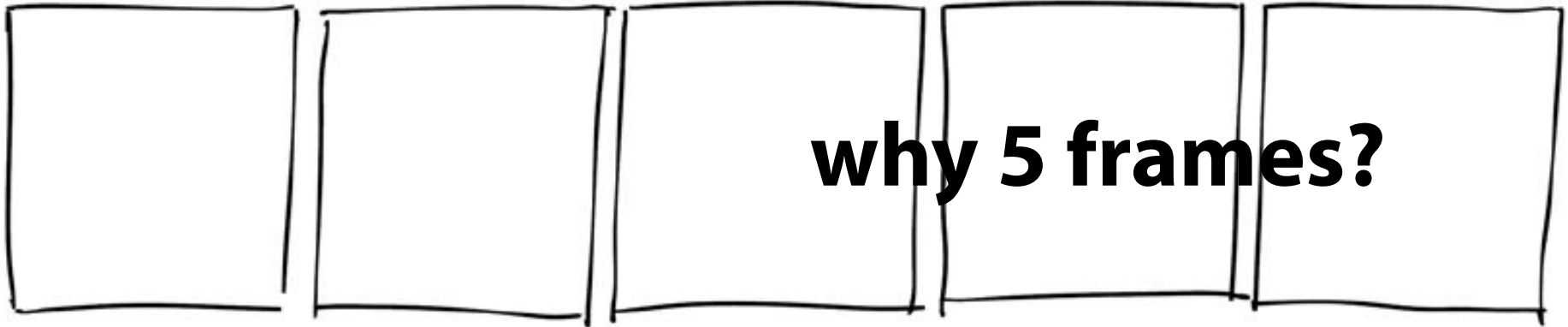


# Begin with 5 empty frames



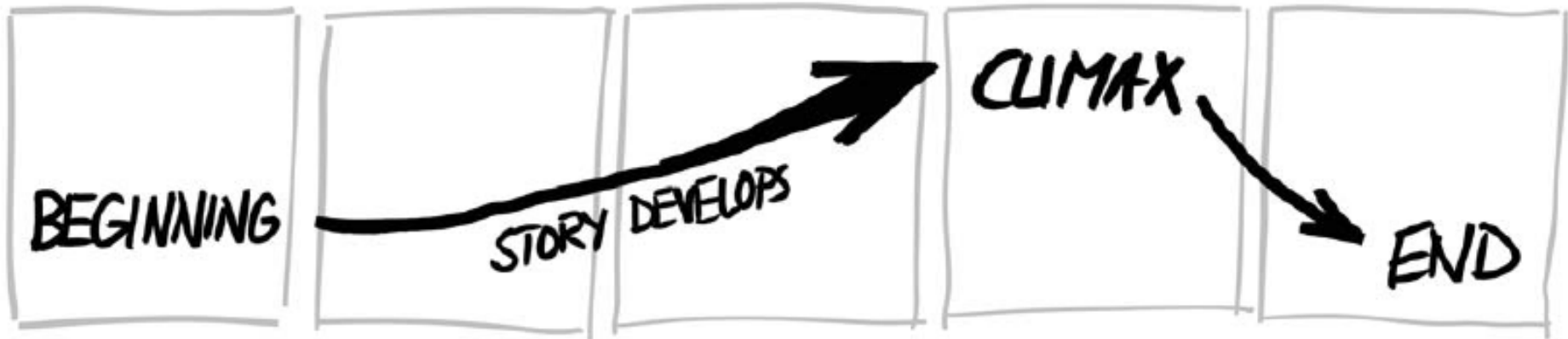


# Begin with 5 empty frames

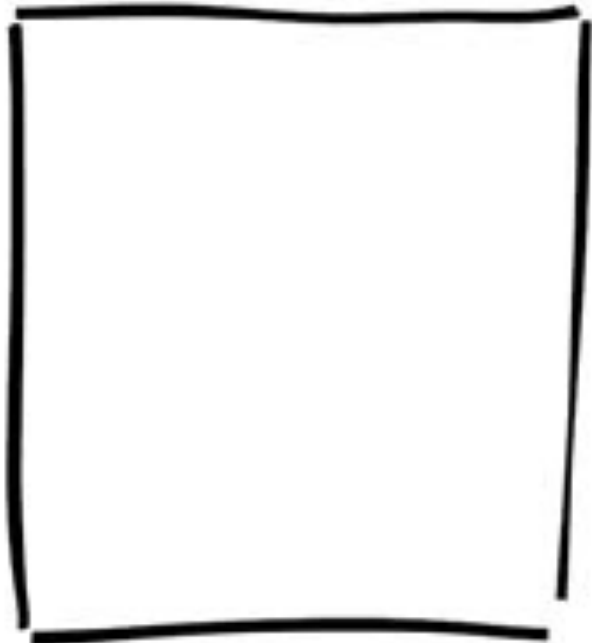


- range between 3 and 7
- if more: try to split it up

# Develop a story



# Write script: 1 sentence per frame

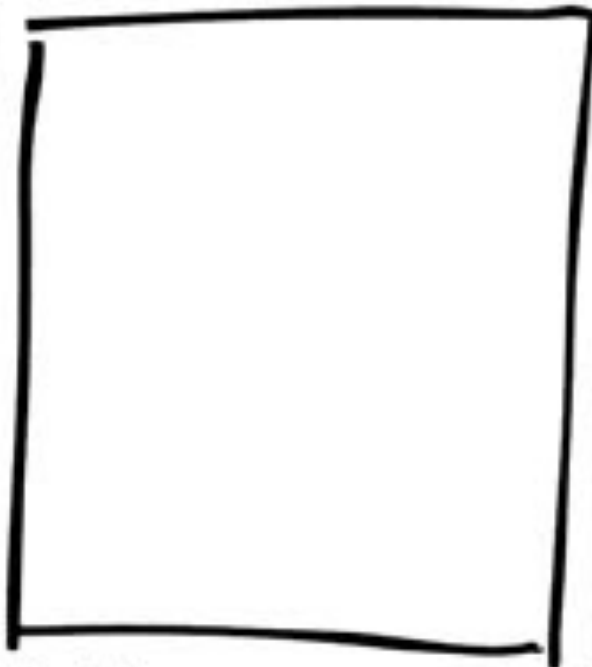


A. Person passing by  
an advertisement board

# Write script: 1 sentence per frame



1. Person passing by an advertisement board



2. Notices one announcement and is interested in more information



3. Taking a photo of a board on the poster.

# Sketch the individual frames



1. Person passing by an advertisement board

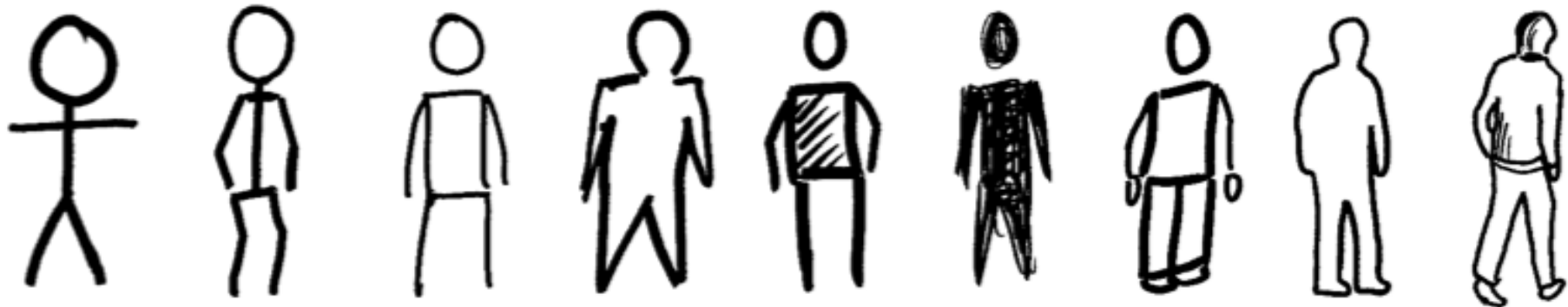


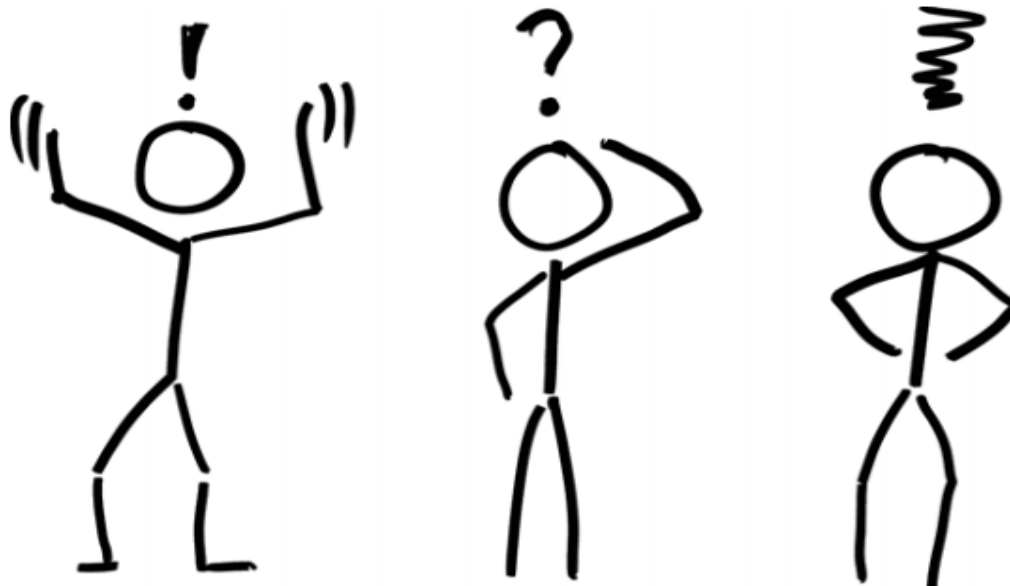
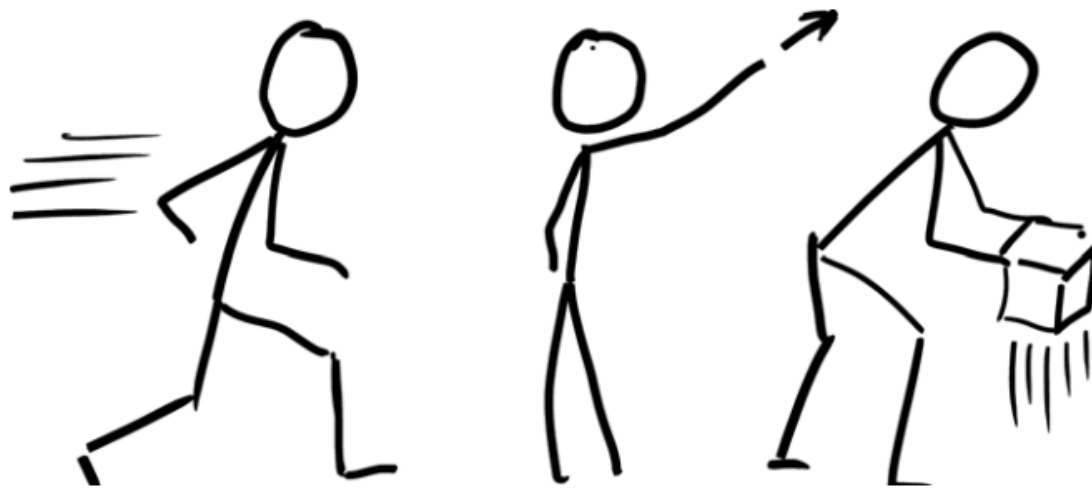
# Sketch the individual frames

**Remember:** use sketching vocabulary and other sketching techniques we learned earlier



*1. Person passing by an advertisement board*





# Select appropriate camera shots (learning from film making)

# Select appropriate camera shots (learning from film making)



**Extreme long shot (wide shot)**  
A view showing details of the setting, location, etc.



**Long shot**  
Showing the full height of a person.



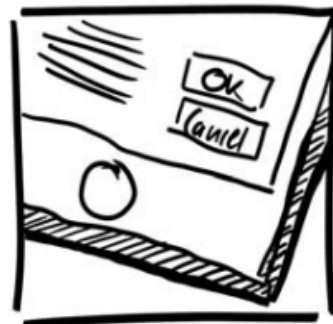
**Medium shot**  
Shows a person's head and shoulders.



**Over-the-shoulder shot**  
Looking over the shoulder of a person.



**Point of view shot (POV)**  
Seeing everything that a person sees themselves.



**Close-up**  
such as showing details of a user interface a device the person is holding.





## Extreme long shot (wide shot)

A view showing details of the setting, location, etc.



**Long shot**  
Showing the full height  
of a person.



## Medium shot

Shows a person's head and shoulders.



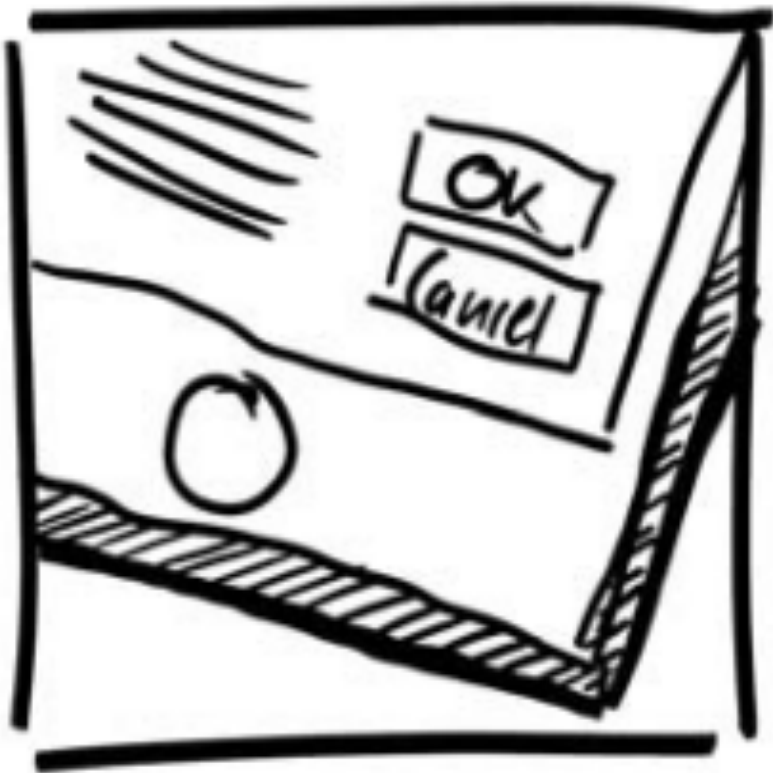
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## Point of view shot (POV)

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such as showing details of  
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# Select appropriate camera shots



**Extreme long shot (wide shot)**  
A view showing details of the setting, location, etc.



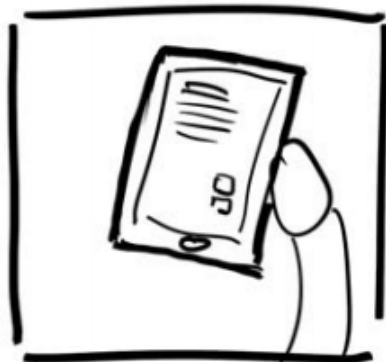
**Long shot**  
Showing the full height of a person.



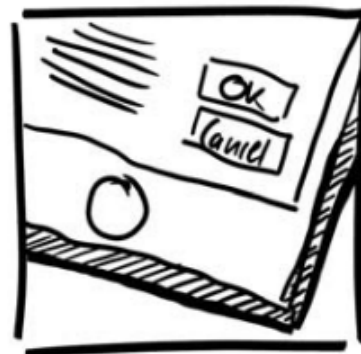
**Medium shot**  
Shows a person's head and shoulders.



**Over-the-shoulder shot**  
Looking over the shoulder of a person.

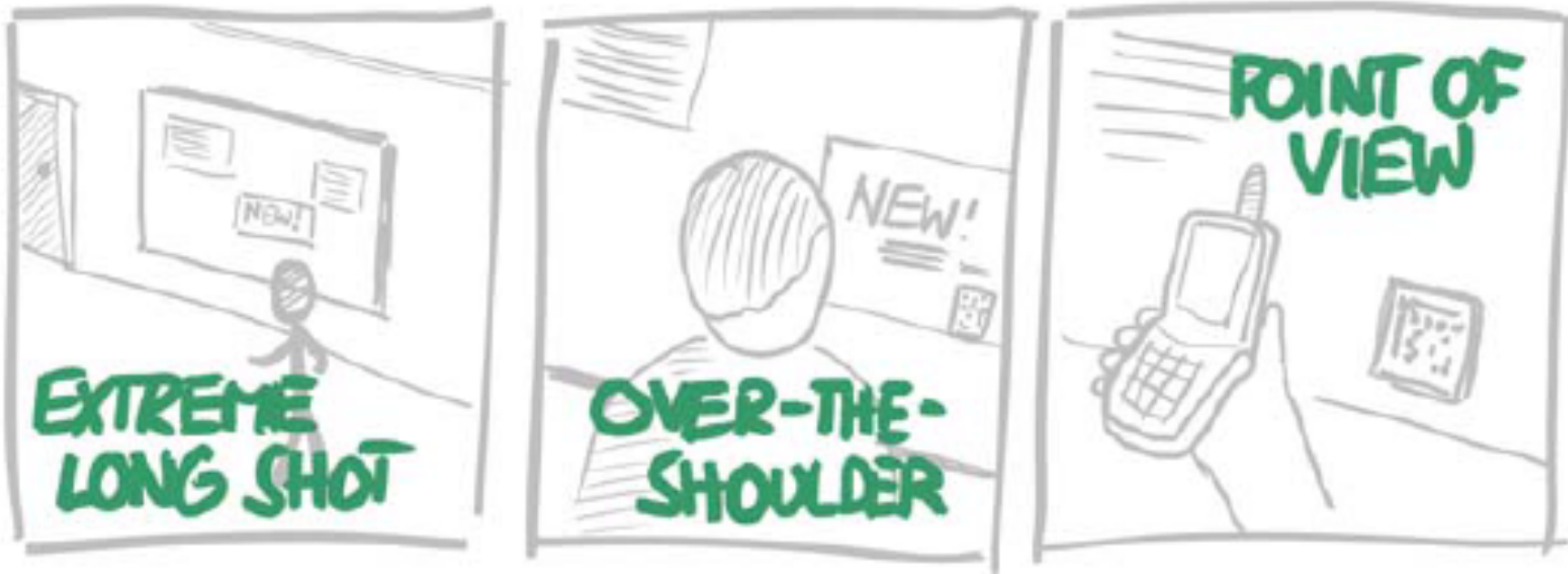


**Point of view shot (POV)**  
Seeing everything that a person sees themselves.



**Close-up**  
such as showing details of a user interface a device the person is holding.

# Select appropriate camera shots (learn from film making)



# Key Decisions

- **should I show the user in the scene?**
- **what key frames** should I use to create the sequence?
  - capture the essence of the story
  - people can 'fill in' the rest
- **what key transitions** should I show?
  - actions to get from one frame to the next?

# Emphasize actions and motions

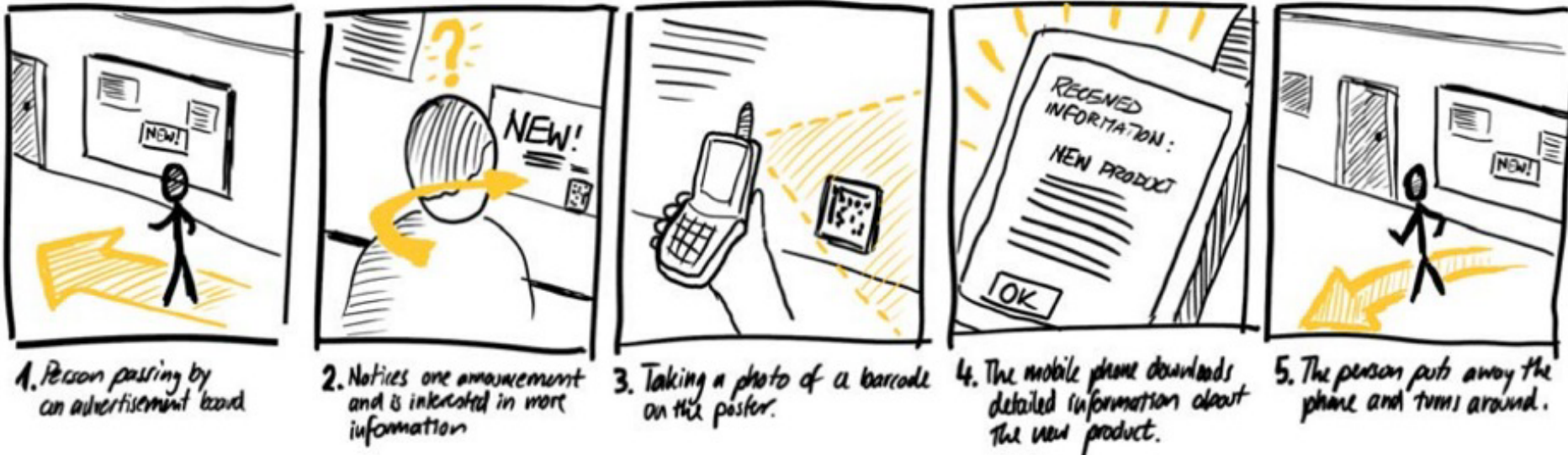




**Add annotations**  
to emphasize people's  
actions or thoughts,  
or changes happening in  
a device's user interface



# The final storyboard



# Case study (Kevin Cheng): The Square



Source: Kevin Cheng

# Case study (Kevin Cheng): The Square



# ***Hands-on Sketching: Storyboards***



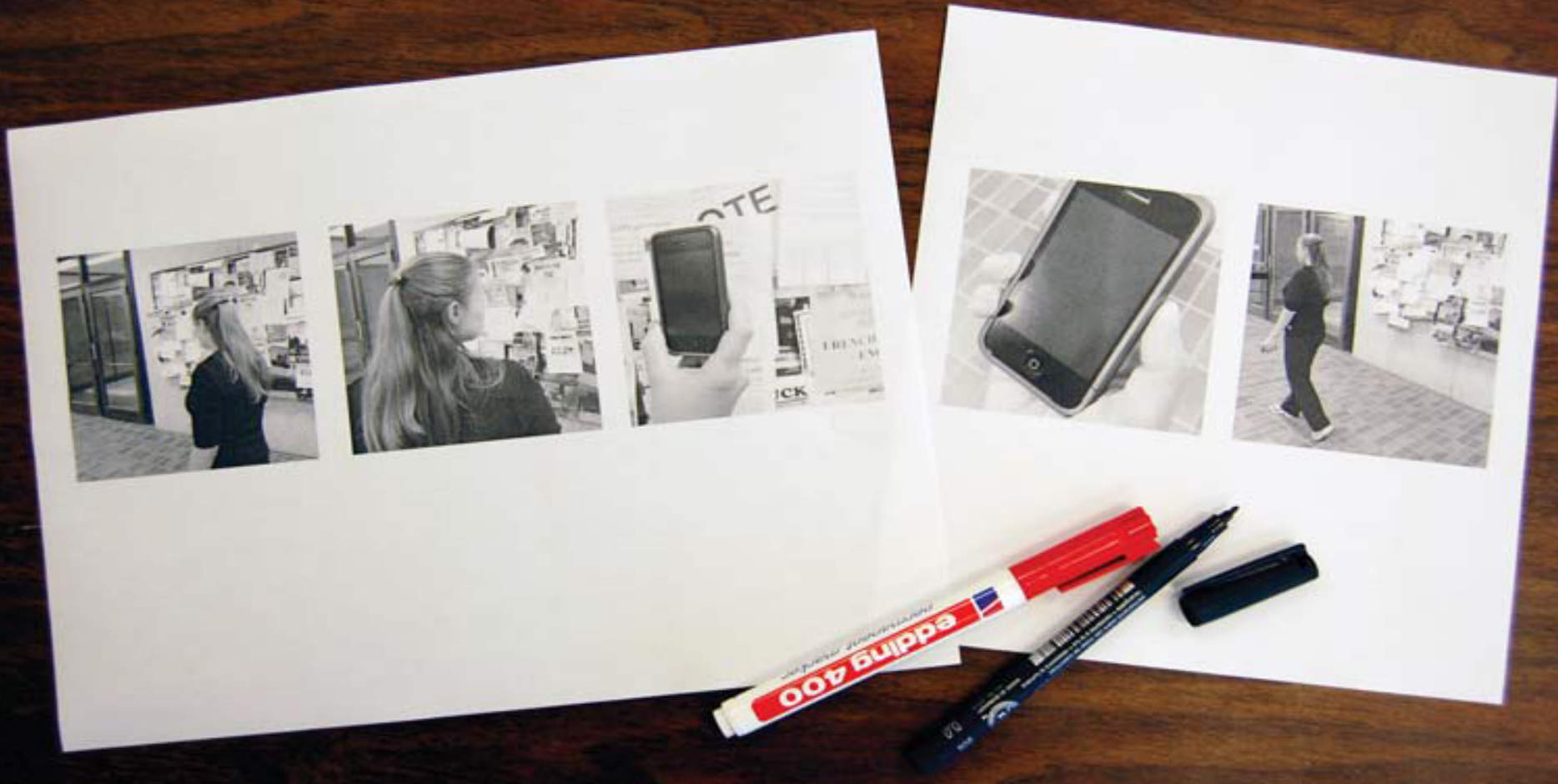


# Shortcuts and other methods for creating storyboards

# Photo-based storyboards: Take 5 photos of key moments



# Print out (50% transparency)





# Add annotations



# Add storyline and comments





# Overlays



# Overlays



# Overlays



Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011

# Result



① Person is passing by an advertisement board



② Notices one particular announcement and is interested in more inform.



③ Takes a photo of the barcode on the poster.



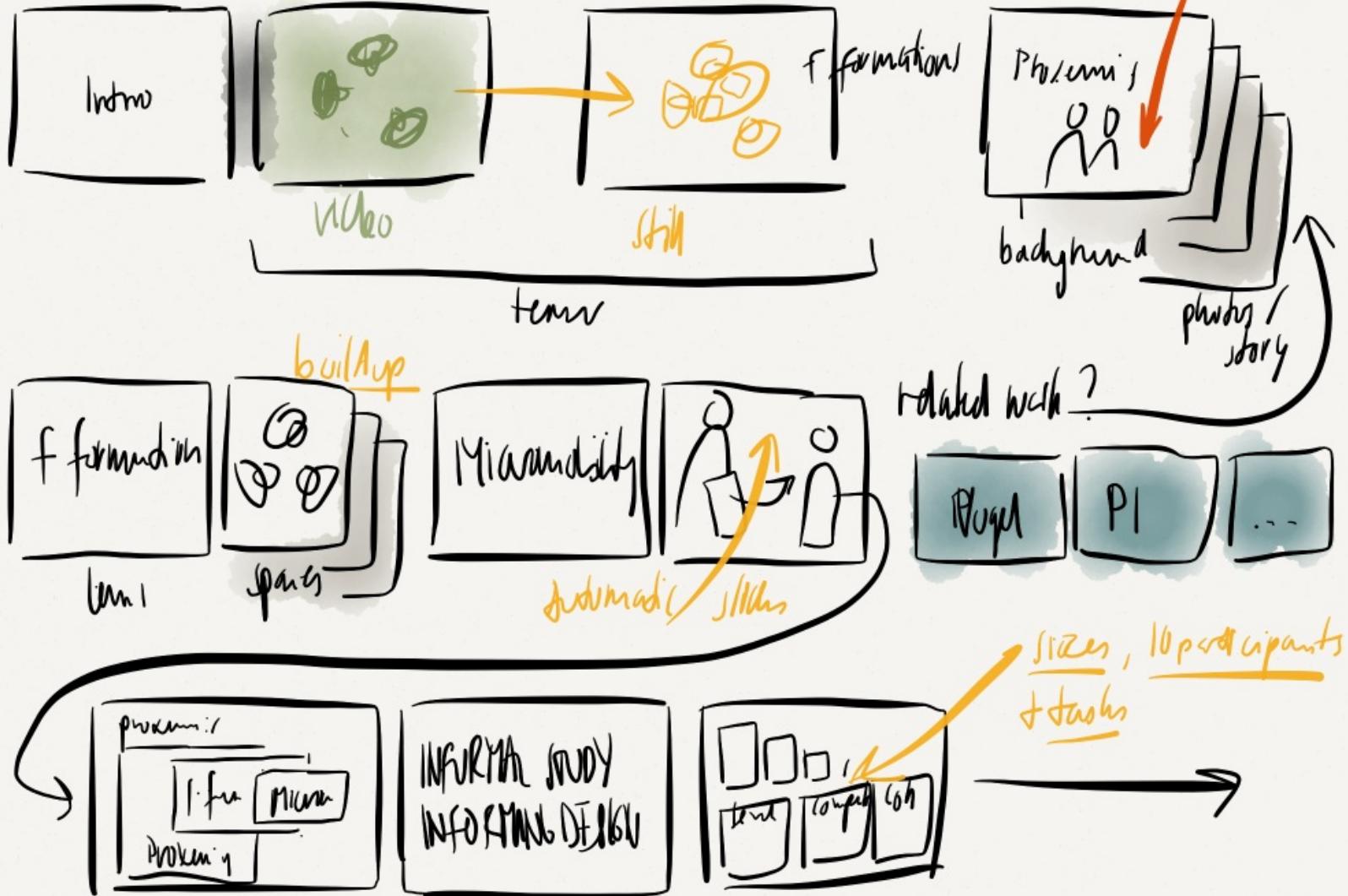
④ Detailed information appears on the phone's screen



⑤ Person turns around and leaves.



# MJR GROUP TOGETHER (I)









Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011



Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011

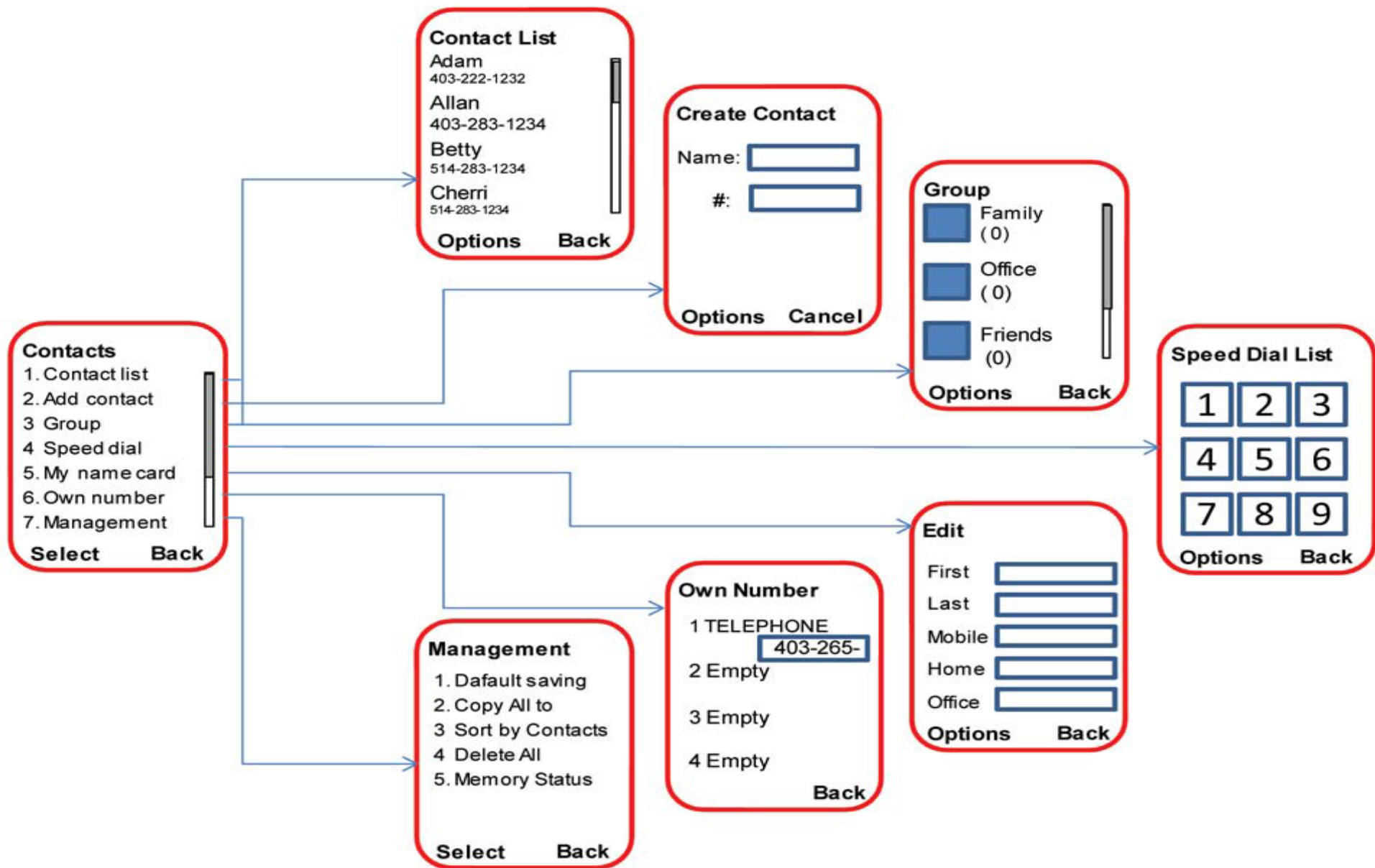


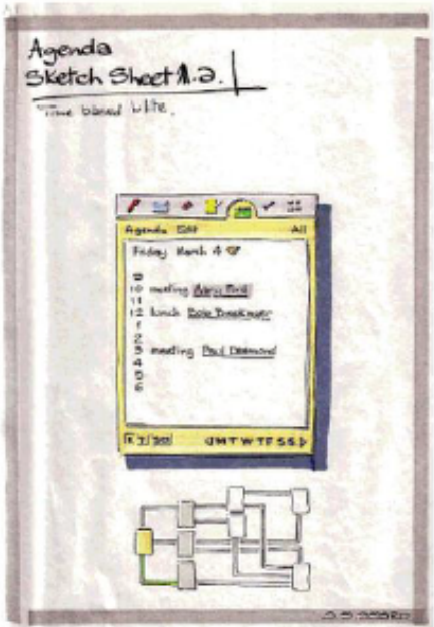


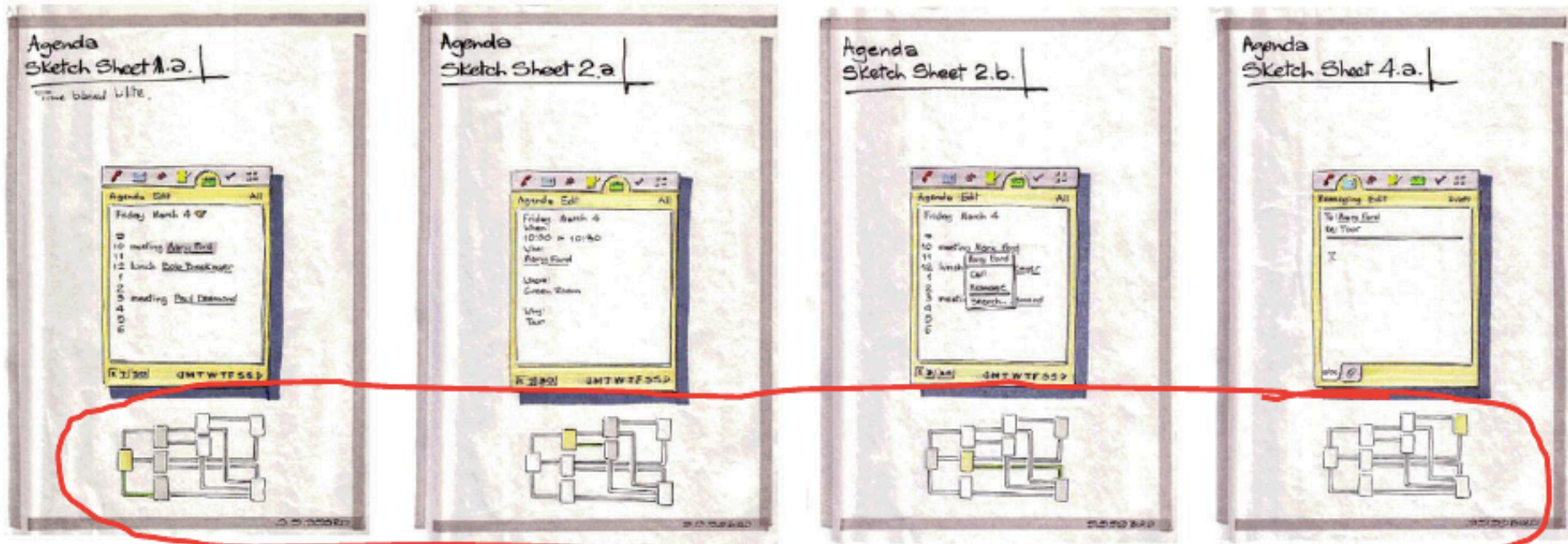
Source: Sketching User Experiences: The Workbook, Morgan Kaufmann, 2011











The sequence of images sketches out a potential design for interacting with a mobile calendar agenda application.

State Transition Diagram



# Case Study:

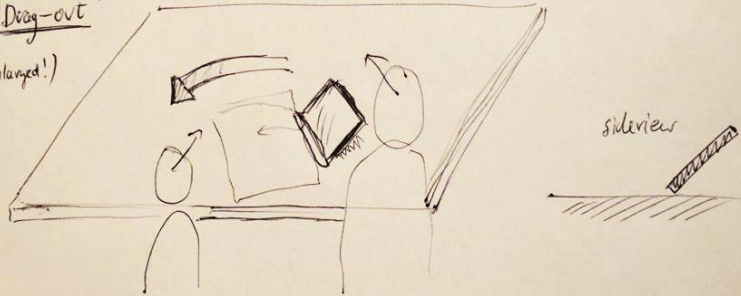
## Microsoft Research Cross-Device Interactions



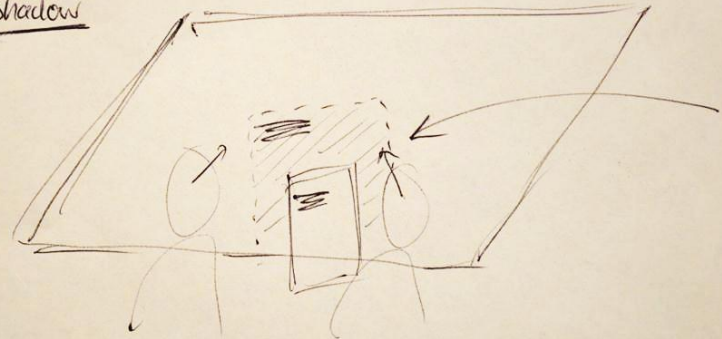


Tablets/ ~~devices~~ + table + supporting micro-mobility

① ~~Fan-out~~  
"Drag-out"  
(enlarged!)

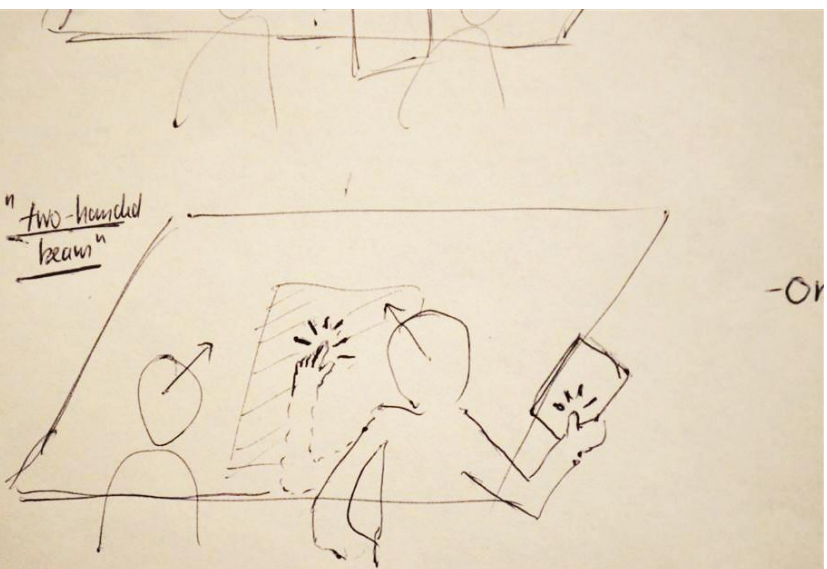


② "Shadow"

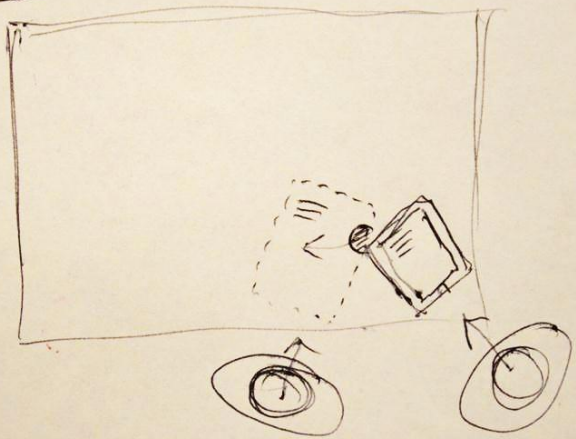


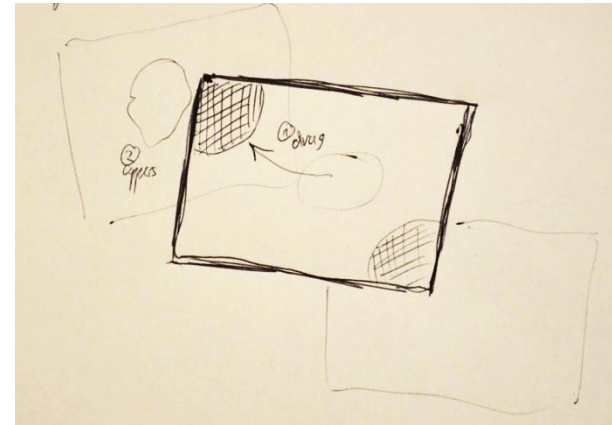
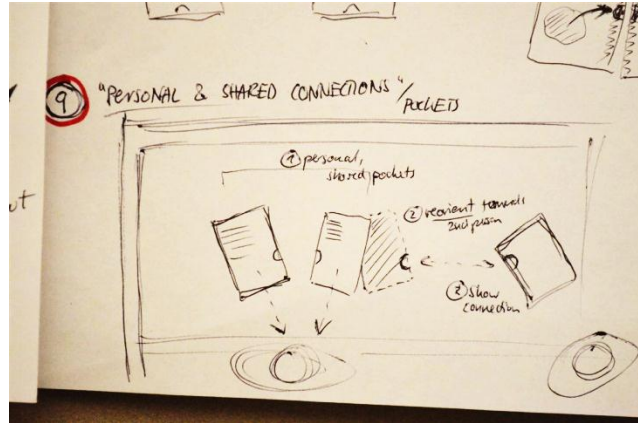
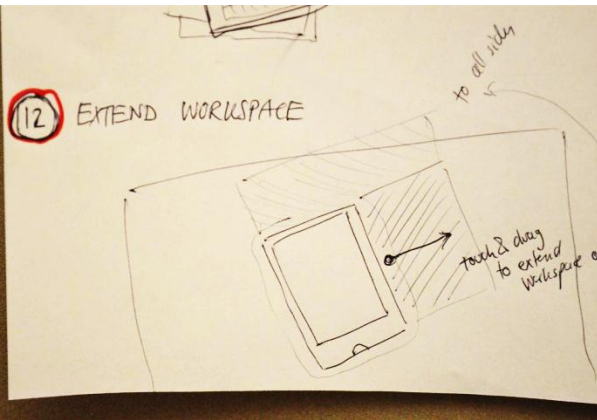
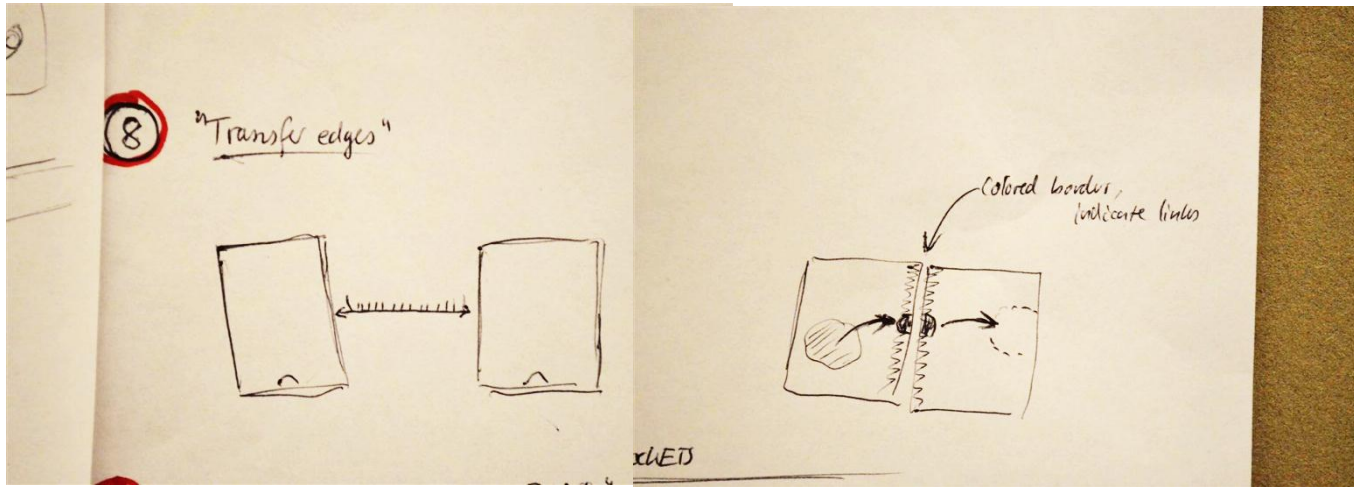
③ "two-handed"

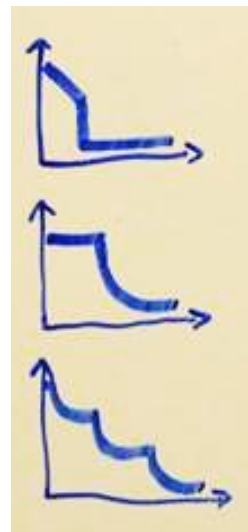
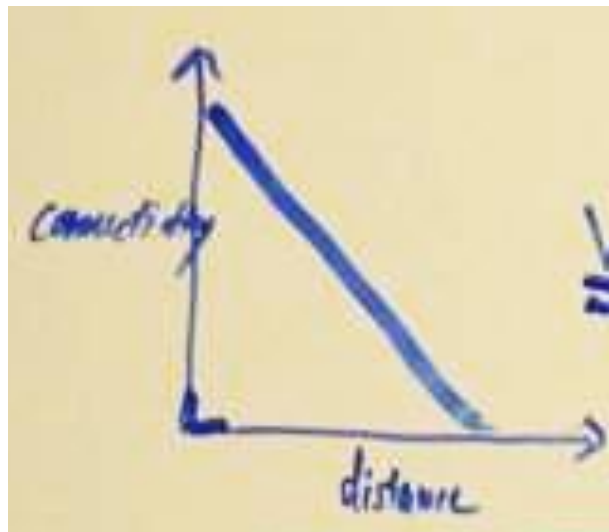
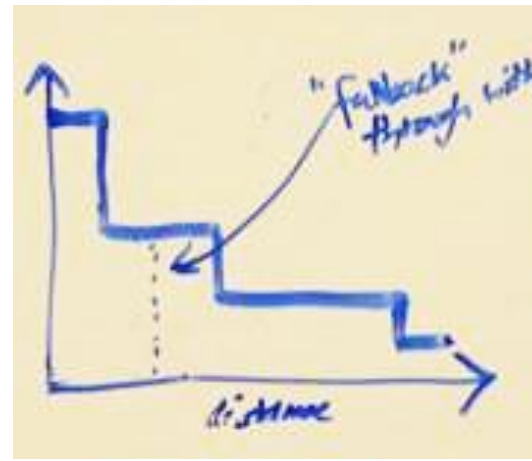
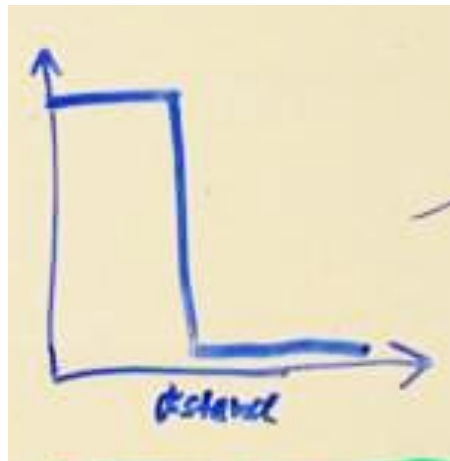
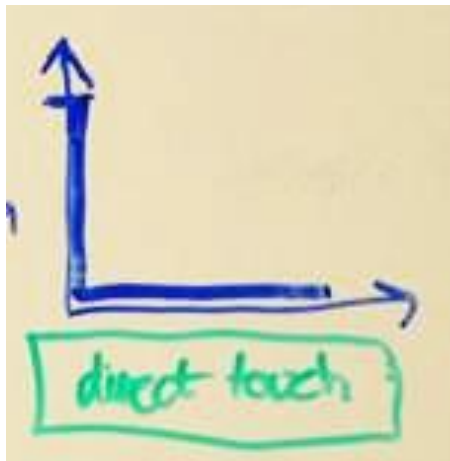
③ "two-handed beam"



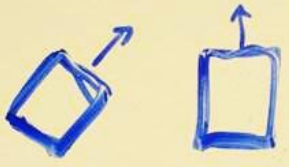
④ "Mirror"











in







**Exploratory  
study: 10  
participants**

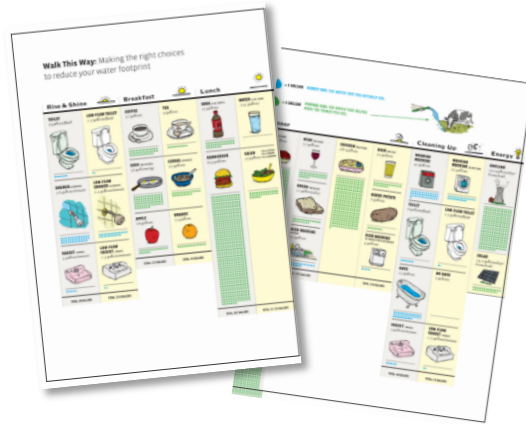


**Foam-core  
mockups of  
devices**

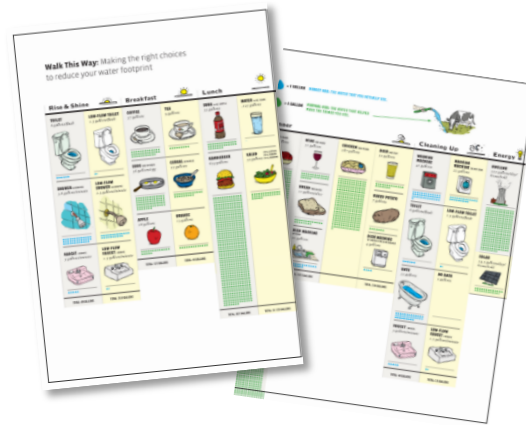
# Tasks

# Tasks

collaborative



# Tasks



collaborative



competitive

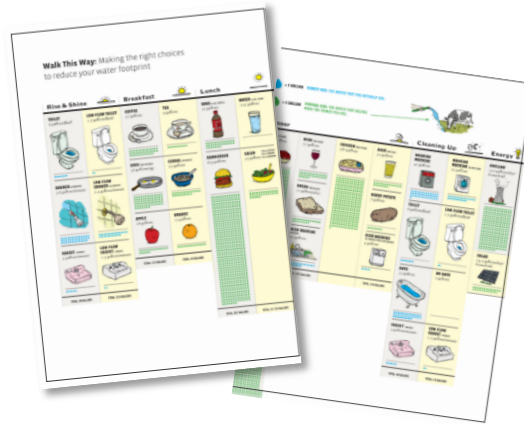


# Tasks

collaborative

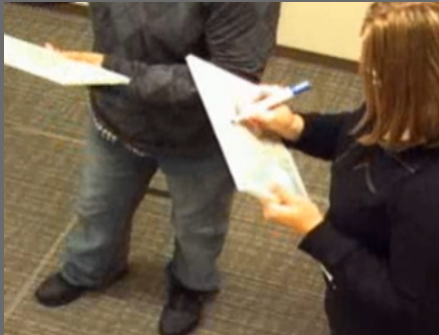
competitive

individual





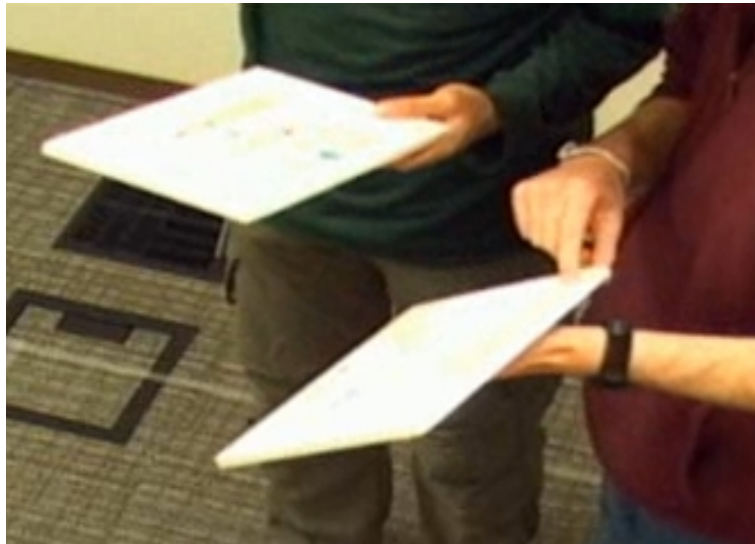
Collaborative



Individual



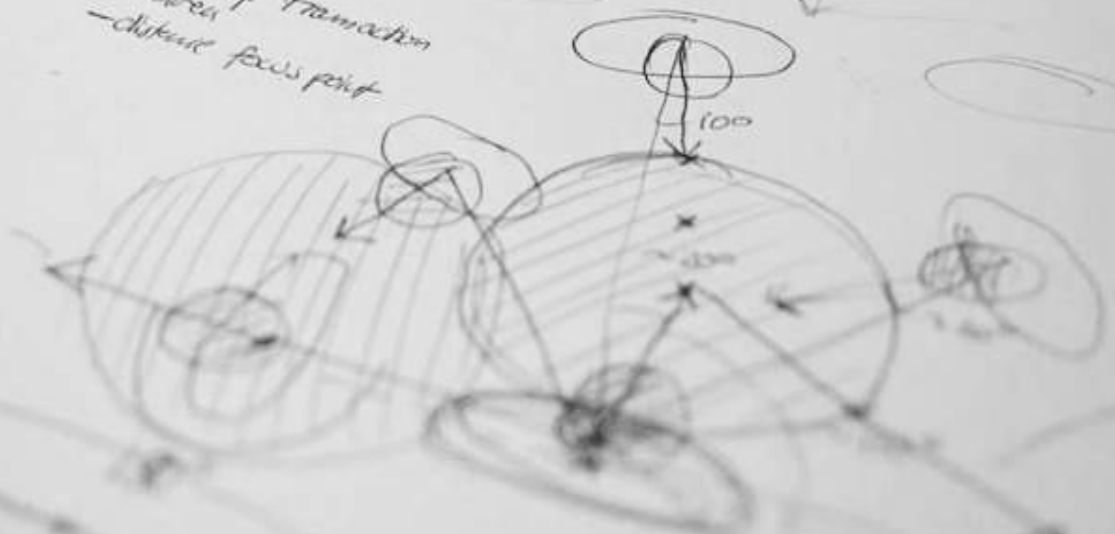
Competitive



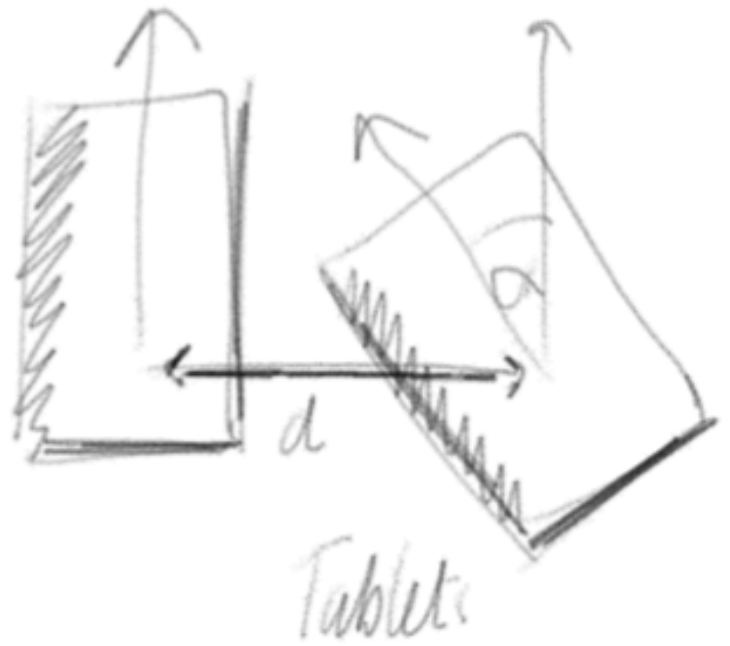


⑤  
⑥  
⑦  
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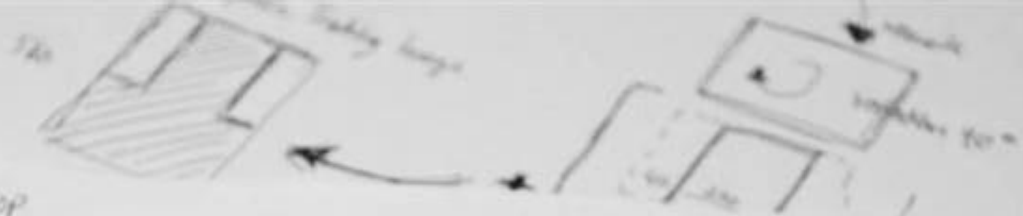
- credit transaction  
- distant focus point



# F-FORMATIONS

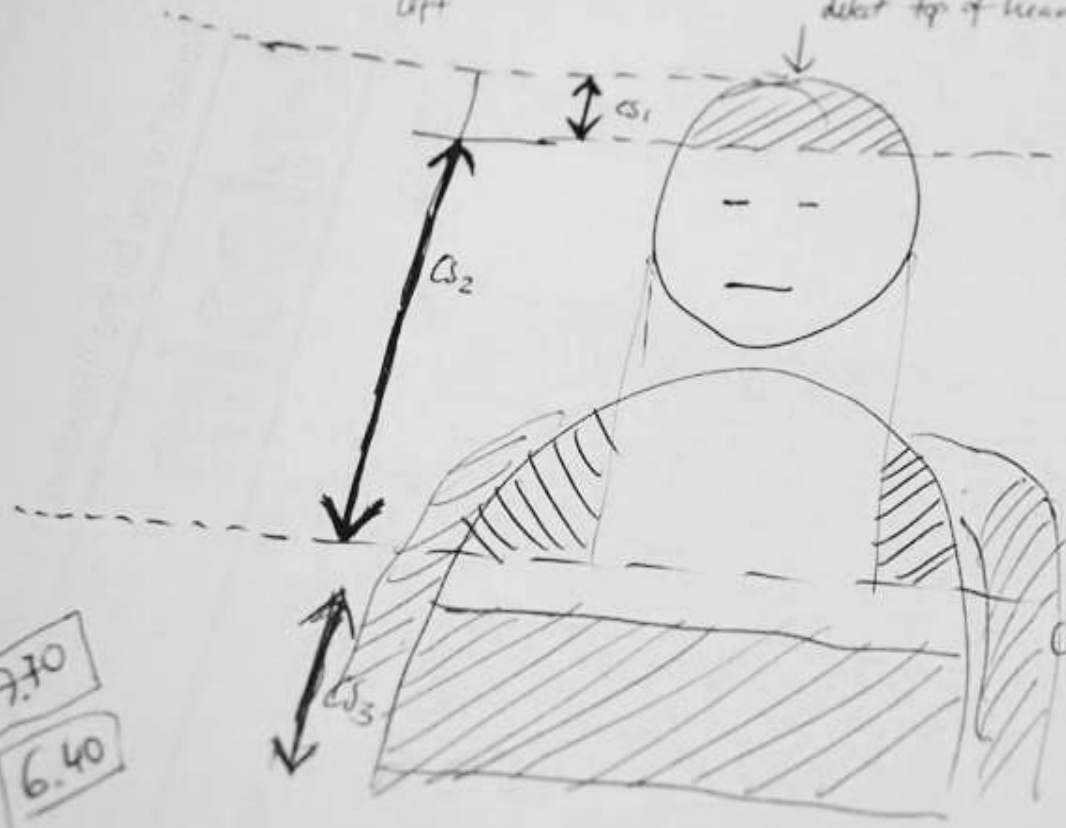






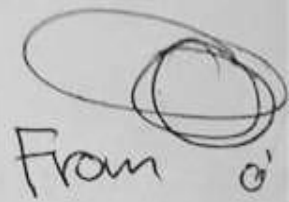
Top left

debat top of head



cutting plane head Segment (1)

cutting plane shoulders Segment (2)



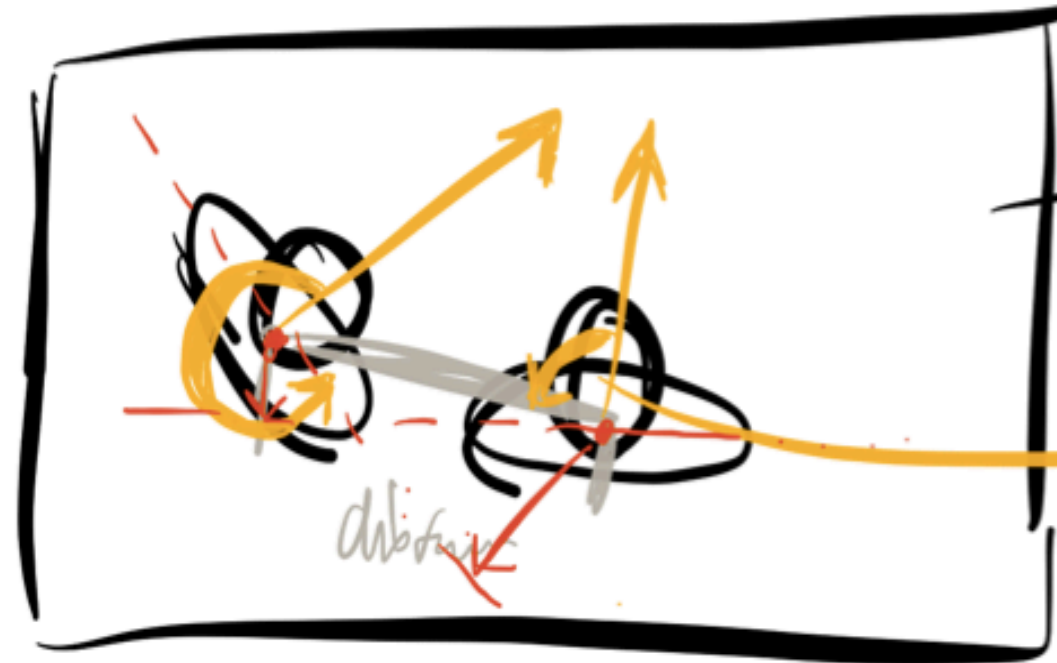
7.70  
6.40





could be part of figure 2 (smaller!)

distal formations



tolerance values

angles

distal

# FIGURES MSR PAPER

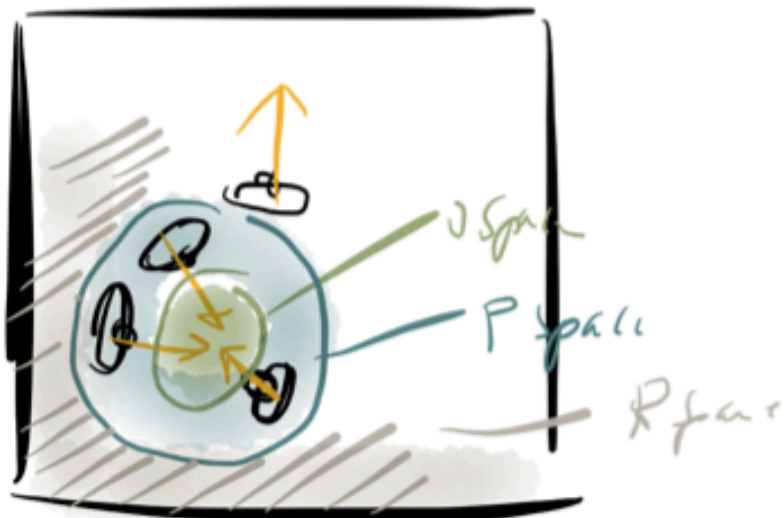


FIGURE 2

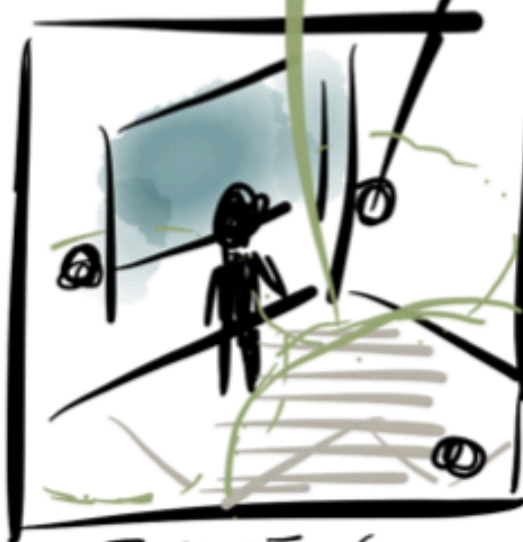


FIGURE 6

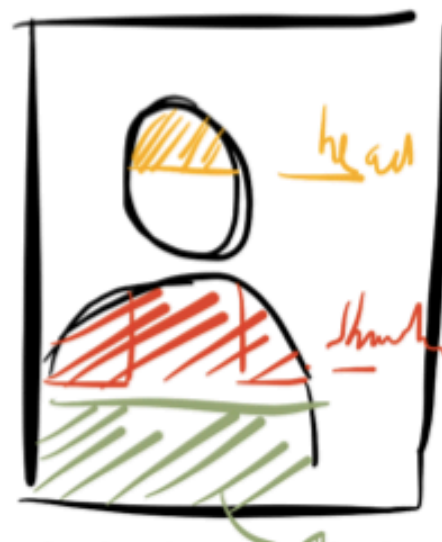


FIGURE 7

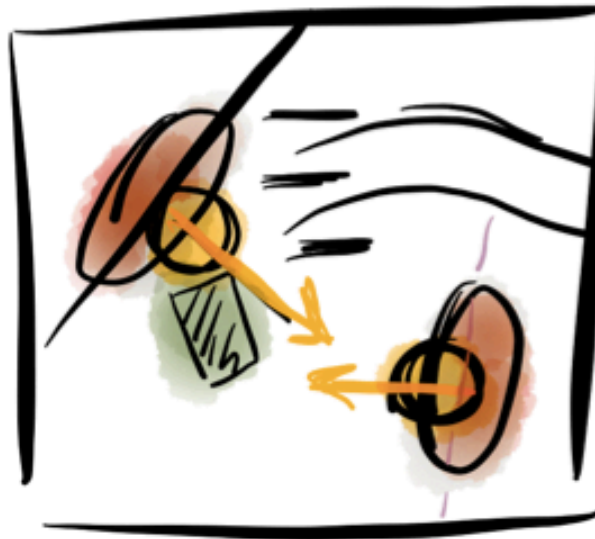


FIGURE 8

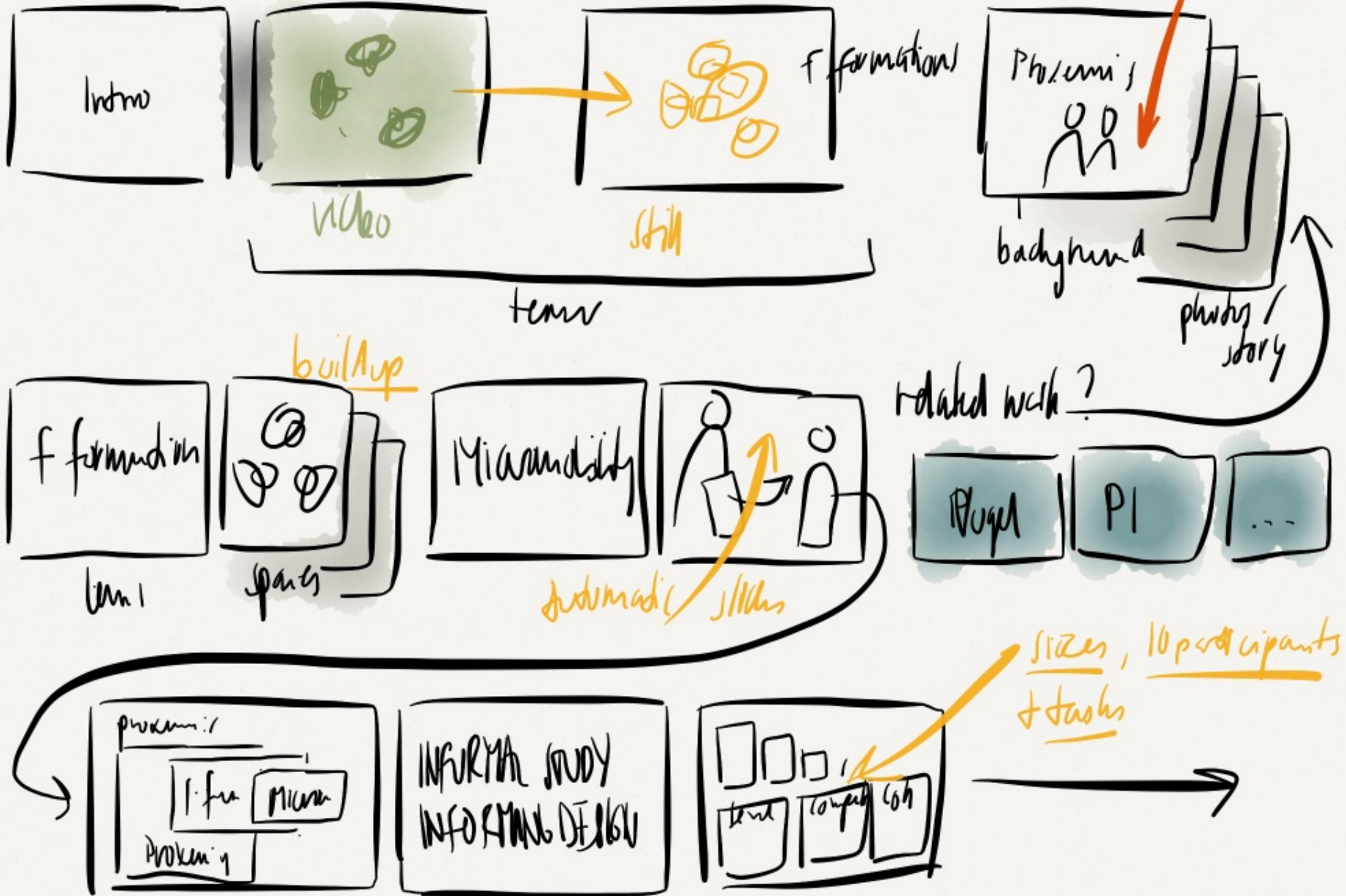
Screen shot  
system

Map to figure 7

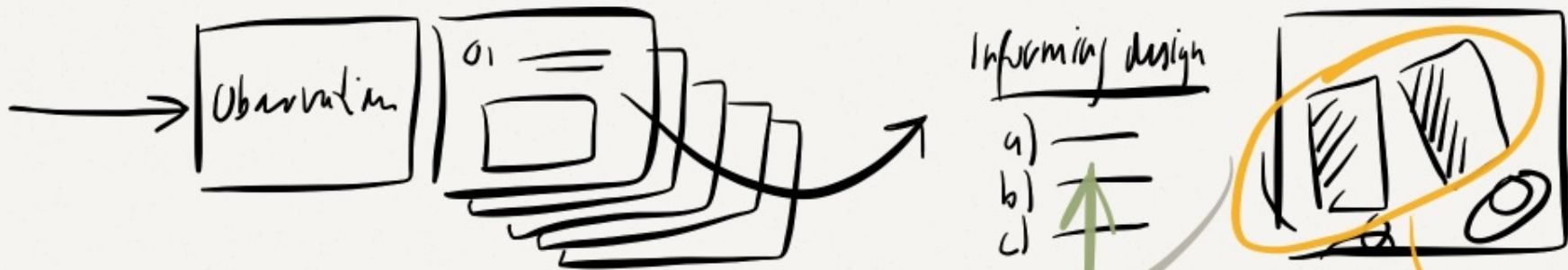
Combine as one  
figure!

trilateral add  
add  
checkbox for minor  
radio!

# MSK GROUP TOGETHER (I)



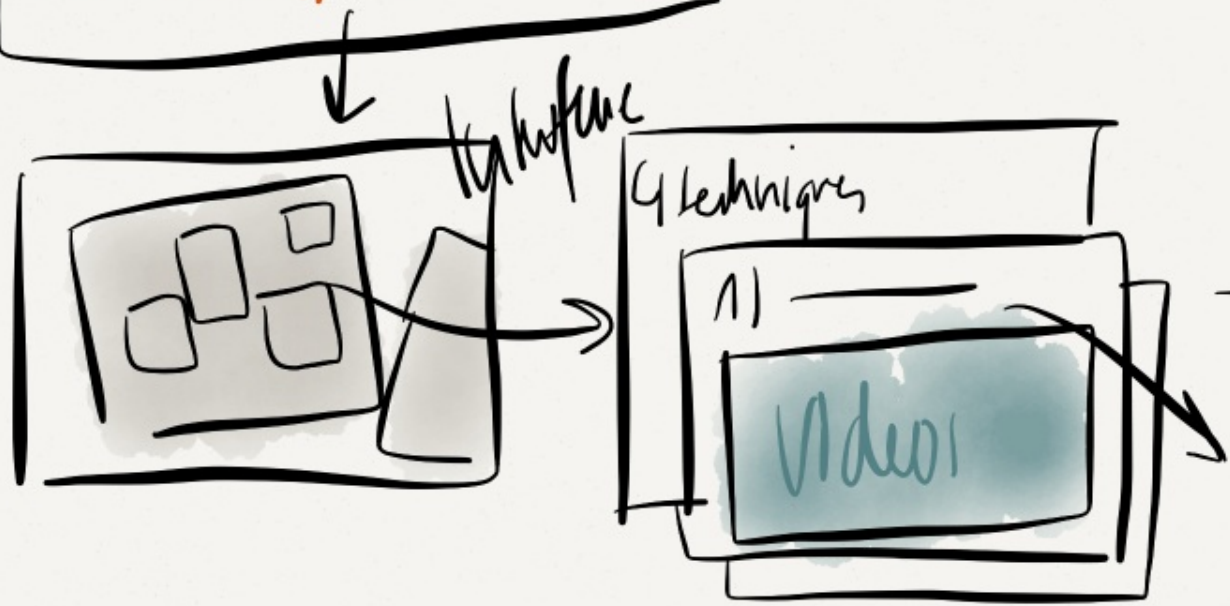




- ▷ Detect people's f. formations
- ▷ Changes in micro mobility allow federation of devices
- ▷ More & copy digital content

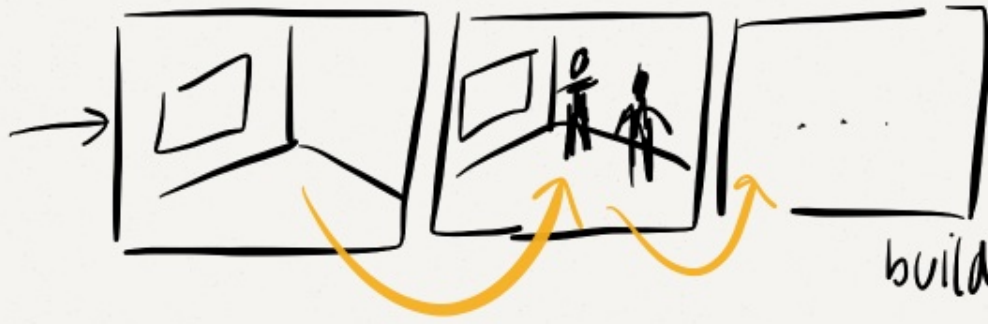
Considering Proximity of people + Proximity of devices

light-weight federations of devices!



But: how to detect f-formations of people & devices?



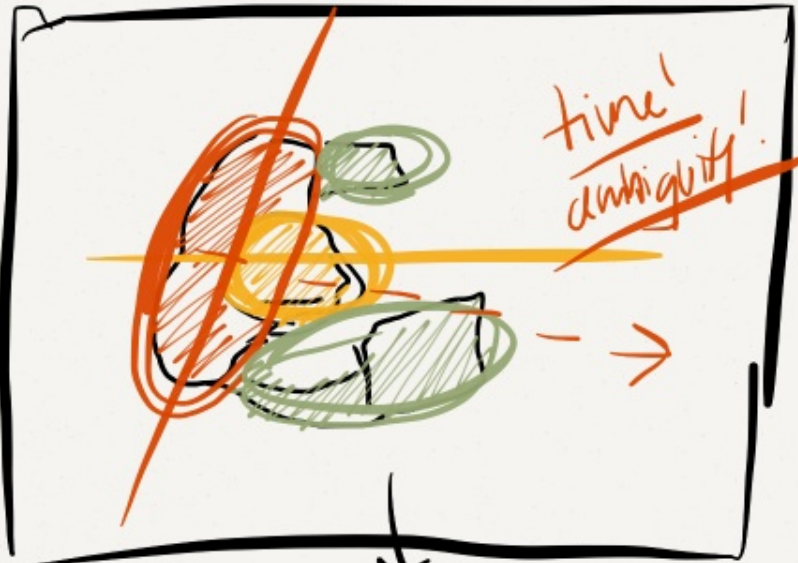


build up

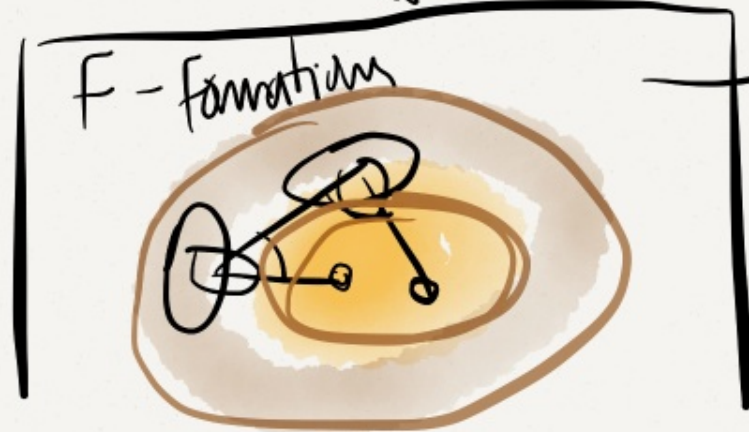


- ① Ortho
- ② multiple together
- ③ segments

bill boxon?

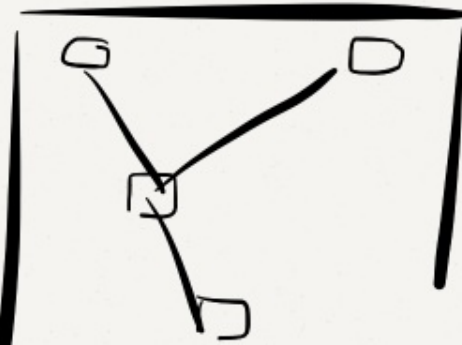


time!  
ambiguity!

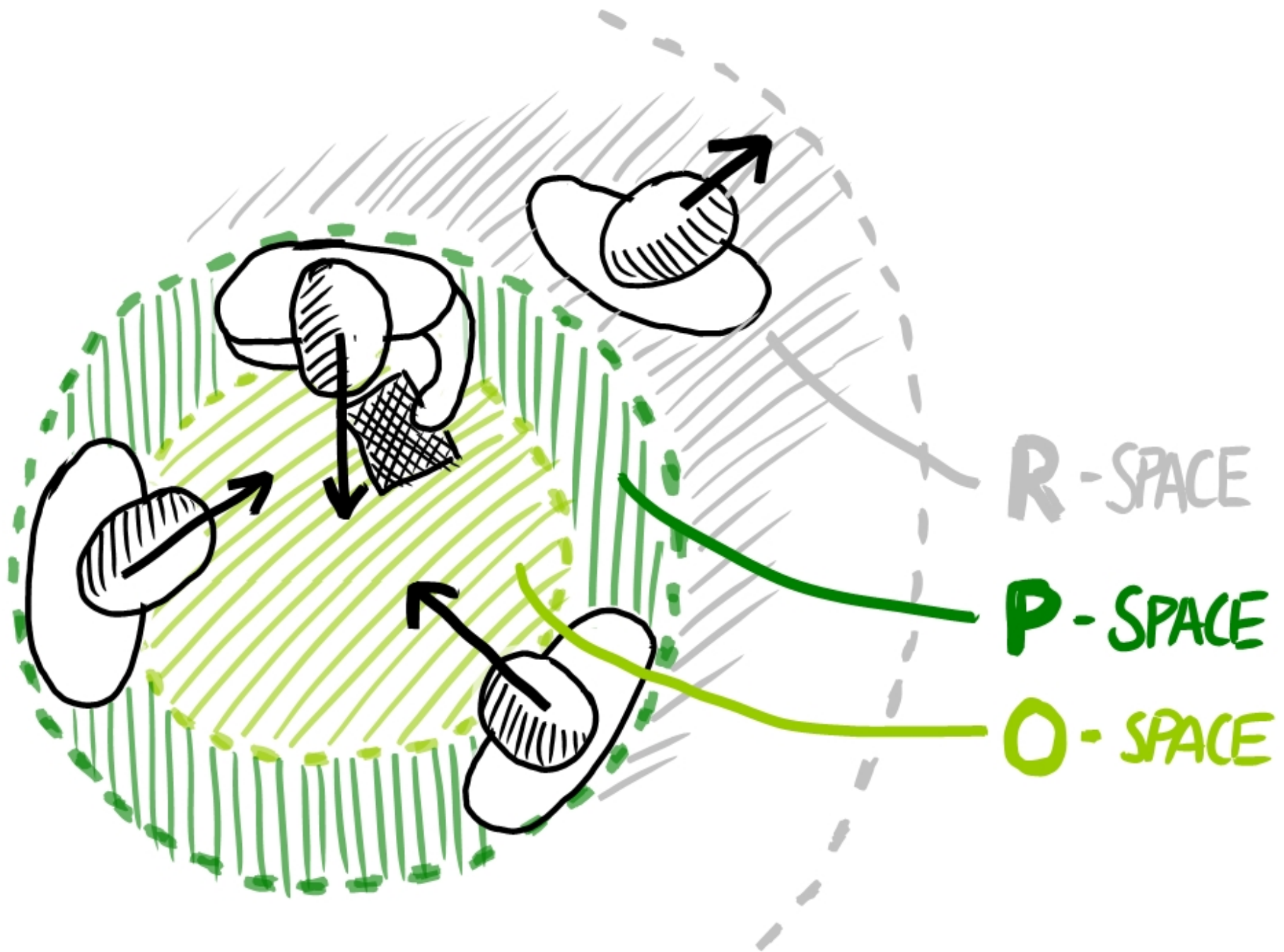


F-formations

problems, people ✓  
problematic devices ?



+ internal  
kinstay  
→ micro  
mobility

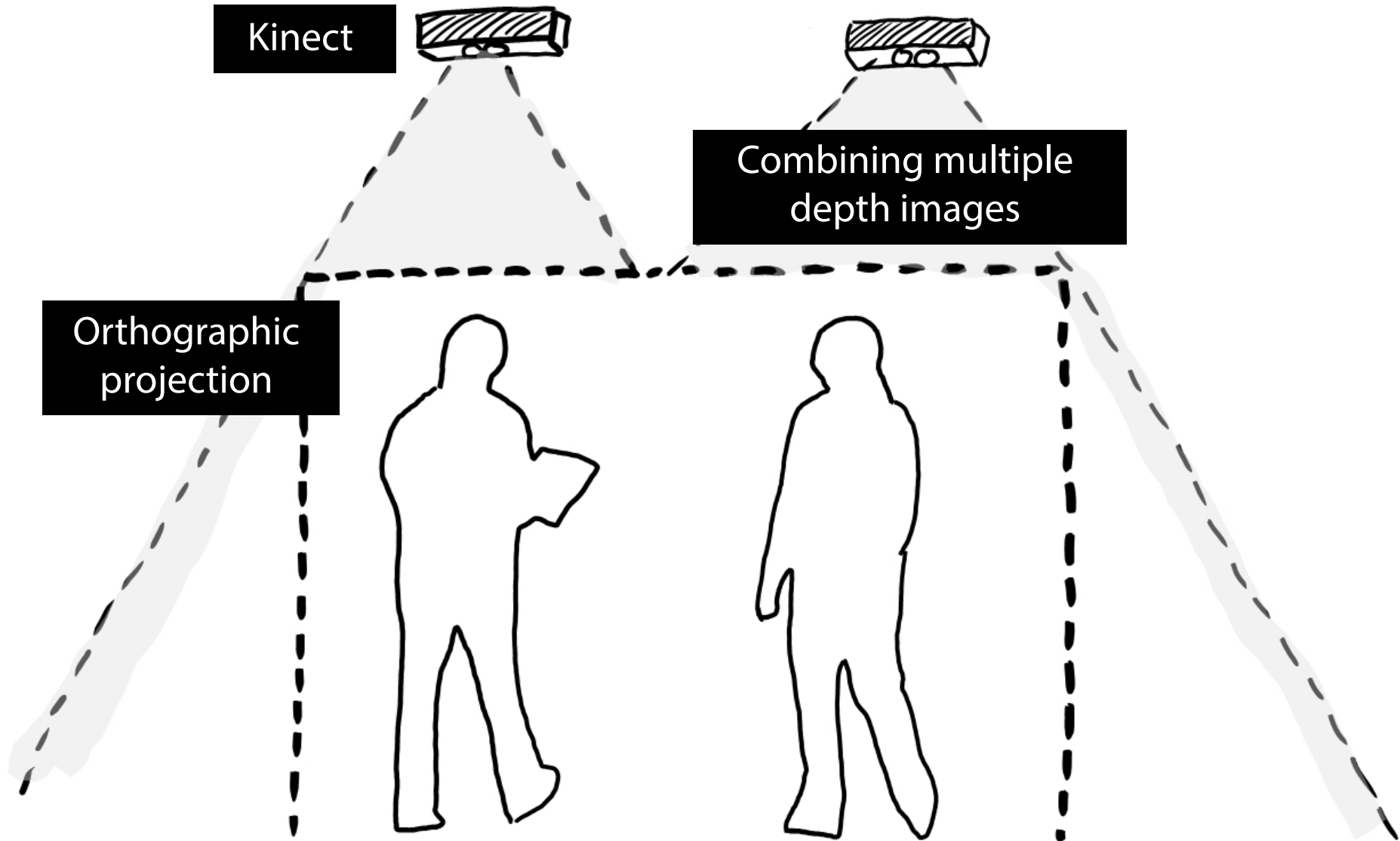


R-SPACE

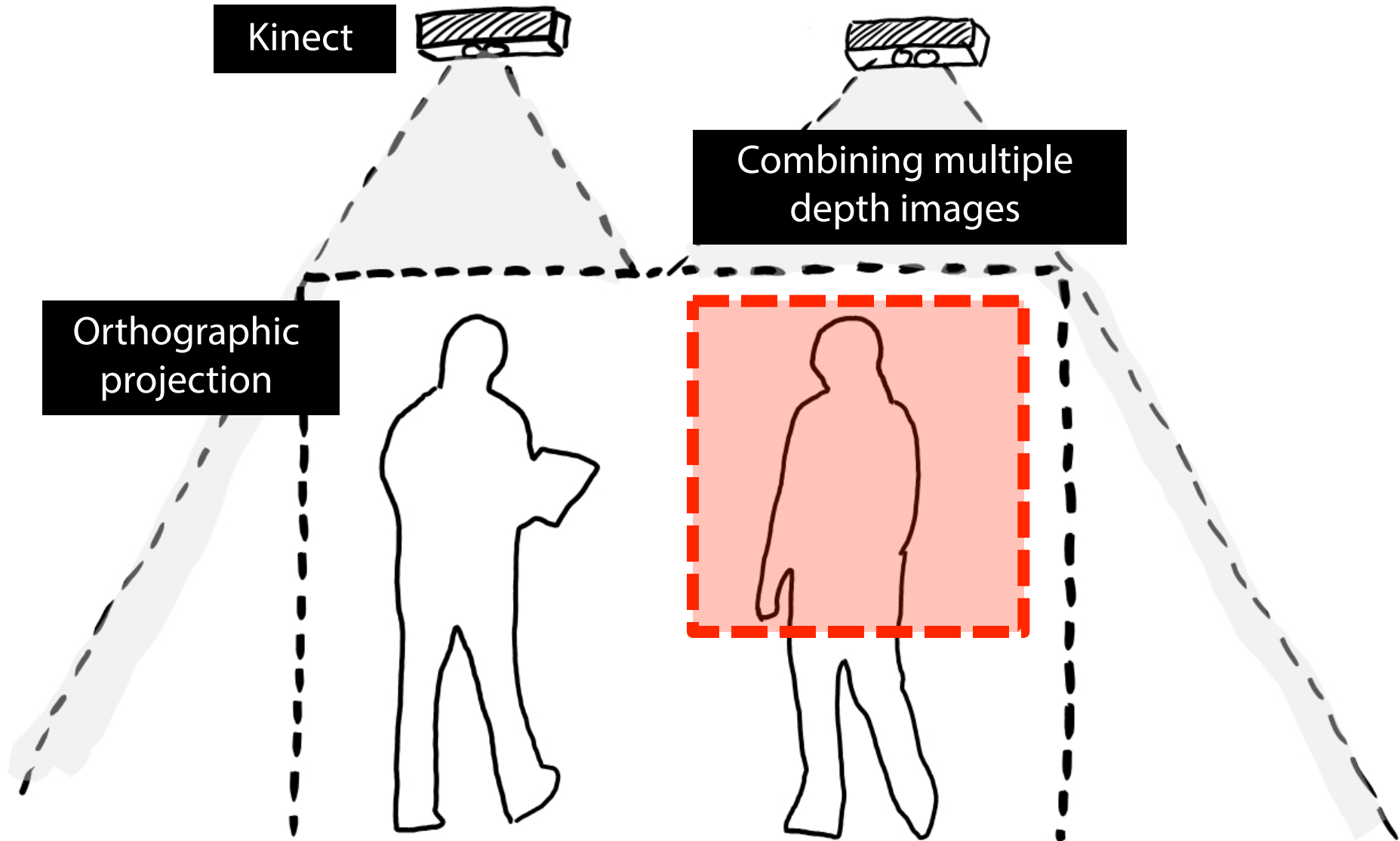
P-SPACE

O-SPACE

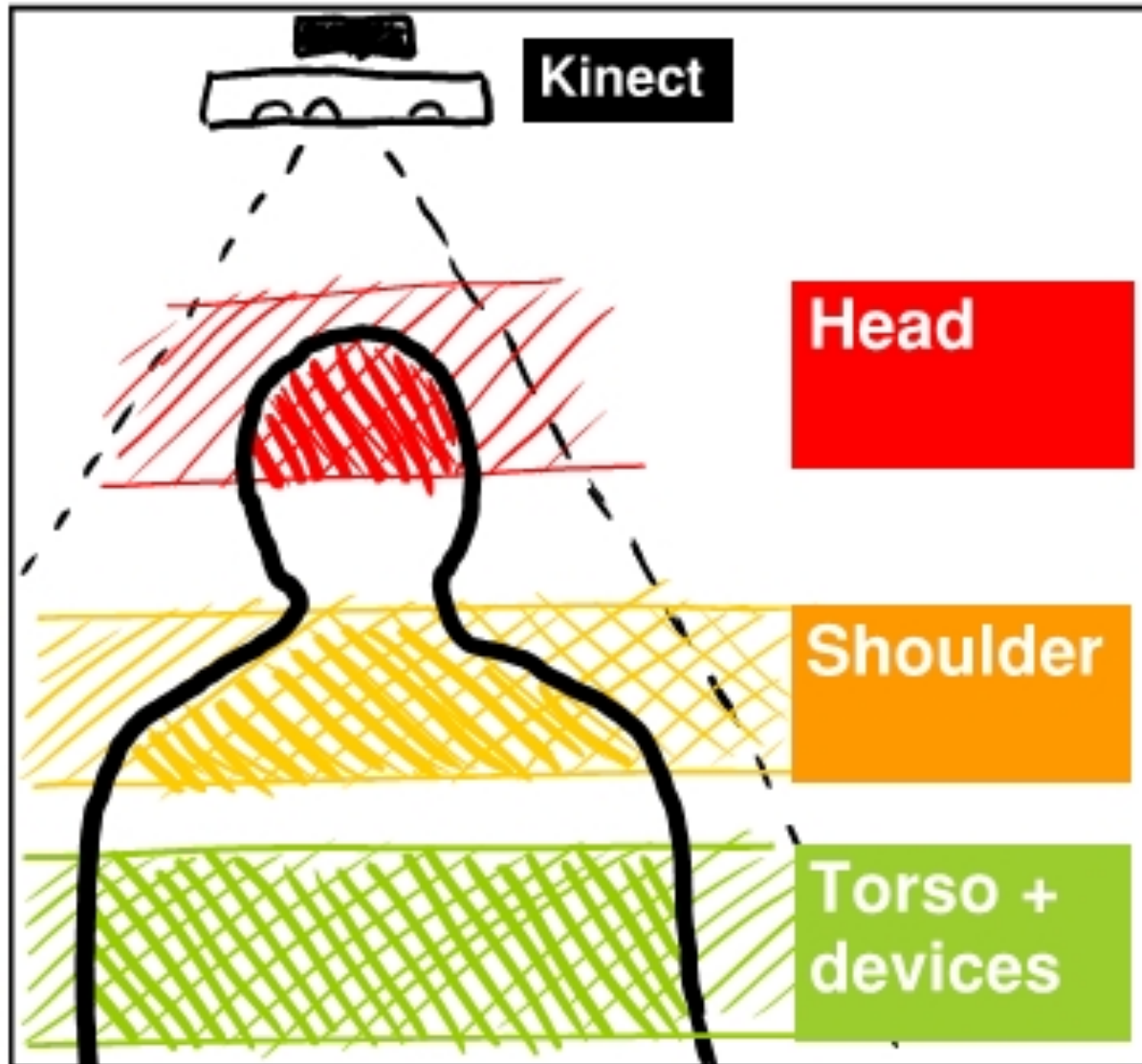
# Tracking people's position



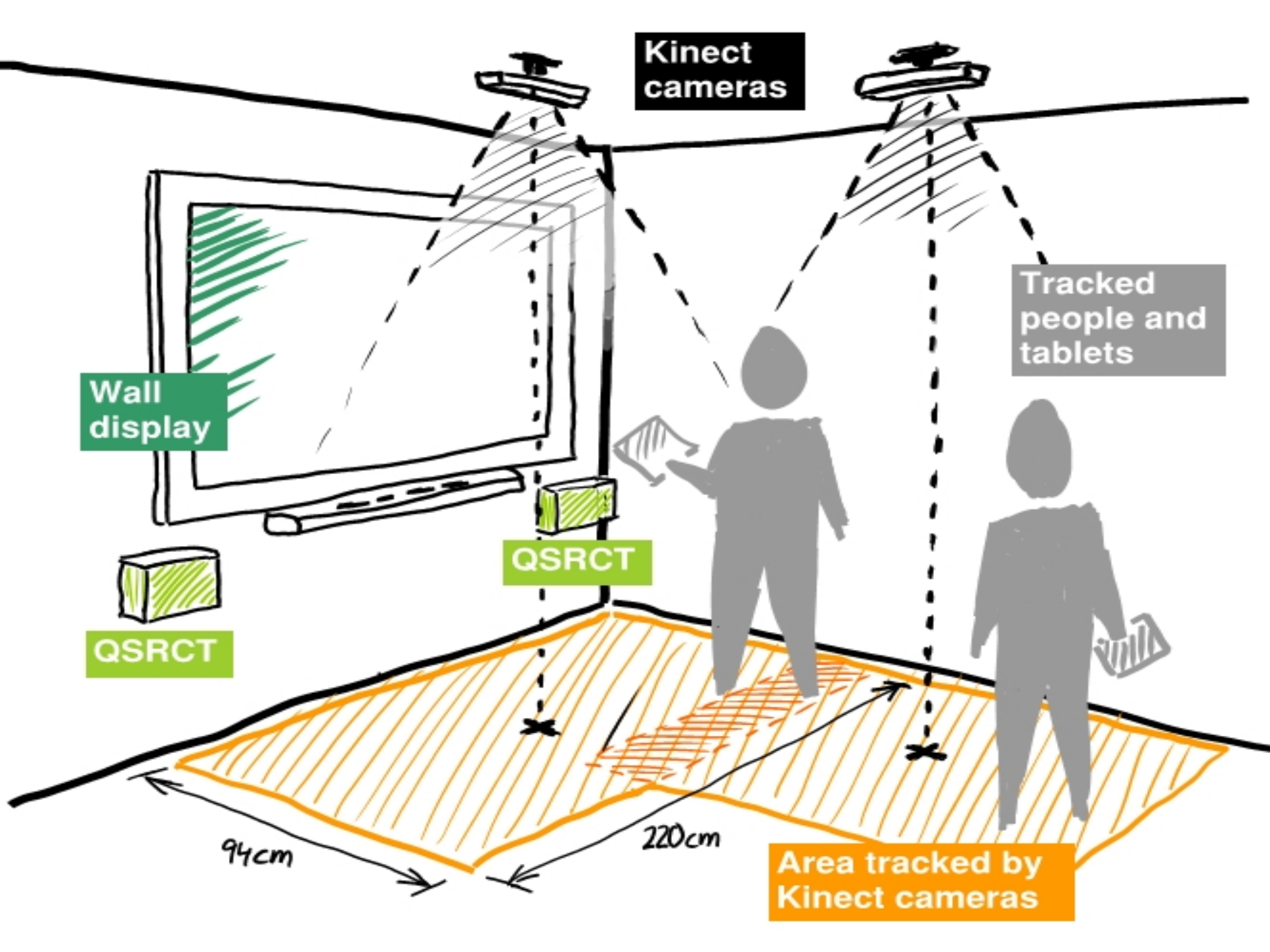
# Tracking people's position



# Tracking people's position









University College London  
Interaction Centre

# Digital Sketching

# Digital Sketching Favorite Software

- **Paper** by 53 (iPad)
- **Adobe** sketching apps: Line/Sketch/Ideas (iPad)
- **Bluebeam** PDF Revu (Windows)



**Paper**

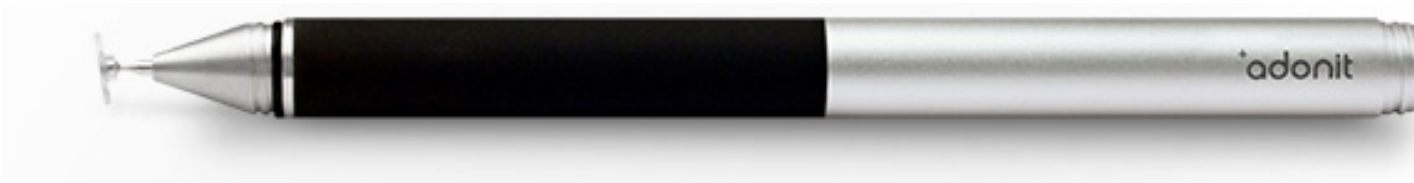


# Digital Sketching Favorite Pens

- Adonit Touch



- Adonit Jot Pro



- Wacom Bamboo pen

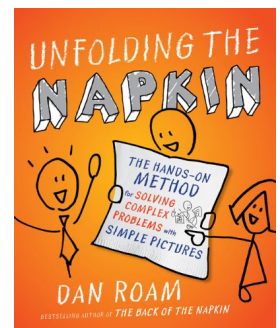
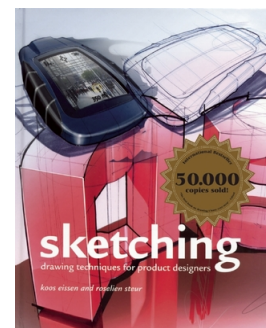
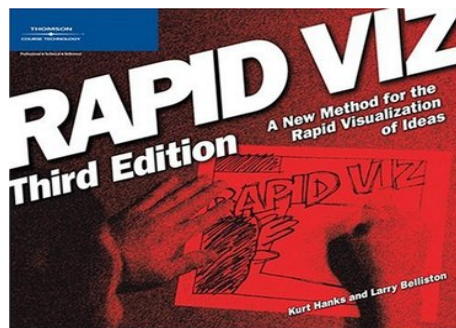
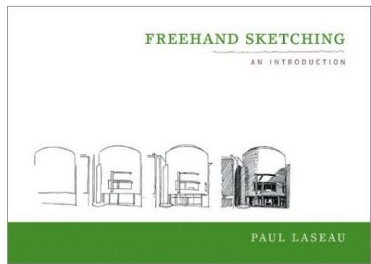
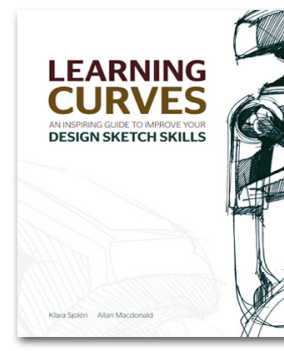
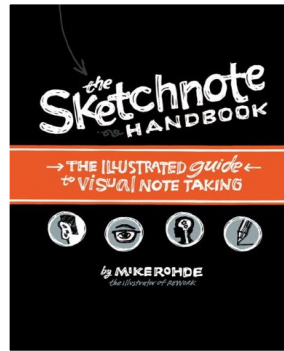
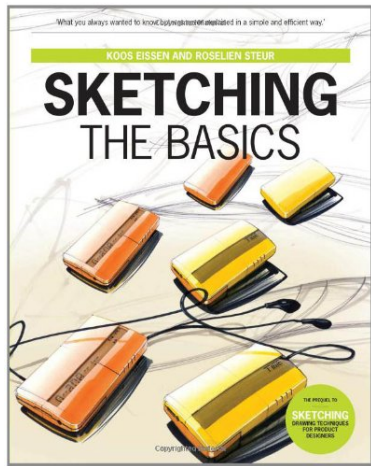
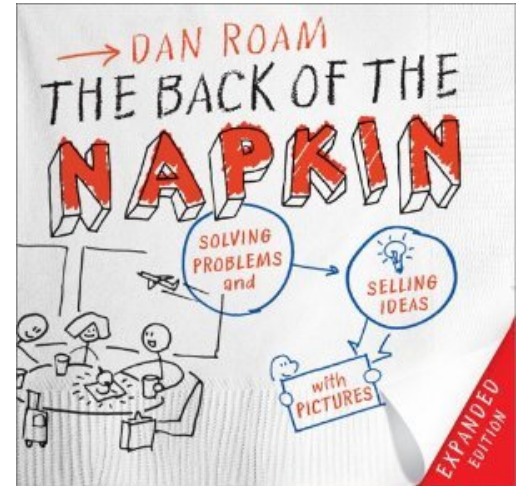
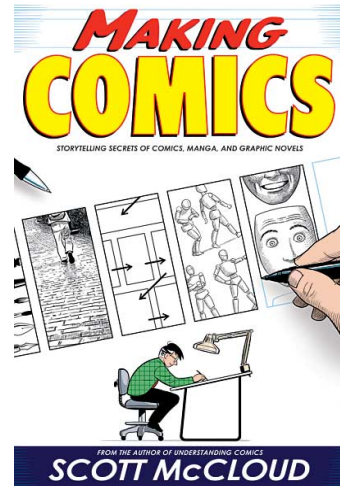
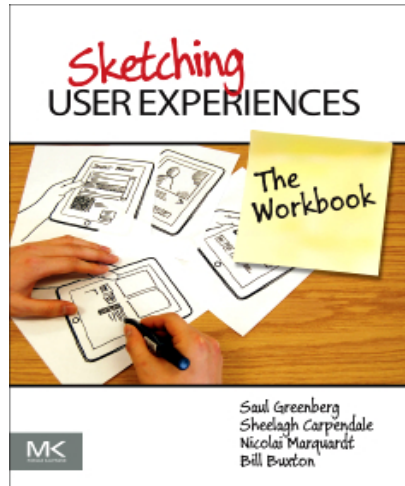
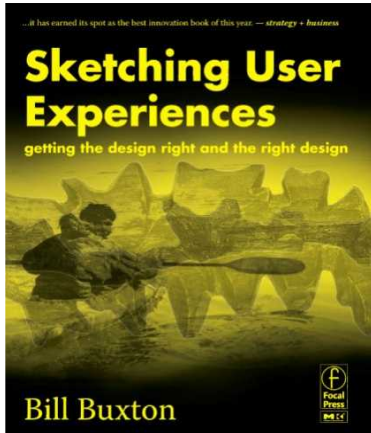




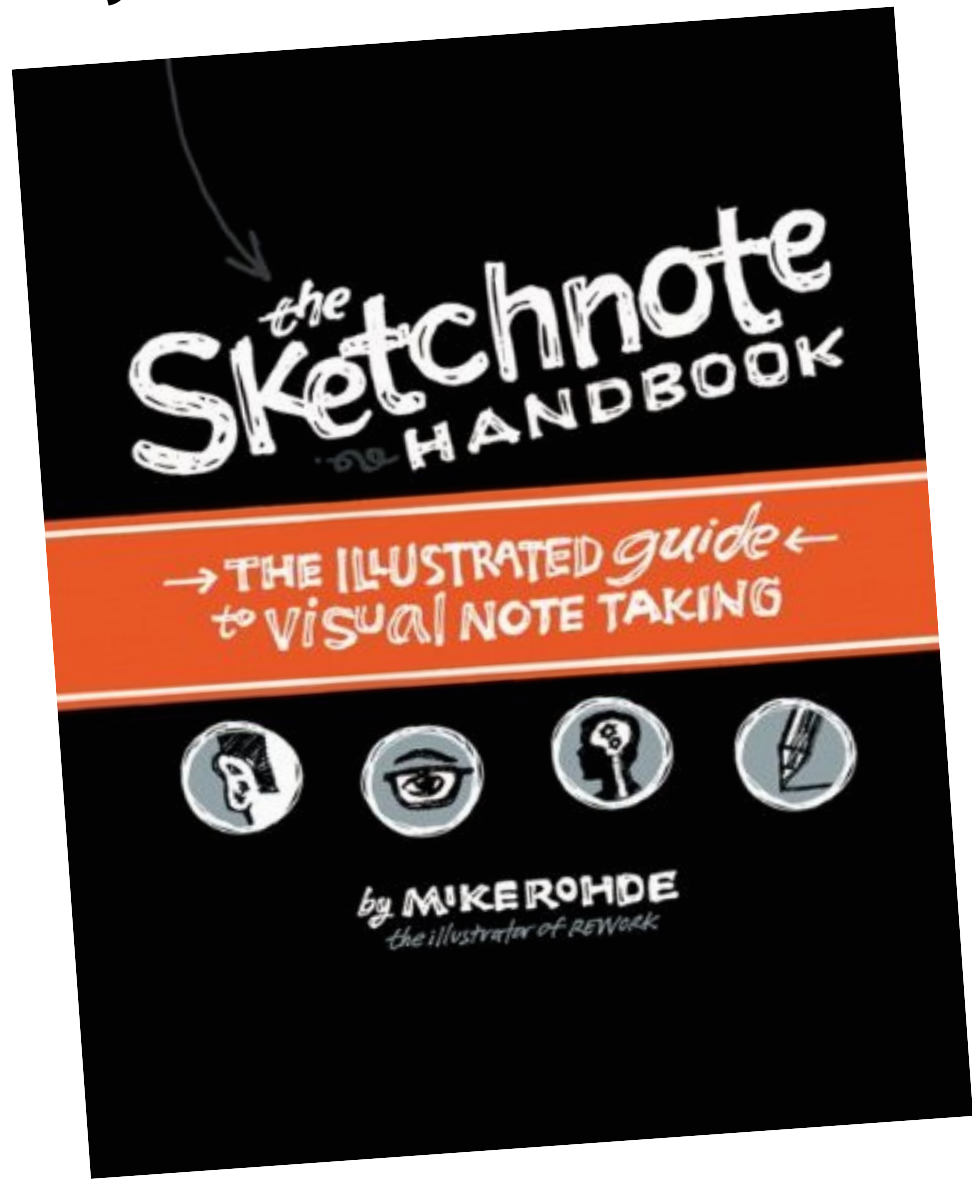
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Learning more...



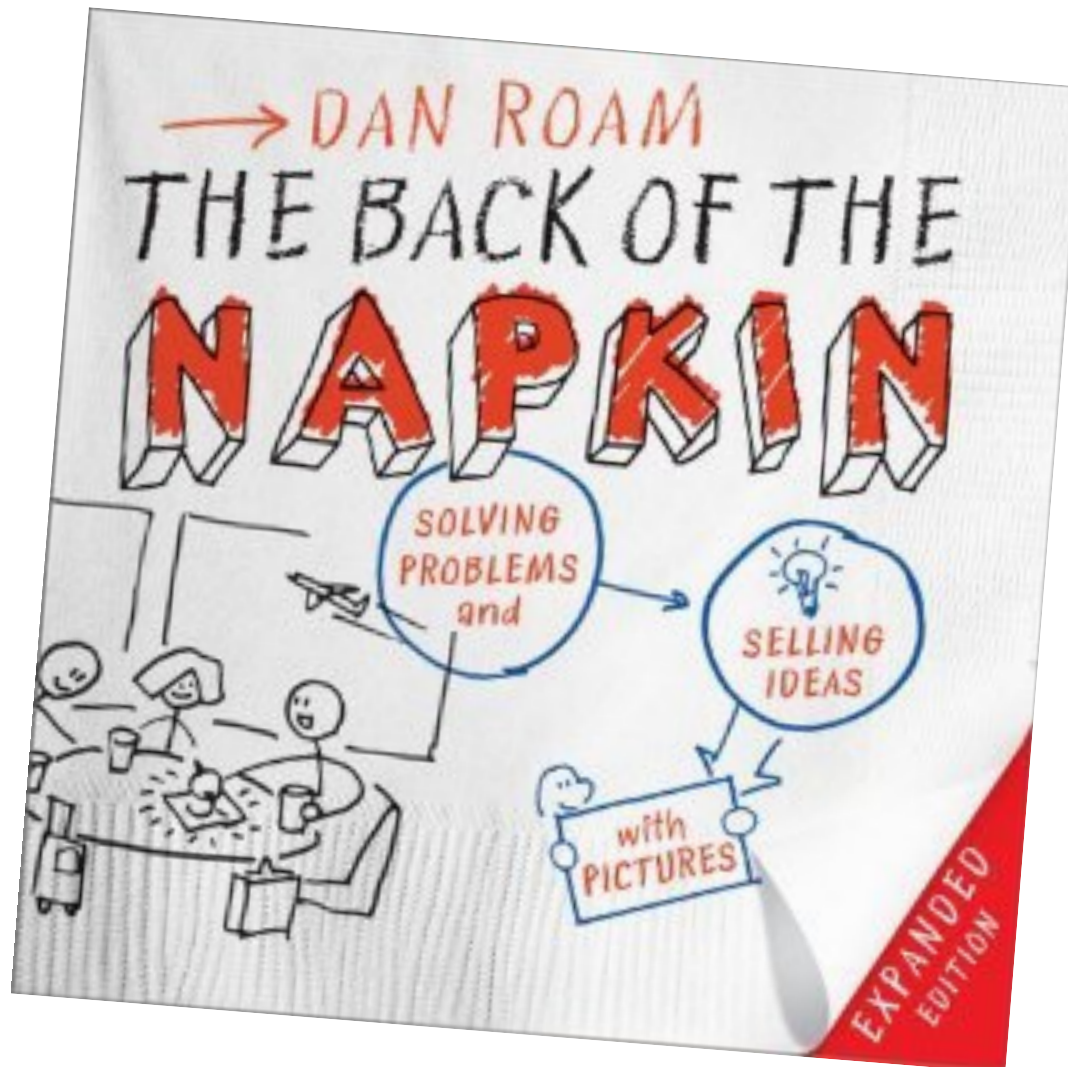


# Sketching as everyday habit

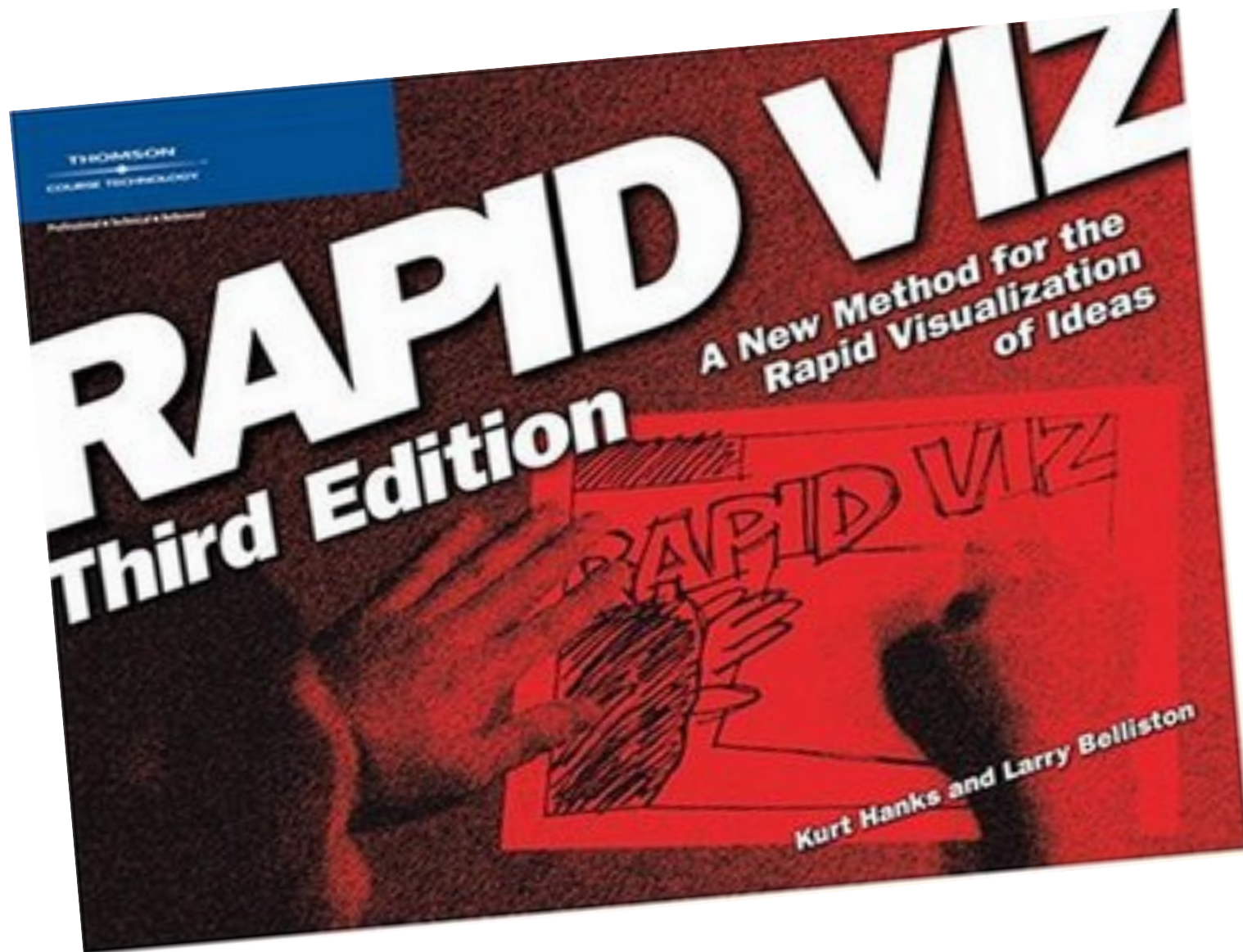




# Problem solving with simple sketches

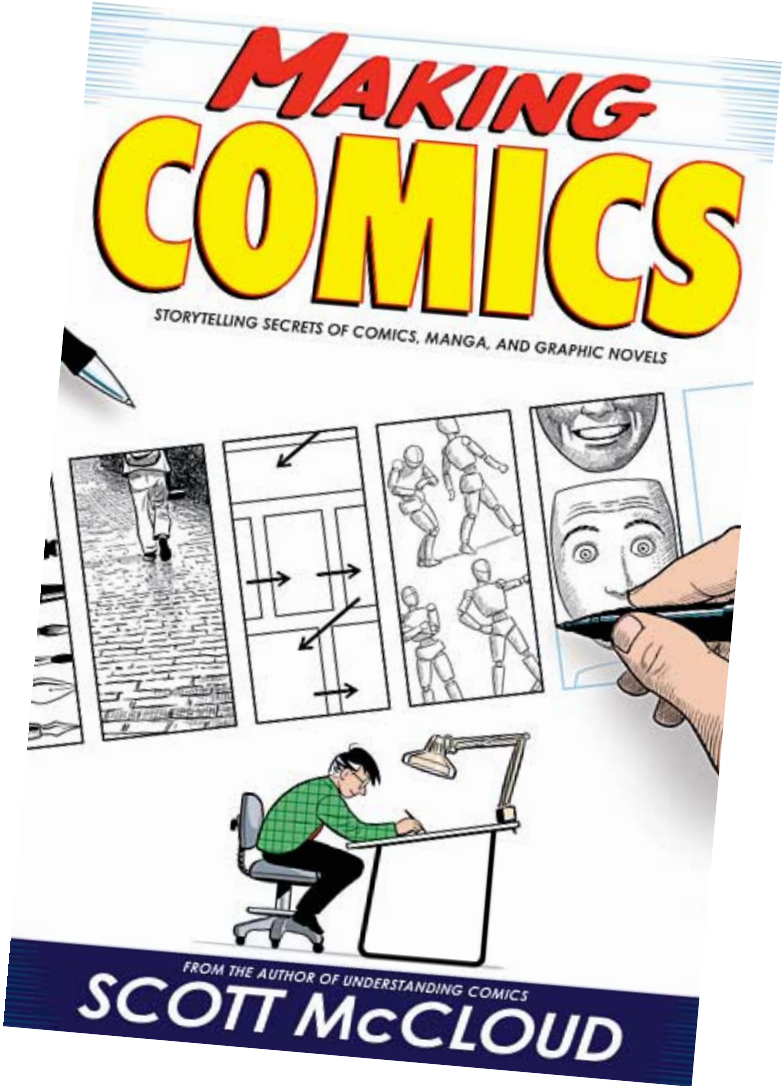


# Rapid (not design) sketching





# Visual storytelling





**Sketching workbook website:  
<http://saul.cpsc.ucalgary.ca/sketchbook/>**



**Jack Dorsey** | Software Architect









# Sketching User Experiences: The Hands-on Course

Nicolai Marquardt  
University College London





University College London  
Interaction Centre

# Optional techniques

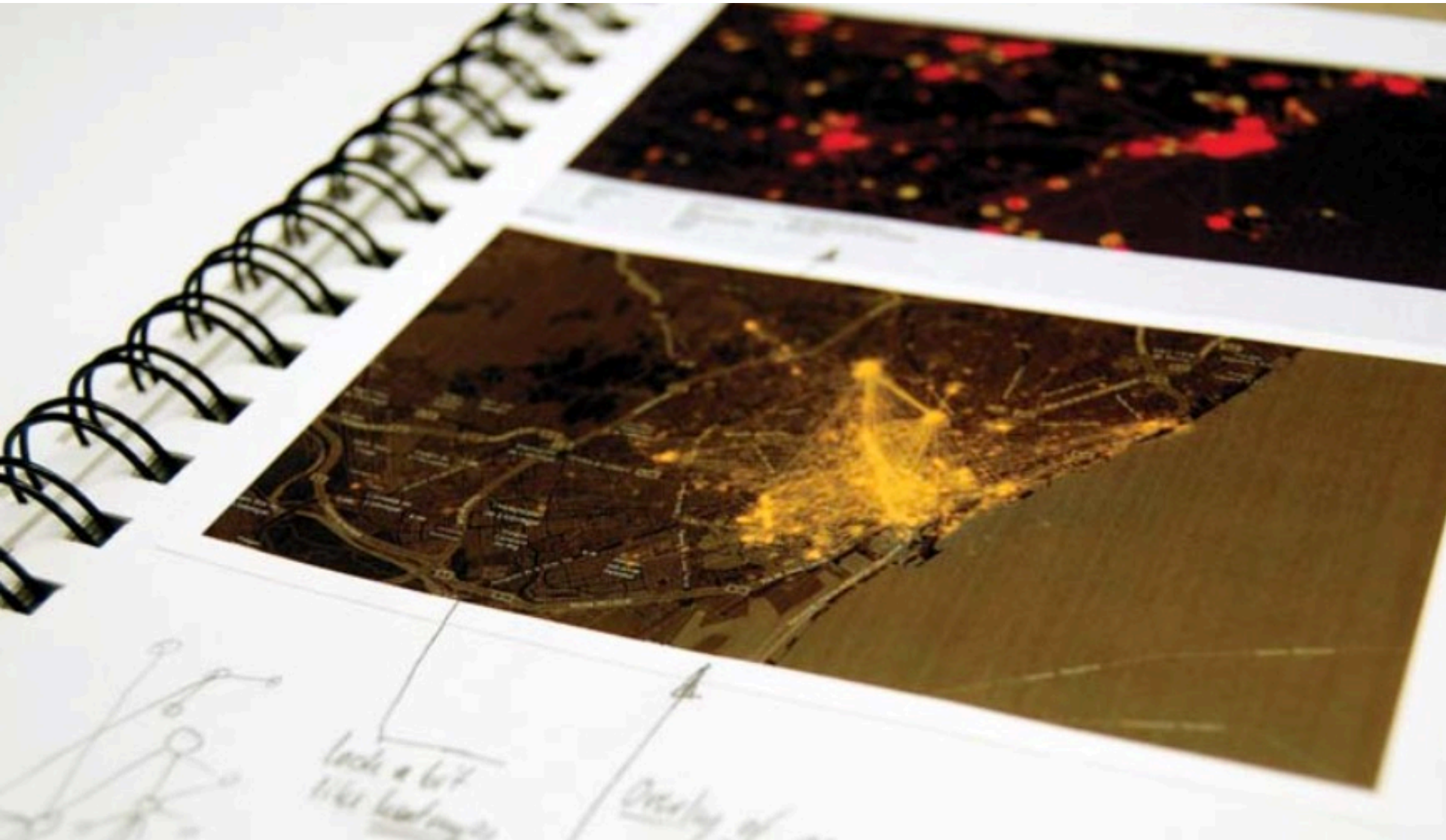




Cambridge 2008 | 1  
Nicola Marquardt











① CONTEXT VIEW

• like an aspect of an  
application, like device  
view

• mainly list of  
objects, resources



② CONTEXT VIEW (realized)

• look at device (or focus aspect) and view  
the surrounding devices in this CONTEXT



- Show possible associations, aggregates
- Show how to combine devices

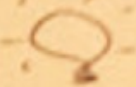
③ FOCUS ON 2nd APPARATUS

• focus on  
• see possible connections  
• PICK AND

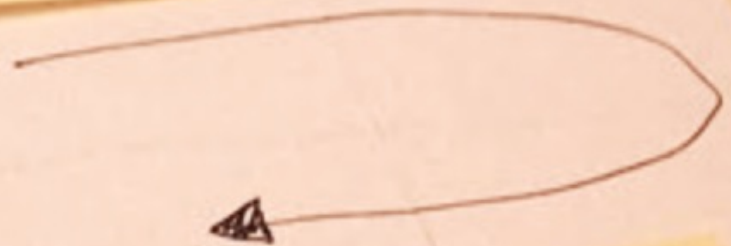
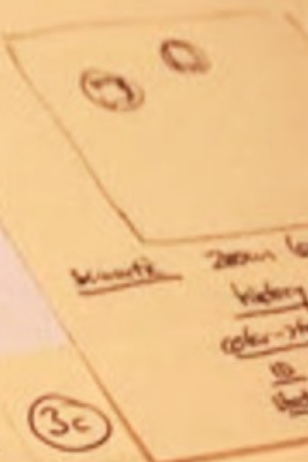




Flow through work + details

① IDEA ! 

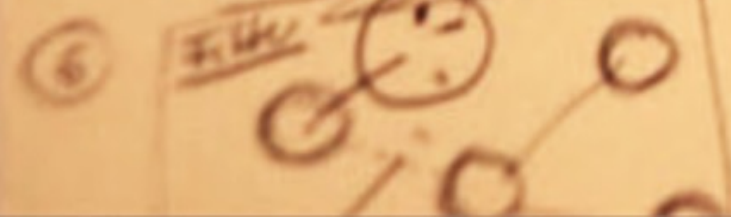
② Hardware → cables plug-in



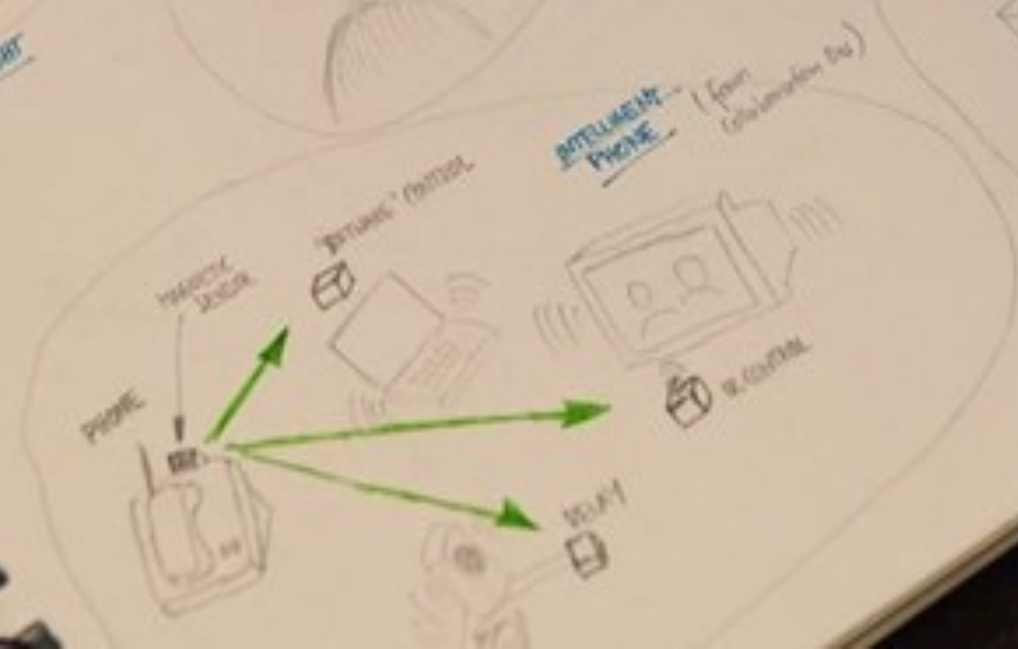
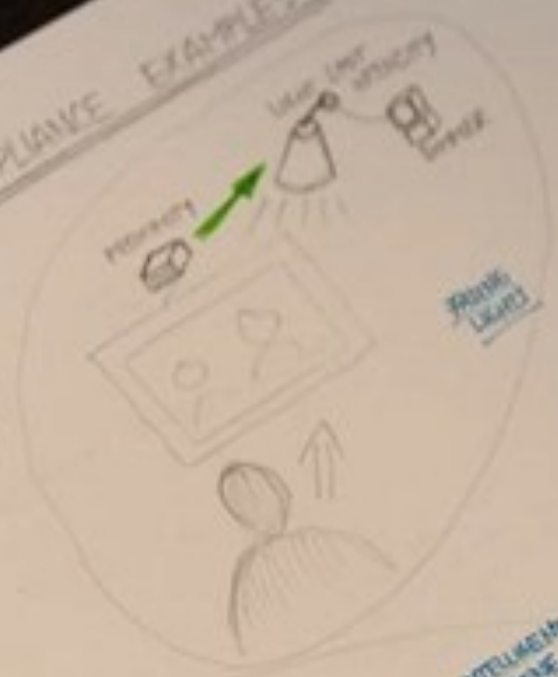
④ Coding



Snipper



APPLIANCE EXAMPLES



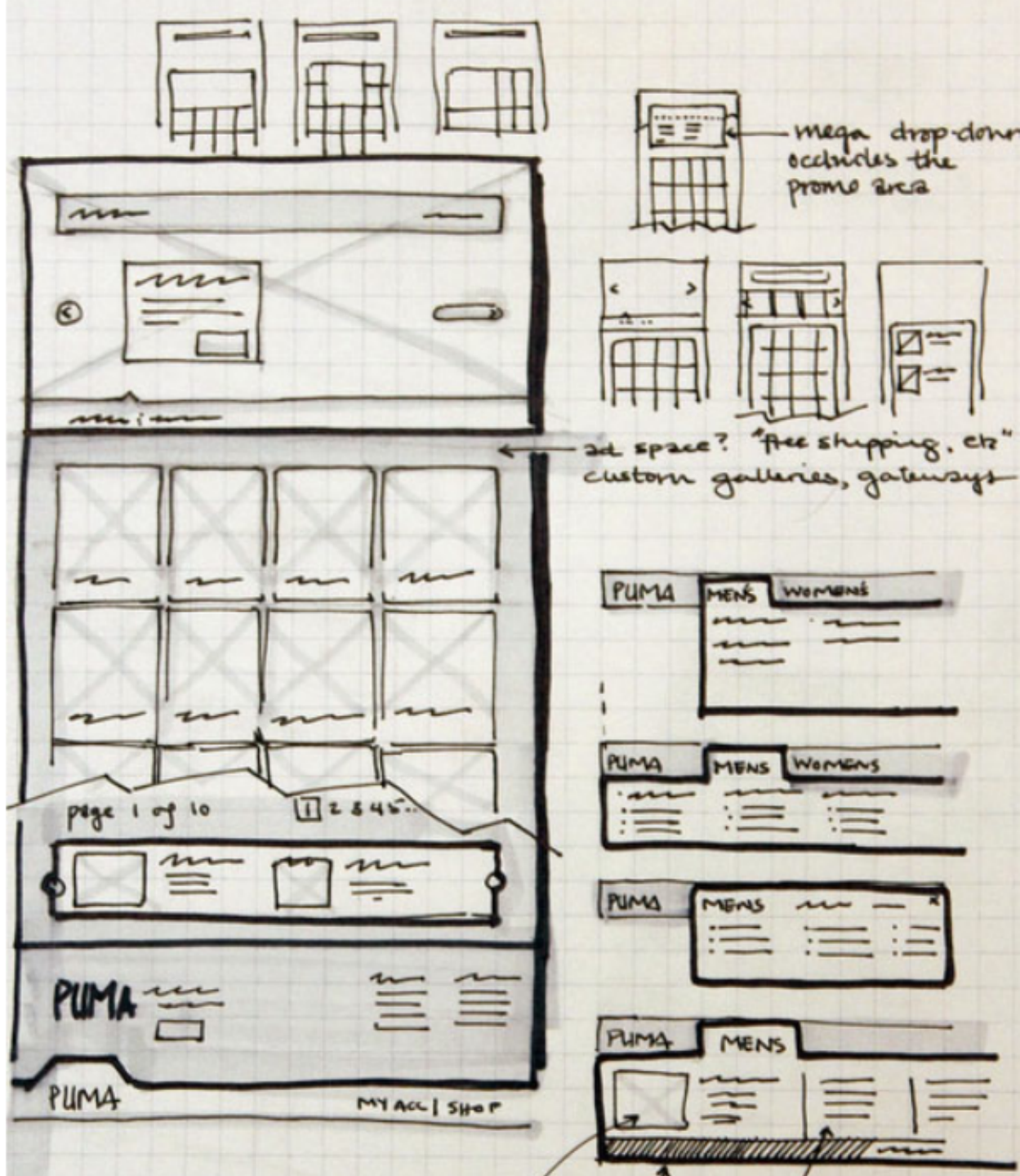
INTELLIGENT PHONE (from collaboration by)



# Sketching Technique: Wireframes



# Sketching Technique: Wireframes



# COMMLOGIX v1

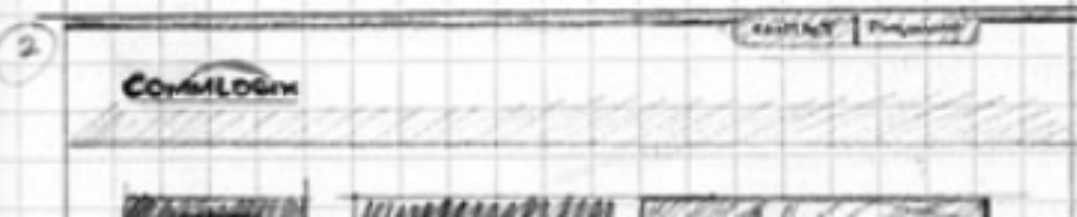


• WHITE  
• CLEAN  
• WIDE OR FIXED IN A SHAPE

HORIZONTAL NAV w/ DRIPDOWN SUBMENU

- MINI MODULES w/ TEASER INFO FOR EACH PRODUCT
- 1 - HOME
  - 2 - SOLUTIONS
  - 3 - HOW IT WORKS
  - 4 - KEY COMP
  - 5 - REQUEST INFO
  - 6 - ABOUT
  - 7 - CUST. SERV.
  - 8 - FAQ
  - 9 - CONTACT

FOOTER w/ ADD'L INFO



③

FIXED + ENCLOSED DESIGN

TABBED TABLE

950 pt wide

Essential sections

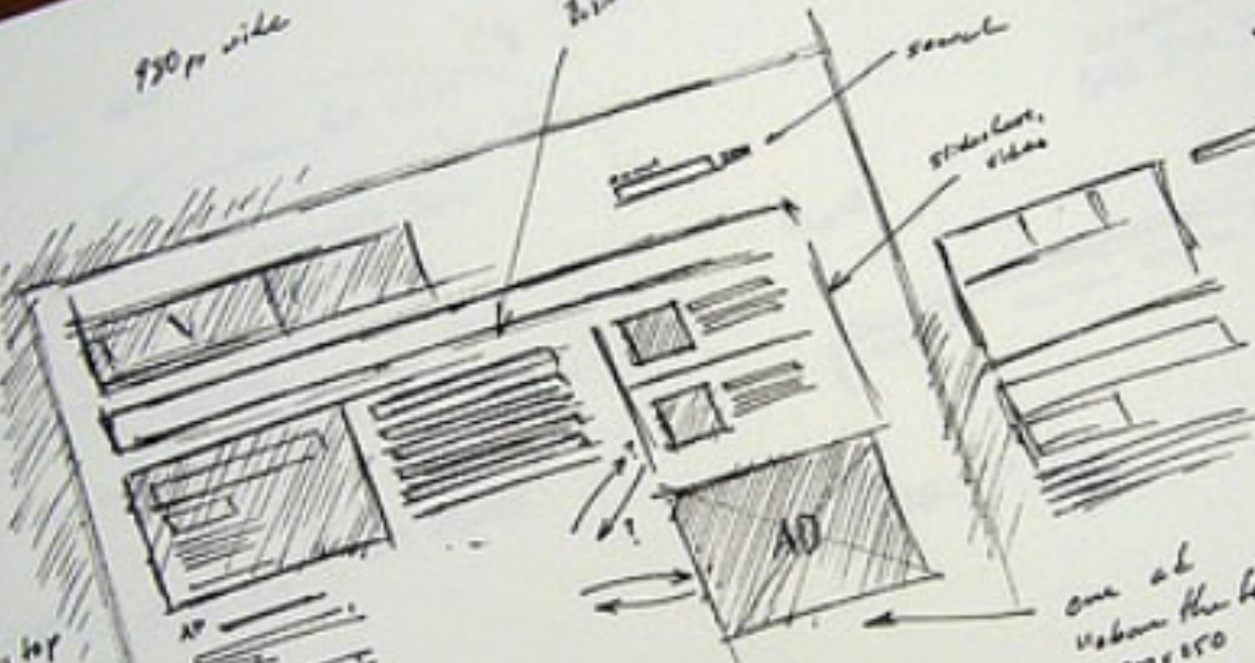
search

slides, ideas

horizontal chapter?  
vertical info?  
organize cover?  
3rd level?  
how to keep  
on the table?  
Saving ad  
on the table

ⓐ

Today's top  
bottom  
LASS

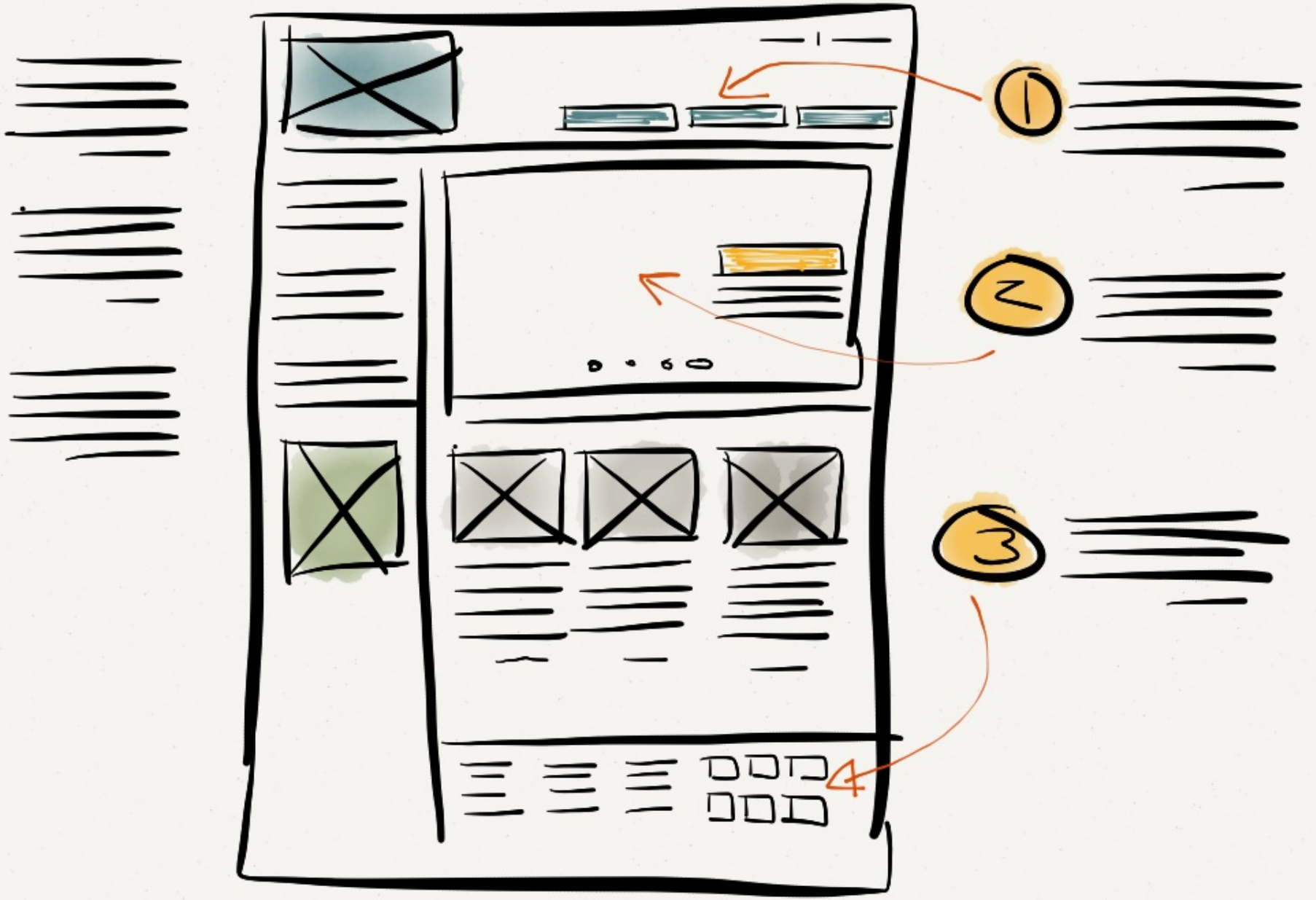


one ad  
below the table  
200x150

950 pt  
400 pt - 250 pt

NOTES





# Task: Sketch the essential elements of the following interface



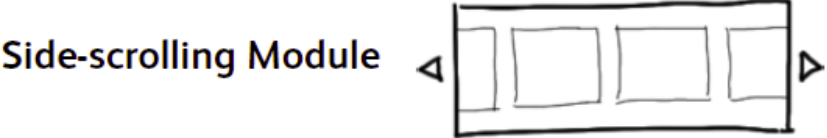
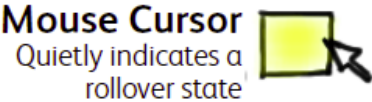
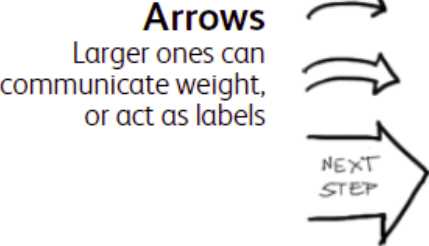
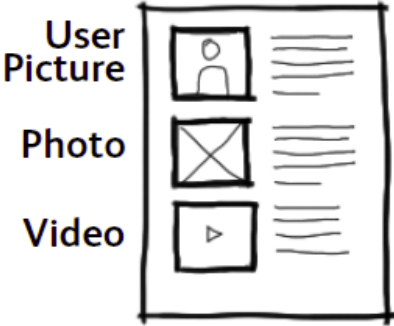
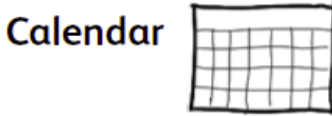
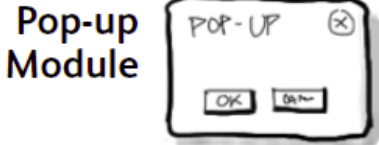
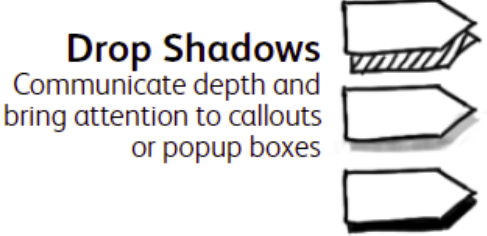
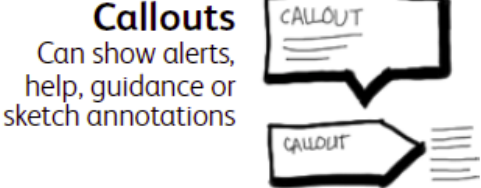
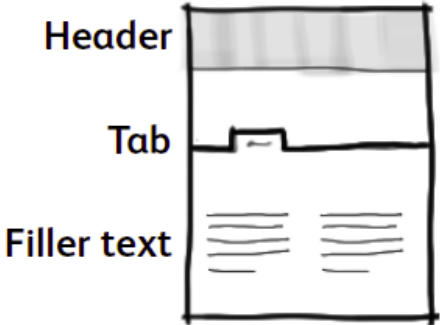
# Task: Sketch the essential elements of the following interface



# Task: Sketch the essential elements of the following interface

... and now sketch variation of this interface.  
(using part of the templates provided)

# Wireframe sketches: Elements



# Shortcuts: Paper Prototypes with Office Supplies



# Wireframing software (e.g., Balsamiq)

