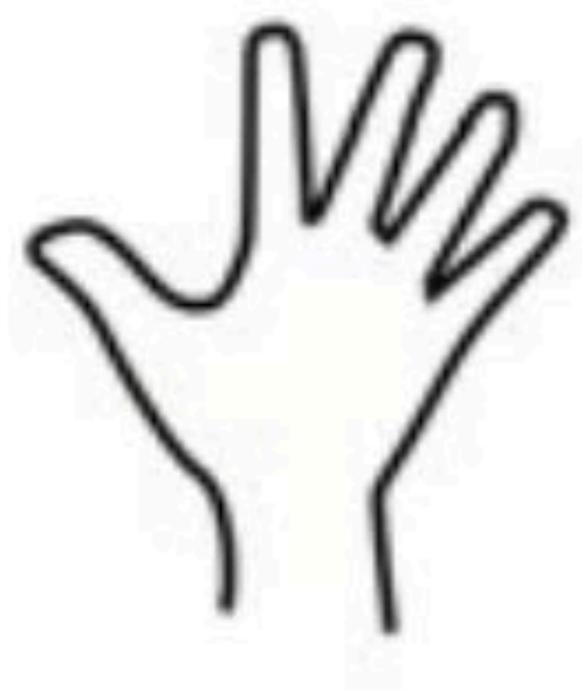
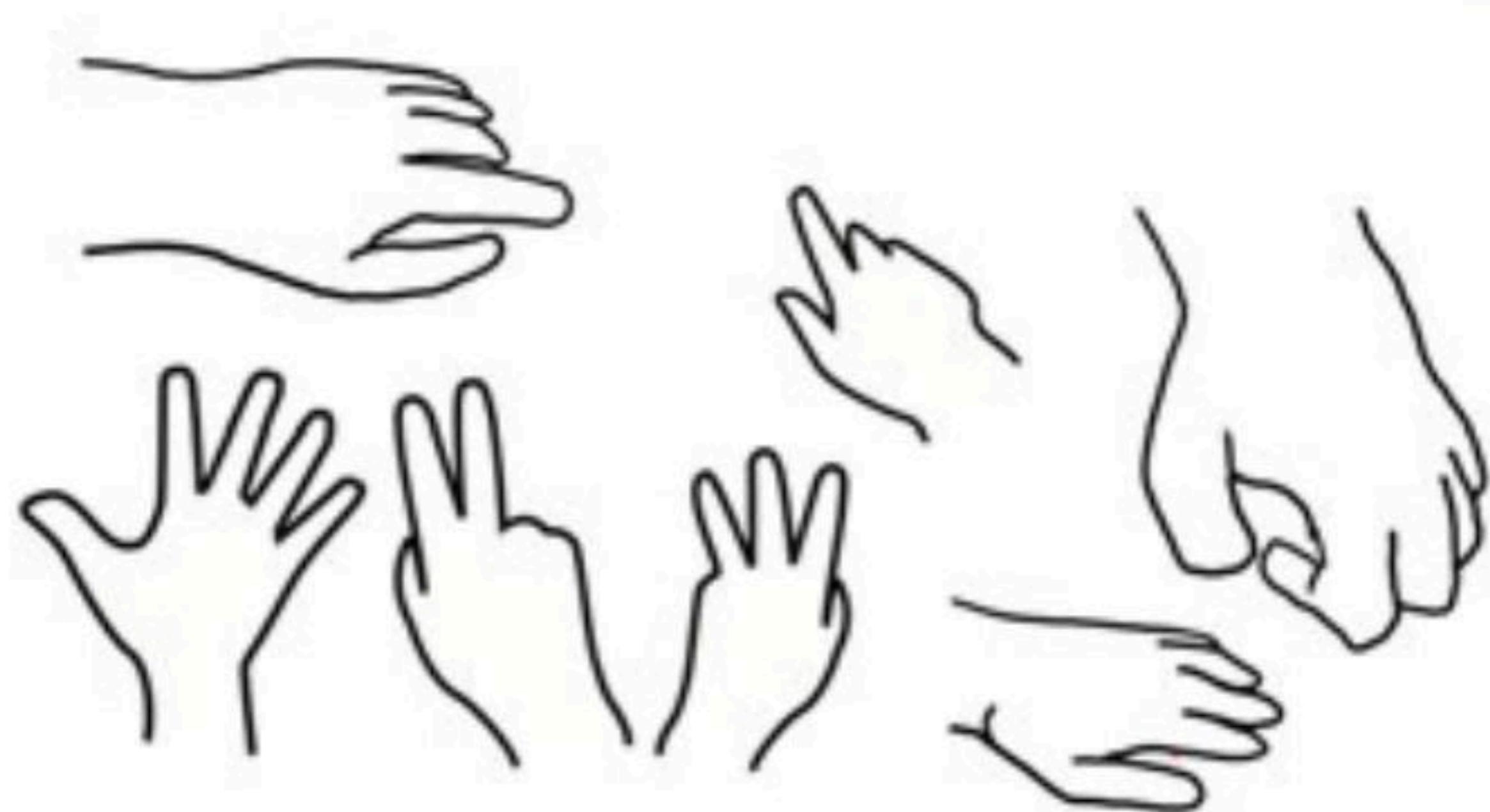




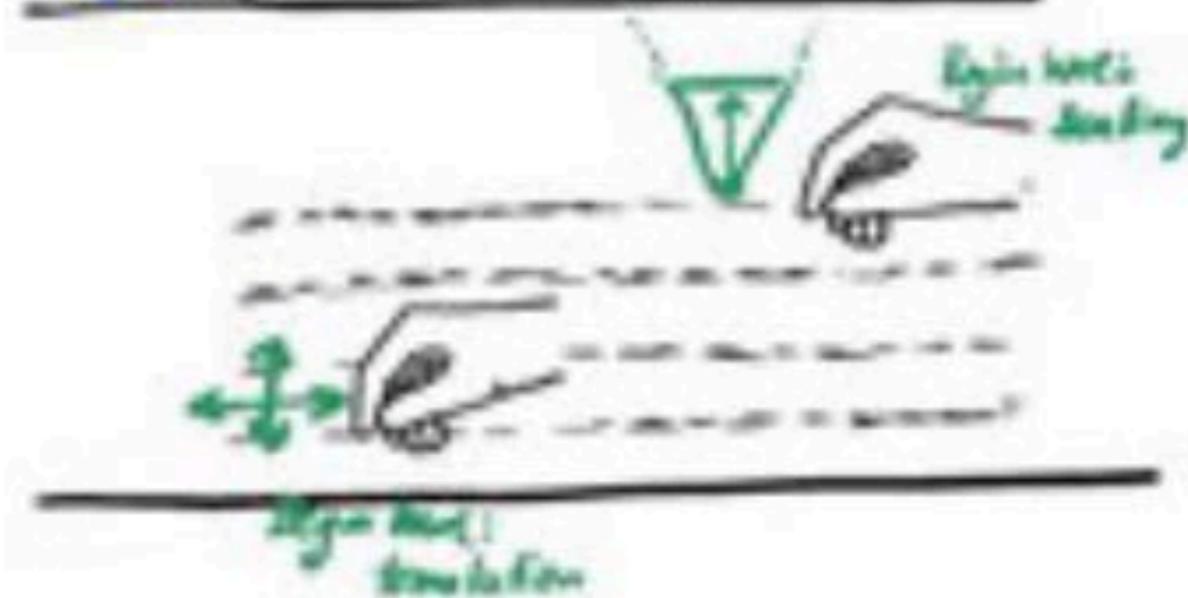
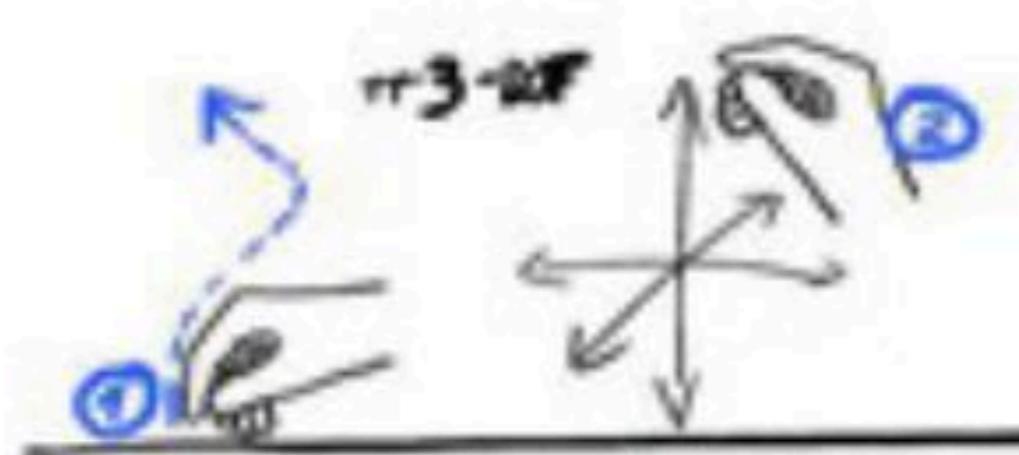
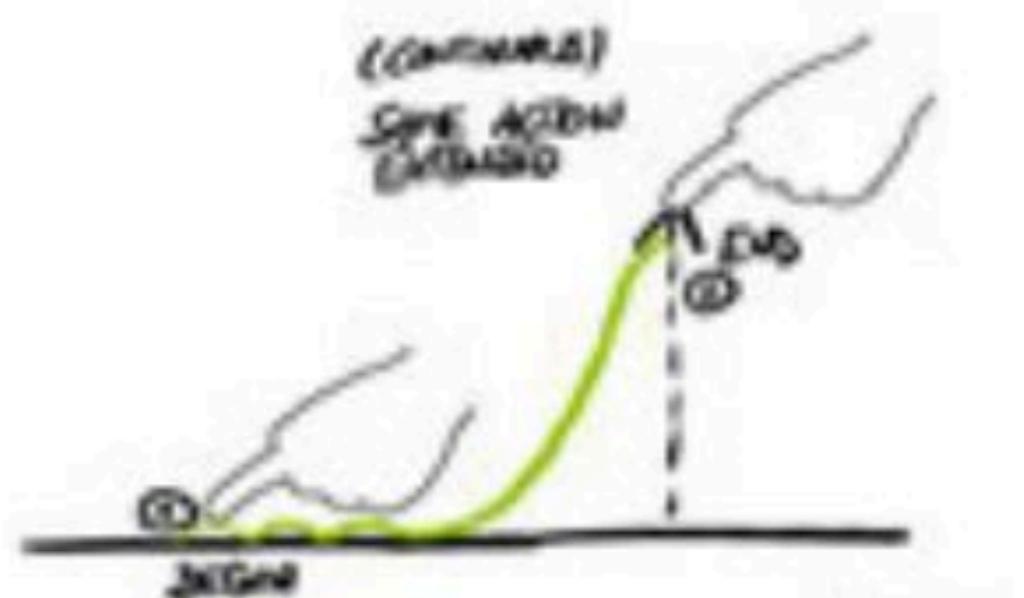
University College London
Interaction Centre

Sketching Hands and Gestures





CONTINUOUS INTERACTION STAGE

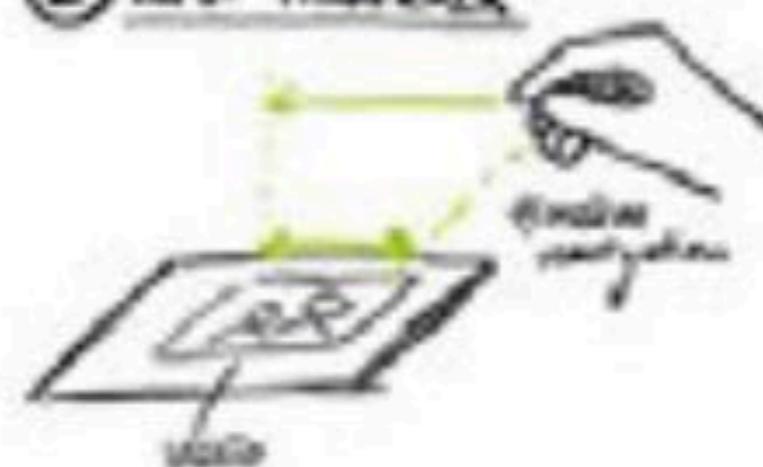


STUDIES ABOVE SURFACES

① 3D SIMULATION / INTERACTION



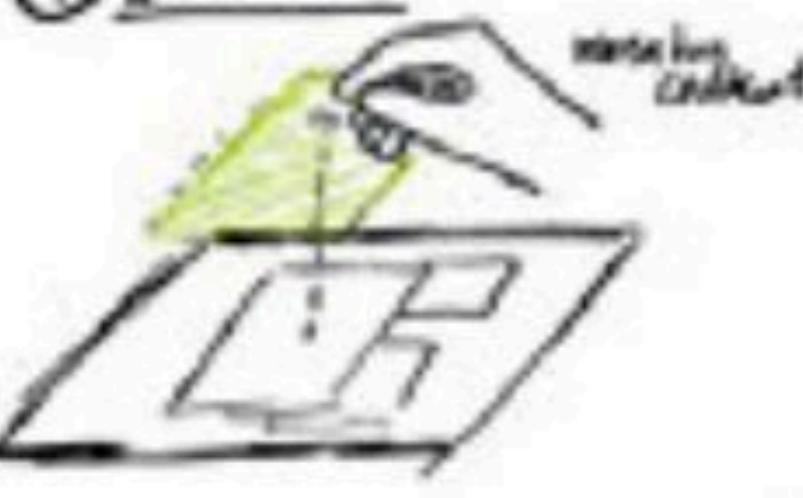
② INPUT PREVIEW



③ ANIMATION / PREDICTION



④ 2.5D INPUT

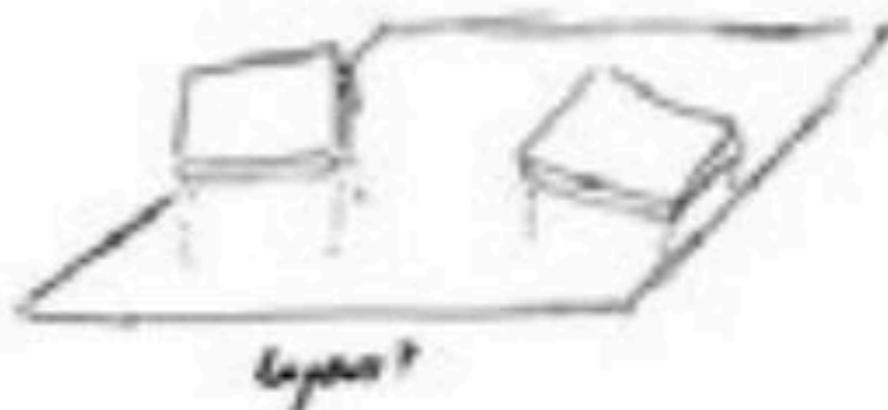


⑤ COMPLEX GESTURES

e.g. handover? hand roll/jog/pick?



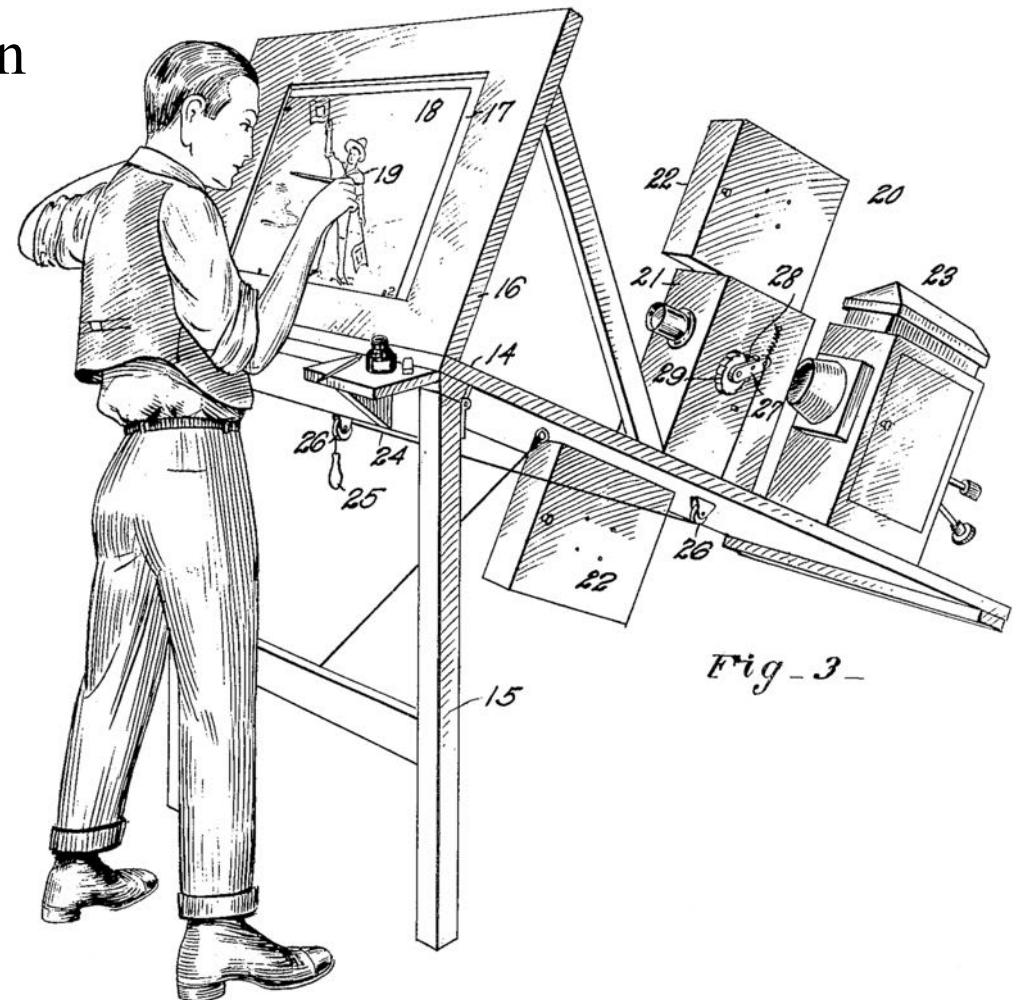
⑥ TOOL SPACE



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

rotoscoping

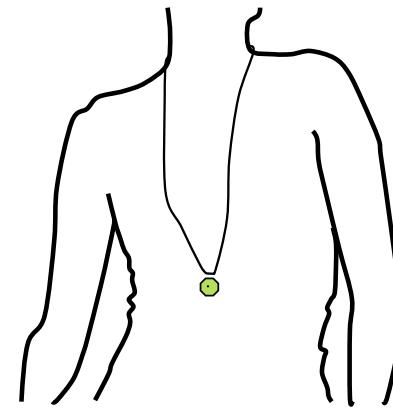
Rotoscoping: an animation technique in which animators trace over footage, frame by frame, for use in live-action and animated movies.



take/import photo



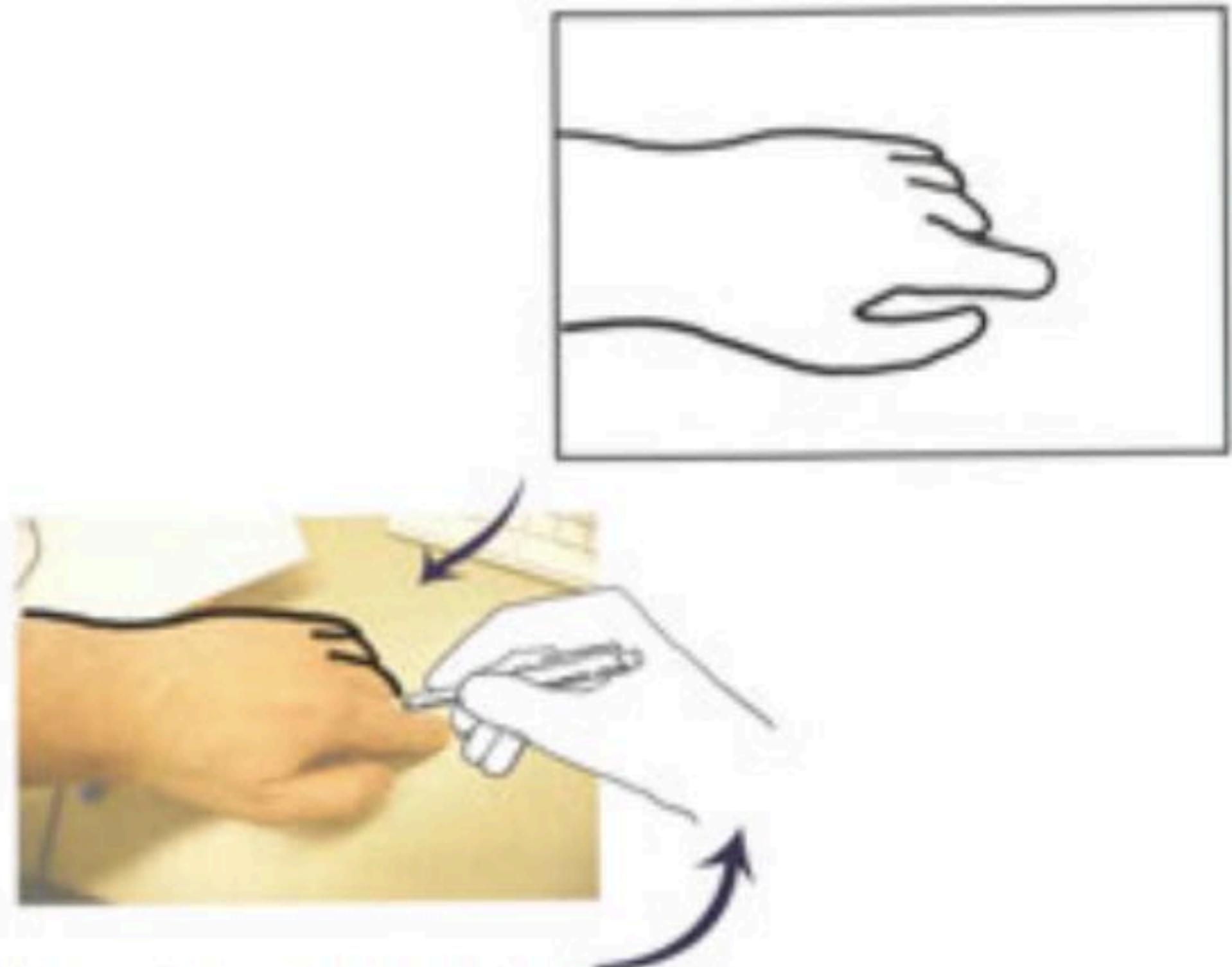
result

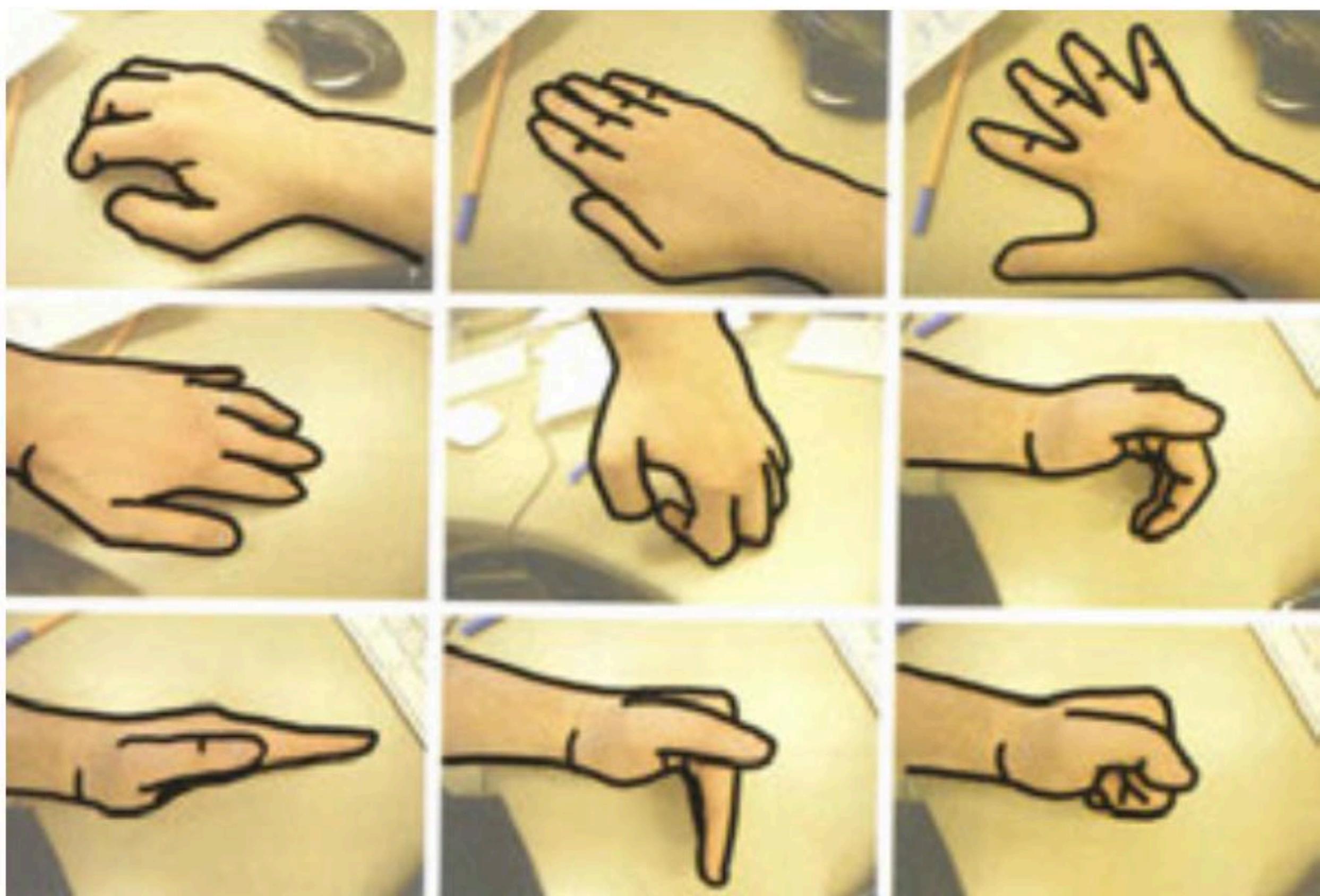


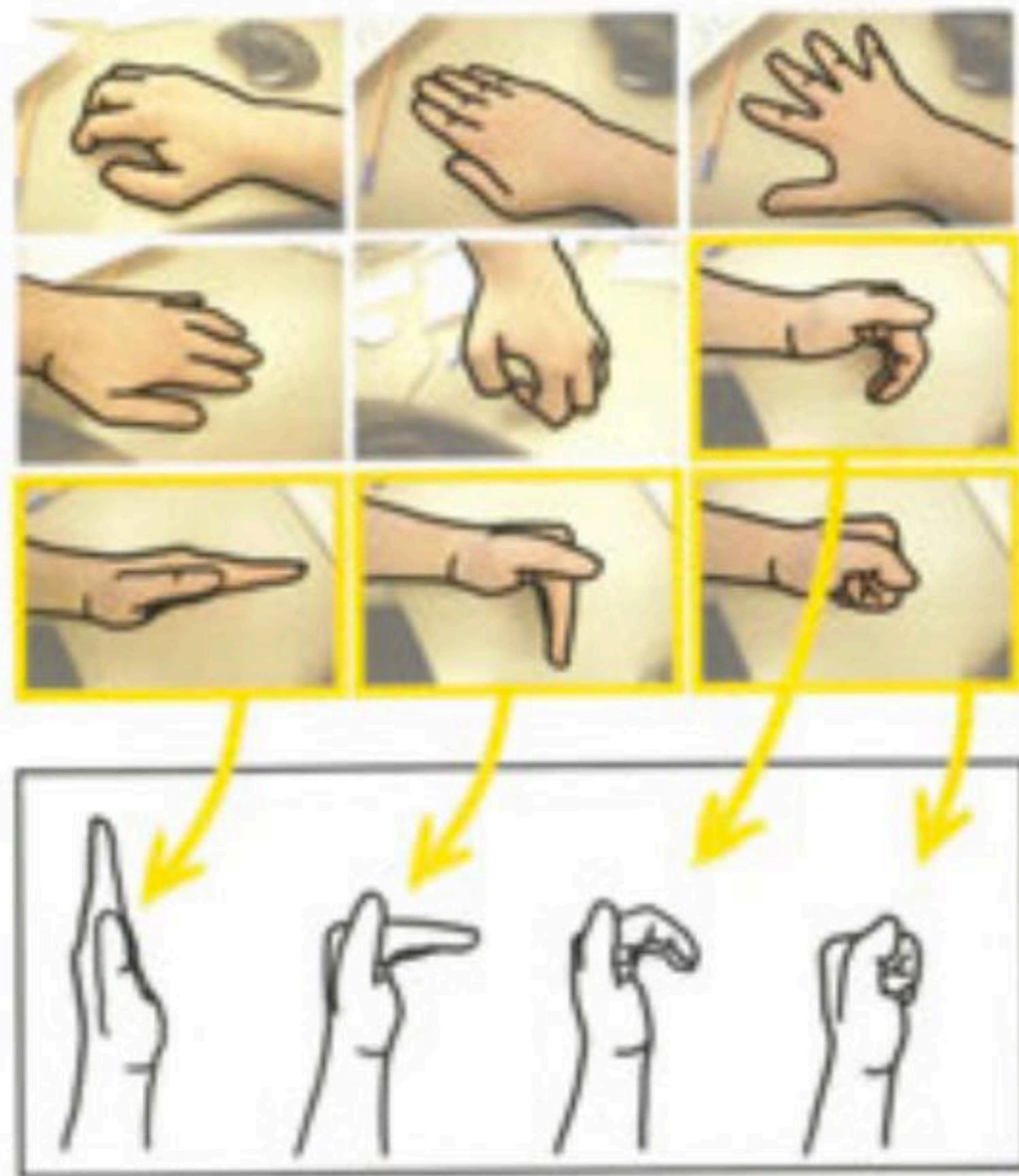
trace important lines

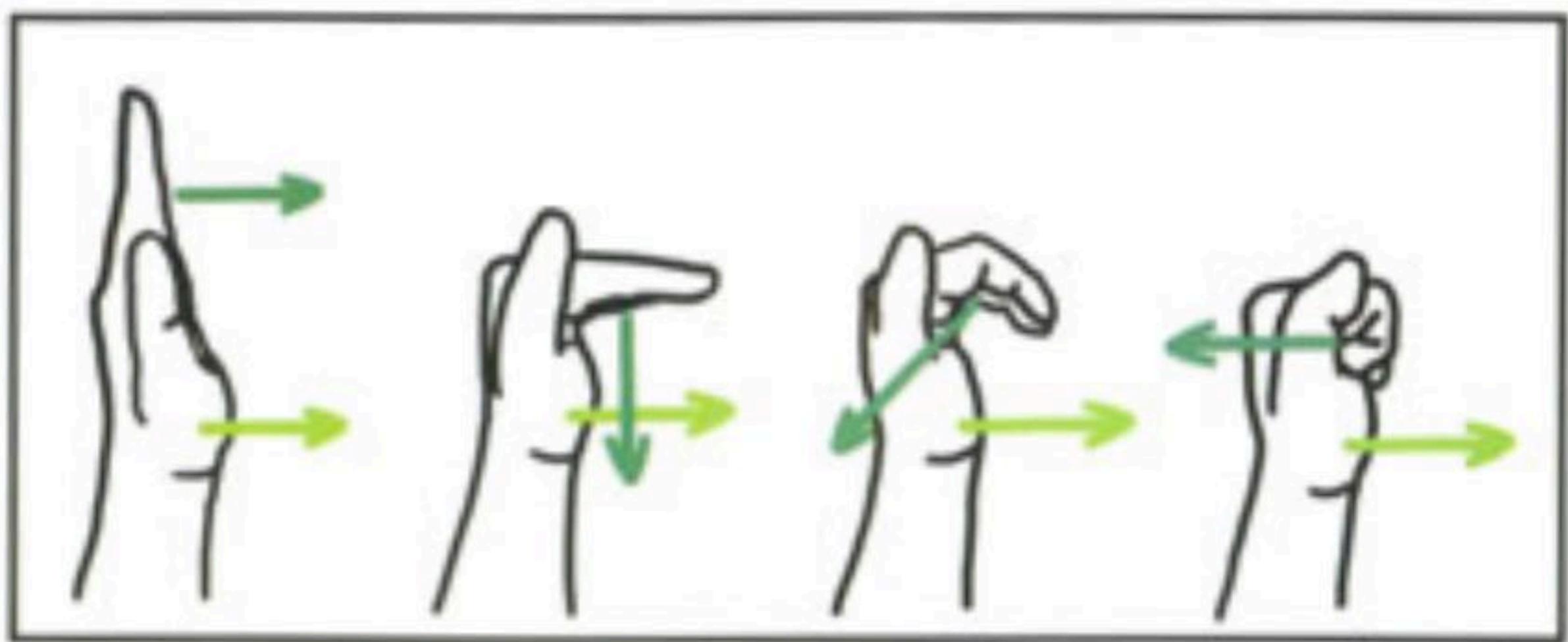
rotoscoping

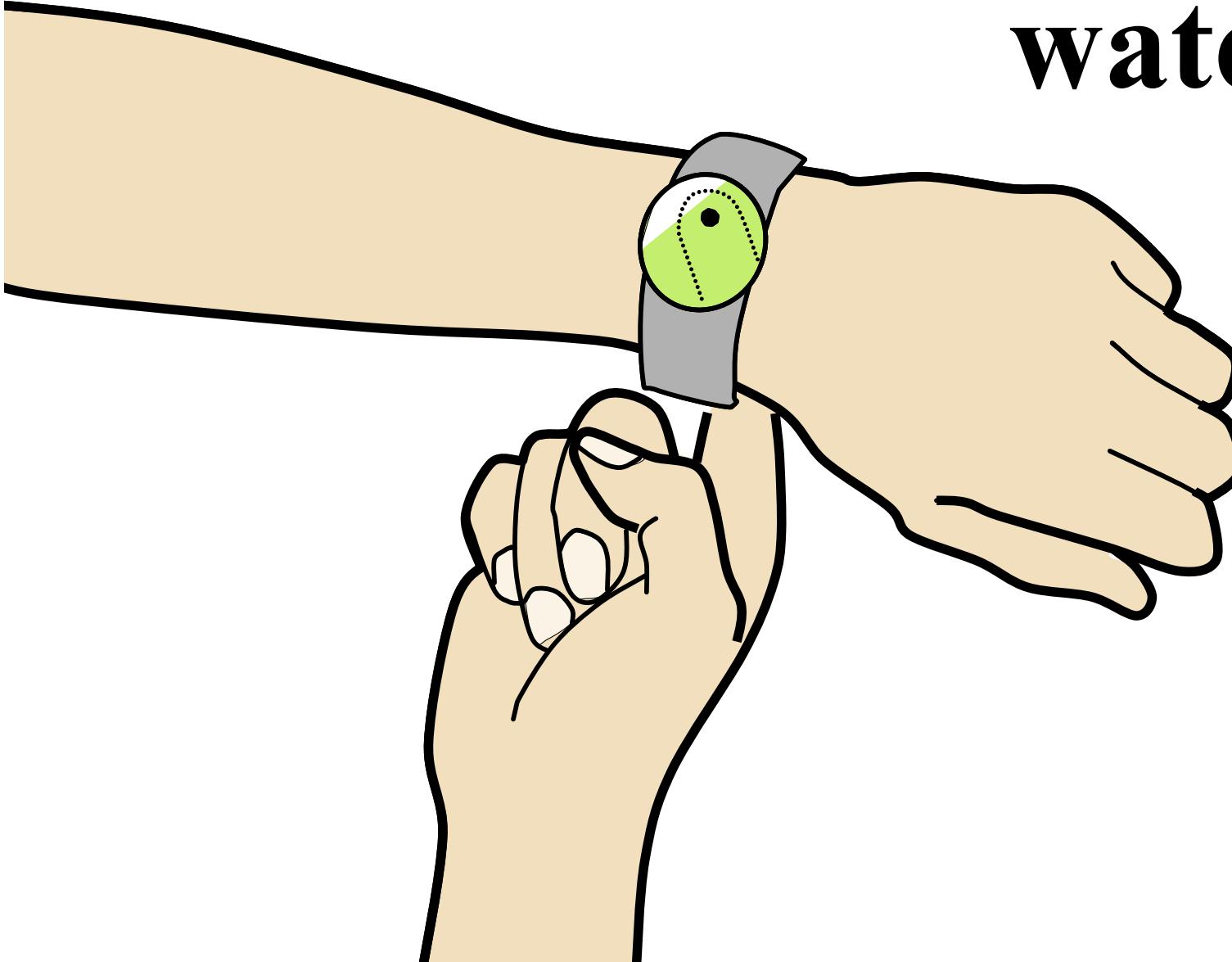
Sketching Technique: Photo Tracing





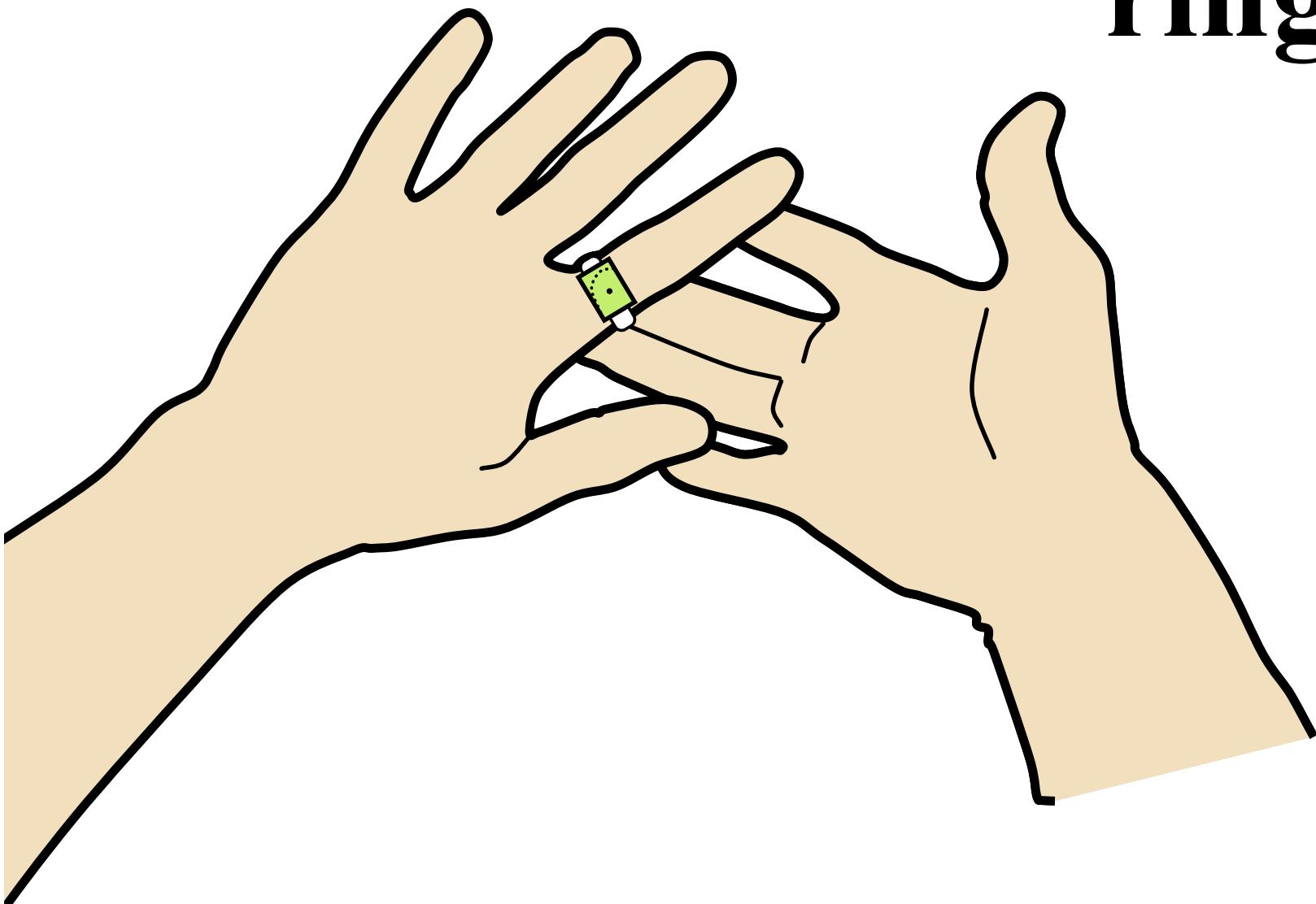






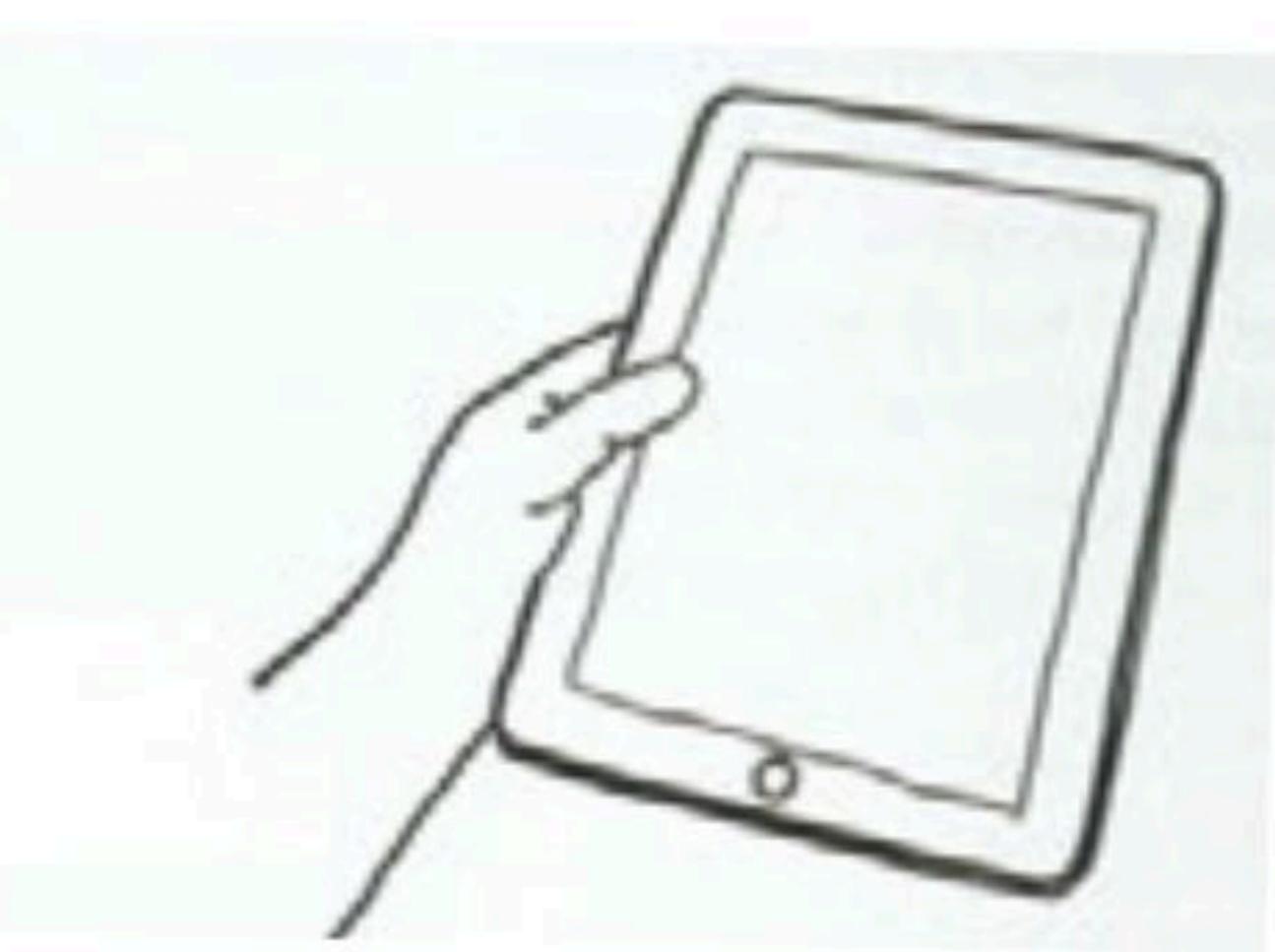
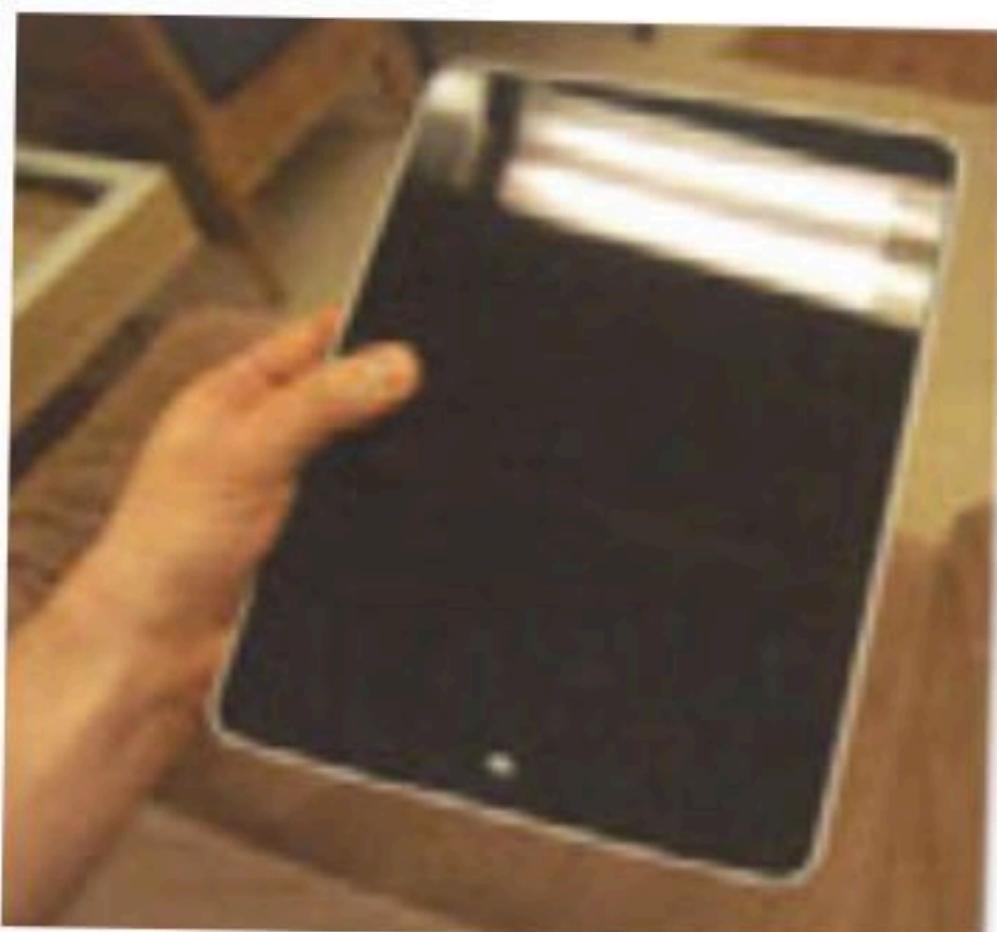
A simple line drawing of a hand holding a watch. The hand is shown from the side, with the thumb pointing upwards and the fingers curled around the watch. The watch has a grey rectangular case and a green circular face with a small black dot at the top. The background is plain white.

watch

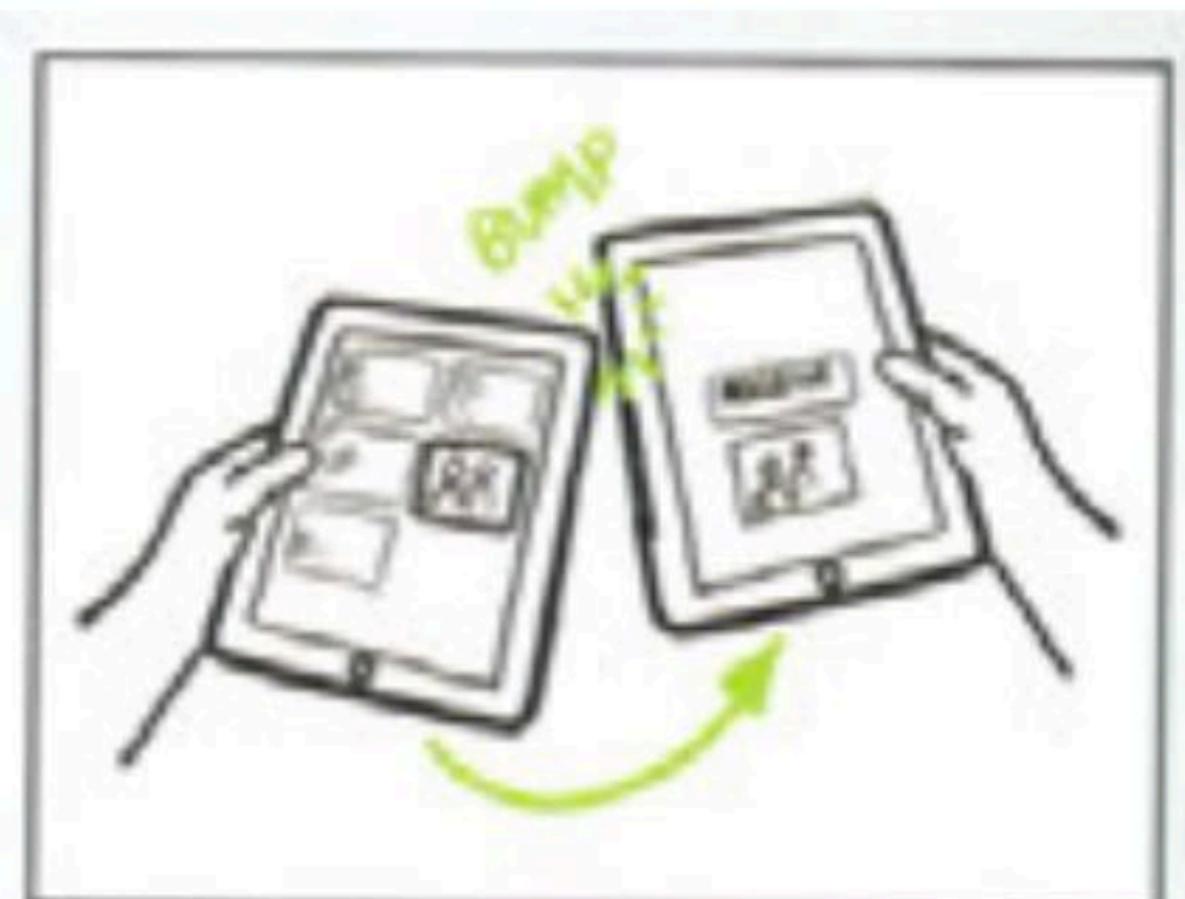


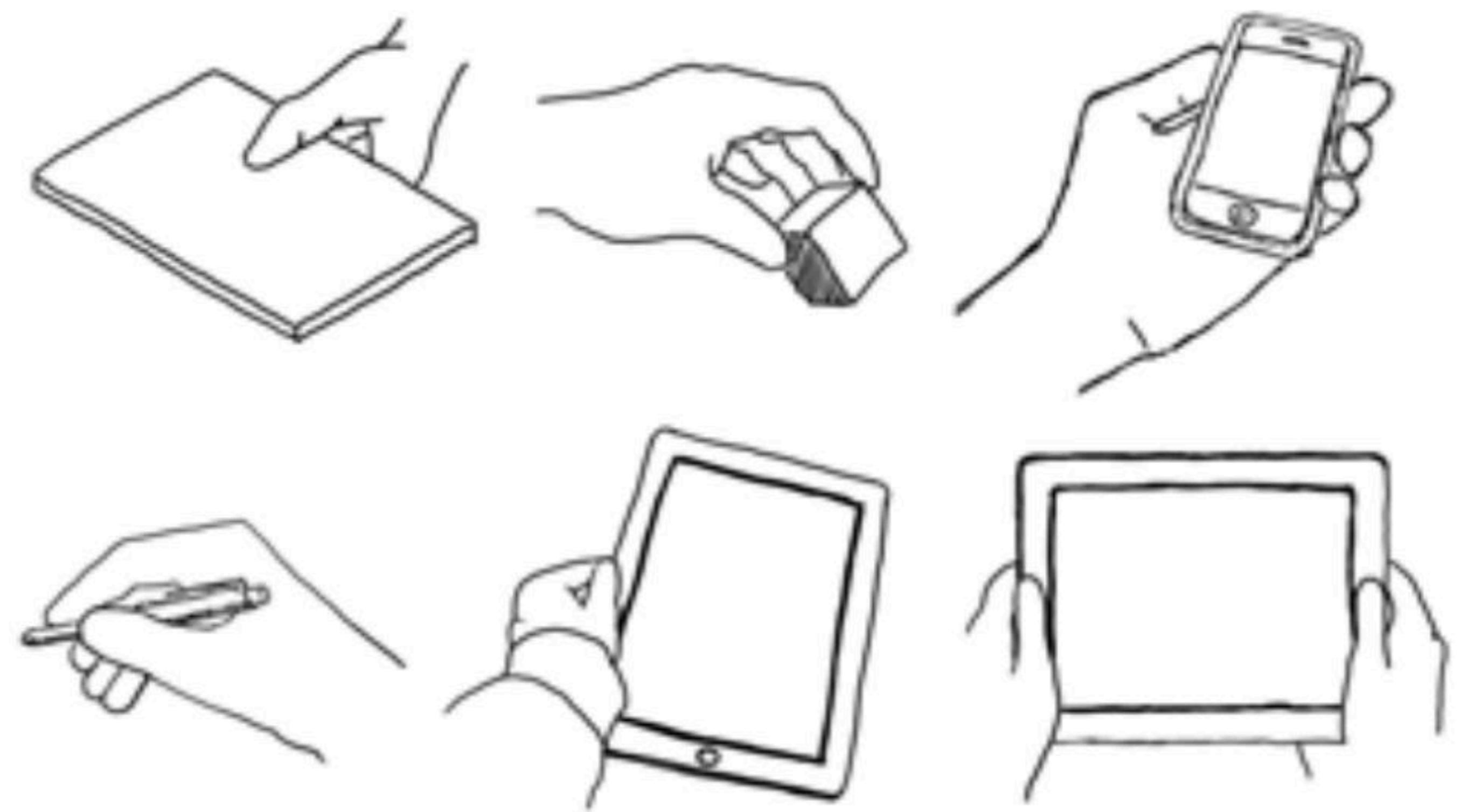
ring

Sketching Technique: Templates



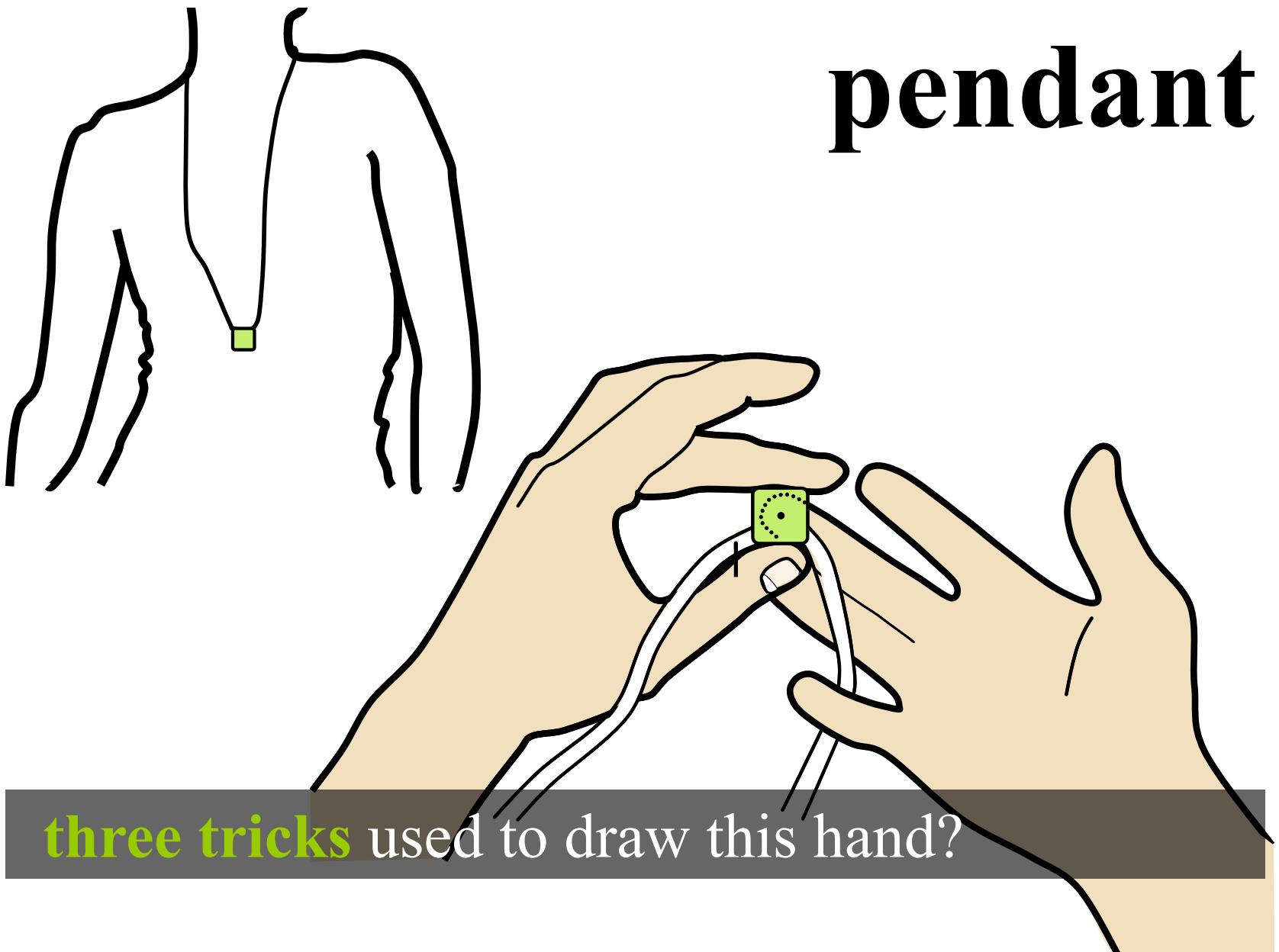
Sketching Technique: Templates





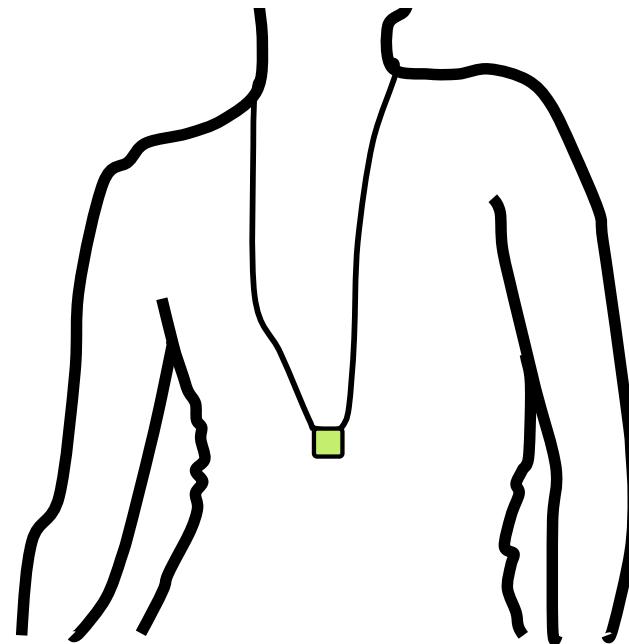
tricks in Rotoscoping

pendant

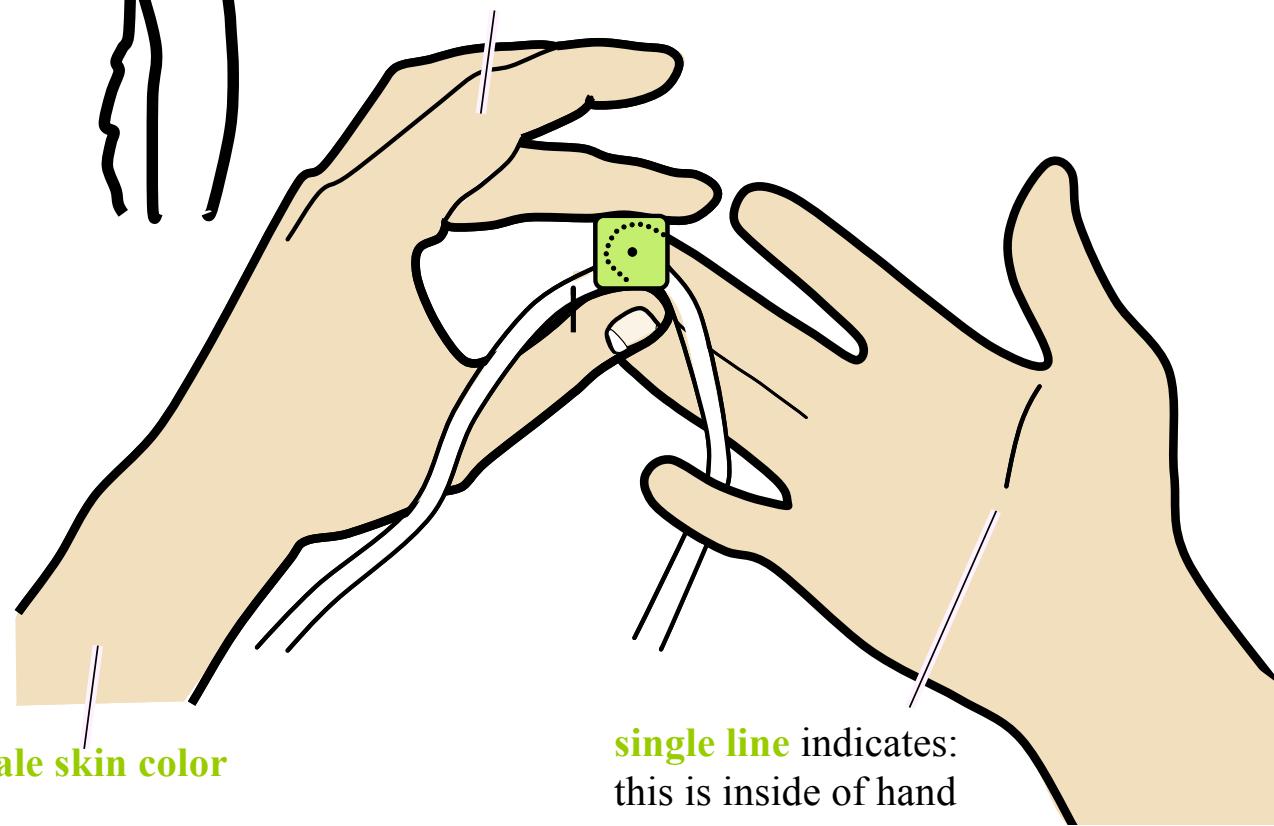


three tricks used to draw this hand?

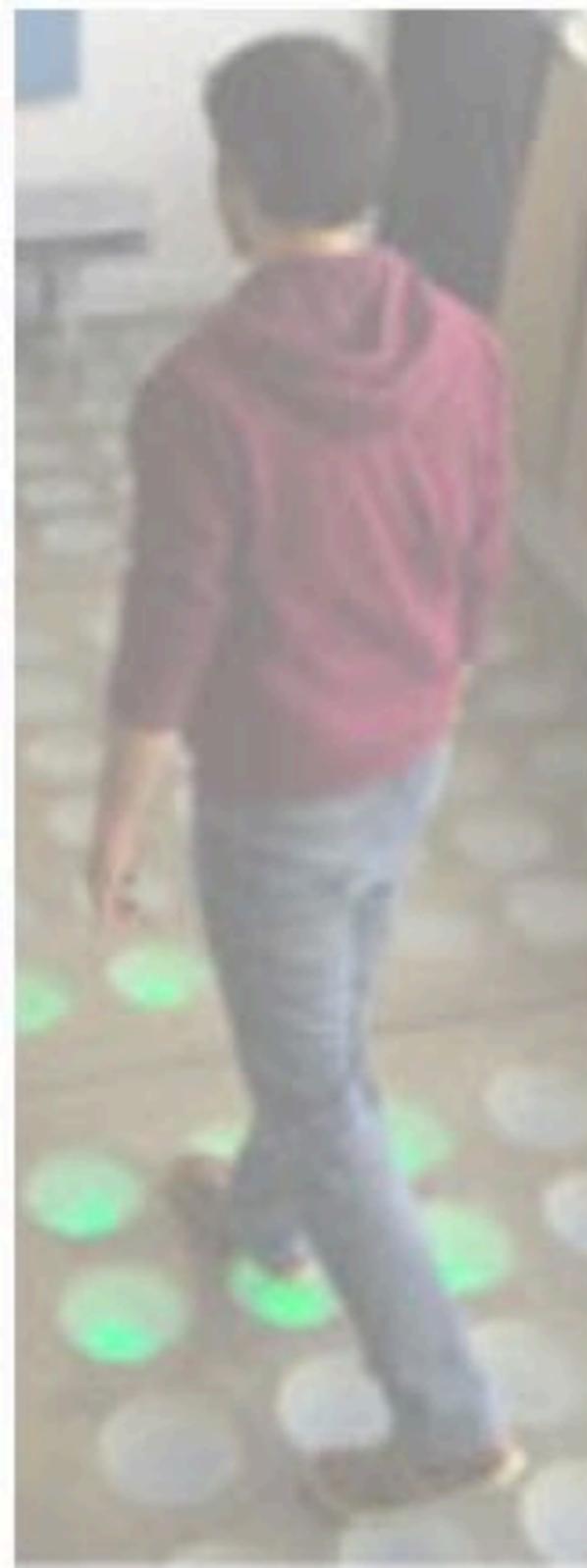
pendant



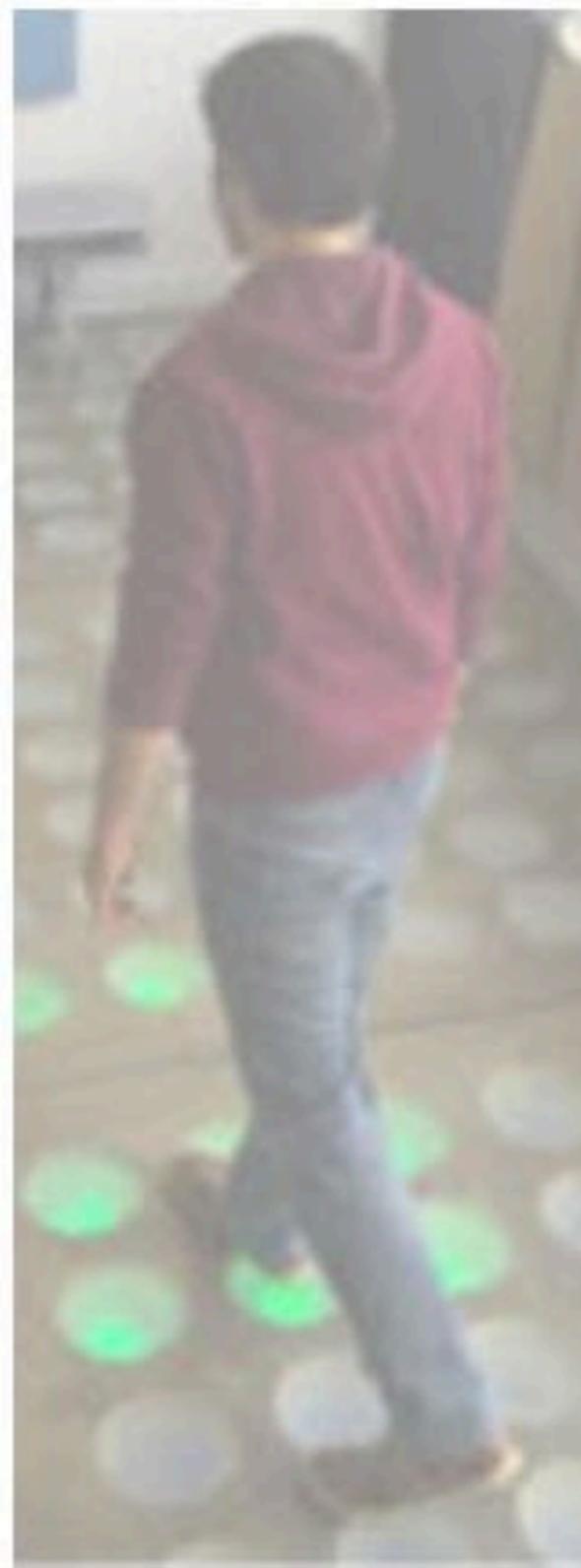
only outer lines are thick, **same line** is thin when inside the hand.



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

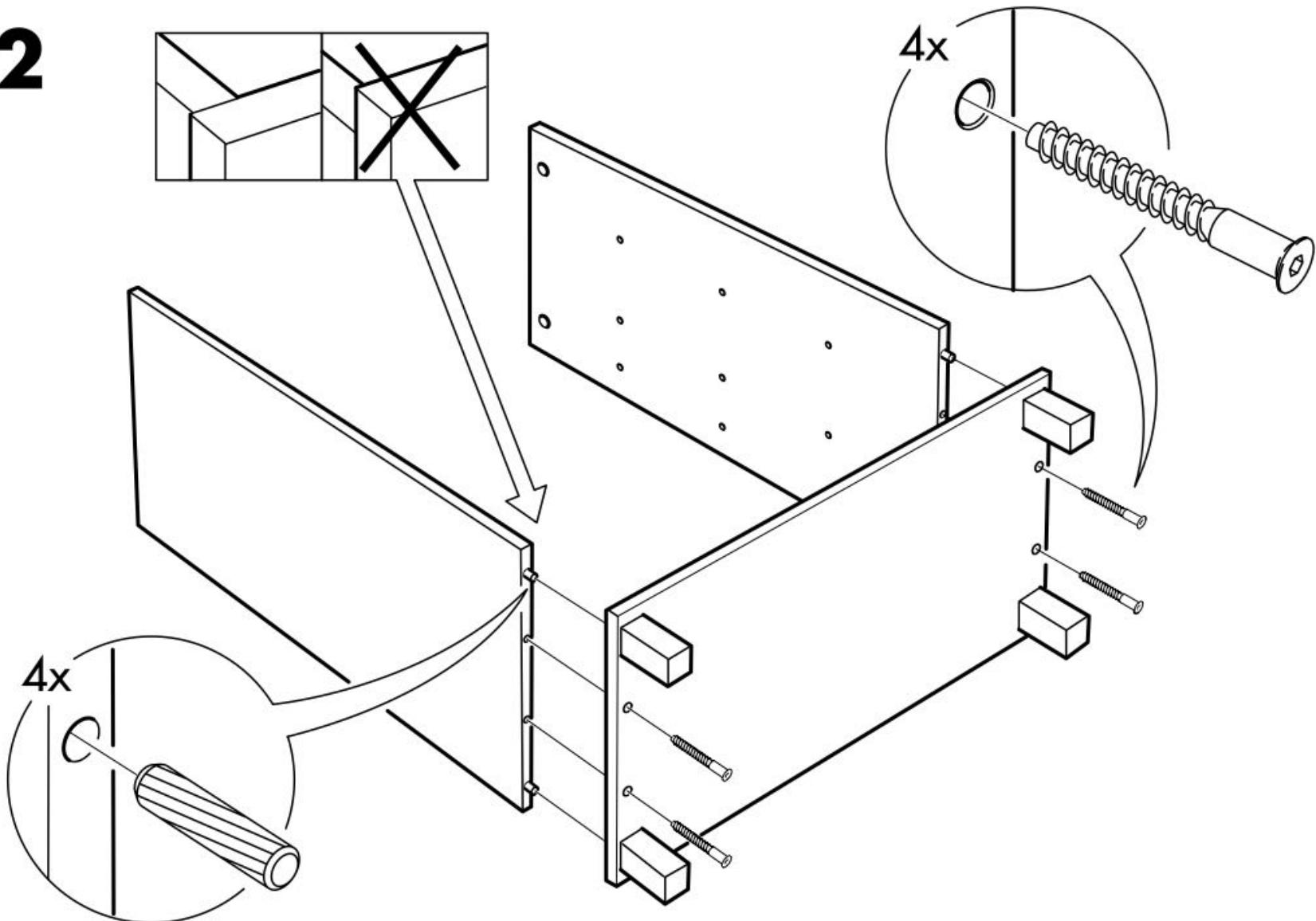


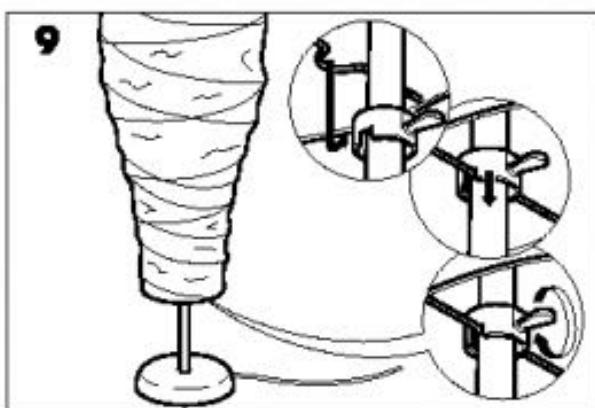
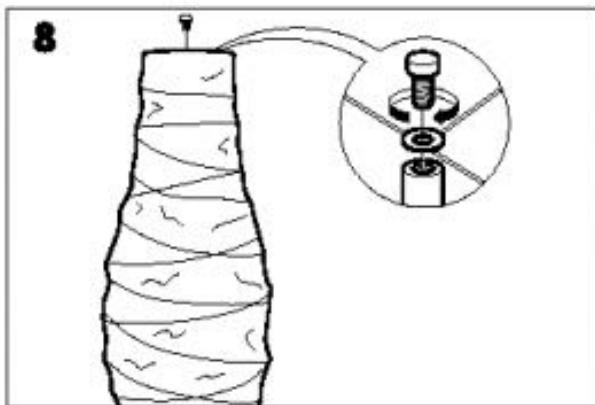
Tricks for photo tracing:
**Begin with major
outline, then add
minimal details**



IKEA Construction Guide !!

2





8

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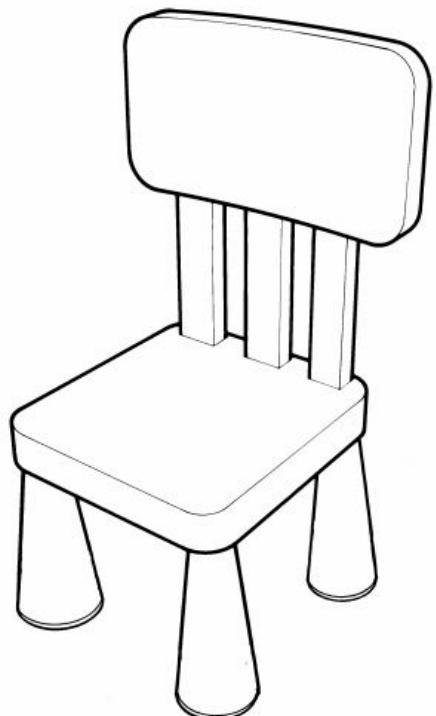
AA-100293-2

DUDERÖ

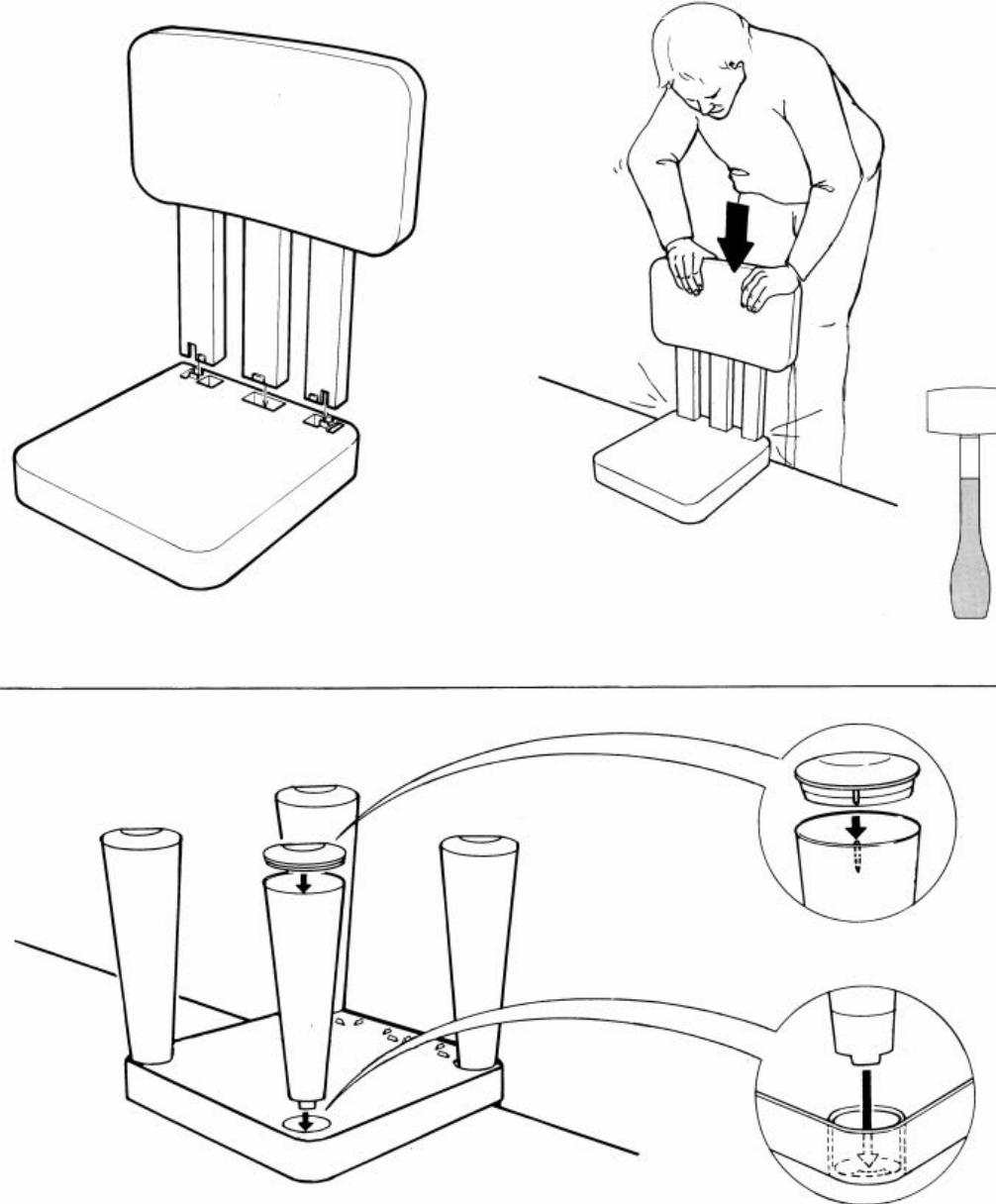
ENGLISH
FRANÇAIS
ESPAÑOL



Mammut

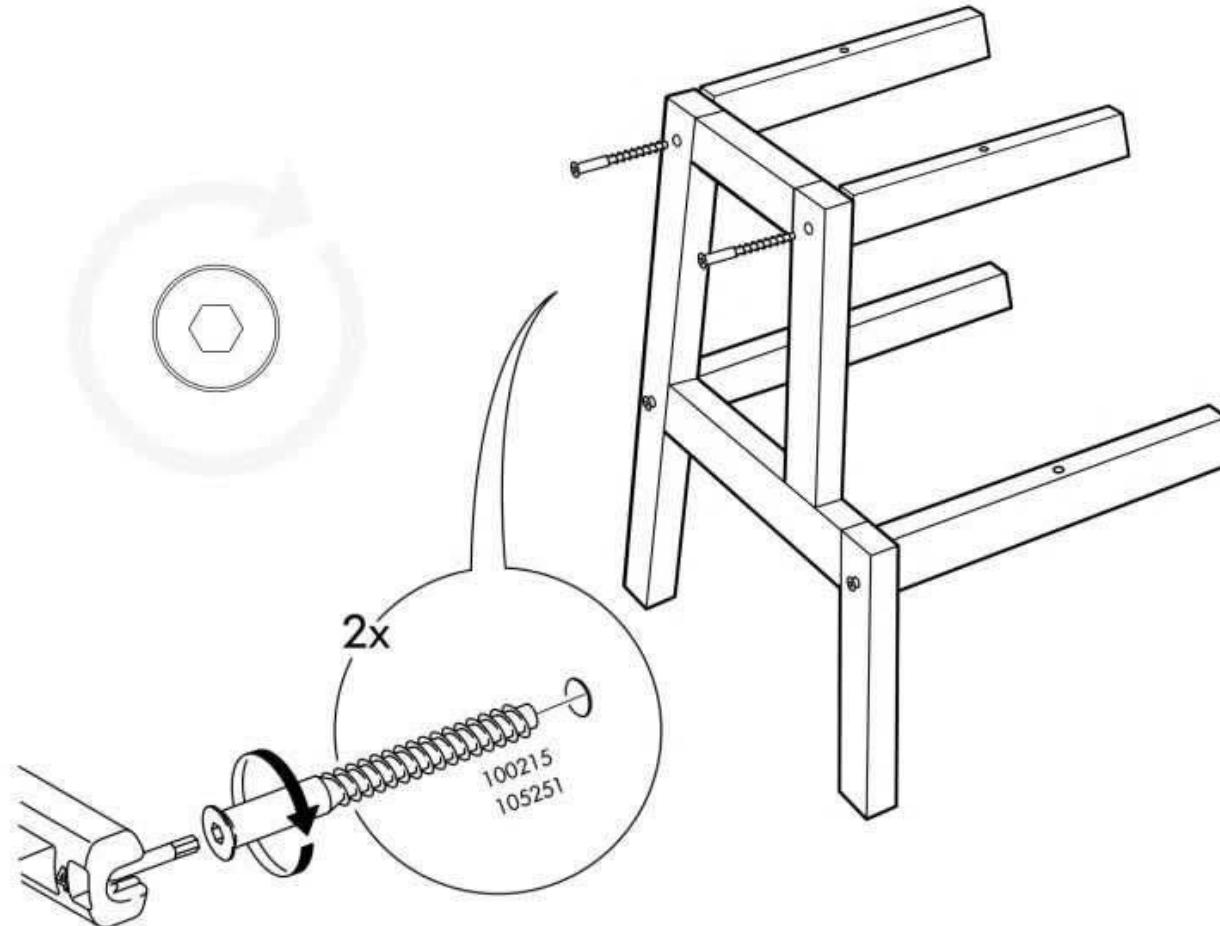
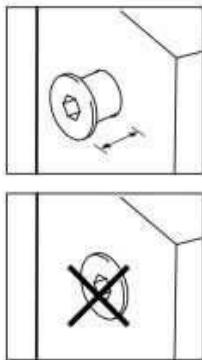


Design and Quality
IKEA of Sweden



Doc. No: AA-18764-2, Doc Size: A4x1
Doc. Name: MAMMUT CHAIR
Alt. Doc No: 9734/1443
© Inter IKEA Systems B.V. 1996

2

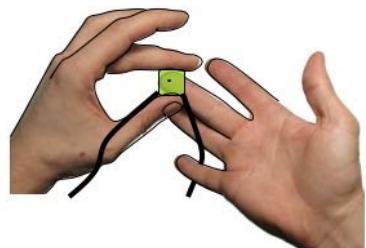




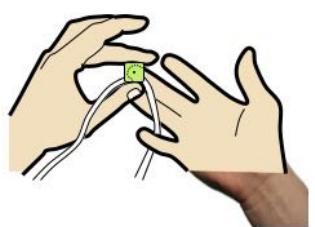
take elements separately
& matt (“freistellen”)



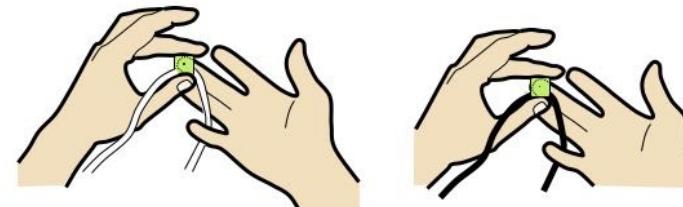
combine



draw over

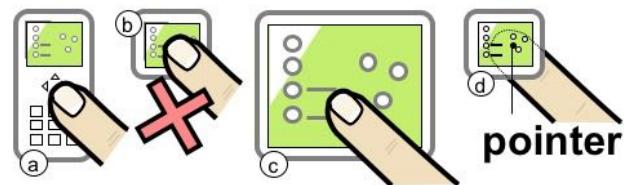


colorize

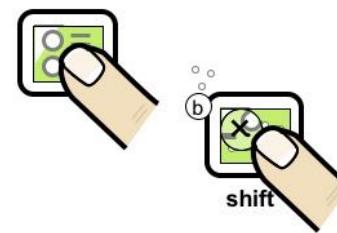


try multiple versions & keep them

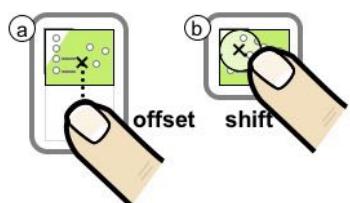
reuse



pointer



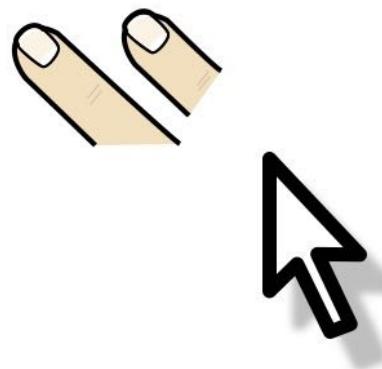
shift



offset

shift

make one good finger,
pointer, device and reuse



① DANCE - TO - MOVE

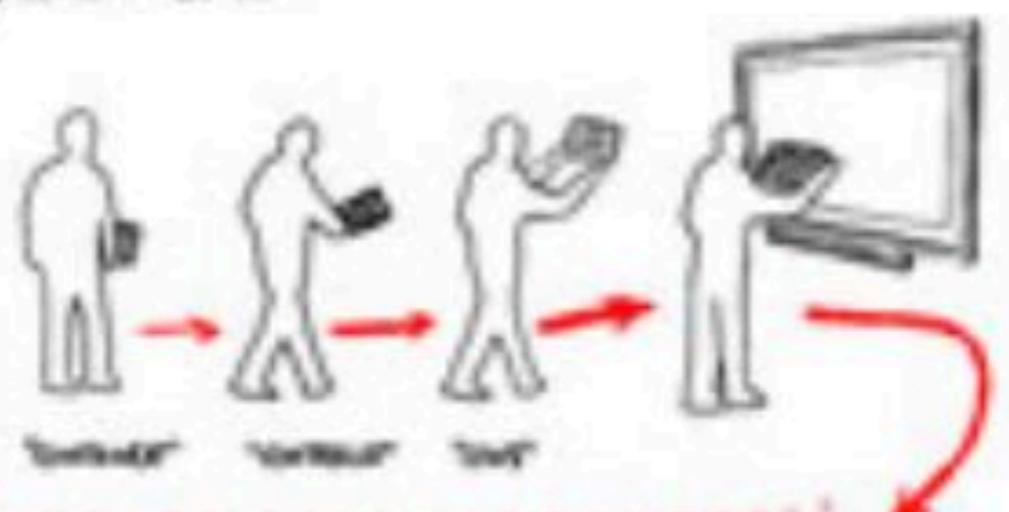
- move
- activity
- music
- movement



② DANCE - TO - MOVE (MOVEMENT, MUSIC, AND)



③ DANCE - TO - MOVE



- movement
- movement
- movement
- movement

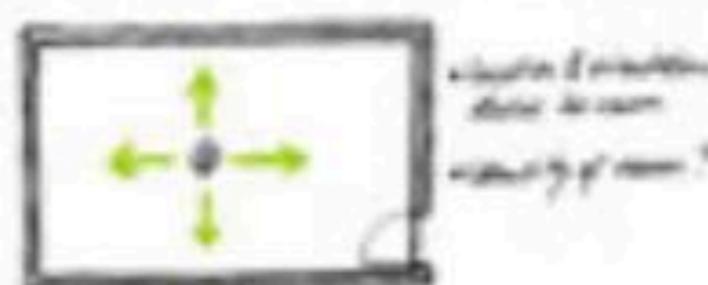


The sequence of movement is: static → movement → movement → movement → static
→ movement → movement → movement → static

④ DANCE - TO - MOVEMENT (MOVEMENT, MUSIC, AND)



⑤ DANCE - TO - MOVE (MOVEMENT, MUSIC, AND)



⑥ DANCE - MOVEMENT

- static
- activity
- music
- physical action
- visual activation (green square)

① DANCE - IN - PAIR

- dancing
- dancing in pairs



② DANCE - IN - PAIR WITH STATION, SWING AND

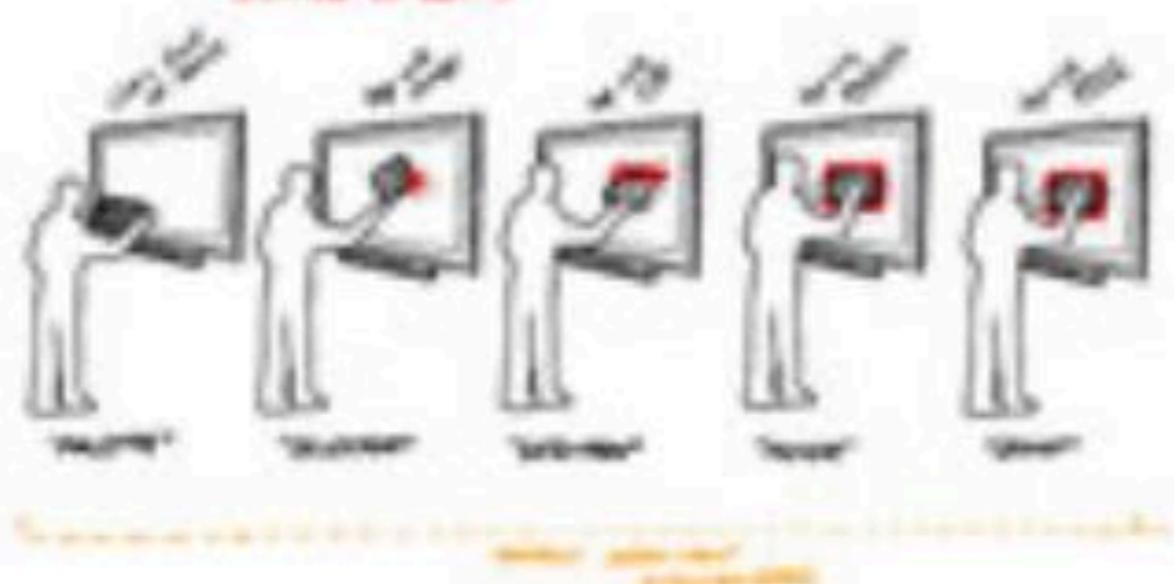


③ DANCE - IN - PAIR

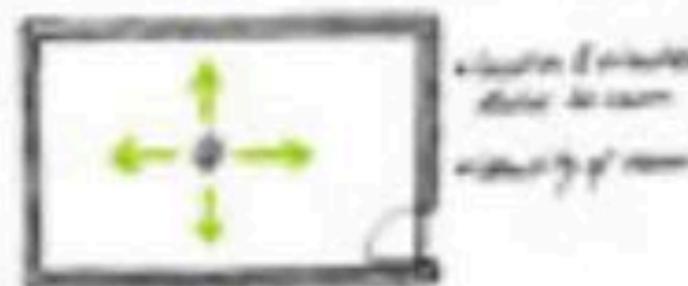
- dancing
- dancing in pairs



④ DANCE - IN - PAIR WITH THE OBJECTS
(color or colour in other?)

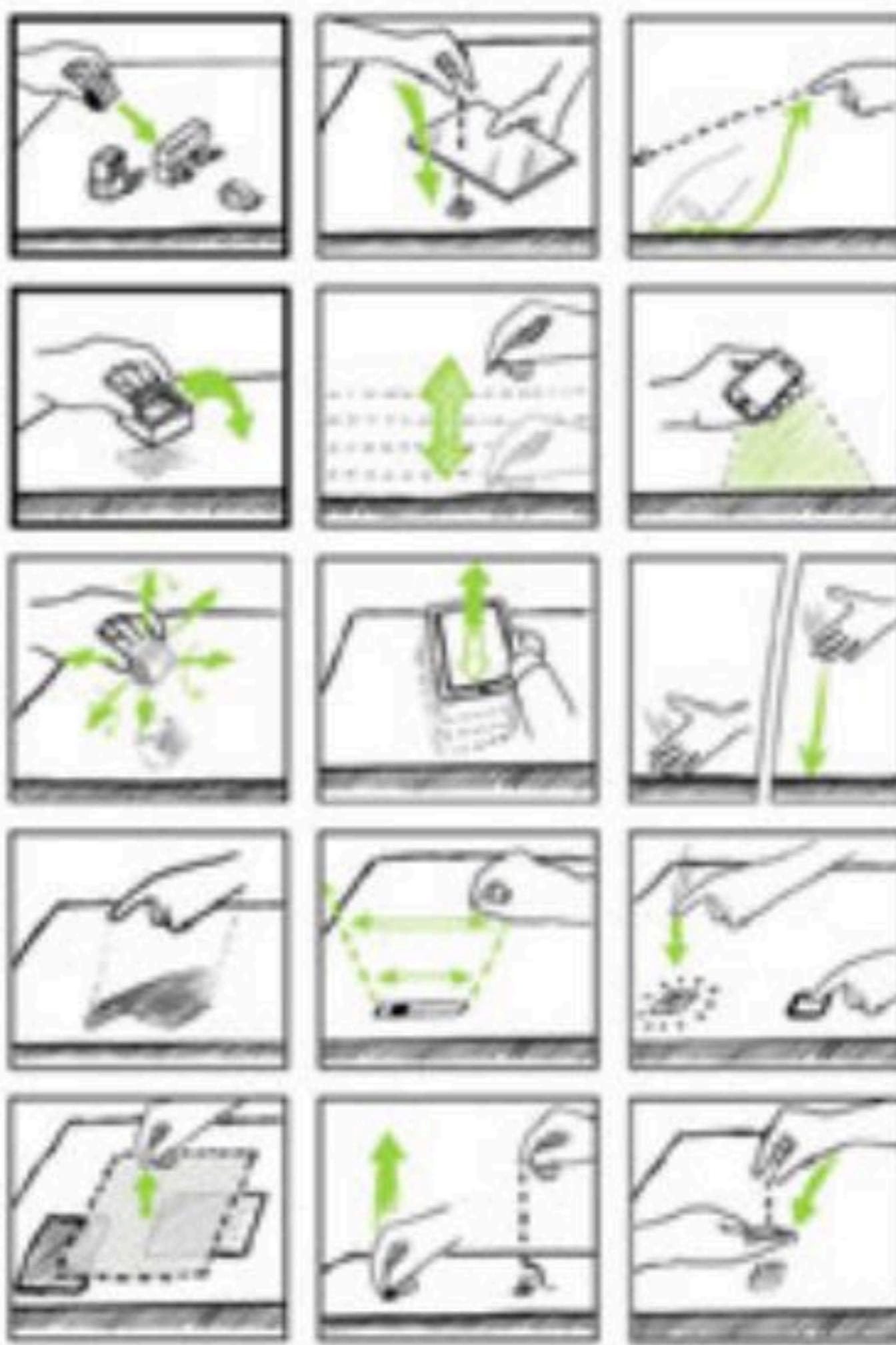


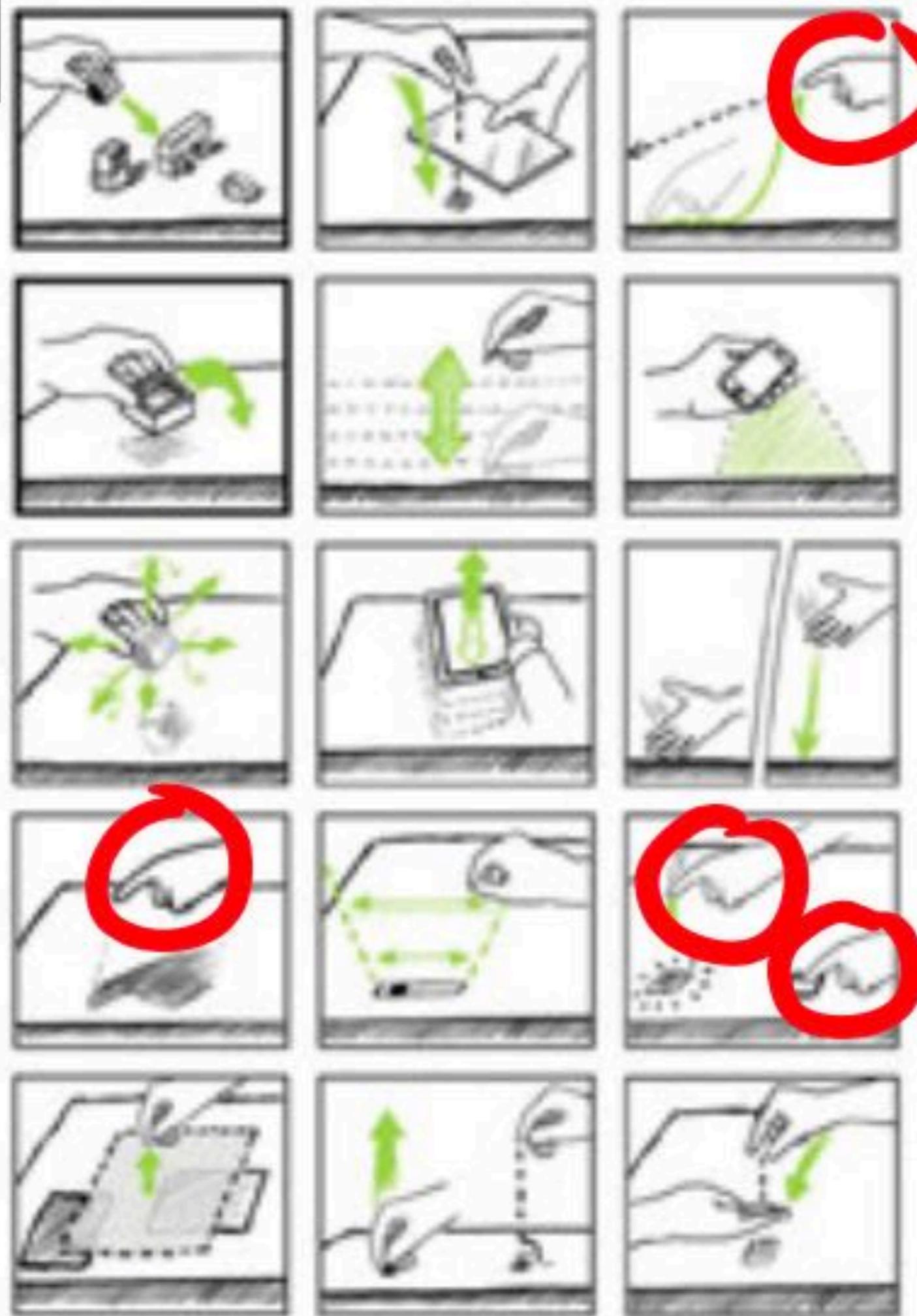
⑤ DANCE - IN - PAIR (PAIRS) / SWINGING

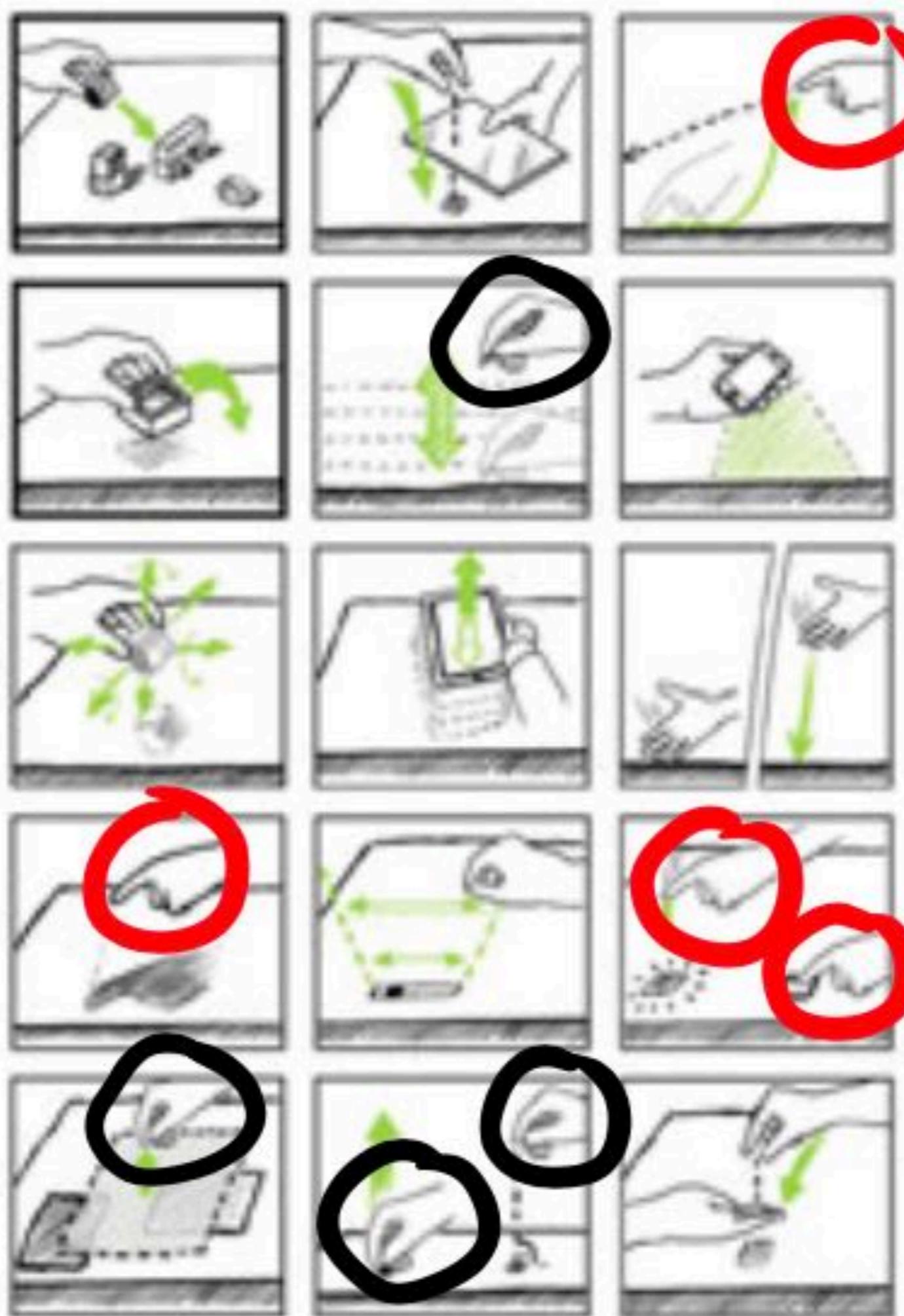


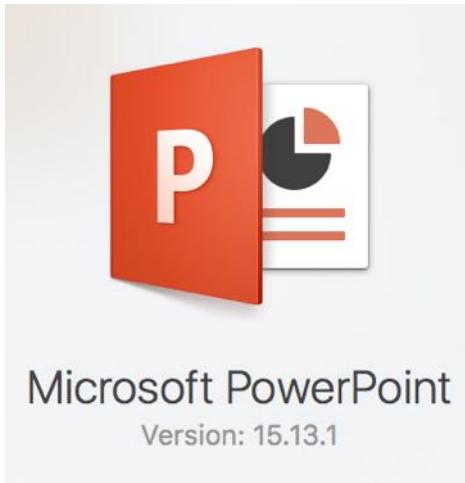
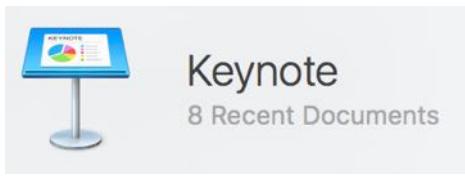
⑥ DANCE - MUSICAL

- dancing
- dancing in pairs
- dancing in groups
- dancing in pairs
- dancing in pairs
- dancing in pairs









we use this today



Adobe
Animation CC

Tools for Rotoscoping



Adobe Flash CS6

Version: 12.0.0.481



[Download this image here](#)



Memo

Canvas size: 1280 * 1024

Create two symbols (e.g.,
objects) for photo and sketch

thick line: 6
thin line: 3

Shortcut

Ctrl+t: transform

P: pen tool

V: selection tool

Skin color:
250, 231, 207

TouchSense: Direct Mode Switching Using Different Areas on Users' Finger Pads

Da-Yuan Huang*

Liwei Chan*

Min-Lun Tsai*

Mike Chen*

Ming-Chang Tsai*

Yi-Ping Hung*

*National Taiwan University
{d99944006, r00944005, r98944021, liwei?, mikechen, hung}@csie.ntu.edu.tw

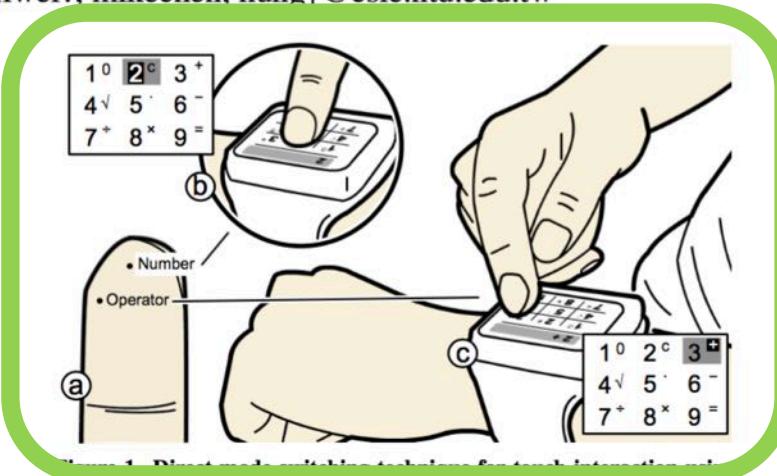
ABSTRACT

We propose TouchSense, a direct-touch interaction technique that enables *direct mode switching* using different areas on the finger pads. It enables fast switching between input modes by single tapping with different areas of users' finger pads, while requiring minimal input area. For example, when using a calculator app on a smart watch, users can tap normally to enter numbers and tap with the right side of their fingers to enter the operators. We conducted two human factors studies which showed that users can tap on a touchscreen with five or more distinct areas on their finger pads. Also, users are able to tap on a finger pad with different areas simultaneously towards their goals. We implemented TouchSense on a smart watch and conducted two prototypes: a calculator and a game. The results show that users can switch between number and operator modes quickly and accurately. In addition, users can invoke different modes by using different areas on finger pads.

Rotoscoping – a walkthrough example

augmented finger input, input modality, smart watch, small screen mobile devices

ACM Classification Keywords



different areas on finger pads. (a) Different finger areas correspond to numbers vs operators. (b) The number '2' is entered by using a normal tap. (c) The '+' operator is entered by tapping the key '3' with the right-side of the finger. The gray highlight indicates the on-screen key touched, and the black highlight indicates the mode invoked.

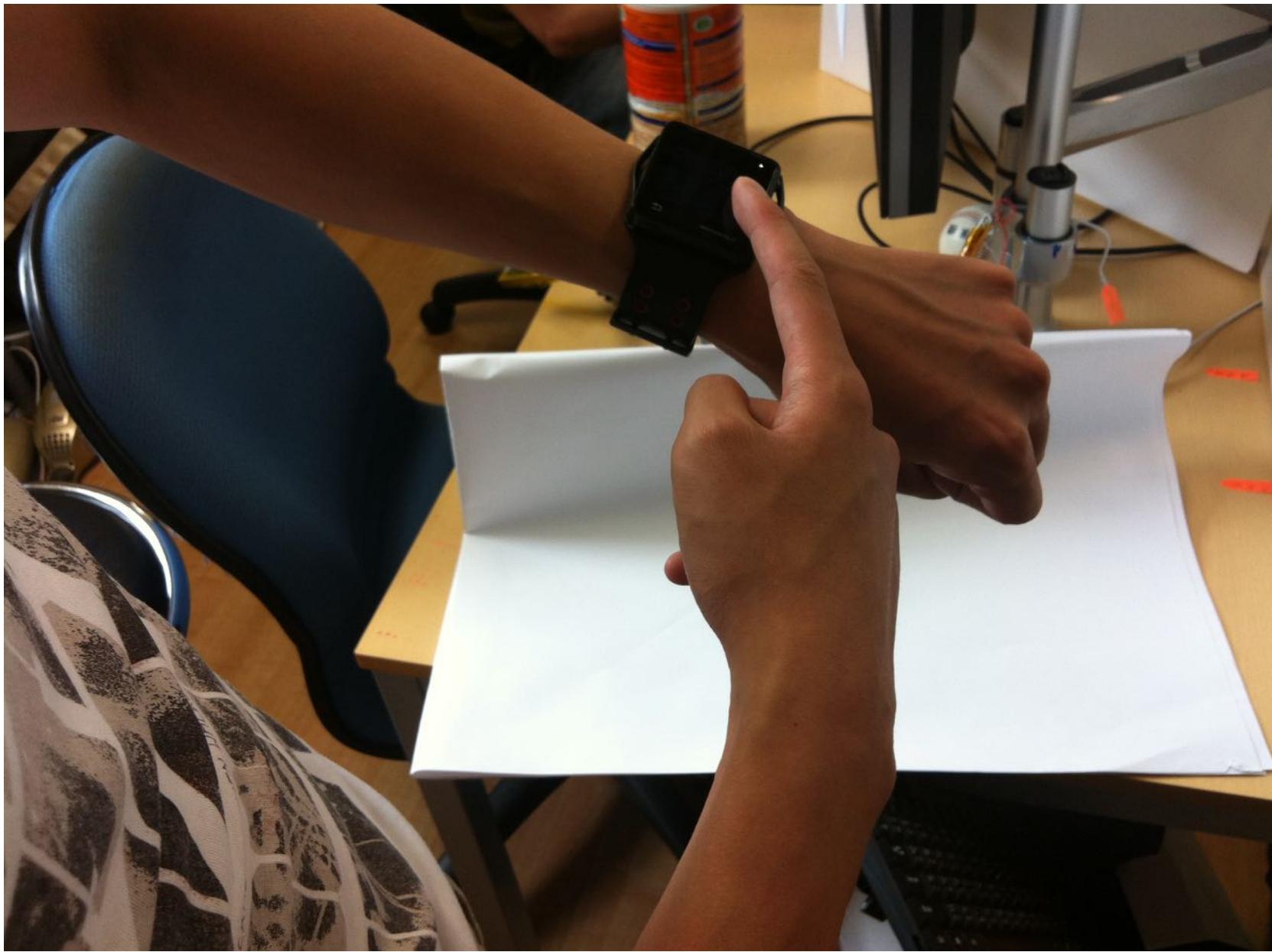
the devices [7, ?, ?]. While these techniques provide a richer input space, they require additional motions, which means



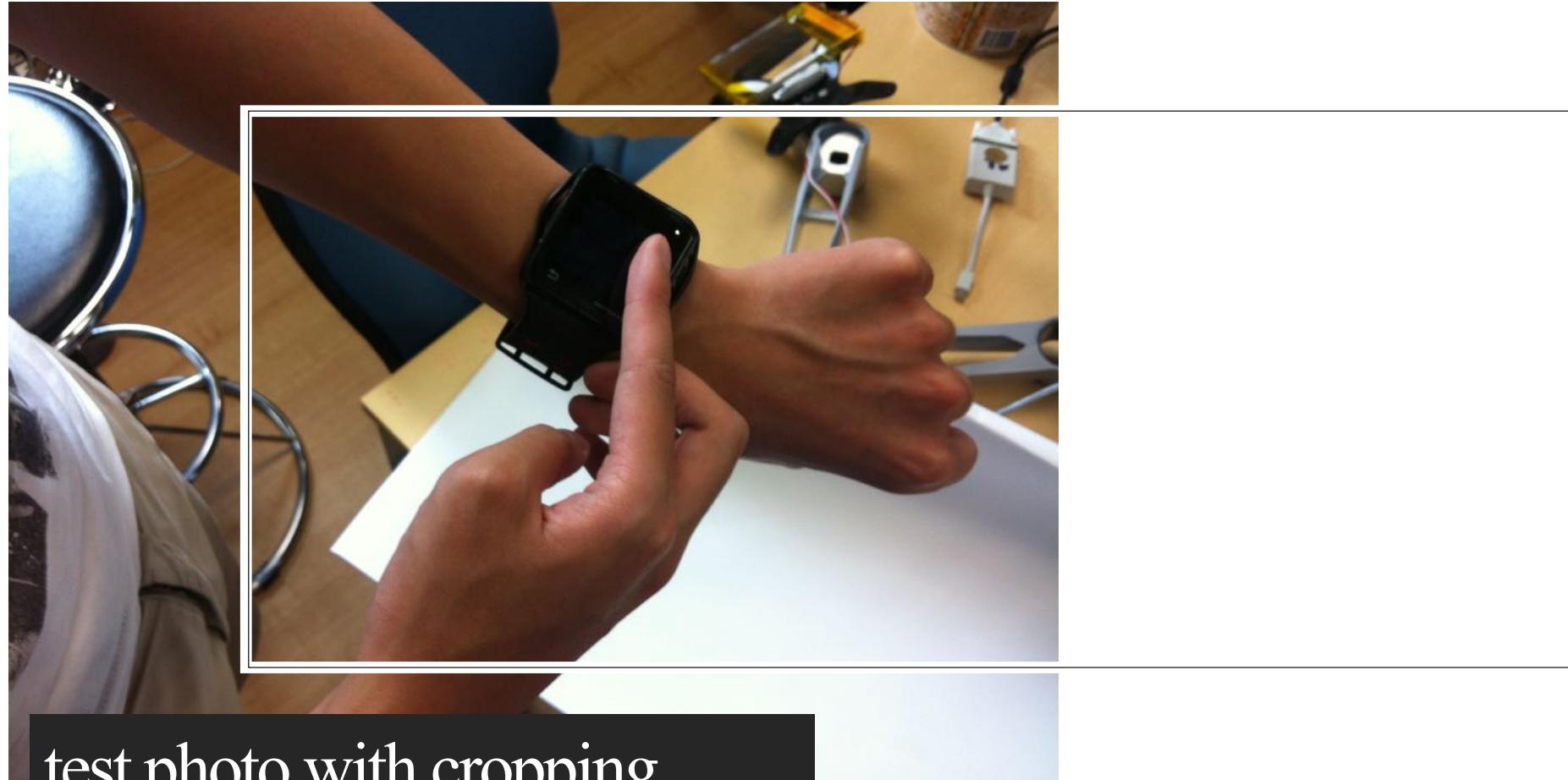
- Take many photos
- Search possible angles which describe context the best
- Image quality / lighting is not important in this stage



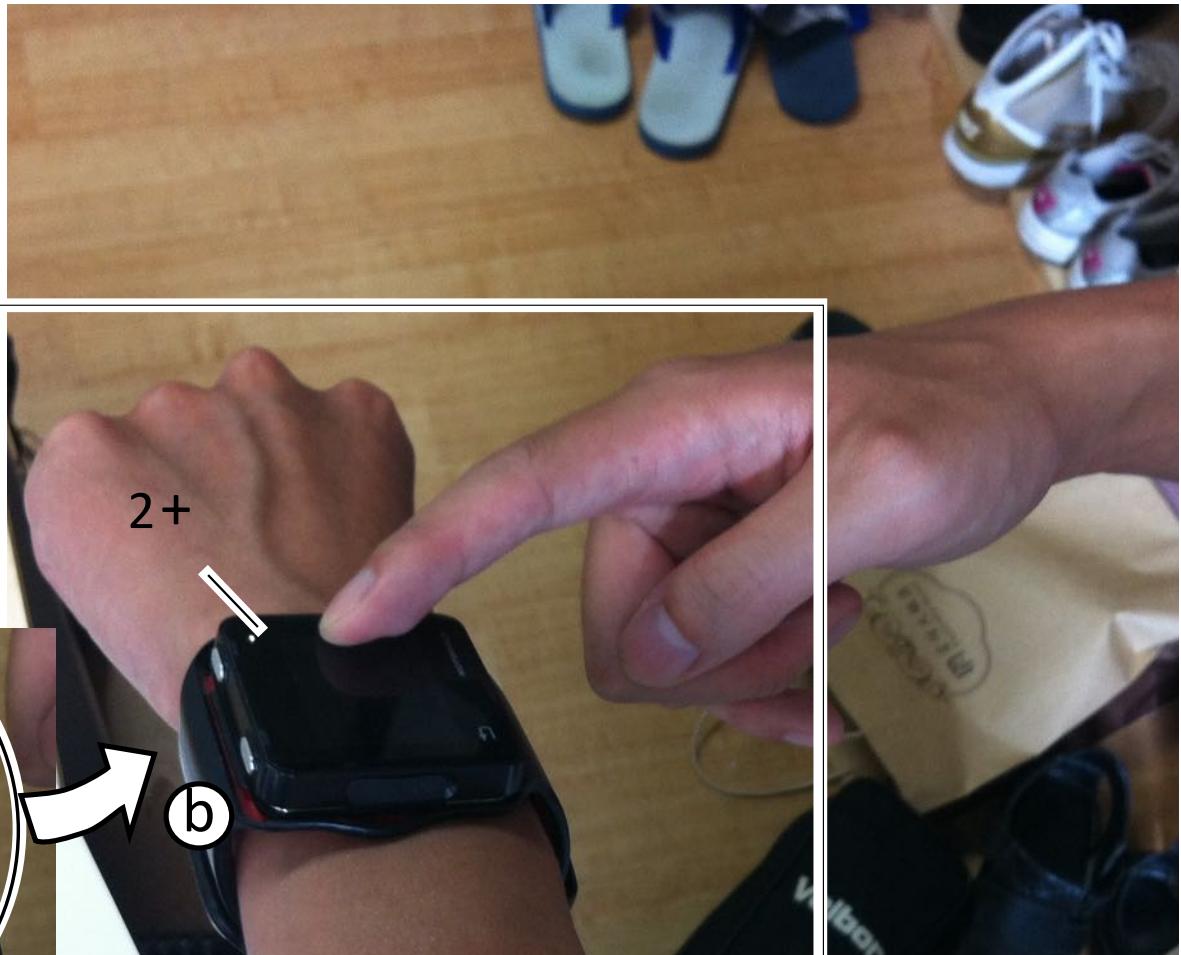
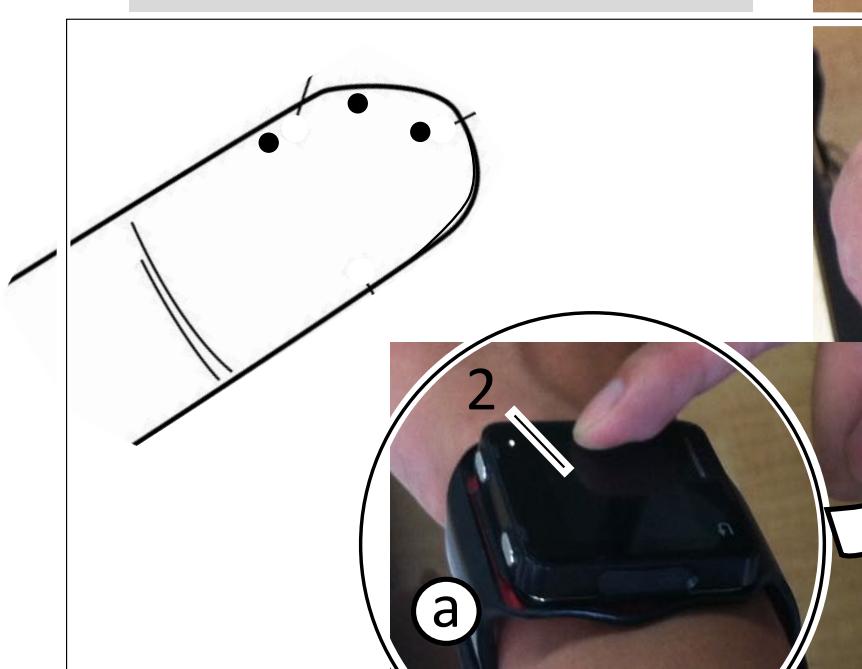




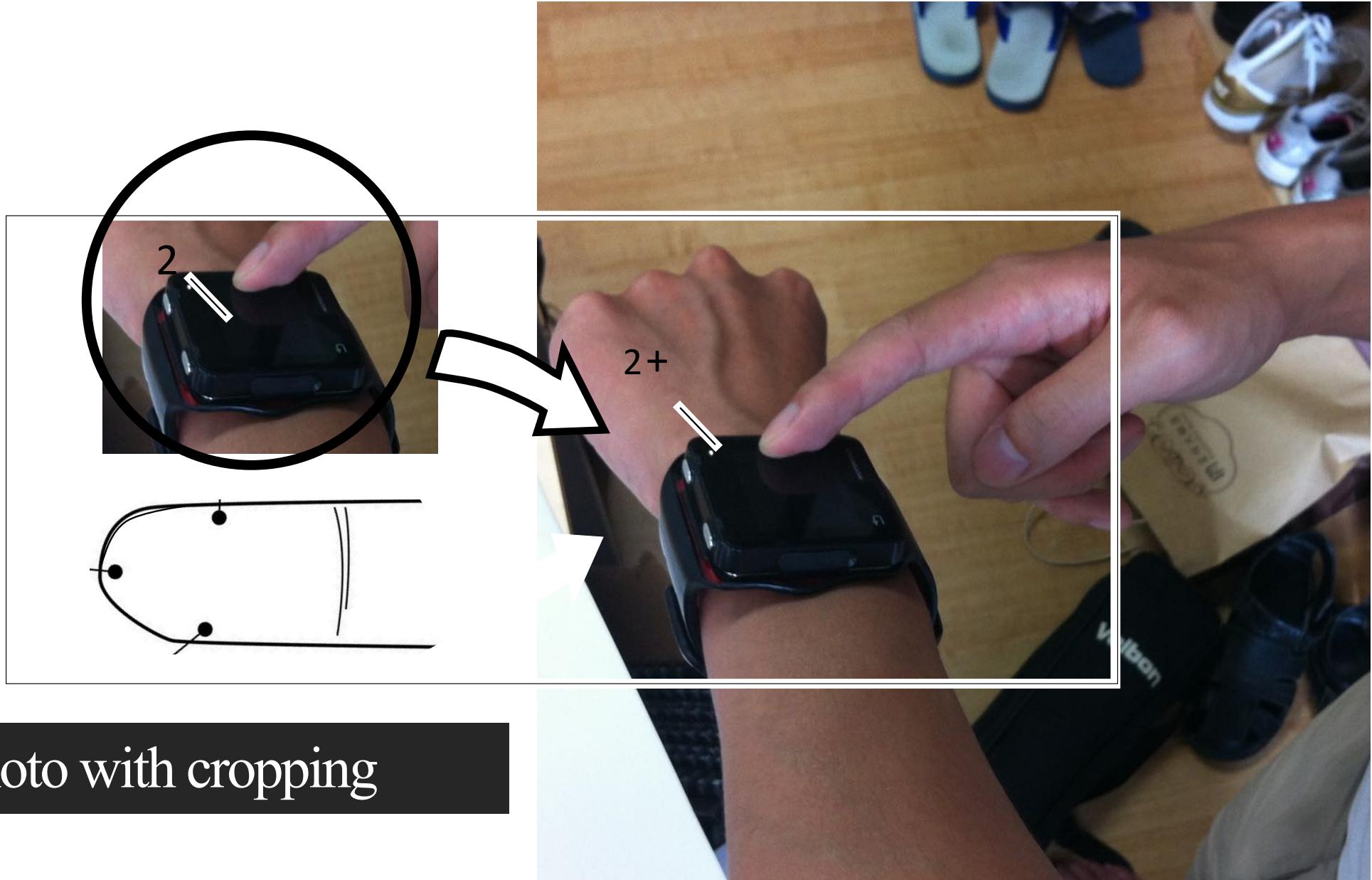




test photo with cropping



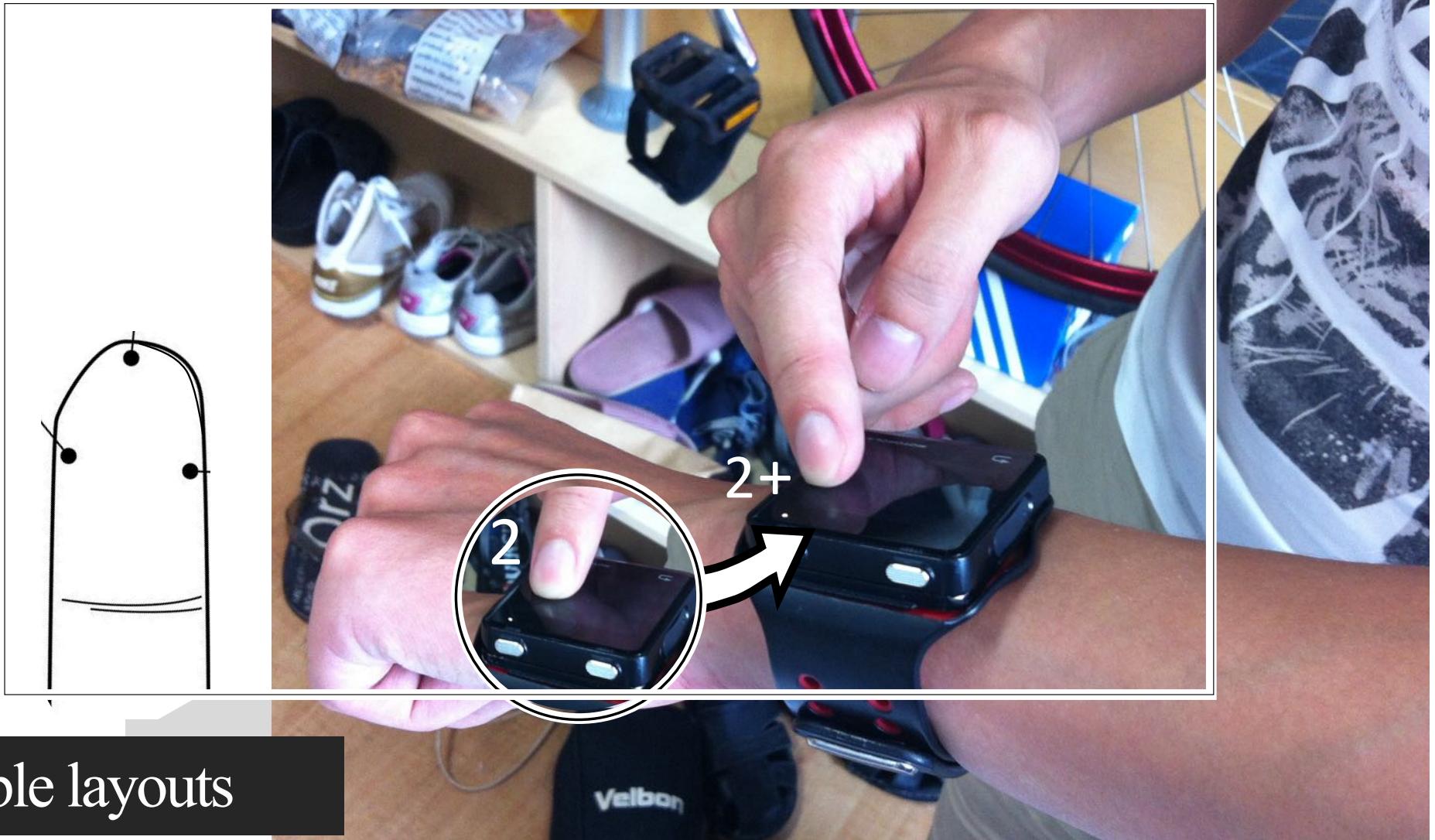
test photo with cropping



test photo with cropping



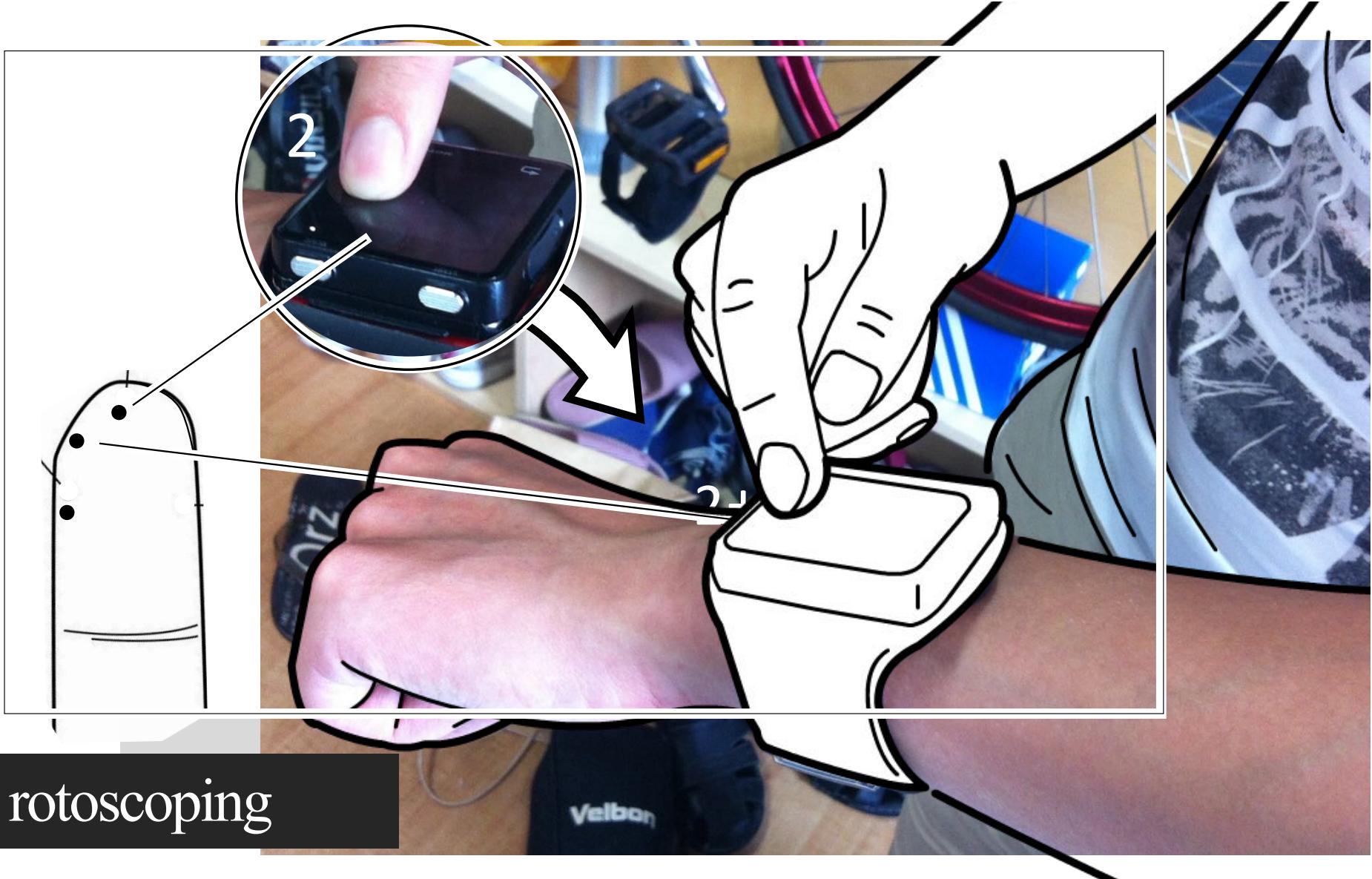
test photo with cropping



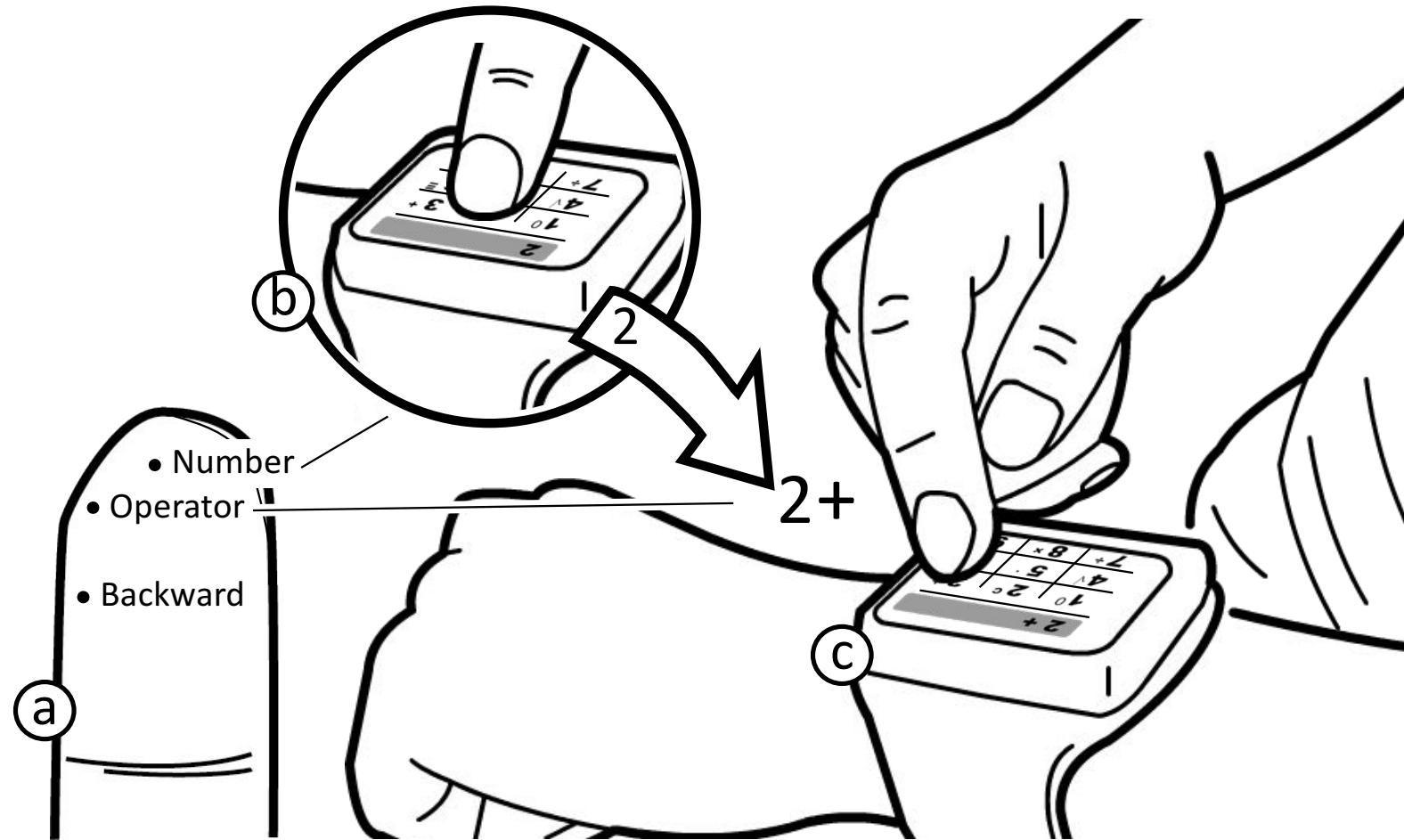
try possible layouts



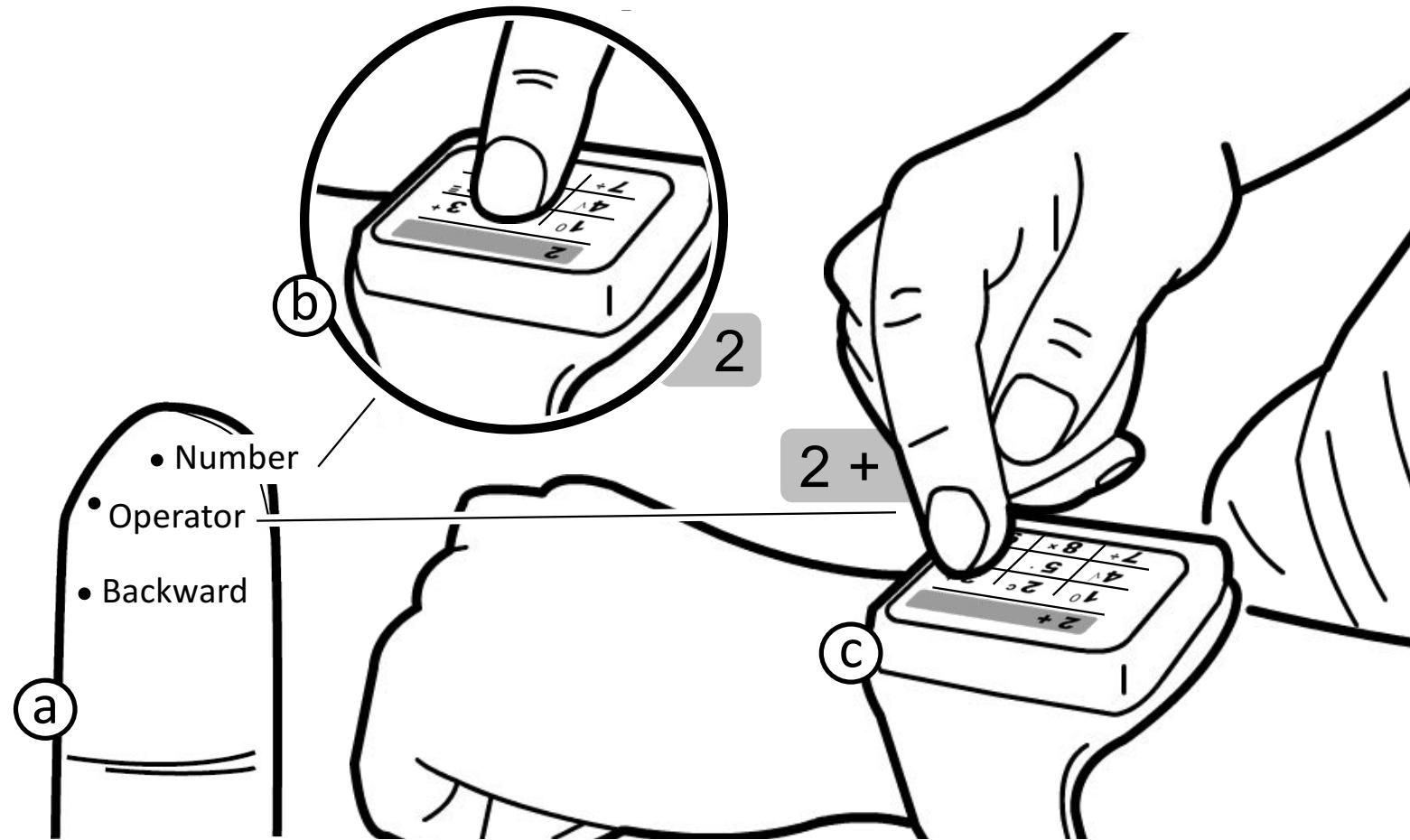
try possible layouts



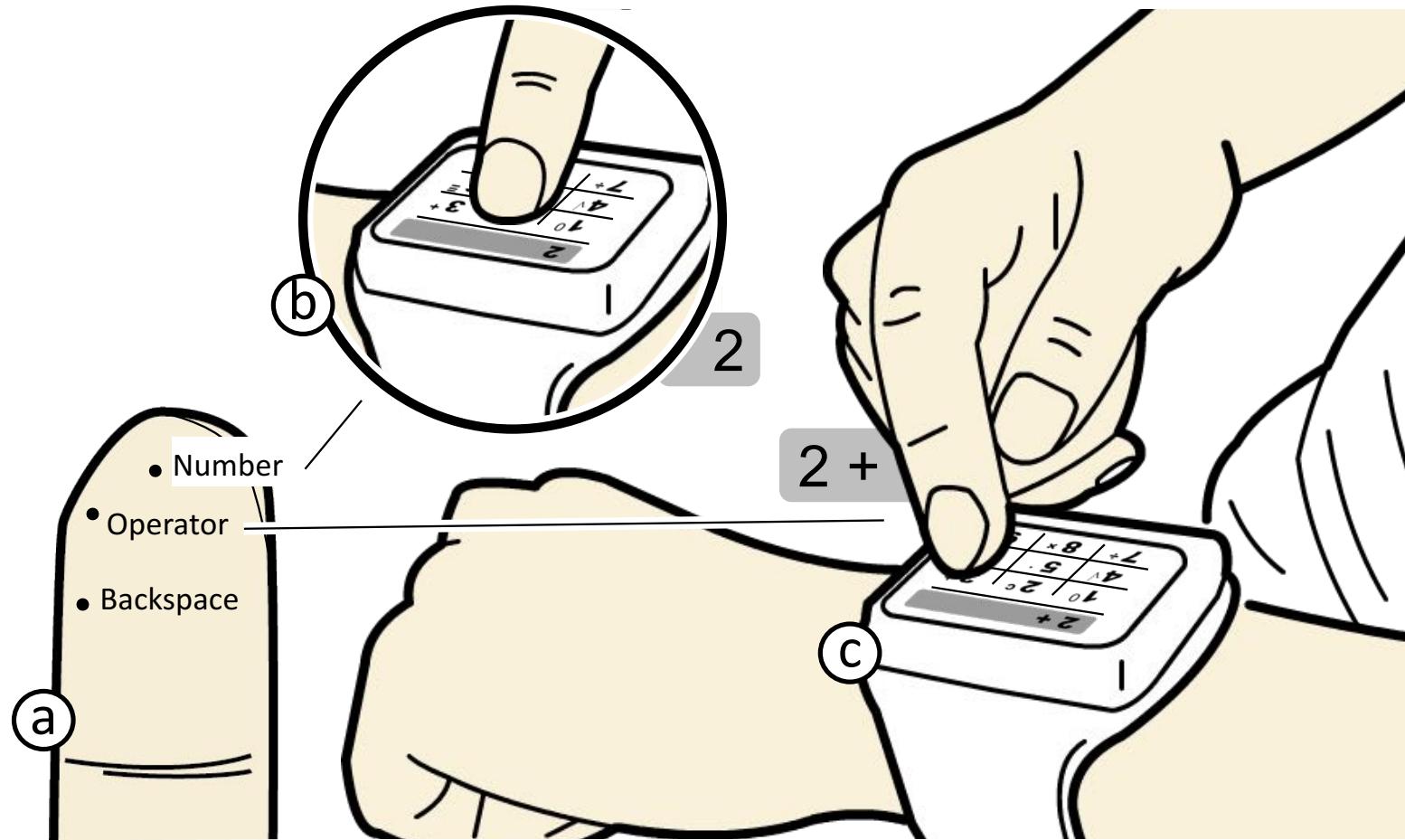
turn into rotoscoping



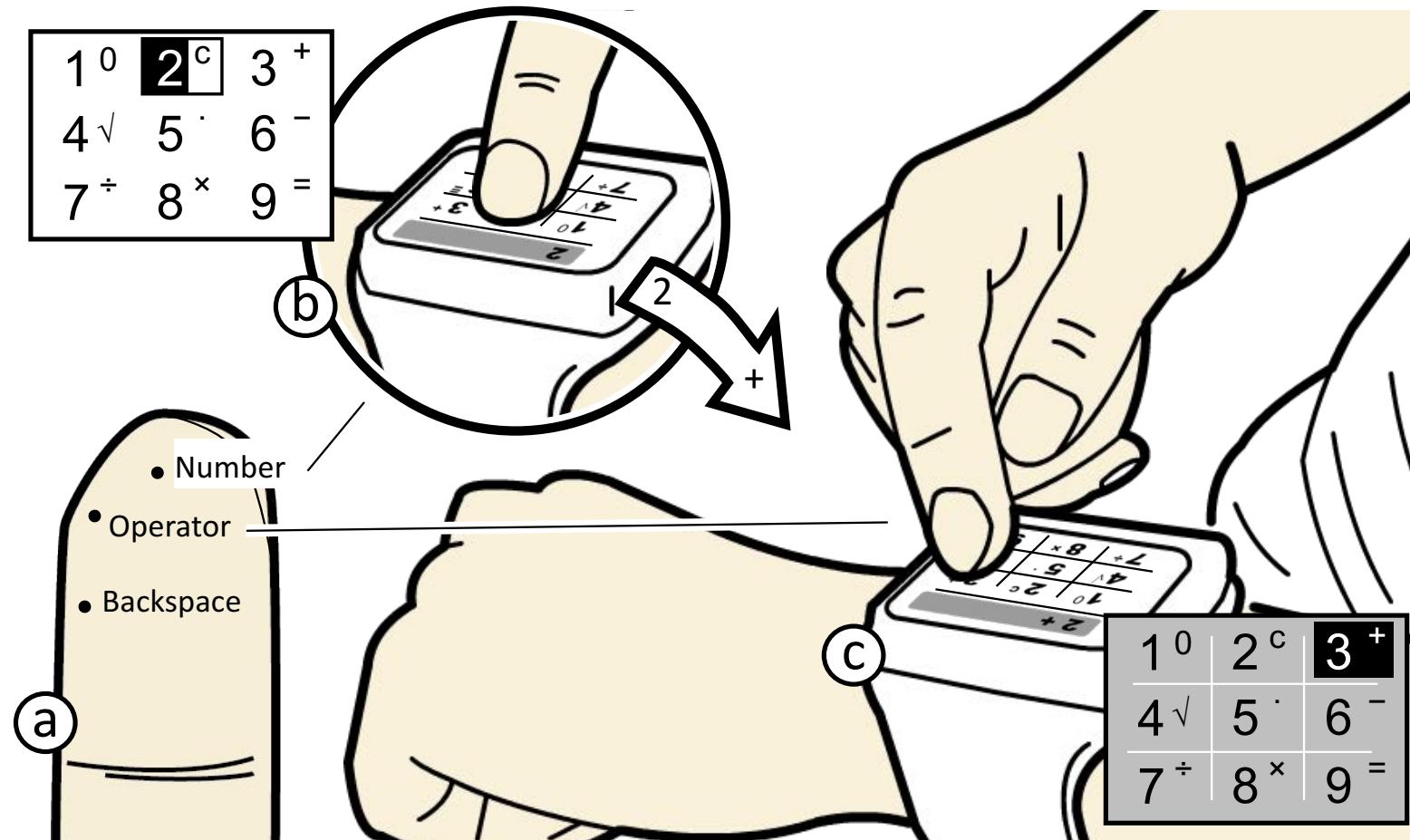
turn into rotoscoping



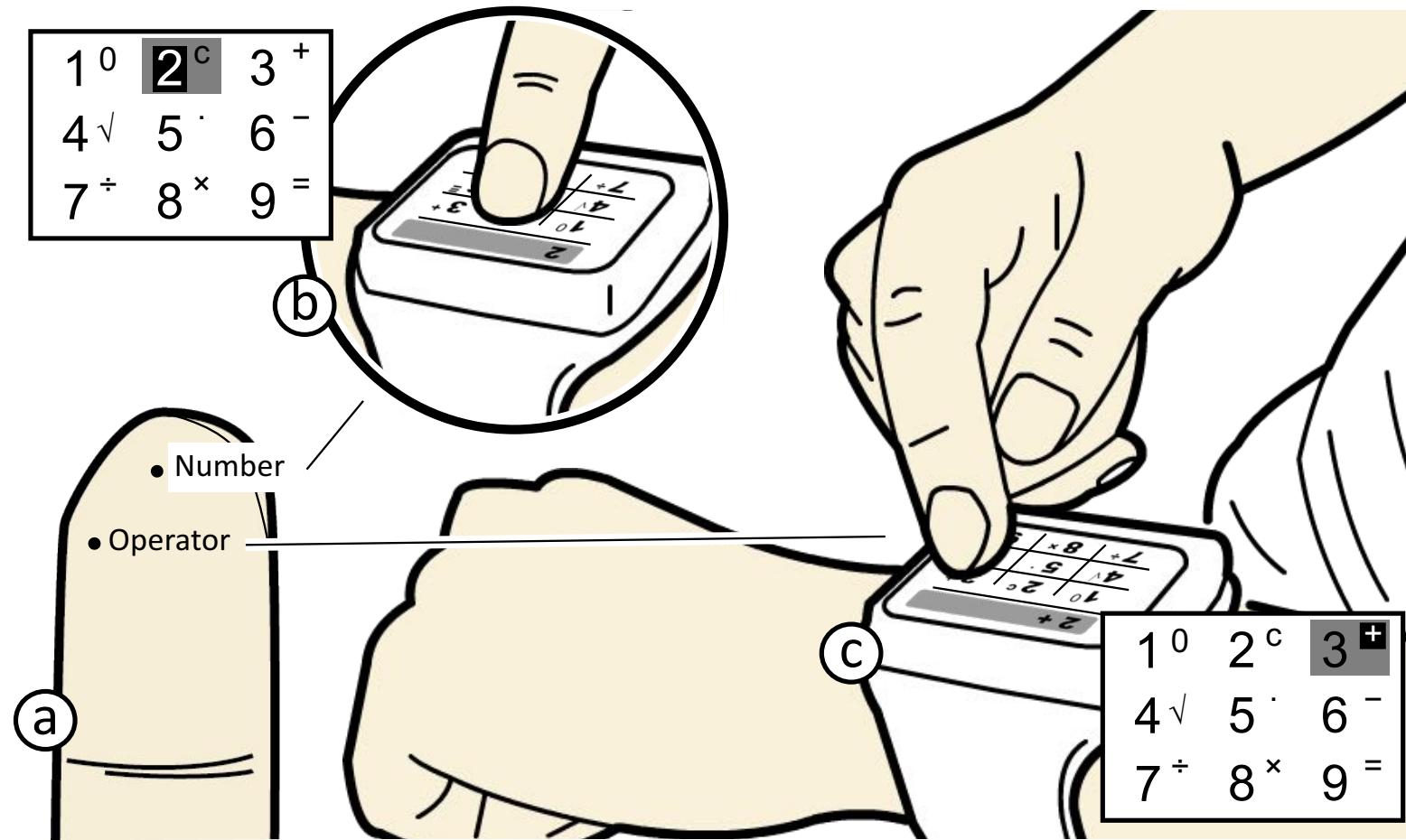
fine tune



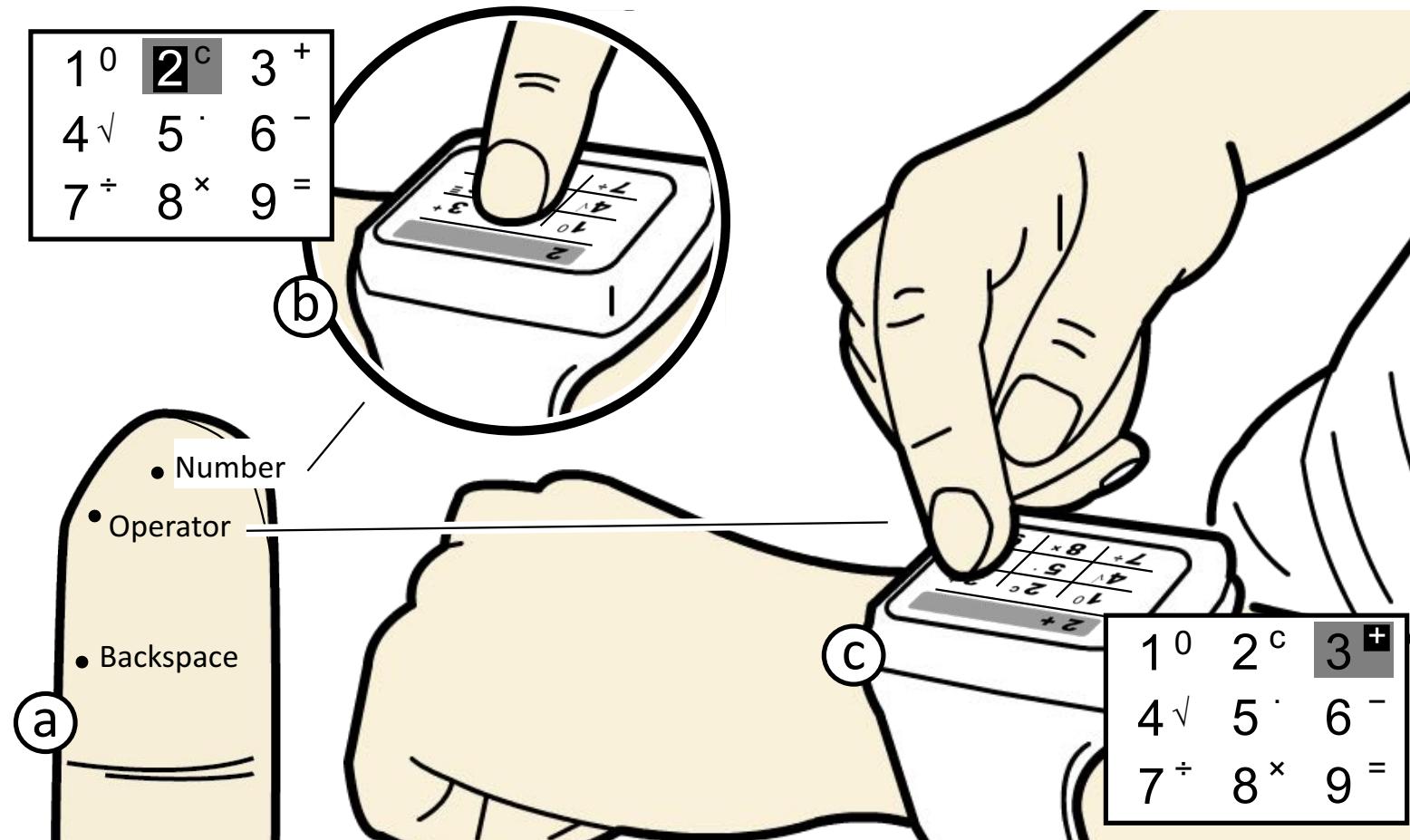
coloring (use minimal colors)



fine tune



fine tune



fine tune

TouchSense: Direct Mode Switching Using Different Areas on Users' Finger Pads

Da-Yuan Huang*

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Min-Lun Tsai*

Mike Chen*

Ming-Chang Tsai*

Yi-Ping Hung*

*National Taiwan University
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Author Keywords

augmented finger input, input modality, smart watch, small screen mobile devices

ACM Classification Keywords

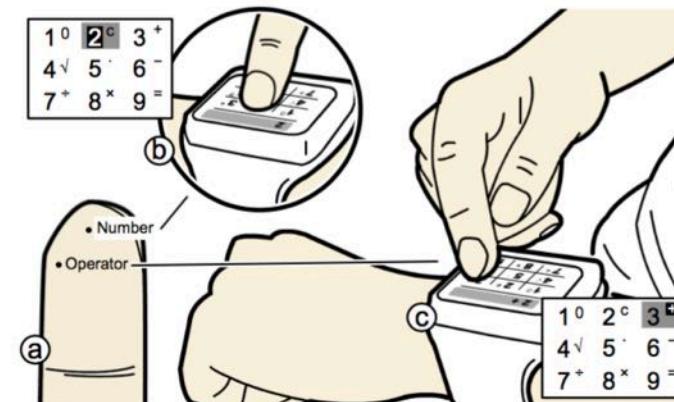
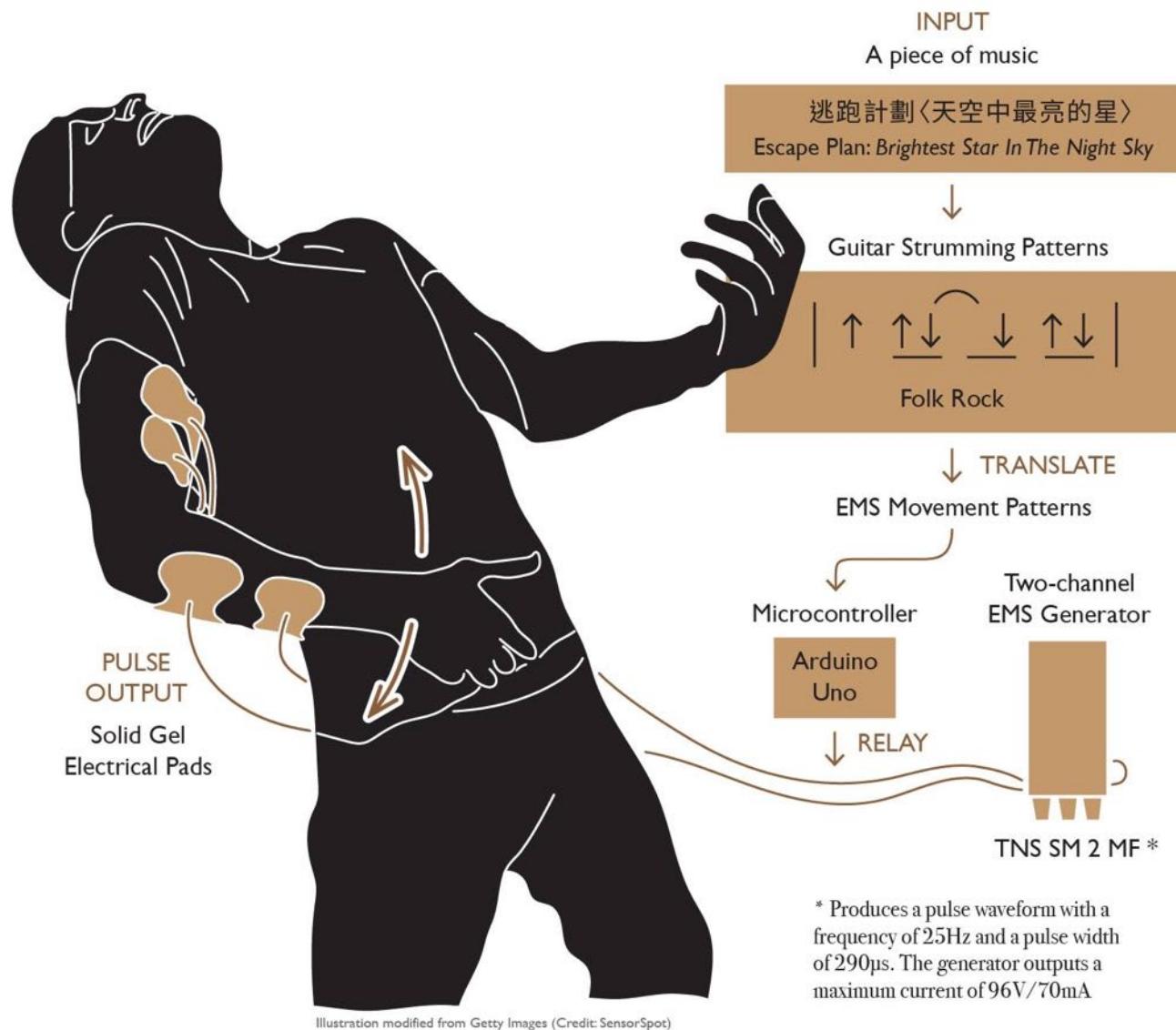


Figure 1. Direct mode switching technique for touch interaction using different areas on finger pads. (a) Different finger areas correspond to numbers vs operators. (b) The number '2' is entered by using a normal tap. (c) The '+' operator is entered by tapping the key '3' with the right-side of the finger. The gray highlight indicates the on-screen key touched, and the black highlight indicates the mode invoked.

the devices [7, ?, ?]. While these techniques provide a richer input space, they require additional motions, which means



* Produces a pulse waveform with a frequency of 25Hz and a pulse width of 290 μ s. The generator outputs a maximum current of 96V/70mA



UIST Student Innovation Contest 2016:
Feeling the virtual with muscle stimulation!

EMS Air Guitar

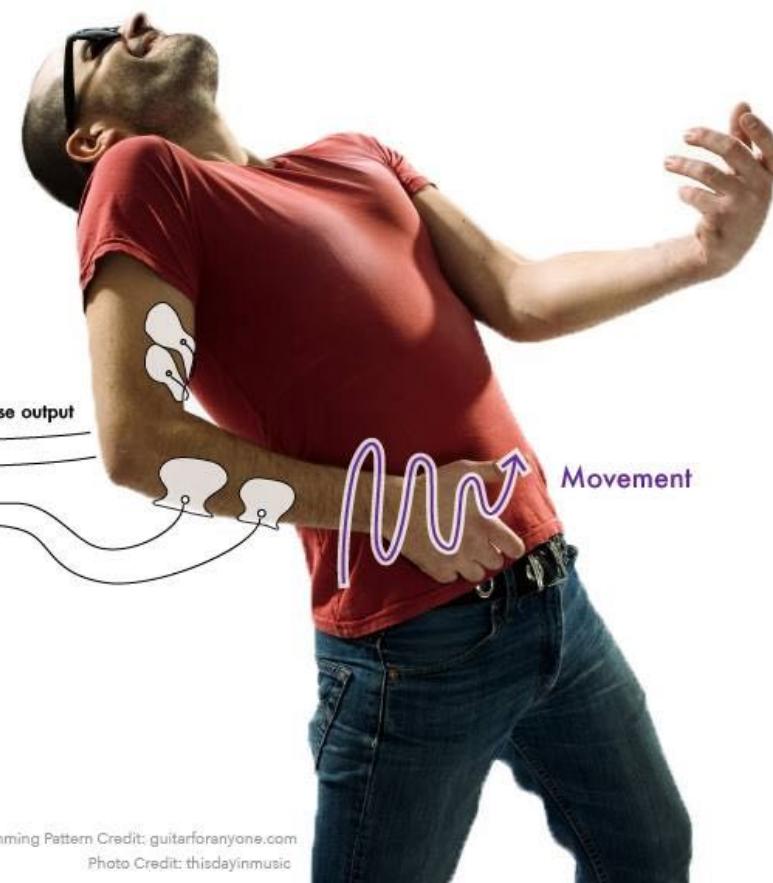
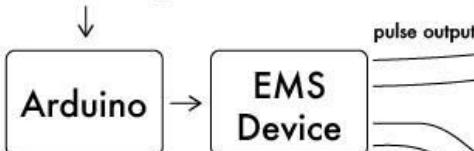
National Taiwan University

Guitar Strumming Patterns

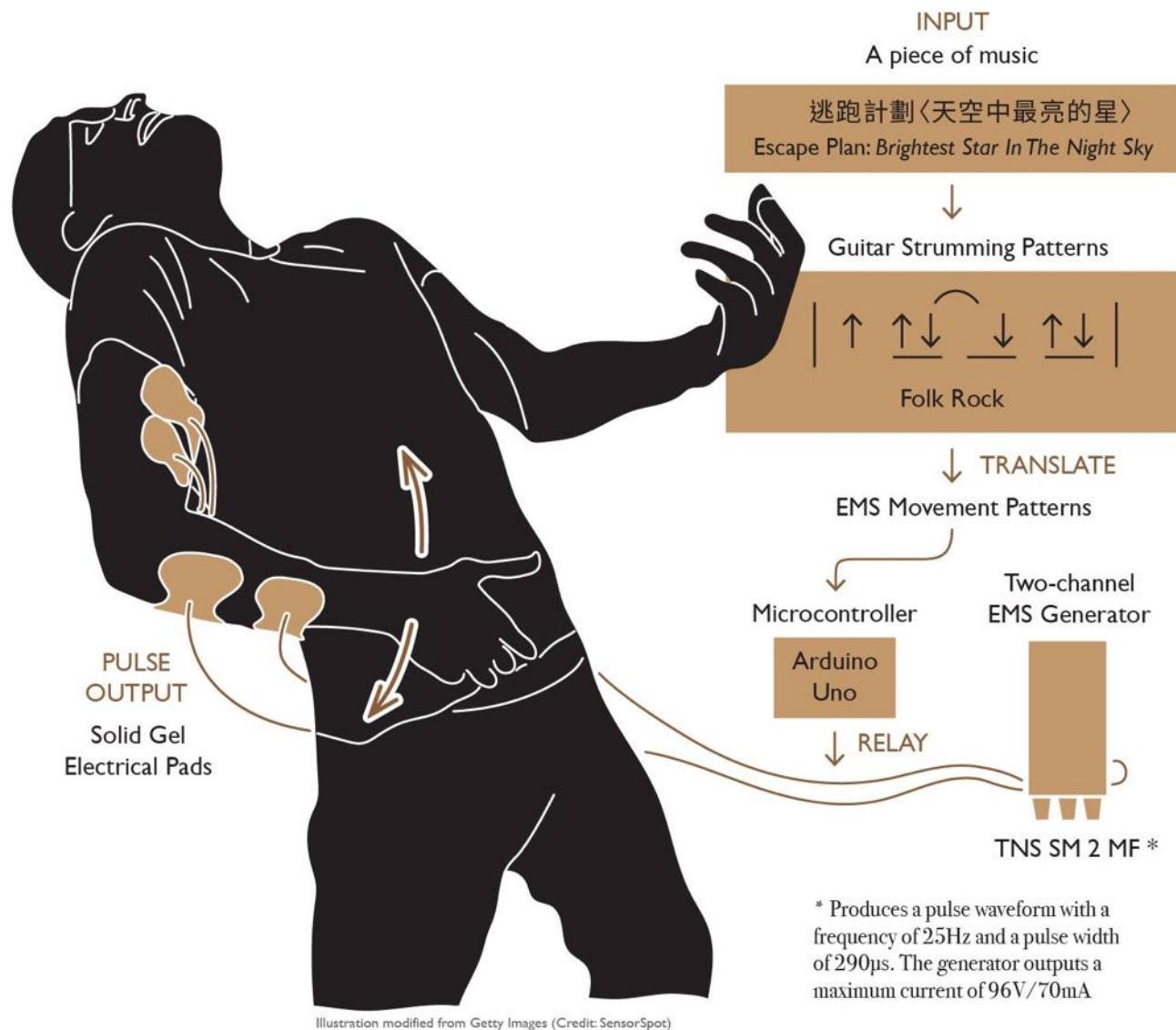


↓ *translate*

EMS Strumming Patterns



Strumming Pattern Credit: guitarforanyone.com
Photo Credit: thisdayinmusic



* Produces a pulse waveform with a frequency of 25Hz and a pulse width of 290 μ s. The generator outputs a maximum current of 96V/70mA

assignment



1. Find a phot relevant to VR with a certain level of visual complexity.
(e.g., ~~body / hand / objects~~ **multi-users**)
2. Complete your Rotoscoping.
3. Submit by 10/4
(next Thu.)
12:00pm.