

Tangible Musical Interfaces



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professional background ...



interfaceculture

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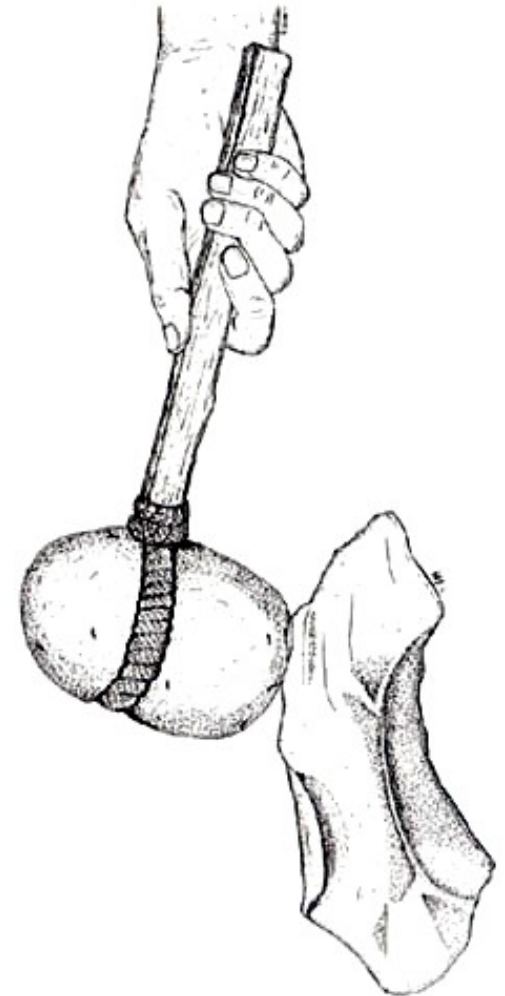
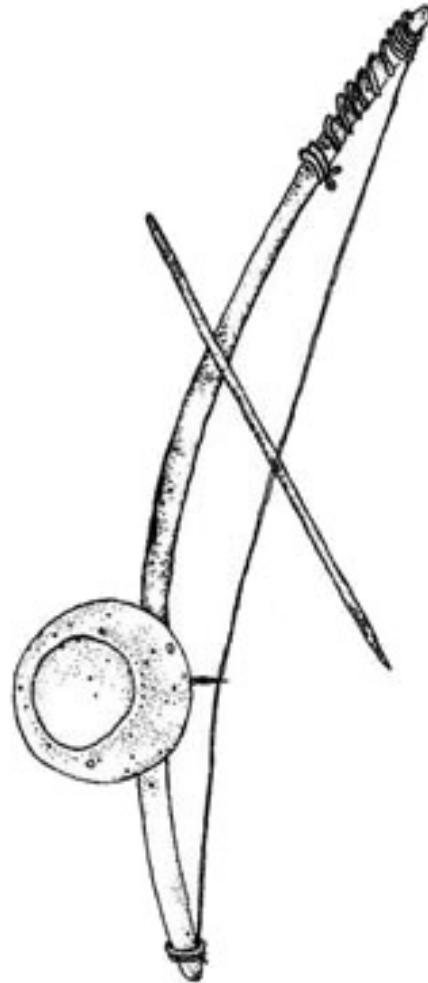
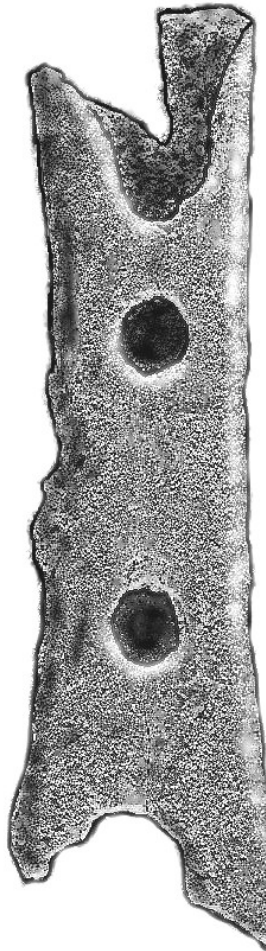
reactable

S Y S T E M S

<http://www.reactable.com/>

Reactable Systems, Barcelona, Spain

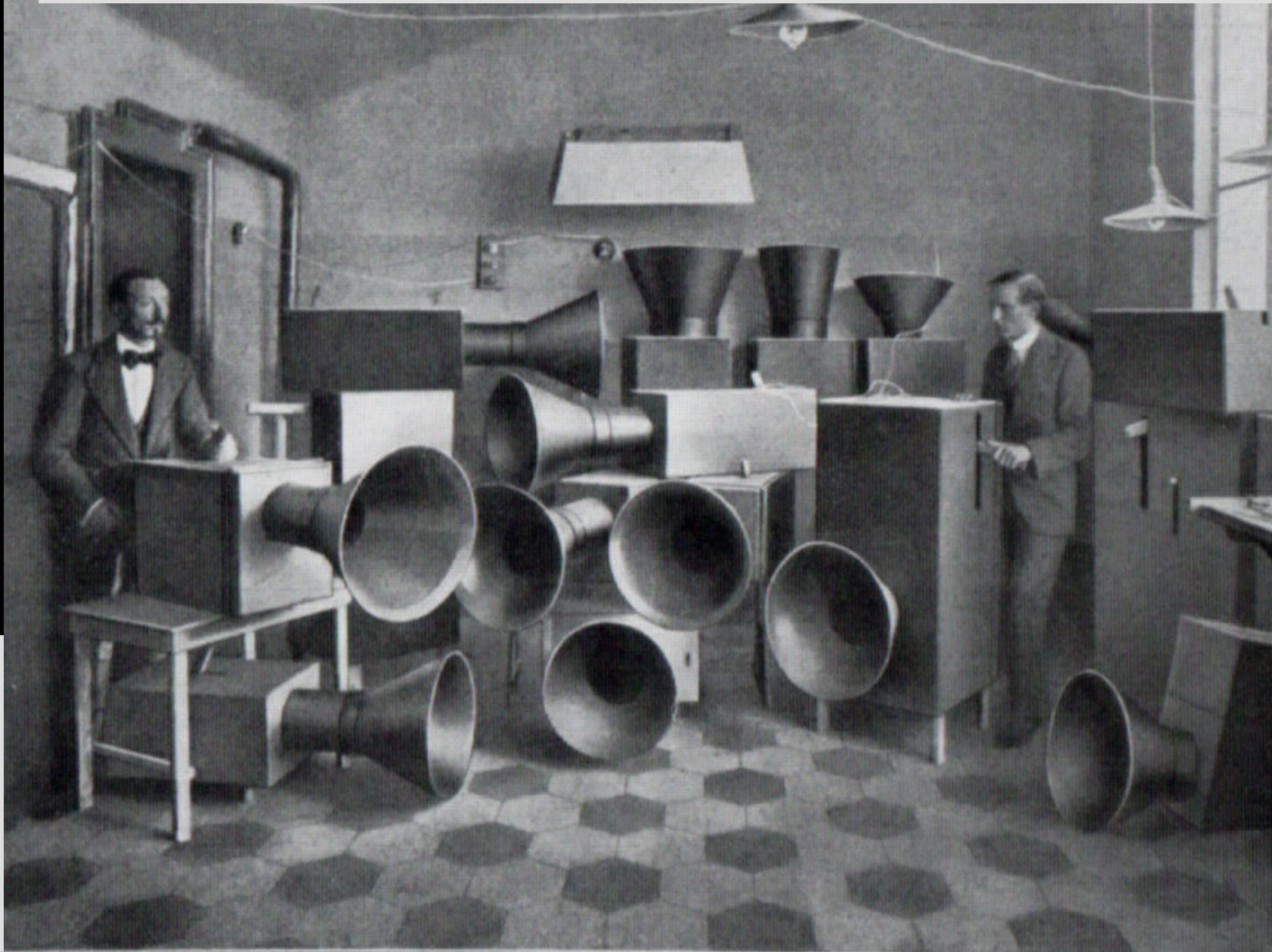
musical instruments 35.000 years ago ...



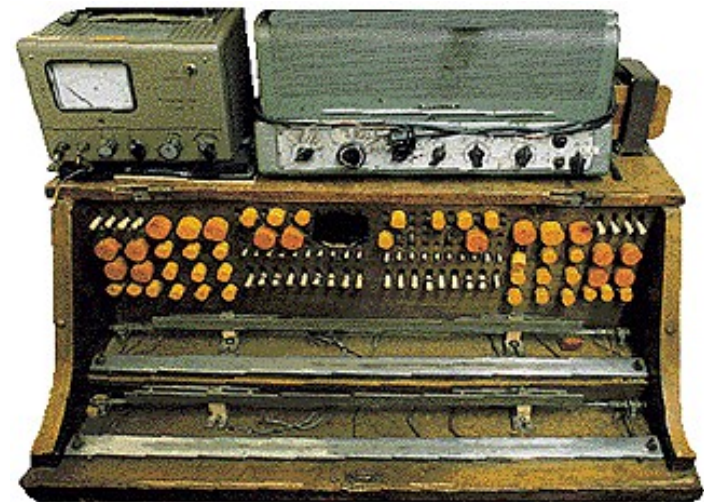
... until the 19th century



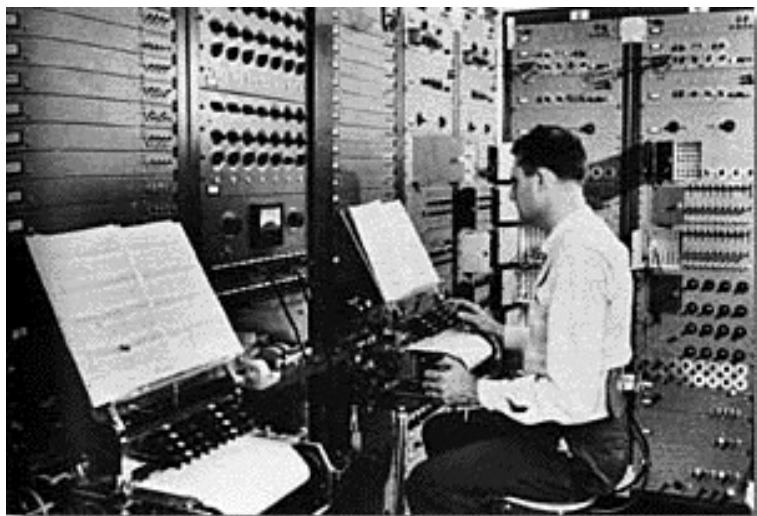
the end of the acoustic possibilities



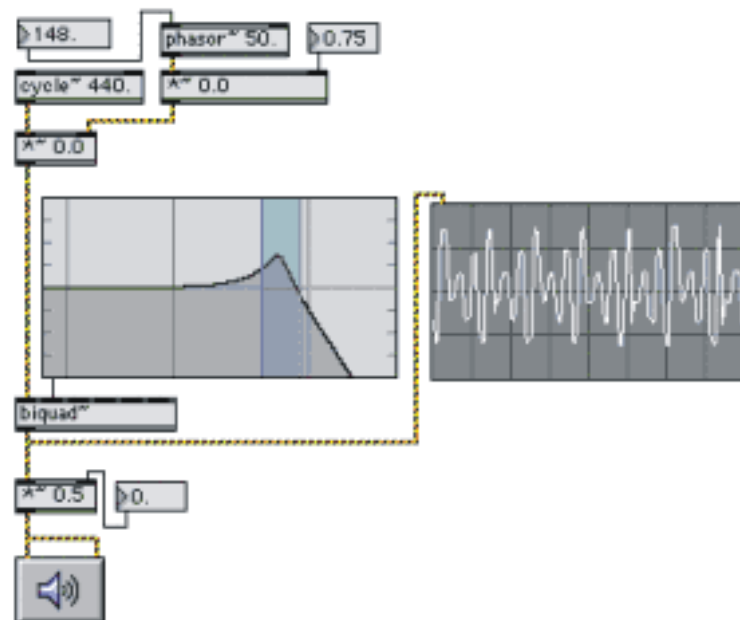
The pioneers of electronic music



from analog sound synthesis



to digital sound synthesis



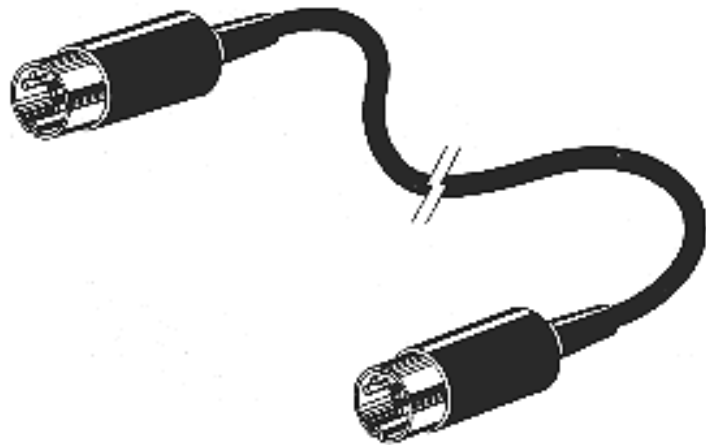
an office tool as musical instrument?



but how can we control all these parameters?



decoupling control & sound generation



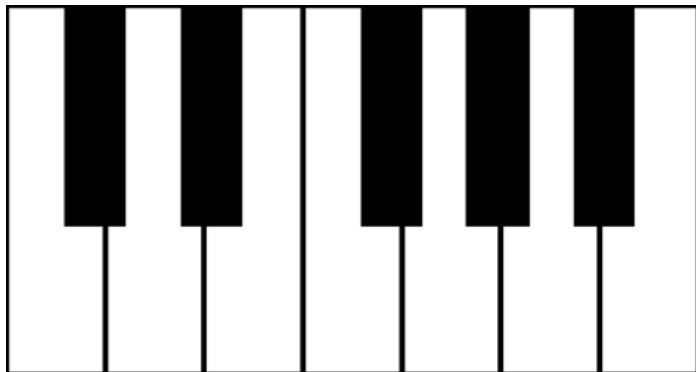
MIDI IN



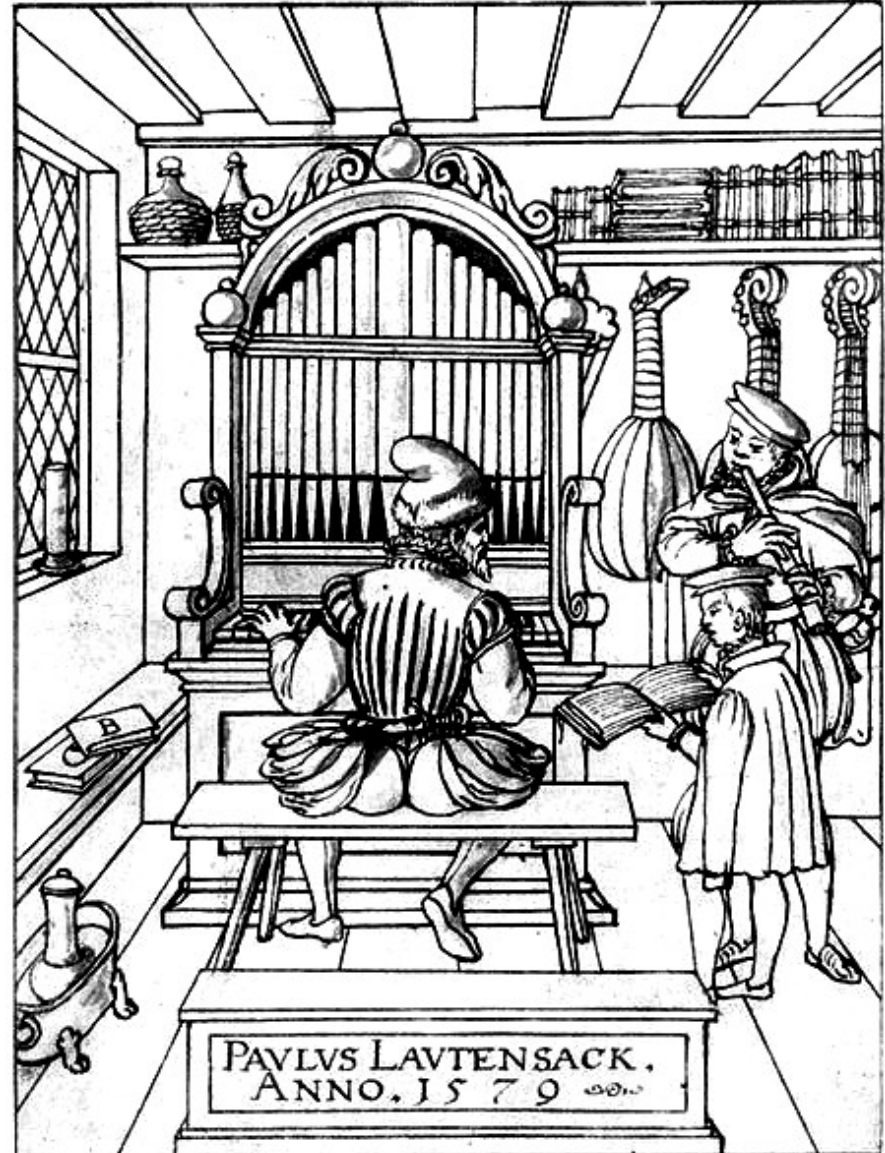
MIDI OUT



MIDI THRU



c d e f g a h



PAVLVS LAVTENSACK,
ANNO. 1579

the need for extended musical interfaces



various types of musical controllers



musical remote control



a musical instrument ...



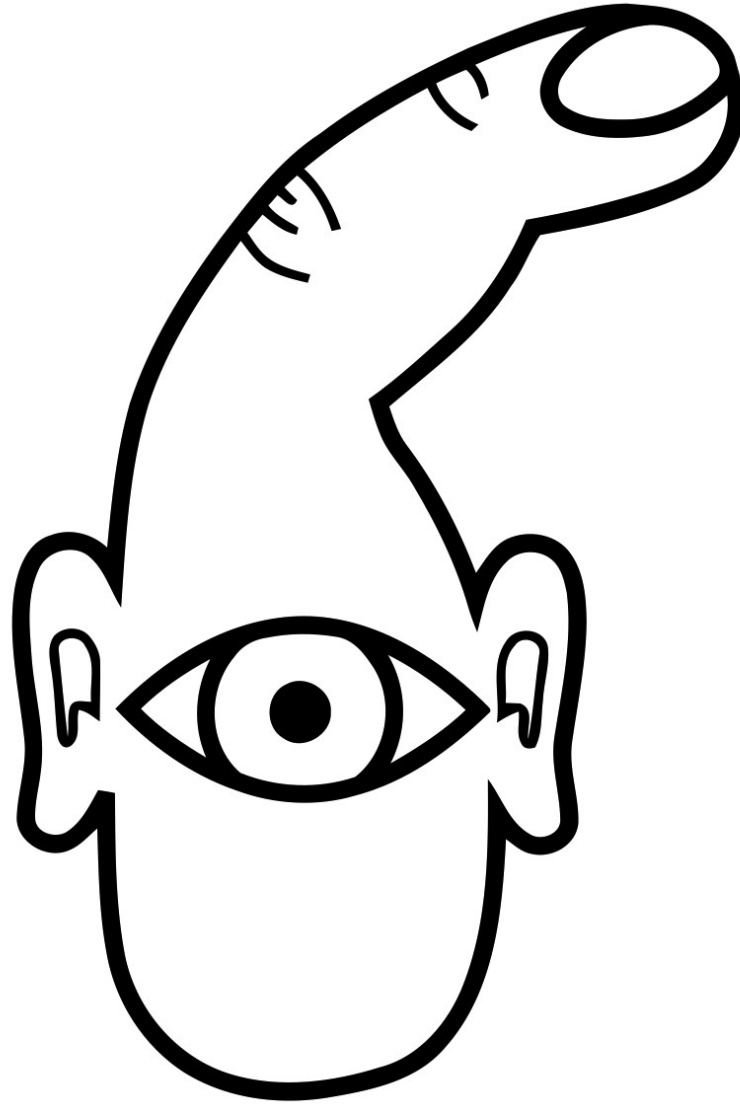
... unifies control and feedback

Graphical User Interfaces

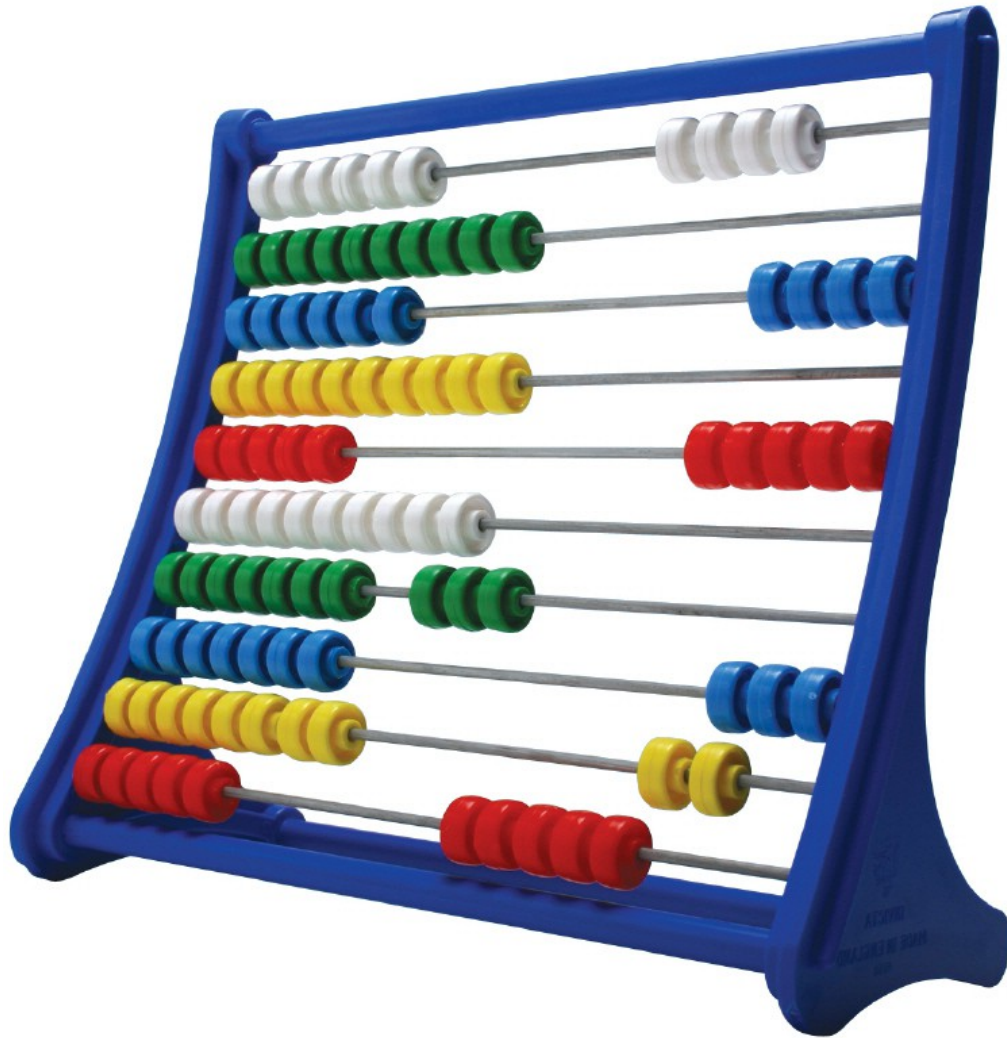


separate control from representation

++ a typical GUI user



an abacus ...



... isn't just a controller device

Tangible User Interfaces



**... unify control & representation
within tangible physical artifacts**

Embodiment



physical objects are containers for digital information and processes



Tangible Surface Instruments

Spatial Systems



Object Oriented Sequencers

Relational Systems



Token based Sequencers

Token-Constraint Systems



Tangible Musical Artefacts

Physical Containers



Building Block Sequencers

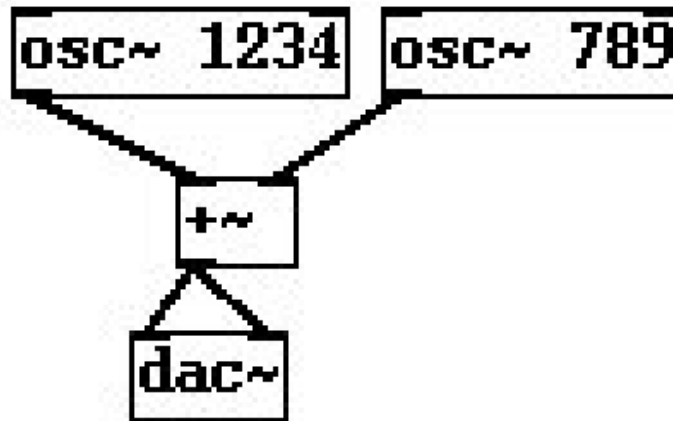
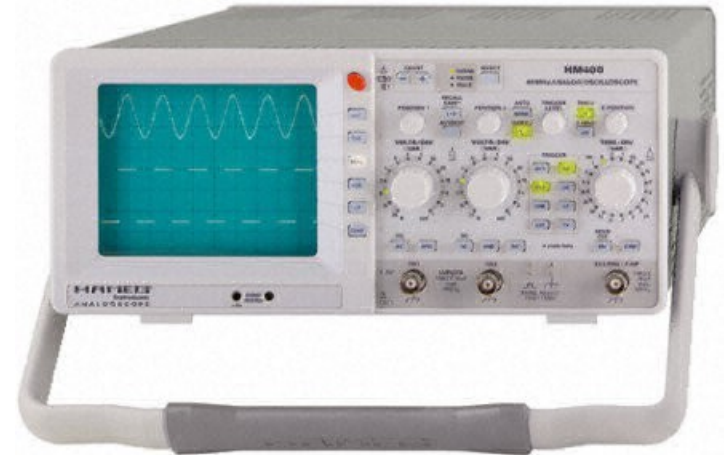
Constructive Assemblies



++ reactable - tangible modular synthesizer



++ fundamental inspirations



++ first experiments, Medialab Europe 2003



++ first public prototype, NIME 2004



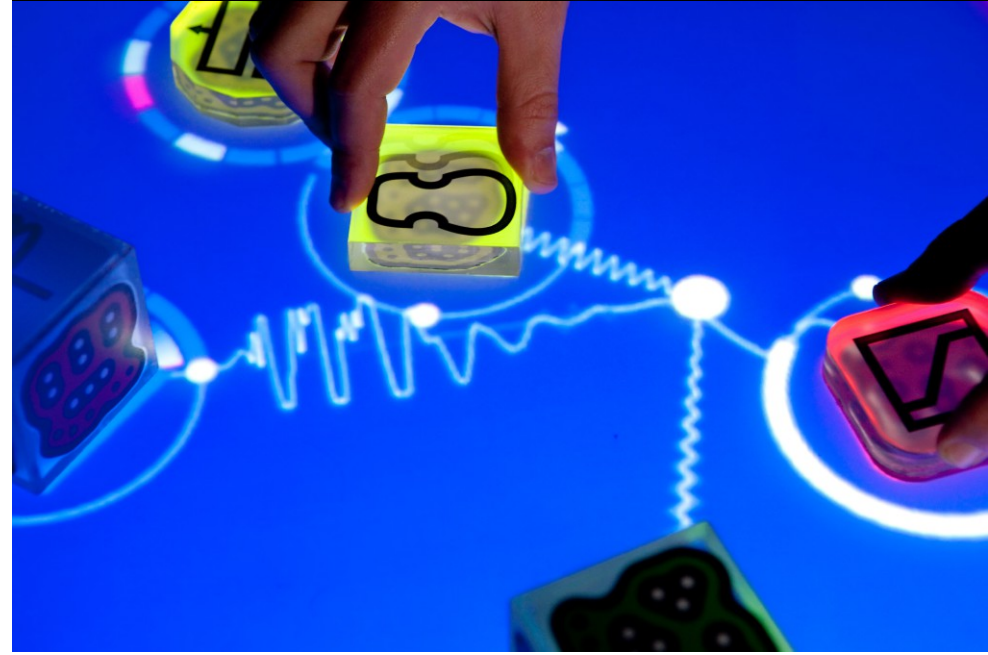
++ first public concert, ARS Linz 2005



++ Björk tour, BBC 2007



++ Reactable Experience



++ Reactable Live!



++ Reactable Mobile



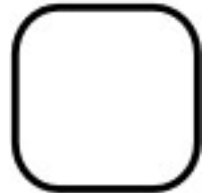


++ shape: generic object classes

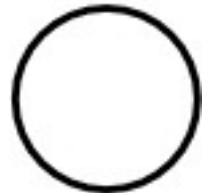
+ **sound generators:** squares, cubes
oscillators, sound fonts, samples, phys. models



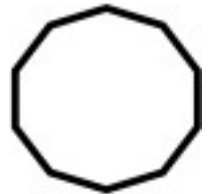
+ **sound effects:** rounded squares
filter and effects (band pass, delay, distortion ...)



+ **control generators:** round disks
LFOs, melody generator, random



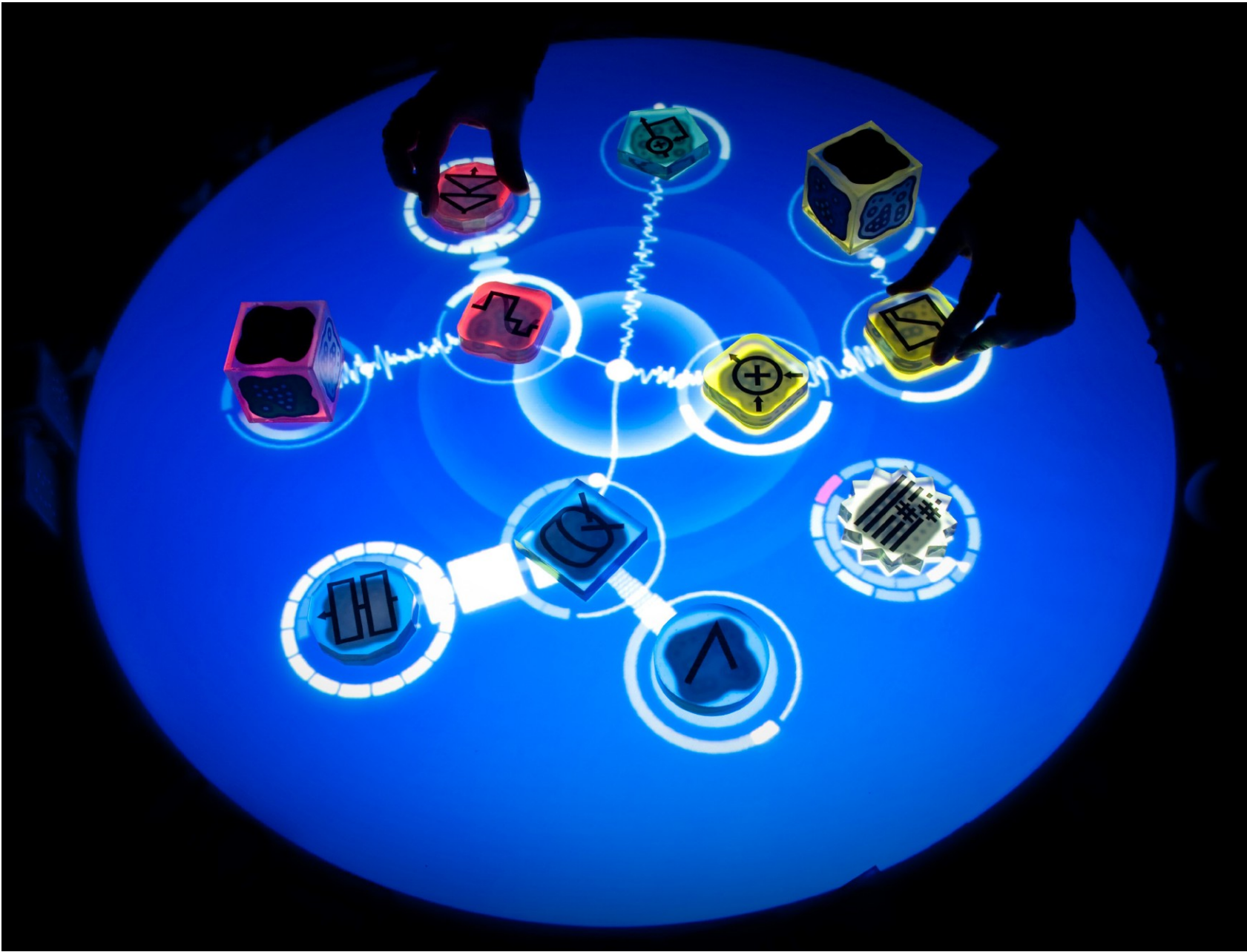
+ **step sequencer:** round polygons



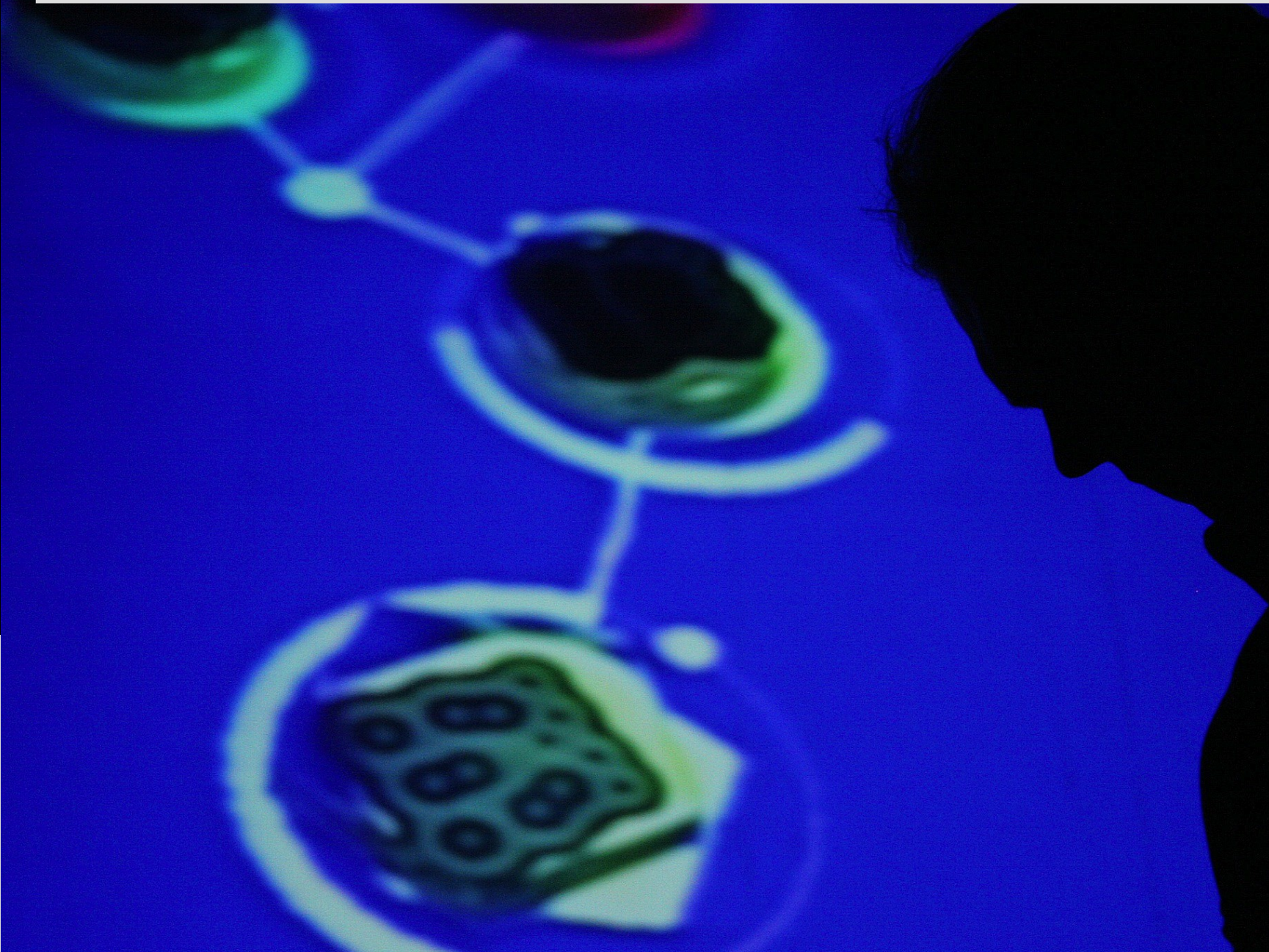
+ **global objects:** star shape
tempo, tonality, volume



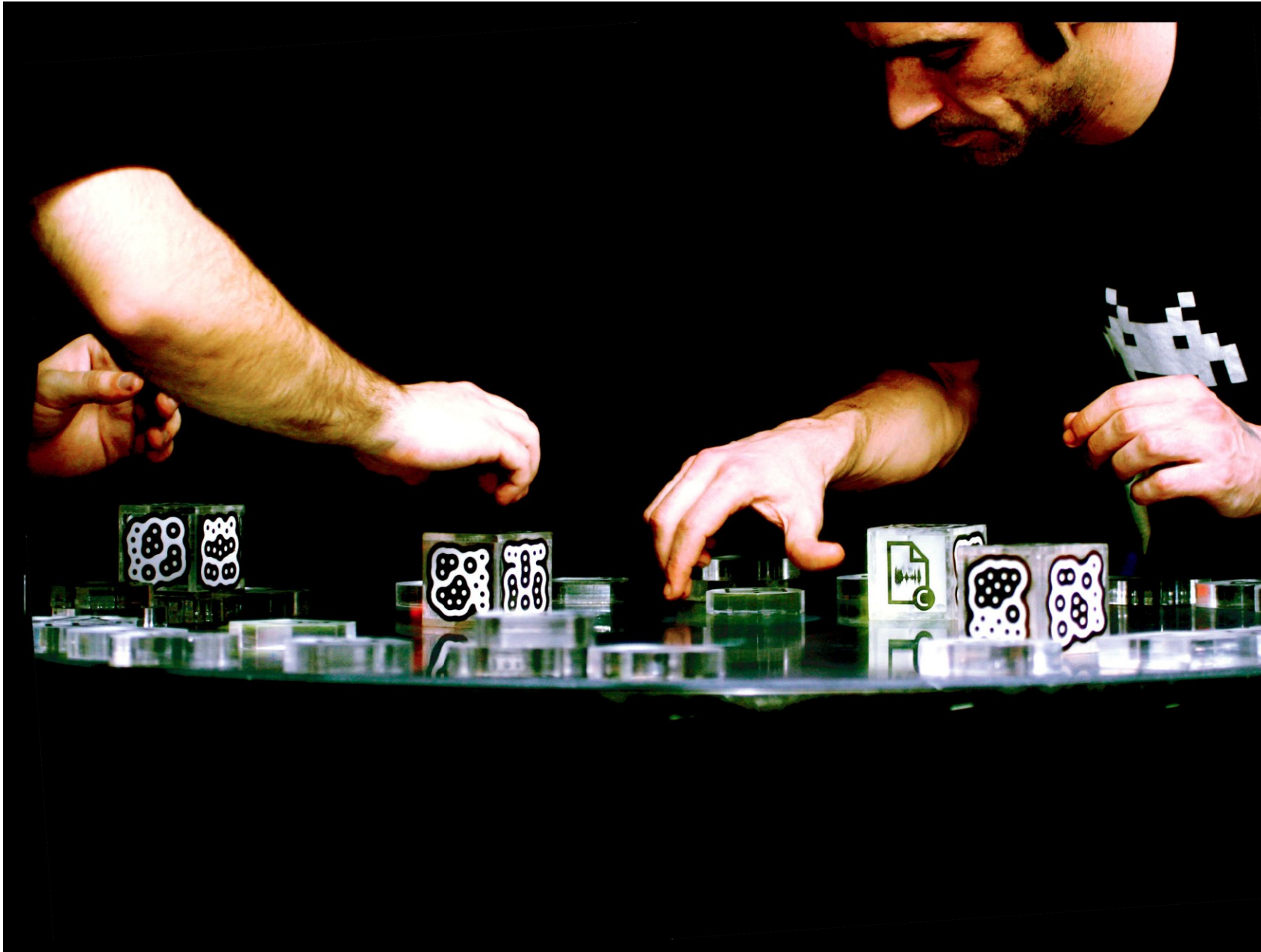
++ dynamic patching paradigm



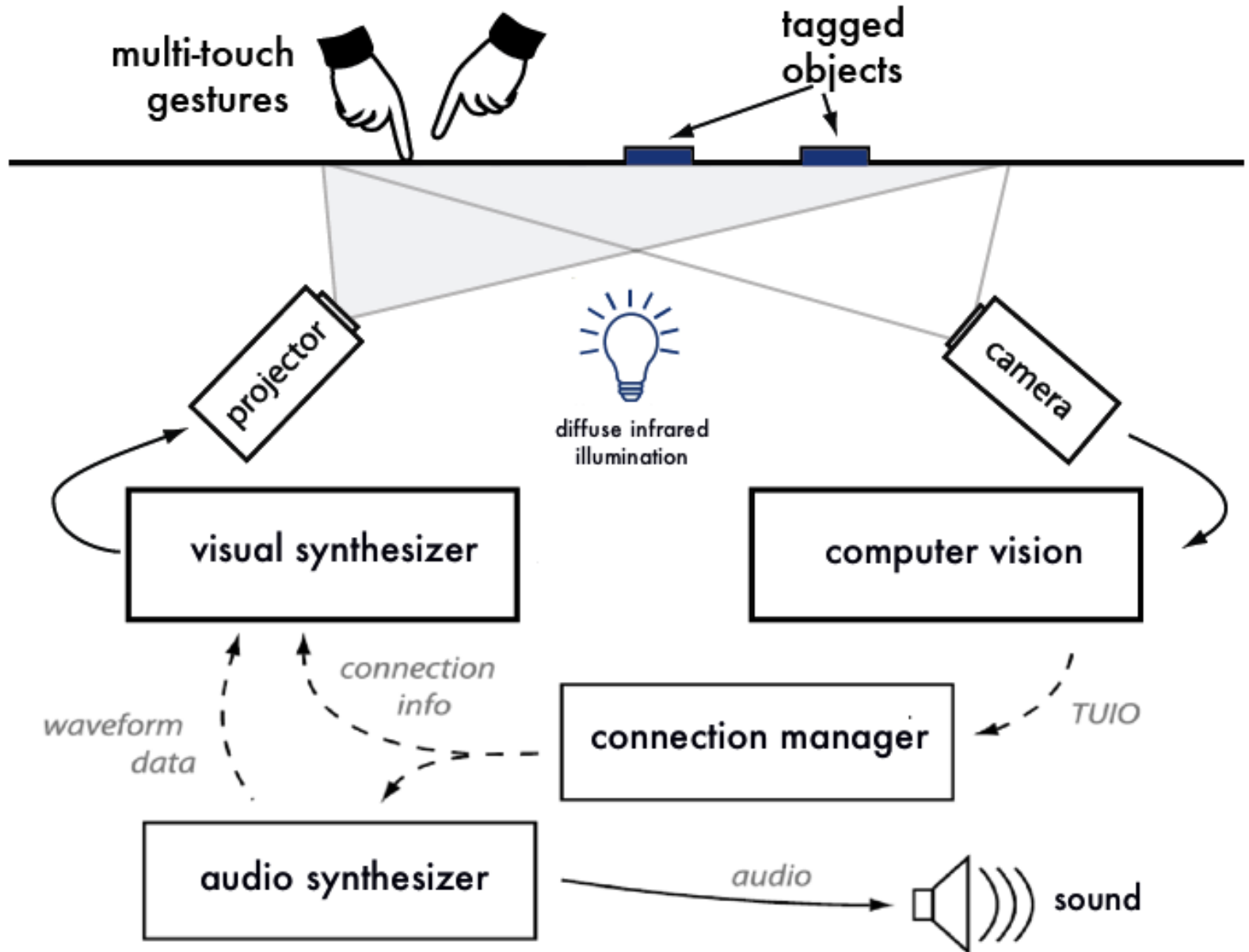
++ visual feedback



++ collaborative instrument



++ system diagram



++ reactTIVision



++ community projects



Description 0 likes 0 comments



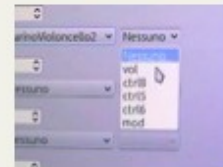
Ribosound - Concept
by Victor



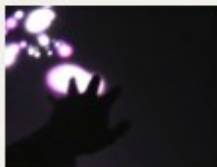
Stadtplanung
by Fabian Gronbach



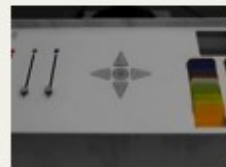
Interfaces for Encours
by JAG



Demo Reactable Ketai
by Dario Freddi



Tuio Kontrol+++multit
by Vision Nocturne



Learn about the RGB :
by YUFANGISED



Learn about the RGB :
by Harsha Vardhan



Block Environment
by Amee

reactIVision

182 videos / 138 subscribers

This channel is a showcase for tangible interface projects made with the reactIVision toolkit.

reactivision.sourceforge.net/

Another list of tangible musical interfaces made with reactIVision:

modin.yuri.at/tangibles/?list=7

Facebook page: facebook.com/reactIVision

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Martin Kaltenbrunner - Creator

Created October 2009

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Shout Box



Thank for adding the vid to your channel...
And thx for your great reactIVision framework of course!!!

Posted by **Fabian Gronbach** 2 days ago



Martin, gracias por incluir nuestro video!

Posted by **derooted creative agency** 6 months ago

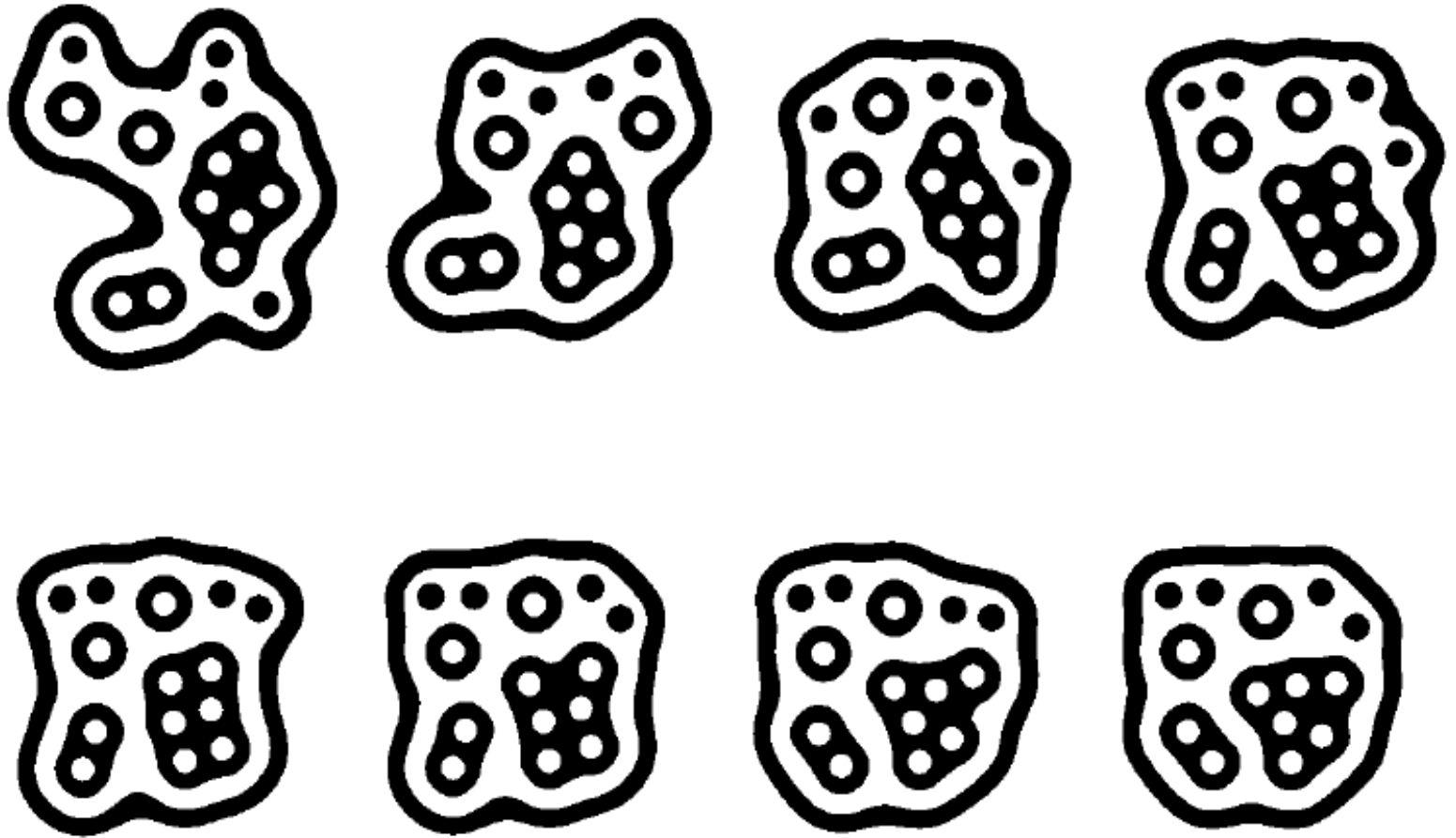
++ student project – Interface Cultures



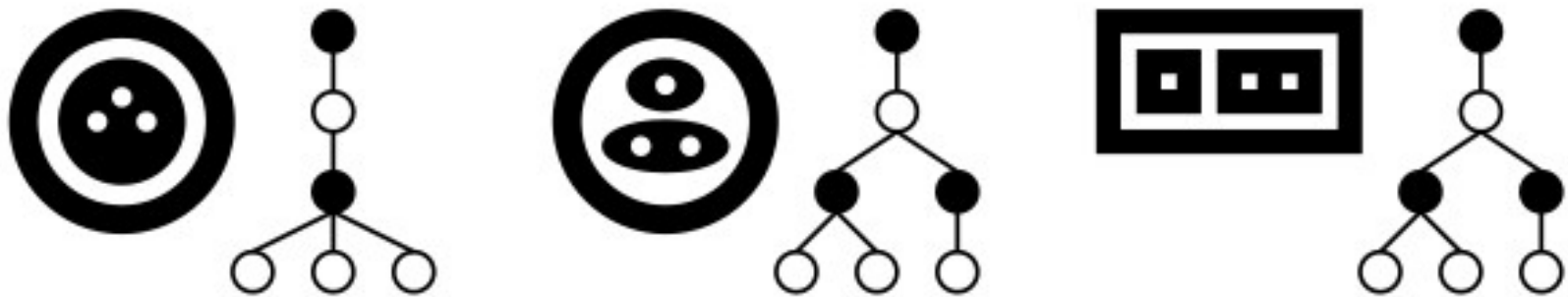
++ amoeba symbols



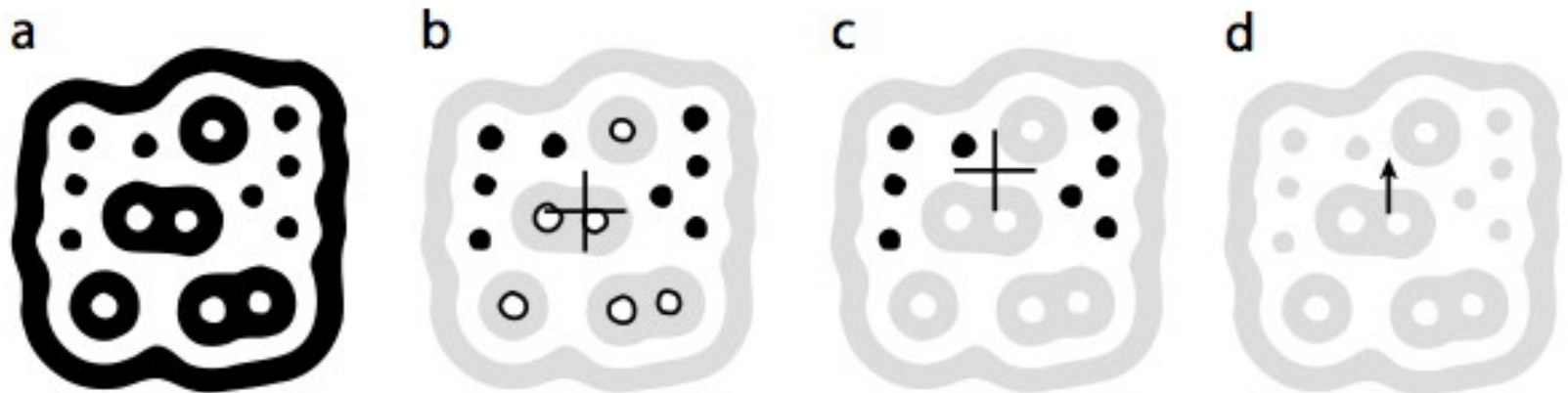
++ fiducial breeding – genetic algorithm



++ region adjacency graph



Some simple topologies and their corresponding region adjacency graphs.

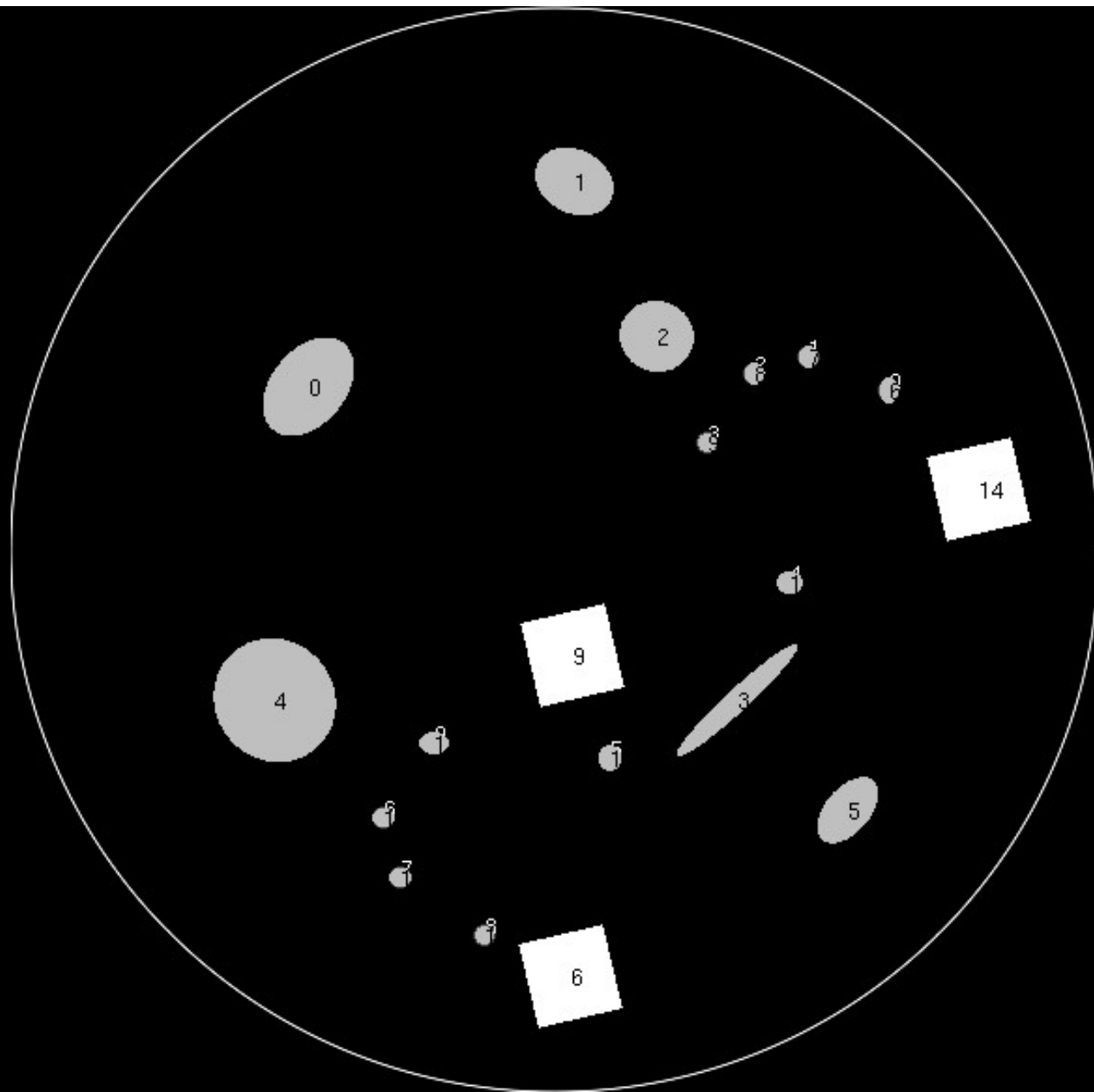


- (a) a reactIVision fiducial
- (b) black and white leafs and their average centroid
- (c) black leafs and their average centroid, and
- (d) the vector used to compute the orientation of the fiducial.

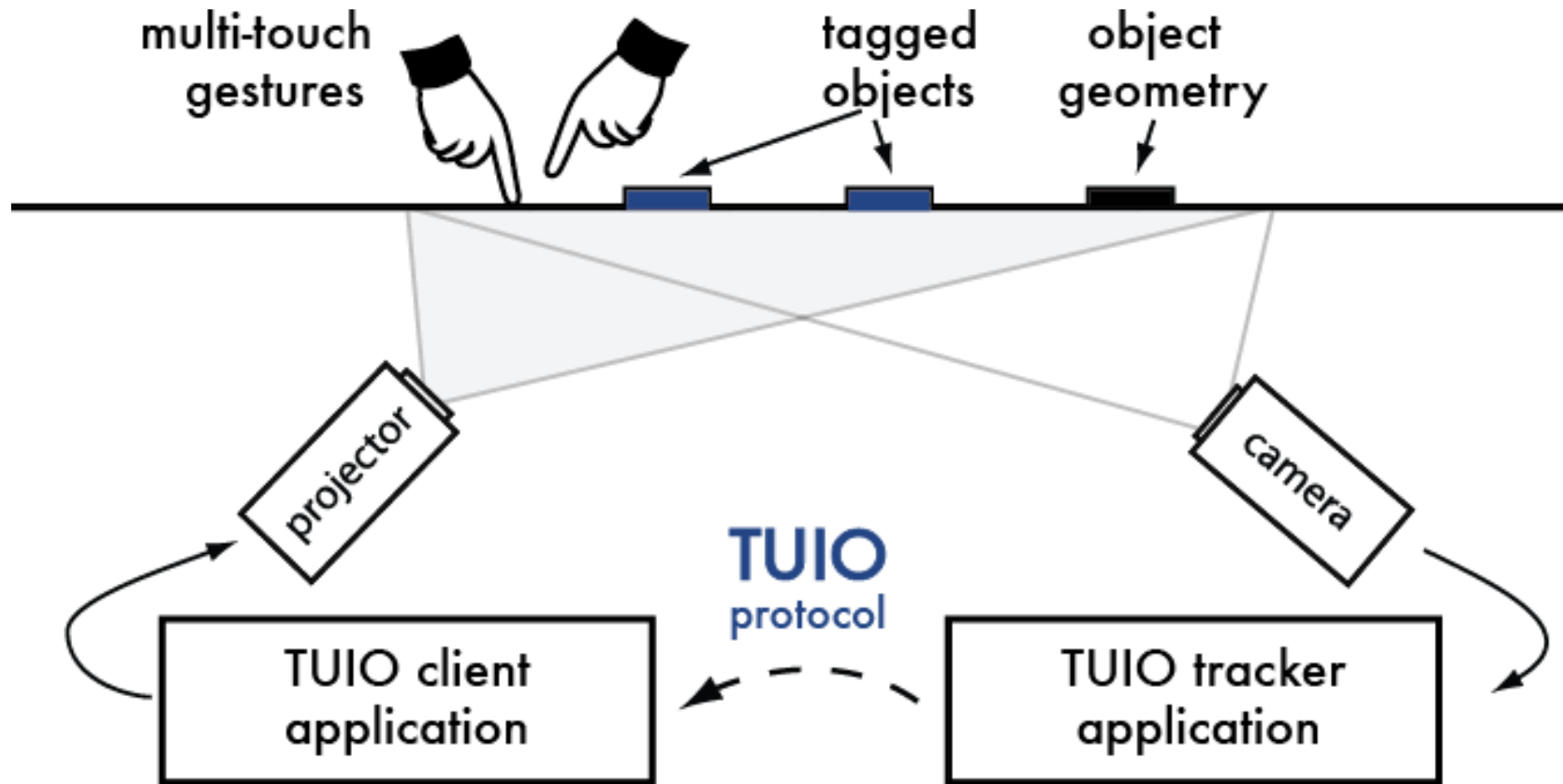
++ marker, finger & object tracking



++ token, pointer & geometry abstraction



++ TUIO framework architecture



++ TUIO components

+ original TUIO 1.0

Objects: */tuio/2Dobj*

describes arbitrary physical objects, which are usually tracked with the help of visual symbols (fiducial markers), RFID tags or similar methods
tokens are not defined by their physical appearance but by their ID
encodes position and rotation angle.

Cursors: */tuio/2Dcur*

describes surface pointers such as finger touches or dedicated devices
multiple pointers are only distinguished by their position

+ extended TUIO 1.1

Blobs: */tuio/2Dblob*

describes the bounds of untagged physical objects
encodes position, and oriented bounding box (angle, width, height)
can be used to additionally describe the approximate object geometry

++ TUIO 2.0 - tangible abstraction framework

+ revised component definition

Tokens (objects), **Pointers** (cursors), **Geometries** (blobs)

+ additional components

Symbols: allow the encoding of extended symbol content

Controls: for the association of additional control dimensions

Associations: allows description of physical connections & relations

Geometries: Contour, Skeleton, Area ... (incremental detail)

+ extended attributes

e.g. pointers include dedicated pointer/user ID, pressure attribute, ...

tokens allow the use of different symbol types

+ timing infrastructure

for improved gesture recognition capabilities