

# Computational Systems in Performance and Interactive Art

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# But First....

Lets Sketch

UN-USELESS CHINDOGU

<https://www.tofugu.com/japan/chindogu-japanese-inventions/>

— — —

# Embedded Systems

- Built for a Specific Purpose
- Some combination of hardware and software
- In performance and art contexts this is often referred to as Digital Art or Interactive Performance or Art

— — —

# Interactive Systems

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**Sense**

**Map**

**Response**

# Sensing/Gathering Information

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- With movement there are two primary ways to gather information: Sensors or Computer Vision.
- This creates the interface between the system and the performer
- Sensors give a physical presence to the interface.
- Computer Vision leaves the performer free of wires and other physical impediments
- Both methods create 'Data Streams' which must be managed or mapped in real-time

# Sensor Model

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- Sensors include Pressure, Light, Acceleration, Tilt
- The sensors generate a feedback loop that informs the movement. Aspects of the motions are changed in real-time to create momentary audio and video effects.
- In this model the performer becomes extended by the technology, each gesture amplified.

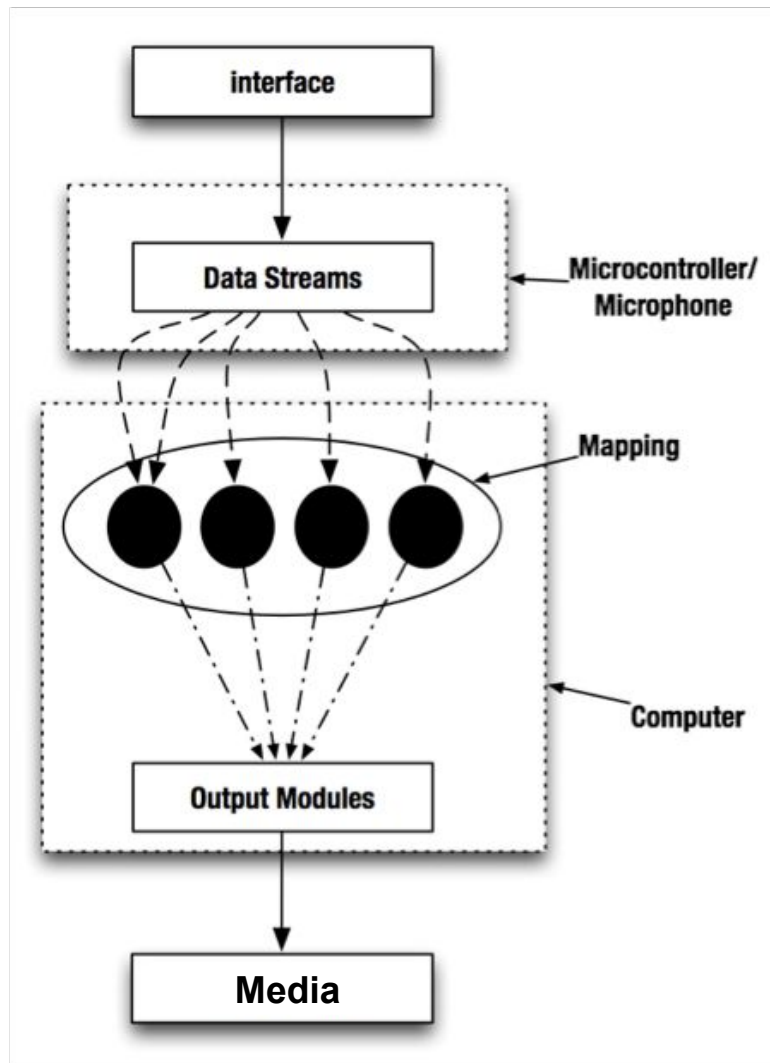
# Computer Vision

— — —

- The body is tracked with a camera and analyzed for motion by a computer.
- There is no tactile interface between the dancer and the technology.
- The performer responds in a way that Cindy Cummings calls ‘video process’ inspired choreography.

# Data Streams

— — —





# Mapping is Transformation

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- Mapping transforms the data from the interface into a control structure for media/sound/projection
- Mapping connects these data to a set of instructions to the system that is creating the media response
- Mapping connects the performer to the media
- For Example

# Response Design

**Kinetic**



**Informatic**

**output is predictable, non variable**

**output is decision based**

**Dance**

# Dumb Type

— — —

Led By Teiji Furuhashi, Dumb Type was a Japanese collective that created socially impactful multimedia theatre and were an early creator of interactive performance.

<https://www.youtube.com/watch?v=H9MIE1eXvGM>

# Adrien M & Claire B

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French MultiMedia Performance Designers

<https://vimeo.com/145201272>

<https://vimeo.com/278181935>

<https://vimeo.com/9782048>

<https://www.am-cb.net/projets>

**Music**

# Kristina Warren

— — —

<http://kmwarren.org/>

# Nick Demopolous

— — —

<https://www.youtube.com/watch?v=lTGwyzFsKE8>



# Phillipe Manoury

— — —

Philippe Manoury's Jupiter , for flute and live electronics,  
was realized at IRCAM and first performed by Pierre-Andre  
Valade in April 1987

https:

**JUPITER**

Philippe MANOUKIAN

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# Peter Evans and Sam Pluta

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<http://www.sampluta.com/improvisation.html>

# Installation and Objects

# Behnaz Farahi

— — —

Caress of the Gaze is an interactive 3D-printed wearable which can detect other people's gaze and respond accordingly with life-like behavior

<http://behnazfarahi.com/caress-of-the-gaze/>

# Daniel Rozin

— — —

<http://www.smoothware.com/danny/index.html>

# Scott Snibbe

— — —

<https://www.snibbe.com/digital-art#/projects/interactive/boundaryfunctions/>

<https://www.snibbe.com/apps#/biophilia/>

# TIMO TOOTS

— — —

<https://www.timo.ee/memopol2/>



# RAFAEL LOZANO-HEMMER

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Zoom Pavillion: Zoom Pavilion is an interactive installation that consists of immersive projection on three walls, fed by 12 computerized surveillance systems trained on the public. The piece uses face recognition algorithms to detect the presence of participants and record their spatial relationship within the exhibition space. Zoom Pavilion is at once an experimental platform for self-representation and a giant microscope to connect the public to each other and track their assembly.

[http://www.lozano-hemmer.com/zoom\\_pavilion.php](http://www.lozano-hemmer.com/zoom_pavilion.php)

# My Work

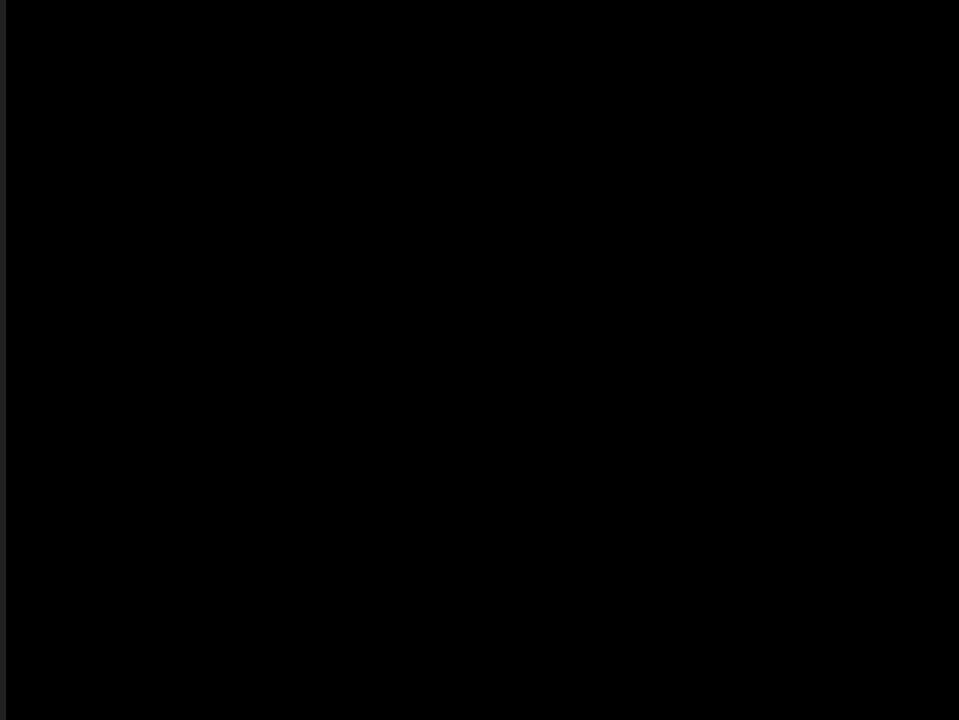
I will take you through  
some of my work to show  
how these concepts are  
applied in specific cases

— — —

# In Development: Interactive Dance



# In Development: First Mappings

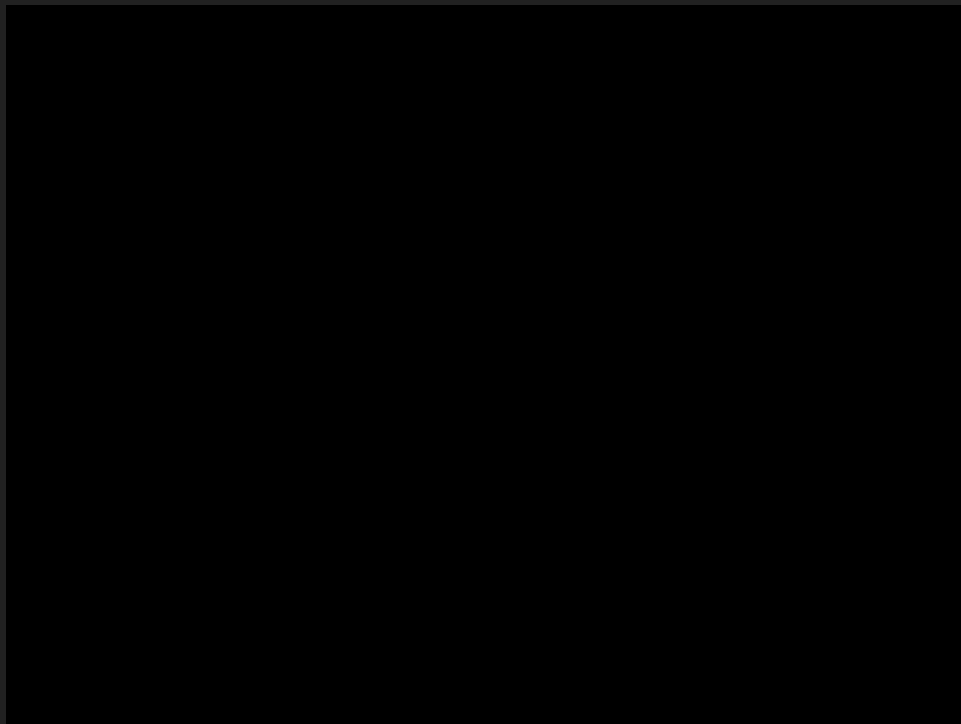


**Music**

# Dona Nobis Pachem Interactive Projection



15:25



# A BIRD ESCAPED FROM THE SNARE OF ITS FOWLER

<https://vimeo.com/158049194>





# Digital Poplar Consort



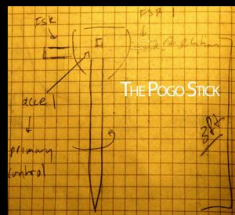
**The Fossil**

This instrument, originally called "The Egg," exploits hand held motions with an embedded accelerometer and four pressure sensitive finger-tip controllers. Musicians are challenged to engage the entire gestural range of the limb (from finger to shoulder) to release the sound making potential of the instrument.



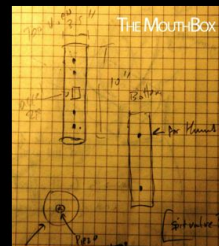
**The Pogo**

This non-referential instrument uses an embedded accelerometer, two pressure sensitive controllers and two momentary switch controllers. The Pogo can be played while balancing the instrument on an accompanying 4 foot rod which activates the pressure sensitive controllers at the base or as a hand-held instrument.



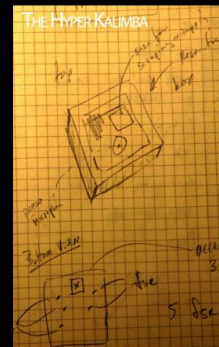
**The Mouth Box**

This instrument combines five force sensitive finger-tip controllers with a breath-activated sensor. The Mouth Box emulates the wind instrument but produces a decidedly different sound palate.



**The HyKal**

The HyKal combines five pressure sensitive finger-tip controllers with a contact microphone affixed to an interior wood surface. It can be thought of as a sound processor activated through small percussive gestures. The instrument also responds to verbalizations of the performer.



# The Ellipsis Catalog

<https://vimeo.com/59264060>



# Installation and Objects

I Sky You



(re)flection: breath



# The Ghana Think Tank



# Thank You

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