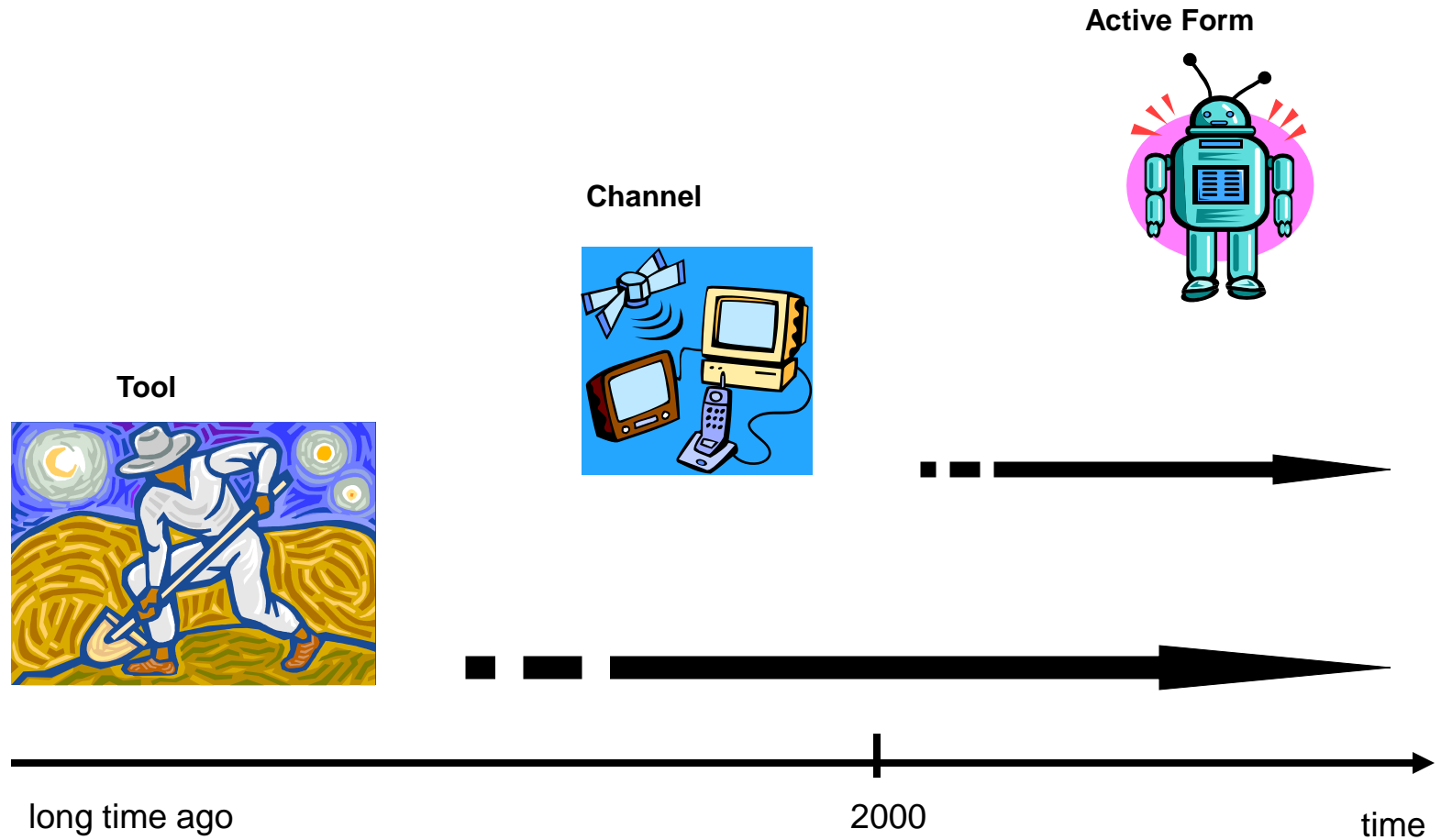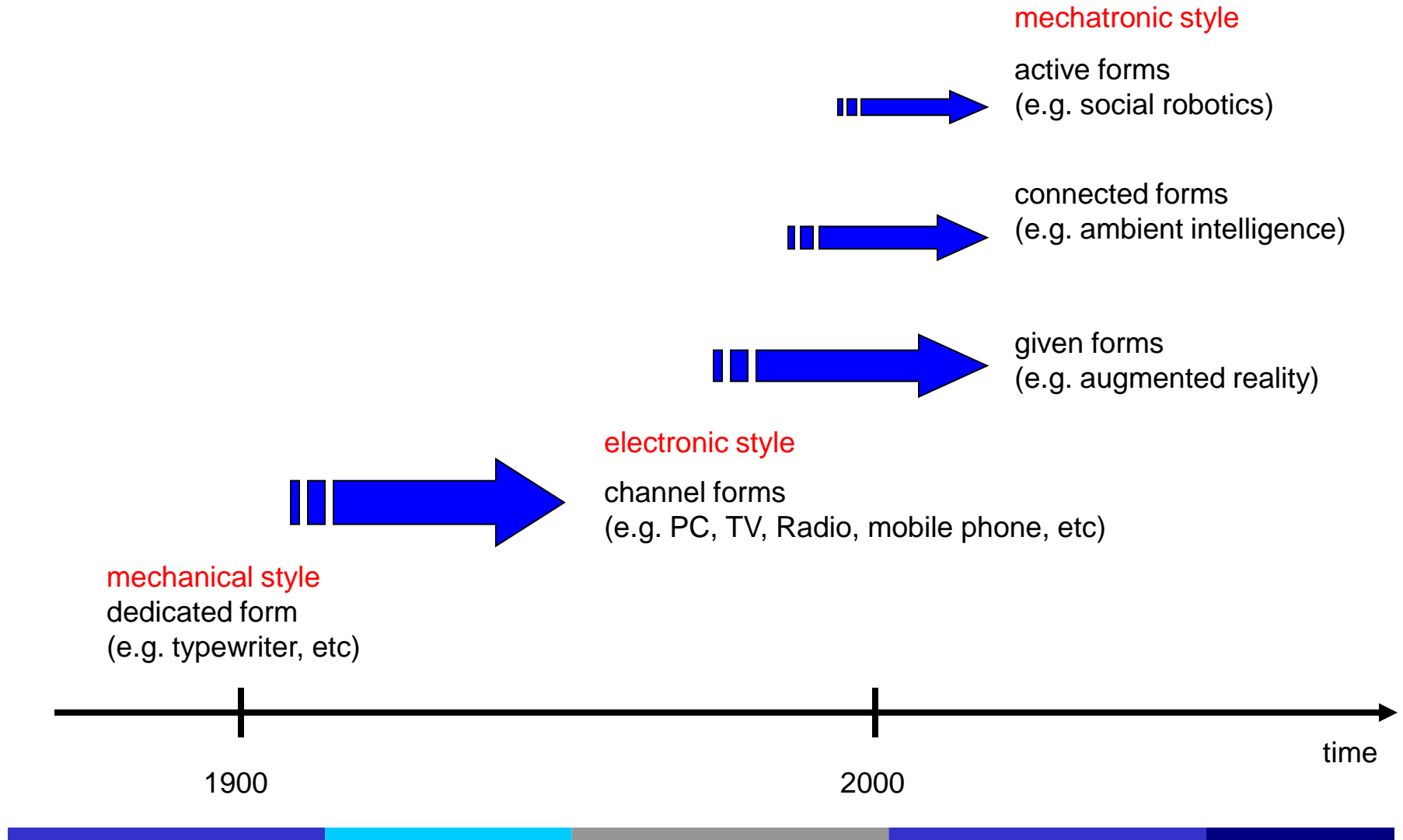# Cultural Dimensions in Ubiquitous and Mobile Computing

Matthias Rauterberg
Eindhoven University of Technology
The Netherlands

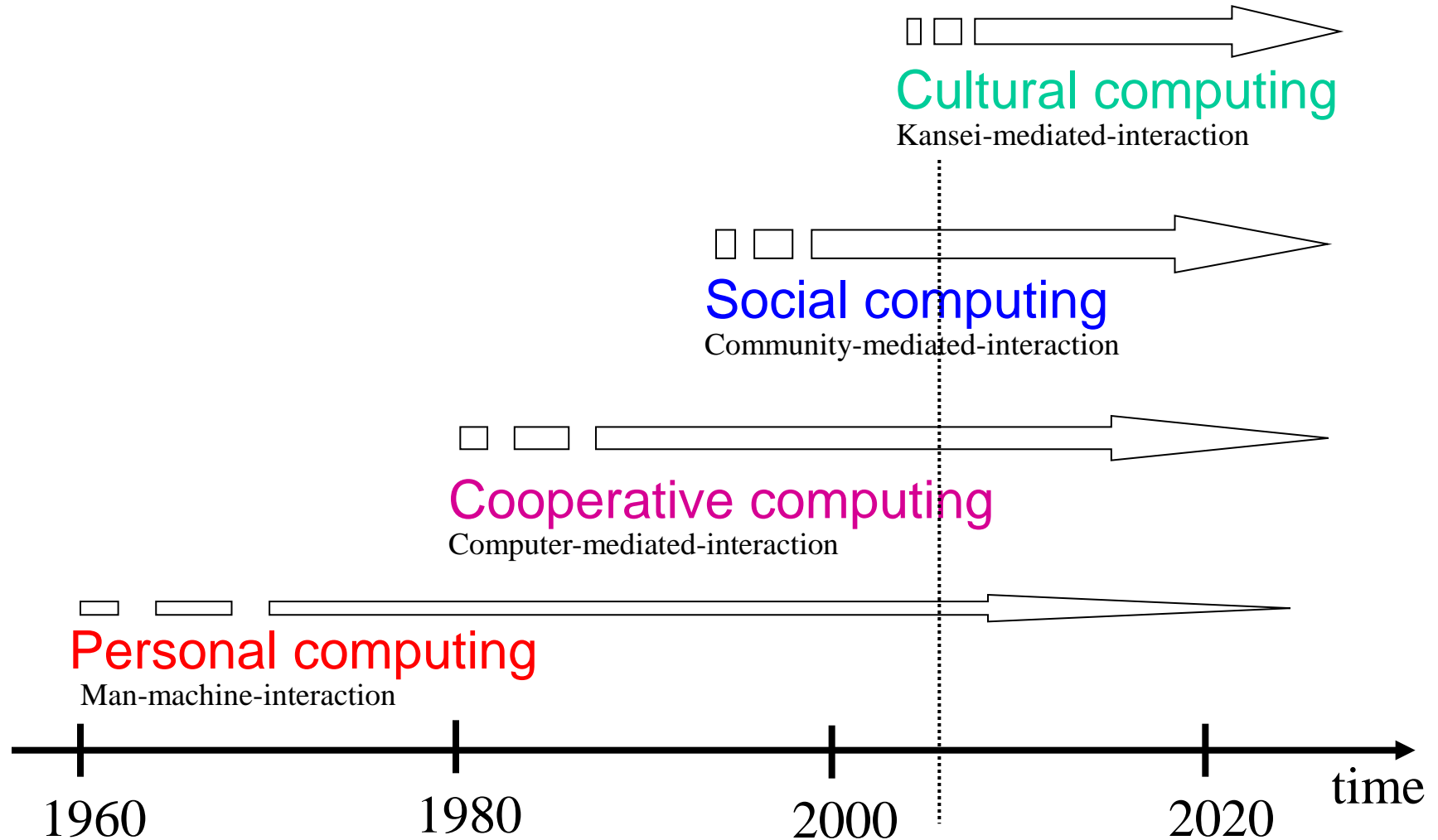# Design Metaphors

Active Form

Channel

Tool

long time ago   2000   time

Design Forms

mechatronic style

active forms
(e.g. social robotics)

connected forms
(e.g. ambient intelligence)

given forms
(e.g. augmented reality)

electronic style

channel forms
(e.g. PC, TV, Radio, mobile phone, etc)

mechanical style
dedicated form
(e.g. typewriter, etc)

1900

2000

time

Interaction Paradigms in Computing

Cultural computing
Kansei-mediated-interaction

Social computing
Community-mediated-interaction

Cooperative computing
Computer-mediated-interaction

Personal computing
Man-machine-interaction

1960   1980   2000   2020   time

What is Culture?

Culture is the integration pattern of human behavior that includes
- attitudes,
- norms,
- values,
- beliefs,
- actions,
- communications and
- institutions of a race, ethnic, religious and/or social group.

The word culture comes from the Latin root *colere* (to inhabit, to cultivate, or to honor). In general, it refers to human *activity*; different definitions of culture reflect different theories for understanding, or criteria for valuing, human activity. Anthropologists use the term to refer to the universal human capacity to classify experiences, and to encode and communicate them symbolically. They regard this capacity as a defining feature of the genus Homo.

Cultural Computing: Kansei mediation

conscious

unconscious

Attitudes
Norms
Values
Beliefs
Etc.

Attitudes
Norms
Values
Beliefs
Etc.
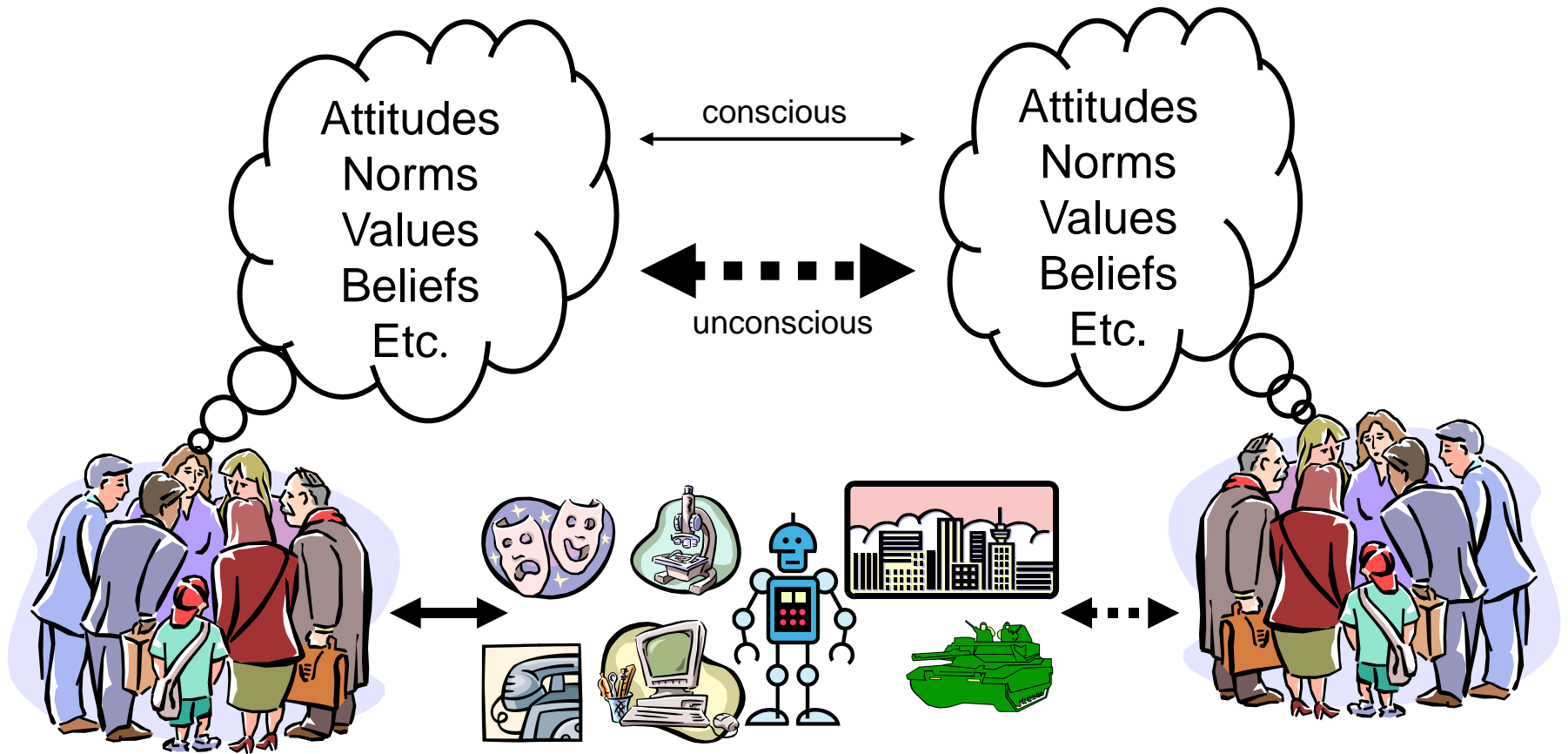
Nakatsu R., Rauterberg M., Salem B. (2006). Forms and theories of communication: from multimedia to Kansei mediation. *Multimedia Systems, 11(3), 304-312*

Anti-Dogmatic Design:
What does that mean, or
what can we do with this for
cultural computing?

Warning:
Attacking a dogma can be dangerous!
Advice:
Be careful!

First Dogma Attack: discovery of the *hidden part of mind*

(1856-1939)

In 1932 the discoveries of
Sigmund Freud
about the unconscious in particular were revolutionary.
His treatment of neuroses allowed inspection of a "hidden" part of the mind. Freud divided the mind into two parts: the preconscious (ideas and memories capable of becoming conscious), and the unconscious (desires, impulses, and wishes of a mostly sexual and sometimes destructive nature).
All human thought is partly a conflict between the preconscious and unconscious, and partly a compromise to pursue pleasure whilst avoiding danger and dealing with the realities of life.
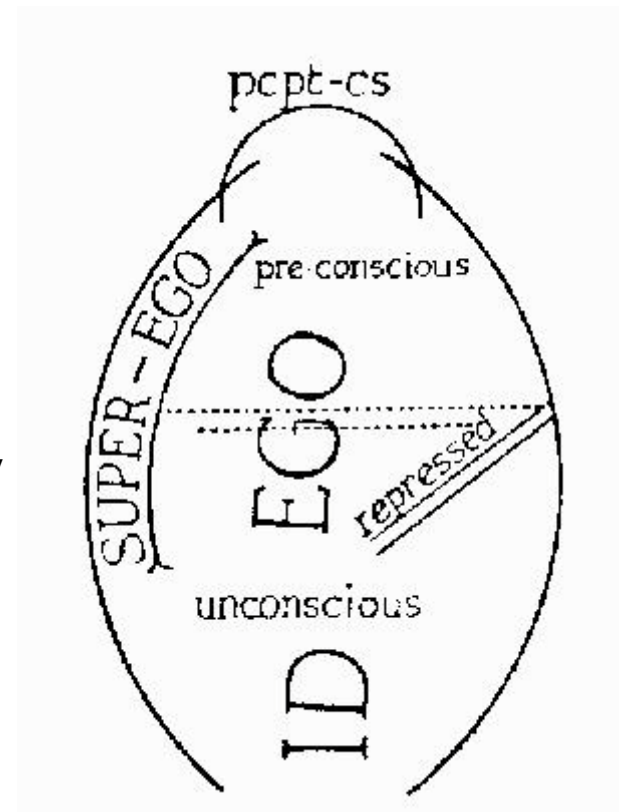
# **Second Dogma Attack**: discovery of the *collective unconscious*
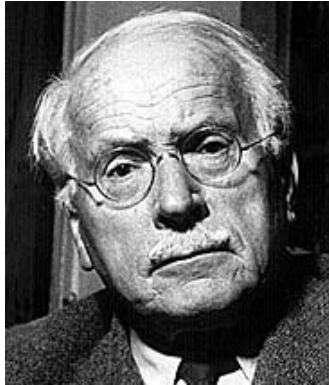
(1875-1961)

After 1910 the discoveries of
Carl Gustav Jung
about the *collective unconscious* and the related *archetypes* were challenging.
Jung dreamt a great deal about the dead, the land of the dead, and the rising of
the dead. These represented the unconscious itself -- not the "little" personal
unconscious that Freud made such a big deal out of, but a new *collective
unconscious* of humanity itself, an unconscious that could contain all the dead, not
just our personal ghosts. Jung began to see the mentally ill as people who are
haunted by these ghosts, in an age where no-one is supposed to even believe in
them. If we could only recapture our mythologies, we would understand these
ghosts, become comfortable with the dead, and heal our mental illnesses.

CONSCIOUSNESS

EGO

PERSONAL UNCONSCIOUS

COLLECTIVE UNCON-
SCIOUS
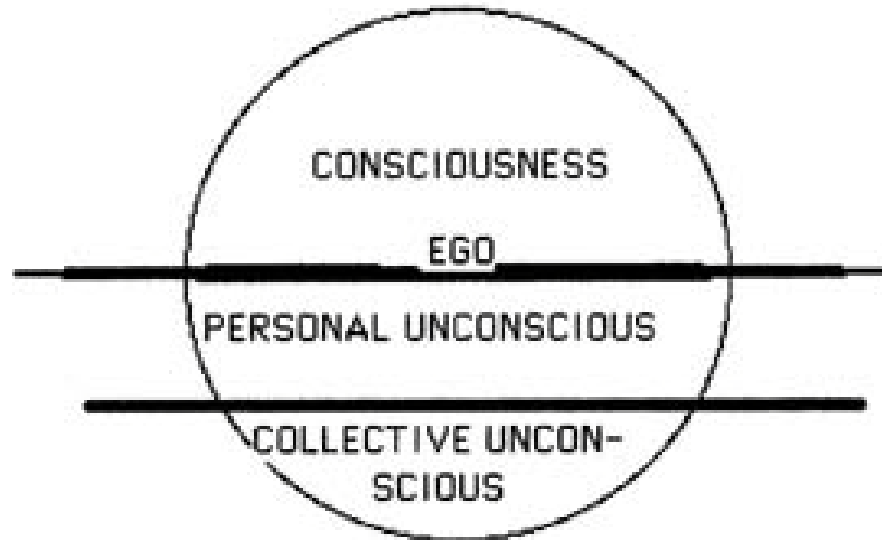
Third Dogma Attack: *fields* beyond energy and matter

Most notably, the theory about morphogenetic fields of
Rupert Sheldrake
in 1981 reveal a substantial change in the way how we should look at reality. He developed the idea of *morphogenetic fields*, and has researched and written on topics such as animal and plant development and behavior, telepathy, perception and metaphysics. For example, Sheldrake began working in the 1990s on the alleged telepathic powers of animals, which he thinks could be explained by *morphic resonance* between two brains.

(1942--)

(video, 4:03)

Reference:
Sheldrake, R. (1981). A New Science of Life: The Hypothesis of Formative Causation.

Cultural Computing: the collective unconscious
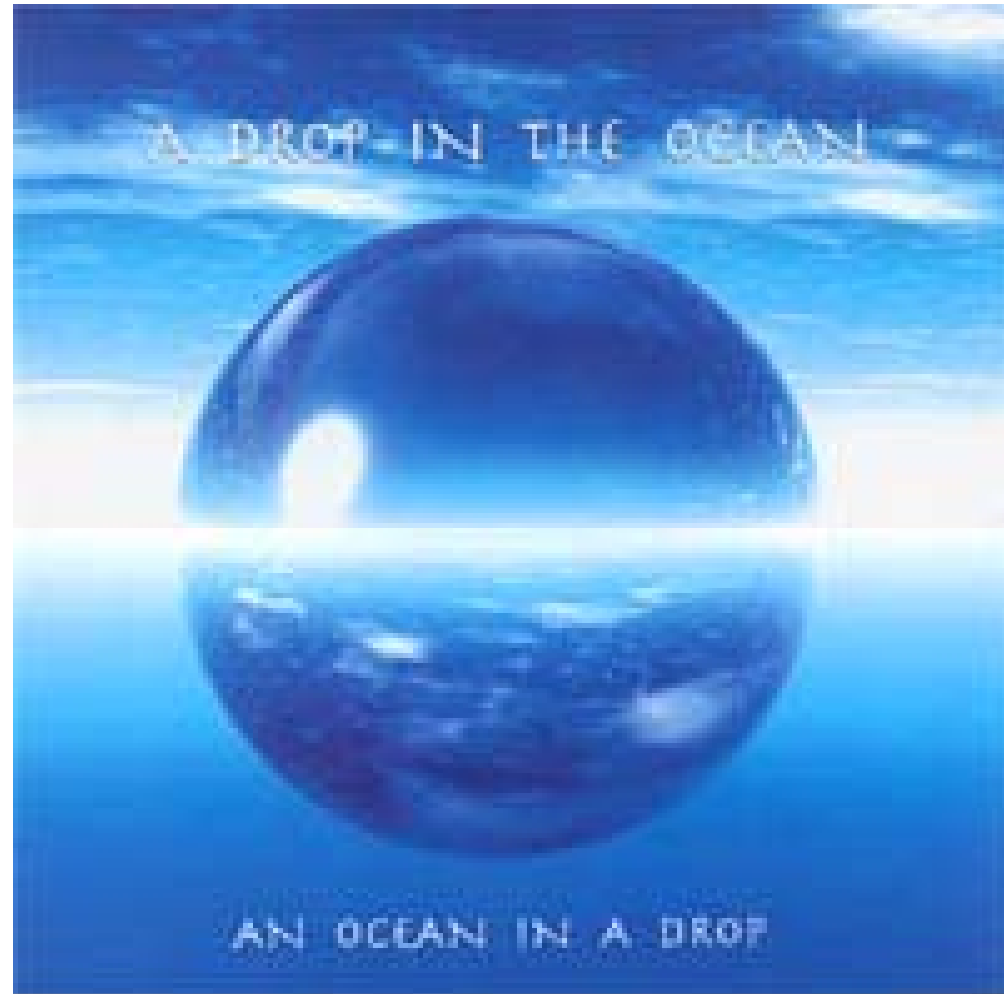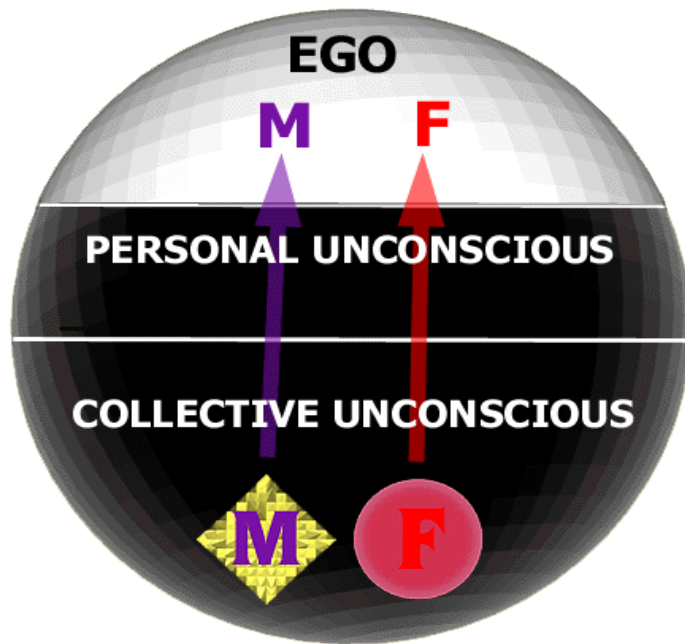
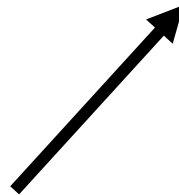# Kansei Mediation for Interactive Systems
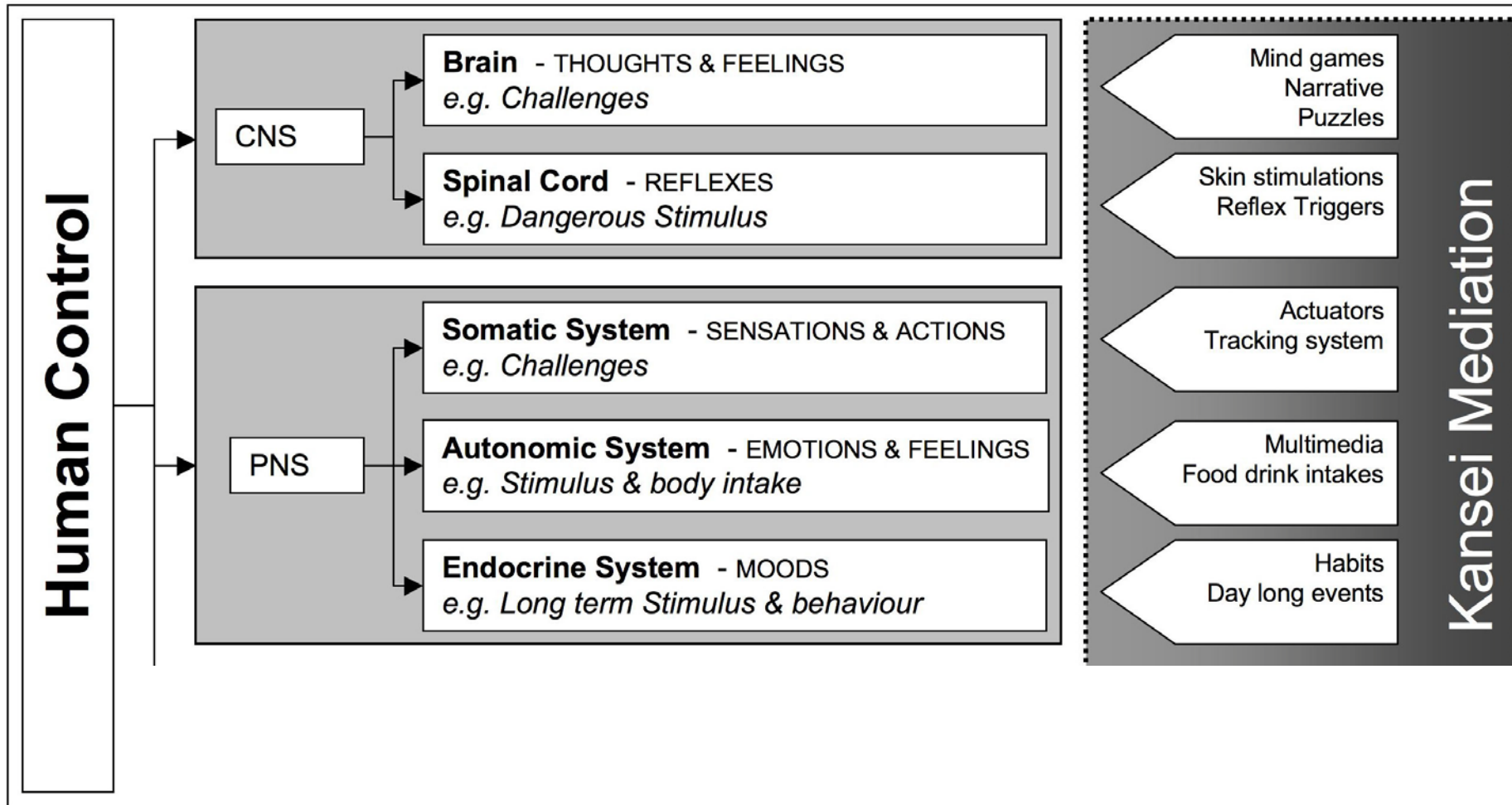
Culture: the East

Lao Tse

TAO TE KING

Lao-Tse
c.604 - c.521 BC

Siddharta Gautama
563 – c.480 BC

Buda

Enlightenment

Zen

Bodhidharma
470-543 AC

Cultural Computing

ZENetic computer (2003)

massachusetts institute of technology

Naoko Tosa

松岡正剛
Seigo Matsuoka
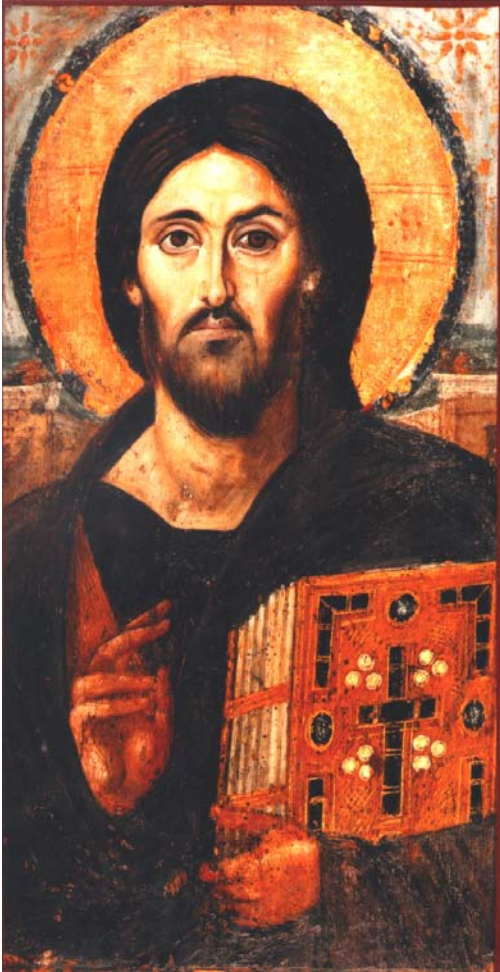
京都大学
Kyoto University

Cultural Computing

ZENetic computer (video, 3:43)
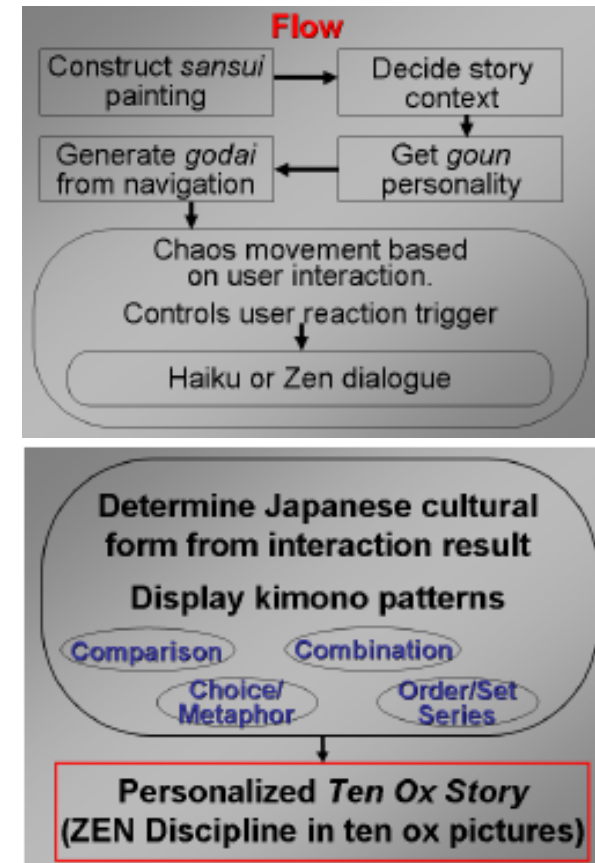
Culture: the West

René Descartes
1596-1650

res cogitans - mind

res extensa   - body, matter, etc

Immanuel Kant
1724-1804

synthetic
a priori knowledge:

- time
- space

both *pure forms of intuition*
and *pure intuitions*.

Culture in East and West

Cross-cultural psychologist's juxtapose
Eastern *holistic* and Western *analytic* reasoning.

Eastern reasoning embraces contradictions among objects in a yin–yang field of constant change.

Western reasoning tends to focus on objects and categories, and is driven by *formal logic.*

Nisbett RE., Peng K., Choi I. & Norenzayan A. (2001). Culture and Systems of Thought: Holistic versus Analytic Cognition. *Psychological Review*, 108(2), 291-310 .

What would be a Western equivalence to ZENetic Computer?

Possible Answer:

- an interactive experience based on the story of **Alice in Wonderland**

Charles Lutwidge Dodgson
1832-1898

Stage-1: Down the Rabbit Hole
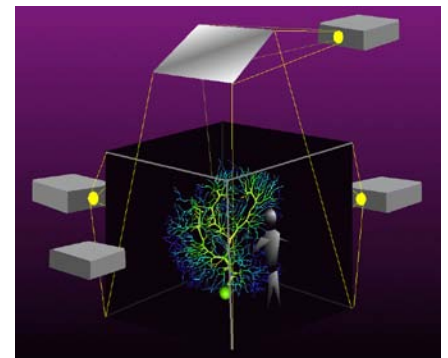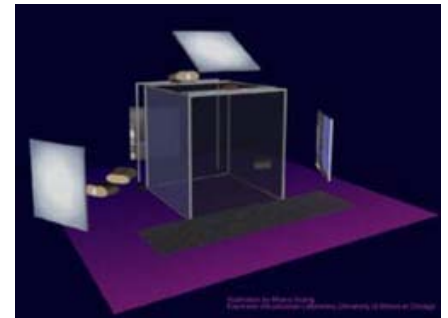
(video, 1:03)

Flow stair lift

Stage-2: Drink me – Eat me

Five sides Cave

(video, 1:25)

# Stage-3: The Caterpillar

'Who are YOU?' said the Caterpillar.
This was not an encouraging opening for a conversation. Alice replied, rather shyly,
'I–I hardly know, sir, just at present– at least I know who I WAS when I got up this
morning, but I think I must have been changed several times since then.'
'What do you mean by that?' said the Caterpillar sternly. 'Explain yourself!'
'I can't explain MYSELF, I'm afraid, sir' said Alice, 'because I'm not myself, you see.'
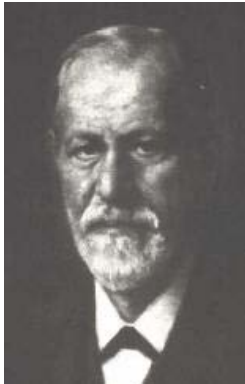*'I don't see,' said the Caterpillar.*

(video, 2:18)
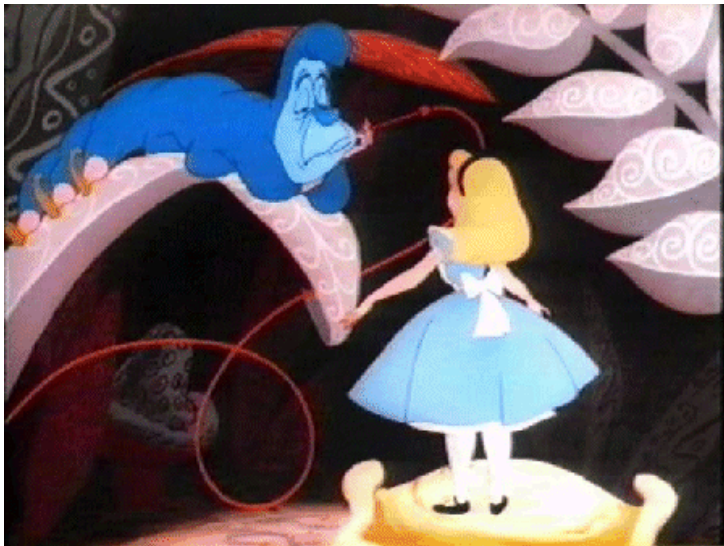
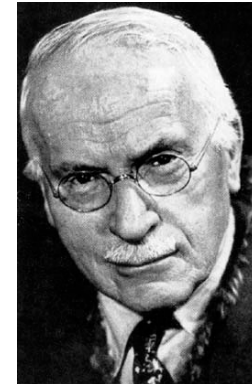**Question**: But what is really important in life?

Answer:

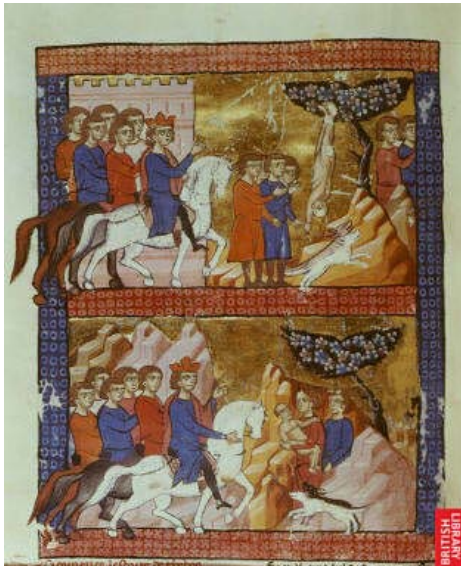**Love**　　　　　**Power**　　　　**Death**

Sigmund Freud
(1856-1939)

Alfred Adler
(1870-1937)

Carl Gustav Jung
(1875-1961)

The Oedipus Trilogy:

Childhood
[Oedipus becomes King]
Love

Adulthood
[Oedipus at Colonus]
Power

Retirement
[Antigone]
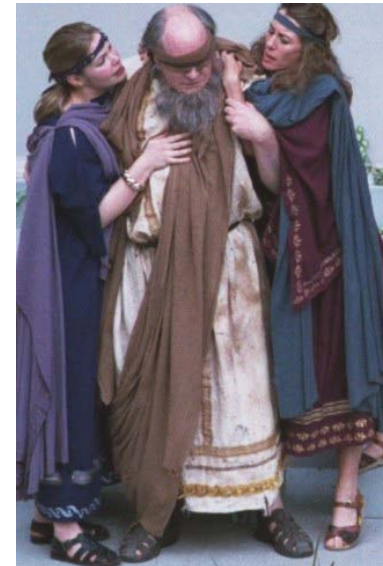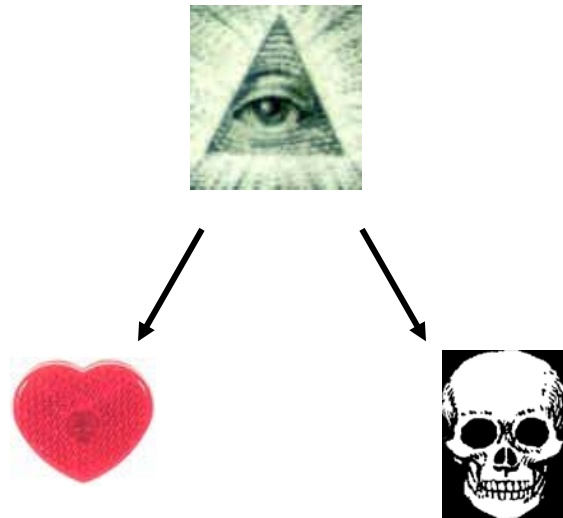## Death

King Polybus rescuide Oedipus
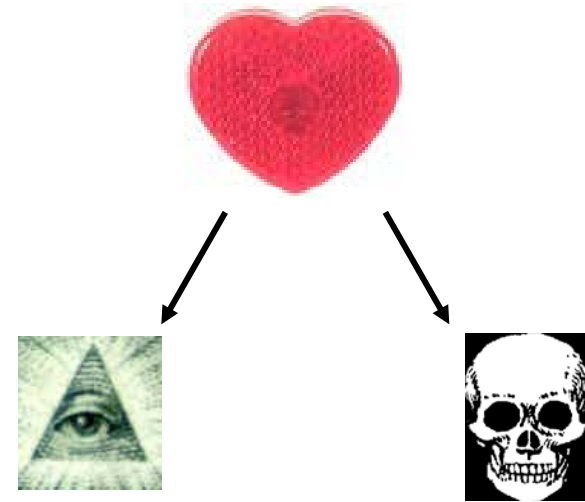

Oedipus Rex

Ismene, Oedipus, and Antigone

Relations between **Love**, **Power** and **Death**

This is what we have…   This is what we want to have…

Love and Mobile Devices

Love-Gety

- There's a Lovegety for men (blue underside), and a Lovegety for women (pink underside).

- They notify each other when a Lovegety of the opposite sex is in range.

- The lovegety operates on 300Mhz frequency and uses 2 AAA batteries.

Power and Mobile Devices

The first ever vote by mobile phone has passed off without any major hitches in the Swiss town of Bülach.
More than 11 per cent of the electorate used the Short Messaging System (SMS) to cast their vote in a local poll on Sunday October 2005.
The ballot is part of a series of trials in several regions of the country to introduce e-voting nationwide. Officials said 445 citizens of Bülach - or 11.6 per cent - used the text messaging system, while another 25.7 per cent voted over the internet. The majority of 62.7 per cent sent their ballot sheets by mail or went to the polling booths.

Political organizations across the world use text messaging to register voters, mobilize constituents, and to win elections.
From the Philippines to Spain to South Korea, text messaging has played an instrumental role in organizing "TxtPower" movements. South African officials have used it to assist more than 180,000 voters to retrieve registration and polling location information; Kenya to coordinate election monitors; India to communicate directly with constituents.
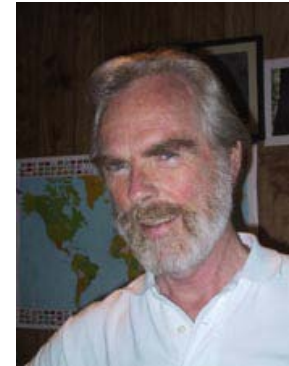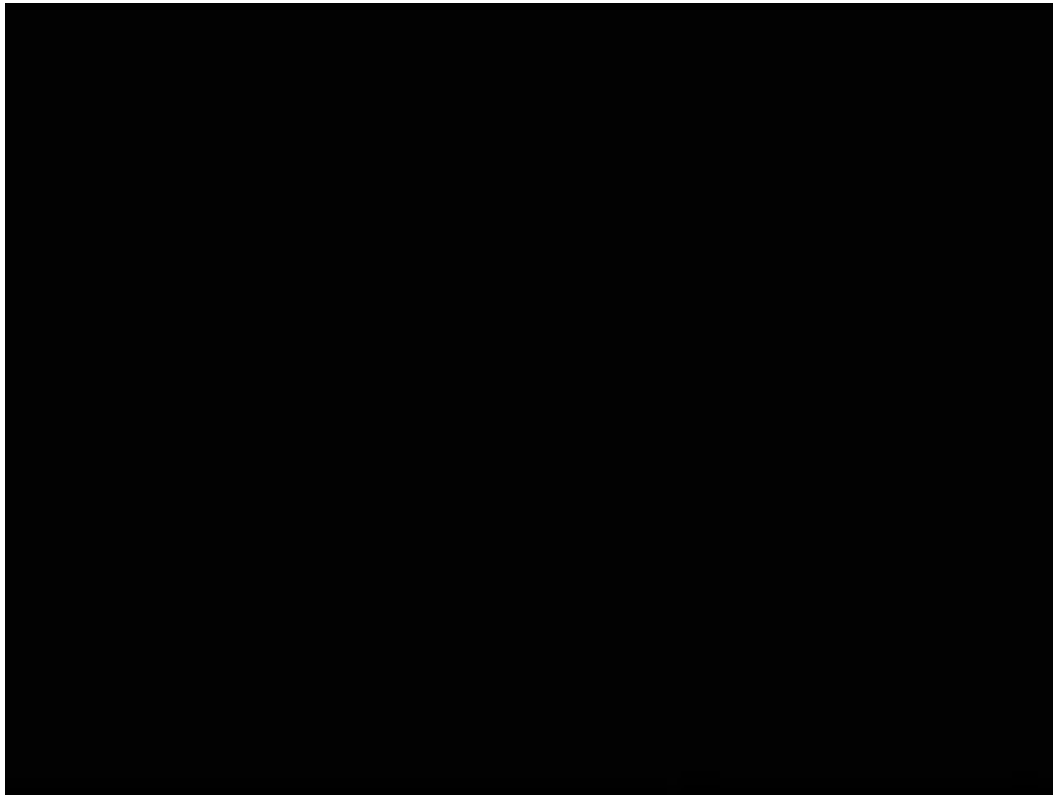Thus far, American political organizations have made only rudimentary use of the mobile technology.

Death and Mobile Devices

[Global Consciousness Project](#)

Princeton, New Jersey, USA (video, 2:30)

Roger Nelson

Mindsong MicroREG

Let's get aware about our
connections to the collective unconscious…

Thank you for your attention.