



**„ I Cyborg “**

**Dr. Daniel Diemers**

**FAB  
Transparencies**

**Basel  
6. Oktober 2002**

- 
1. The virtual triad
  2. The process of virtualization
  3. The process of cyborgization
  4. The process of bionization
  5. Autonomy and Transparency in the virtual triad
-

# The background of the virtual triad lies in several interdisciplinary lines of thought

## *The background of the virtual triad*

sociology of  
modernity

- „The multi-optional society“ (by Peter Gross)
- Theory of modernism and post-modernism
- the role of technology in modern societies

sociology of  
knowledge

- „The social construction of reality“ (by Peter L. Berger and Thomas Luckmann)
- ethnographical studies
- The works of Alfred Schutz

natural  
sciences

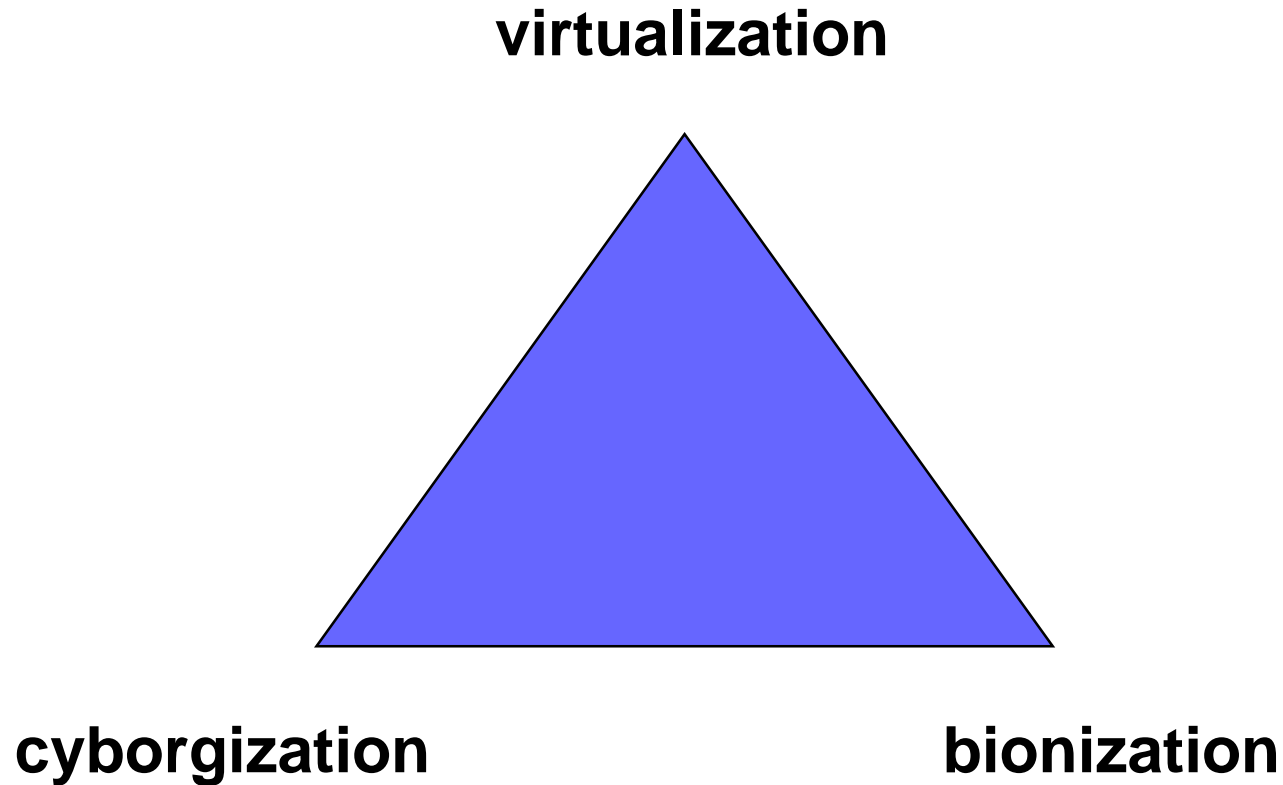
- technological issues of virtualization / cyborgization / bionization
- computer sciences, artificial intelligence, artificial life
- nanotechnology

internet  
research

- Empirical research on the internet
- Theoretical Frameworks on the information society / cybersociety / knowledge society

**The virtual triad consists of the 3 process of virtualization, cyborgization, and bionization**

*The model of the virtual triad*



»Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts ... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding...«

William Gibson, 1986



# The virtual triad is a model to analyze the social impact and evolution of technology



## *The process of virtualization*

---

### Gradual processes of virtualization

#### Digitalization

- From analogue signals to digital media
- From heterogeneous media to heterogeneous protocols
- Exponential increase of digital storage capacity

#### Connectivity

- Global wired connectivity with steadily increasing bandwidth
- Wireless communication networks

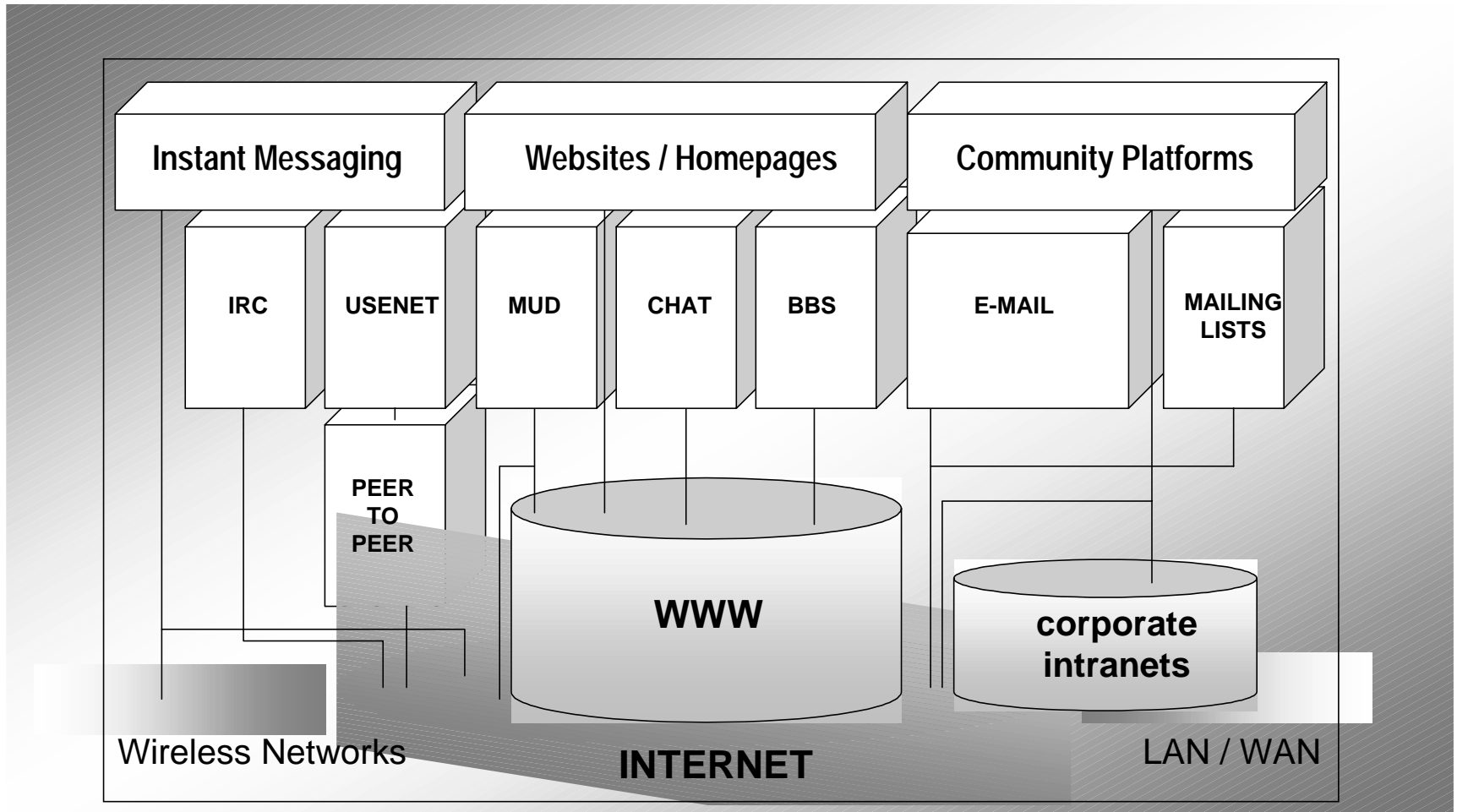
#### Spatialization

- The emergence of virtual spaces for storage, information and interaction
  - Virtual Spaces increasingly become similar or enhanced to reality
  - Delocalization of information and interaction
-

# The reality of virtual reality is constantly changing and is being driven by technological innovation and social change



## *The process of virtualization*



# The process of virtualization leads to a reduction of face-to-face communication and a reconfiguration of social networks



## *The process of virtualization*

---

### **Reduction of face-to-face communication**

- transformation of social interaction patterns
- reduction of channels of perception
- chances: remote communication, handicapped people
- threats: isolation, online addiction & other pathologies

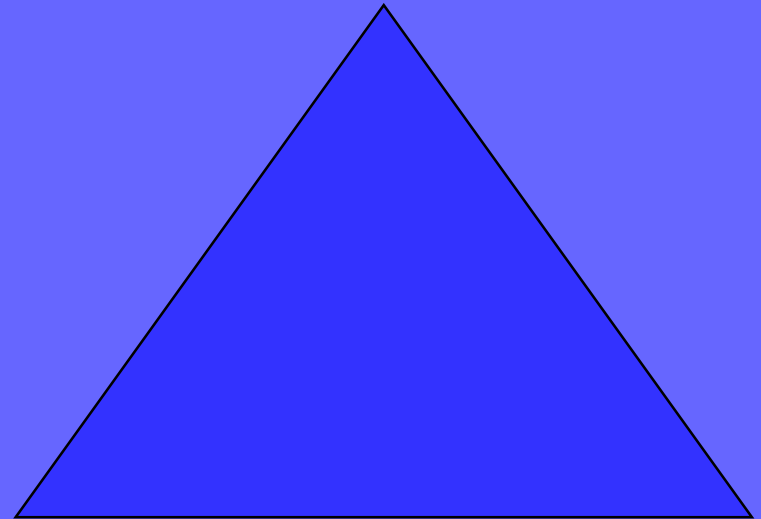
### **Reconfiguration of social networks**

- proximate communities vs. virtual communities
  - virtual space as interaction space
  - convergence of language and culture?
  - new constructions of identity and the evolution of multiple identities
-

»We have modified our environment so radically that we must now modify ourselves in order to exist in this new environment.«



Norbert Wiener, 1954



# The process of cyborgization can be split into 3 processes of invading the flesh, endo/exo-prothetization, and the abandoning of the body



## *The process of cyborgization*

### Invading

- Opening, understanding, scientifically (de)constructing the human body
- Decoding the DNA
- Invading, penetrating the body

### Prothetization

- Enhancing body functions by artificial forms of exo-prothesis and endo-prothesis
- Reengineering the human body
- The emergence of cyborgs

### Abandoning

- Substituting organs and body functions with enhanced cyborg technology
- emergence of cyborgs that are more artificial than biological in nature
- the rise of transhumans and extropians

**(wo)man + machine = cyborg**

»Apparently we are going to design devices and systems which to the naive observer might appear to be alive. They will employ processes and techniques and accomplish functions which hitherto have existed only in living systems. (...) We have given the name "Bionics" to the recognition and practice of these methods.«



Luc Steele, 1995

# The process of bionization transfers biological principles and concepts into (wo)man-made technology



## *The process of bionization*

adaptation of biological principles

- “Humanization” of interfaces, computers, machines
- Increased efficiency and powerful principles for bionic technology
- neuronal networks, multi-agent systems
- pervasive computing, ubiquitous computing, intelligent environments

artificial intelligence

- Distributed artificial Intelligence (DAI)
- ELIZA mark.2, artificial personalities, avatars
- outsourcing of simple processes to artificial entities
- creating autonomous systems

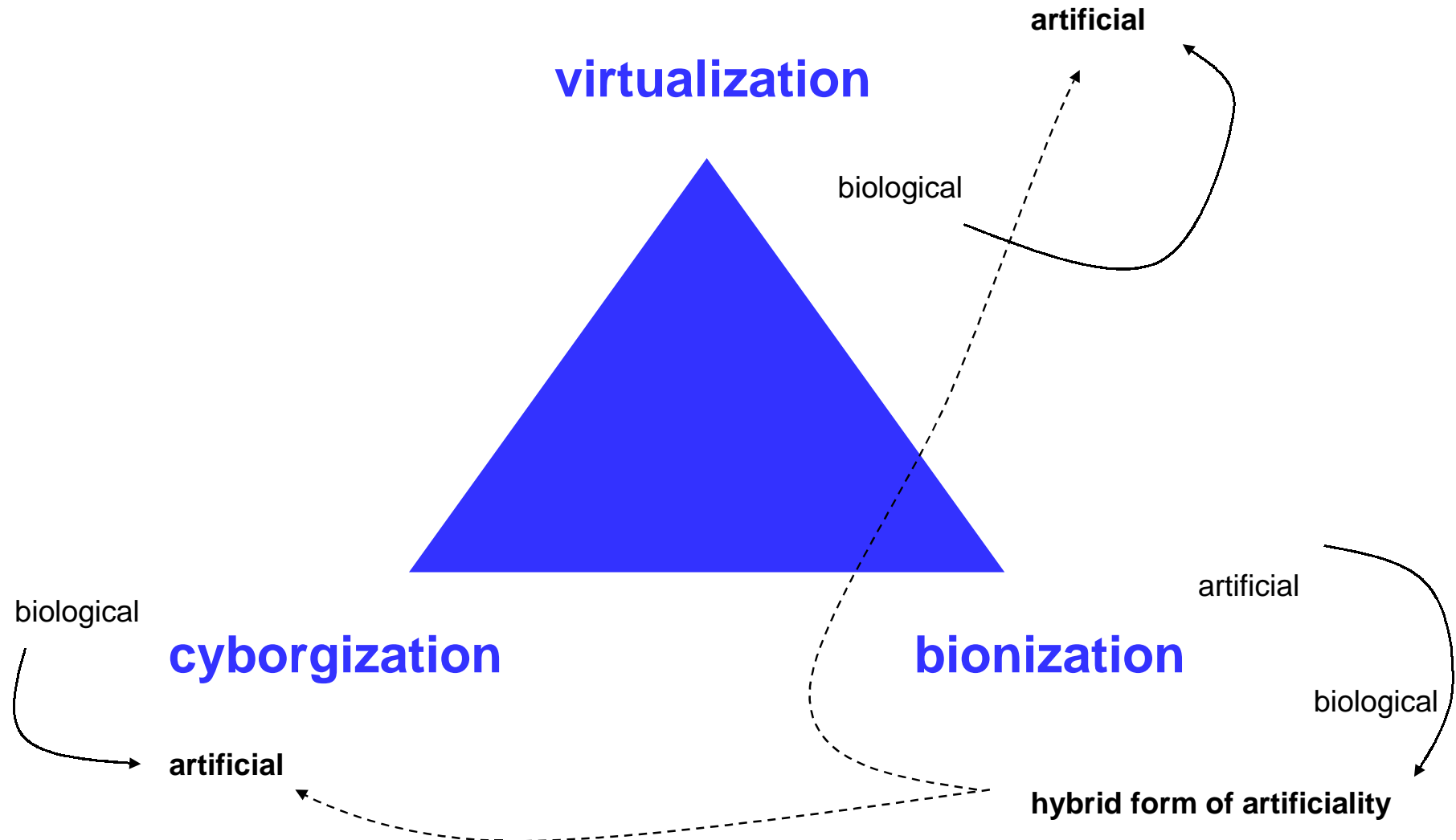
artificial life

- Robots, pets, artificial lifeforms
- virtual artificial life: bots, know-bots

**machine + biological principles = bionics**

The bionization of the artificial leads to a repercussion effect within the virtual triad, which is gaining momentum over time

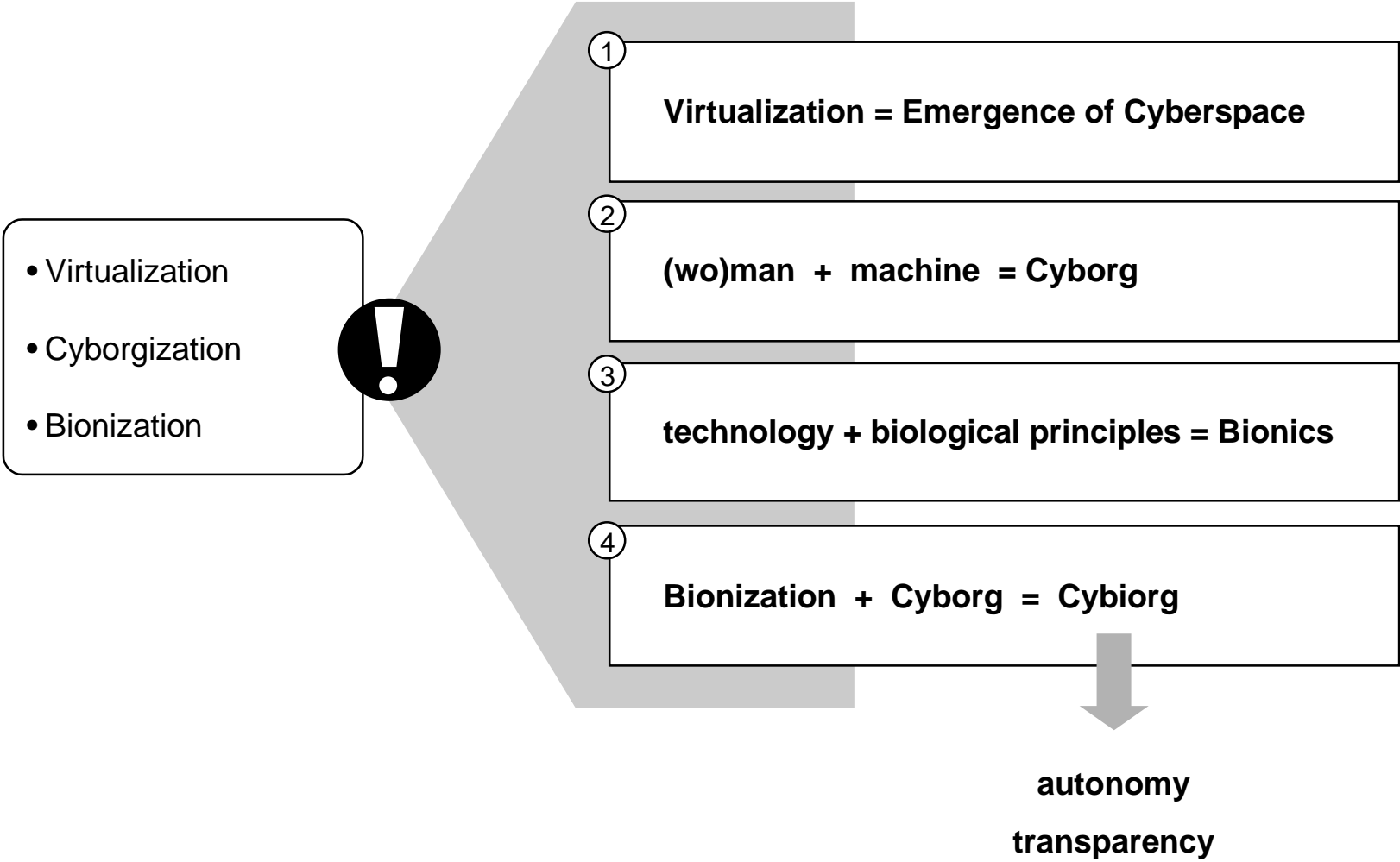
*The model of the virtual triad*



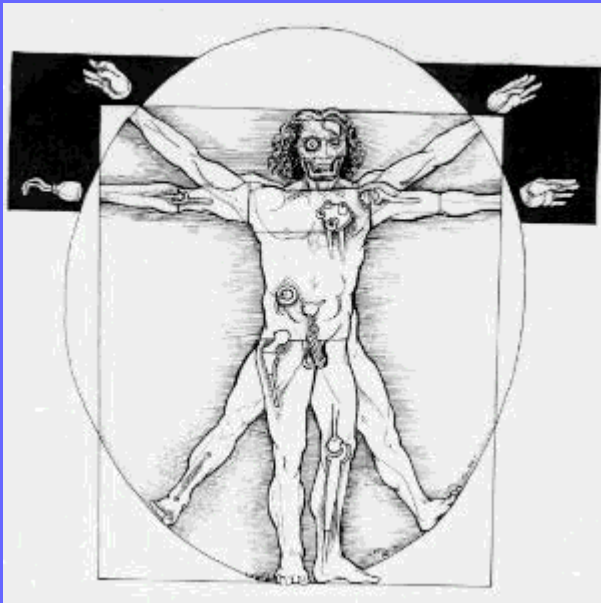


# The Processes of the virtual triad irrevocably lead to new forms of social patterns, which will mark a new way of living: Cyborgs

## The Emergence of Cyborgs



»If man in space, in addition to flying his vehicle, must continuously be checking on things and making adjustments merely in order to keep himself alive, he becomes a slave to the machine. The purpose of the Cyborg, as well as his own homeostatic systems, is to provide an organizational system in which such robot-like problems are taken care of automatically and unconsciously, leaving man free to explore, to create, to think, and to feel«



Clynes / Kline, 1971

# The category of autonomy reveals interesting issues within the framework of the virtual triad



## *Autonomy and the virtual triad*

### 4 phases of increased autonomy within the virtual triad

Phase 1

- Cyborgization leads to a higher autonomy of (wo)man
- With increasing technological progress, the level of autonomy will also increase
- At the same time, (wo)man become increasingly dependent on technology

Phase 2

- Bionization leads to faster technological progress, and creates (semi-)intelligent environments, entities, and technology.
- In the course of the process of bionization, technology is increasingly being made autonomous

Phase 3

- The process of bionization enhances the process of cyborgization, and creates new forms of social living: cyborgs
- These Cyborgs are highly autonomous individuals, but at same time very dependant on the correct functioning of their bionized Cyborg-equipment

Phase 4

- With increasing levels of autonomy both for (wo)man and machine, and at the same time an ever increasing dependency on technology, the issue of control becomes crucial
- ...?



# The category of transparency is a measure for dependency and vulnerability within the virtual triad



## *Transparency*

Assumptions

- (a) The emergence of Cyberspace + Digital life as an accepted social pattern = true
- (b) There is no safe data in Cyberspace = true
- (c) from (b) follows: any data in cyberspace is traceable = true

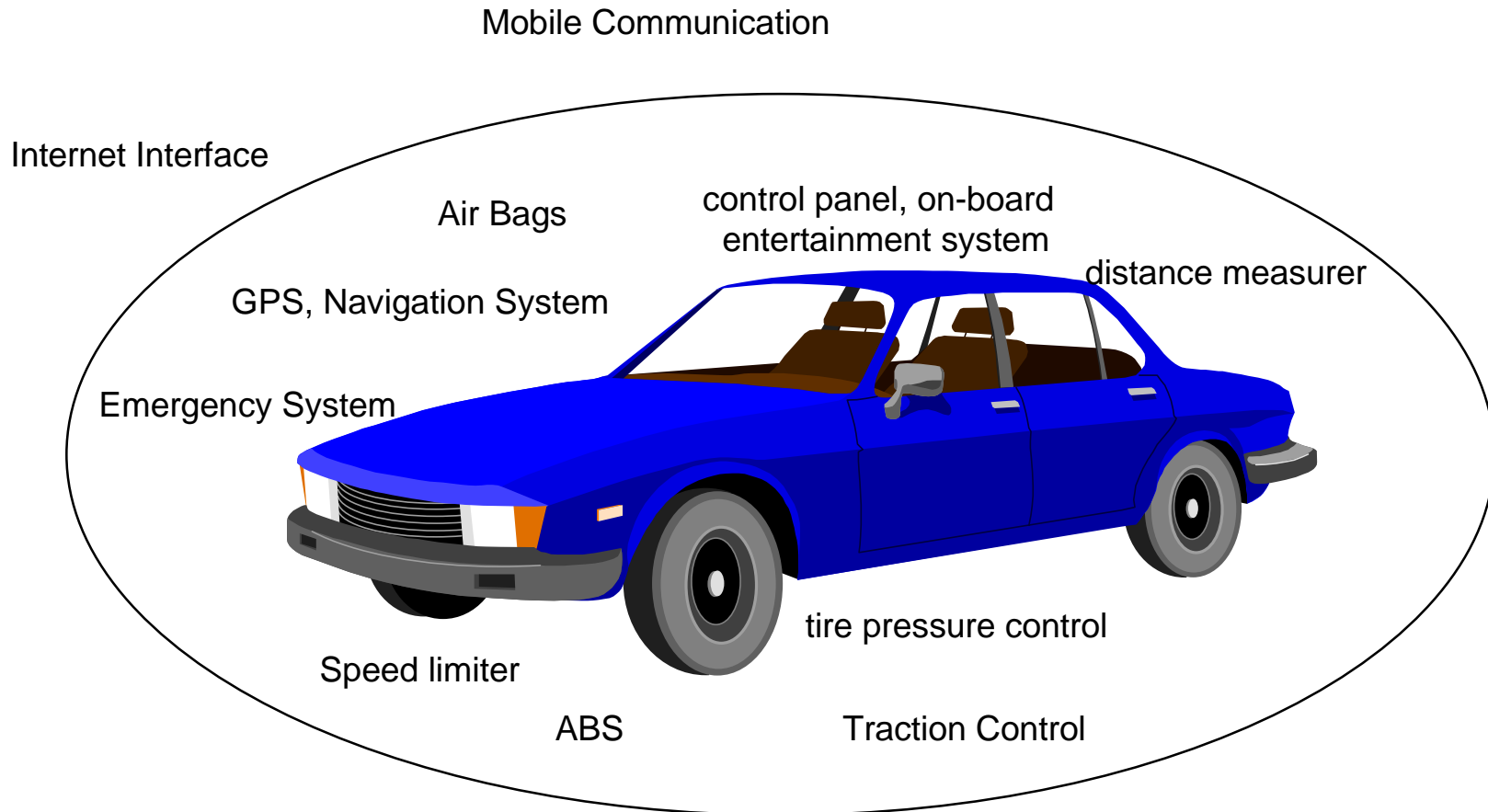
Layers of  
Digital Life

- birth ads hospital records
- school education e-learning learning communities
- sports leisure clubs teenage communities clans
- websites online communities guestbooks
- e-markets credit card records customer clubs marketing lists
- insurance e-insurance claims
- online booking travel clubs airline programs guestbooks
- work ads job platforms communities of practice intranets
- e-government e-voting political communities
- death ads virtual graveyards

# A practical example on the future of cars reveals how the categories of autonomy and transparency change social patterns



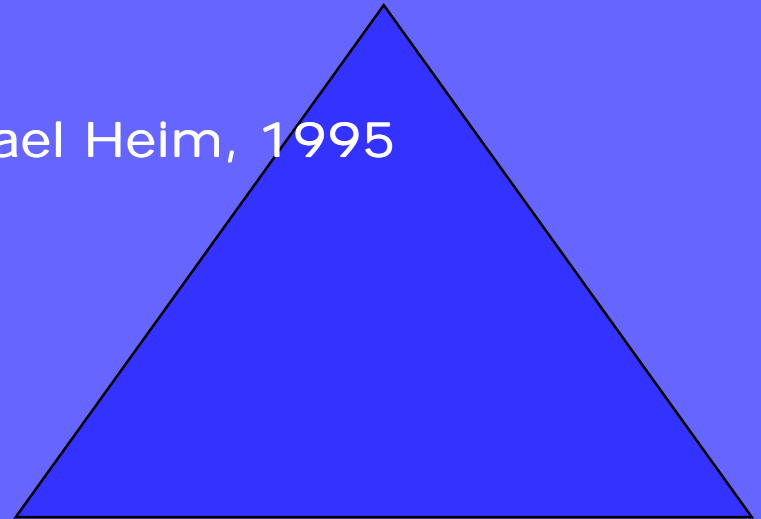
## *The future of Cars*

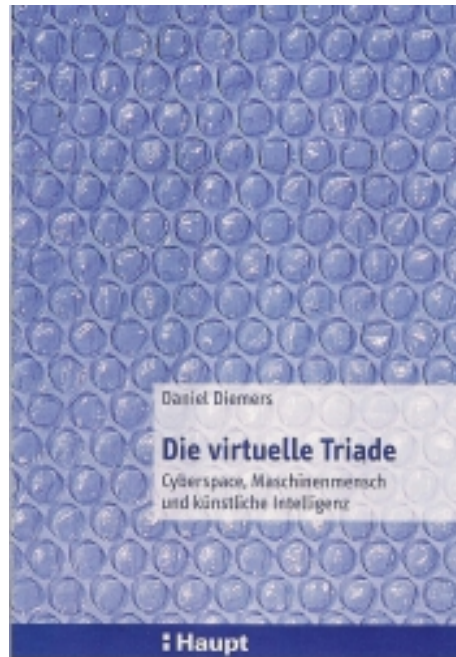


»It's up to artists to guard the visionary aspects of technology. Art nurtures infant technologies like virtual reality. Art lifts a mirror to show the power and peril of nascent technologies. No accident, then, that art should preserve our ambivalent attitude toward technology«



Michael Heim, 1995





**Daniel Diemers**  
**Ackerstrasse 44**  
**8005 Zürich**

**+41 1 271 18 35**

**daniel@diemers.net**

**<http://www.diemers.net>**

**diemers.net**

