The Psychology of Mobility

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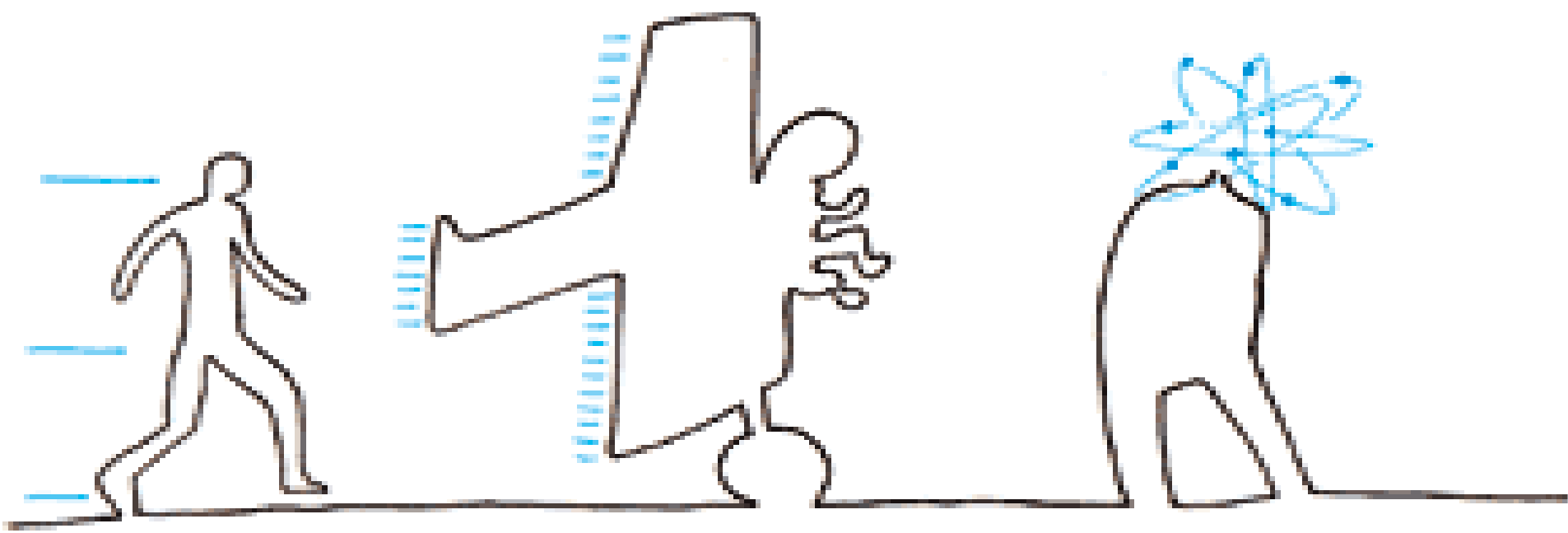
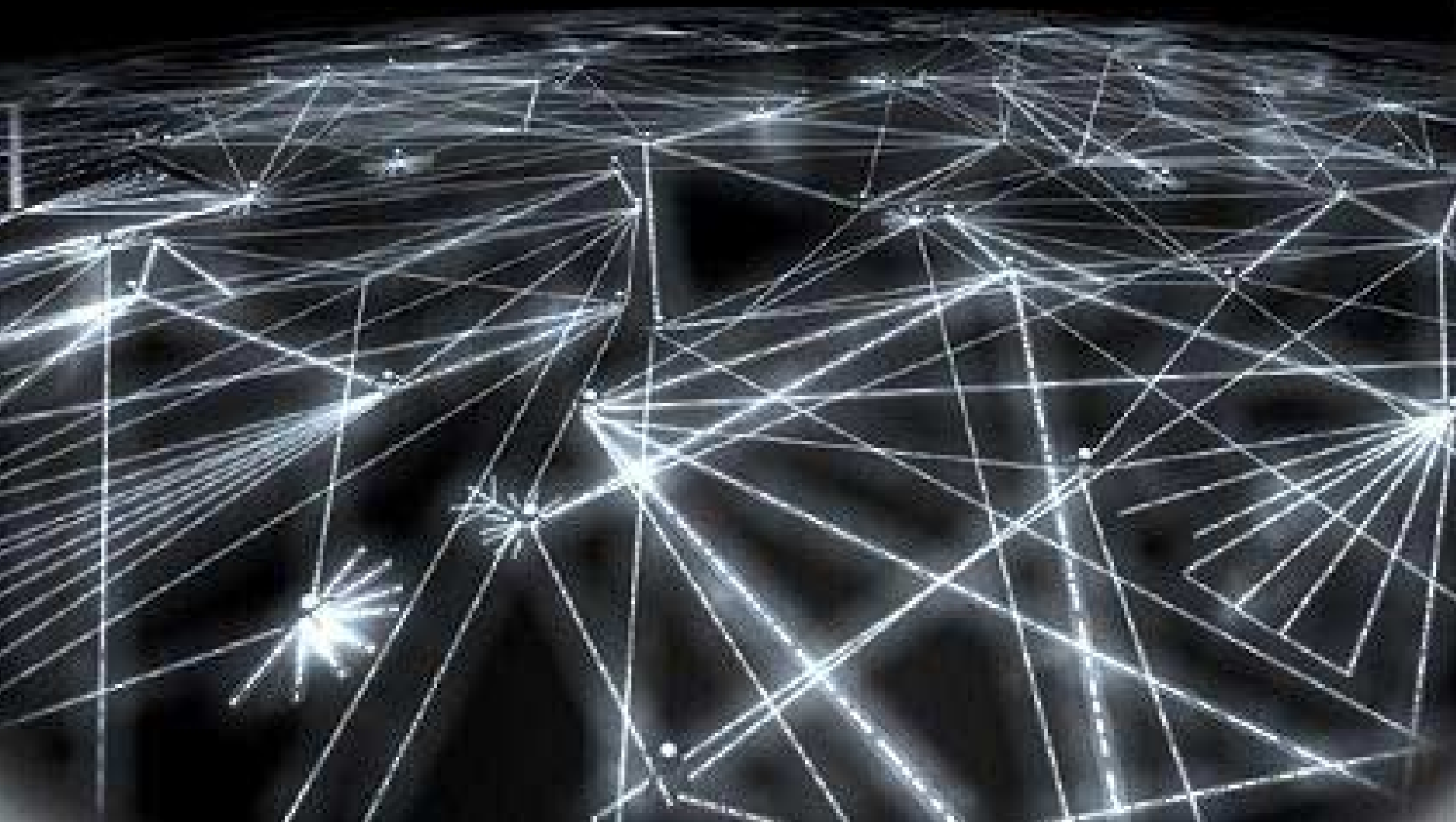
The three eras of mobility



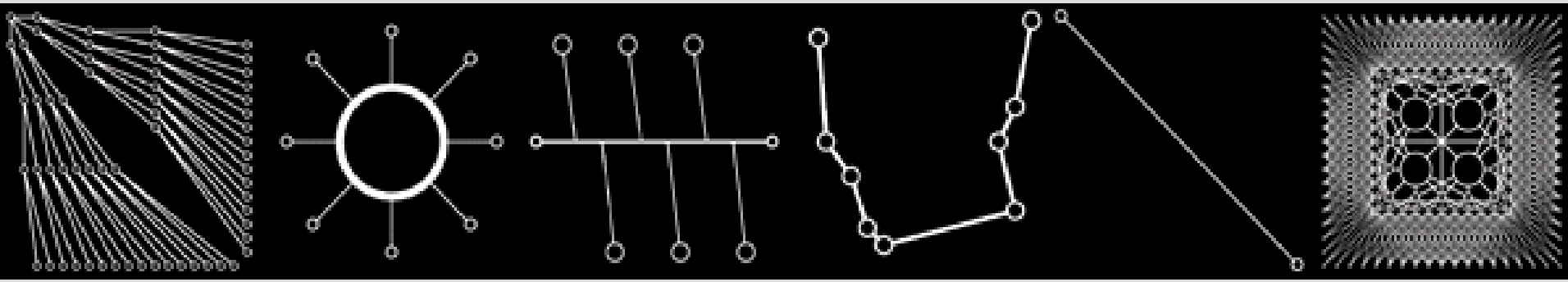
Why mobility is destiny

- The need and the drive towards autonomy (technical “weaning”)
- An ever greater independence of movement and place
- “just-in-time everything” (permanent as well as instant gratification)
- A better use of the available time and even of some of the “down-time”
- Accelerated lives (a perhaps more dubious benefit)

The hidden ground



Electricity

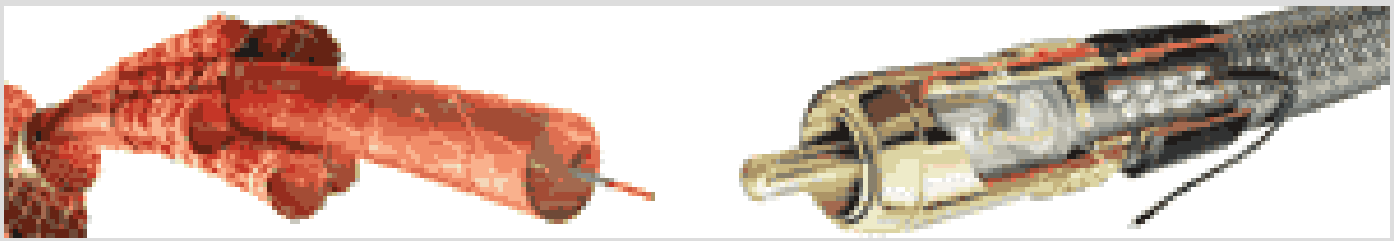


The cellular phone is but one of the extensions of our central nervous system in the electronic grid of the world

- **1834: Electricity weds the alphabet**
- **Telegraph = Language accelerated, amplified, redistributed by electricity**
- **Maximum speed multiplying and distributing maximum complexity**
- **Relentless refinement of the code from the 26 letters of the alphabet to 0/1 via Morse's "long, short, naught"**
- **O/1 becomes the smallest common denominator of all our experiences, physical and mental (actual and virtual)**

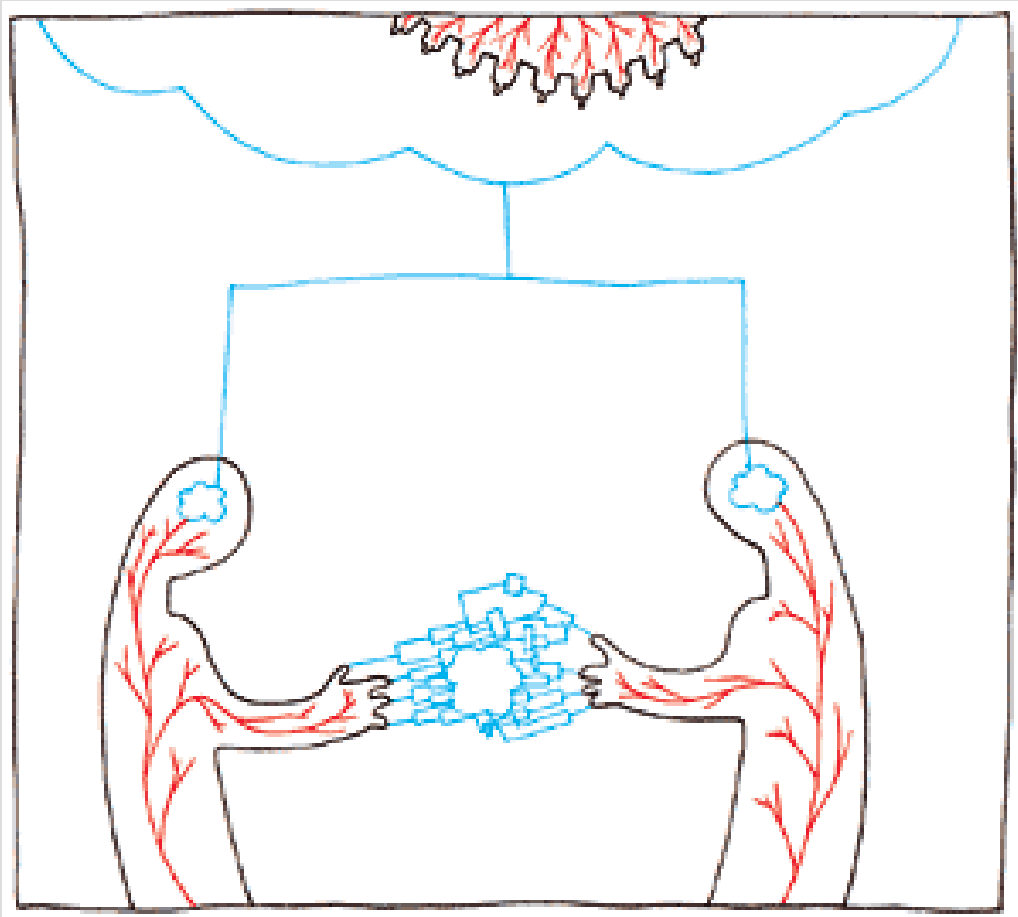
The technobiology of electricity

- **Electricity is both within and without the human body**
- **In the analogue mode, electricity emulates muscular functions of the body**
- **In the digital mode, it emulates cognition**
- **All digital appliances are extensions of our senses and our communications capabilities**
- **Some of them such as the cell phone bring electric back to the body…**



The technobiology of wirelessness

- **Wireless means permanent, ubiquitous access to all our extensions**
- **The cellular phone spells the integration of the whole world within the body of the user**
- **Wearable computing heralds the quasi internalization of this process**



The technopsychology of mobility

Globalization

Change of self-image (body-image)

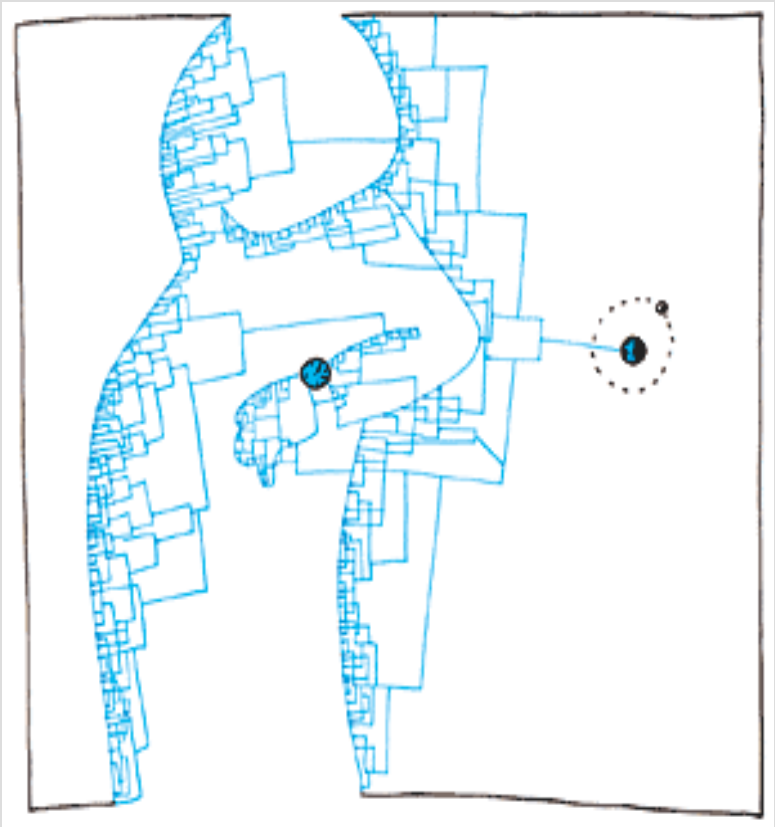
Change of scale

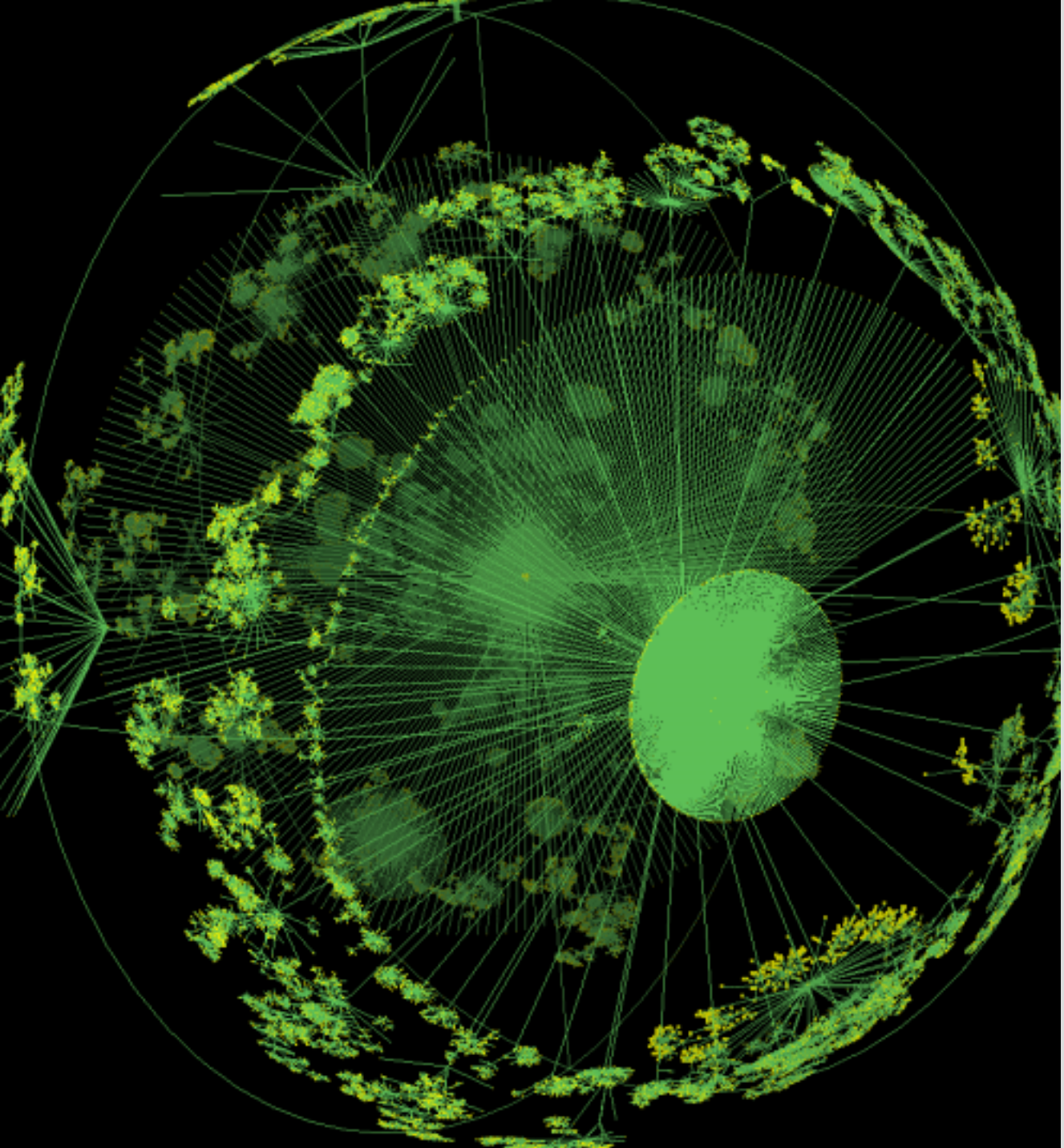
Change of physical distribution

Change of time (macro and micro scales)

Living at nanospeed

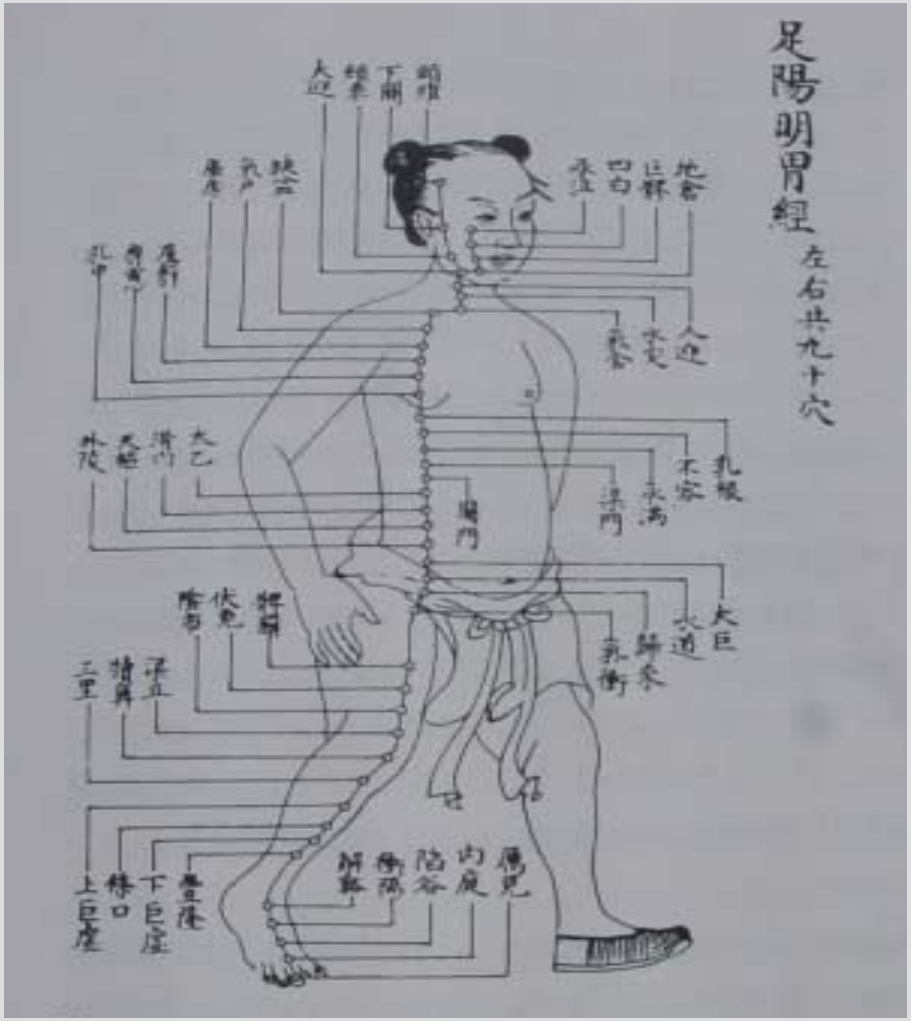
1600: invention of the 10th of a second
1800: 100th of a second
1850: the millisecond
1950: the microsecond (a millionth of a second)
1965: the nanosecond (a billionth of a second
1970: the picosecond (a thousandth of a billionth of a second
1990: The femtosecond (a millionth of a billionth of a second)
2001: the attosecond, that is, precisely a billionth of a billionth of a second





The message of mobility: an entirely different way of being in the world

The body electric



Three cyborgs

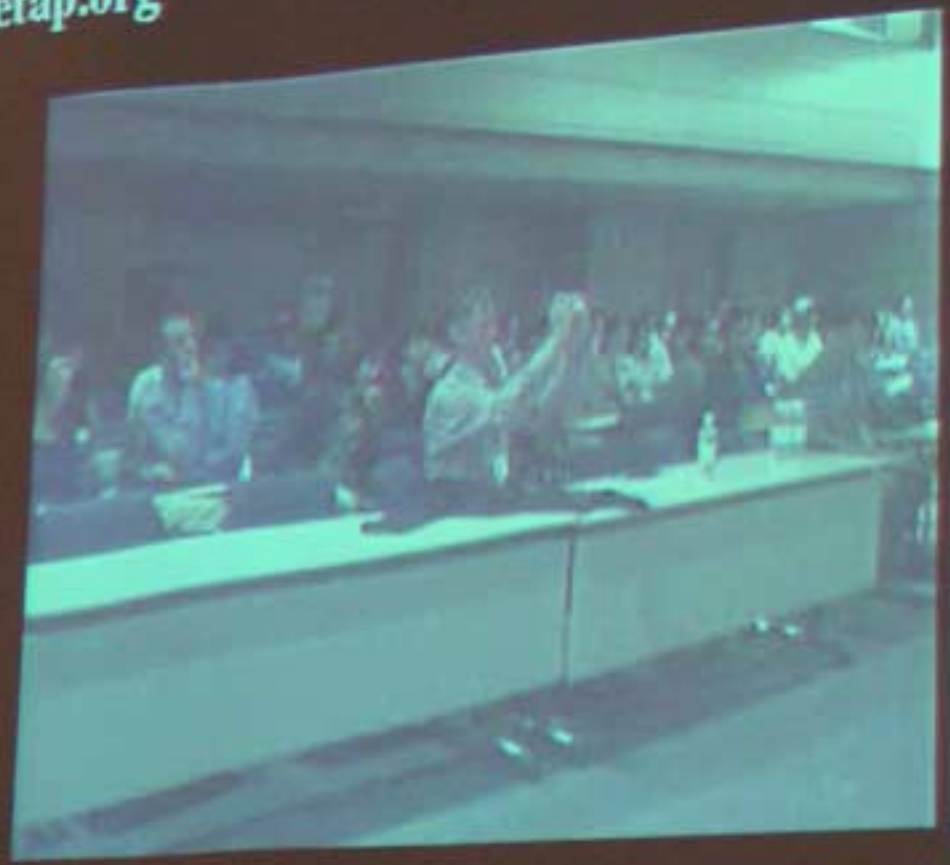
Steve Mann

Stelarc

Kevin Warwick

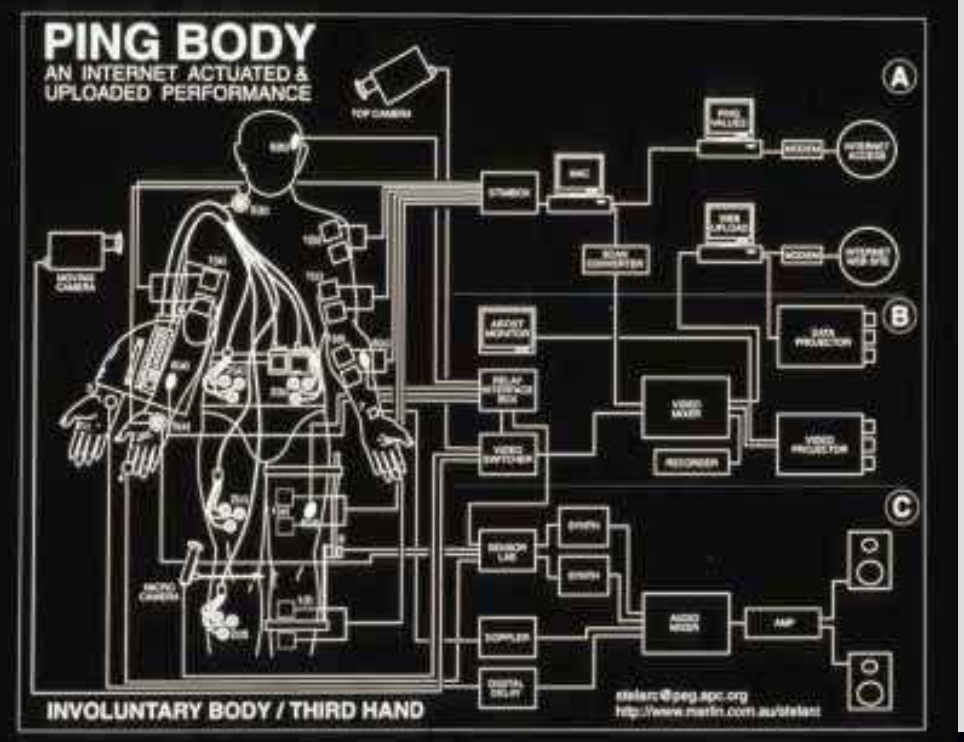
편집 보기 찾아가기

://eyetap.org

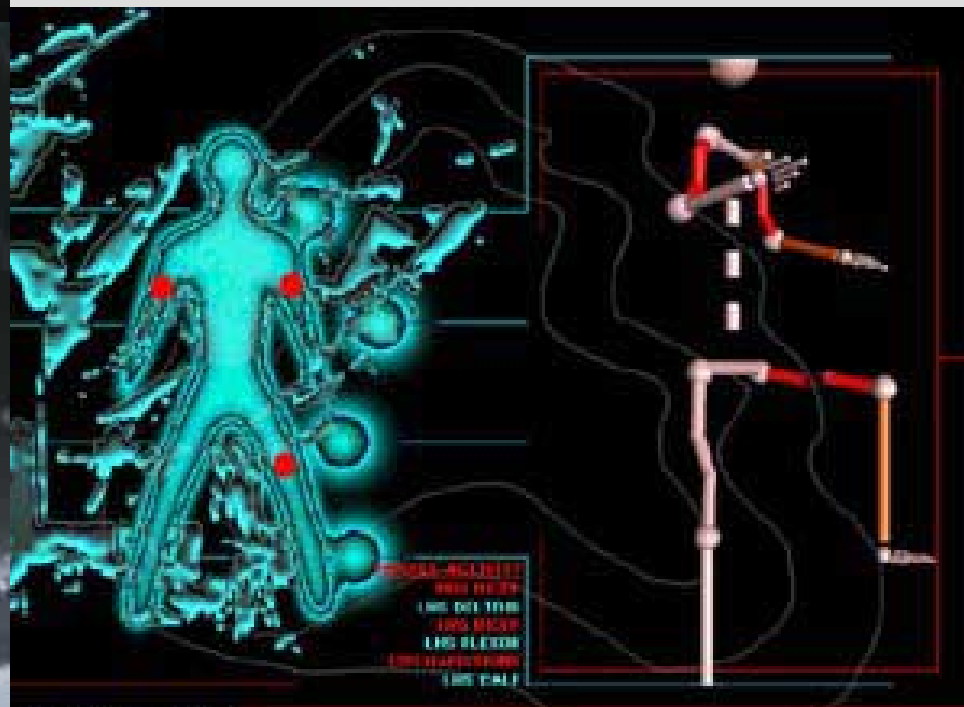


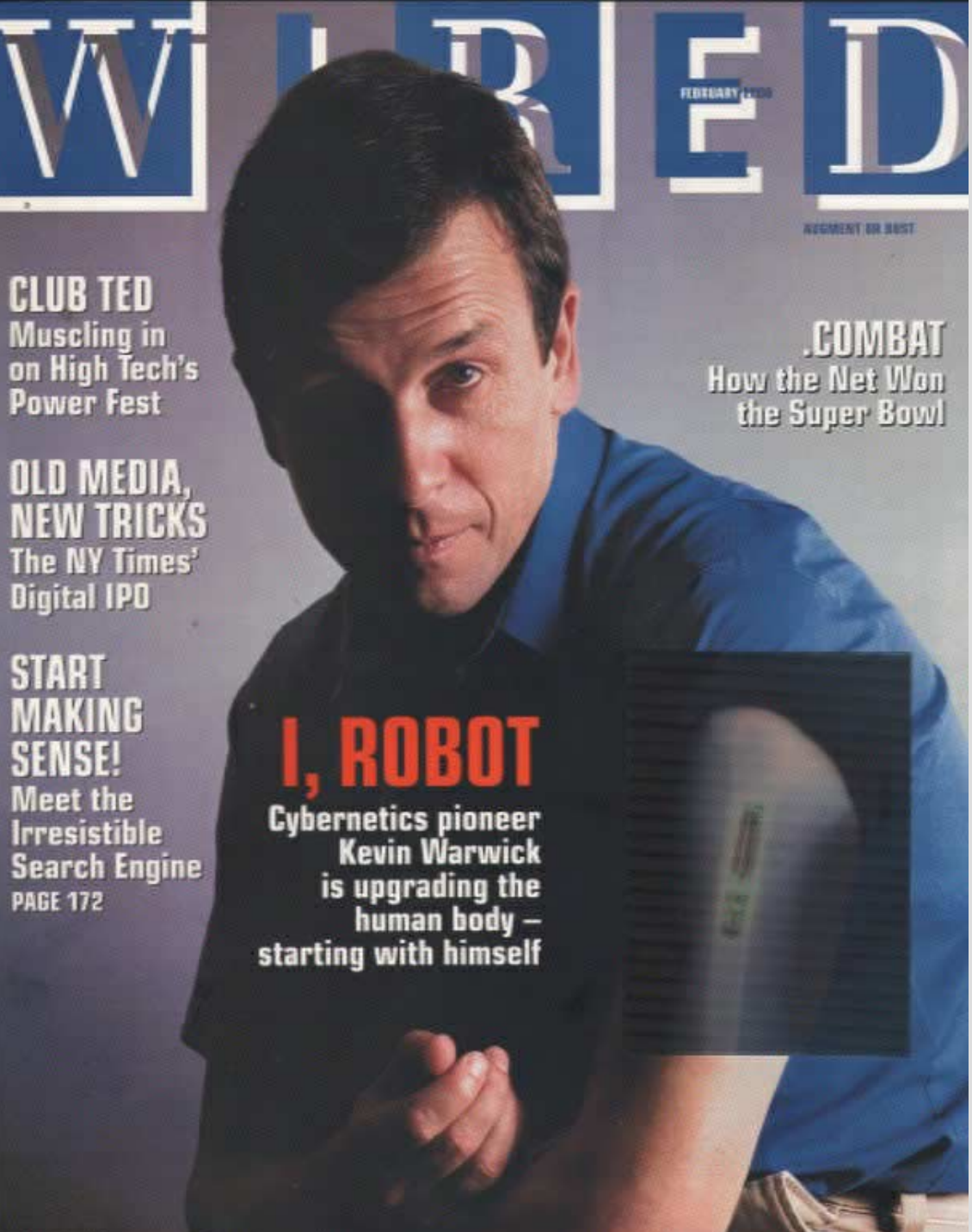
Steve Mann sends what his eyetap sees to the web…permanently

Whatever he is looking at goes on line for anyone to see

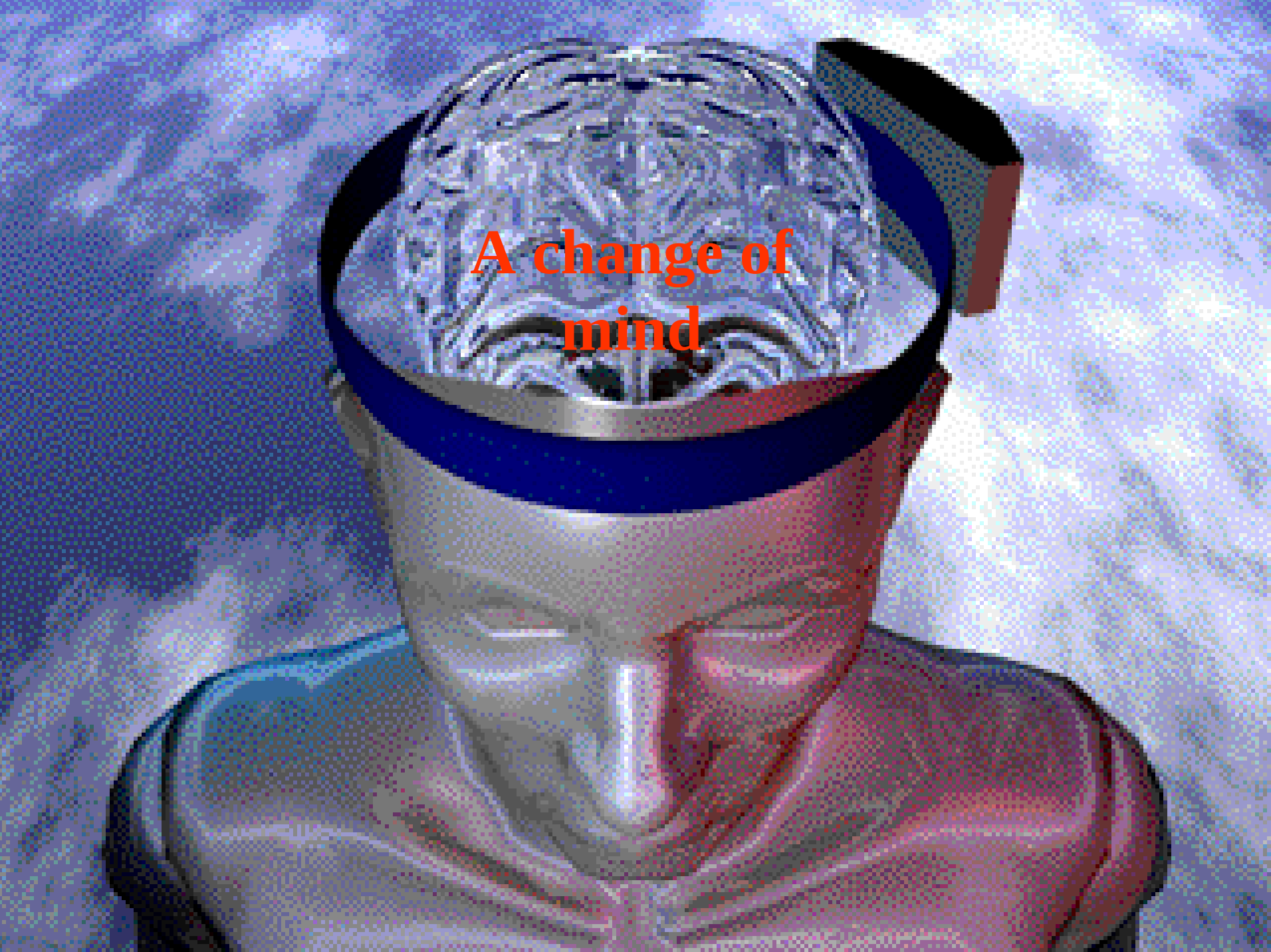


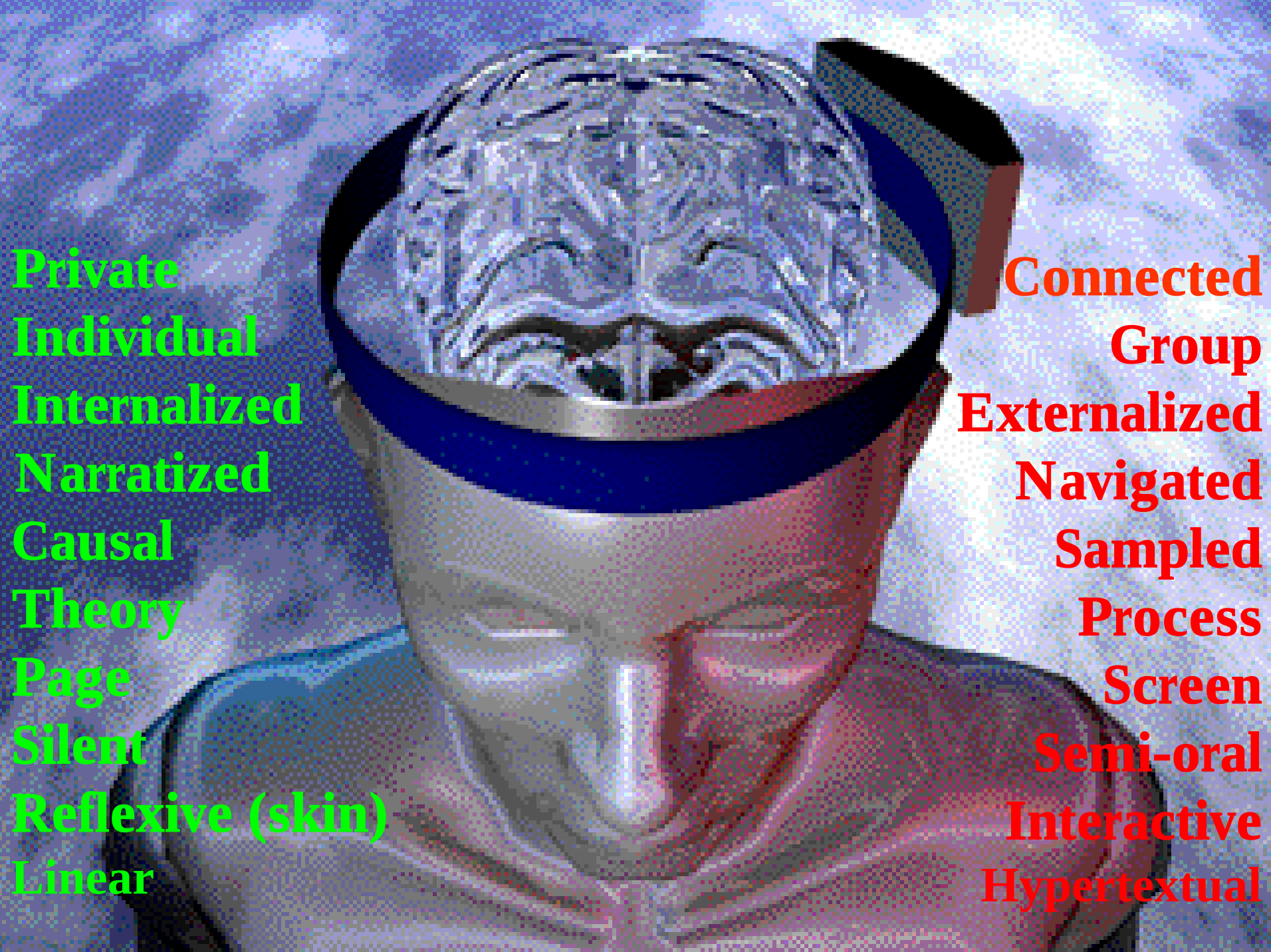
Stelarc connects his CNS to someone else's via the www





Warwick implants sensors for contextual cues from the environment


A change of mind


Private
Individual
Internalized
Narratized
Causal
Theory
Page
Silent
Reflexive (skin)
Linear
Connected
Group
Externalized
Navigated
Sampled
Process
Screen
Semi-oral
Interactive
Hypertextual

Hypertextual thinking

Your horoscope

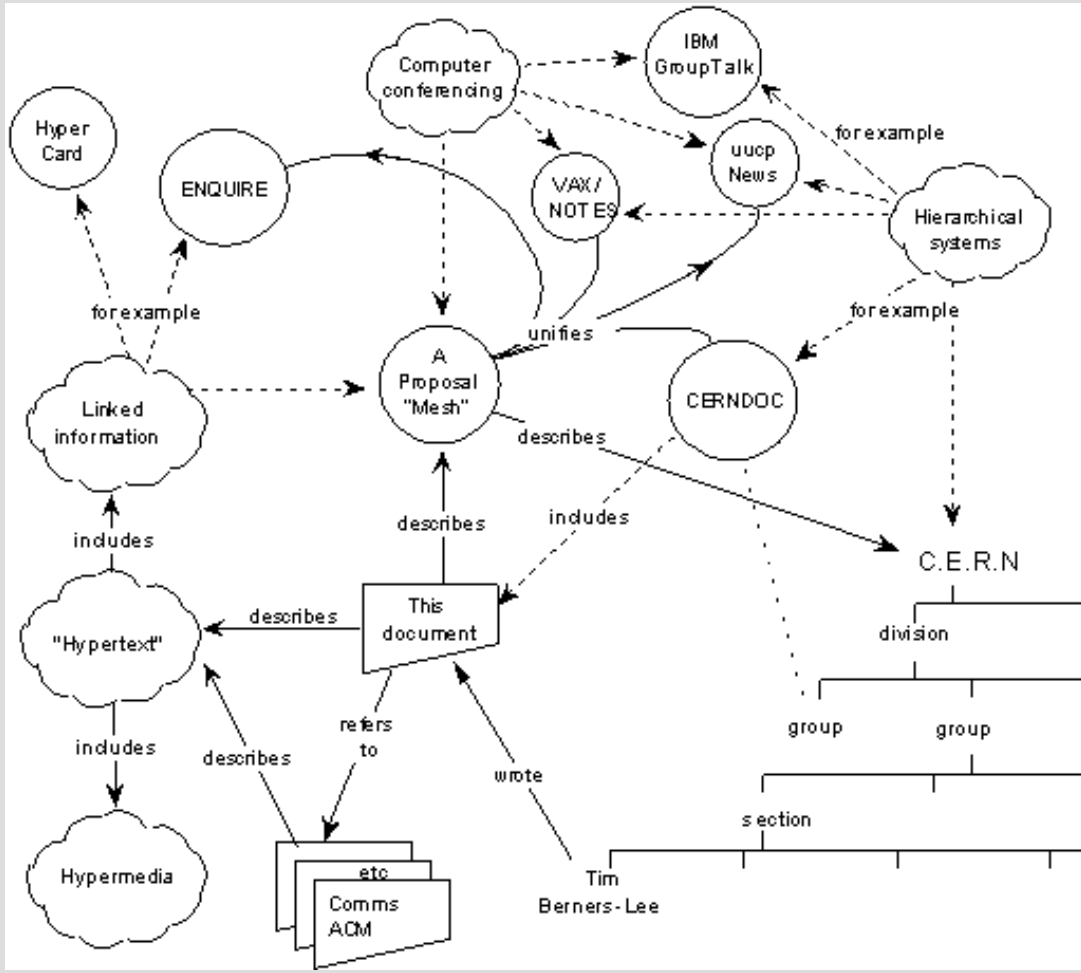
The I Ching

Palabra, dreaming, prayer, simulation

Hypertextual thinking an issue of time, not space:

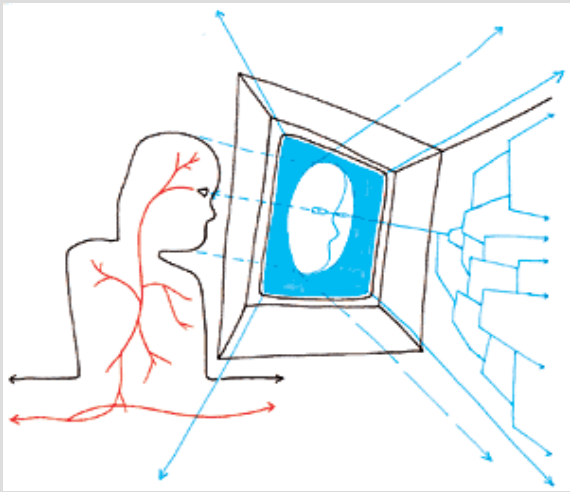
- **The only time that counts is NOW**
- **All links and connections are made in REAL TIME**
- **All simulations are manner of prediction (pregestual)**

Under electronic conditions, the delay between project and realization is shortening



Mind-machine-direct-connect

- **The image as close to thought as possible**
- **Closing the gap between the mind and external I-P**
- **Every move, every glance a command (hand / eye / brain ratio)**
- **Emigration of mind from head to screen**



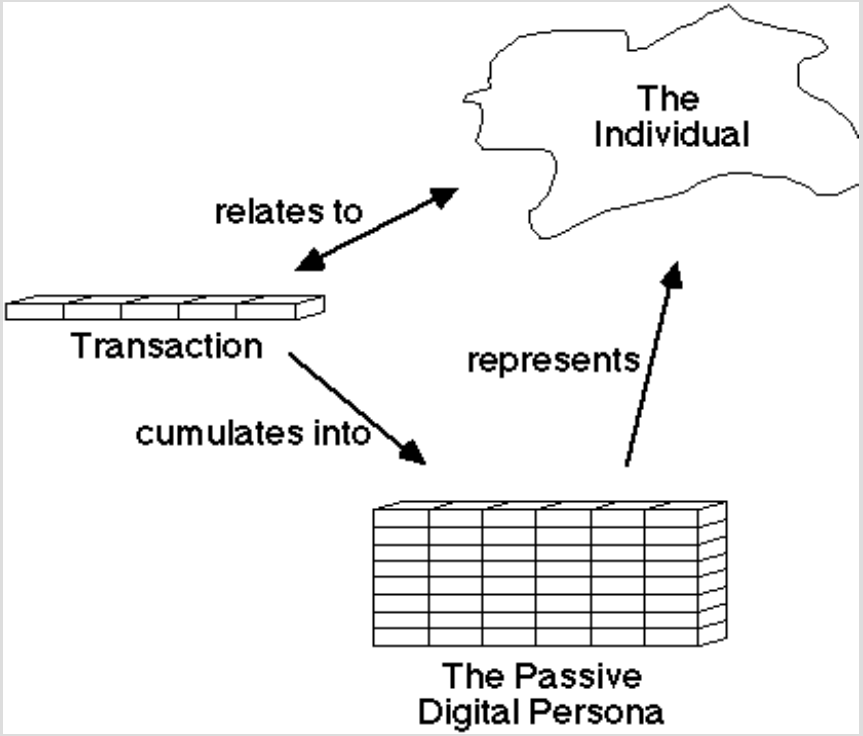
Mark Ngui

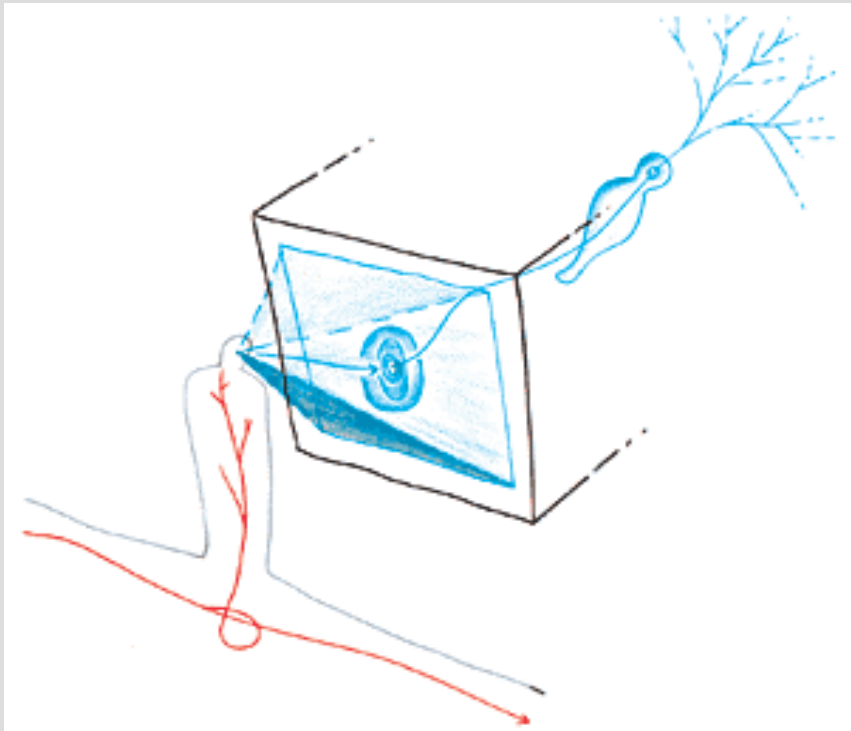
The Digital Persona: Unorganized Elements

Mailstop
Connection Speed
Emergency Phone
Title
Remote Access?
Badge Issue date
Geographic Region
Social Security Number
Phone Number
Direct Reports
Badge Exp Date
Directory Photo
Floor Number
Building Authority
Remote Access Login ID
Primary Dial-in Number
Challenge Phrase
Response
Admin Name
Department Name
Badge Photo
Monitor Serial Number
Employee Number
Building Access Authorizations
Building Badge Number
Email Absence Message
Cell Phone Serial Number
Fax Number
Airline Seating Prefs
Frequent Flyer Numbers
Password
Challenge Phrase
Home Address
Password Expiration
Primary Machine Name
IP Address
Pager Number
Remote Access password
Login ID
Home Phone Number
Login Exp Date
Initials
Laptop Serial Number
Mobile Phone Serial Number
College Name
Cubicle Number
Browser Version
Personal Email Address
Mouse Serial Number
License Plate
Emp Grade Level
MS Office Version
Room Number
Emergency Contact
Work Address
Project Responsibility
Primary Printer
Password Change Date
Keyboard Serial Number
Cell Phone Number
Building Number
Location
Personal Group
Department URL
Mailing Address
Desktop OS Version
Network Drops
Active ports
Desk Number

Hometown

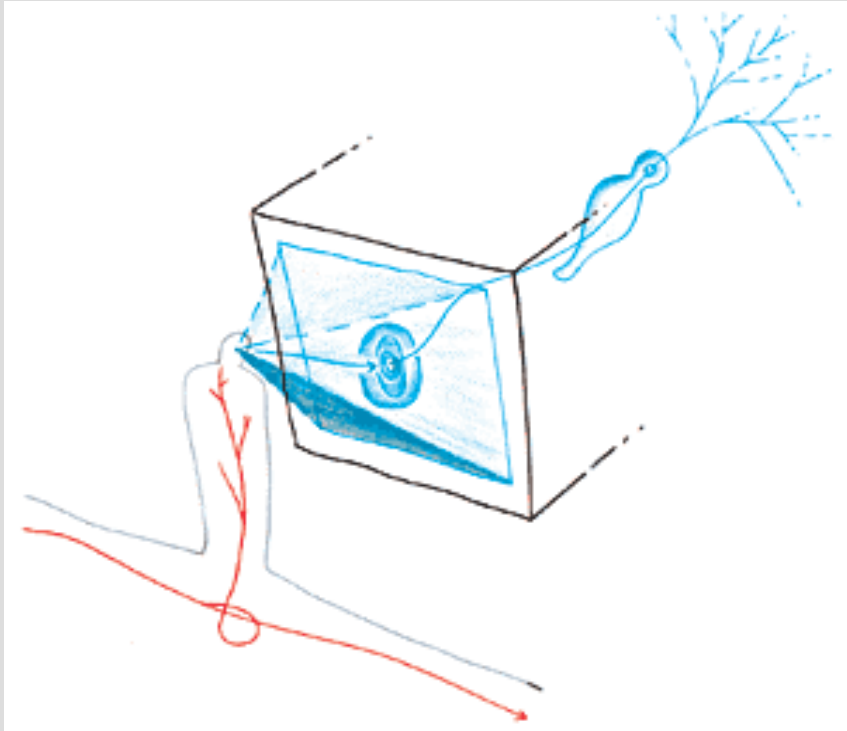
Digital persona





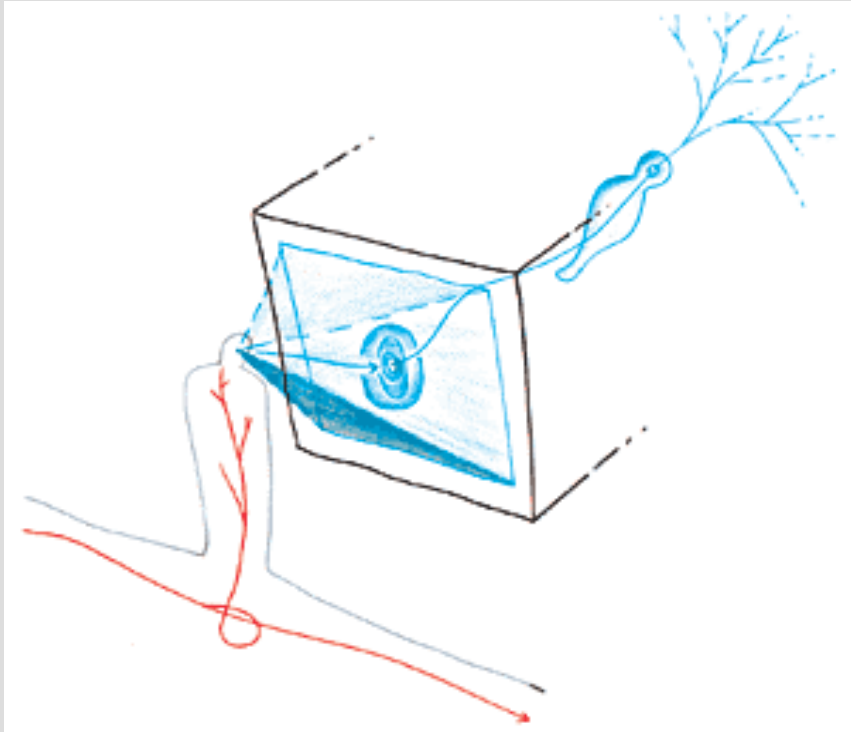
Digital persona

- The digital persona is a model of the individual established through the collection, storage and analysis of data about that person.
- (It is) intended for use as a proxy for the individual (Roger Clarke).



Digital persona

- Projected versus imposed
- Formal versus informal
- Passive versus active versus autonomous
- Private versus public



Digital community: blogging

The blog is the soul of the cyborg

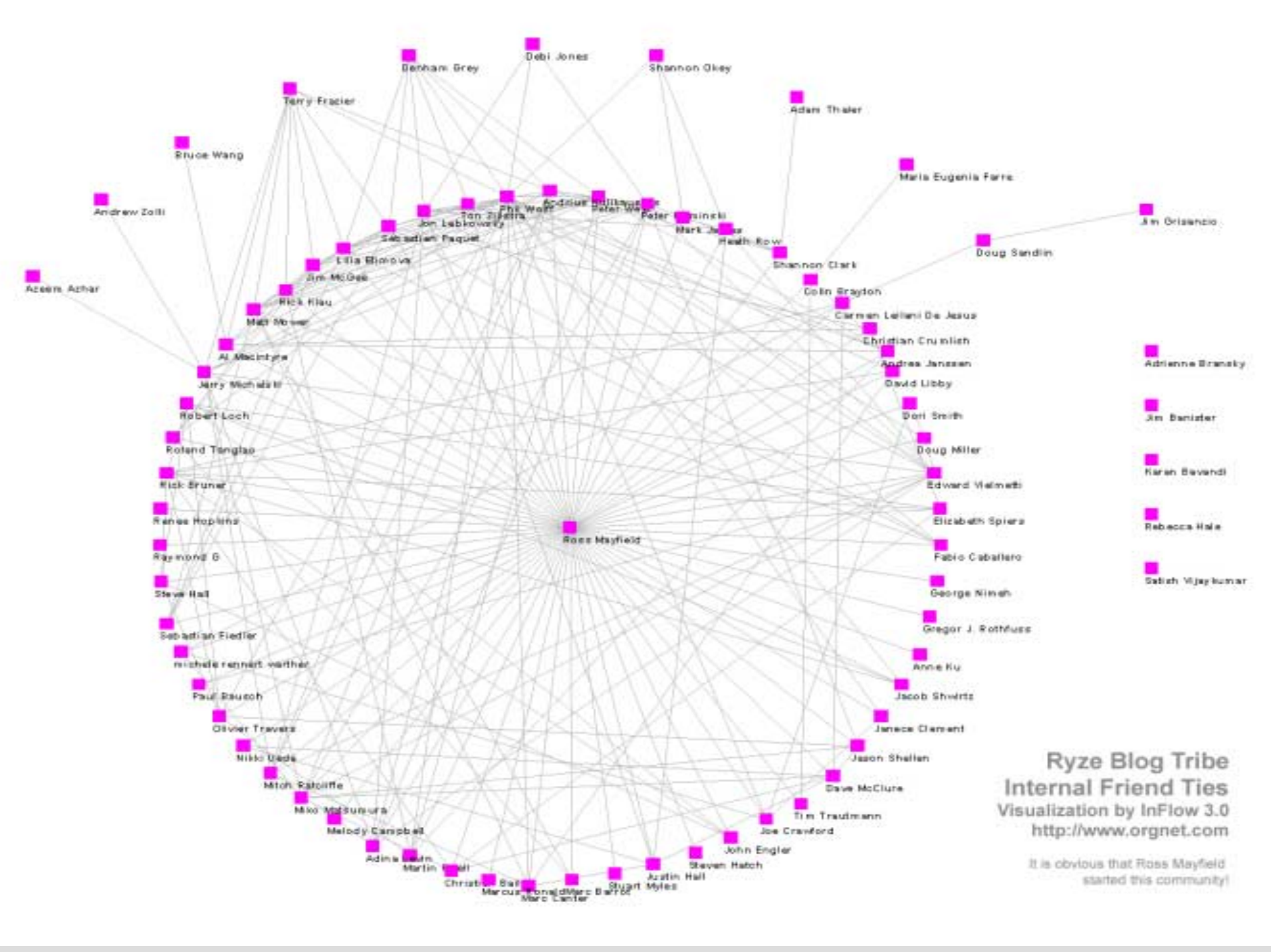
A connected psychology

A projected chosen self image

A community of interest

A new digital community

“Publicy”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Adam Thaler
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Maria Eugenia Ferra
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Jim Grisanzio
Doug Sandlin
Sebastien Paquet
Lilia Blonova
Jim McGee
Azeem Azhar
Rick Klau
Matt Mower
Shannon Clark
Colin Grayton
Carmen Leilani De Jesus
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Al Macintyre
Andrea Janssen
Adrienne Bramsky
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David Libby
Robert Loch
Dori Smith
Jim Banister
Roland Tanglao
Doug Miller
Karen Bevandi
Rick Bruner
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Elizabeth Spiers
Rebecca Hale
Ross Mayfield
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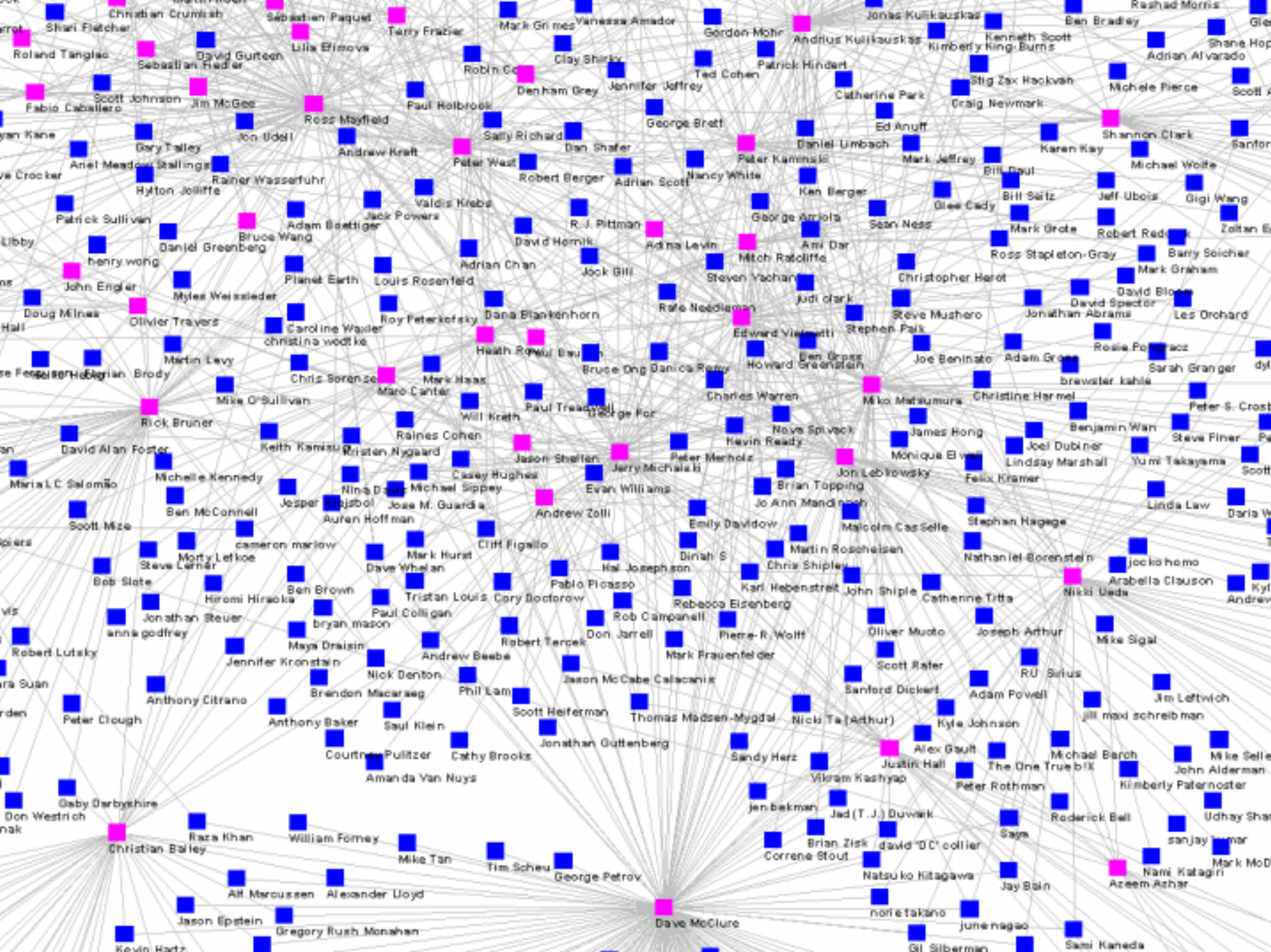
Fabio Caballero
Satish Vijaykumar
Steve Hall
George Nimeh
Sebastian Fiedler
Gregor J. Rothfuss
michele rennert werther
Anne Ku
Paul Rausch
Jacob Shwirtz
Olivier Travers
Janece Clement
Nikki Ueda
Jason Shellen
Mitch Ratcliffe
Dave McClure
Miki Matsumura
Tim Trautmann
Melody Campbell
Joe Crawford
John Engler
Steven Hatch
Justin Hall
Stuart Myles
Ryze Blog Tribe
Internal Friend Ties
Visualization by InFlow 3.0
http://www.orgnet.com
It is obvious that Ross Mayfield started this community!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Roland Tanglao
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Lilia Efimova
Robin Cook
Clay Shirky
Ted Cohen
Patrick Hindert
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Nathaniel Borenstein
cameron marlow
Cliff Figallo
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Justin Hall
The One True b1X
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Vikram Kashyap
Peter Rothman
Kimberly Paternoster
Gaby Darbyshire
Roderick Bell
Christian Bailey
Raza Khan
William Forney
Mike Tan
Tim Scheu
George Petrov
Correne Stout
Natsuko Kitagawa
Azeem Azhar
Alf Marcussen
Alexander Lloyd
Jason Epstein
Dave McClure
Gregory Rush Monahan
Kevin Hartz
Gil Silberman
Sami Kaneda

We are immersed into a data matrix

ENABLING IMPLICIT HUMAN COMPUTER INTERACTION

ISWC

A Wearable RFID-Tag Reader

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Abstract

Implicit human computer interaction is based on the concept of using user activity in the real world as input to computers. Implicit HCI can help to reduce the problem of user input to wearable computers. In this paper we report on wearable RFID technology that facilitates applications that are triggered by handling tagged physical objects. We also report on a case study in which the technology was integrated with an enterprise resource planning system to optimize work processes that involve physical objects.

Introduction

In traditional computing hard- and software is mainly designed to support users in office environments (e.g. desktop computers with keyboard and mouse). Human computer interaction (HCI) is based on an explicit metaphor – the users explicitly request actions that should be performed by the computer.

In wearable computing it is much more difficult to provide input to the system. Most available input devices for explicit interaction either carry a high cognitive load (e.g. Twiddler), are hardly usable when the user is moving (e.g. pen input, arm mounted keyboards, pointing devices), or have significant performance problems in real-world deployment (e.g. speech recognition).

In the case studies described in this paper we explore implicit HCI using RFIDs and a wearable tag reader. The term *implicit HCI* describes user actions that are not primarily aimed to interact with a computer, but which are recognized by the computer and used as input.

In many work situations physical goods are at the center of the tasks that workers perform. We made the following assumption to enable implicit HCI: knowledge of which physical objects are handled and of the tasks that determine a work situation enables the system to reason on the intention of the user.

RFID Tags and Readers

RFID systems consist of tags and readers. These technologies have been widely applied over recent years for identification and tracking applications.

Passive RFID tags are small electronic components with an integrated circuit and a small antenna usually sealed in one small package. The tags do not need a battery, they are energized during access by the reader via electromagnetic induction.

The reader is an electronic component that supplies energy to the tags for a short time and then communicates with the tag.

A Wearable Tag Reader

For our case studies we build a wearable tag reader. We also made different types of coils that are integrated into clothing or worn on the body.

We build and used different coils with the reader, which have been connected with a cable to the tag-reader. The coil used in the case study described below is made of a flexible wire sewn into a work glove. The usage scenario determines the type of coil and its placement in clothing. The wearable computer is connected via serial line to the reader module.

Software – Giving Meaning to Tags

Each tag has a unique id. The reader sends this string continuously over the serial line to the wearable computer while a tag is nearby. To build systems that are flexible and can easily make use of the information we decided to implement software that maps RFIDs to URLs on the WWW.

The software has three parts: a module that listens on the serial port, a web browser component, and a mapping table. When a ID appears on the serial line this ID is mapped to an URL, then the web browser is called with this URL. The software is implemented using Visual Basic and run on MS-Windows based systems.

Case Studies

We have used this system to explore implicit human computer interaction based on RFID tags. The first case demonstrates a implementation of real world bookmarks. The second shows how complex business processes can be simplified using the suggested technology.

Real World Bookmarks

Physical objects have often a specific meaning to the user. When their identity is associated with a URL, objects can serve as real-world bookmarks. We have explore a range of examples that employ object/URL mappings:

- Objects to trigger applications: pick up pen: open editor by calling a URL with an empty document
- Objects as bookmark to information: wooden spoon suggesting a recipe
- Personal object to access individualized information: wallet show user's stock portfolio

Integration with mySAP.com

The tag reading system is integrated with mySAP.com enterprise resource planning components like R/3 using the middleware product SAP Business Connector. By mapping the tag IDs to specific URLs the integration of business functionality accessible by remote enabled function calls (BAPI's) and IDocs (Intermediate Documents) is implemented. The output format is either XML or HTML that can be displayed by the browser.

The wide range of typical applications includes data reading/recording in inventory management, warehouse management, production planning, logistics execution or quality management. As an example an employee equipped with a wearable RFID reader can check incoming deliveries against the purchase order stored in SAP R/3 by reading the tag that was on a packing list. If the check has been successful the goods receipt could be automatically posted. In another scenario a quality inspector records inspection results in SAP R/3 by sorting out bad parts.

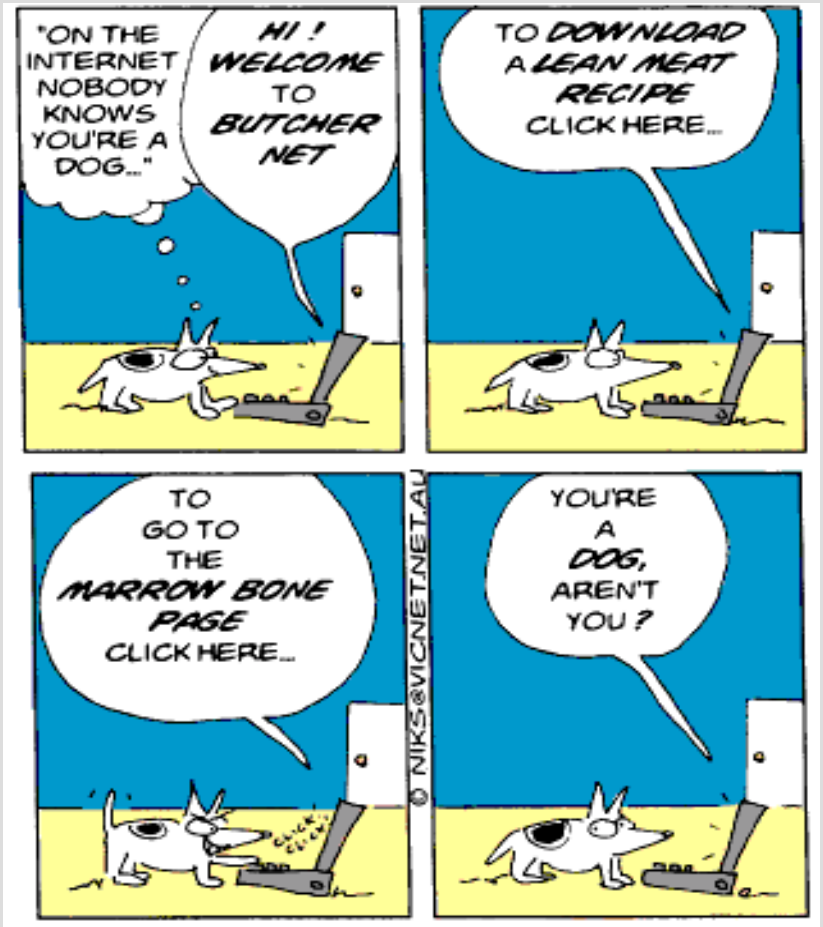
Conclusion

In the paper we argued in favor of implicit HCI to address the problem of user input to wearable computers. We described a hardware and software implementation of a wearable tag reading system enabling implicit HCI. In this system RFID tags attached to physical objects are associated with URLs. This mechanism makes it easy to build applications using standard web technology or to integrate the RFID system with existing systems, such as SAP/R3.

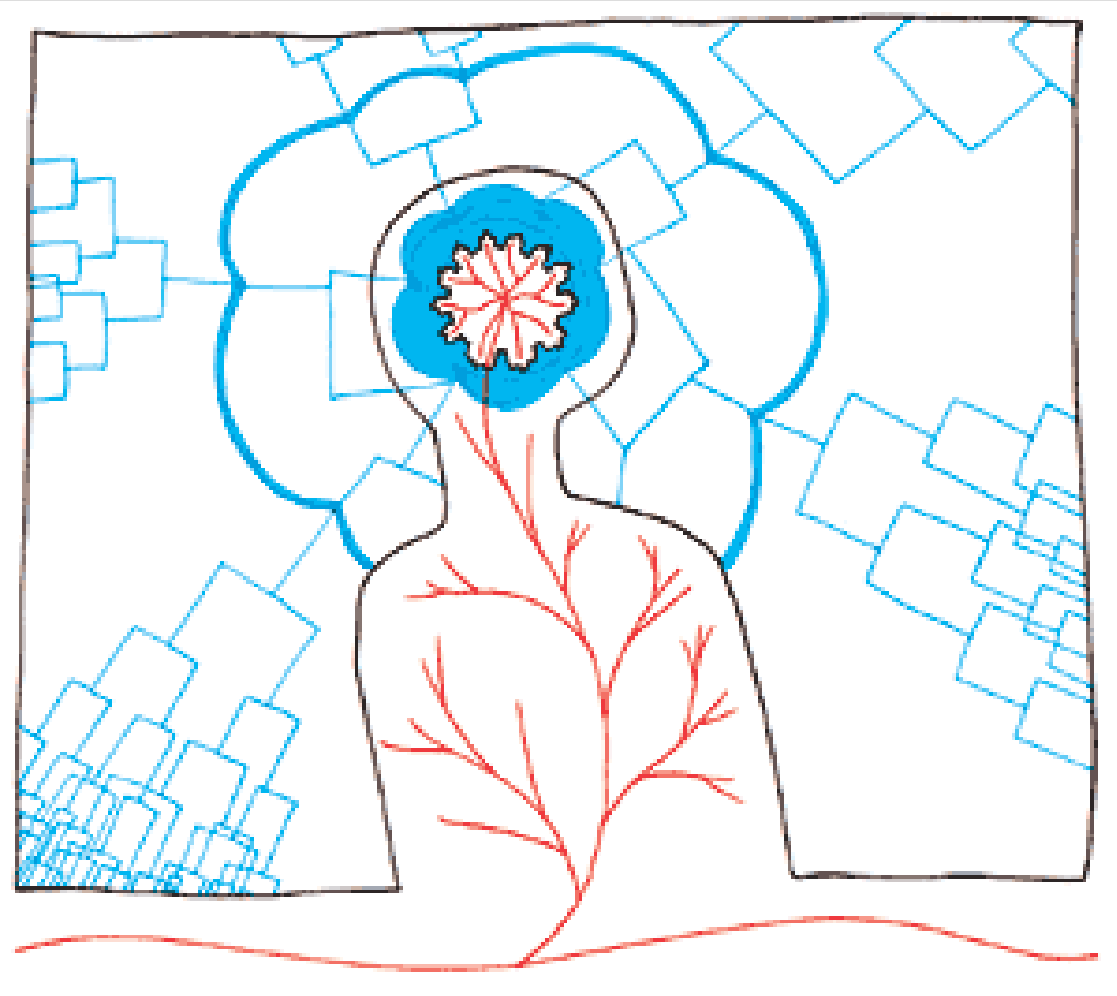
YESTERDAY'S DOG JOKE

"On the Internet, nobody knows you're a dog."

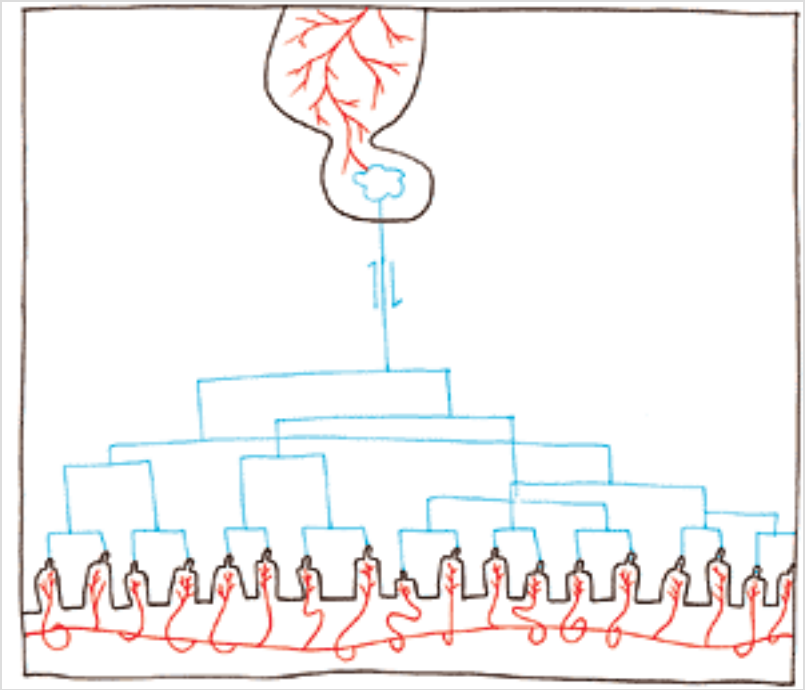
TODAY'S DOG JOKE



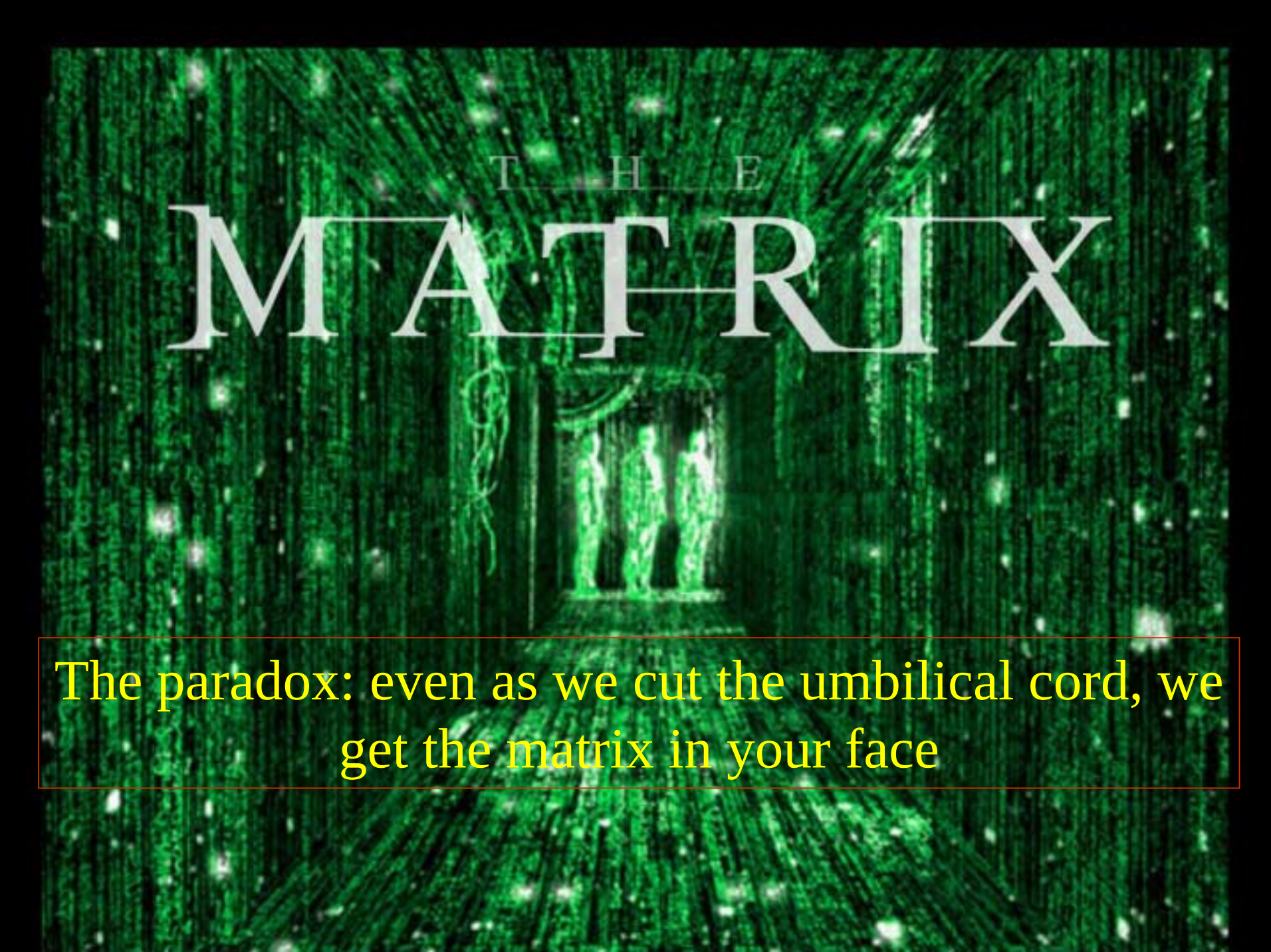
The big trade-off: If you have access to everything it means that…



…everything has access to you



Anytime, anywhere, always on…



The paradox: even as we cut the umbilical cord, we get the matrix in your face

Anxieties over civil liberties

HOMELAND SECURITY

National Governors Association

Prevention and Response

• Critical infrastructure protection
• Cyber security
• First responder support
• Preparedness training
• Incident monitoring and response

Citizen Interaction

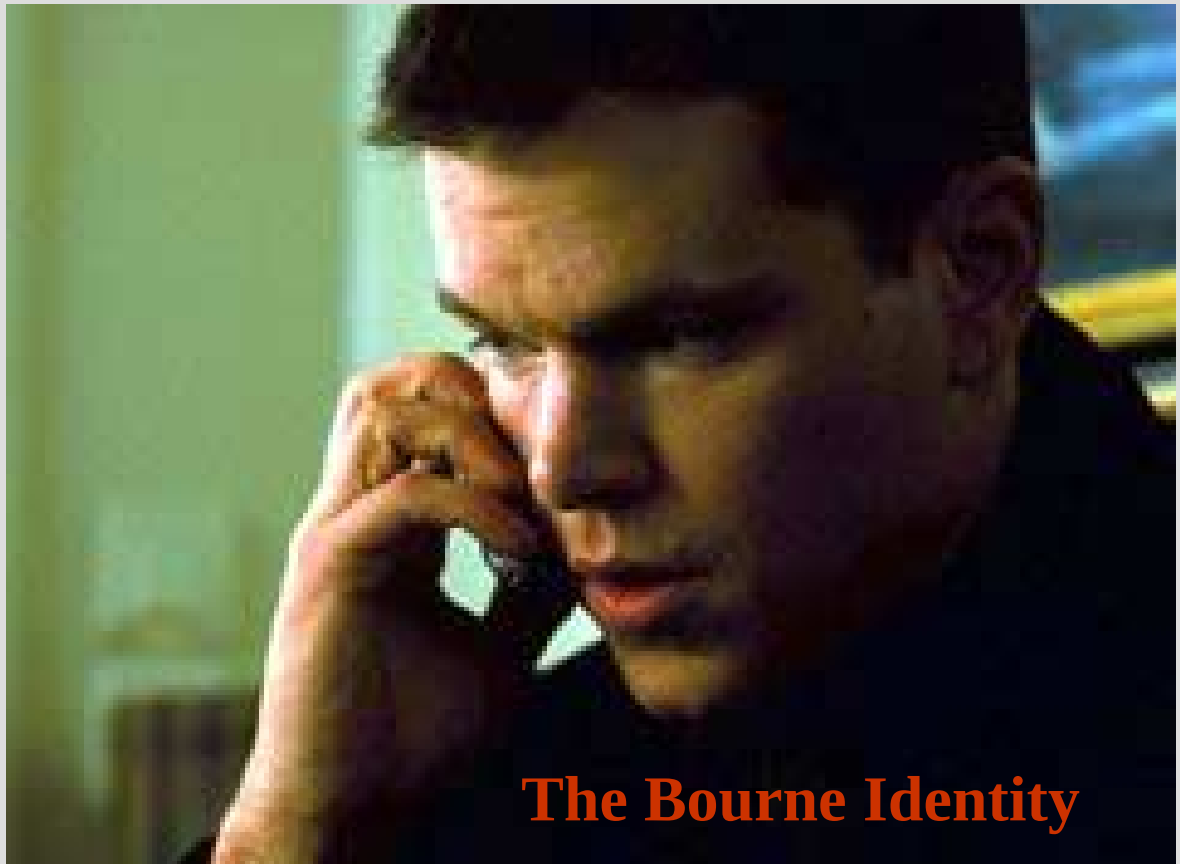
• Public awareness & reporting
• Education
• Alert systems

Information Sharing and Data Exchange

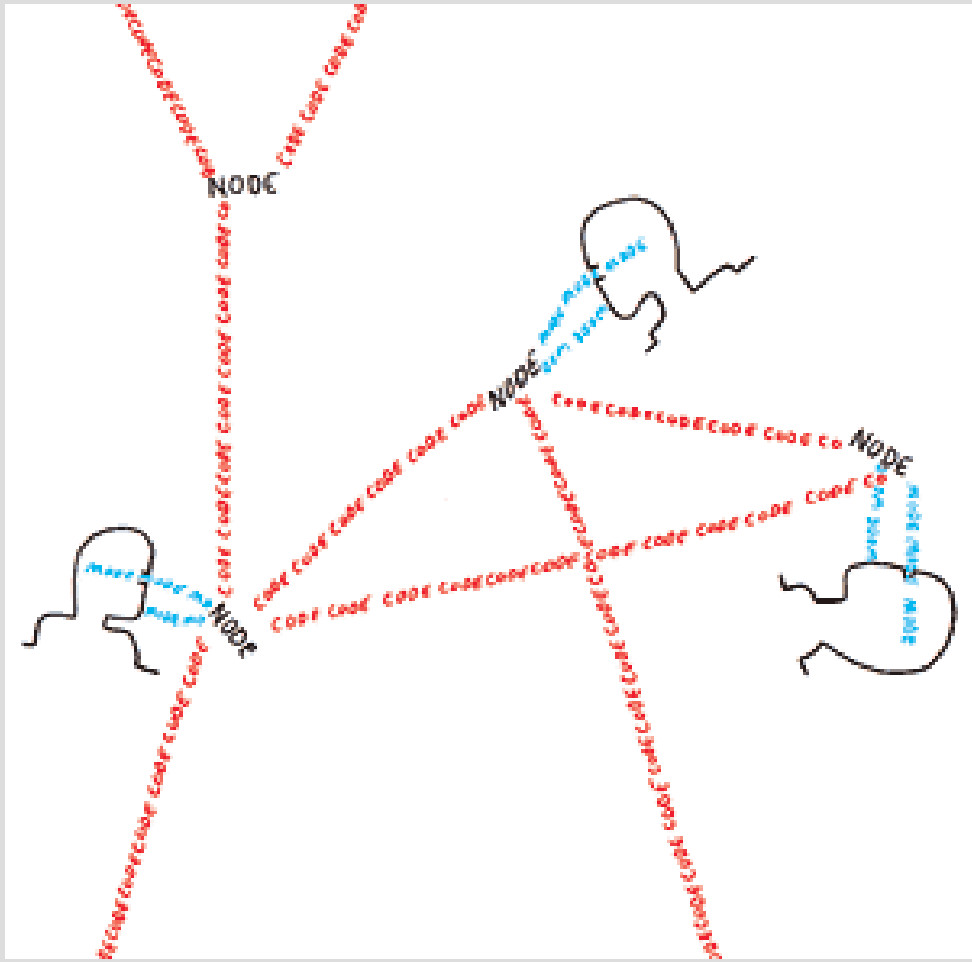
• Regional intergovernmental information exchange
• Decision support
• Real-time information
• Interoperability

The NGA Center for Best Practices developed the Solutions Toolkit in cooperation with its Corporate Fellows eGovernance Advisory Group.

Anxieties over leaking identity

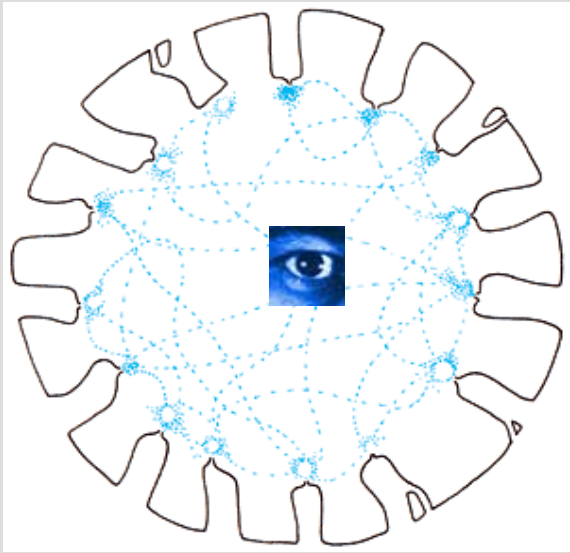


Dataveillance
« The more they know about you, the less you exist » (McLuhan)



Identity verification and management in the datasphere (Shannon Smith)

- Biometrics (fingerprints, retina, smell, face & voice)
- Digital Cash
- Prepaid Services
- VPNs
- Smartcards
- Virtual Desktop
- Policy / Legal
- Passwords
- Copyright
- Privacy
- Passports / Visa
- Drivers License



- Corporate, National, Global ID
- Total Information Awareness
- Personal Information Audit
- Surveillance Organizations
- IBM, HP, Logitec, TI
- ATT / BT / FT / DT
- big banks
- EFF.org
- Mobotix
- Schlumberger
- EU / USA / China
- Japan / Interpol
- / FBI / CIA / NSA

The eye of the medieval God

The bigger question: is transparency destiny ?

For there is nothing hid, which shall not be manifest; neither was anything kept secret, but that it should come abroad.

(Mark 4:22)