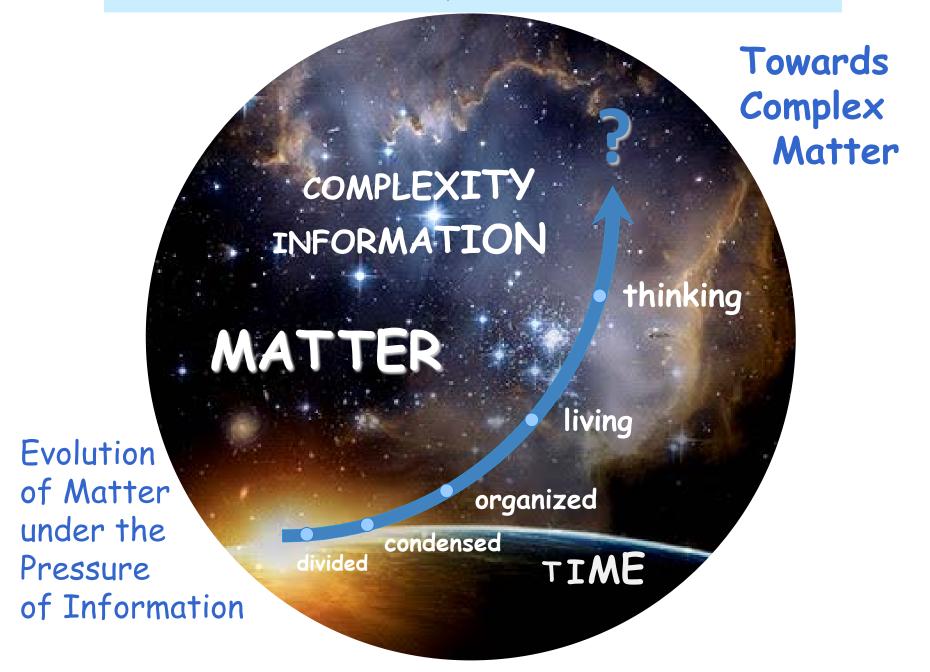
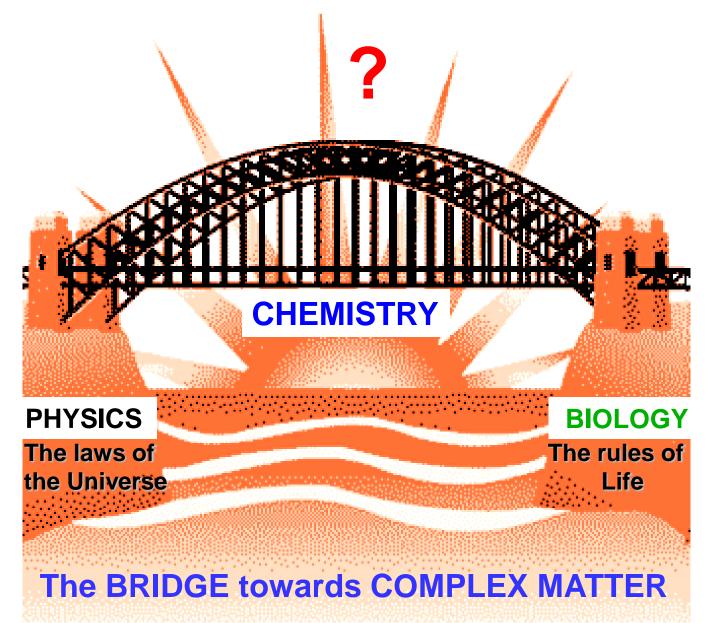


# EVOLUTION of the UNIVERSE



### **HOW DOES MATTER BECOME COMPLEX**



# **SELF-ORGANIZATION**

as a **COSMIC IMPERATIVE** 



THE PATH TOWARDS COMPLEX MATTER

DIVIDED – CONDENSED - ORGANIZED LIVING – THINKING MATTER !



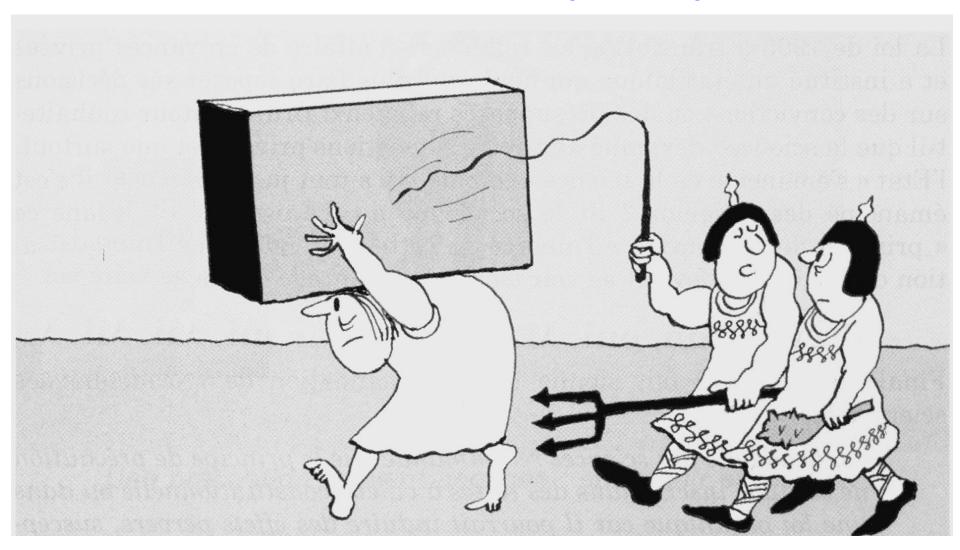
# **HOMO**SAPIENS



Auguste RODIN

# → SCIENCE

### WHY Scientific and Technological Progress ?



It would be stupid to invent the wheel!

## Invention and Progress......

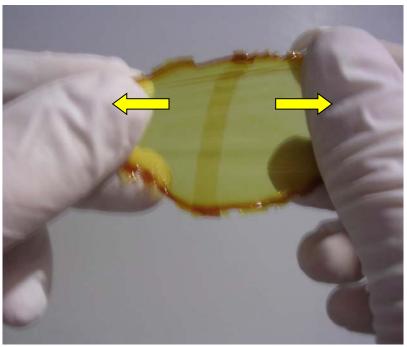


"It may not be a perfect wheel, but it's a state-of-the-art wheel."

# Self-Healing Dynamic Polymer Film







# SUPRAMOLECULAR POLYMERS first publication in 1990 as BIOCOMPATIBLE POLYMERS

First Worldwide Application for Cardiovascular Implants

Development by the company **XELTIS** of cardiovascular implants based on supramolecular polymers

Surgical treatment of children born with severe congenital cardiac malformation and requiring cardiac reconstruction.

FIRST In MAN: A breakthrough in surgical practice

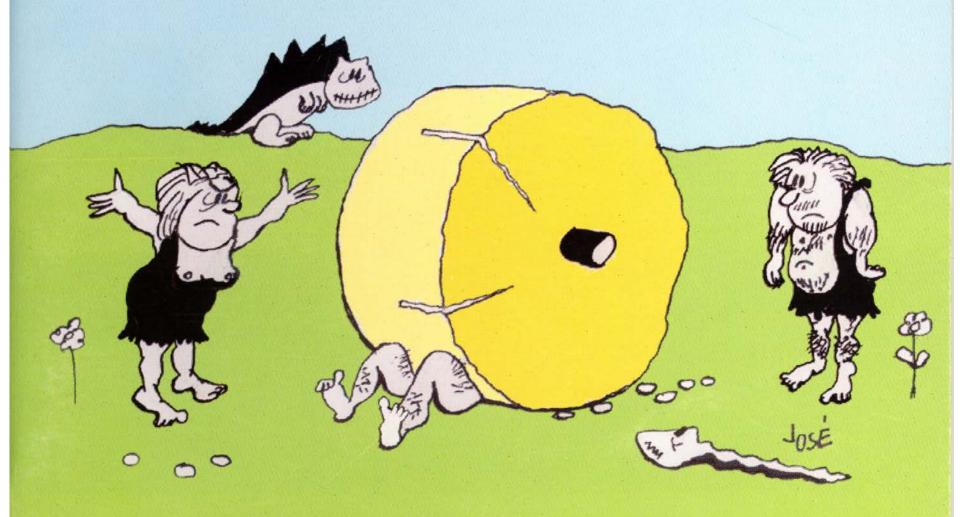


Three months check-up

First implantation on a 4 year old girl successfully performed by Professor **Leo BOKERIA**, (Bakoulev Scientific Center of Cardiovascular Surgery, Moscow) on October 23rd 2013.

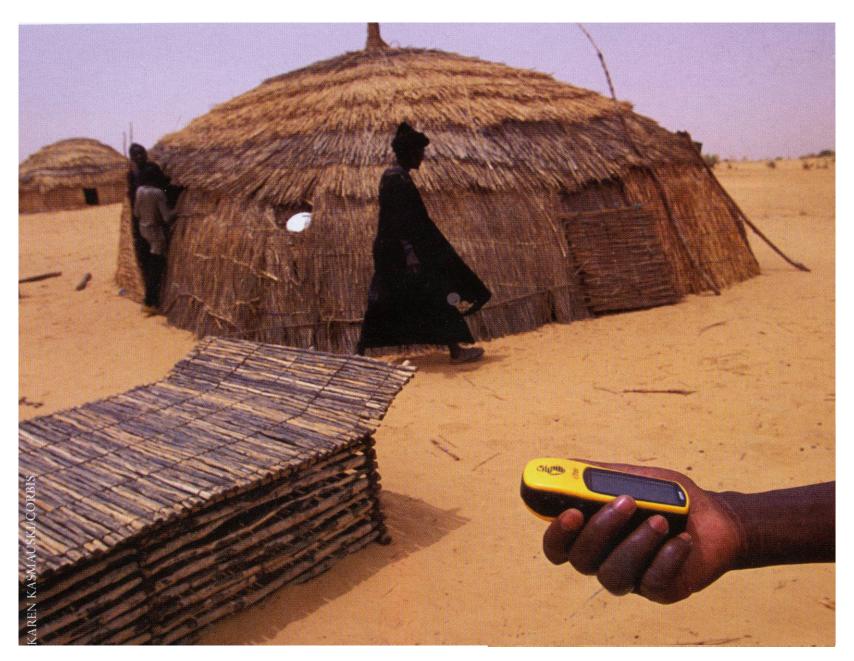
Dp to now: 5 successful implantations performed

### Rational choice, Risk Assessment and Precautionary Principle

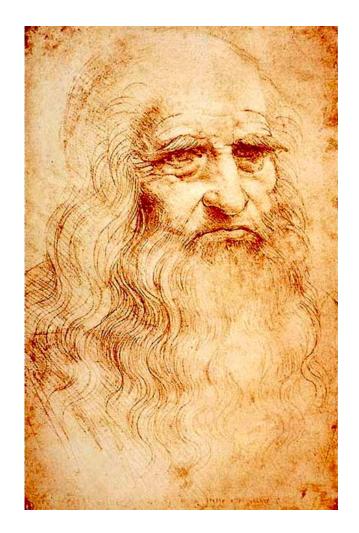


One invents the wheel..... And here is the result!

The IT Shunt: from the desert to the world



### NOT JUST « NATURAL »



" Là dove natura finisce di produrre le sue spezie, quivi l'uomo comincia con le cose naturali, con l'auditorio di essa natura, a creare infinite spezie."

Leonardo da Vinci

"Where nature finishes to produce its own species, man begins, using natural things, in harmony with this very nature, to create an infinity of species."

Leonardo da Vinci

(1452 - 1519)

# MAN - MADE !!

# The ESSENCE of SCIENCE is not just to discover but to

#### CREATE

#### NOVEL EXPRESSIONS of COMPLEX MATTER

The BOOK of Science is not just to be read, it is to be WRITTEN

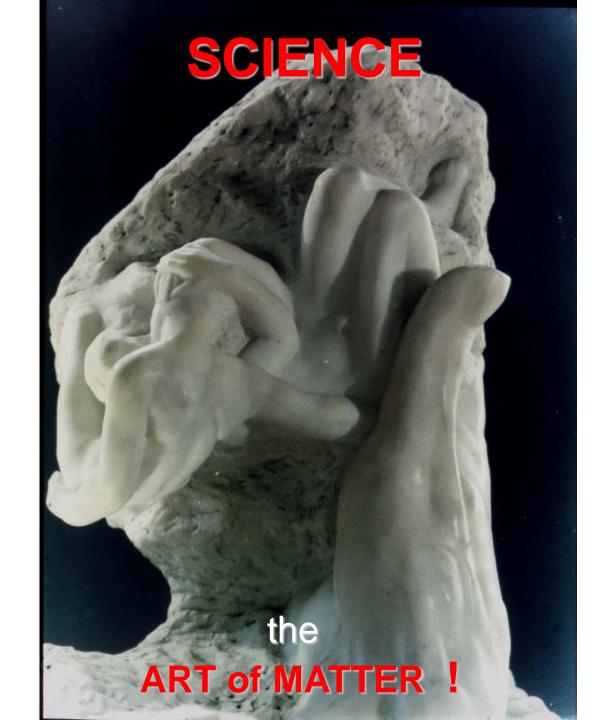
The SCORE of Science is not just to be played, it is to be COMPOSED

# SCIENCE THE CREATIVE POWER



# Auguste RODIN

(1840-1917)







PROMETHEUS

CONQUERED THE FIRE,

we cannot give it back.

Our path leads us from the TREE OF KNOWLEDGE to the CONTROL OF OUR DESTINY!

# Lucas CRANACH the Elder

(1472-1553)

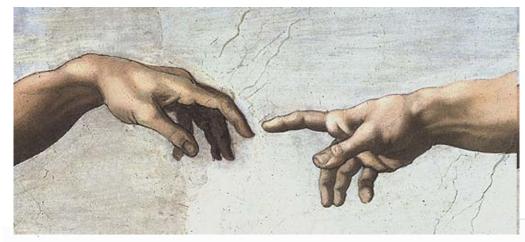
#### Eve

picking the Forbidden Fruit of the Tree of Knowledge:

the Birth of Science!



Future.....?



Present.....

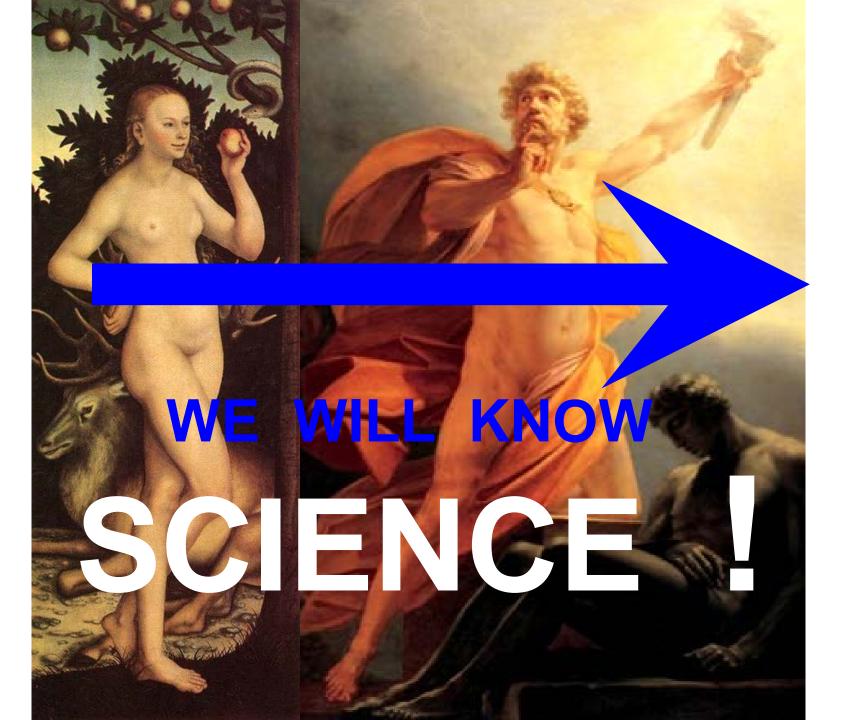






David HILBERT (1862-1943)

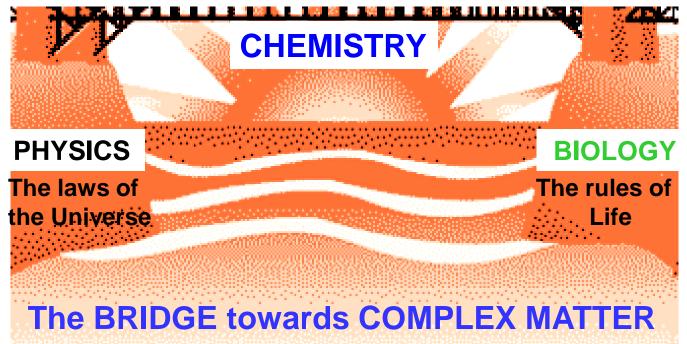






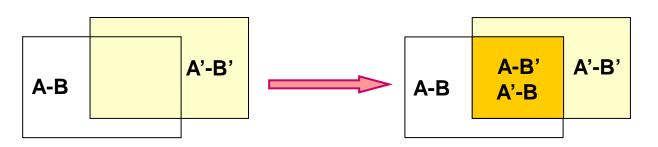
### HOW DOES MATTER BECOME COMPLEX

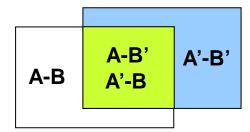




#### **DYNAMIC MATERIALS: OPTO DYNAMIC POLYMERS**

Color and fluorescence changes of dynamic polymers induced by bond recombination through the interface





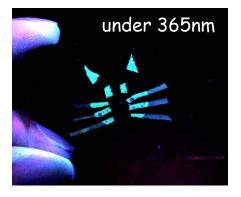
The two polymer films are cut with scissors and superimposed





Color

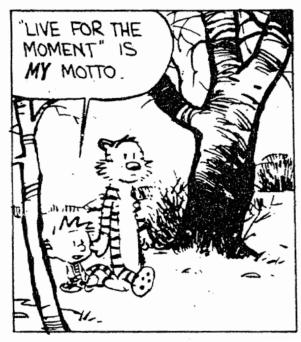
#### Fluorescence



yellow-green fluorescence only where superimposed



smart optical materials responsive to external stimuli



YOU NEVER KNOW HOW LONG YOU'VE GOT! YOU COULD STEP INTO THE ROAD TOMORROW AND - WHAM - YOU GET HIT BY A CEMENT TRUCK! THEN YOU'D BE SORRY YOU PUT OFF YOUR PLEASURES!



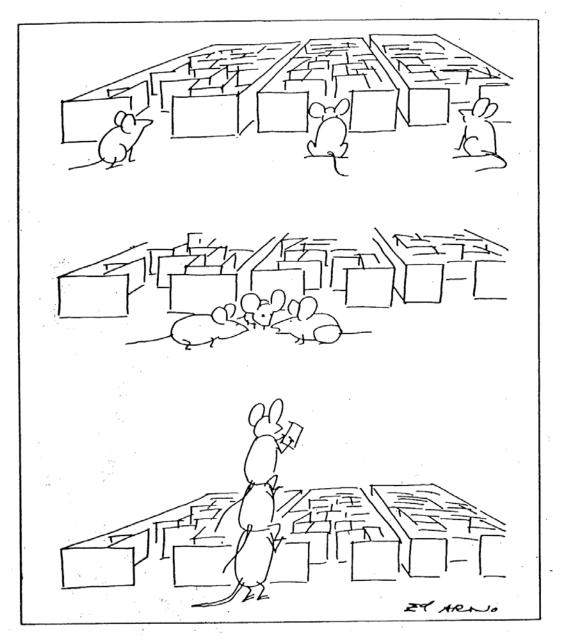
#### **CALVIN AND HOBBES**

The Precautionery Principle!





## COLLABORATION.....





# **HOMO**

# **SAPIENS**

# **BIONICUS**



Auguste RODIN



