

How to get hard science across

The importance of sharing the pursuit of truth

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Symbolic communication



Symbolic manipulation

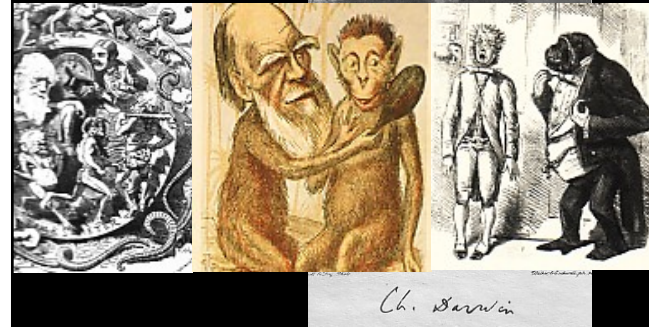


The “pagan rod”

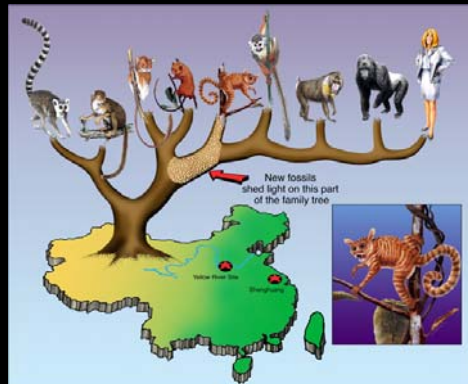
The case which did most to convert the Italian theologians to the scientific view was that of the church of San Nazaro, at Brescia. The Republic of Venice had stored in the vaults of this church over two hundred thousand pounds of powder. In 1767, seventeen years after Franklin's discovery, no rod having been placed upon it, it was struck by lightning, the powder in the vaults was exploded, one sixth of the entire city destroyed, and over three thousand lives were lost.

Charles Darwin

Variation
Natural selection



Shaping the tree of life

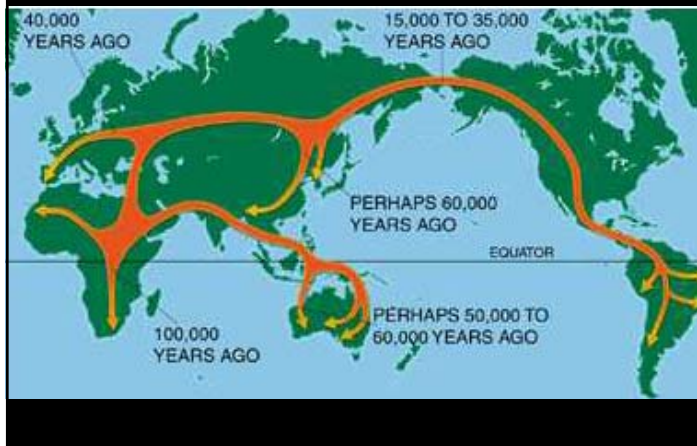


Bridging the gap..?



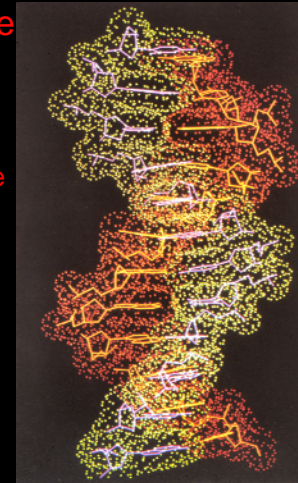
NRC
6 april 2006

The latest 200.000 years



The molecular structure

...that made us rethink life



DNA clears "killer"

Printer Friendly 9/1/09 10:17 AM

TIMESONLINE
From: The Times
March 12, 2009

DNA clears 'killer' Sean Hodgson after 30 years in jail

Sean O'Neill, Crime Editor
A convicted murderer who has spent nearly 30 years in prison for the death of a young woman in 1979 could not have been the killer, according to new DNA tests.

The case of Sean Hodgson, 58, has been referred to the Court of Appeal as a matter of urgency by the Criminal Cases Review Commission and he is expected to be freed next week. The commission said that the findings raised serious concerns about the safety of many other murder convictions and called for a wideranging review of scores of cases.

A spokesman said: "We have decided to contact the Director of Public Prosecutions to discuss the desirability of a project to identify and review similar murder cases arising from the time before DNA testing and where testable forensic evidence still survives, which could confirm or cast doubt on the safety of a conviction, and where the defendant is still alive. A guilty plea or the existence of admissions should not exclude cases."

Julian Young, Hodgson's solicitor, said: "Will this open the floodgates? I would say anyone who believes that they've been wrongly convicted, and thinks DNA tests would help, should contact a lawyer immediately."

Hodgson, who is mentally ill and held in the hospital wing of Albany jail, was convicted in 1982 of the murder of Teresa de Simone, 22, whose body was found in her car in Southampton in December 1979.



Teresa De Simone, who was

15 Answers to

When Charles Darwin introduced the theory of evolution through natural selection 143 years ago, the scientists of the day argued over it fiercely, but the massing evidence from paleontology, genetics, zoology, molecular biology and other fields gradually established evolution's truth beyond reasonable doubt. Today that battle has been won everywhere – except in the public imagination.

Declining Darwinism

Darwinisme taant in VS

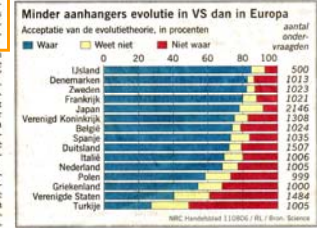
Door onze redactie wetenschap
KOTTERDAW, 11 NOV. Drie keer
zoveel Amerikanen twijfelen aan
de evolutietheorie als twintig jaar
geleden. Dat blijkt uit gegevens
die vandaag zijn gepubliceerd in
een artikel in het wetenschappelijk
tijdschrift Science.

Van de Amerikanen vindt nu 40
procent dat de evolutietheorie aan-
nemelijk of zeker waar is (was 45).
Ook het aantal dat de theorie af-
wijkt daalde, van 46 naar 39 pro-
cent. Het percentage twijfelers
verderovoudigde echter van 7 pro-
cent in 1985 naar 21 procent twee-
tig jaar later.

Alom 2005 neemt onder de
de Amerikaanse bevolking dat de
evolutietheorie "zeker niet waar"
is. In Europa daarentegen schone-
melt het percentage anti-evolutio-
nisten rond de tien procent. Het
verschil moet volgens Jon Miller
van Michigan State University, een
van de auteurs van het artikel, gro-
tendeels worden verklaard uit de
sterke politisering van het onder-
werp "evolutie" in de VS.
Miller en twee collega-onder-
zoekers baseren zich op een analy-
se van opiniepeilingen onder de
bevolking van de Verenigde Staten
en negen Europese landen, waar-
onder Nederland. Zoals te ver-

wachten, bloeit religieus funda-
mentalisme de houding van de on-
derzoekers ten aanzien van evo-
lutie het sterkst te beïnvloeden.
Die correlatie was twee keer zo
sterk in de Verenigde Staten als in
Europa. Volgens Miller zijn Ame-
rikaanse christenen veel meer dan
Europese gelovigen geneigd het
scheppingsverhaal in het Bijbel-
boek Genesis letterlijk te nemen.

De tijd dat wetenschap en tech-
nologie werden gezien als onpar-
tijlijke bringers van vooruitgang
is in Amerika voorbij, concluderen
de auteurs. De acceptatie van de
evolutietheorie blijkt ook sterk sa-
men te hangen met biologische
voorkennis van de geteste vrien-
den. Met die kennis is het echter
teurig gesteld: gemiddeld scoort
de bevolking een vier.



De role of the press

Even when reporters do know the difference, the conventions of he-said-she-said journalism get in the way of conveying that knowledge to readers. I once joked that if President Bush said that the Earth was flat, the headlines of news articles would read, "Opinions Differ on Shape of the Earth." The headlines on many articles about the intelligent design controversy come pretty close.

Curiosity



Questions?

What is??	Mythical	Science
Matter Space and time The universe Life and death The mind	Alchemy Astrology Creation Medicinan Religion	Physics Chemistry Math (Astro)physics Astronomy/Cosmology Biology/Medicin Psycho-Sociology
????	Magic Mystery Myth Esoterics Belief	Reason Logical analysis Critique Observation Falsification

Answers?

Question/ demand:

▪=> answer?

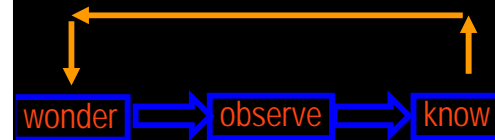
▪=> supply!

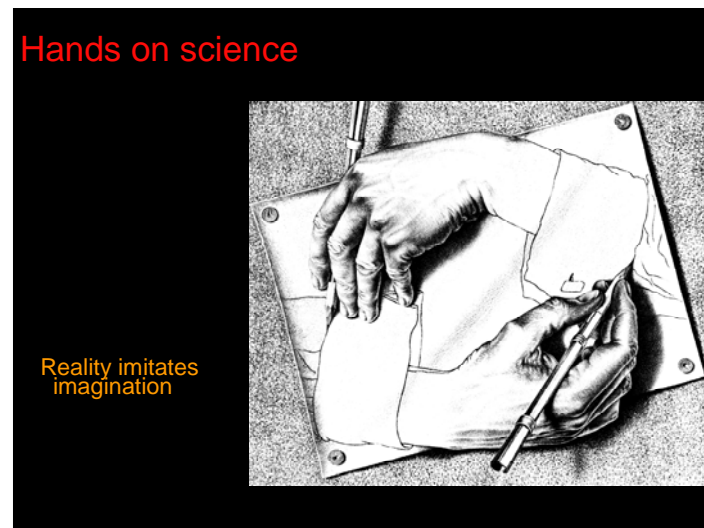
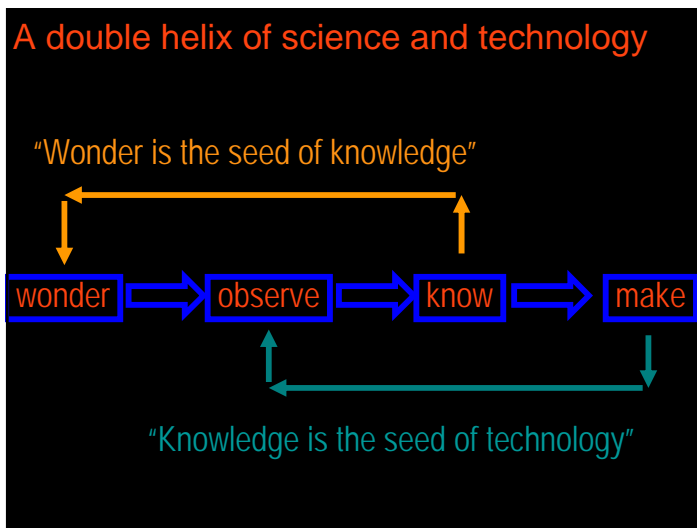
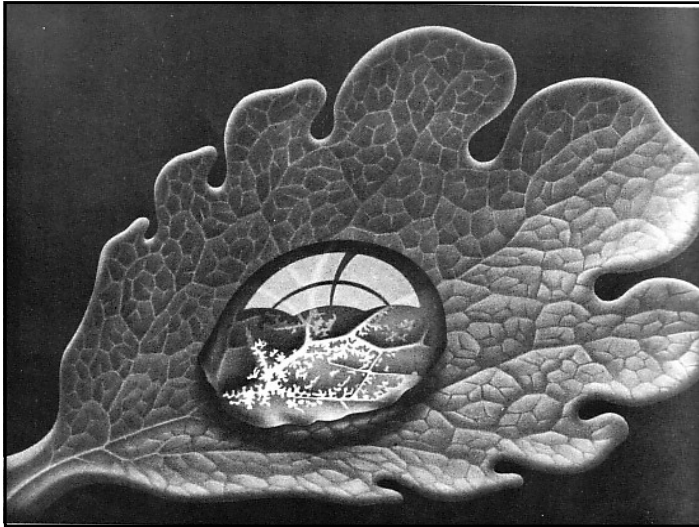
Science is the
systematic liberation
from the iron embrace of
prejudice



A double helix

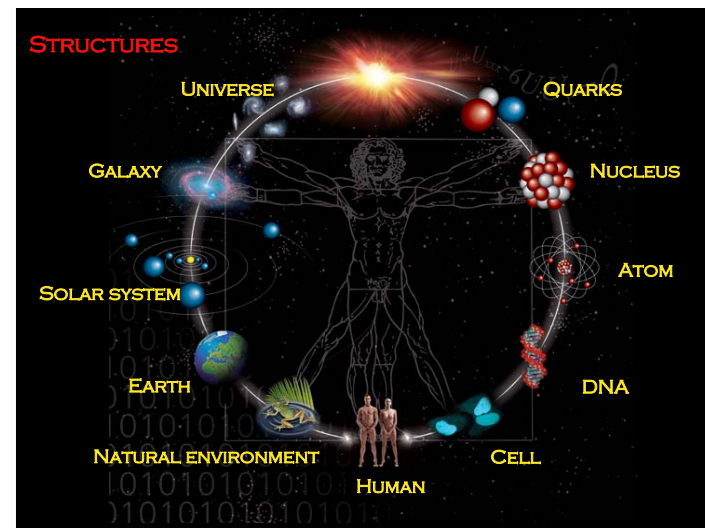
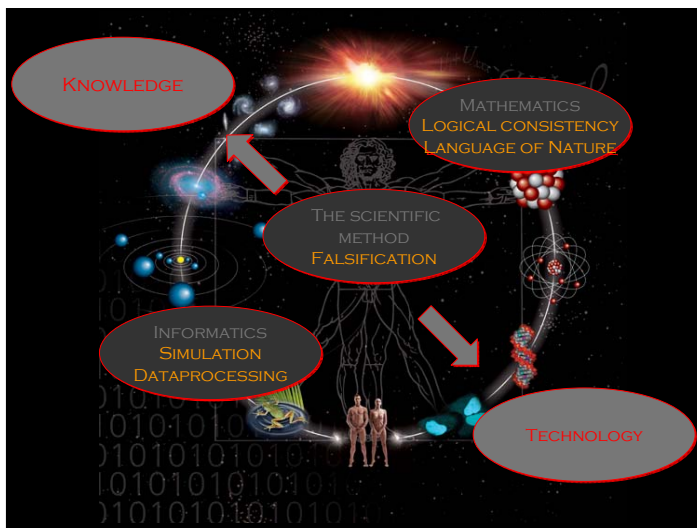
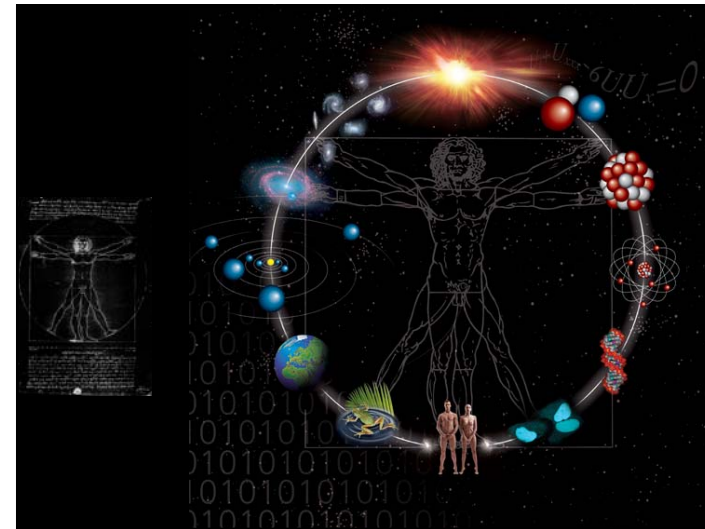
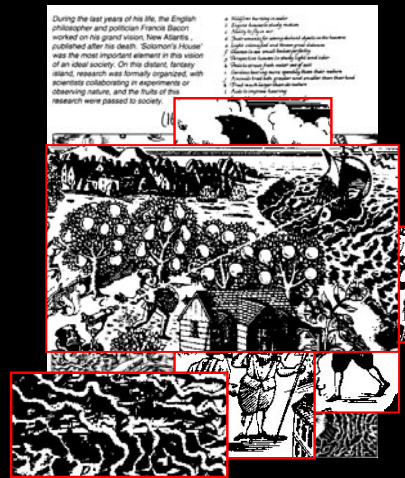
"Wonder is the seed of knowledge"

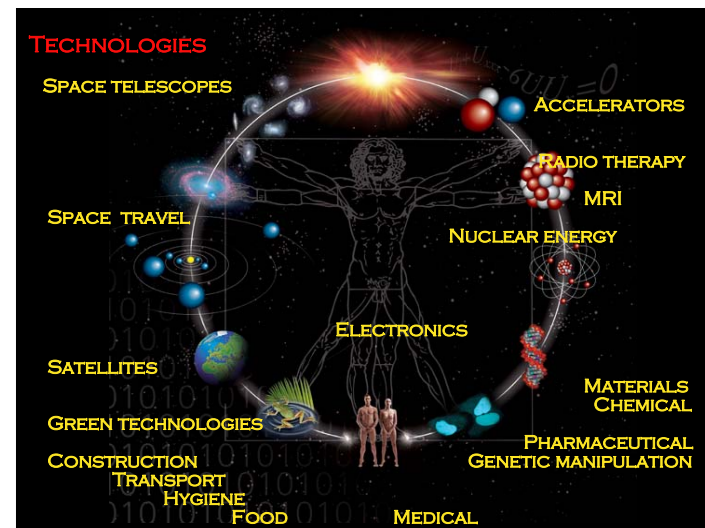
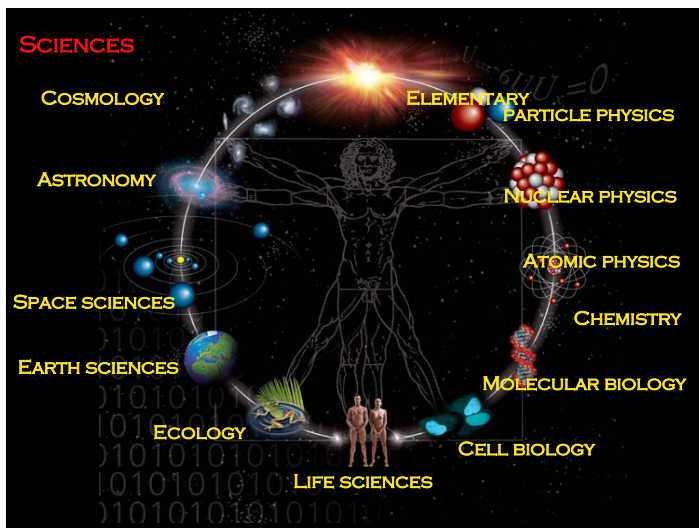
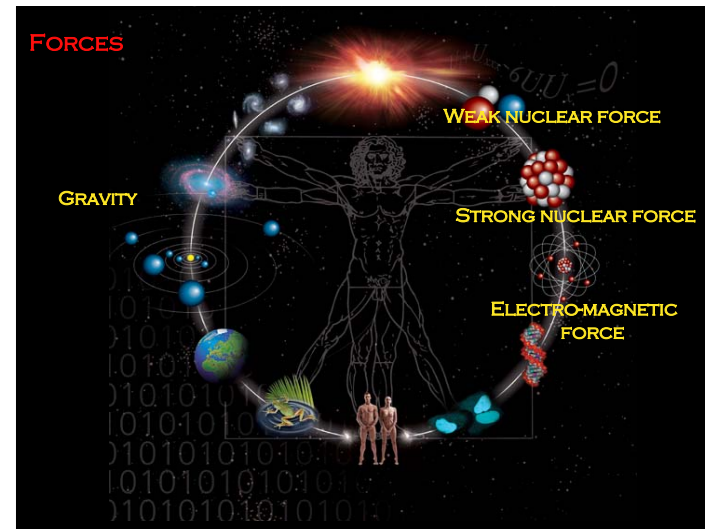
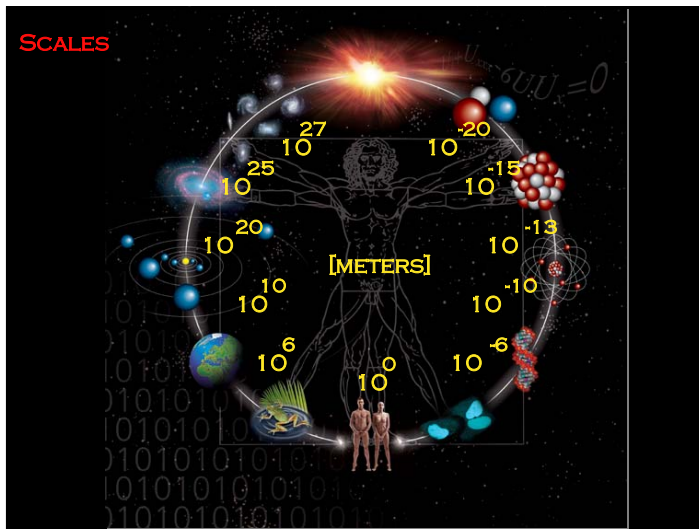




Looking ahead

- Animals bred both greater and smaller than their kind
- Ability to fly in air
- Fruit much larger than its nature
- Aids to improve hearing
- Light intensified and thrown great distances
- Ships sailing under water



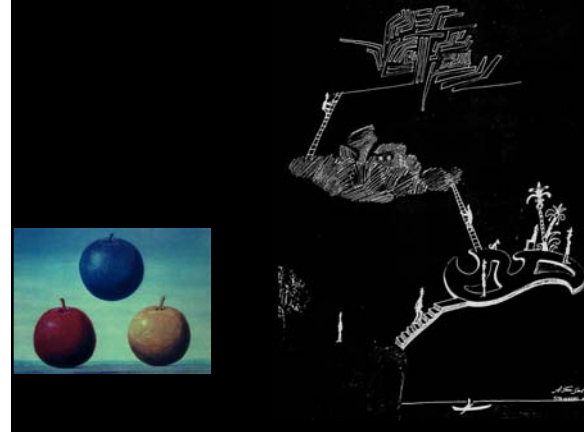


Elementary particles

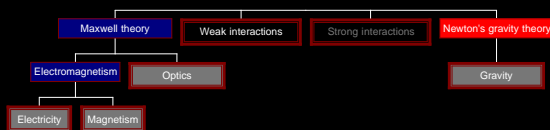
HET STANDAARDMODEL				
Kracht dragers				Higgs
g	γ	w	z	ϕ
Quarks		Leptonen		
u	d	e	ν_e	
c	s	μ	ν_μ	
t	b	τ	ν_τ	

Standardmodel

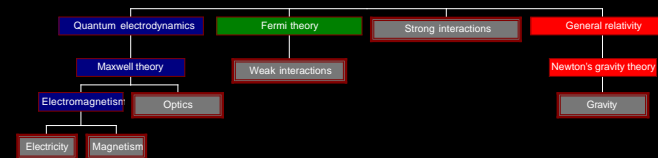
The road of theory



A reductionist road towards unification

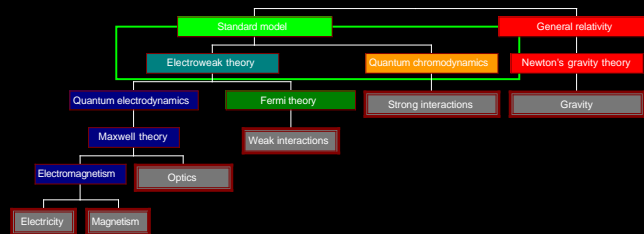


A reductionist road towards unification



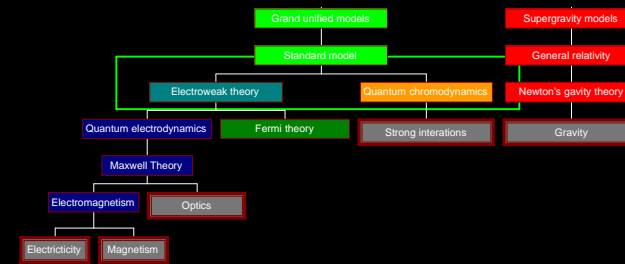
1970

A reductionist road towards unification



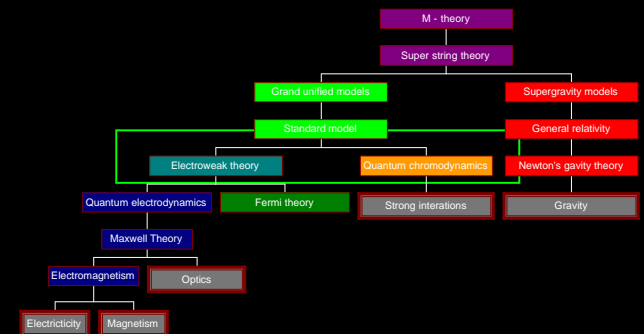
1975

A reductionist road towards unification



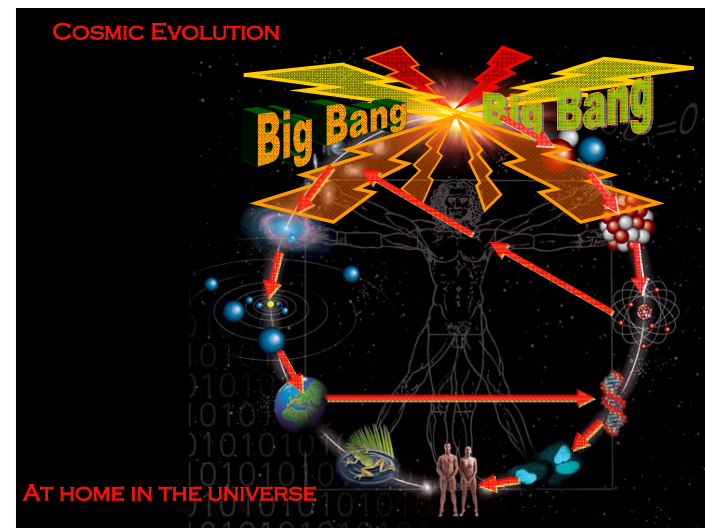
1985

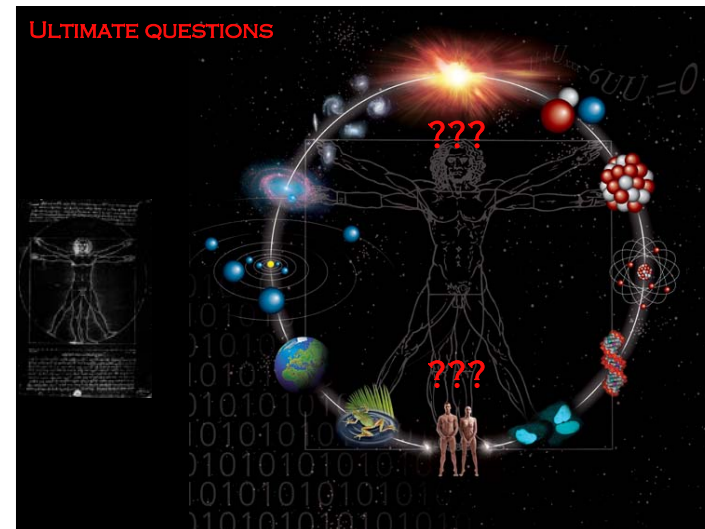
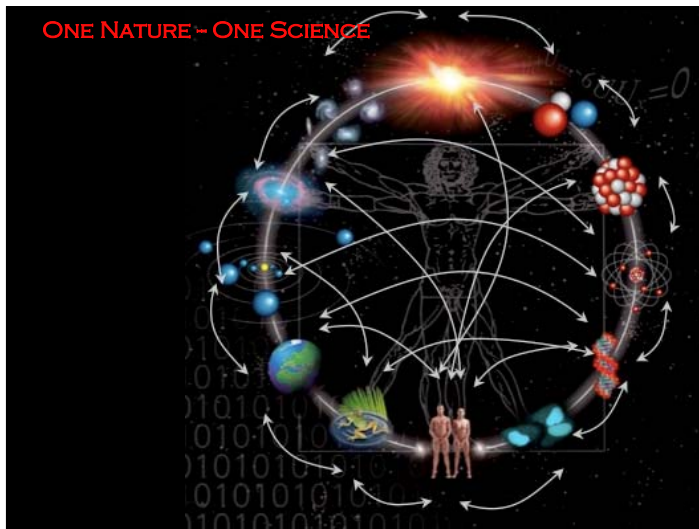
A reductionist road towards unification



1985 - ...

COSMIC EVOLUTION





Ian Mc Ewan

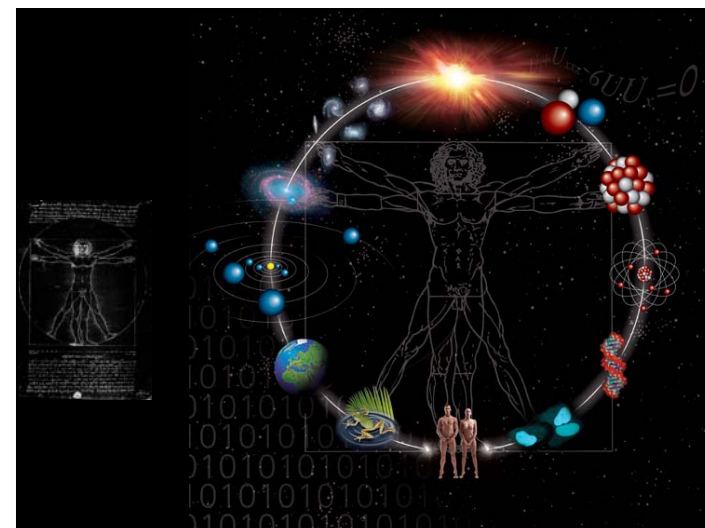
For all recent advances, it's still not known how this well-protected one kilogram or so of cells actually encodes information, how it holds Experiences, memories, dreams and intentions. He doesn't doubt that in years to come the coding mechanism will be known, though it might in his lifetime. Just like the digital codes of replicating life held within DNA, the brains fundamental secret will be laid open one day,

...

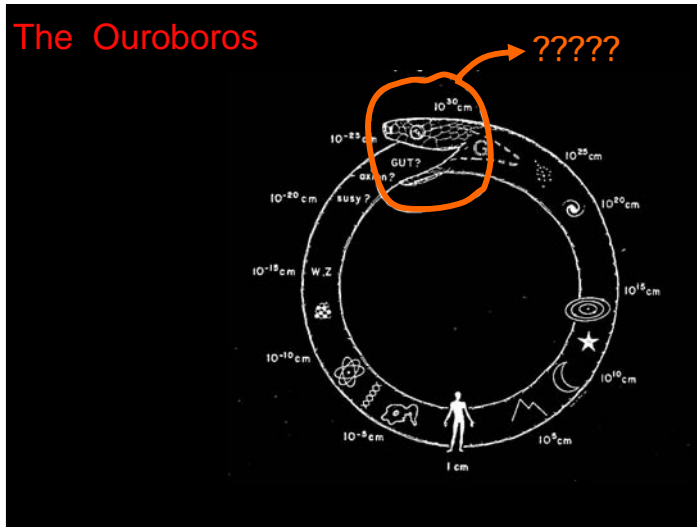
Could it ever be explained how matter becomes conscious? He can't begin to imagine a satisfactory account, but he knows it will come, the secret will be revealed over decades, as long as the scientists and the institutions remain in place, the explanations will refine themselves into an irrefutable truth about consciousness

...

The journey will be completed. He is certain of it. That's the only faith he has. There's grandeur in this view of life.



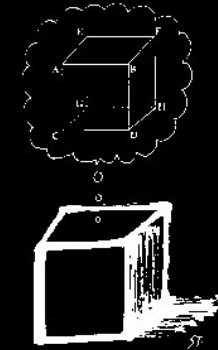
The Ouroboros



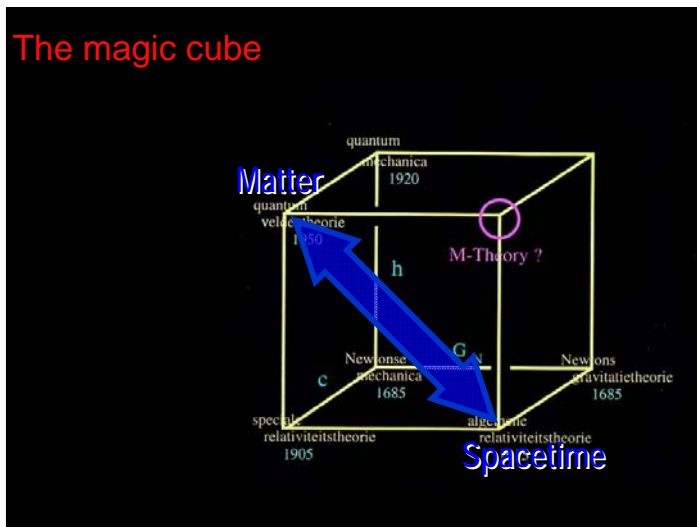
Abstractions

"What I value in life is quality rather than quantity, just as in nature the overall principles represent a higher reality than does the single object"

A. Einstein



The magic cube



Albert Einstein 1918

"The most important task for scientists is to search for the most fundamental laws, from which a picture of the world can be deduced. There is no logical path that leads to these elementary laws, only an intuitive one, based on creativity and experience."

With such a methodological uncertainty one would think that an arbitrary number of equally valid systems would be possible. However, history shows that of all conceivable constructions always a single one did stand out as absolutely superior to all others."

Max Perutz 1994

"Discovering its structure was wonderful. You must imagine the time when proteins were black boxes. Nobody knew what they looked like. There I was, having worked on this vital problem for twenty-two years, trying to find out what this molecule looked like, and eventually how it worked. When the result emerged from the computer one night and we suddenly saw it, it was like reaching the top of a difficult mountain after a hard climb and falling in love at the same time. It was an incredible feeling to see this molecule for the first time and to realize that my work had not been in vain: because during those long years I feared that I was wasting my life on a problem that would never be solved."

Richard Feynman 1981

"You see, one thing is, I can live with doubt and uncertainty and not knowing. I think it's much more interesting to live not knowing than to have answers which might be wrong. I have approximate beliefs and different degrees of certainty about different things, but I'm not absolutely sure of anything and there are many things I don't know anything about, such as whether it means anything to ask why we're here..."

I don't know the answer. I don't feel frightened by not knowing things, by being lost in a mysterious universe without any purpose, which is the way it really is as far as I can tell, it doesn't frighten me."

The cultural dimension of science

Edizioni Dedalo



Equazioni
Le icone del sapere

Traduzione:

Andrea Migliori



Relatività
Guida illustrata
molto speciale

Traduzione:
Andrea Migliori



Elogio della scienza

Traduzione:
David Santoro