

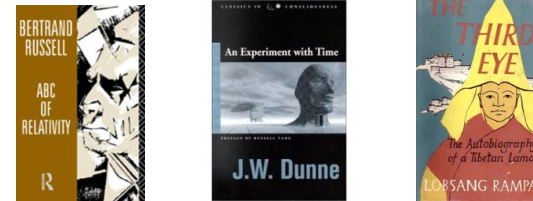
## THE COSMIC CONSCIOUSNESS CONNECTION

Bernard Carr



Frenchman's Cove 19-25 January 2017

## PERSONAL PERSPECTIVE



C.U.  
Astronomical  
Society

C.U.  
Psychical  
Research  
Society

C.U.  
Buddhist  
Society

Wednesday **Matter**

MACROPHYSICS – MICROPHYSICS – CONNECTIONS

Thursday **Mind**

ANTHROPIC PRINCIPLE – LIFE IN UNIVERSE – ROLE OF MIND

Friday **Spirit**

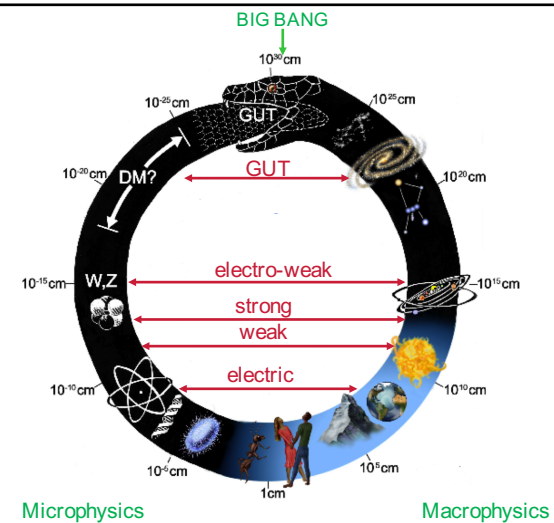
CONSCIOUSNESS – PSYCHIC AND SPIRITUAL EXPERIENCE  
– SURVIVAL

Saturday **Space, Time and Consciousness**

THEORIES OF PSI – SPACE FOR MIND – TIME FOR MIND

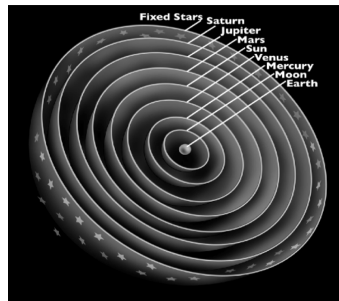
Sunday **Seeking a new paradigm**

HIGHER DIMENSIONS OF REALITY – SCIENCE AND SPIRIT –  
POST-MATERIALIST SCIENCE



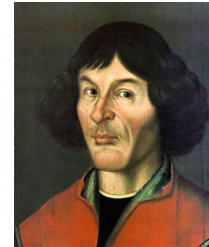
## GEOCENTRIC VIEW

Plato 400 BC

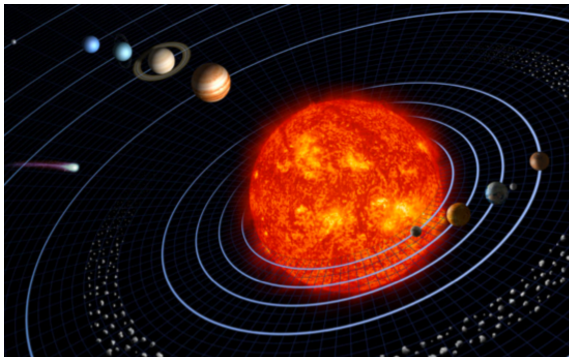


Nicolaus Copernicus  
(1473-1543)

*Conversation with God*



## HELIOCENTRIC VIEW



Visit to Torun 2009



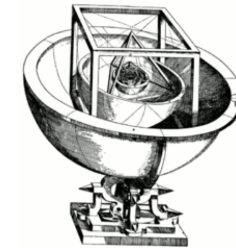
Tycho Brahe (1546-1601)



Supernova in Cassiopeia in 1572

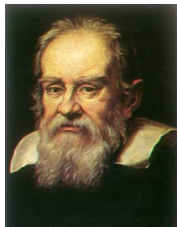
"Crassa ingenia. O coecos coeli spectores"  
(Oh thick wits. Oh blind watchers of the sky)  
Preface of *De Nova Stella*

Johannes Kepler (1571-1630)



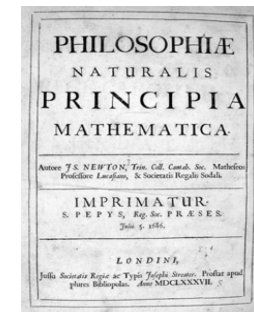
Laws of planetary motion

Galileo Galilei (1564-1642)



Isaac Newton (1642-1727)

"Principia" (1687)



"Blind fate could never produce the wonderful uniformity of the planetary movements. Gravity may put the planets into motion But without the divine power it could never put them into such circulating motions as they have."



August Comte (1859)

"Never, by any means, will we be able to study their chemical compositions [stars]. The field of positive philosophy lies entirely within the Solar System, the study of the Universe being inaccessible in any possible science."

### GALACTOCENTRIC VIEW



### The Great Debate (1921)

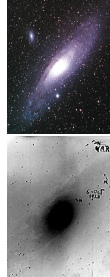
- Harlow Shapley (1885-1972)
  - believed it unlikely that nebulae could be outside the Galaxy
- Heber Curtis (1872-1942)
  - led group supporting "island universe" idea



## Resolution of Debate

- Edwin Hubble (1889-1953)

- measured distance to M31 (Andromeda) in 1925
- using *Cepheid variable* stars
- 500 kpc – outside Galaxy (10 kpc in size)



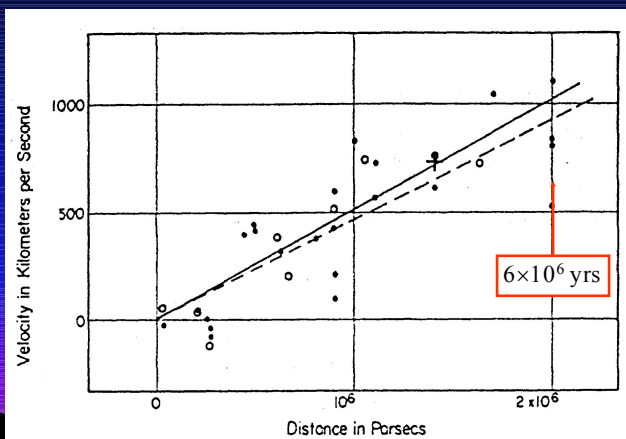
Hubble, H. P.  
Proc. Am. Astr. Soc.  
48:139-142 (1925)

## The recession of the Galaxies The Red-Shift Distance Relation



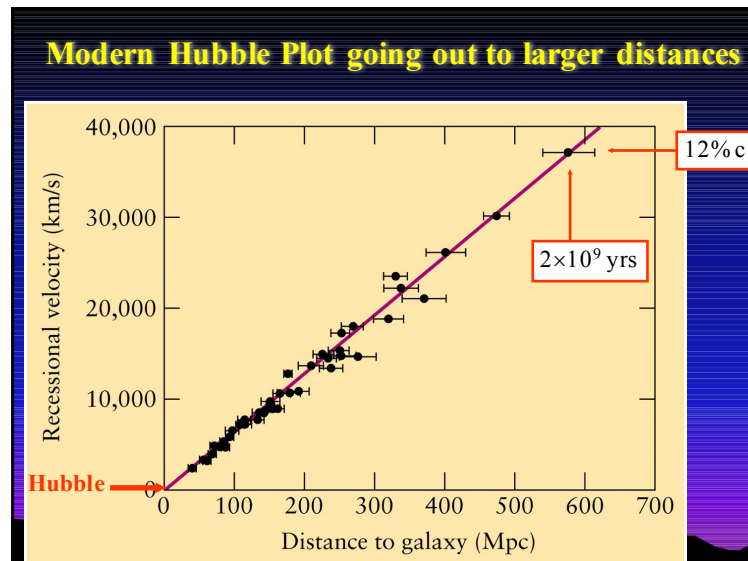
**Hubble's  
Law  
1920's**

## Hubble's original 1929 plot



Hubble Deep Field





**Hubble's Law**  $v \propto d$

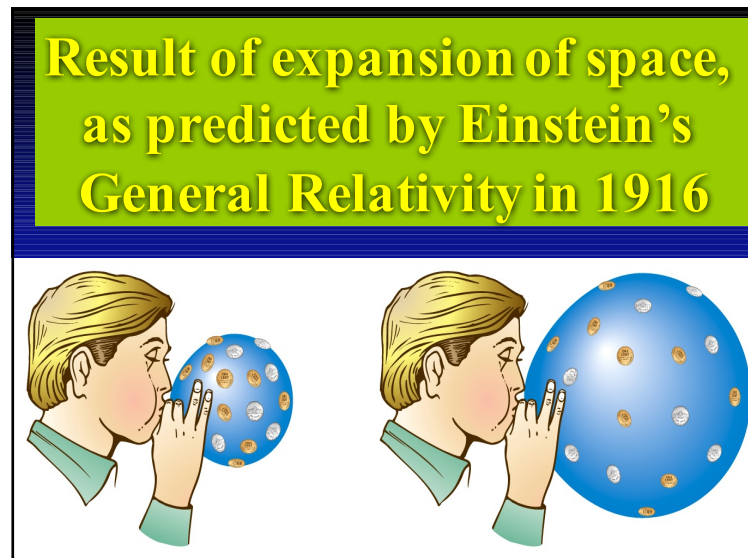
- Recession Speed of source is  $v$
- Distance of source is  $d$

$v = H_0 d$

the 'Hubble Time' is

$H_0^{-1} = (13.7 \pm 0.2) \times 10^9 \text{ y}$

Ages of oldest known stars  $(13 \pm 2) \times 10^9 \text{ yrs}$



Alexander Friedmann  
(1922)

Separation Between Galaxies

Time

Open Universe

Flat Universe

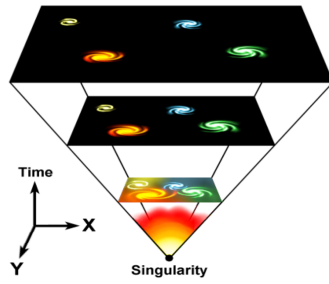
Closed Universe

Now

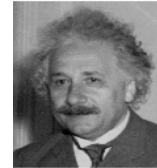
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GEORGES LEMAITRE

Father of the Big Bang



Proposed "primeval atom" model at session on science and spirituality at British Association meeting in 1932



Einstein (1927) "Your maths is correct, but your physics is abominable."



Eddington (1931) "Philosophically, the notion of a beginning of the present order of Nature is repugnant to me".

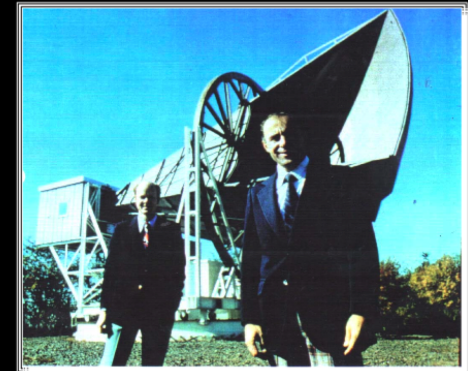


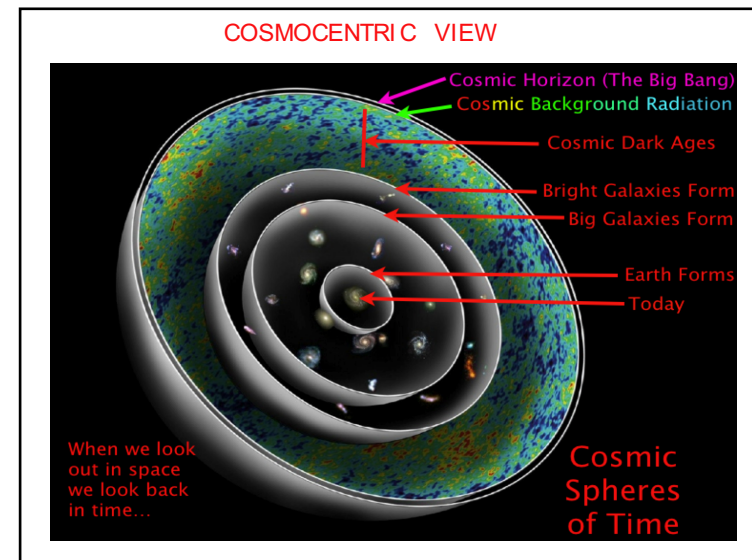
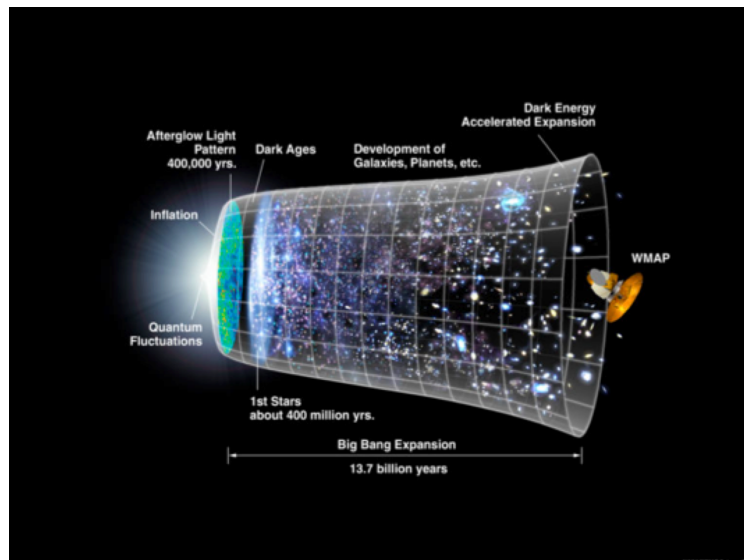
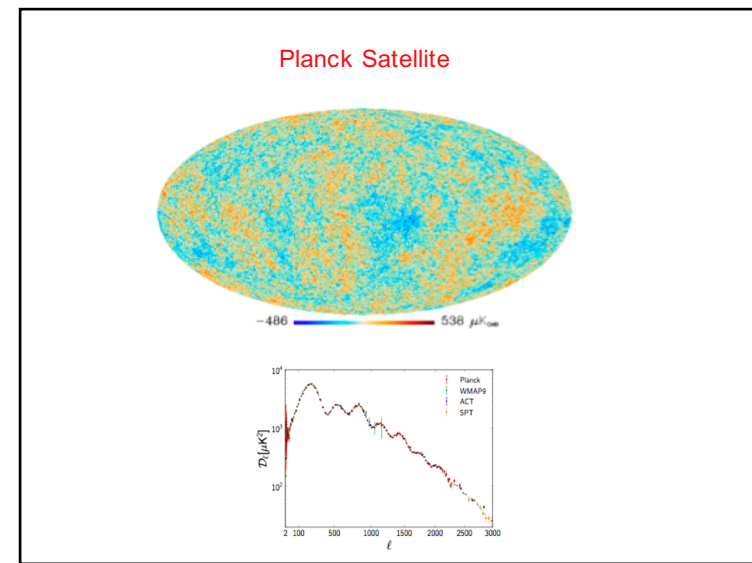
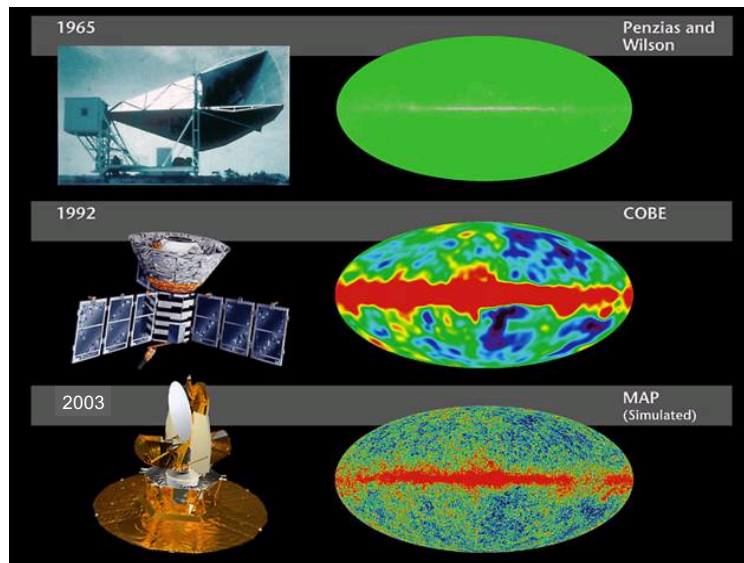
*Don't let me hear anyone use the word 'Universe' in my Department!*

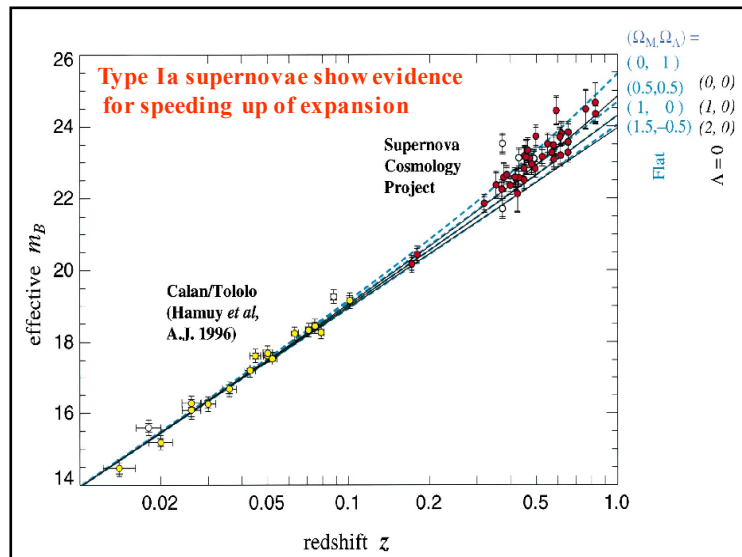
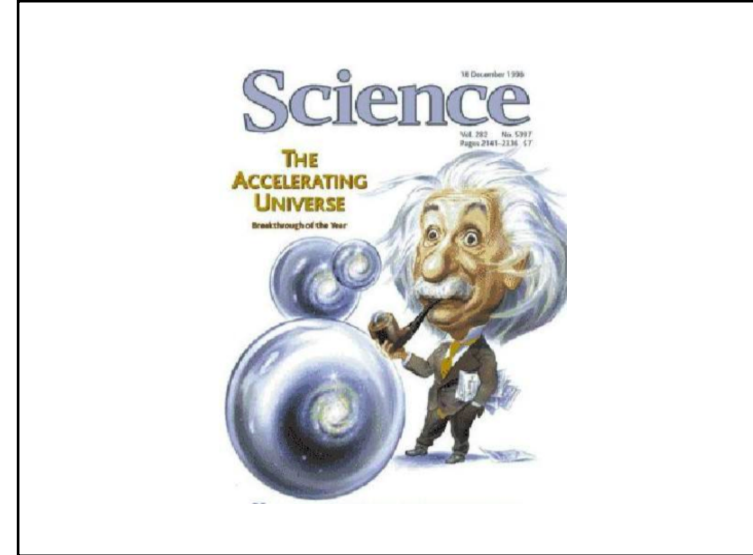
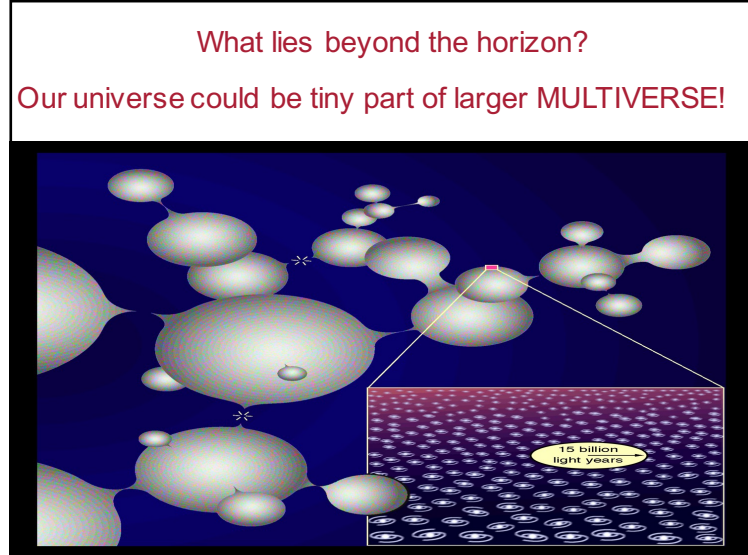
Attributed to Ernest Rutherford, Nobel Prize in Chemistry 1908

**The universe is radiant.**

**Arno Penzias  
Robert Wilson  
1965**





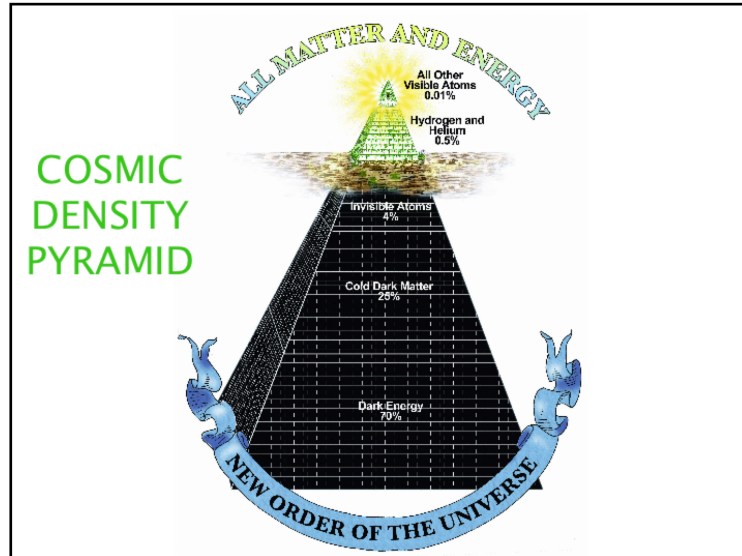


**Cosmological constant  
(dark energy)**

Mass density of space:  $10^{-30} \text{ g cm}^{-3}$

**The unbearable lightness of nothing!**

Inflation theory invokes this in early universe  
but we also need it at the present epoch



### RESULT OF OUTWARD JOURNEY



What we call the “universe” is always growing

Humans have become increasingly insignificant

Heavens have been stripped of divinity

**Conventional science:**

“The more the universe seems comprehensible, the more it also seems pointless.”

~ Steven Weinberg  
Nobelist, physics, 1979

**Conventional science:**

“We humans are just crumbs of organic matter clinging to the surface of one tiny rock. Cosmically, we are no more significant than mold on a shower curtain.”

~ David Lindley  
astrophysicist

MUSICAL INTERLUDE

### INWARD JOURNEY

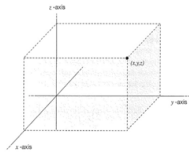
This has also shattered our view of physical reality

- Atomic theory
- Quantum theory
- Unification of forces
- Extra dimensions
- Quantum gravity

## NEWTONIAN VIEW



Arena of physical reality is 3D space....and time

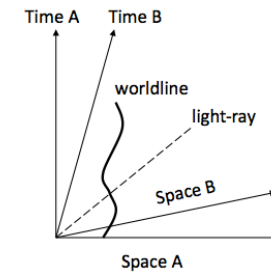


Both space and time are absolute (God's sensorium)

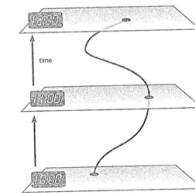
## EINSTEIN VIEW



Arena of physical reality is 4D spacetime

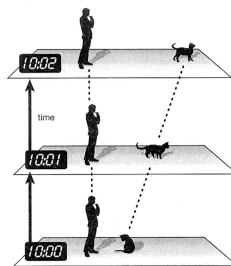


Time is 4th dimension



Worldline

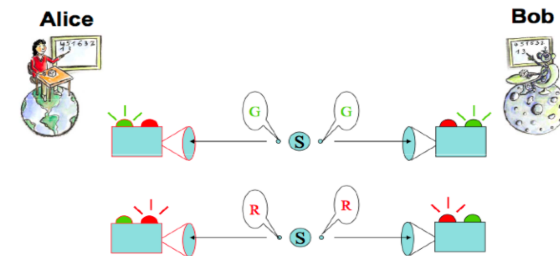
Quantum Theory is INCOMPATIBLE with Relativity Theory



Uncertainty Principle => cannot measure position and velocity

## ENTANGLEMENT

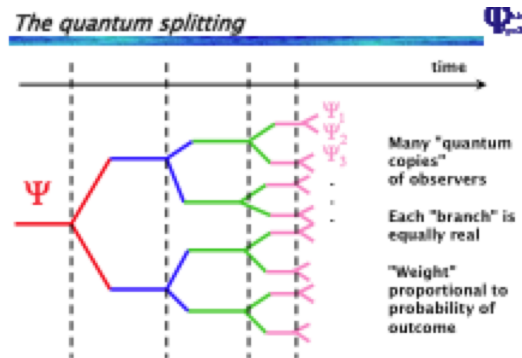
Occurs when two or more particles interact, causing their fates to become linked *outside of space & time*.



Courtesy Popescu

Non-locality => space is transcended

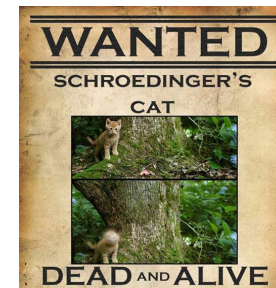
"Many worlds" interpretation of quantum mechanics



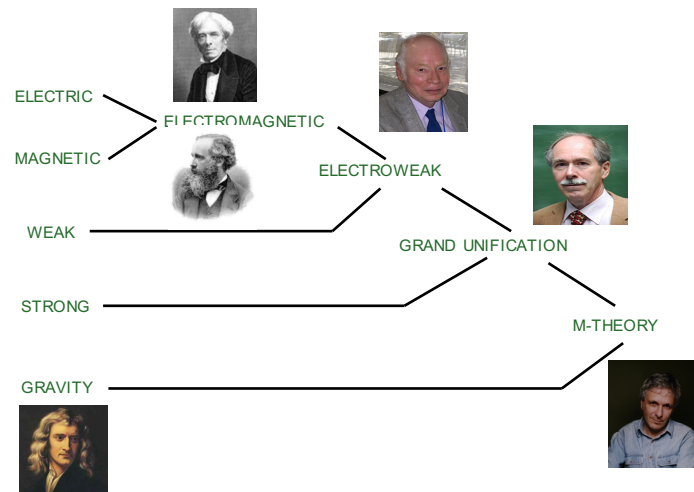
### WOODY ALLEN JOKE

A guy goes to a psychiatrist and says, "Doc, my brother's crazy - he thinks he's a chicken!"  
The doctor says, "Well, why don't you turn him in?"  
The guy says, "I would, but I need the eggs!"

Quantum theory is also crazy but we need the eggs.

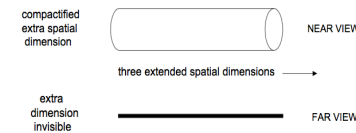


### UNIFICATION OF FORCES



### HIGHER DIMENSIONS IN PHYSICS

Kaluza-Klein (1926): 5th dimension unifies gravity and electromagnetism but is compactified on Planck scale

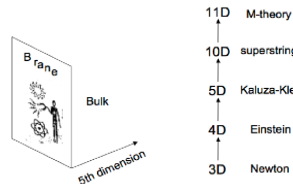


Superstrings (1984): six compactified dimensions  $\Rightarrow$  10D

M-theory (1995):  
seven compactified dimensions  $\Rightarrow$  11D



Randall-Sundrum: 4D brane in higher-dimensional bulk



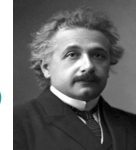
Physics gives sequence of paradigms with increasing dimensionality  
.... with increasing remoteness from common sense reality

This is the price of UNIFICATION!

### UNIFICATION OF CONCEPTS

Space + Time = Special Relativity (SR)

Spacetime + Gravity = General Relativity (GR)



Quantum Theory + SR = Quantum Field Theory (QFT)

QFT + Electromagnetism = Quantum Electrodynamics

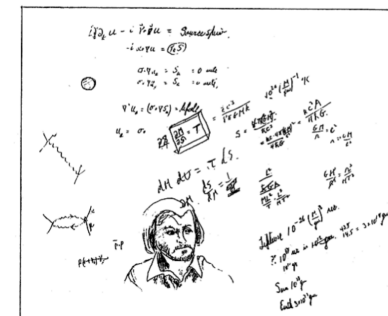


GR + QFT + Thermodynamics = Black Hole Radiation

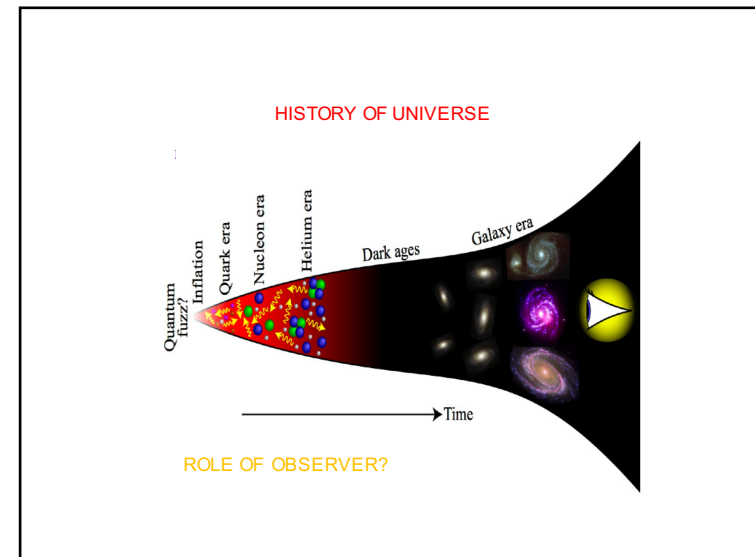
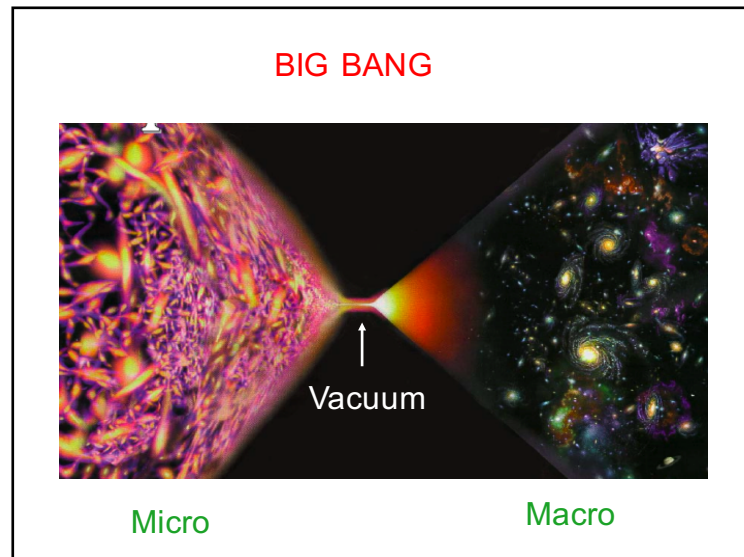
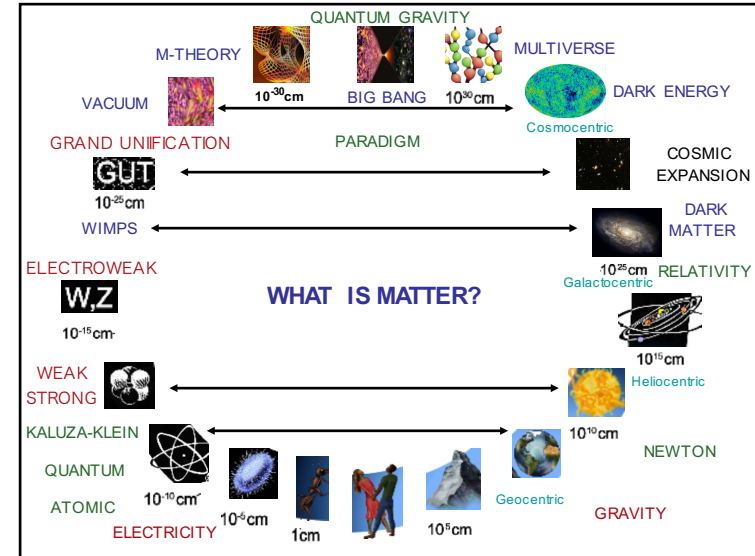
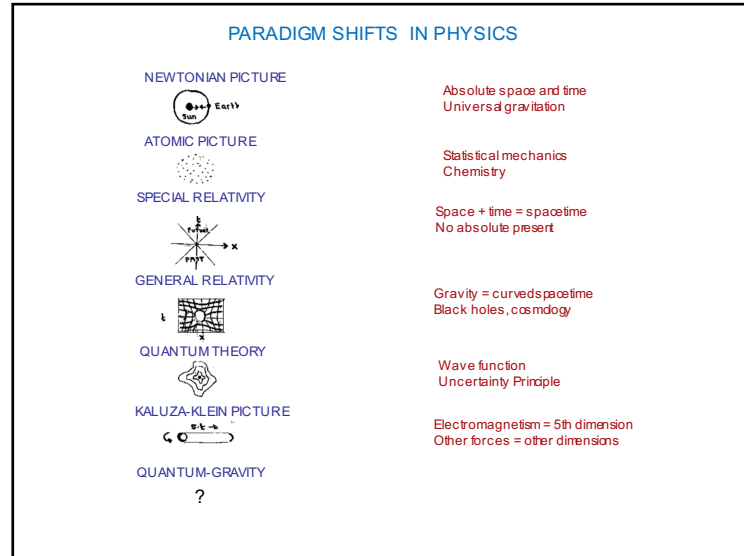
Caltech 1975

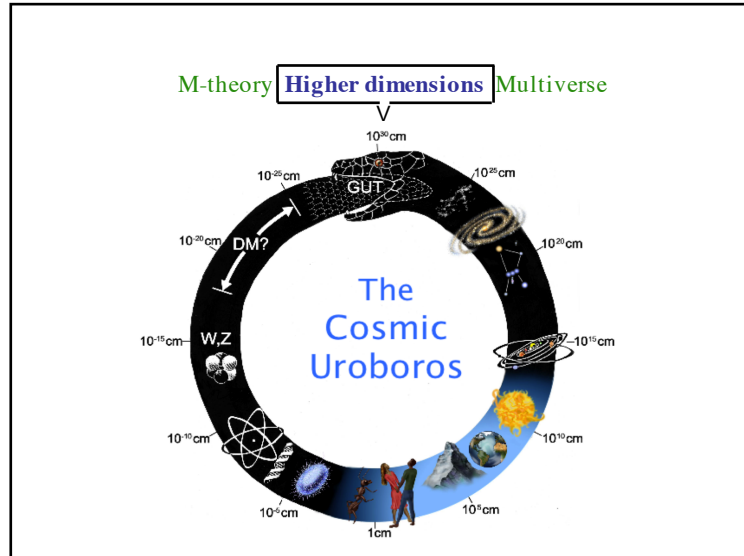


Feynman's envelope!



1975





TRANSFORMATIVE EXPERIENCE 1969

## THE VIOLENT UNIVERSE



Allegretto: Shepards' Song,  
Beneficent feelings with  
thanks to the Godhead after the  
Storm  
5th Movement



MUSICAL FINALE