

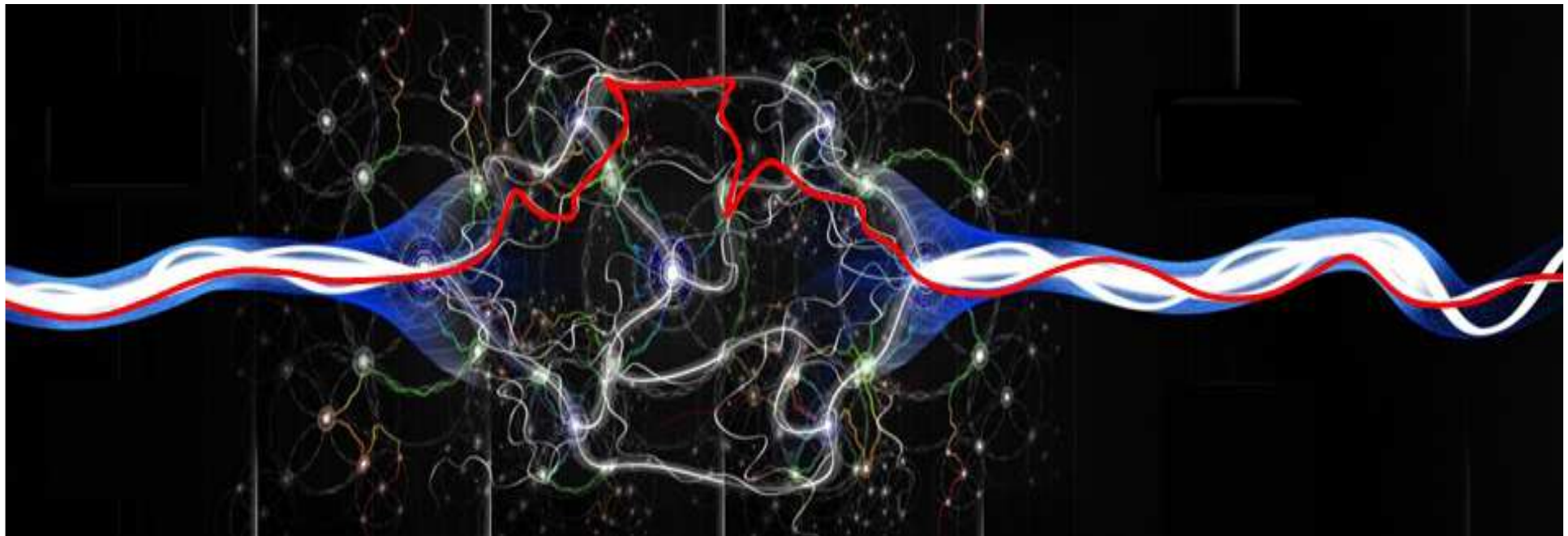
Could the past be unstable ?

A lecture by Philippe Guillemant

Physicist engineer & researcher at CNRS

February 25th, 2016

I.E.A. Nantes



The big puzzle of modern physics

Conflict between two fundamental physics

General Relativity

Gravitational force

Determinism

Continuity

Speed of light limit for any signal

Classical reality

Causality independant of time



A. Einstein



B. Podolsky



N. Rosen

Quantum Mechanics

Electromagnetic, weak and strong

Indeterminism (quantum collapse)

Discontinuity (all is quantified)

Non locality

Observer depending reality

Time causality

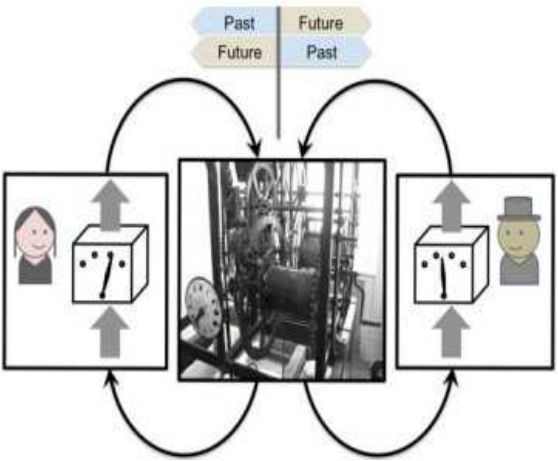
Consensus for a solution

Quantum gravity => **Time doesn't exist**

Atemporal mechanics is necessary

Upheaval of our concept of time

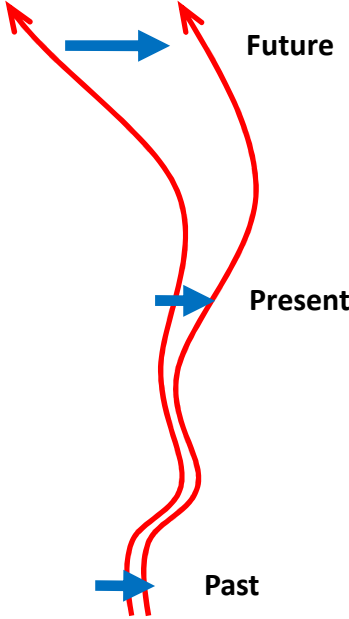
GR ok with QM on atemporal physics



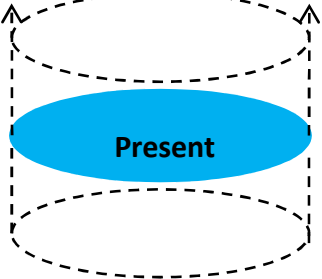
(1) *General relativity impose already realized future*

(2) *Quantum mechanics extend non locality to temporal domain*

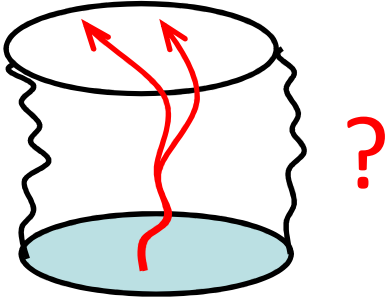
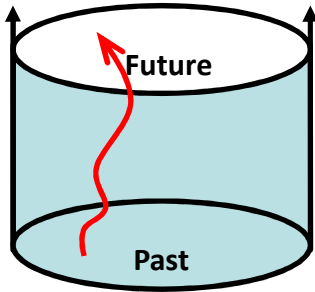
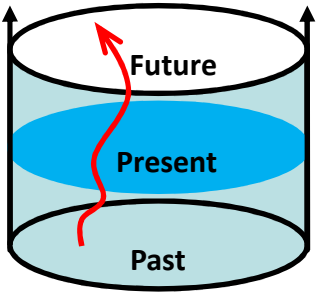
(3) *Quantum gravity eliminates time*



Presentism

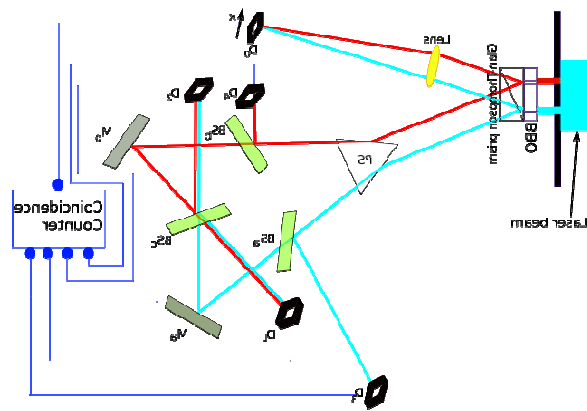


Block-universe

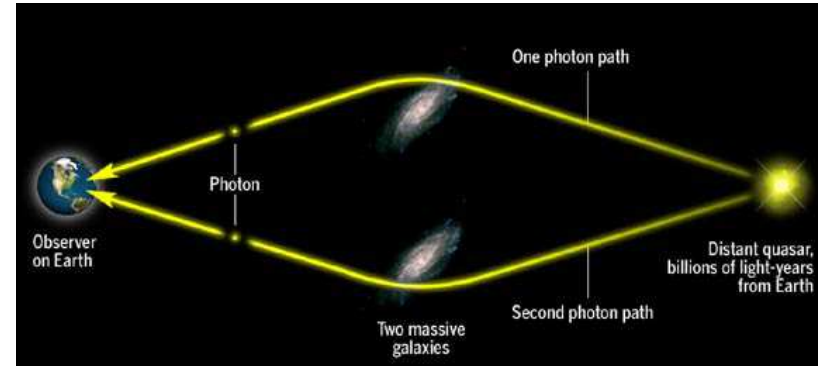


Elastic or flexible block universe have impressive consequences...

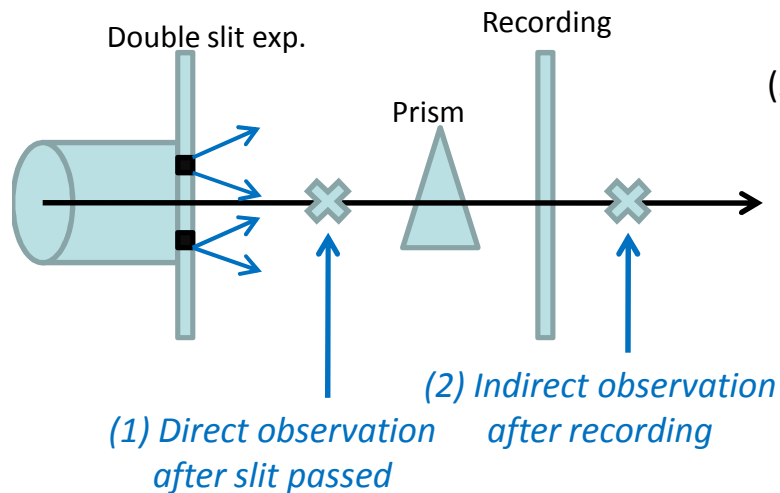
Delayed choice quantum eraser



Does the universe exist if we are not looking ?



Ultra-simplified:



- (1) Delayed choice: we can choose how the photon shows itself (interference or particle) after it crossed the double slit
- (2) Quantum eraser: the interference pattern can reappear depending on a future observation, made after recording (> 8 ns)

Attention: this statistical result cannot be used to predict future

Conclusion: it's only when we ask questions to some past that it begin to exist, permitting us to imagine a coherent history of this past.

The great questions: What is the degree of generality? What is reality ?

What is reality ?

Matter => Consciousness or Consciousness => Matter ?

- Space is deformable, pierced, pixellised and vibrating
- Matter is made of 99.99... vacuum and becomes space / vacuum vibrations at Planck level
- Vacuum is an ocean of energy / **information**
- Mechanics time doesn't exist: time is related to consciousness / information
- **Information is physical.**

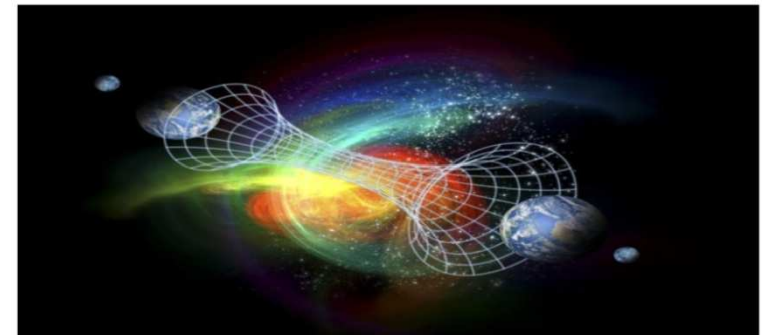


What is reality ?

Simulation ?

Multiverse ?

- *All in one ?*
- *Separated ?*

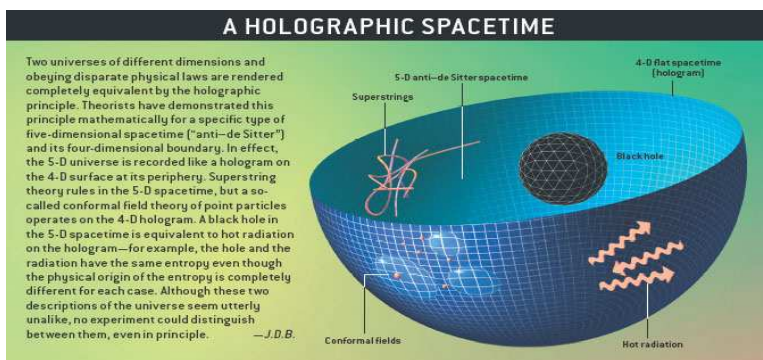


Hologram ?

Plato's cave ?

Information ?

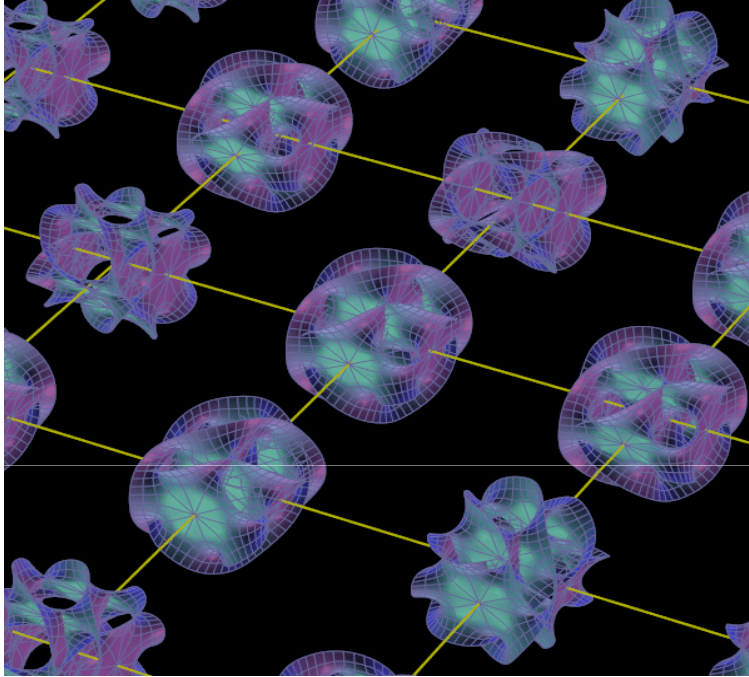
Consciousness?



The key point to understand : vacuum space void of matter but full of information

What is the correct space theory ?

String theory => **6 or 7 extra dimensions.**



Loop quantum gravity: => **probabilistic quantum foam**

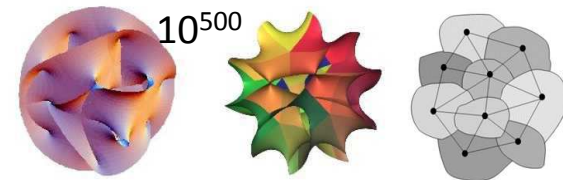


Planck scale space-time structure

Bubble parallel universes ?

Unique universe or temporal multiverse ?

Best synthesis: 6 degrees of freedom for space vibrations



Why 6 extra dimensions ? Why is it necessary to add such information ?

The disturbing progress of physics with information

Discoveries	Why ?	Opposite dogmae	Questioned faiths
Vacuum is not vacuum	Vacuum is full of informations	Matérialism	Consciousness is a product of brain
Future already exists	Future is full of informations	Strict causation (irreversibility)	The future is the result of the past
Atemporal entanglement	Non local space & time Informations	Hazard / fate	Choices are made in dissociated universes
Indeterminism	Out of 3D space informations	Determinism (temporal)	We are machines



We seem connected to non material informations from... quantum scale / future / vacuum / out of space-time ?

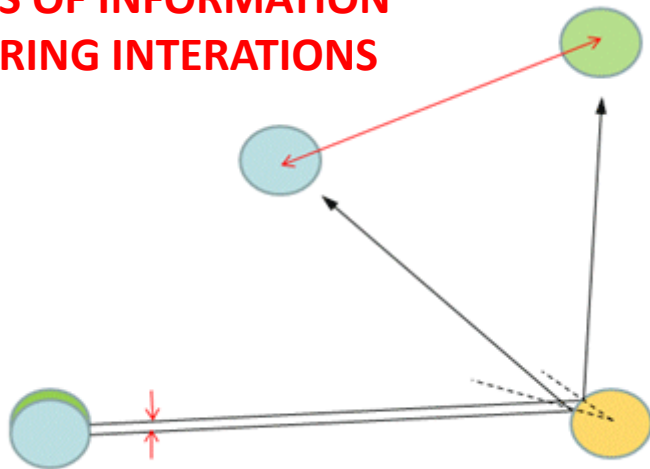
What is our big problem with information ? Is it serious, doctor ?

A gigantic error of XXth century physics ?

In my opinion: the reason why quantum physics is incompatible with classical physics and relativity is that mechanics cannot be deterministic with only 3 space dimensions

Balance of an interaction : {
Energy conservation
Momentum conservation
Information conservation has been forgotten !!!

**LOSS OF INFORMATION
DURING INTERACTIONS**



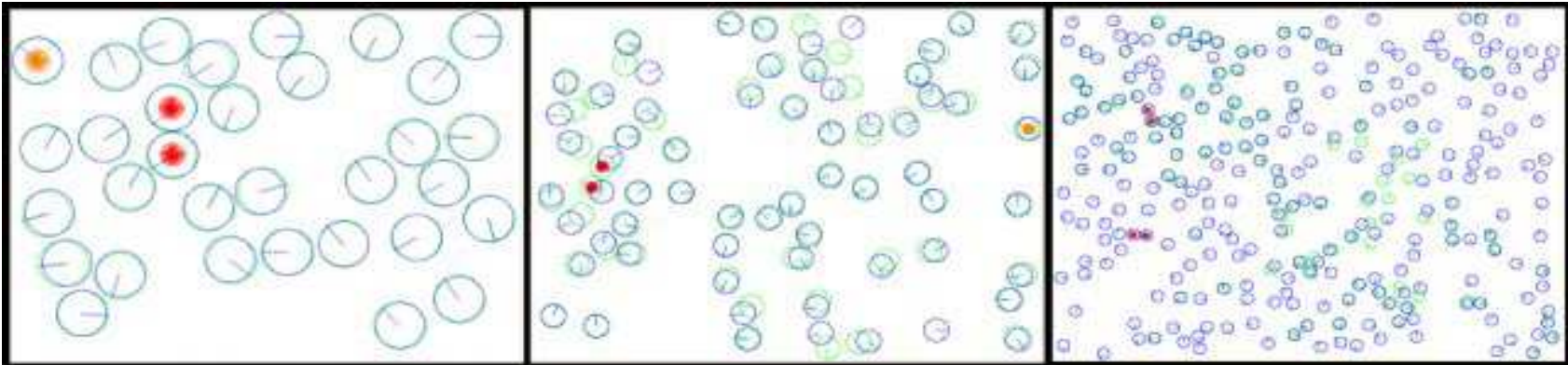
5000 balls billiard:
10 shocks => Planck scale information

Atemporal coordination is inevitable:

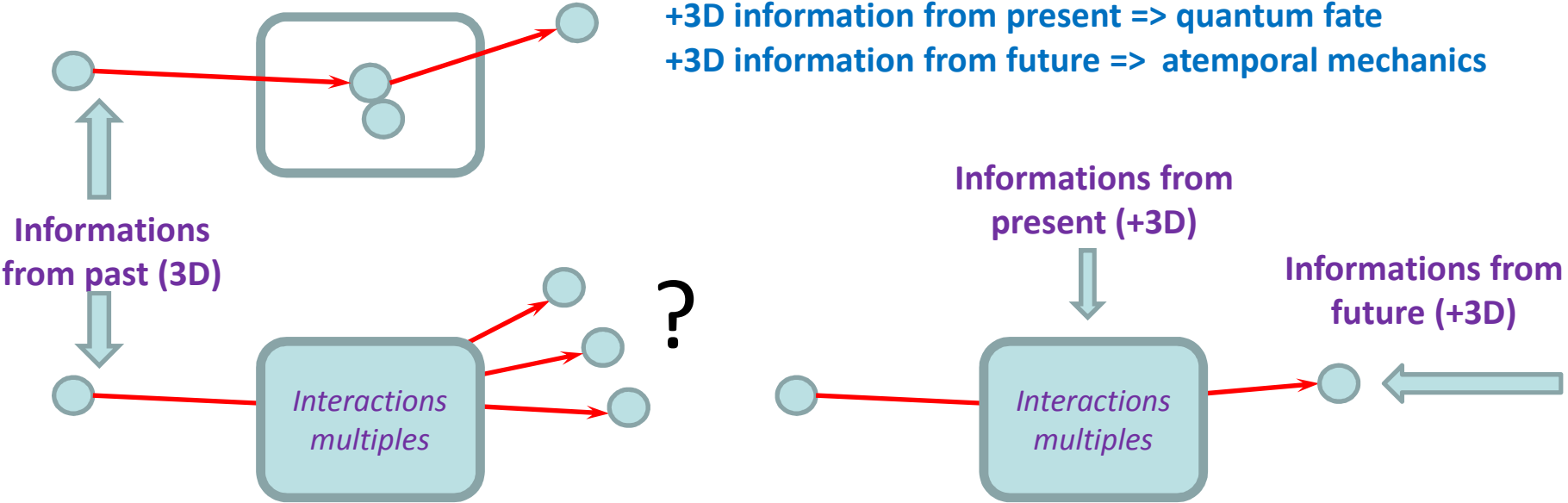
- 6 extra dimensions
- information increasing with delay square
- for intuition : the video game metaphor

=> If past depends on present, it is continuously losing information

Where does atemporal information comes from ?



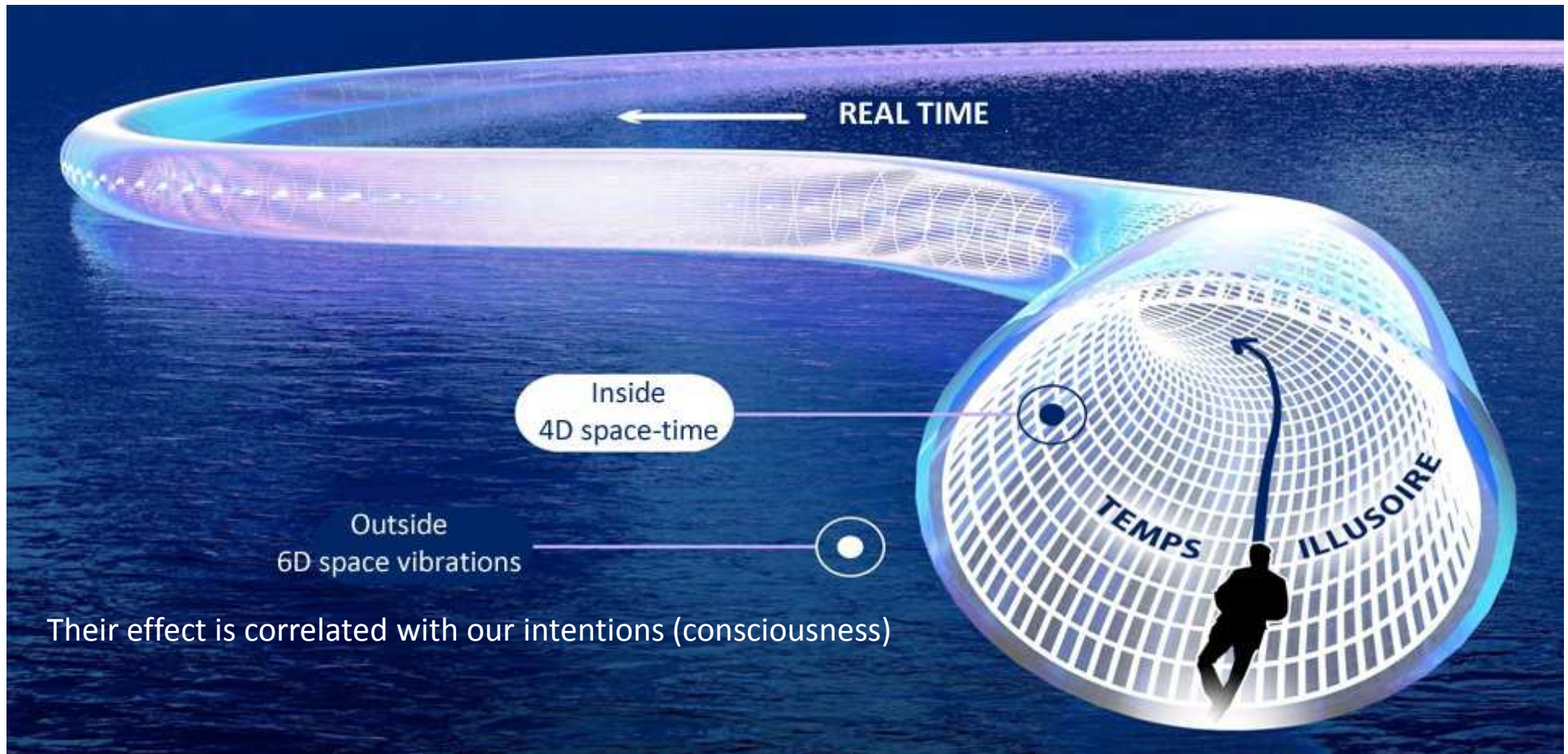
3D informations from past => initial conditions
+3D information from present => quantum fate
+3D information from future => atemporal mechanics



In the future, physicists will have to learn working with both initial AND final conditions

Introducing a new perpendicular time (real time ?)

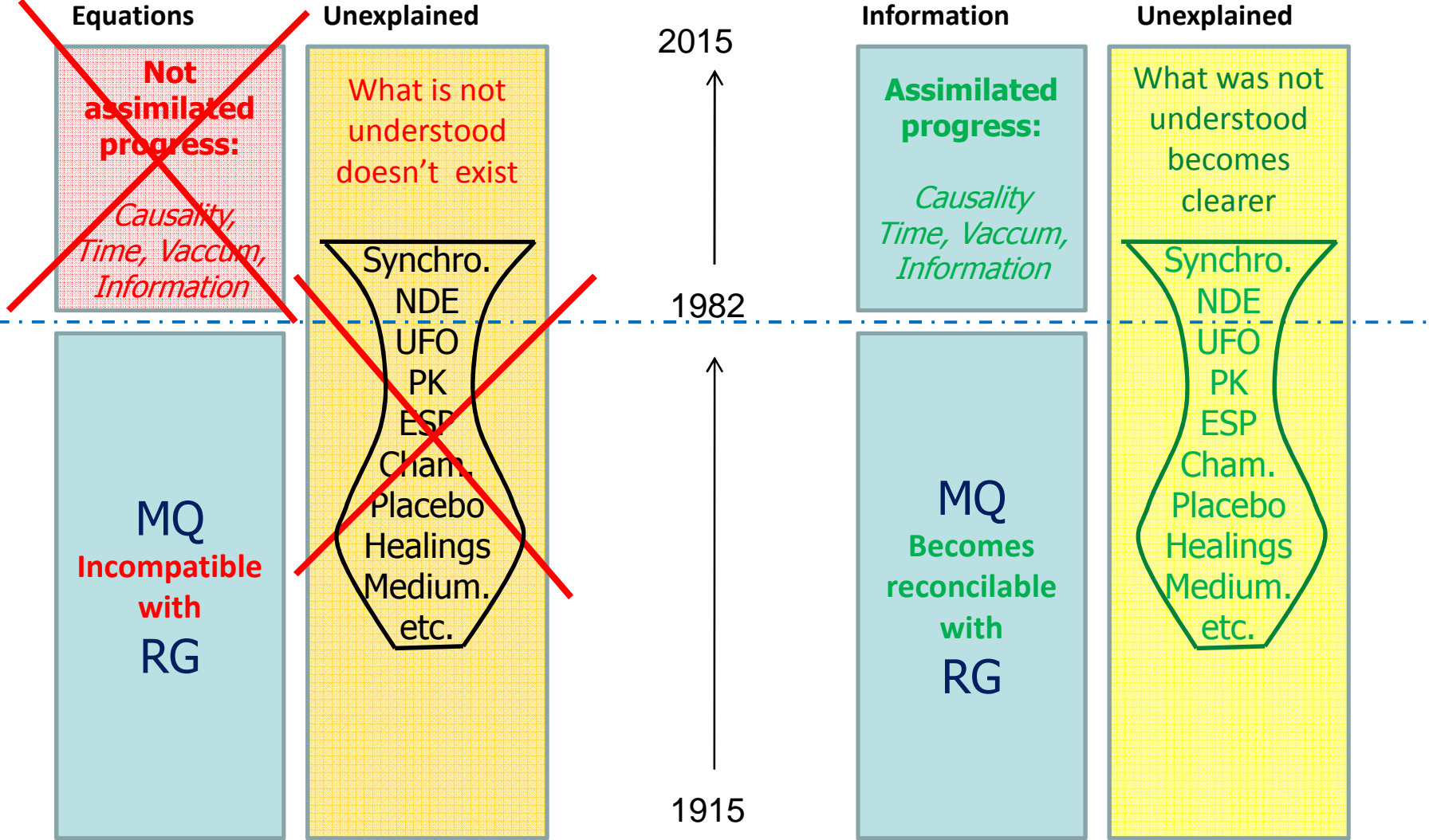
This new time or « imaginary time » was introduced by Stephen Hawking to describe all possible histories of the universe occurring during space inflation after the big-bang



Graphisme: Gabriel Uribe

Are there other reasons to correlate this quantum sea (quantum foam) to consciousness ?

Unexplained information involve consciousness



Physics accumulates progress which challenge its equations and involve information and consciousness

Levels of consciousness and density

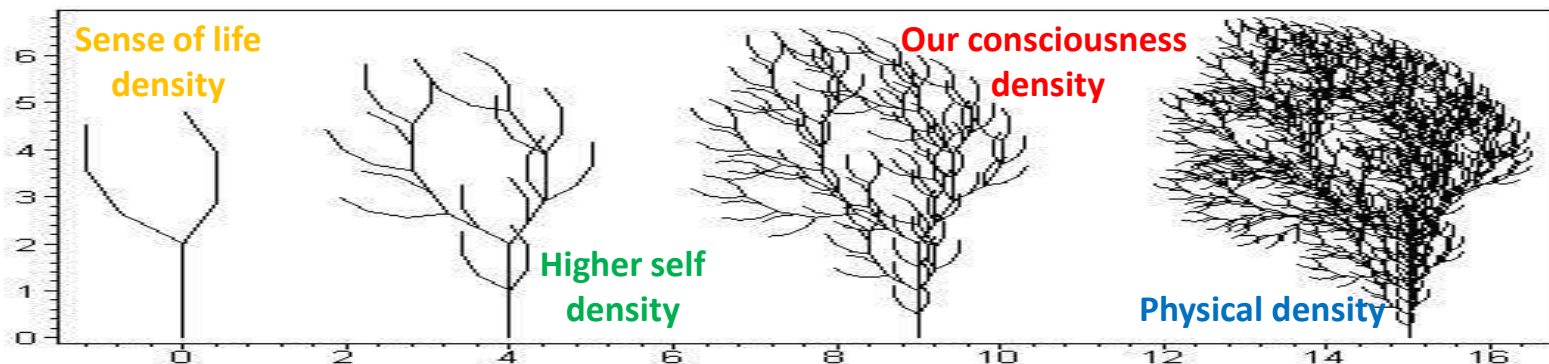
Correcting the gigantic error of 3D mechanics leads to major conclusions:

Time mechanics cannot maintain molecular information into the future or the past, even through decoherence (due to absence of information brought by observation)

=> Present is made of high density information, corresponding to Heisenberg uncertainty.

=> Future is made of low density information: **causality cannot maintain molecular interaction nor create thermodynamic degradation**: that's why placebo or miracle cures are possible.

⇒ Same for the past excepted high density elements from all tracks of past into present, but they are mainly time decoupled, because causality cannot reconstitute their exact history from past to present: **that's why past could change (using other coherent paths)**

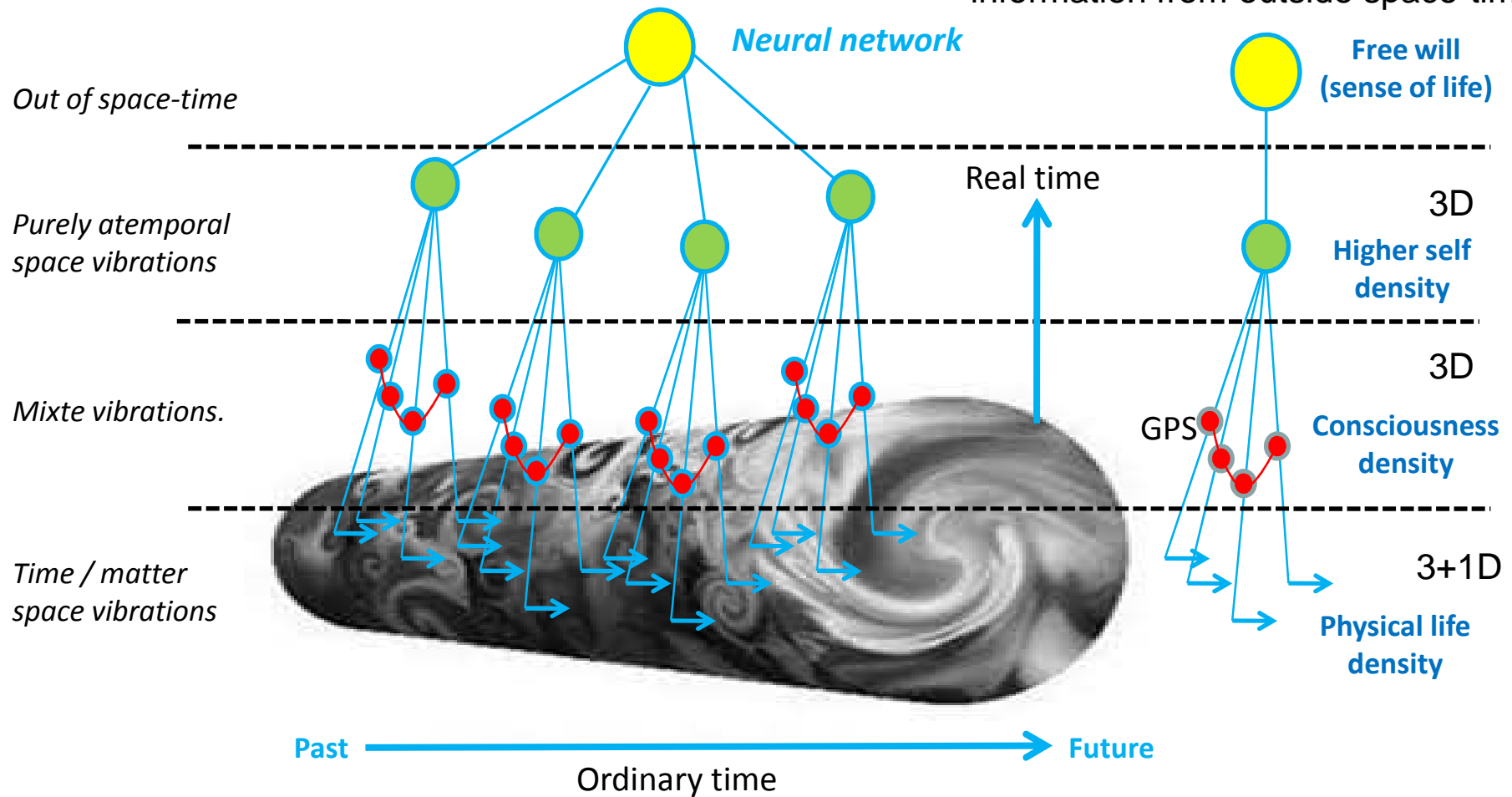


Two densities are not enough to build the multiverse with vacuum information (too limited)
Other densities, much lower, are necessary (fractal structure of density consciousness levels)

A possible atemporal evolution of space-time

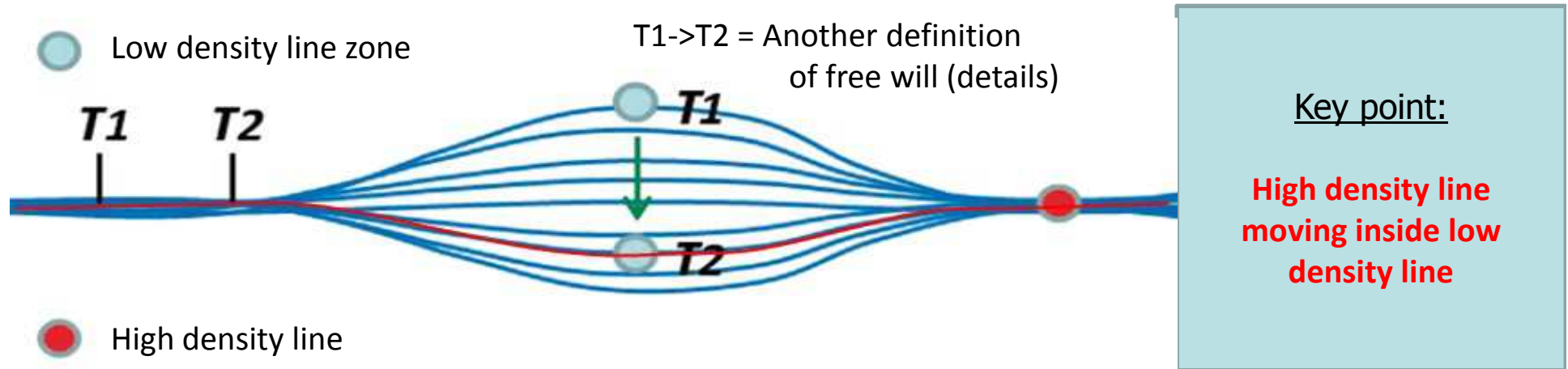
Via an atemporal cybernetic architecture using neural network to model free will

= information from outside space-time

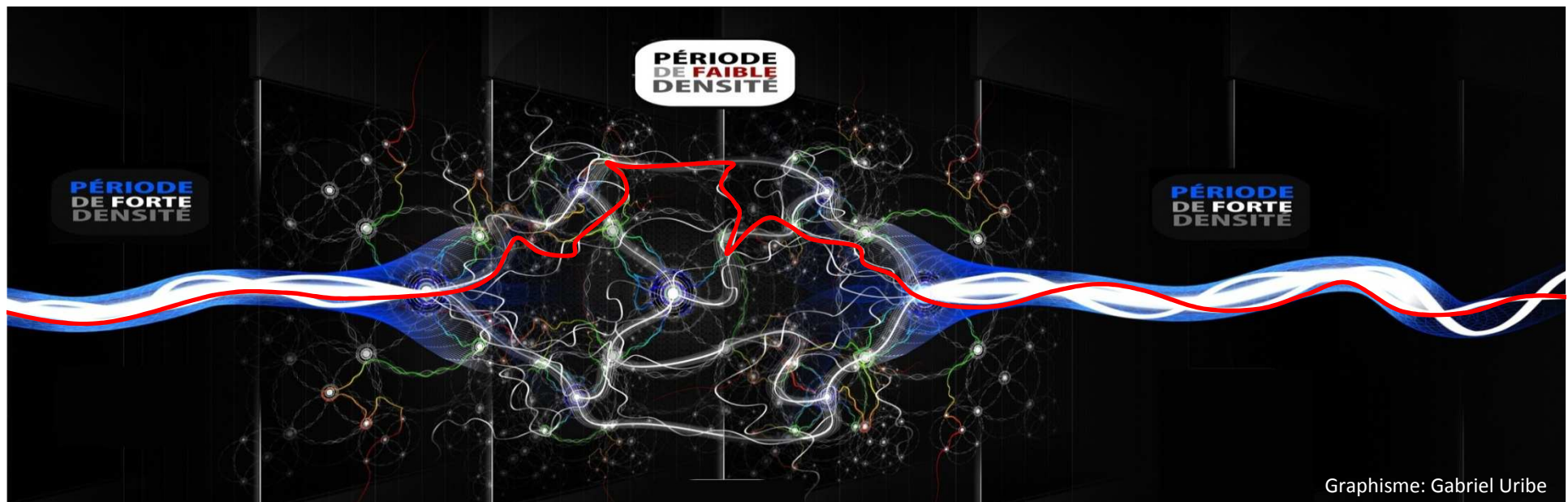


This « free will » is possible only if our brain consciousness is connected to an hypothetic higher self

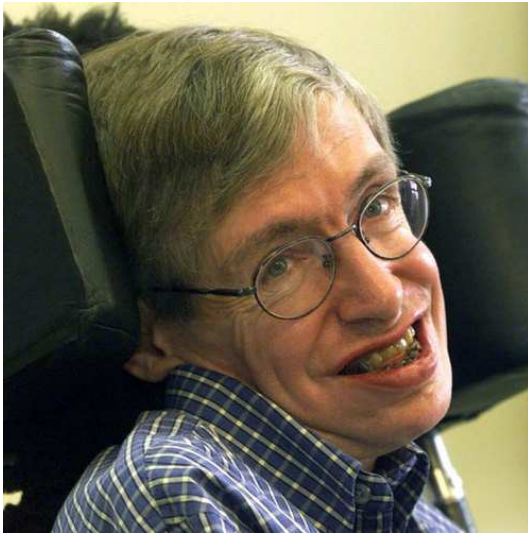
Evolution of the future via time line commutation



=> At macroscopic level retrocausation is inevitable: space-time dynamics

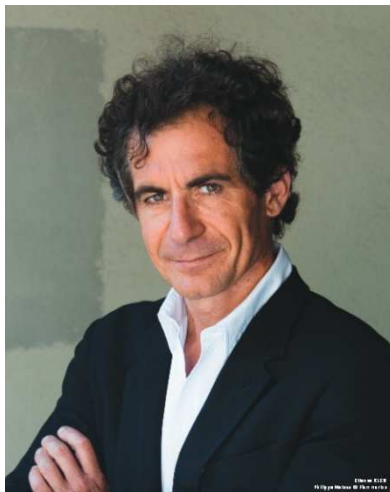


Two quotes about retrocausality



Stephen Hawking proposition for a top-down cosmology explains anthropic paradox (wikipedia)

The Universe's initial conditions could consist of a superposition (*low density lines*) of many possible initial conditions, only a small fraction of which contributing to the conditions we see today. According to this theory, it is inevitable that we find our Universe's "fine-tuned" physical constants, as **our current Universe "selects" only those past histories that led to the present conditions.**

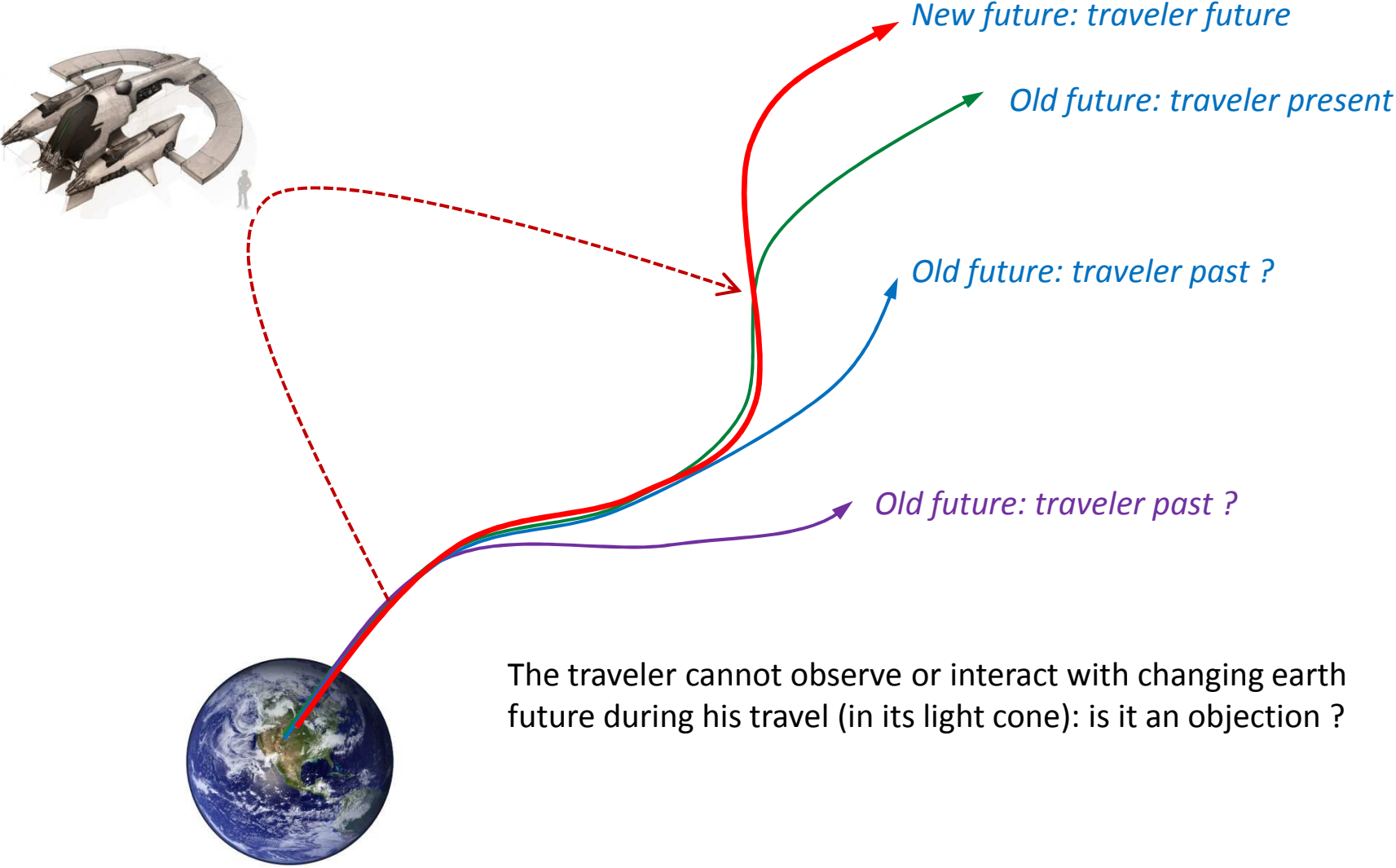


Etienne Klein (vidéo about the block universe, 2013)

*<< If we put quantum mechanics into the block universe, **we must accept retrocausality**, the idea that a future event can influence a present event, and that's occurring in our present life... I knew I had to come here this morning a long time before... and then this event that was in my future has acted on my present >>*

To what extent is it possible to change the past ?

Traveler of the future: does his past changing ?

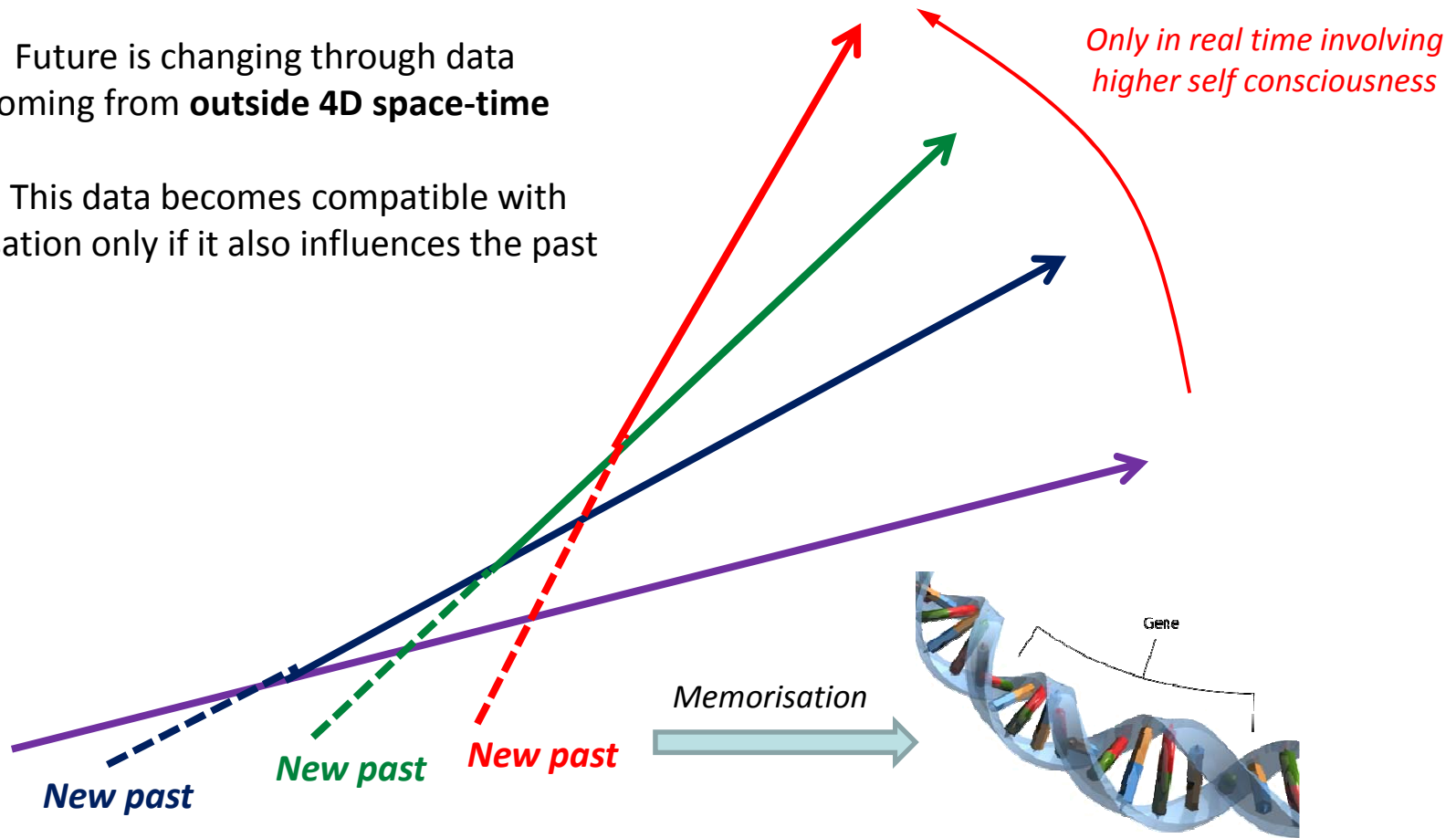


The traveler cannot observe or interact with changing earth future during his travel (in its light cone): is it an objection ?

A paradox: Branch determinism => changing past

Future is changing through data coming from **outside 4D space-time**

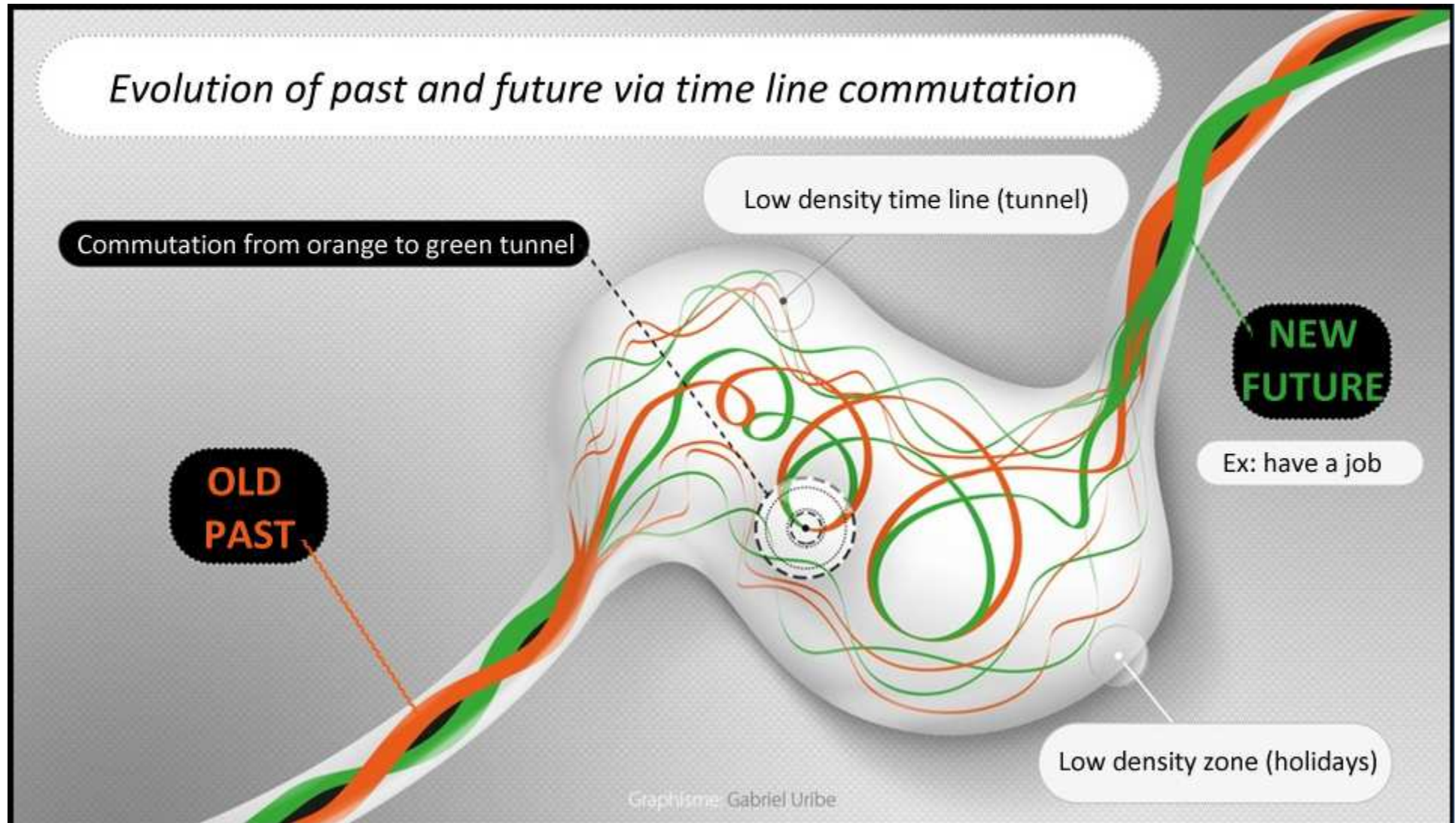
=> This data becomes compatible with causation only if it also influences the past



Important consequence: changing the past is not possible through causality
It cannot be made into a mechanized world or through a mental processus

Example of past and future possible evolution

3 periods: Working-> Holidays -> Working



Conclusion

In view of modern physics:

- The past could be considered as a collective construction in the same way as the future.
- The creation of our reality (block universe) could be made from the future to the past.
- The main fonction of the past could be to memorize (store) the progress of our evolution.

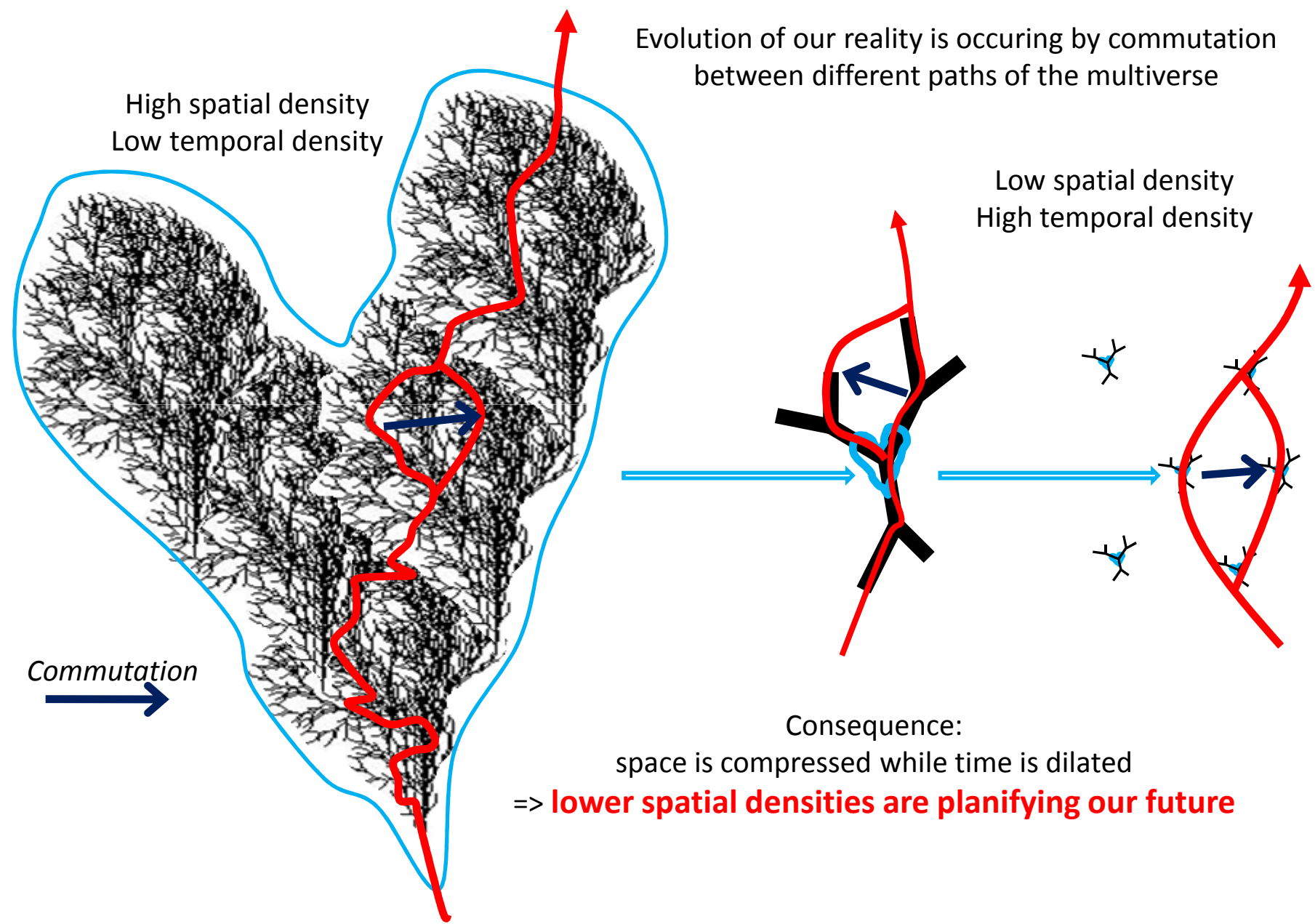
In view of the corresponding metaphysics:

- This evolution **in real time (eternal present)** is not the result of temporal mechanics but of our free consciousness, not conditionned (mental / emotionnal / ego) but higher self (HS).
- Perhaps we should take care of our level of counciousness (connection to HS) so as to build a better future, which would create a better past as a consequence (stored in our genes for example).
- Trying to change the past by eliminating tracks or forcing a new past could be the best way not to change anything, because our past, like present, is a dense reflect of our higher self (= our future)
- Changing the future by changing our counciousness of the past is much easier (forgiveness)

And finally: physics is opening the door to spirituality...

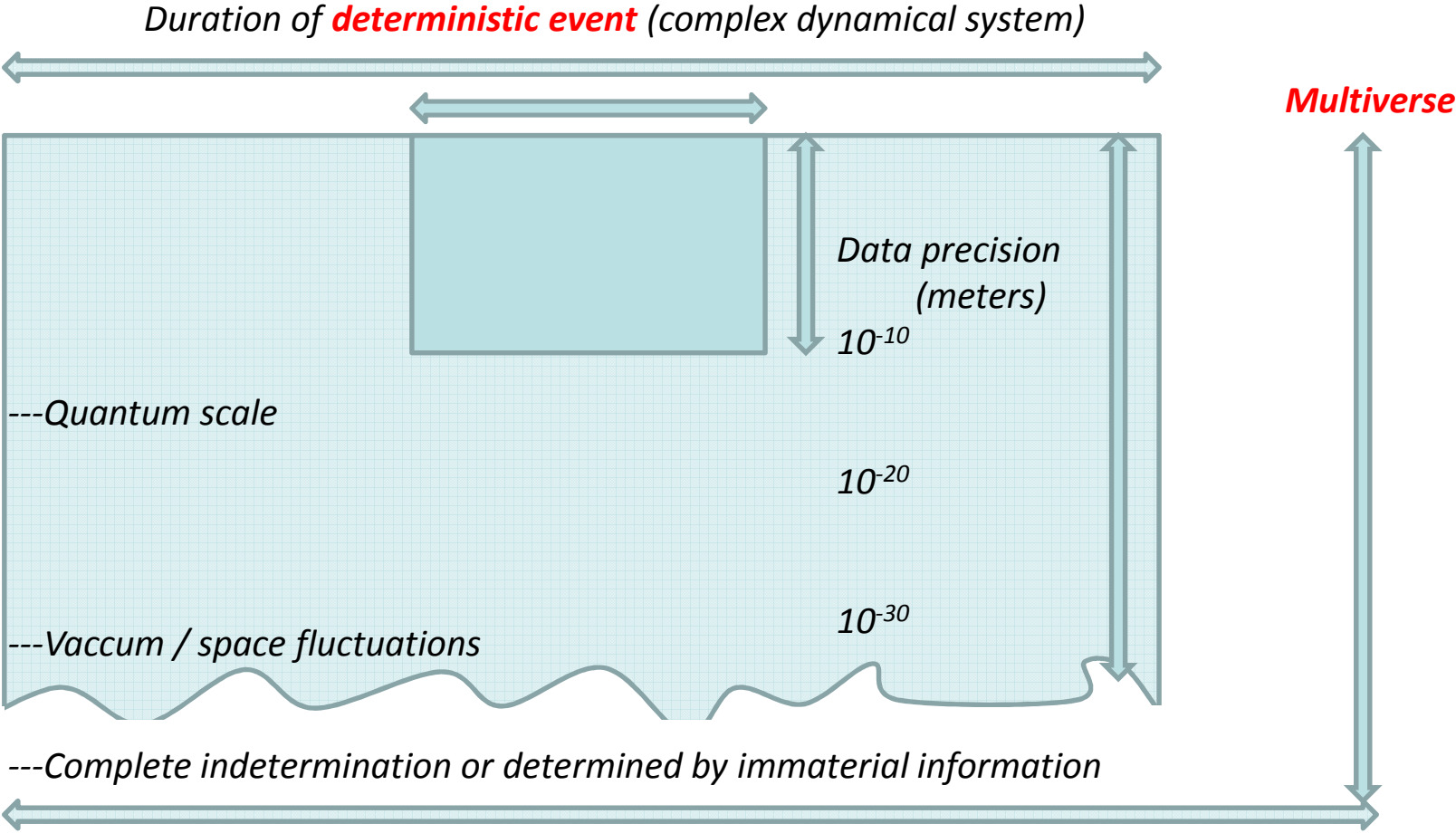
ANNEXES

Fractale multiverse hypothesis (density levels)

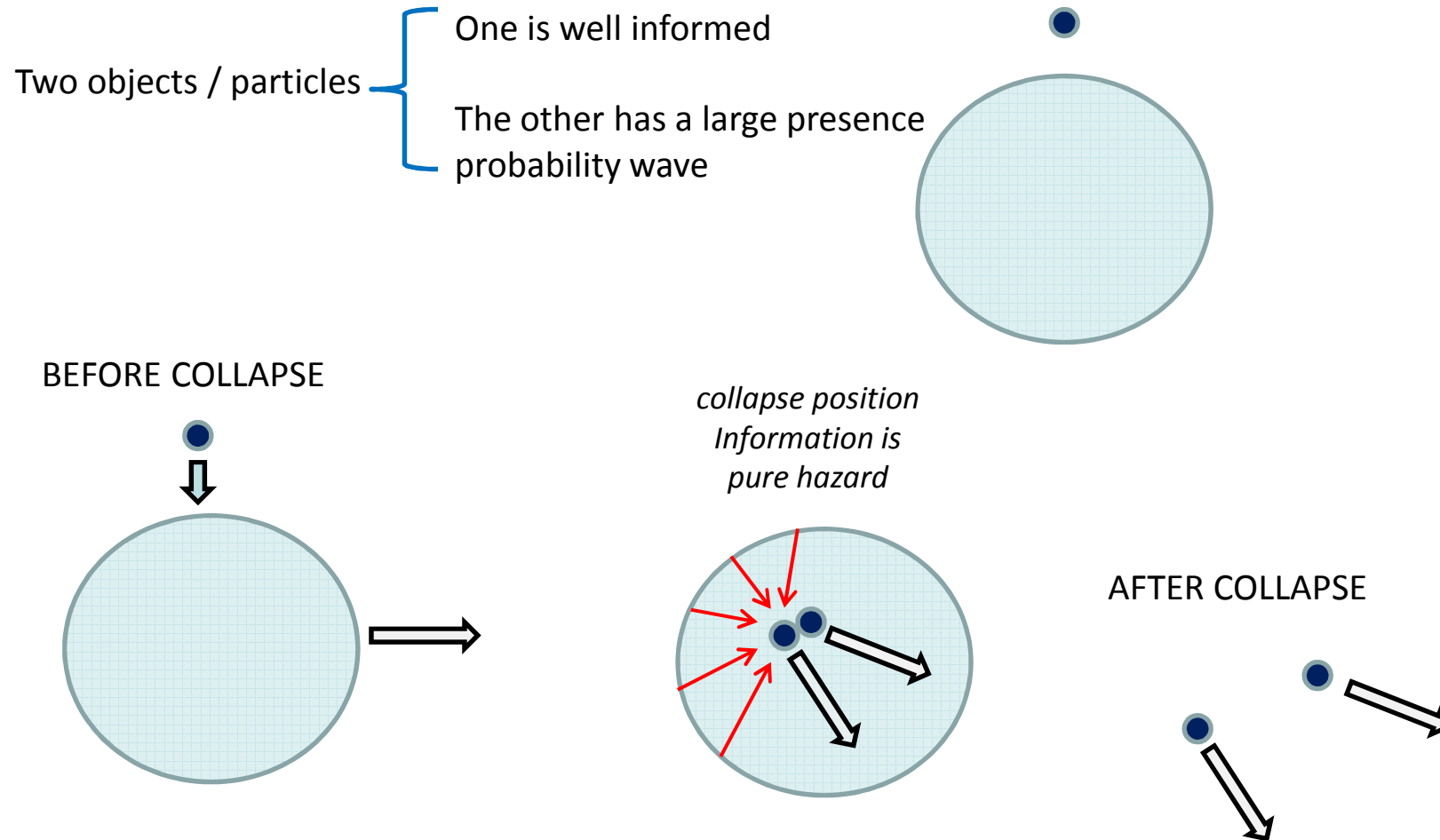


The multiverse is not only quantum but classical

Decoherence give the illusion we live in a unique reality : it's only an illusion

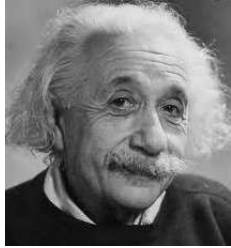


A simple way to understand decoherence



Attention: due to entropy increasing, decoherence is not enough to maintain informed reality without observation (consciousness)

Quotes of 7 physicist writers about time



Einstein:
*the separation
between past,
present, and future
is only an illusion*



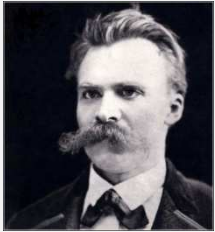
Thibault Damour:
*The future is already there ..
The time is fundamentally
reversible*



Etienne Klein:
*The future already exists, it is
an authentic reality, but
partially configured*



Marc Lachièze-Rey:
*The time does not exist.
Causality is independent
from time.*



Nietzsche:
*The future influences
the present just as
much as the past*



Carlo Rovelli:
*The time does not
exist. The reality does
not evolve in time,
but another way*



Alain Connes:
*The past could be
unstable, the past
could change or be
altered.*



Antoine Suarez:
*Physics needs an immaterial
coordination, insensible to
space and time (or from
outside space-time)*