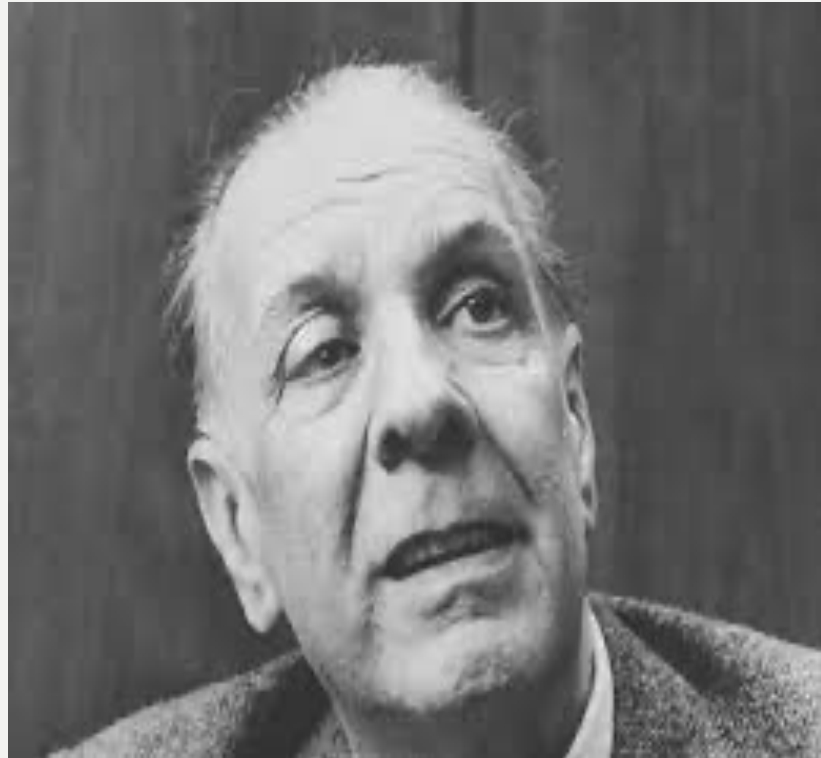


THE ARROW OF TIME



**ETZEL CARDEÑA, PH. D.
THORSEN PROFESSOR OF PSYCHOLOGY
LUND UNIVERSITY, SWEDEN**

JORGE LUIS BORGES (1899-1986)



- El tiempo es un problema para nosotros, un tembloroso y exigente problema, acaso el más vital de la metafísica...
- Time is a problem for us, a quivering and demanding one, perhaps the most important metaphysical one

Philosophy

Physics

PSI

Time

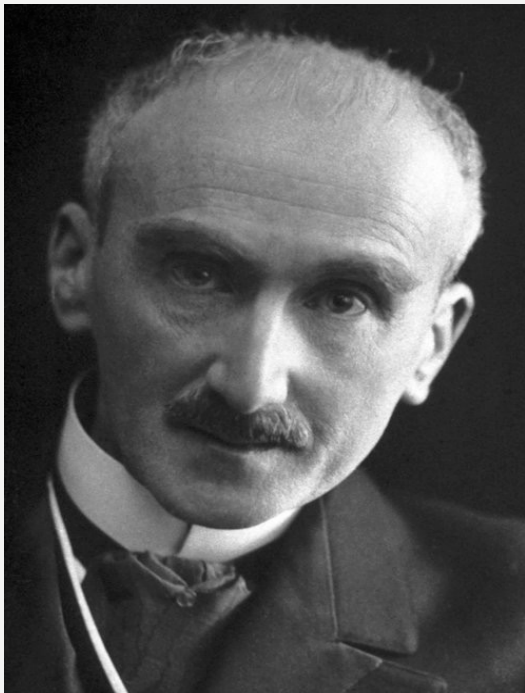
Biology

PSI

Psychology

TWO PHILOSOPHERS OF TIME

HENRI BERGSON (1859-1941)



MARTIN HEIDEGGER (1889-1976)

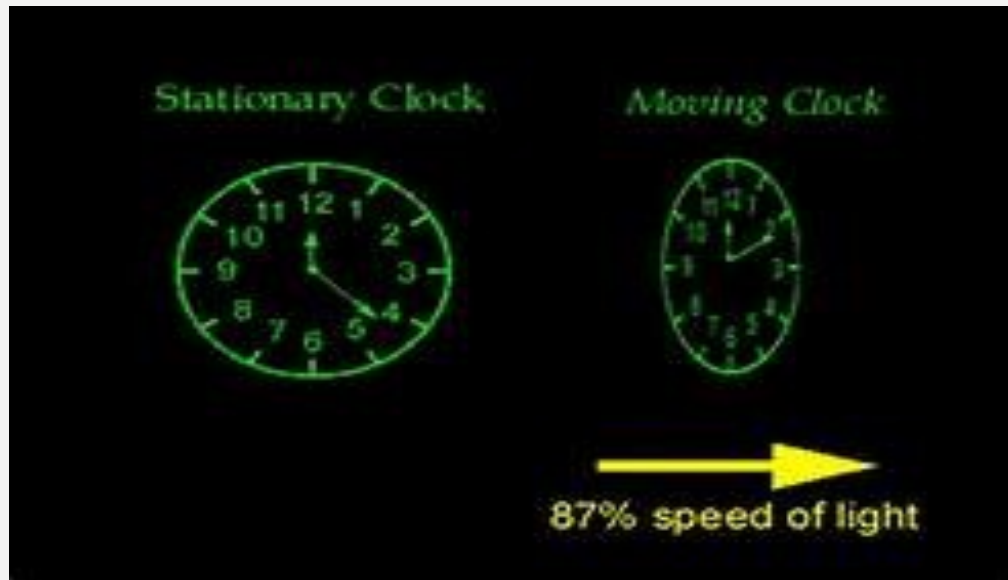


THE MEASURE OF TIME IN PHYSICS

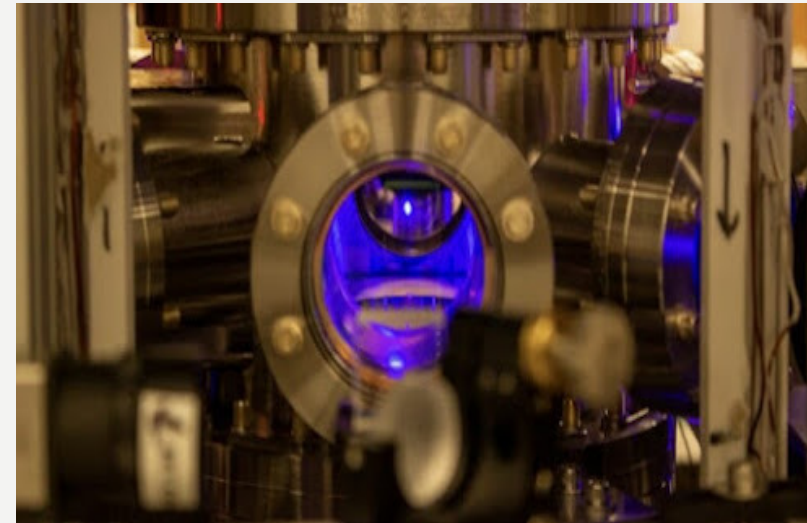
- Caesium clocks provide the International System of Units second, predicted to be off by less than one second in 300 million years.
- A second was defined in 1967 as the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom

YET, THERE IS NO ABSOLUTE TIME

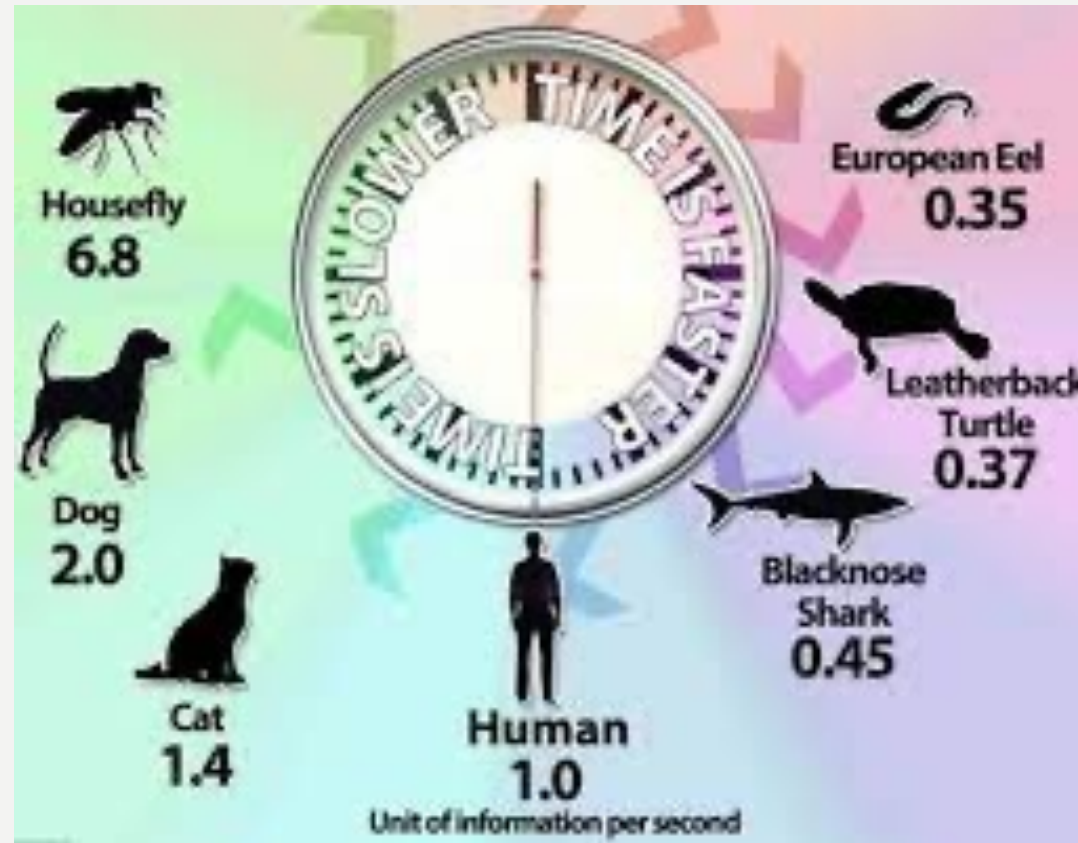
SPEED



GRAVITATION (CLOCKS SEPARATED BY 1 MM HAVE 1 S DIFFERENCE AFTER 300 BILLION YEARS)



TIME PERCEPTION VARIES BY SPECIES (HEALY ET AL., 2013)

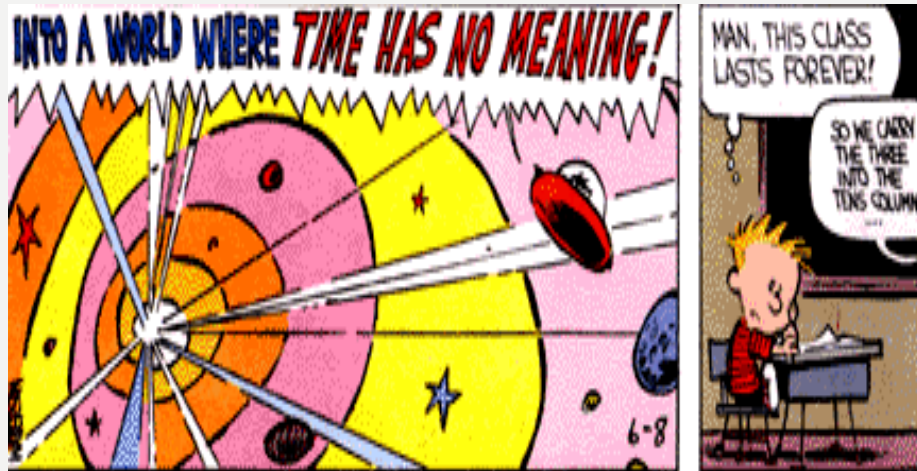


AND ENVIRONMENTAL CHANGES

- Two breaths from a frozen frog may be separated by months



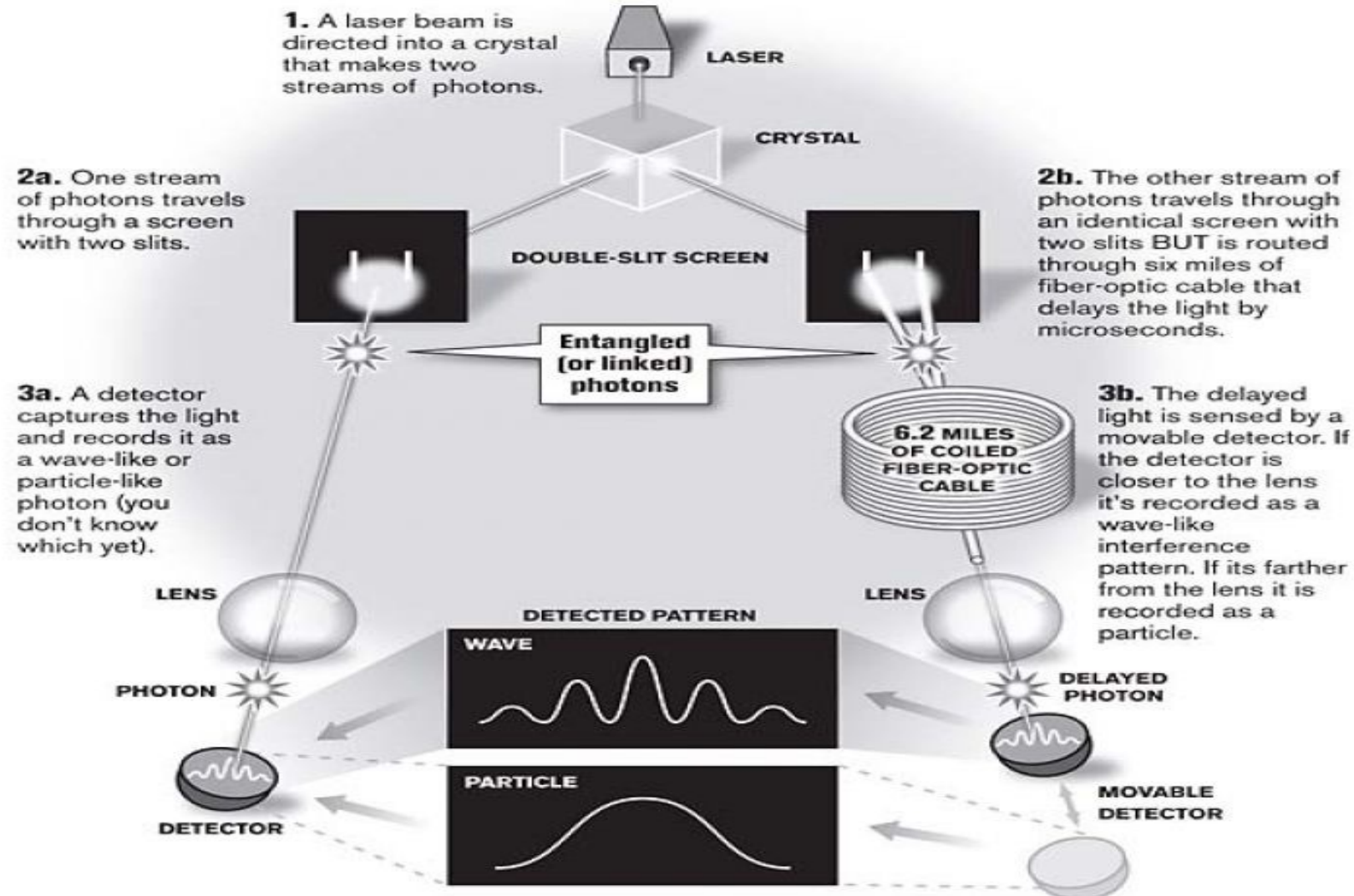
BY PSYCHOLOGICAL VARIABLES INCLUDING STATE OF CONSCIOUSNESS



- Hold Infinity in the palm of your hand
- And Eternity in an hour
- (William Blake)
- (From a hypnosis session with a hypnotic virtuoso)
- Did anything else happen to you during the time that you didn't speak?
- Things don't happen here. It's not a matter of happening, it's a matter of being

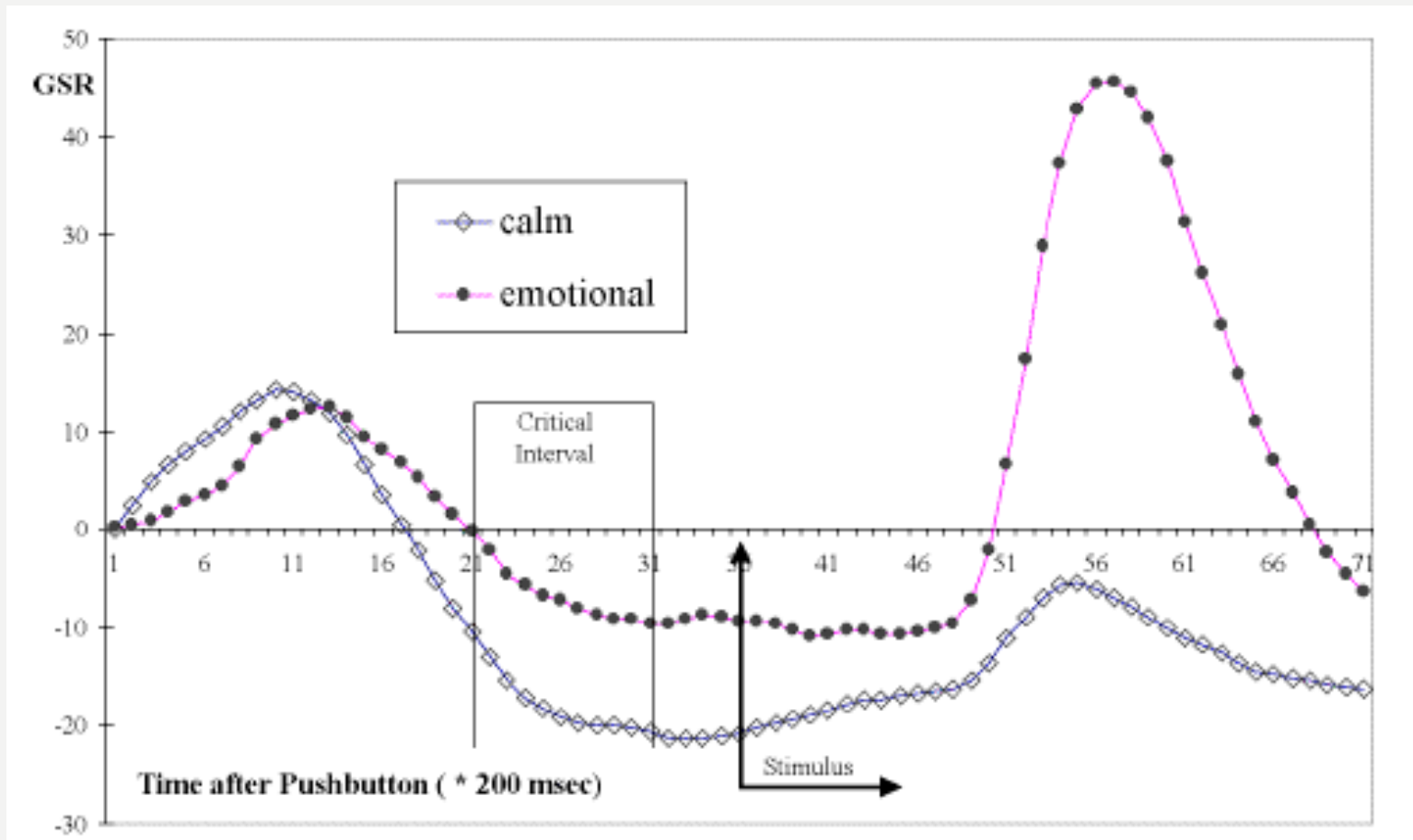
Retrocausality: Can the present affect the past?

Researchers have devised an experiment using laser light to demonstrate a property of quantum mechanics: That pairs of entangled photons show identical properties as either a wave or a particle. By using this knowledge, they hope to demonstrate how to influence an event that has already occurred.



What is happening here: By choosing to measure the delayed photon as either a wave or particle photon, the experimenter forces the other photon to appear in the same way – because they are entangled – even though it reaches the detector earlier.

PRECOGNITION (PRESENTIMENT) AND EMOTIONS (BIERMAN & RADIN, 1997)



RICHARD II (SHAKESPEARE)

- I wasted time, and now doth time waste me; For now hath time made me his numbering clock...

