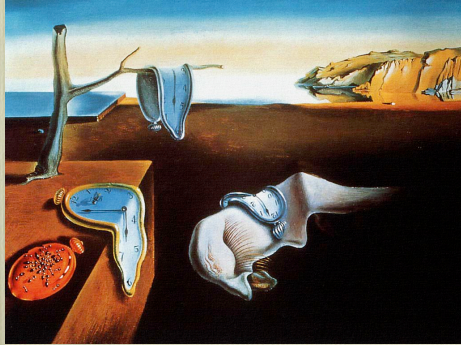


Time is Just a Four-Letter Word

Peter Watson



What then is time?

- *If no one asks me, I know what it is. If I wish to explain it to him who asks, I do not know.*
- **St Augustine**
- **Time is what we don't have enough of.**

(title stolen from Joan Baez)

What does a clock measure?

- What does "prediction" mean?
- When did time measurement start?
- Do we experience time in the same way?
- Why does time pass quicker as we get old?
- What defines the direction of time?
- Physiological Time: what is a biological clock?
- How short a time can we perceive?
- What exactly is causality?
- Is time travel possible?
- If so, why can't we do it?
- If not, what forbids it?
- How do we know that two clocks measure the same time?
- How are time and space linked?
- Is time "smooth"?
- Did time begin?
- Will it end?

Where are we going?

1. Time and Language: How we talk about time
2. Stonehenge to Caesium: How we Measure Time
3. Bicycle Pumps and Rice Puddings: Time's Arrow
4. Going Straight in a Bent Space: How Matter bends Time
5. "All You Zombies": Good literature and Bad Science
6. Grouse, Hurricanes and Dead Cats: How to predict
7. The Beginning and the End

Time and Culture

Note we will be using "culture" generically

- Literature
- Theatre
- Film
- TV
- Music
- Art

Sources:

Books (non-fiction):

- Time Machines (Paul J. Nahin, also with K. S. Thorne)
- Time Travel in Einstein's Universe (J. Richard Gott)
- In Search of Time: The History, Physics, and Philosophy of Time (Dan Falk)
- About Time (Paul Davies)
- The Stuff of Thought : Language as a Window into Human Nature (Steven Pinker)
- Don't Sleep, There are Snakes (Daniel Everett)
- Physics of Star Trek (Lawrence Krauss)
- An Experiment with Time (J. W. Dunne)

Fiction: short stories

All You Zombies..... (Robert Heinlein)
...and he built a Crooked House (Robert Heinlein)
All Mimsy were the Borogroves (Lewis Padgett)
The Sound of Thunder (Ray Bradbury)
The Garden of Forking Paths, Library of Babel (Jorges Luis Borges)
A Subway Named Mobius (Deutsch)

Fiction: novels

The Time Machine (H. G Wells)
The Forever War (Joe Haldeman)
Slaughterhouse 5 (Kurt Vonnegut)
Times Arrow (Matin Amis)
Einstein's Dreams (Alan Lightman)
The Time Traveller's Wife (Audrey Niffenegger)
Time and Again (Jack Finney)

Movies

Sliding Doors
Back to the Future
The Butterfly Effect

Plays

Dangerous Corner, I have Been Here Before, Time and the Conways (J. B Priestley)
Arcadia, Hapgood (Tom Stoppard)

TV

Dr Who; (not many, but try "Blink" in the David Tennant series)
Red Dwarf: (esp. Future Echoes, Time Slide, Stasis Leak, Backwards, Dimension Jump)
Star Trek (some)

Other

Ford, Roman Scientific American; January 2000, Vol. 282 Issue 1, p46

So how do we talk about Time?