

The Future of Time Travel

John Ashmead



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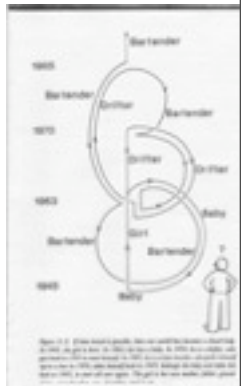


- “Really this is what is meant by the Fourth Dimension, though some people who talk about the Fourth Dimension do not know they mean it. It is only another way of looking at Time. There is no difference between time and any of the three dimensions of space except that our consciousness moves along it.” - The Time Traveler

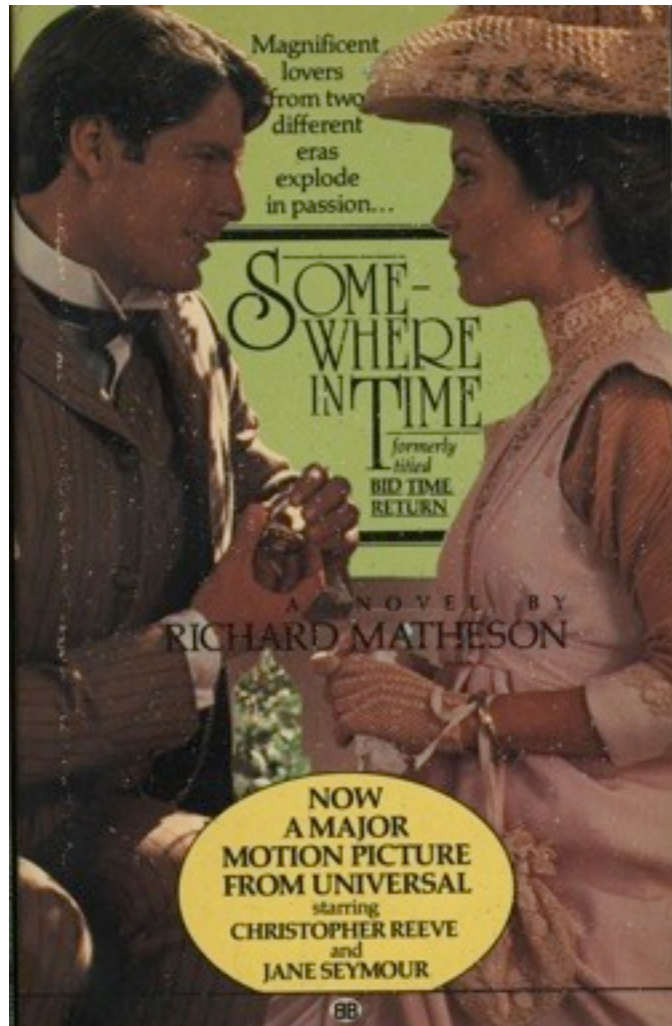
The past is
a different
country



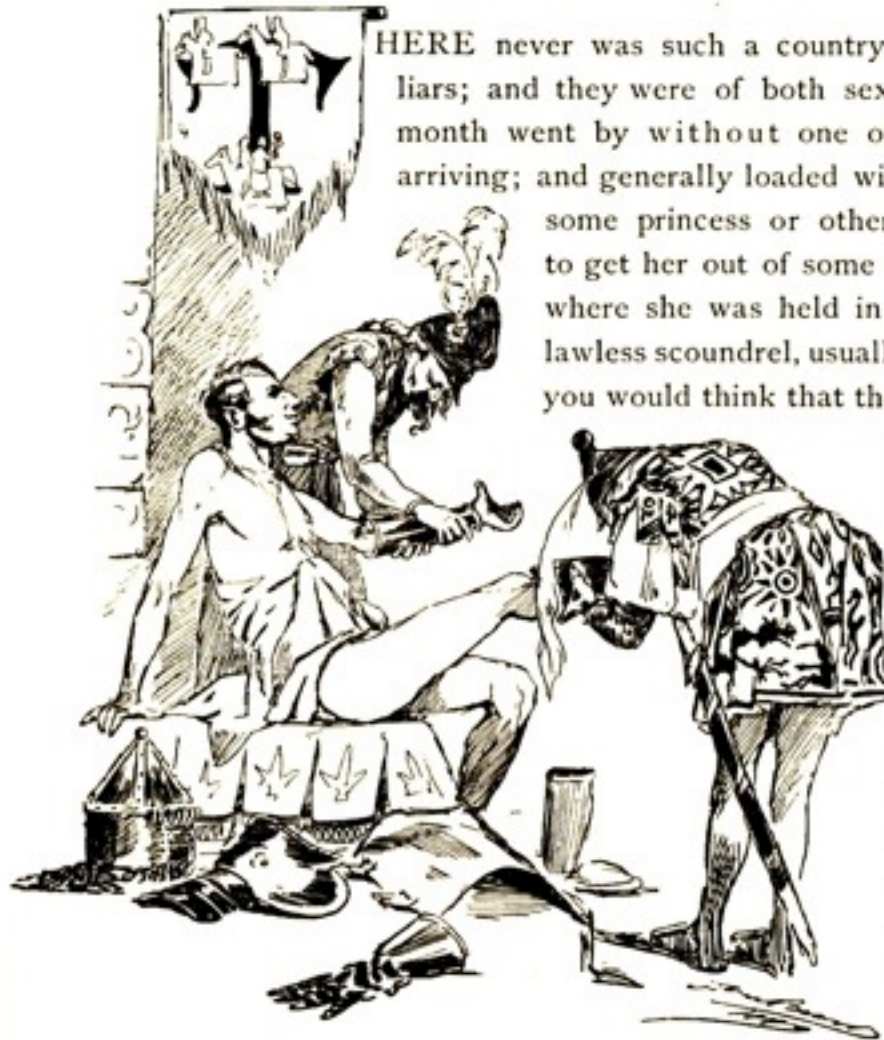
- **Time Past**
- Time Present
- Time Future
- All time



Vintage Season



- Time travel by force of nostalgia
- Time travel for nostalgia
- And time travel for anti-nostalgia: in classic Vintage Season, the time traveling tourists are there to see a disaster.



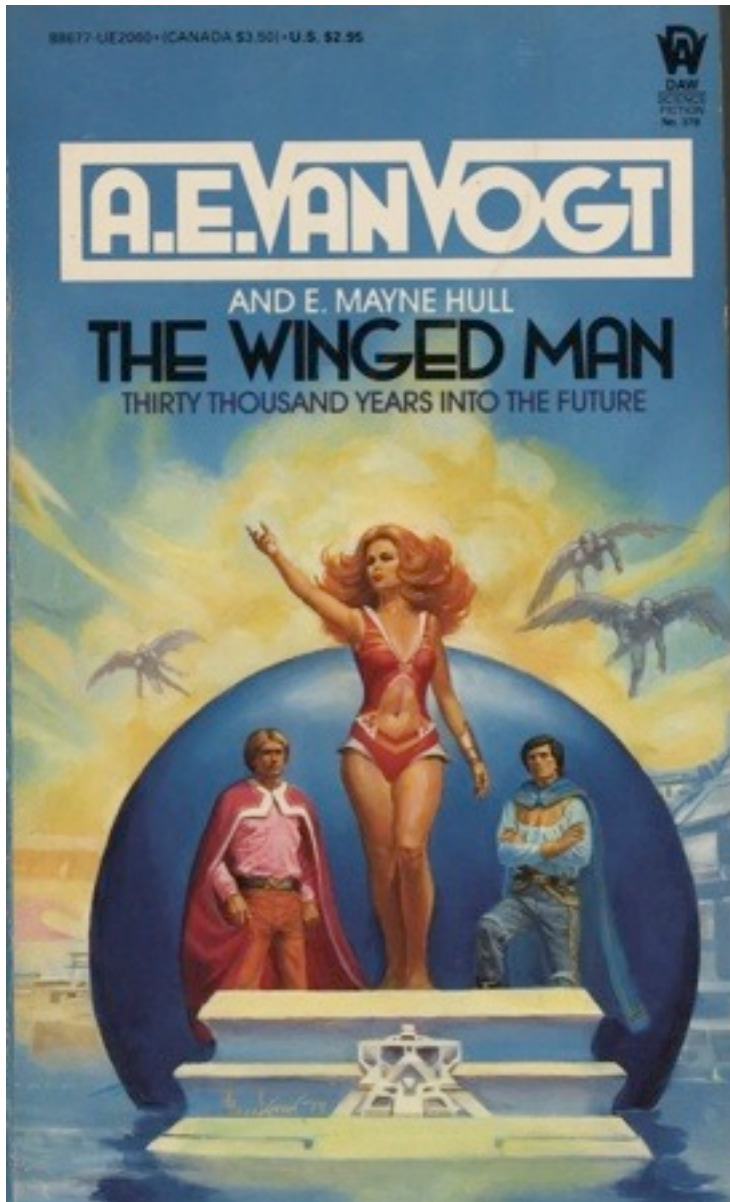
HERE never was such a country for wandering liars; and they were of both sexes. Hardly a month went by without one of these tramps arriving; and generally loaded with a tale about some princess or other wanting help to get her out of some far-away castle where she was held in captivity by a lawless scoundrel, usually a giant. Now you would think that the first thing the

king would do after listening to such a nov-
elette from an entire stranger, would be to ask for creden-
tials—yes, and a pointer or two as to lo-
cality of cas-
tle, best route to it, and so on. But no-

"THE BOYS HELPED ME, OR I NEVER COULD HAVE GOT IN."

body ever thought of so simple and common-sense a thing as that. No, everybody swallowed these people's lies whole, and never asked

A Connecticut Yankee in King Arthur's Court



- A fighting submarine from our time leaps to the future & plays a decisive part in the war of that time!
- The plot is pure van Vogt: if it slows for a moment it would crash to the ground of its own weight!
- Pure froth (& where's the harm?)!

The Persistence of Memory



- Time stretched, distorted, bent back on itself: time as a rubber sheet (not that far from the truth!)
- And memory is very tricky too

TOURMALIN'S TIME CHEQUES

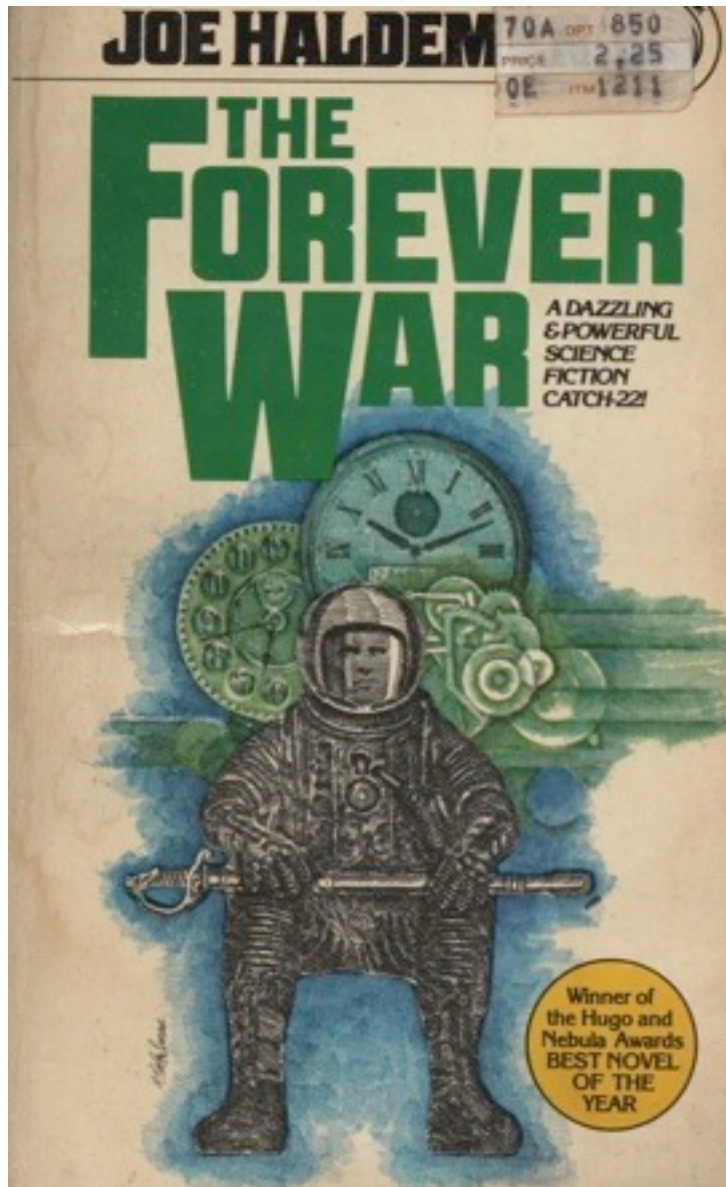
F. Anstey



GREENHILL
SCIENCE FICTION
& FANTASY

Time is Money

- “Why the amount of Time passing through our books annually during the last ten years, averages--ah! about sixty centuries!” - Anstey
- “I knew that time was precious but I did not know that it was priceless” - Petrarch

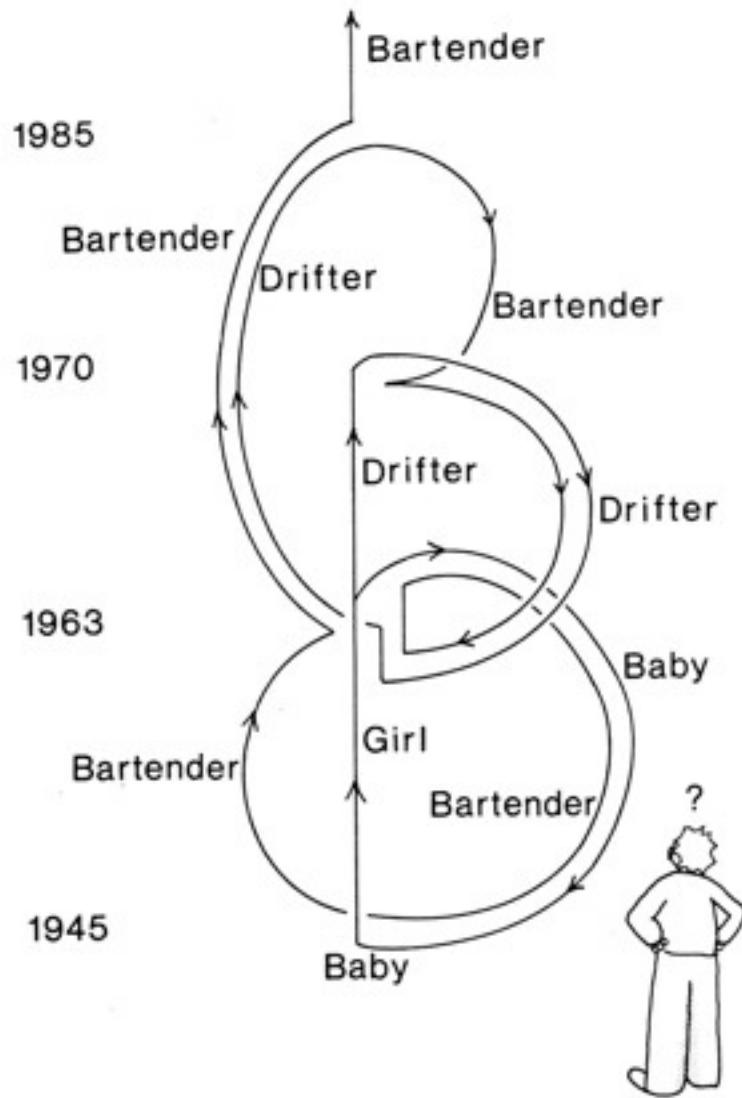


- Relativistic war: slowed time on travel & moments of desperation in combat
- “The 1143-year-long war had been begun on false pretenses and only continued because the two races were unable to communicate.”

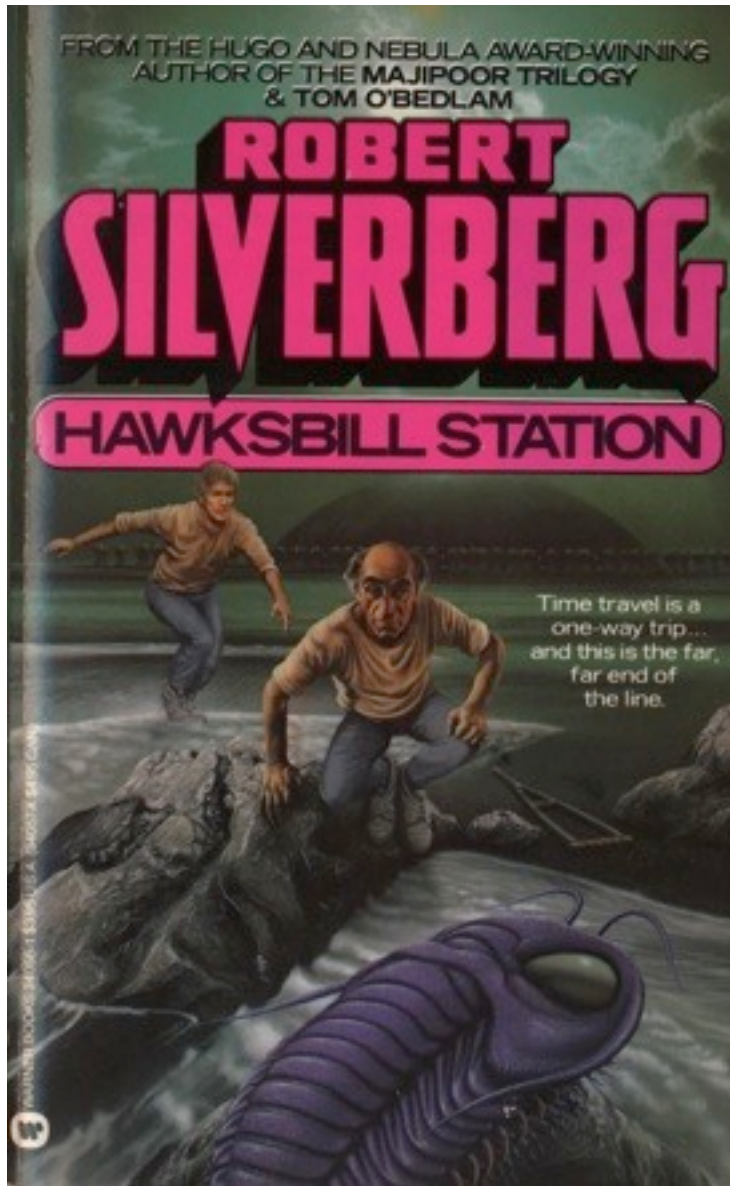


- “The Archive was a temporal telescope, a recording, a memory--in essence, a book. It was the ultimate history book, fed and refreshed by temporal discontinuities built into its matrix, a record of every known sentient act and thought since the dawn of the Eclectic Age. It was unalterable but infinitely accessible, aloof and antientropic.”

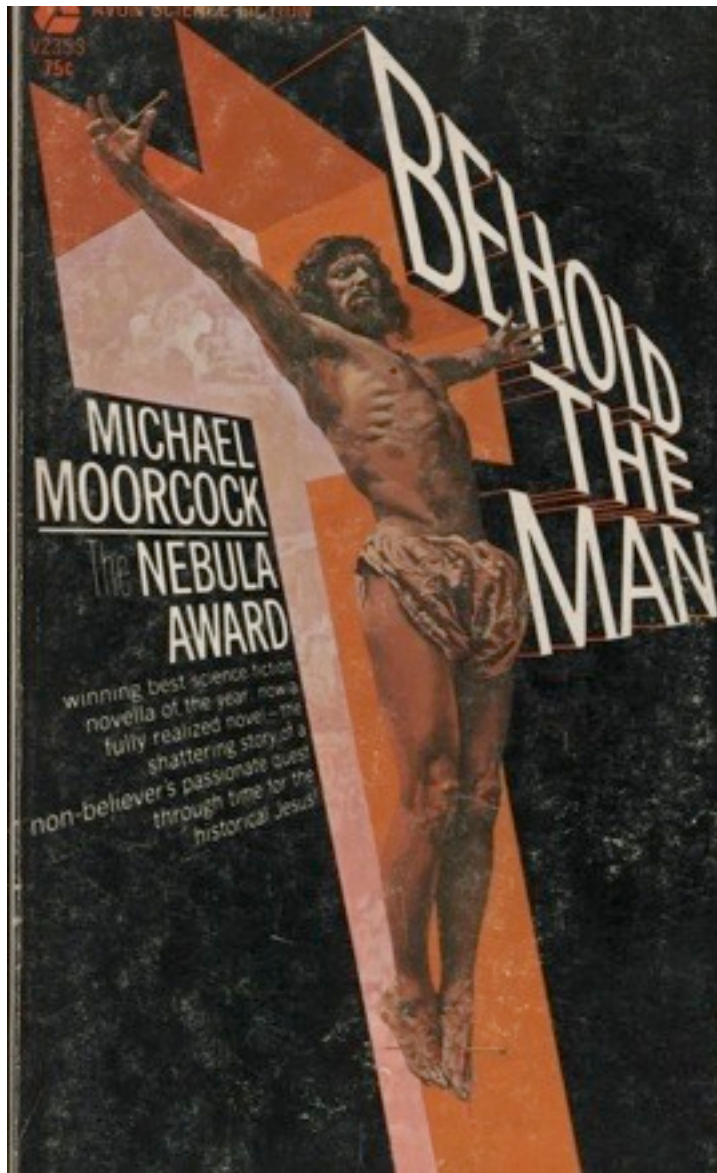
All You Zombies



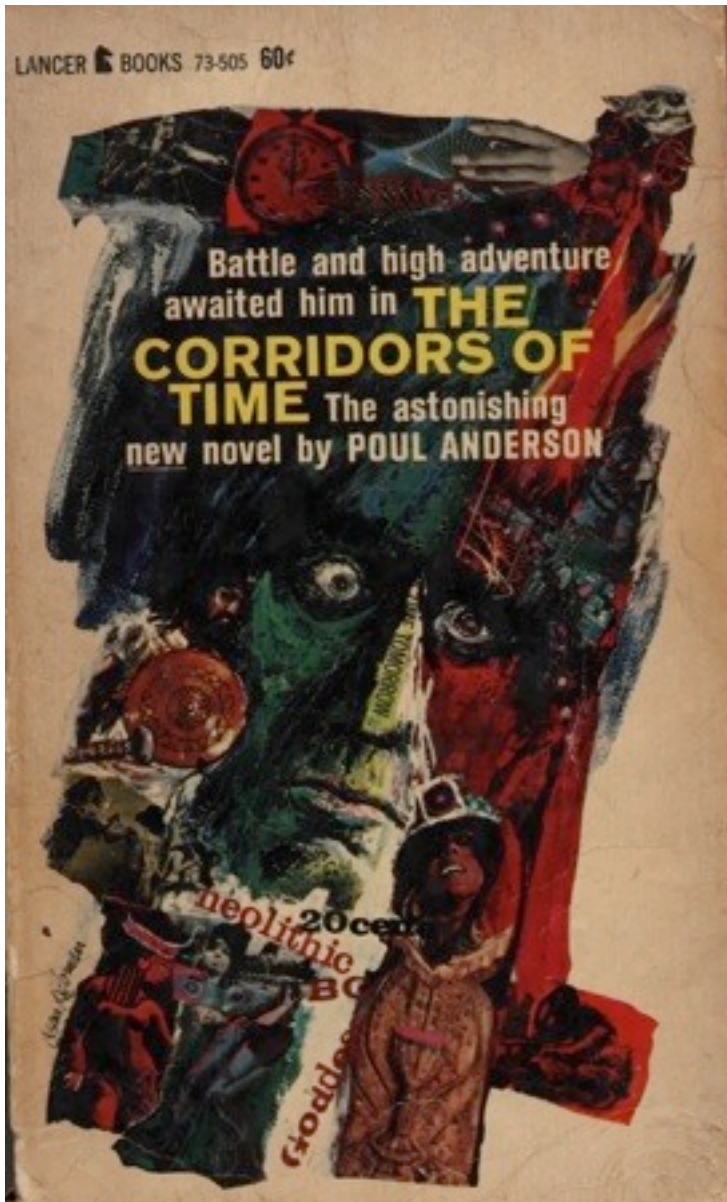
- A Paradox can be paradoctored!
- “I’m My Own Grandpa”
- “I know where I come from, but where do all you zombies come from?”
- “Of course I have free will. What choice do I have?” - Irving Berlin
- (Drawing is from Kaku’s Hyperspace)



- Temporal crimes:
- Paradoxing
- Destruction of timelines
- Rumfuddling
- Murdering your alternative self
- & the usual murder, theft, & so forth
- Pop quiz: Name 10 time crimes.



- “On the other hand, he was surprised that he felt so well considering all the self-inflicted hardships he had had to undergo. Also, he felt relaxed in the company of these strange men & women who were, he had to admit, undoubtedly insane by any normal standard. Perhaps it was because their insanity was not so very different from his own that after a while he stopped wondering about it.

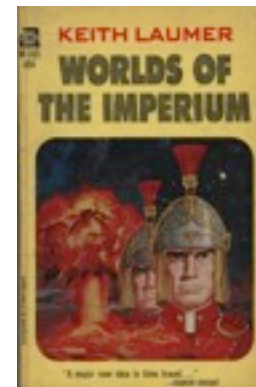
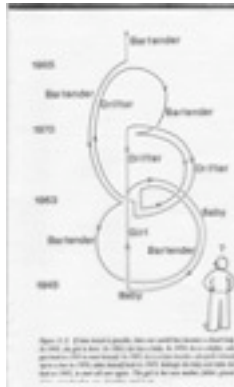


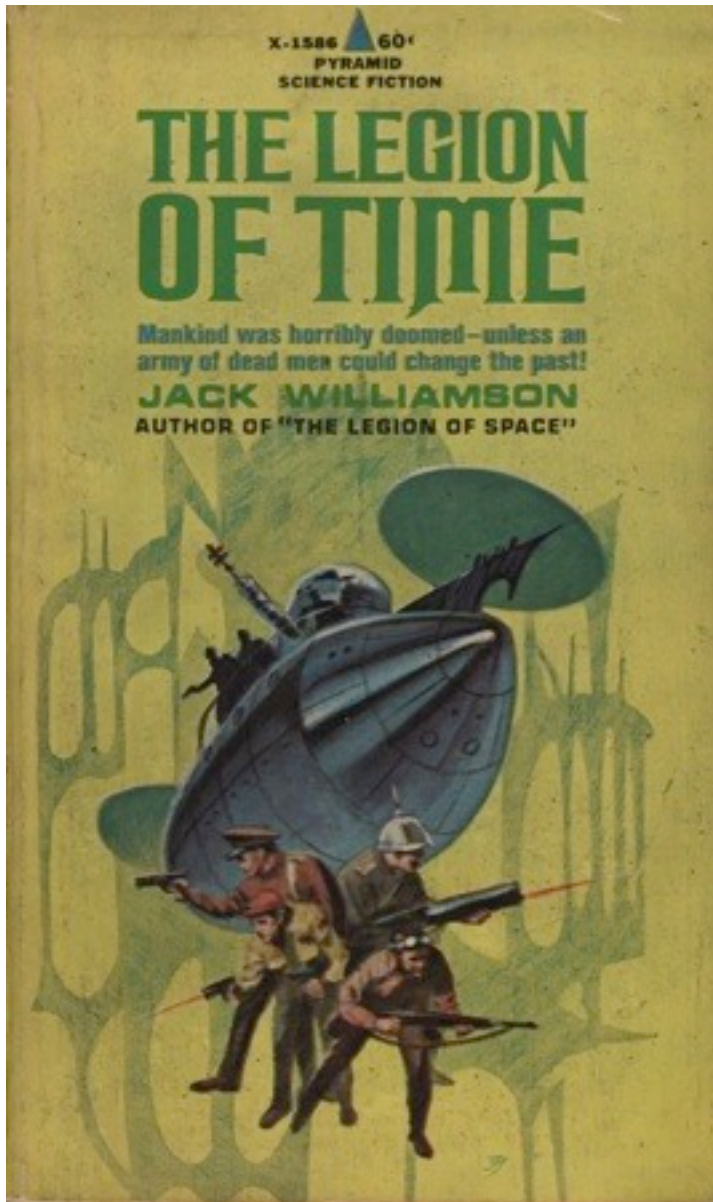
- “Huh? Wait! You mean you people *change* the past?”
- “Oh, no. Never. That is inherently impossible. If one tried, he would find events always frustrated him. What has been, is. We time travelers are ourselves part of the fabric. But let us say that we discover aspects of it which are useful to our respective causes, we get recruits, build up strength for the final contest.”

“That depends
on what the
meaning “is”
is.



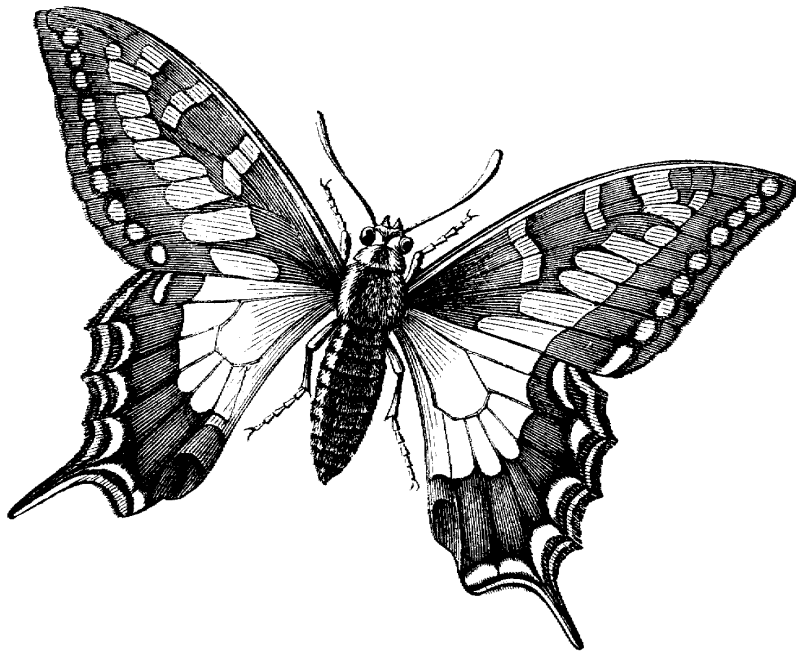
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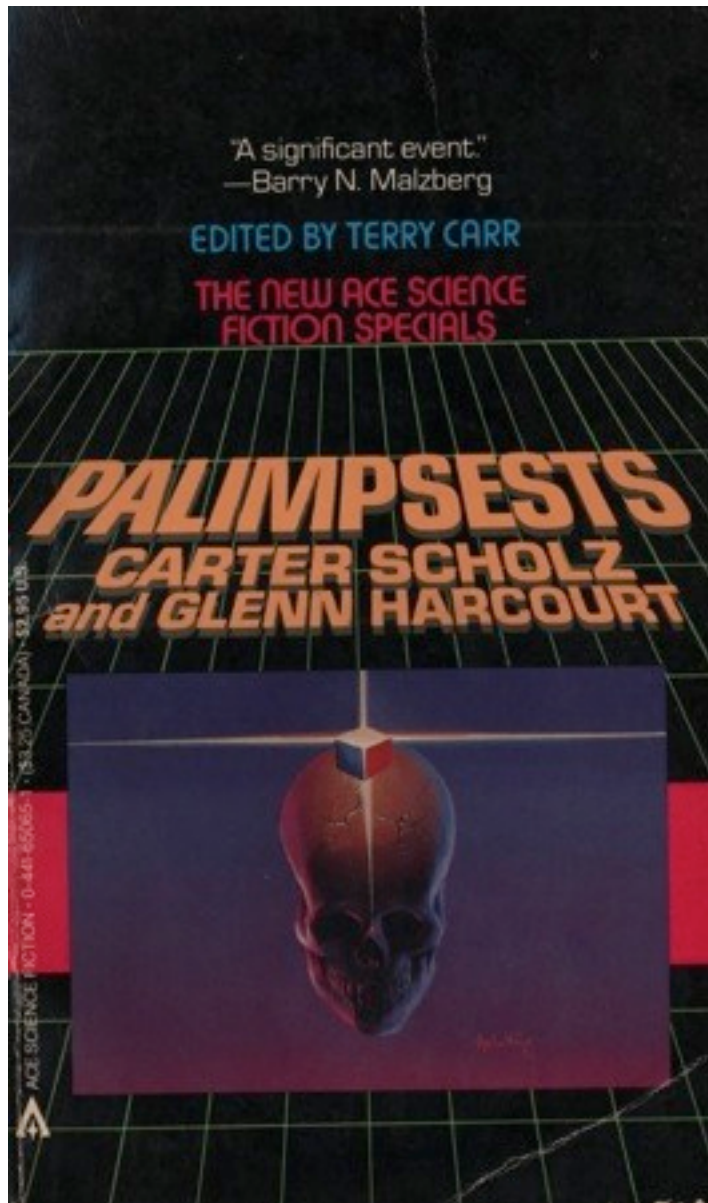


- “It happened,” the hoarse voiceless gasp went on, “that Gyronchi was the first future world, out of those possible, that the chronoscope revealed. Happened that I found Sorainya, splendid in her armor, fencing with one of her human ants.”

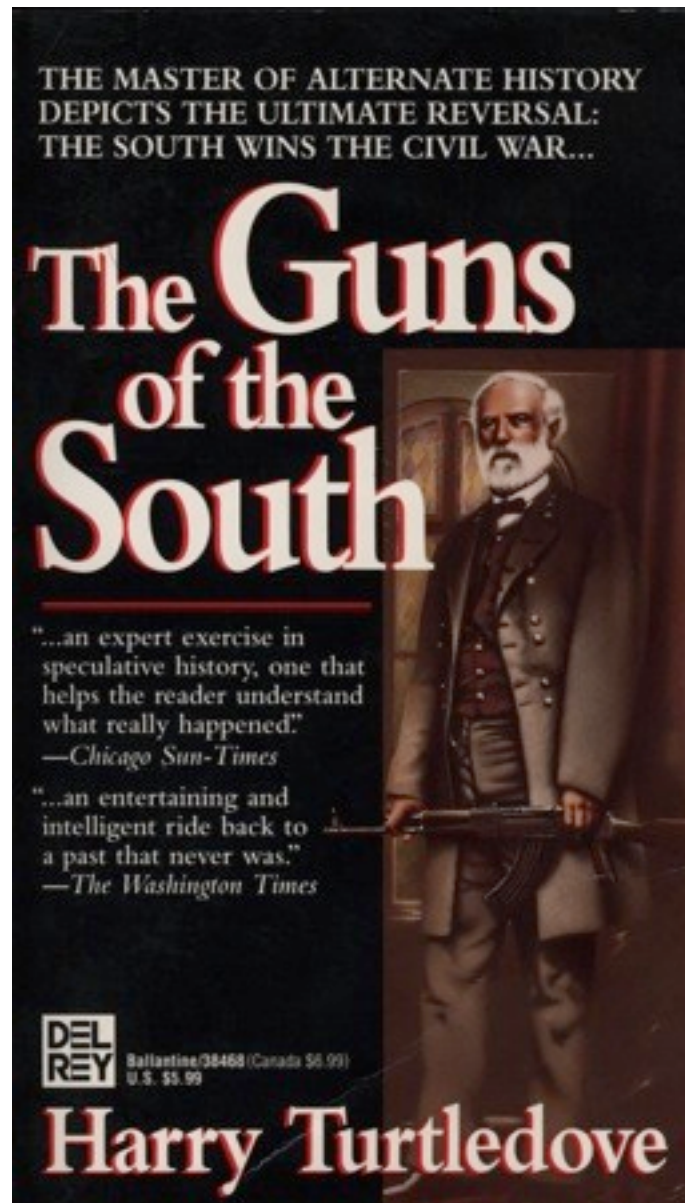
A Sound of Thunder



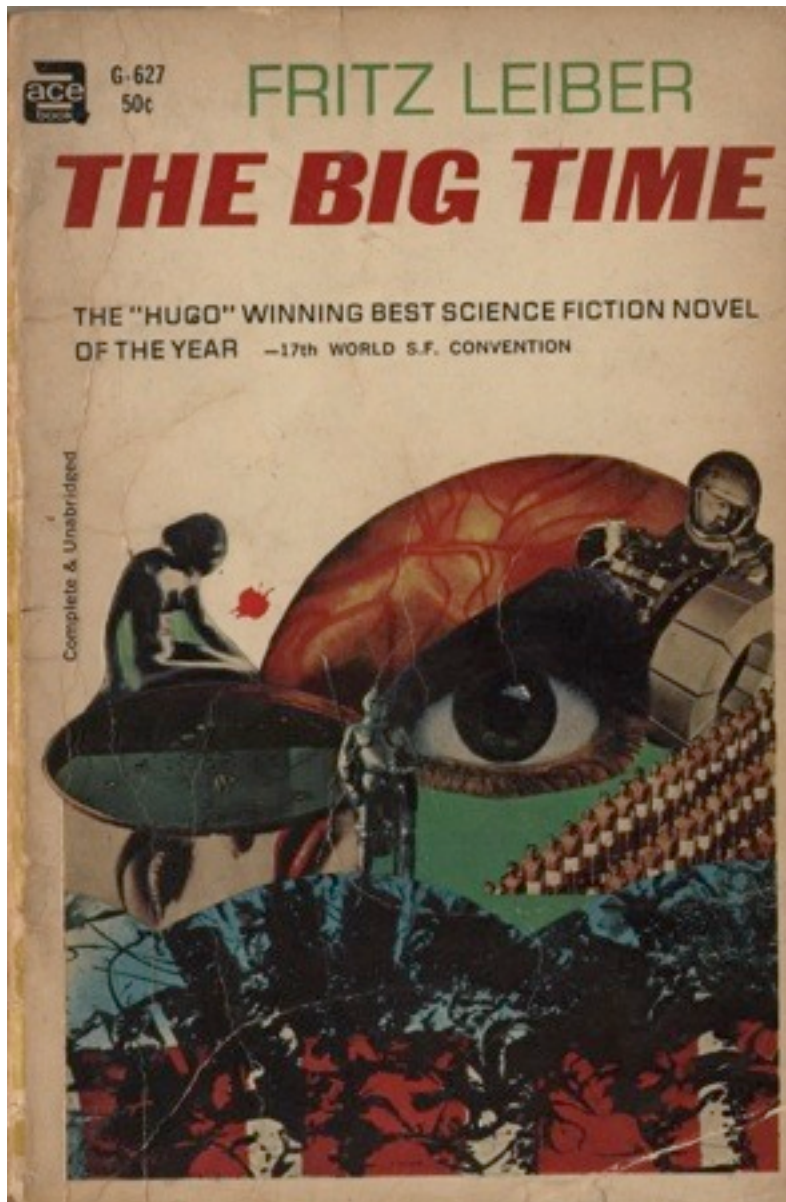
- Eckels ... fumbled crazily at the thick slime on his boots. He held up a clod of dirt, trembling, "No, it can't be. Not a little thing like that. No!"
- Embedded in the mud, glistening green and gold and black, was a butterfly, very beautiful and very dead."



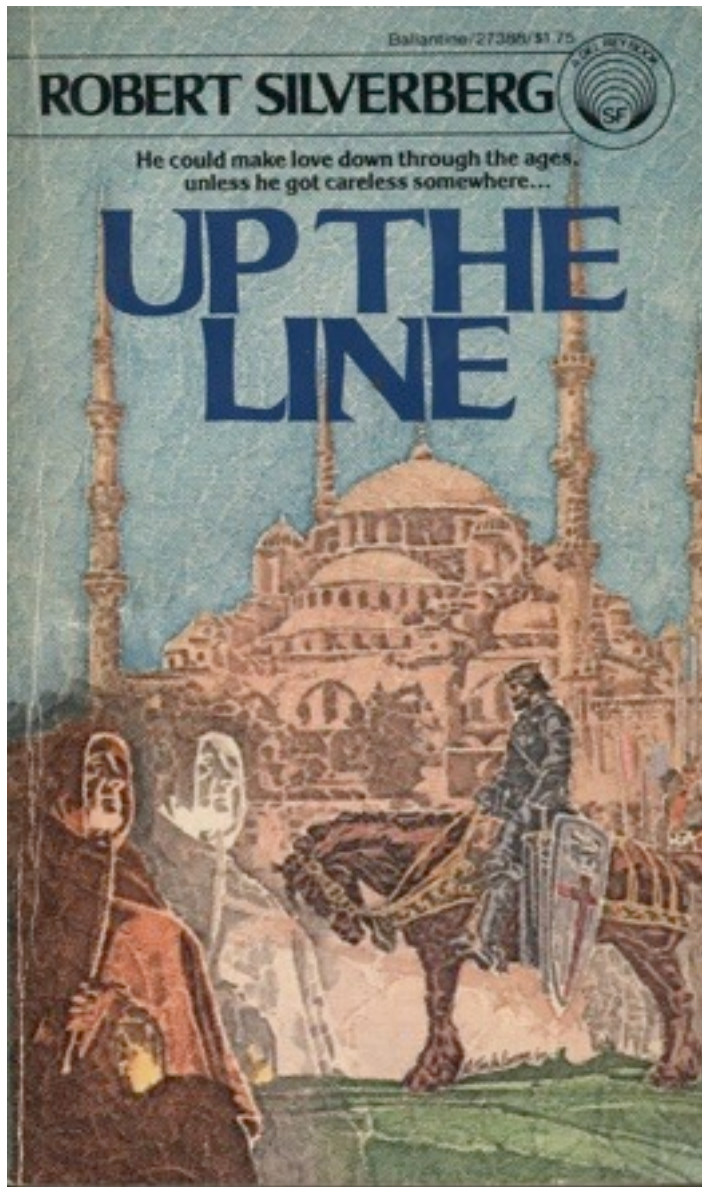
- “How very many piously forged palimpsests slipped in the first place from his pelagiarist pen.” - Finnegan’s Wake
- A palimpsest is a pagan scroll scraped clean for reuse by the devotee; traces of the old writing often persist.
- A relic of the overuse of spreadsheet time.



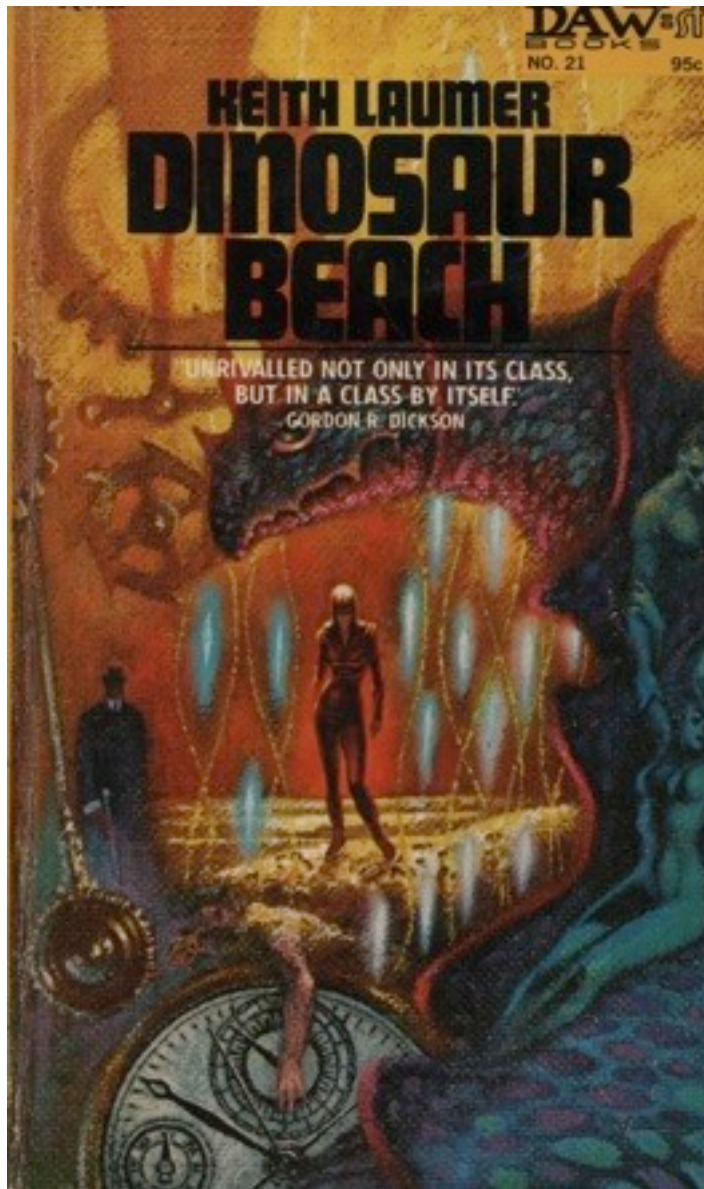
- “The Guns of the South would never have been written had Judith Tarr not complained in a letter to me that the cover art for an upcoming book of hers was as anachronistic as Robert E. Lee holding an UZI. That set me wondering how and why he might get his hands on such a weapon. ...”



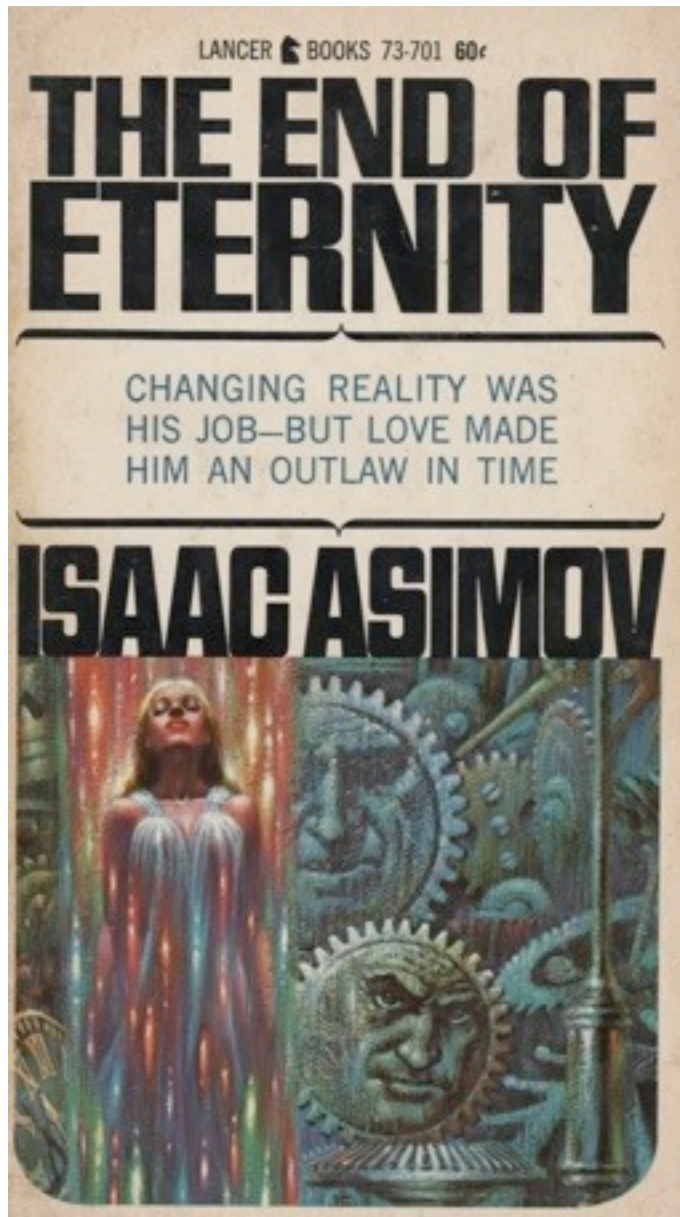
- Law of Conservation of Reality
- Try & Change the Past: the universe is not enthusiastic about this.
- Snakes & Spiders: you can join both at the moment of your death.



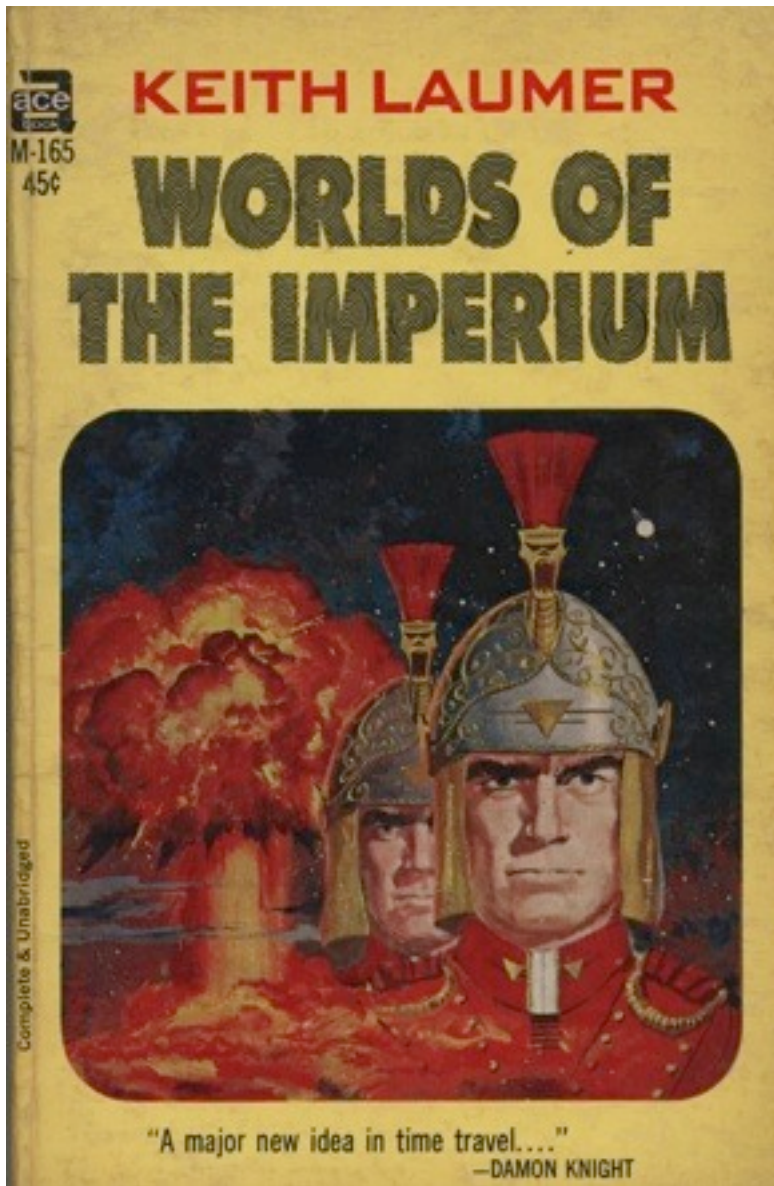
- “You can work the switch through your clothes. It’s never a good idea to arrive in the past with your pants around your knees. You can’t run fast enough that way. And sometimes you’ve got to be ready to run the second you get there.”



- “When you patch time, you poke holes in it; and patching the patches makes more holes, requiring still larger patches. It’s a geometric progression that soon gets out of hand; each successive salvage job sends out waves of entropic dislocation that mingle with, reinforce, and complicate the earlier waves- and no amount of paddling the surface of a roiled pond is going to restore it to a mirror surface”



- Trying to create the MNC (minimum necessary change) to create the MDR (maximum desired response).
- Eventually they breed mankind into a sterile utopia, the inheritors of which cancel the whole ab initio.

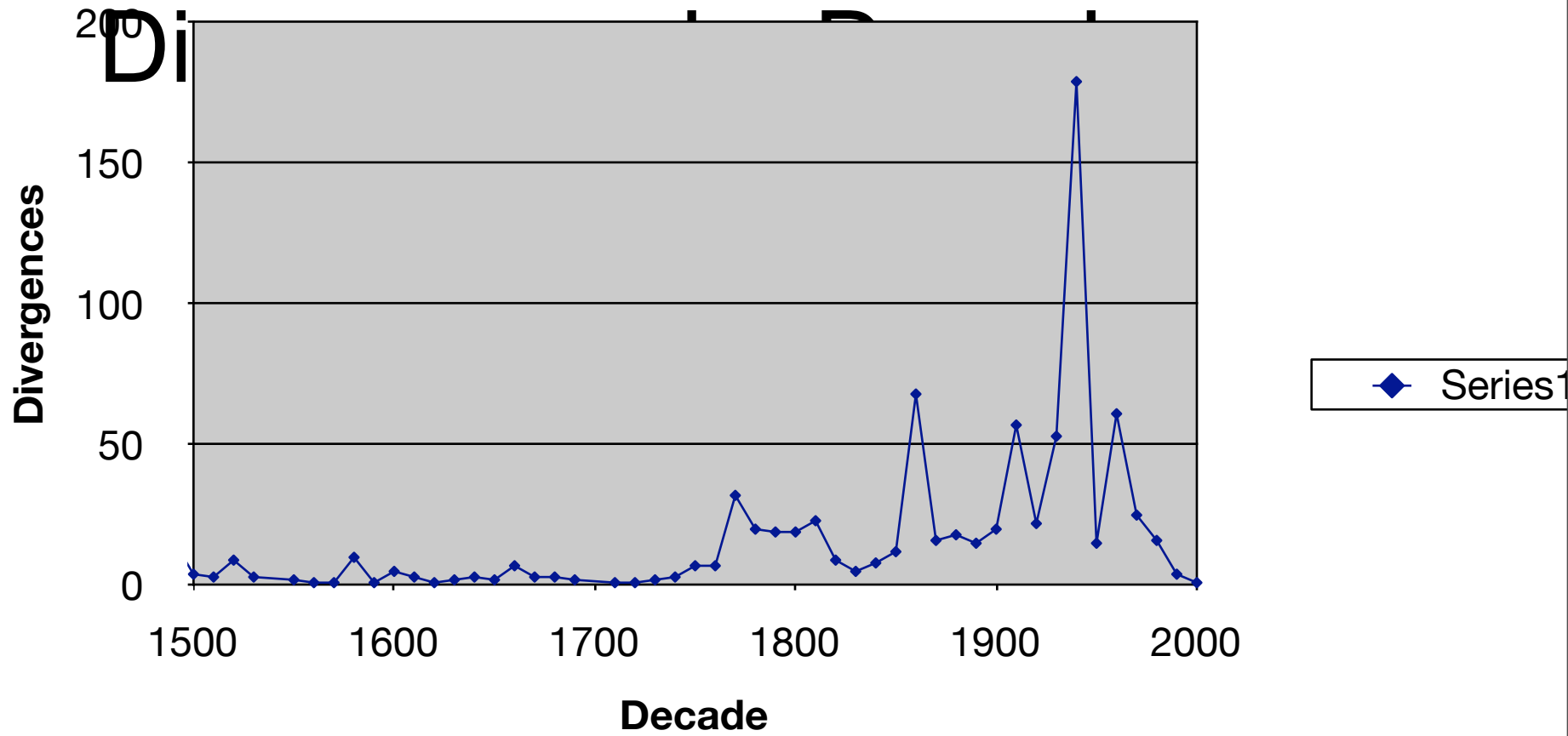


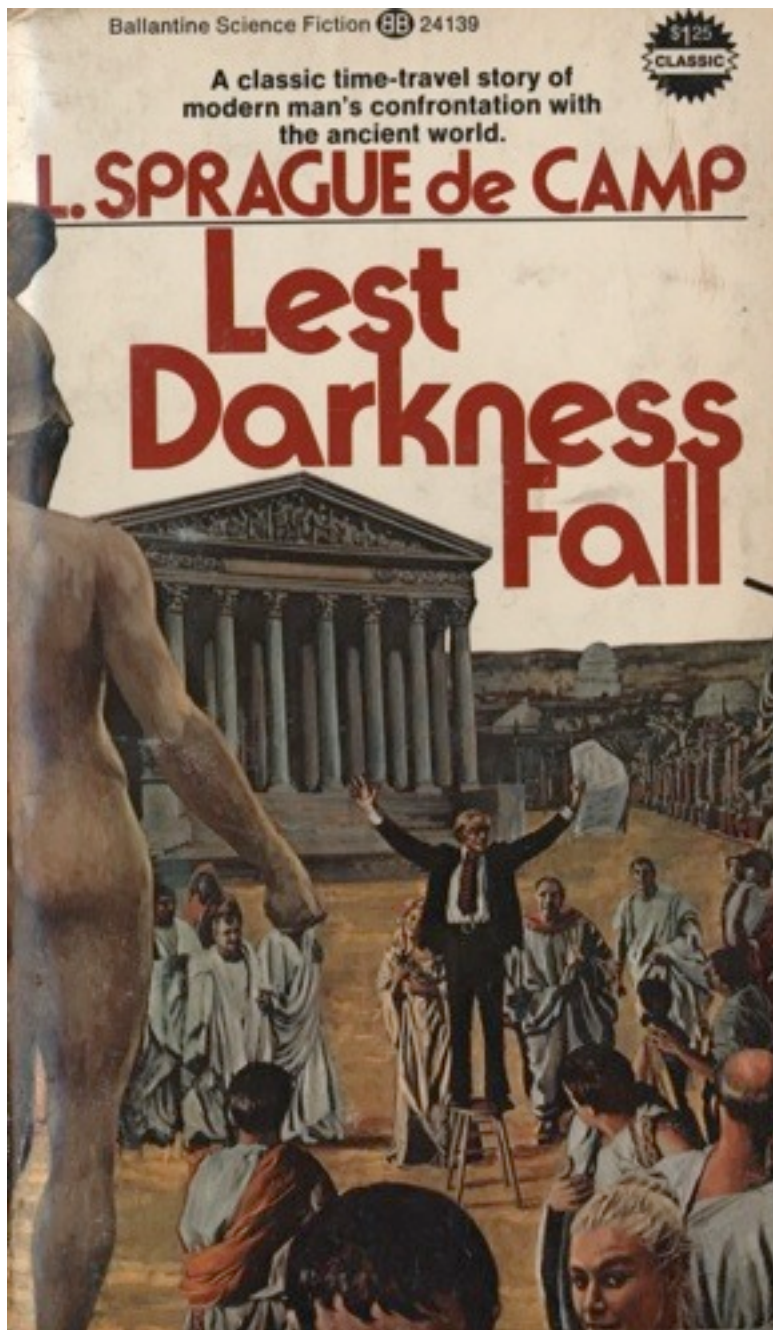
Brion Bayard, of our own continuum, is snatched into one in which there never was a United States, in which Northern Europe, Britain, the Western Hemisphere and Australia form one huge empire, in which Hermann Goering is a useful ally. He learns that there is still a third continuum, in which nuclear war has nearly shattered civilization, leaving a North African dictatorship headed by - **himself**.

*If It Had Happened Otherwise: Lapses into Imaginary
History*
Squire, J.C. (ed.).

- Belloc, Hilaire. "If Drouet's Cart had Stuck"
- Chesterton, G.K. "If Don John of Austria had Married Mary Queen of Scots"
- Fisher, H.A.L. "If Napoleon had Escaped to America"
- Guedalla, Philip. "If the Moors in Spain had Won"
- Knox, Ronald. "If the General Strike had Succeeded"
- Ludwig, Emil. "If the Emperor Frederick had not had Cancer"
- Maurois, Andre. "If Louis XVI had an Atom of Firmness"
- Nicolson, Harold. "If Byron had Become King of Greece"
- Squire, J.C. "If It Had Been Discovered in 1930 that Bacon Really Did Write Shakespeare"
- Van Loon, Hendrik Willem. "If the Dutch had Kept Nieuw Amsterdam"

Divergences





Padway “invents”:

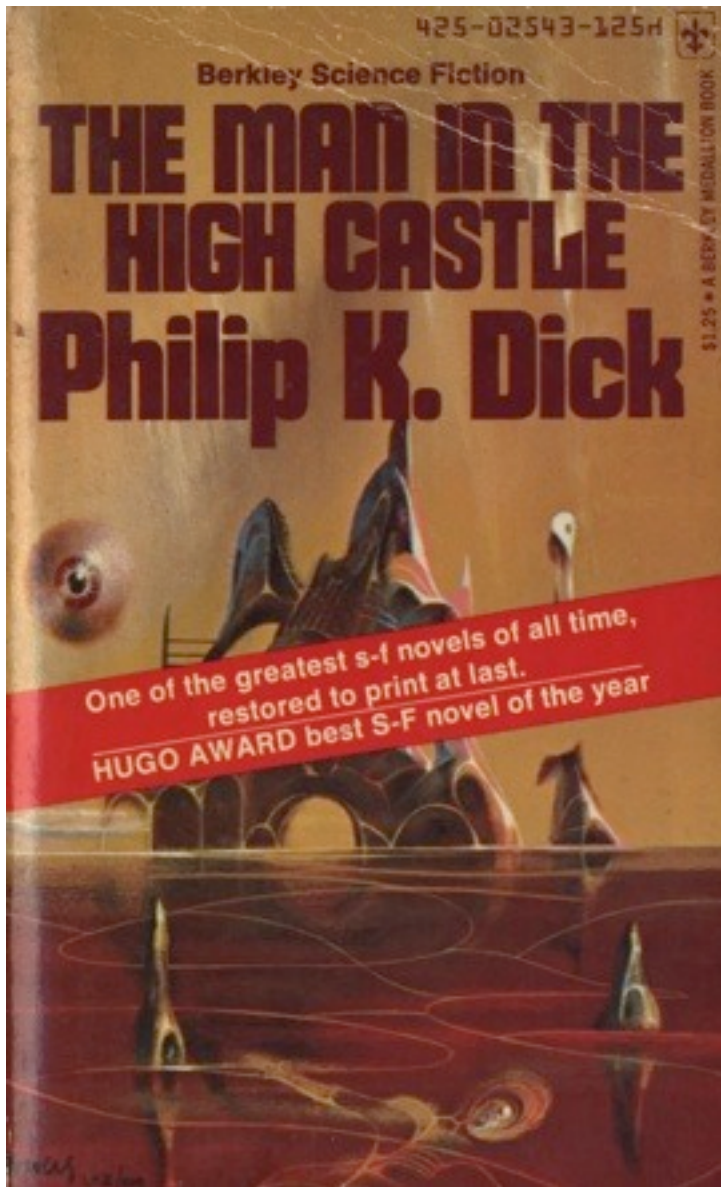
Printing & newspapers

Arabic numerals

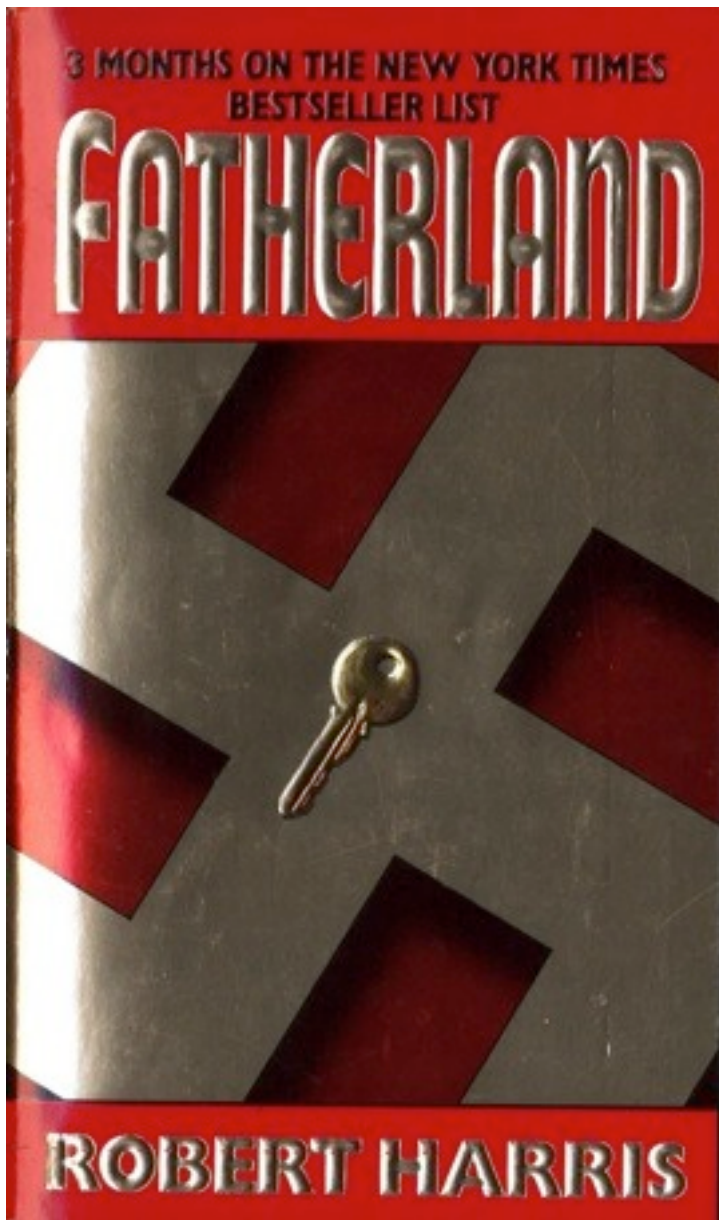
Double-entry bookkeeping

Copernican astronomy

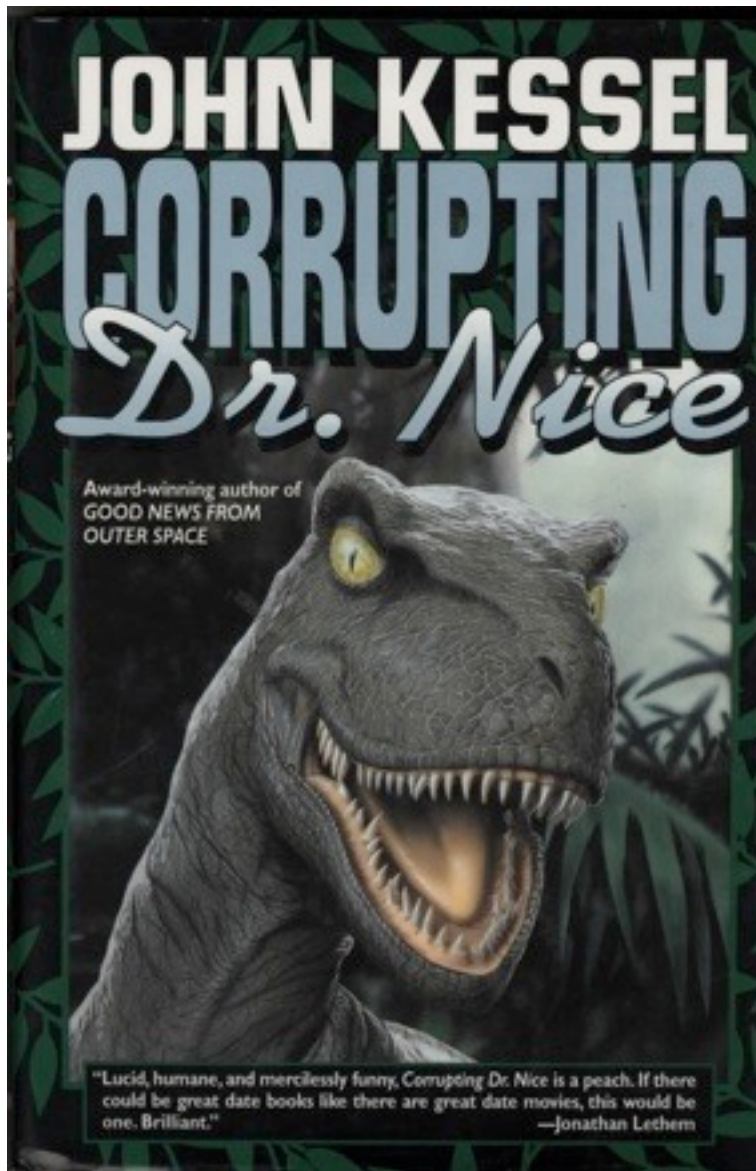
Distilling



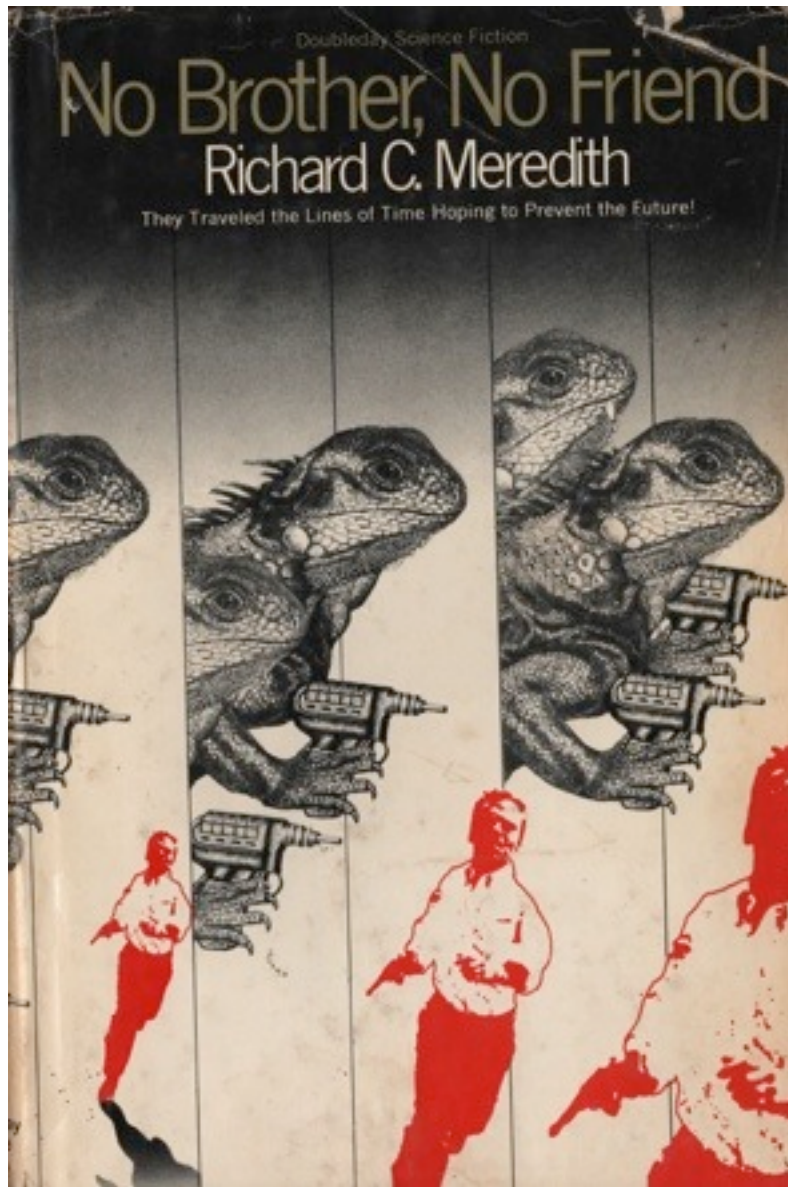
- The Grasshopper Lies Heavy
- I Ching or The Book of Changes
- The Japanese Empire & the Third Reich have divided the US between them



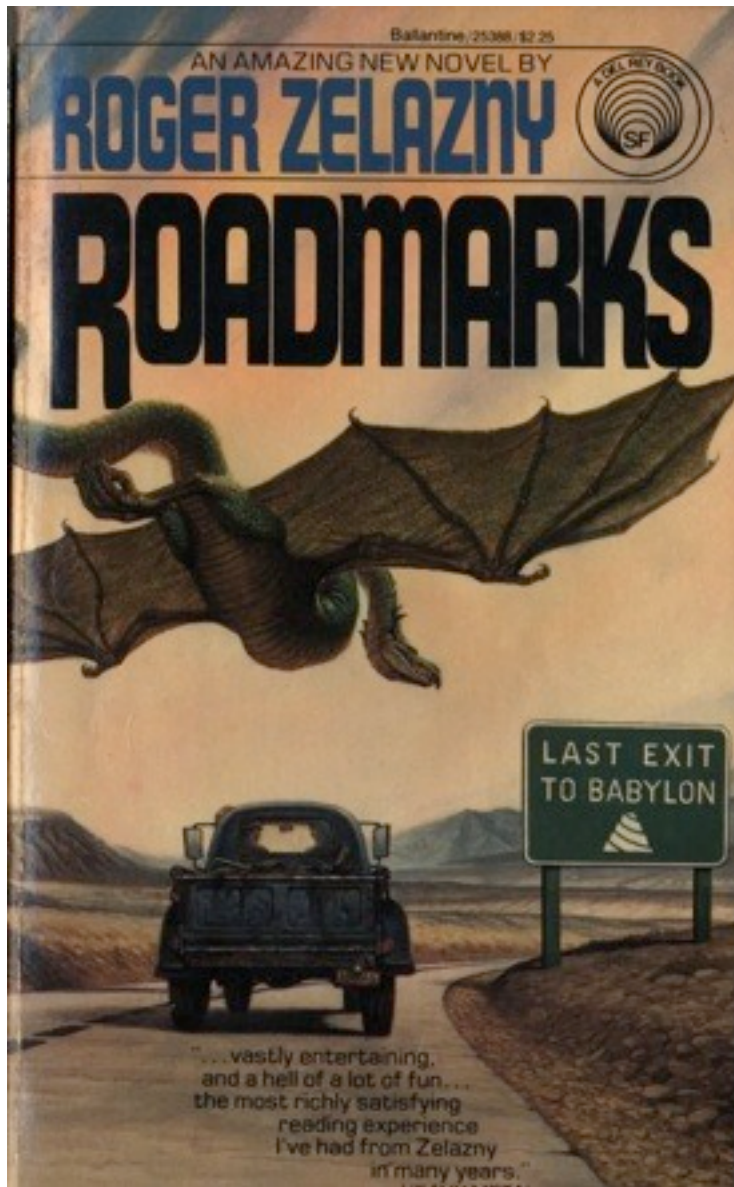
- Other Nazi Zeitfahrers
- The Sound of His Horn
- Sarban
- 1945 - Newt Gingrich & William Forstchen
- SS-GB - Len Deighton
- The Trinity Paradox - Doug Beason
- The Proteus Operation - James P. Hogan
- The Year Before Yesterday - Brian Aldiss



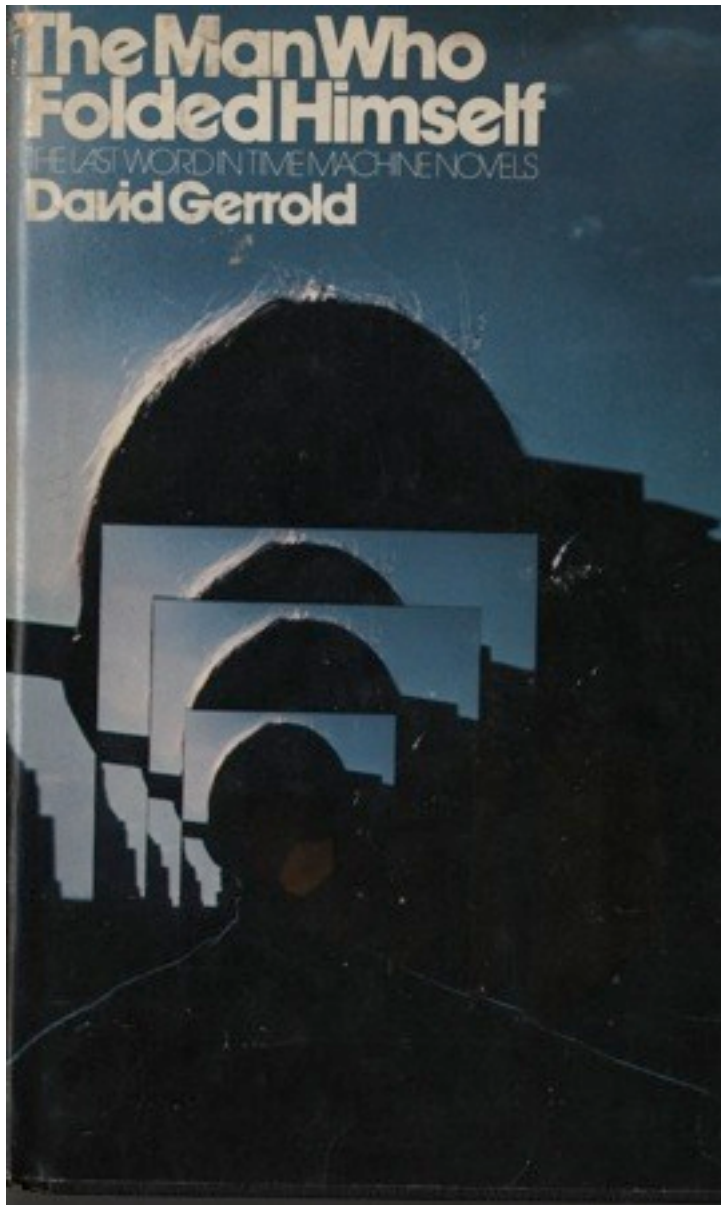
- “If you want to see what would happen if you turned a machine gun on Brutus and the conspirators, we can arrange that--but not on this tour! We don’t want to have too much fun, do we?”



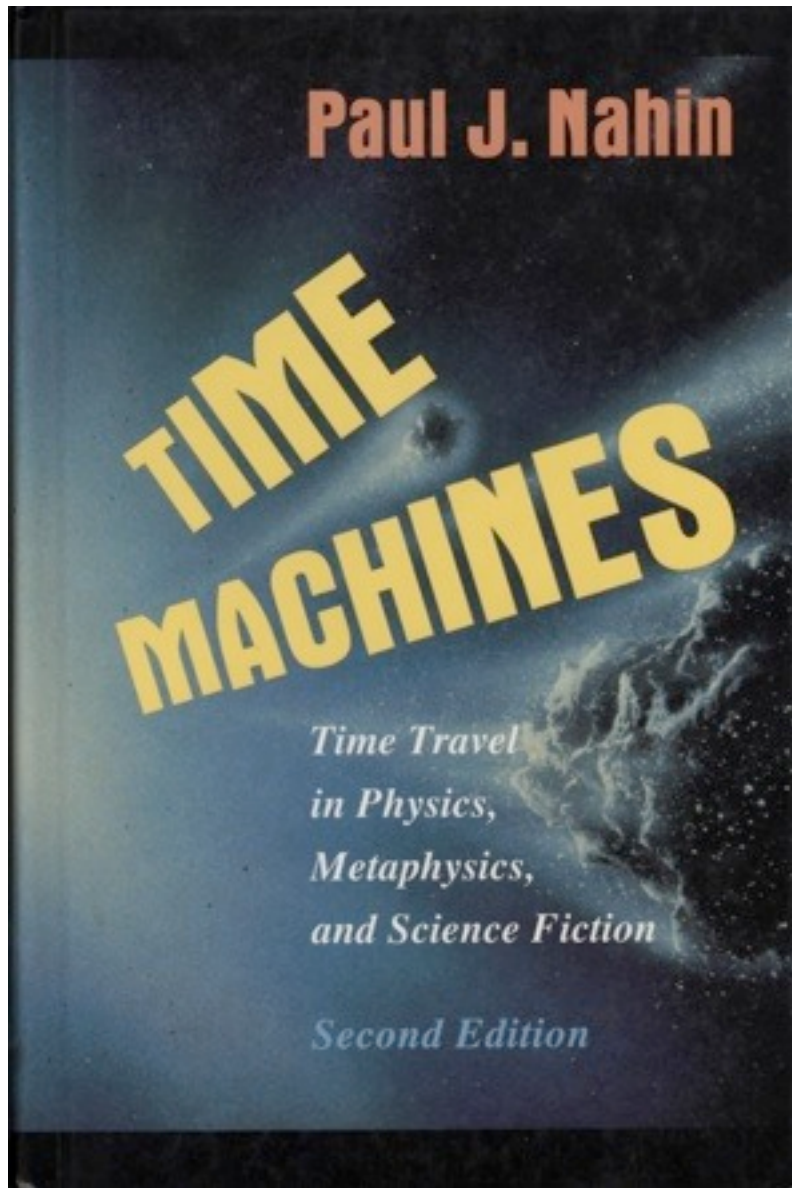
- High fun factor
- Toads of time
- Wars in alternative time lines
- Wars across the time lines
- War up & down the time lines
- Trilogy, thins out near end as author slowed down by death - the ultimate time policeman - alas.



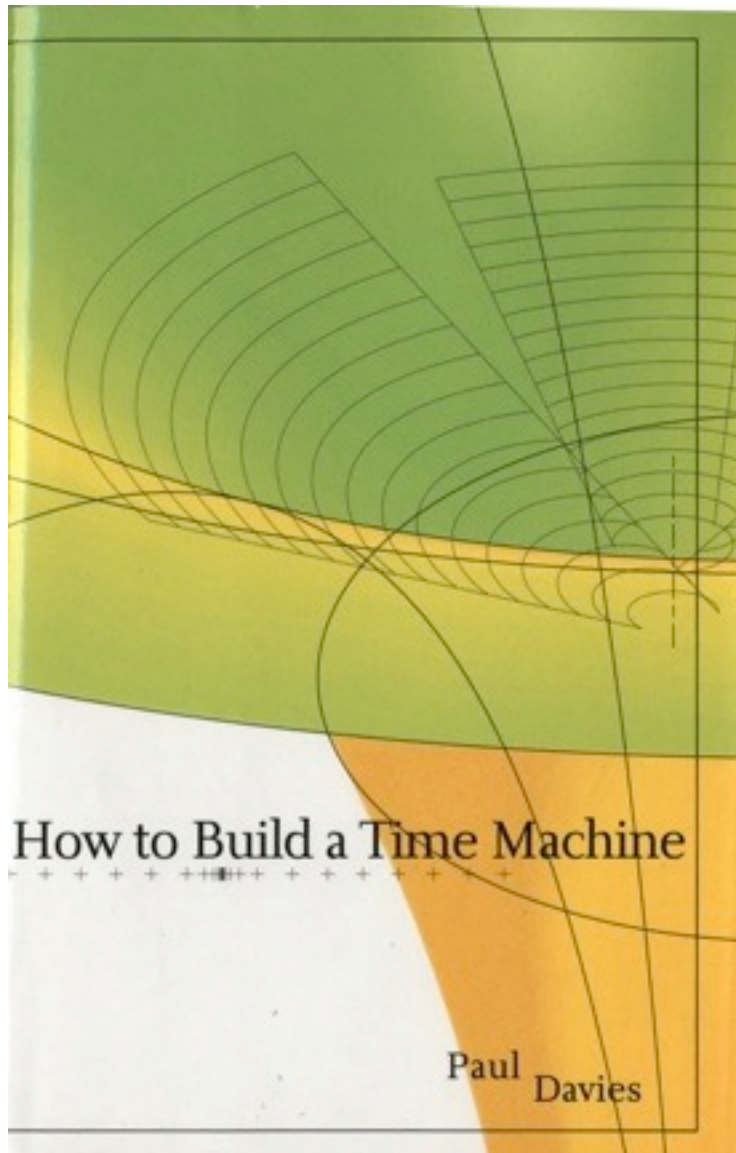
- “Oh, about sixty Cs up the Road I’m an archaeologist. Every now & then I come back to bury a few things. Then I go forward & dig them up again. I’ve already written the paper on this batch, actually. It’s a pretty interesting piece on cultural diffusion. I’ve got some really nice artifacts from Mohenjo-Daro this time around.”
- “Isn’t that-uh-sort of cheating?”
- “Why, no. As I said, I am from here. And they’ll really be six thousand years old when I discover them.”



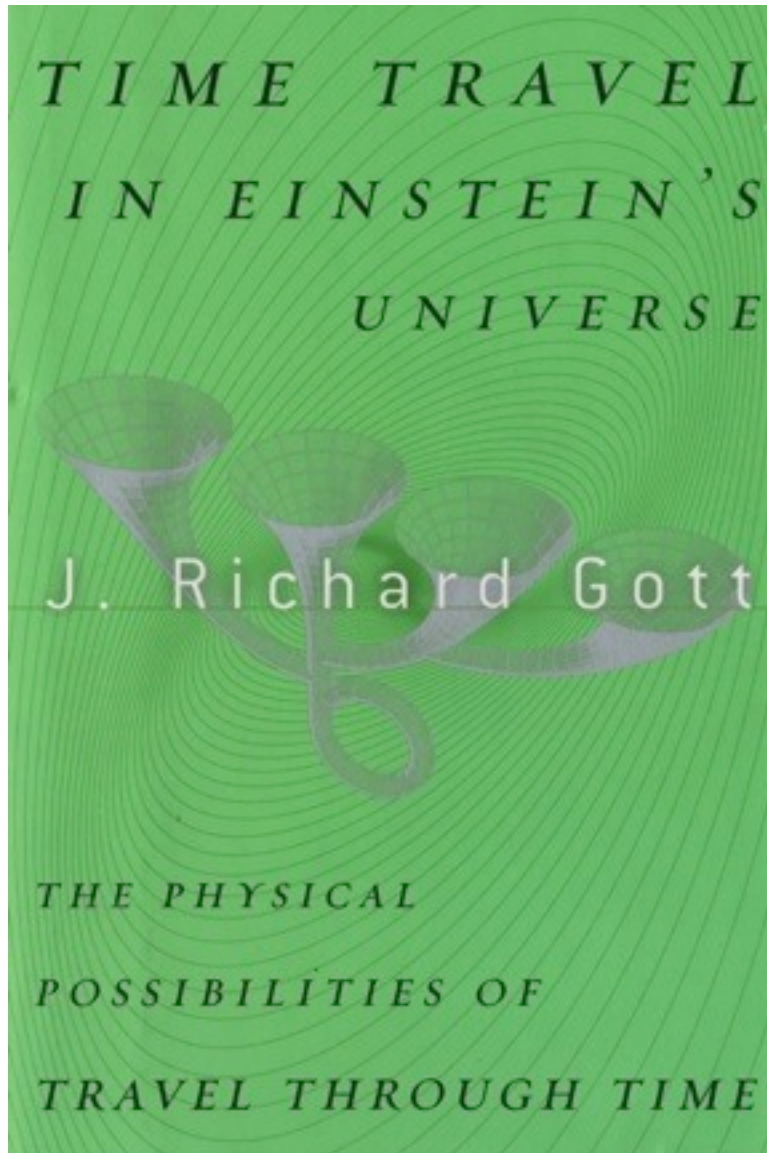
- All You Zombies on Steroids
- He becomes she
becomes baby
becomes crowd
becomes alien
becomes old man
becomes bored
becomes dead
again & again &
again.



- *Why pick on grandfather? It seems that the only way to prove that time travel is impossible is to cite a case of killing one's own grandfather. This incessant murdering of harmless ancestors must stop. Let's see some wide-awake fan make up some other method of disproving the theory.” – letter to Astounding Stories*

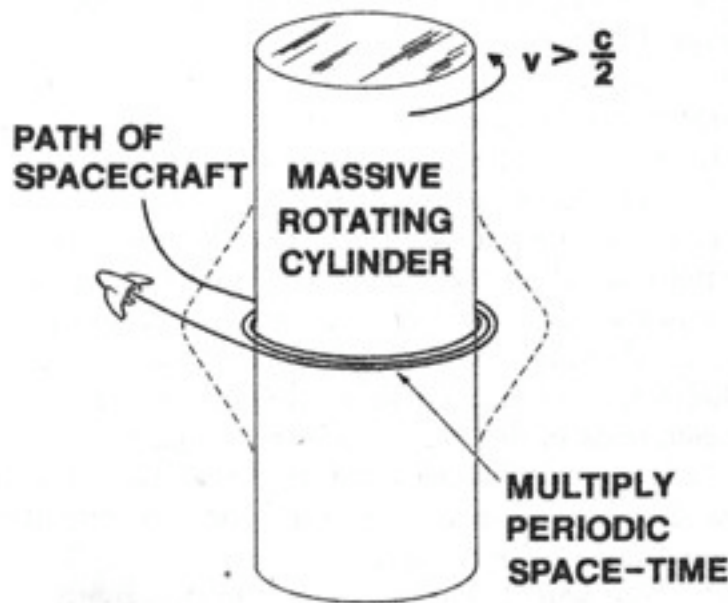


- Wormholes, Tachyons, & Time Travel, Oh My
- Excellent introduction to the physics
- And short!
- With a first rate bibliography (he has taken time to write a short one)

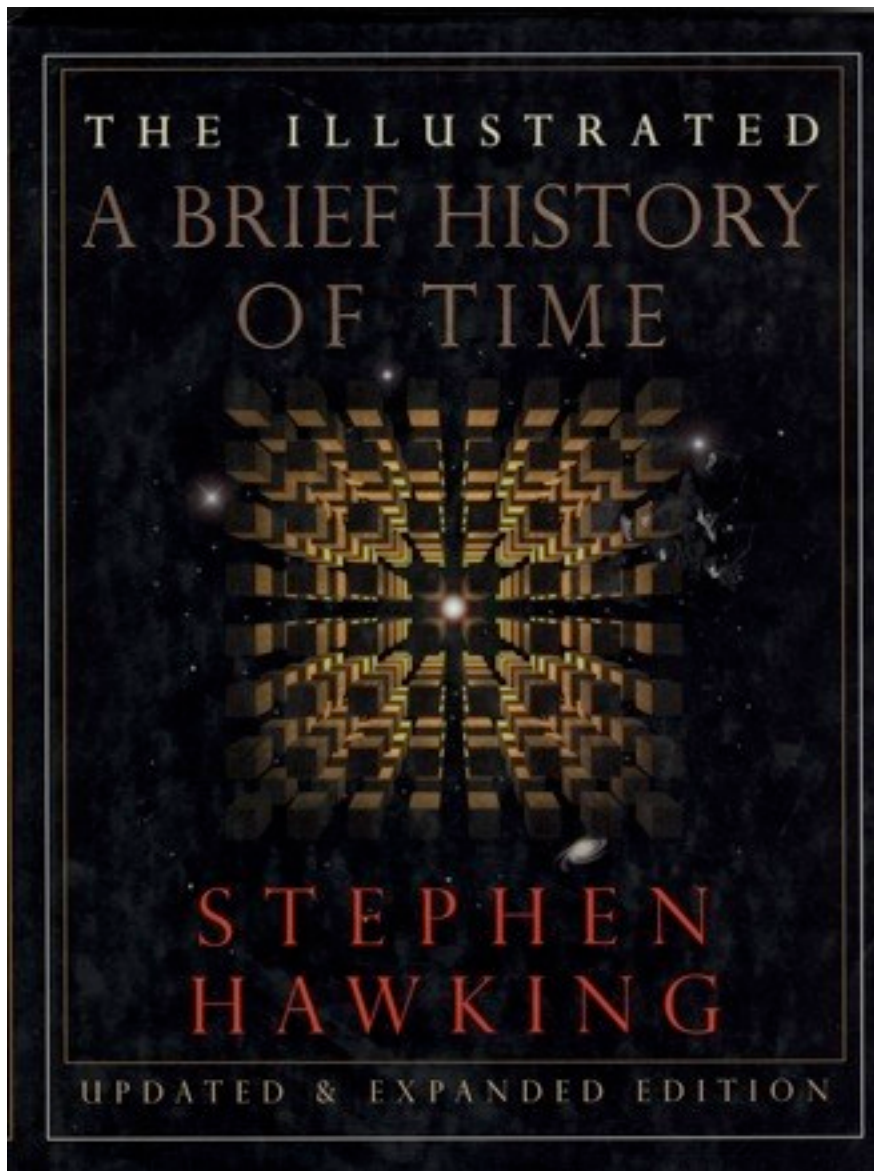


- One of the CTC inventors
- And also of a way of estimating time ranges from very small samples

On Rotating Cylinders & the Possibility of Global Causality Violation



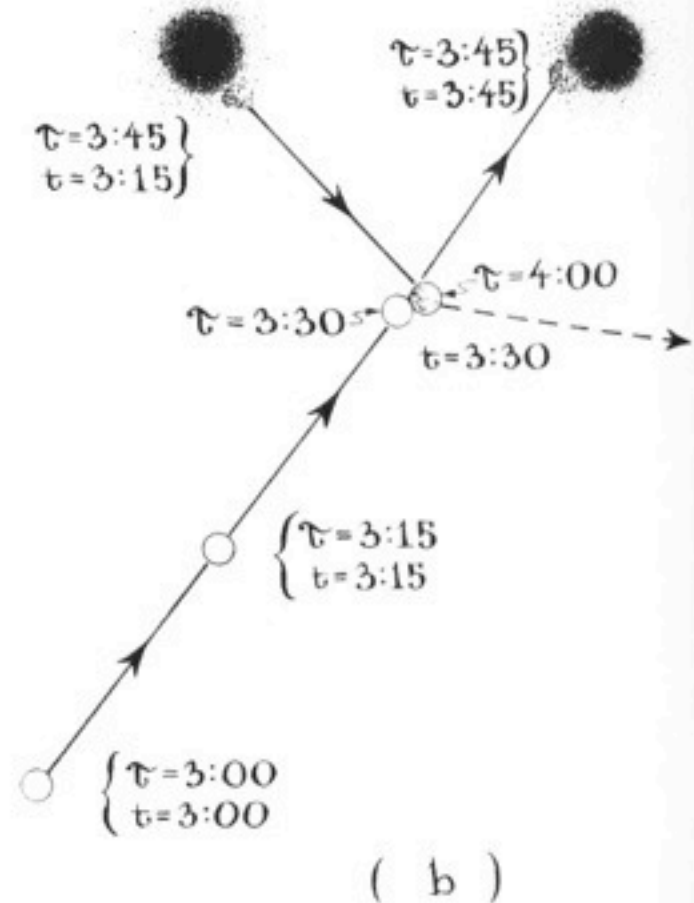
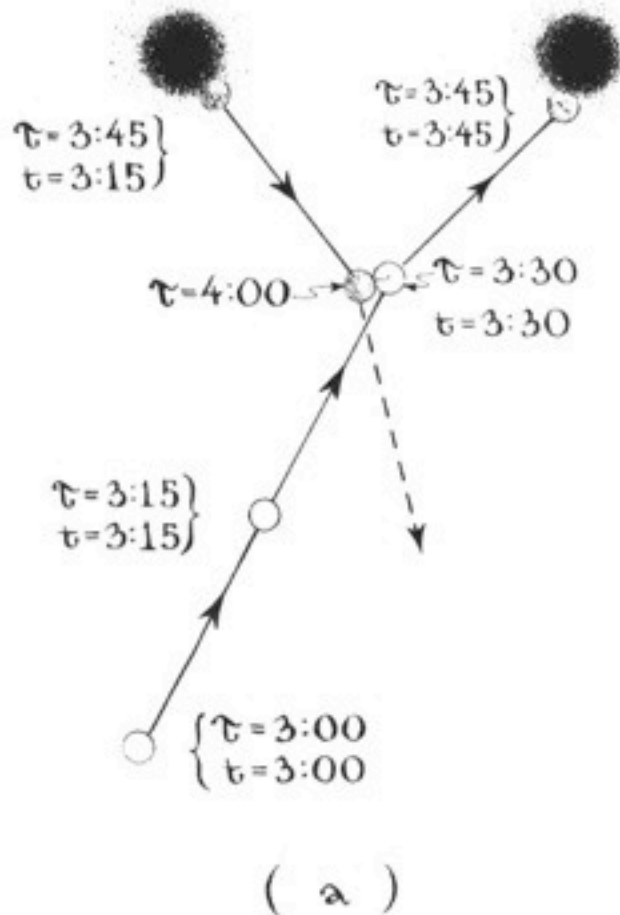
- Niven's Law:
- "If the universe of discourse permits the possibility of time travel, and of changing the past, then no time machine will be invented in that universe."

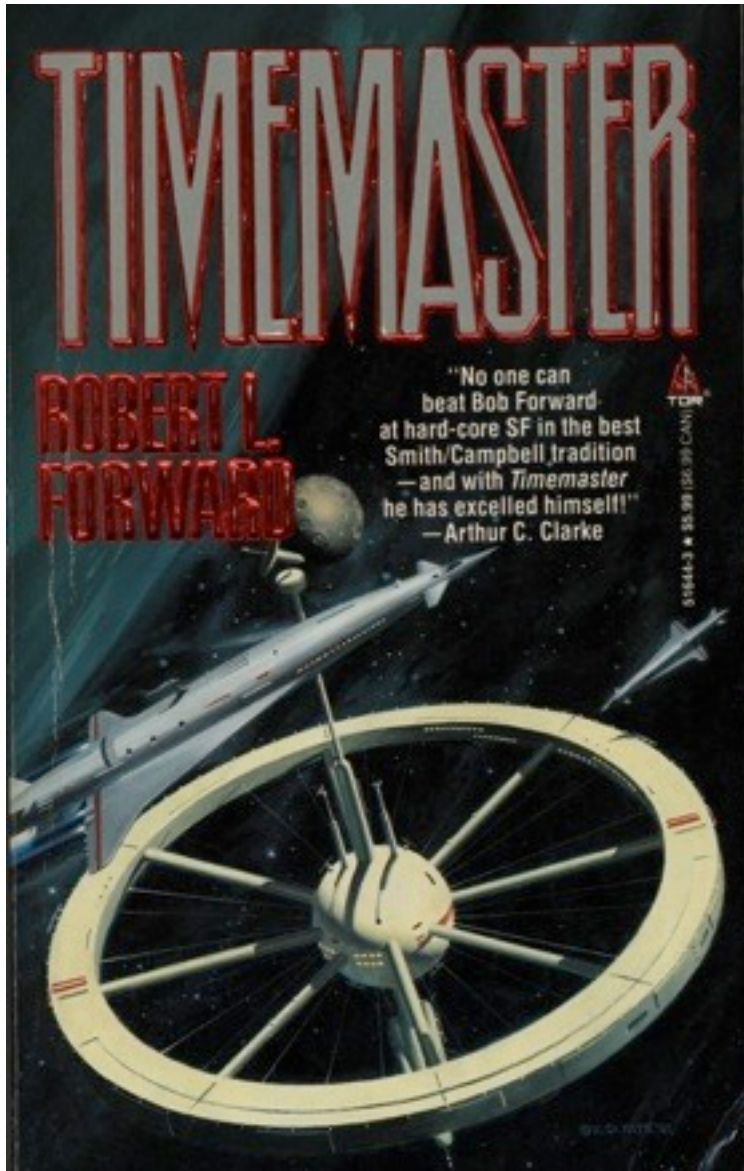


- Chronology protection conjecture:
- “The laws of physics do not allow the appearance of closed timelike curves.”
- “Thus the possibility of time travel remains open. But I’m not going to bet on it. My opponent might have the unfair advantage of knowing the future.”

Black Holes & Timewarps

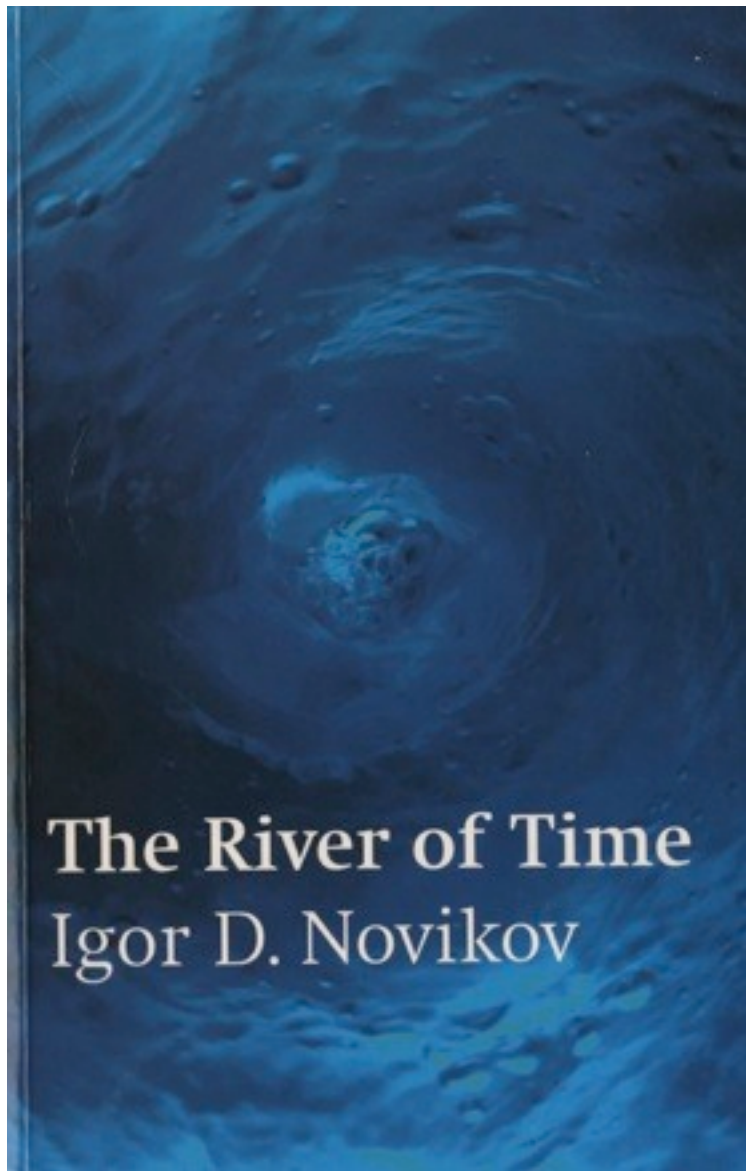
- Kip S. Thorne



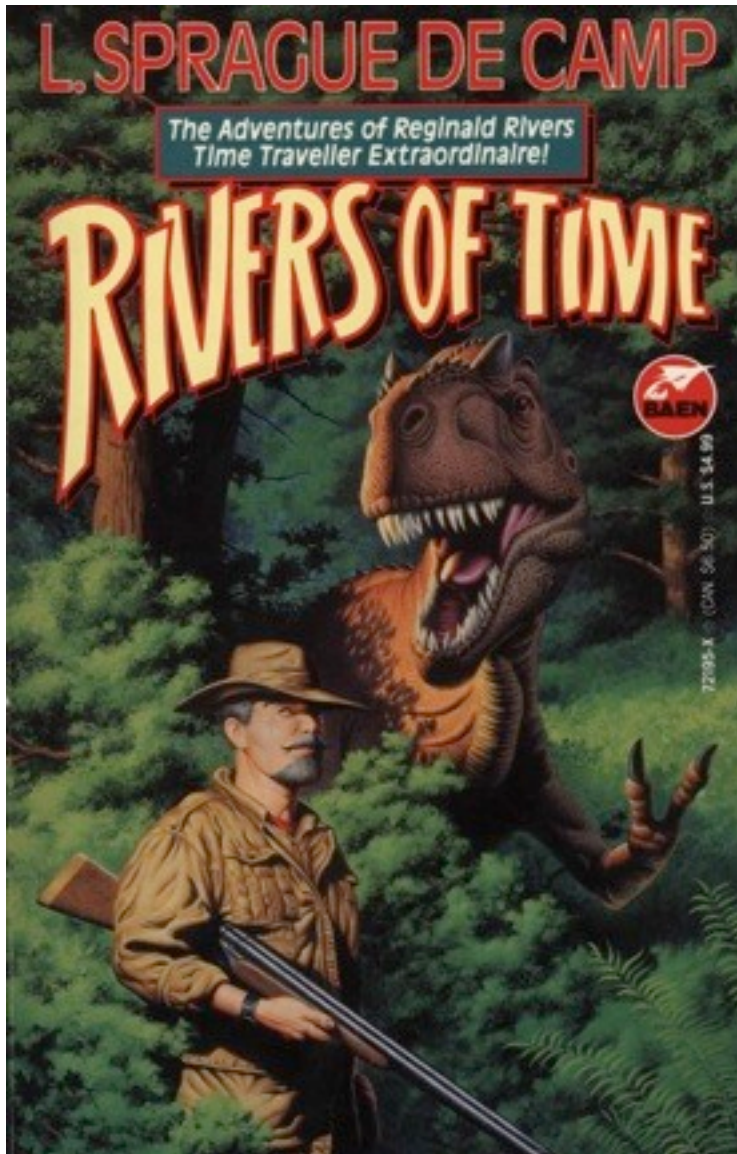


If wave functions can continue backwards in time (through one of his stargates) then only self-consistent solutions are allowed.

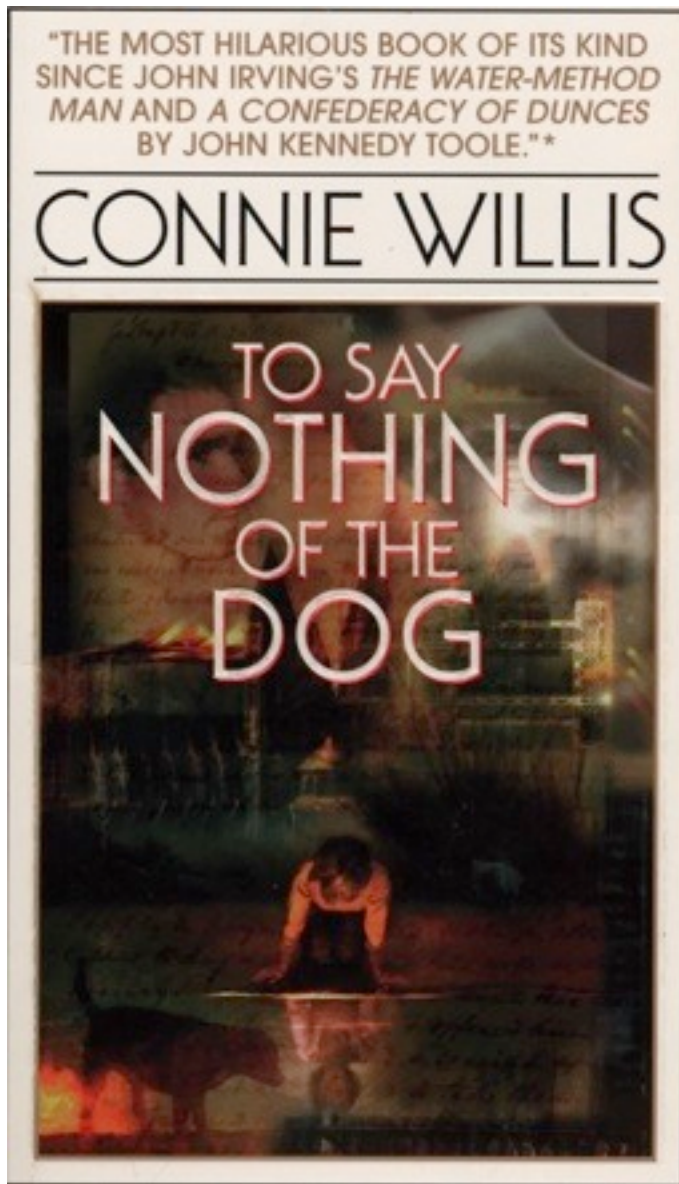
(By analogy with Bohr-Sommerfeld quantization rules for the atom!)



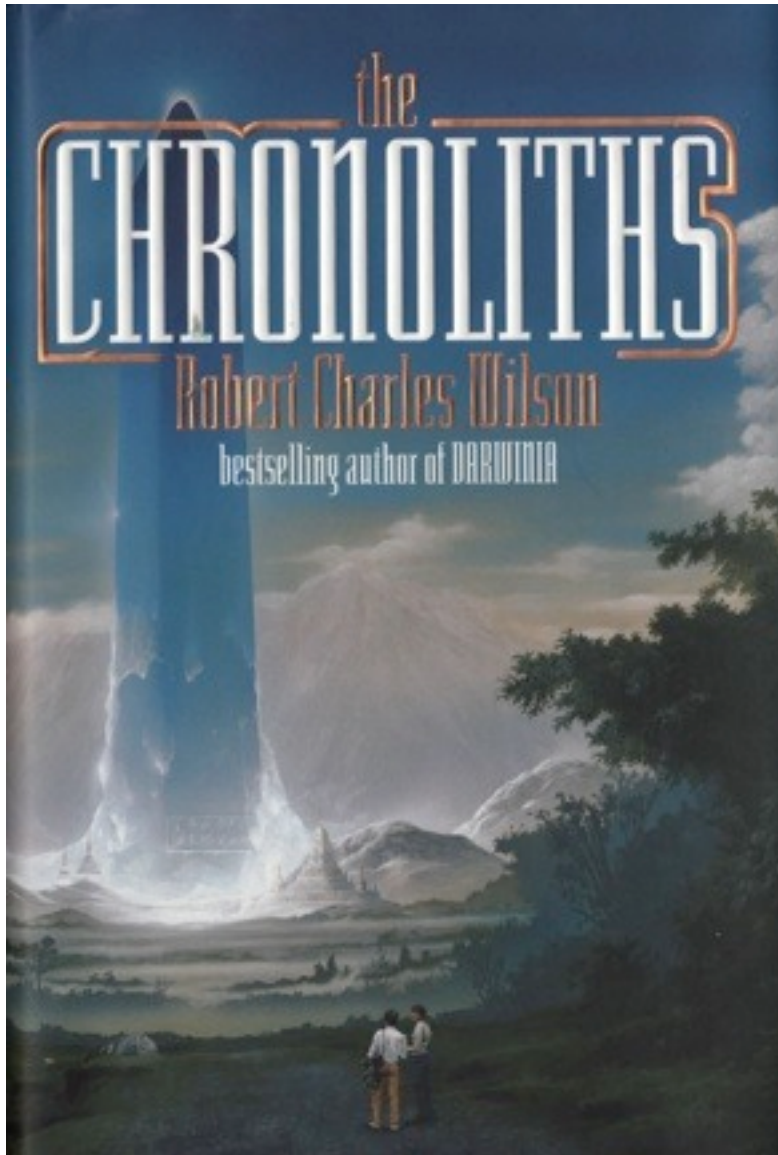
- Novikov has taken a stronger position, in his Novikov consistency conjecture : inconsistent trajectories are forbidden: self-consistency is treated essentially as one of the boundary conditions imposed on any problem.



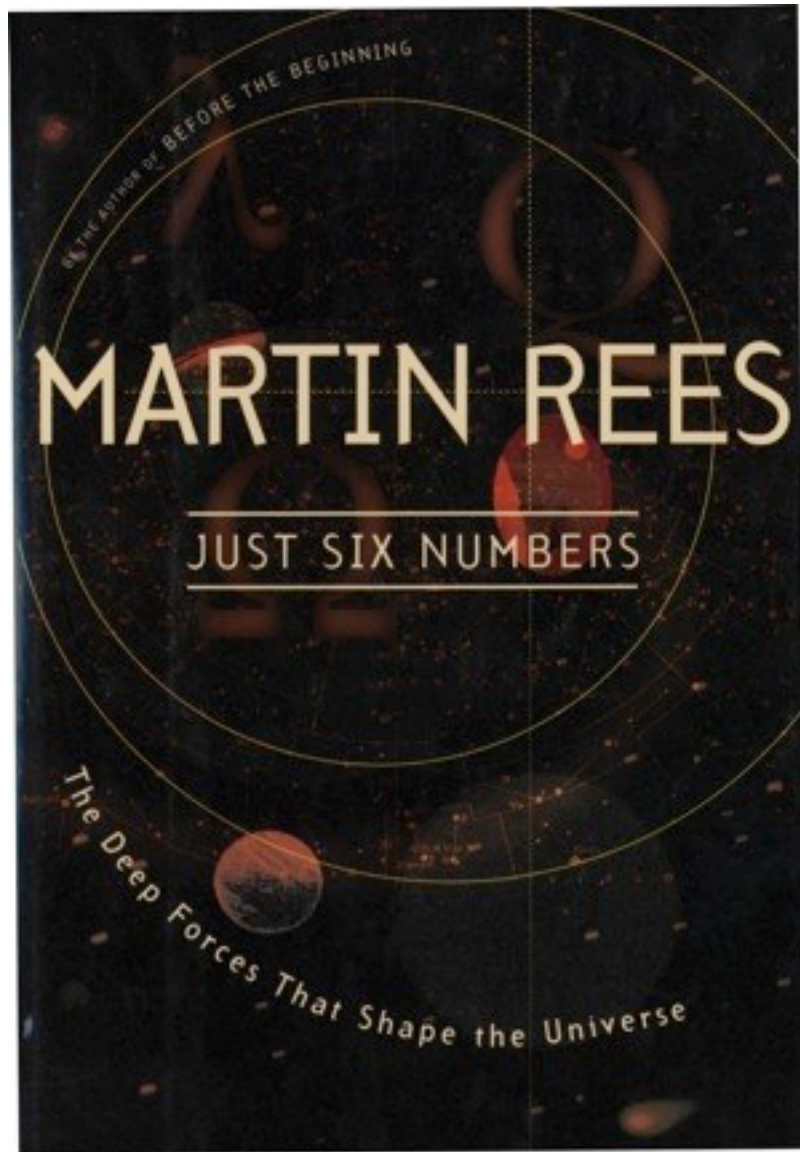
- A Gun For Dinosaur
- “...the instant James started to do anything that would make a visible change in the world of 85,000,000 BC, such as making a footprint in the earth, the space-time forces snapped him forward to Present to prevent a paradox. And the violence of the passage practically tore him to bits.”



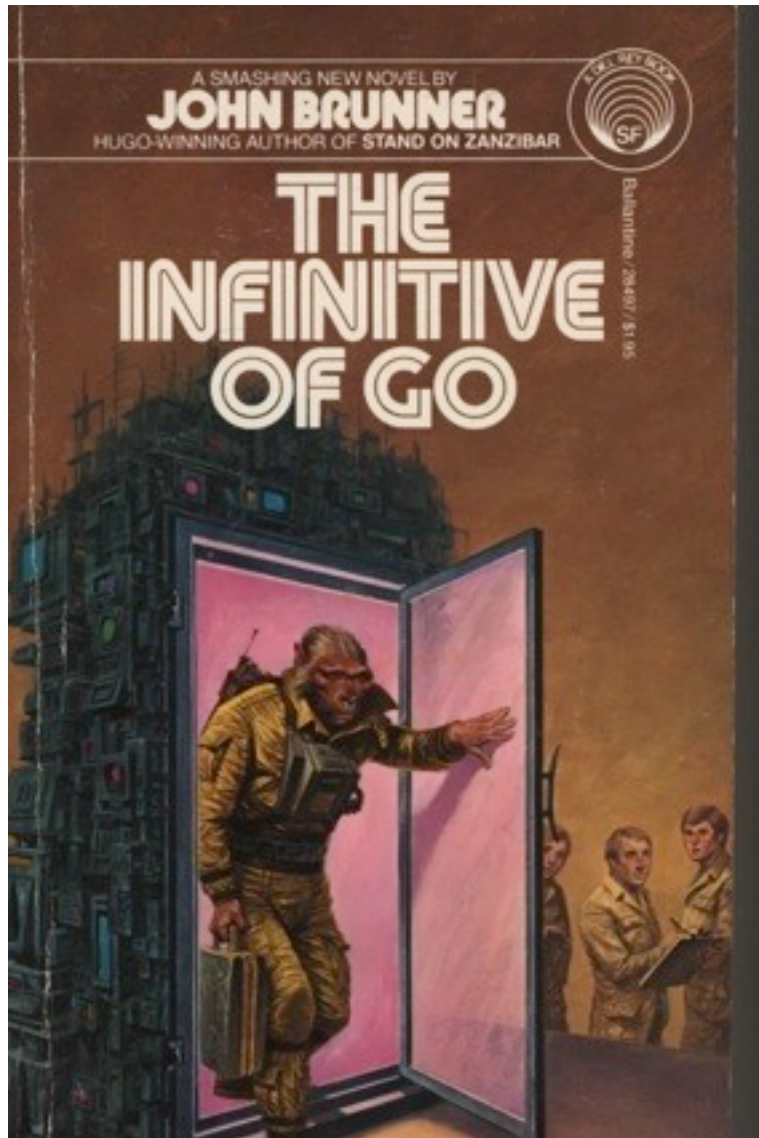
- Back to do archeology: to investigate the past, not change it! (They're checking out "The Bishop's Bird Stump")
- "Slippage" keeps you from any actual interference
- Very literary: intertwined around the river voyage described in Jerome K. Jerome's famous "Three Men in a Boat"



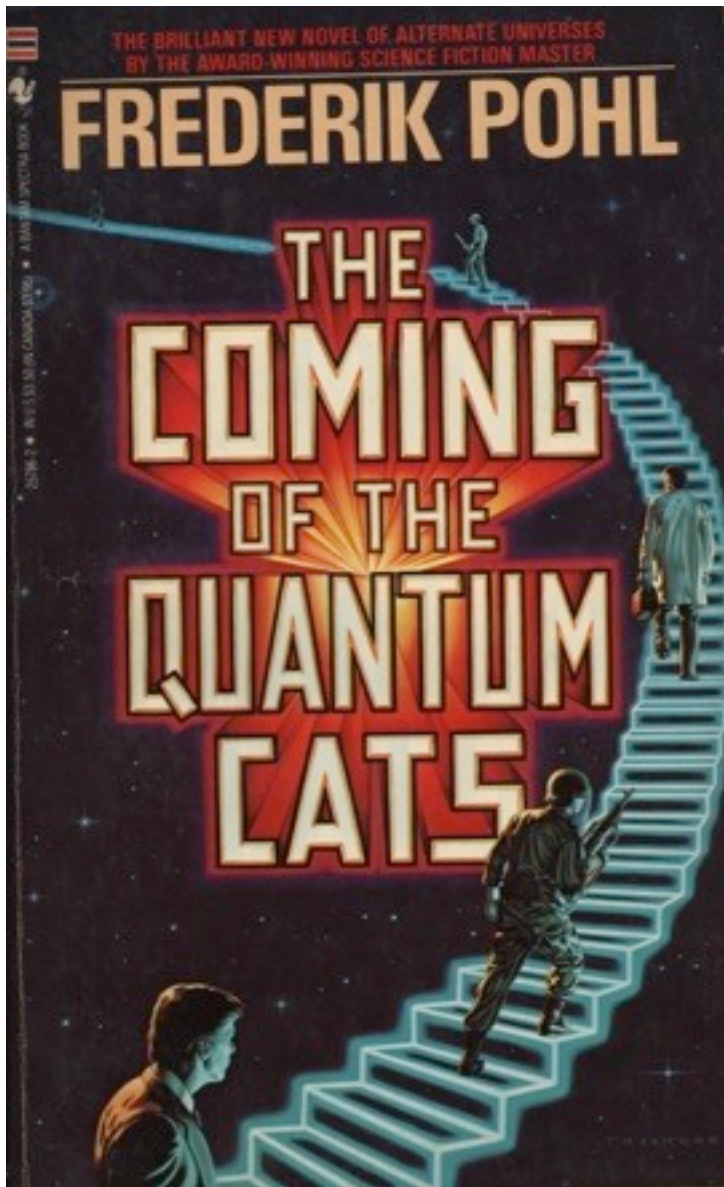
- Kuin sends chronoliths 20 years & 3 months into the past to presage his intended victory...
- Like the three witches telling Macbeth a partial truth to damn him.



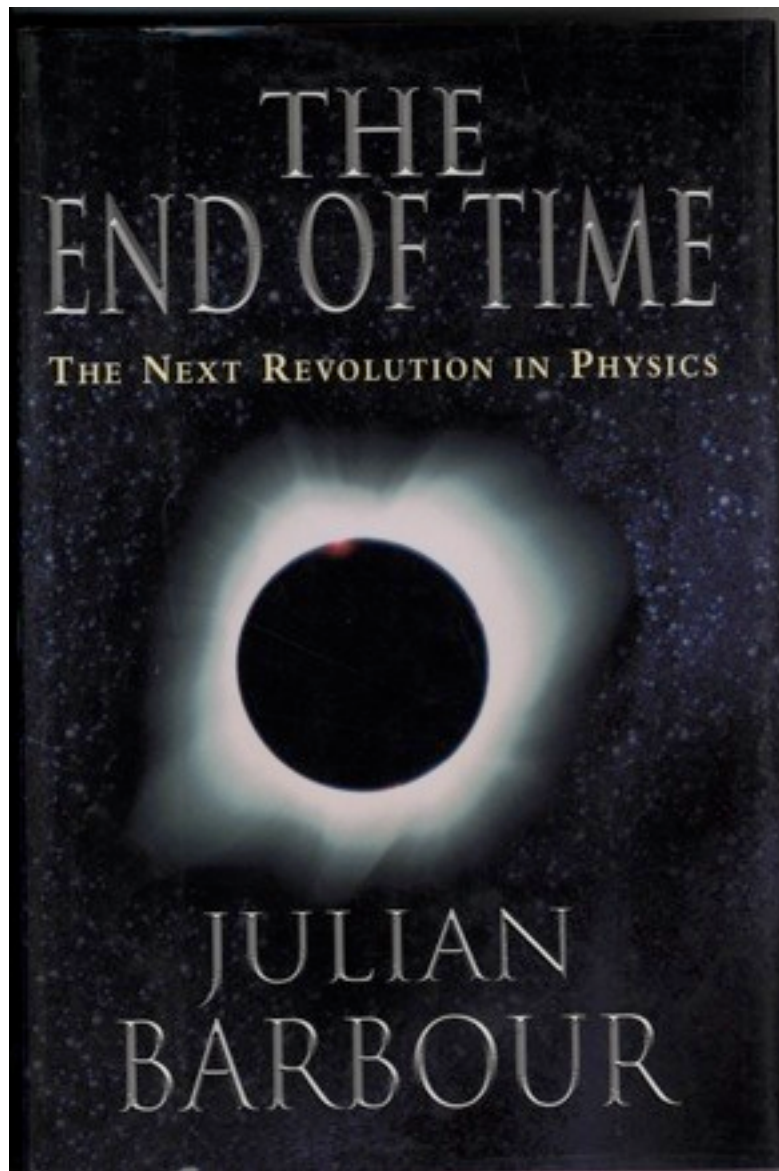
- The large number N : gravity in the cosmos
- The stars, the periodic table, and ϵ .
- The fine-tuned expansion: dark matter and Ω .
- The number λ : is cosmic expansion slowing or speeding?
- Primordial ripples: the number Q
- Three dimensions (& more)

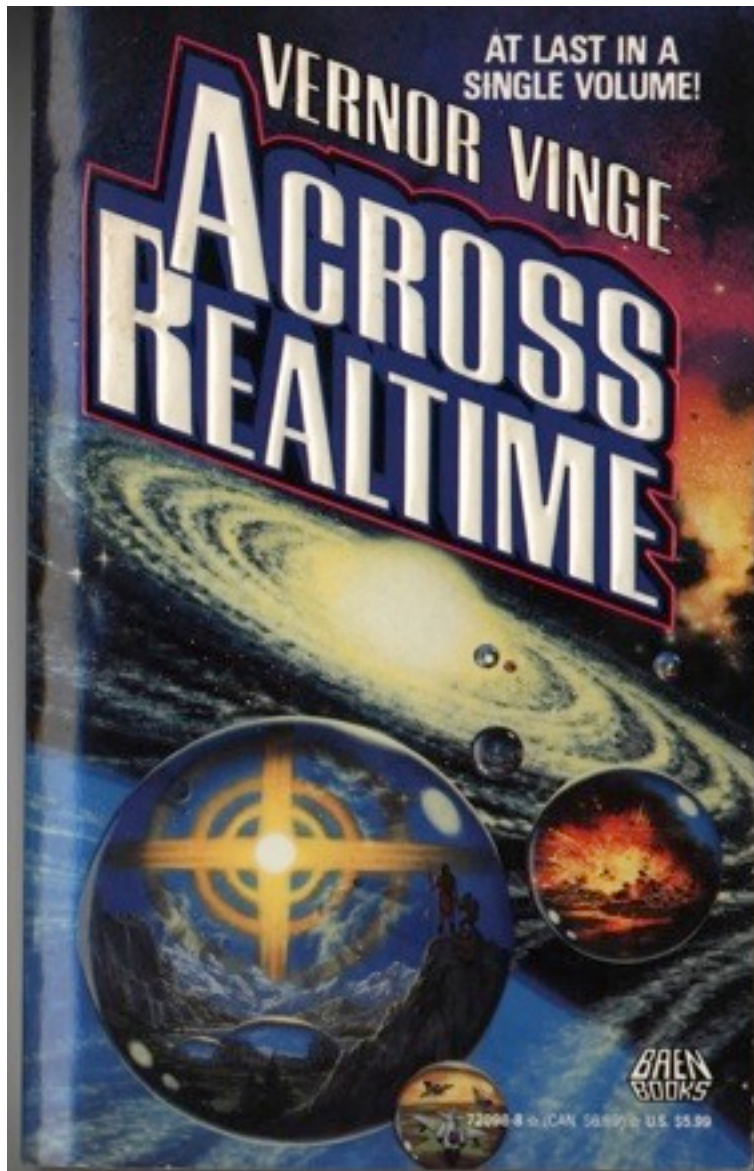


- “That means every poster program must contain not merely demons but daemons, built into the actual machinery, and they don’t search for what we want to be transferred... They simply take the nearest...”
- “the nearest congruent item... That is, the nearest in the ρ -space direction. Not in the universe of departure.”

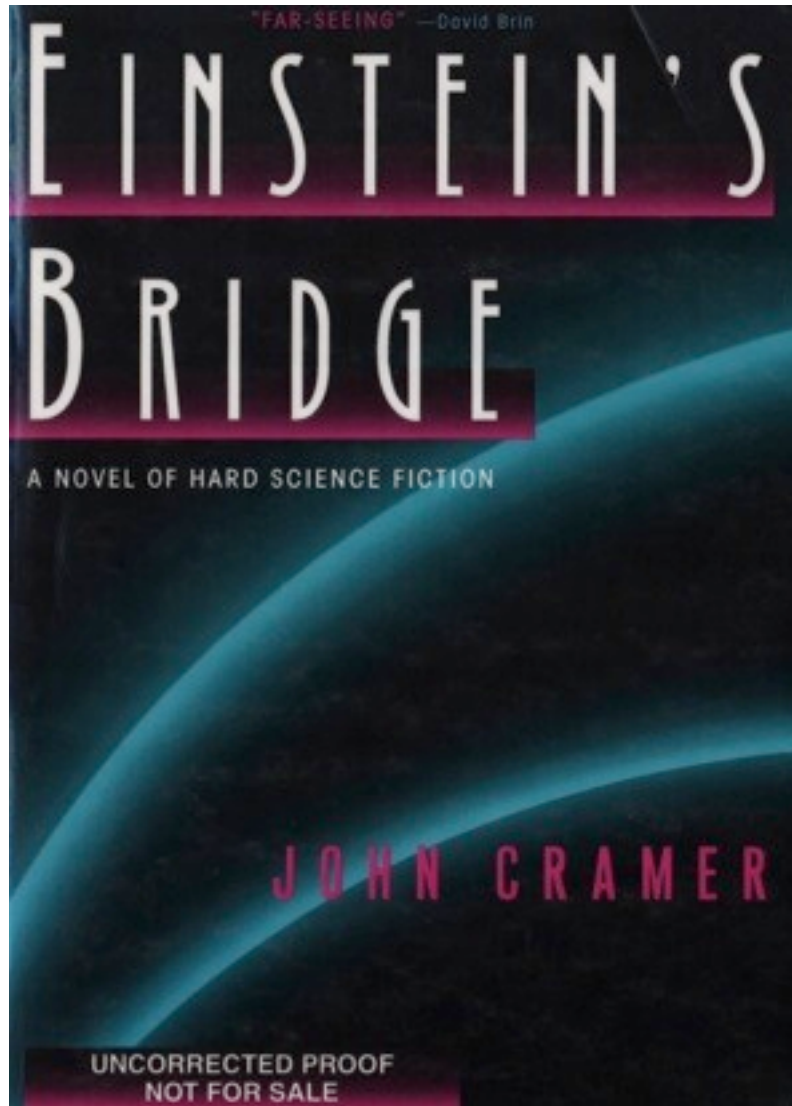


- “It’s not mathematics, it’s just sense. It’s October 1983, right? Not just here. For everybody. They’re not *ahead* of us. They just got luck 50 or a 100 years ago. But it’s October 1938 for an *infinite number* of parallel times. Not just them. Not just us. All the times, and time is a-marching on in all of them.”

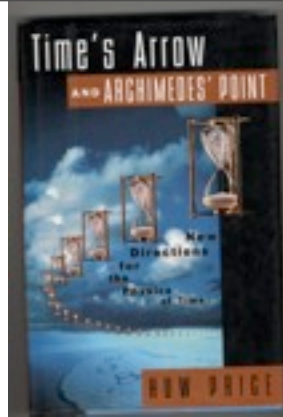




- Mind Bobbling
- Bobbles (bubbles of stasis) used as a weapon
- Of course, just like black holes, at some time they dissolve...

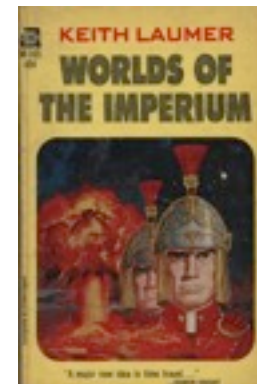
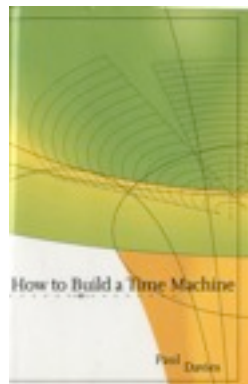
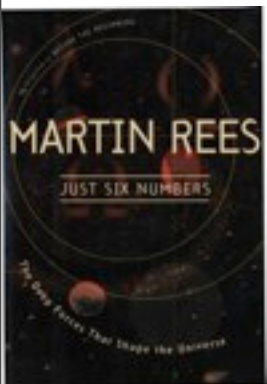


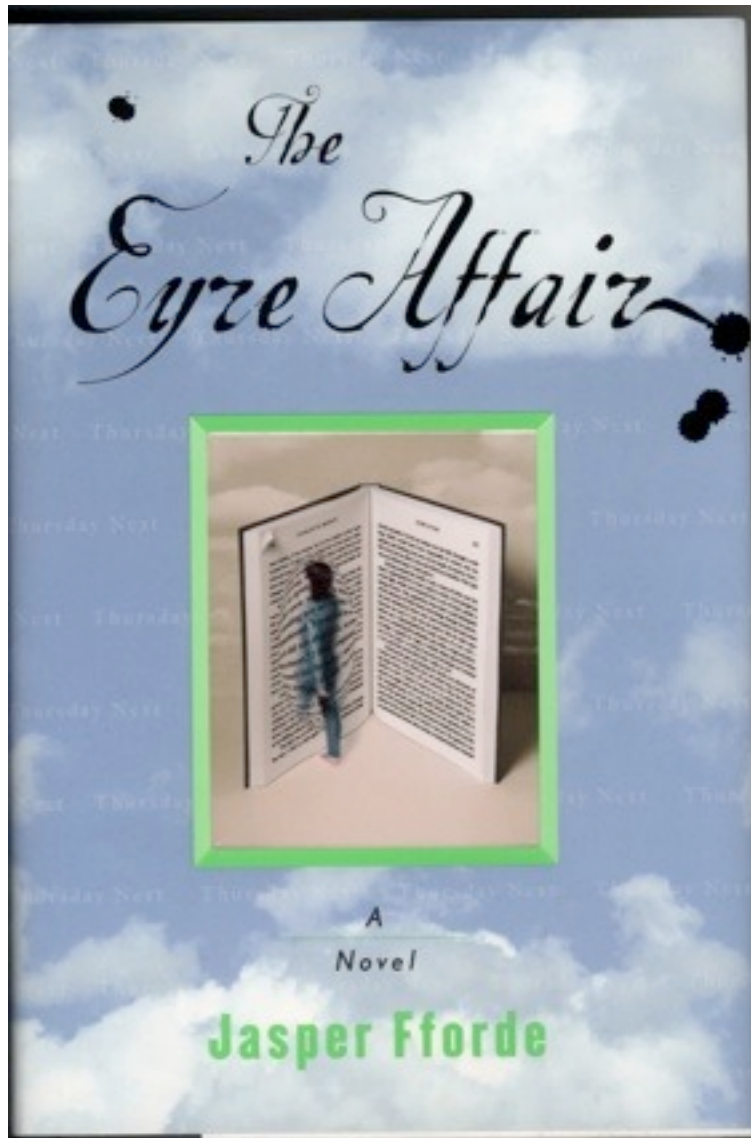
- Bubble Universes and the Einstein-Rosen Wormholes that bridge them...
- And unexpected risks associated with the Superconducting Super Collider (watch out for Hive Minds)



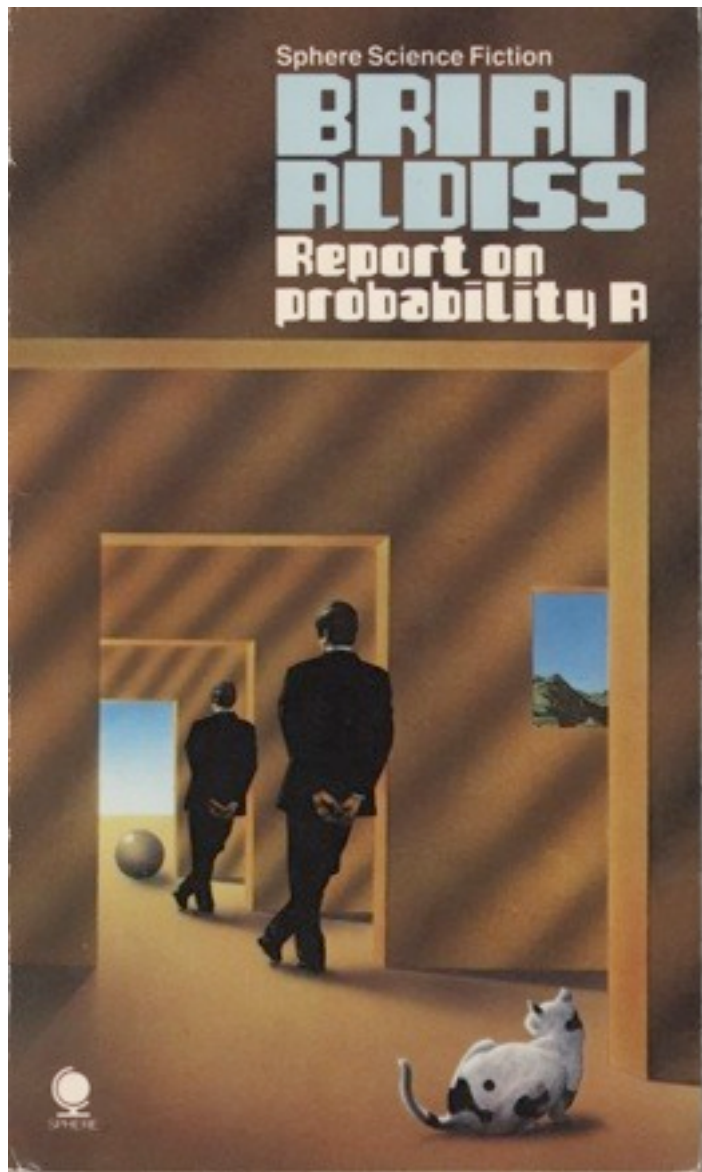
All right,' said the Cat; and this time it vanished quite slowly, beginning with the end of the tail, and ending with the grin, which remained some time after the rest of it had gone.

'Well! I've often seen a cat without a grin,' thought Alice; 'but a grin without a cat! It's the most curious thing I ever saw in my life!'





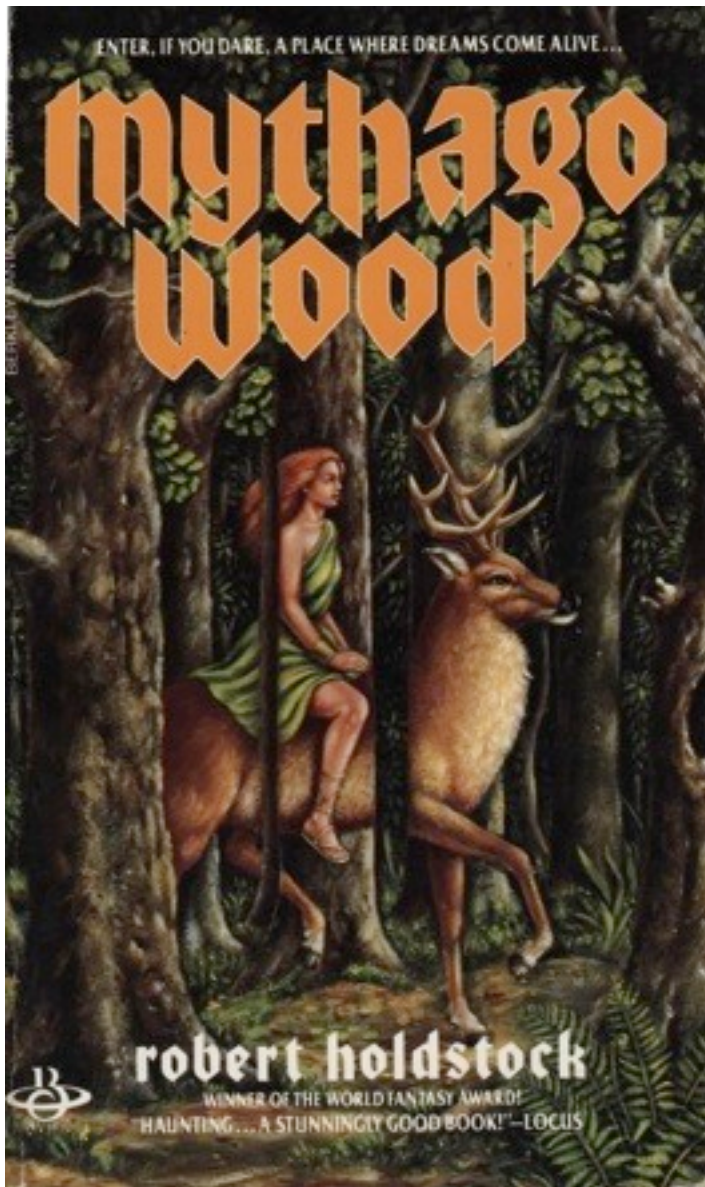
- Heroine: Thursday Next
- Acheron Hades (hobbies: “murder, torture, & flower arranging”) holds Jane Eyre hostage & kidnaps protagonist
- Sequel: Lost in a Good Book



- Infinite regress of worlds observing each world
- Kafkaesque in subject & tone
- Deconstructionism as a plot device

Einstein's Dreams - Alan Lightman

Circular	Flows like water	3 Time dimensions	Mechanical vs. body time
Slower in mountains	Chronopolis	Erratic	No events
End of world	Stuck	Reversed	Stopped
Images	No long term memory	Visionary	Slower when fast
Reversed	One day at a time	Individual	To live forever
Quality	No future	Visible time	Fractal
Great clock	Local time	Fixed future	Musical time
Kaleidoscope	Bird of time		



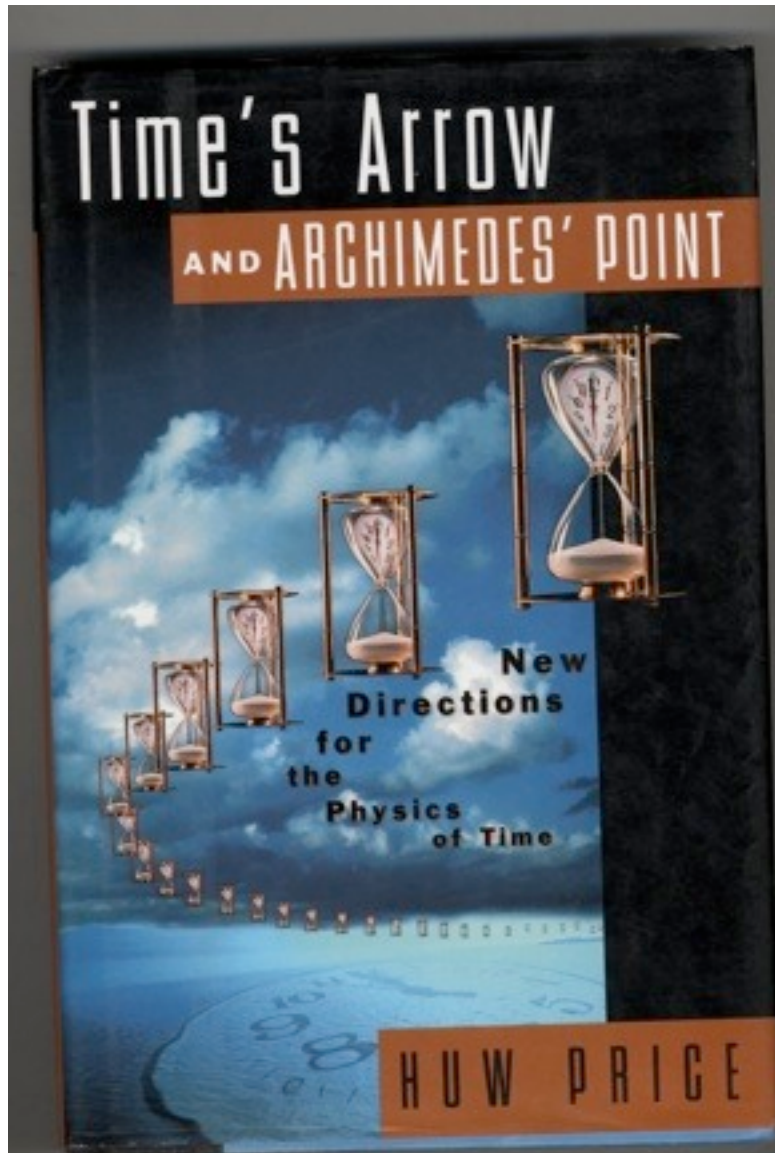
- Mythic woods functions with time opposite to that in a black hole, time lengthens as you get closer to center.
- The Sliced Sideways on Tuesday World



- The Castle of Crossed Destinies - Calvino
- Spacetime as a tapestry of interwoven lovers - Barbour
- Opposite Thermodynamic Arrows of Time - Schulman
- The Fabric of Reality - Deutsch



- Schizophrenia & time disorders
- *"Time has stopped, there is no time... The past and the future have collapsed in to the present, and I can't tell them apart."* - paranoid physicist



“We need to guard against the double standard fallacy-- that of accepting arguments with respect to one temporal direction that we wouldn't accept with respect to the other.”

