

# A brief history of time travel

CONVERSATION

In his brisk and entertaining new book, *Time Travel: A History*, James Gleick serves as an enthusiastic guide through the fourth dimension as seen in literature and popular culture. I spoke with Gleick to discuss his book, the interface between science and science fiction and what makes genuinely compelling time travel.

Gleick begins his story around the turn of the twentieth century, which saw both H. G. Wells's publication of *The Time Machine* and, not entirely coincidentally, Albert Einstein's *annus mirabilis* papers. Wells wasn't a scientist, and nobody — least of all Gleick — would make the argument that *The Time Machine* presaged special relativity, but he argues that language itself made spacetime almost an inevitable concept; we use the same word for the flow of time and the flow of a river, for example. "Physicists didn't invent that analogy; it was partly built into the language because we don't have words for everything. But the words connecting space and time became more powerful over time."

The nineteenth century was a golden age of geology and Wells in particular was fascinated by it. There is a very literal sense in which the physical strata of Earth represent movement through time. That, along with the synchronization of clocks required for successful railroads, started many thinkers on the path of considering what time really is. Gleick notes, "Wells's hero, the time traveller, makes a speech explaining why time travel is possible in a way that to modern ears is almost comically pedantic. We can see that his vision of the Universe is almost standard — it's Einstein's version of the Universe".

But time as a river, or a dimension or any of the familiar analogies is more than simple language at play. We know, and Einstein showed, that space and time really can be rotated into one another with a suitable choice of frame. Wells's innovation was to consider seriously the premise of freely traversing time as we would any other dimension.

Wells is a seminal figure in the development of fictional time travel, but he wasn't the first. Mark Twain's *A Connecticut Yankee in King Arthur's Court*, for example, predated *The Time Machine* by six years.



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But Twain's Connecticut Yankee is more of a tourist than what we now consider a time traveller.

Gleick makes the pitch that the precursors of modern time travel include many ideas that we wouldn't call time travel at all: sleeping into the future, for example, in the tradition of Rip Van Winkle or in prophecies going back to the ancients. In the early decades of the twentieth century, the time capsule fad represented a way of speaking directly to the future — albeit only in one dimension.

Wells's time traveller, however, wasn't simply a passive observer. He could affect the future (and Wells seemed to be uniquely interested in travelling into the future), prompting Gleick to propose a parlour game similar to the 'flight or invisibility?' litmus test for superpowers: "if you had one shot with a time machine, would you go into the future or the past, provided you could go and return safely?"

The future is full of promise, but in the past you could — perhaps — fix your mistakes. Gleick's tour of the development of what are by now are familiar paradoxes brings into focus the giants of early science fiction. One example is Ray Bradbury's *A Sound of Thunder*, which showed that changes in the past (in the story, the crushing of a butterfly in the Jurassic) can lead inexorably to dramatic changes in the present.

Temporal manipulations can create paradoxes, the most famous of which amounts to the fact that you can't kill your grandfather and prevent your own birth — or can you? From a storytelling

perspective, time travel, or at least backwards time travel, seems to preclude the possibility of free will.

In the 1980s, the Russian physicist Igor Novikov put forth what is now known as the 'self-consistency conjecture', which posited, in short, that the probability of inconsistent histories in closed time-like curves was exactly zero. Quantum events should play themselves out the same way the second time around. Gleick notes that "this was why writing the book was so much fun. Watching first the science fiction writers and then the physicists grapple with these questions. What we love about science is the very way it undermines our common sense and it's a great joy whenever it happens." He cites classic sci-fi movies like *The Terminator*, *12 Monkeys* (itself a remake of *La Jetée*, a film he lovingly describes in detail in his book) and, in a particularly neat resolution, 'Blink' (an episode of the classic sci-fi series *Doctor Who*).

The 'trick' in great time travel literature becomes the way in which the author closes the loop. As Gleick puts it, "the job of a good time travel writer is to explore the paradox by taking it seriously ... but when you go back and think about it, you can see the trick".

What distinguishes *Time Travel: A History* from other books more focused on the philosophy or physics of time travel is that Gleick allows himself into the realm of the aesthetic. It is irrelevant whether the physical mechanism for time travel is driven by a steampunk bicycle or a wormhole — you have to believe in the dramatic stakes.

As to the practical possibility of time travel, Gleick is something of a sceptic. Common sense, he argues, suggests that the past really is immutable, no matter how clever the theoretical models that imply otherwise. And despite the apparent symmetry of the microscopic laws of physics, there really is, he argues, something different about the future and the past. "The future hasn't been written yet. When did that become controversial?"

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■ *Time Travel: A History* by James Gleick is available through Pantheon Books.