

Time Travel is my favourite thing in all of sci-fi. You can keep your laser sticks and incest, THIS. This is my jam.

For most people Time Travel was arguably most popularised either by The Time Machine by HG Wells or Animal Crossing (you filthy cheats), but I think my first proper exposure to the genre was Quantum Leap. A TV series about the seemingly ageless Scott Bakula hopping around to different points in time, taking over people's bodies to right past wrongs. Because of this show, and this is absolutely true, I sometimes imagine someone quantum leaping into my body and wonder what they'd think of me based on the context clues around me. "Huh. So he's a pathetic man-child who can't let go of the past"

But this show raises some questions. And not just the weird religious elements.

[Example of overt God references]

If I wanted preaching in my sci fi, I'd watch A Path In Time [Christian movie about time travel].

If Sam Beckett is changing the past, doesn't that have serious ramifications for the future? And why did I think that?

Back To The Future: any change to the past can have serious consequences to the future.

With every time travel story, it always comes with rules, but they're always different. So we wind up the conflicting morals. It's good to change the past and it's bad to change the past. Why are the rules different? What are the rules?

Well it's *time* to find out in:

The Rules Of Time Travel

In fiction, there's generally three types of time travel.

Number 1: The Mutable Timeline (Looper, Back To The Future, Dr Who Comic Relief)

This is where if you change something in the past, the future will change accordingly.

If you kill your grandad, you cease to exist.

Changing history in any way will instantly alter time forever.

Dr Who Comic Relief (4 min anticipated time travel)

So if we're gonna kill baby Hitler, this is the time to do it. Just saying.

Let's take an example from one of my favourite TV shows, Star Trek Next Generation.

In the episode Yesterday's Enterprise, the crew encounter a rift in time. Just as a starship from 22 years in the past comes through. This immediately alters the present with the Federation suddenly at war with the Klingons when they weren't before.

This is all because the starship was taken away from where it was meant to be in the past, immediately altering events of the present. Also known as the Butterfly Effect, not that one, a principle of Chaos Theory stating that a minor change can have the knock-on effect of a larger change no matter how disconnected it may seem. A butterfly flaps it's wings in China can cause me to [minor accident i.e stub toe - GRR STUPID BUTTERFLIES!]

See this is what confused me about the movie *Looper*. If you cut off someone's finger in the past, why does the future version only then lose it. Wouldn't it have been missing all along? That's because of:

Number 2: The Immutable Timeline (*Terminator*, *Red Dwarf*, *Futurama*, *Arrival*)

Even if you change the past, the future is still inevitable.

If you kill your grandad, then brace yourself nanny nooky.

Essentially suggesting that by going back in time to prevent something from happening, you in fact plot twist cause it to happen anyway. And we can see this demonstrated in the movie (*Terminator*): *Star Trek Next Generation*.

In the two-parter episode *Time's Arrow*, Picard and Data, he's an android, this'll be important later, are called to an excavation site to discover the severed head of Data, he's an android remember. They figure out that at some point Data will travel back in time nearly 500 years and die. They spend the whole episode trying to stop it happening but it happens anyway but it's ok. Because android.

Novikov's Self-Consistency Principle states that time travel is permitted as long as the timeline is closed and reverts back to its original state, to avoid any paradoxes. But this creates a loop where the occupants essentially lose all free will, because to have true autonomy would destroy the universe and - oh no I've gone cross-eyed

<https://www.youtube.com/watch?v=pGnMiGrYmPE> 10:33

There's actually a spin-off idea of the immutable timeline.

Number 2A: "Fixed Points In Time" (*Scrooge*)

You cannot change major historical events, but you can make small changes to the past, without massively impacting the future. A bit like *Quantum Leap*! After all he couldn't stop JFK's assassination.

*yeah AI you swat that mean ol' sniper like an angry cat*

<https://www.youtube.com/watch?v=iWOGNTmbulc>

<https://www.youtube.com/watch?v=r28lOrcFK6U> 3:30

Or to stick to our grandad example, you cannot kill him, but you can kick his shins.

For this of course we can turn to one of most memorable *Dr Who* episodes: *Star Trek Next Generation*.

In the episode *Firstborn*, Lt. Worf and his son Alexander encounter a man who later turns out to be the son from 40 years in the future. He attempts to come back in time to try and alter his younger self's future from being a diplomat into a warrior in order to prevent his own father's murder. He fails to change his own mind, but changes Worf's own perspective and he comes to accept his son's wishes. In this case the change doesn't come from altering the past but to change someone's present actions to lead to a different and presumably better future. So, you know, It's *A Wonderful Life* or *Scrooge*. [re-enact *Scrooge* window "what day is it" scene but in Klingon]

So in this, time travel doesn't create any big changes on a worldwide scale, only smaller typically personal changes. This follows Stephen Hawking's wonderfully named Chronology Protection Conjecture, which says time travel would only be possible on a tiny scale because it's the only way to avoid paradoxes. Things have to make sense. Unless it's Klingon.

<https://www.youtube.com/watch?v=pGnMiGrYmPE> (10:12)

Number 3: Multiple Timelines (Avengers Endgame, Wonderful Life, Sliding Doors, Days Of Future Past

<https://www.youtube.com/watch?v=aiaJuJND2k0&list=PLkLimRXN6NKxc4bqOLeyqhzGVWjUJjkFe&index=45>)

By travelling back in time, you make an alternate timeline leaving your own history untouched.

If you kill grandad, you only killed this version of grandad, not your own. He's still there out there.

It's an easy-out for any complicated questions about paradoxes because it's all happening somewhere else. Or in other words: meanwhile in a parallel universe.

This is how time travel was dealt with in the highest grossing movie of all time: Star Trek Next Generation.

In the episode Parallels, Worf keeps sliding into different parallel dimensions where it shows different outcomes to past decisions, from flavours of cake to exploding. And it's only when he returns to his point of entry that he can return to his original dimension. While not strictly about time travel, it shows the effect of small changes to the past, which he has no memory of because it never happened in his timeline, therefore his history remains intact.

Now we're into quantum mechanics like Hugh Everett's Many-Worlds interpretation, suggesting an infinite number of worlds exists with every single possibility.

[Portal 2 Cave Money-Planet]

And that's all- But that's not all! Because we also have

Time loops, just like in the Bill Murray classic Star Trek Next Generation with the excellent episode Cause and Effect, trapping the crew in a destructive loop until they find a way to break the cycle.

Time Dilation, just like in Christopher Nolan's (Interstellar) Star Trek Next Generation with Timescape where everything moves so slowly it looks motionless.

A One-Way Trip, like Futura- Star Trek Next Generation in A Matter Of Time where someone from the past attempts to steal things from the future for personal gain but gets trapped and-

Time loops, just like in-

Find a way to break the cycle-

[gets trapped in a loop and glitches out]

With so many time travel stories why haven't we all agreed on one way to tell them? Why are there differing rules. That's because there are no rules. Time travel at least to the future isn't entirely science fiction thanks to the theory of relativity but there are no laws that govern how time travel works. Everything is theoretical which is why I guess I find them so exciting. When you screw around with cause and effect, it can make for some exciting unpredictable stories with endless possibilities!

So keep breaking the rules! In fact to prove my own point, I'm going to go back to the start of this video and add more Star Trek Next Generations references-  
[Quantum Leap ending]

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## References

Mutable timeline = Change the past, the future changes too

[https://memory-alpha.fandom.com/wiki/Yesterday%27s\\_Enterprise\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Yesterday%27s_Enterprise_(episode))

Immutable timeline = Change the past but actually causes same future anyway (or travel but nothing changes like Christmas carol)

[https://memory-alpha.fandom.com/wiki/Time%27s\\_Arrow\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Time%27s_Arrow_(episode))

(argument? -

[https://memory-alpha.fandom.com/wiki/We%27ll\\_Always\\_Have\\_Paris\\_\(episode\)](https://memory-alpha.fandom.com/wiki/We%27ll_Always_Have_Paris_(episode)))

Fixed Points in Time = Change only small things in the past, major events happen anyway

[https://memory-alpha.fandom.com/wiki/Firstborn\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Firstborn_(episode))

Multiple Timelines = Alternate history that does not affect your own future. You remain but in a new timeline.

[https://memory-alpha.fandom.com/wiki/Parallels\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Parallels_(episode))

Time Loop

[https://memory-alpha.fandom.com/wiki/Cause\\_and\\_Effect\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Cause_and_Effect_(episode))

Trapped in the future

[https://memory-alpha.fandom.com/wiki/A\\_Matter\\_of\\_Time\\_\(episode\)](https://memory-alpha.fandom.com/wiki/A_Matter_of_Time_(episode))

Slow Down

[https://memory-alpha.fandom.com/wiki/Timescape\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Timescape_(episode))

Different History

[https://memory-alpha.fandom.com/wiki/Tapestry\\_\(episode\)](https://memory-alpha.fandom.com/wiki/Tapestry_(episode))