

Backward Time Travel

An Atomic Paradox

Traveling forward in time is achievable. Einstein proposed this in his theories of relativity, and this has been confirmed by many experiments. So, we'll say no more about forward time-travel.

Traveling backward in time is more intriguing, especially for the movie industry. But it seems every time we bring this up, someone points to the "classic paradox": If you go backward in time, and kill your grandfather before he meets your grandmother (either side of the family will do), you could never have been born. And if you were never born, how could you go back in time and kill your grandfather? And this branches out into someone going back in time and doing something that causes the history timeline to significantly change the future. Et cetera.

But there's a paradox even more convincing that traveling back in time is just not possible, at least without serious consequences for the traveler.

Since I live in Tombstone, this scenario oriented to the OK Corral. Suppose I've just built a time machine, and for my first trip, I want to go back to Oct 26, 1881 and see the gunfight at the OK Corral for myself. An anthropologist friend of mine came running up to me and said, "I've got this skull that's supposed to be Wyatt Earp's skull (it is), and I want you to take this with you and see if this skull's measurements match that of Wyatt himself."

This seems like a reasonable request, so I take the skull and climb into my time machine. I set the location, date and time, press "Enter", and the next thing you know, I'm standing just outside the OK Corral, skull in hand, and sure enough there's Wyatt and Doc Holliday and Ike Clanton and all the rest.

And right off the bat we've got a problem, and the problem is with this statement:

"Nothing – absolutely nothing – can be in two different places at the same time."

This means that either the skull disappears from my hands, or Wyatt's scalp, his skull now gone, flops down over his face like an ascot. At any point in time, the skull can only be in one place.

Since Wyatt would have a hard time firing his pistol without a skull, this possibility would definitely be history-changing, so the fairly obvious conclusion is that the skull would disappear from my hands. And the problem, it seems, is solved.

But it's not.

The next problem is not with Wyatt's skull, but my own. The calcium atoms in my skull certainly didn't form a skull way back in '81, but each of these atoms was certainly

somewhere. And an individual atom can't be both in my skull and wherever it was in '81 at the same time. If we follow the same logic as with Wyatt's skull, it's me wearing my scalp for an ascot.

It's even worse than that. That same argument could be made for every atom in my body, the clothes I'm wearing – everything that got time-traveled back. All of this – Wyatt's skull, me, and everything I brought with me – would simply dissipate.

So, what does this scenario accomplish? It provides an effective alternative to the “kill your grandfather” paradox and, in my opinion, is more convincing. And it doesn't require me to kill anyone.