

Time travel is possible

My View

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I was a physics student in college in 1960 when the movie "The Time Machine" starring Rod Taylor premiered. I recall going to a theater in downtown Boston with a group of friends to catch a showing. It was an exciting, well-produced film based on the 1895 book by English author H.G. Wells.

Wells set his story in then-present Victorian England. In the tale, an adventurous, young inventor creates the machine that brings him into the far future. He encounters a post-apocalyptic society populated by beautiful people and underground monsters.

Ever since the work was published, the idea of being able to travel in time, both forward and backward, has captured the imaginations of people everywhere. But is time travel really possible? Not today, as it is described in Wells' tale. But many scientists believe that the laws of nature do indeed allow it — if only we can develop the technology to make it happen.

When we are children, we learn the basic facts of life. We realize that we live in the present, the here and now. The meanings of "here" and "now" become intuitive concepts. "Here" is the building we are in. "Now" is the present moment, as defined by the time and date on our smartphones.

Time can seem to go by slowly if we are in a boring situation, or super-fast when we are having fun with friends. We also know that time goes only in one direction, forward, and it can't be stopped.

But the reality is much different than what we have come to believe. Albert Einstein, the world-famous physicist, published his "Theory of Relativity" in 1905 when he was just 26 years old and working as a patent clerk in Bern, Switzerland. Understanding the implications of relativity

has dramatically changed how scientists think about time. According to Einstein, time turns out to be an illusion. What!?

A key concept from the "Theory of Relativity" is that the three dimensions of space and the point in time that defines an event in that space are really part of the same thing. They are, in fact, fused together into the four-dimensional continuum that Einstein called "Spacetime." This concept's implications allow us to consider the possibility of time travel.

To understand how it works, think about how your life would look in Spacetime. It would start at the place and time you were born and track through all of the other moments in Spacetime where you existed, till you reach the place and time of your death. Here is the mind-blowing part. According to Einstein, all of these points in your Spacetime line exist simultaneously. The past, the present, and the future happen at once and are always there!

Now, this idea completely violates your intuition of how the world works. Over the last 100 years, however, scientists have tested experimentally the many implications of relativity. They have all proven to be correct. So, Einstein's theory does indeed appear to represent reality.

What follows is a way to think about Spacetime, demonstrating how time travel is possible. Consider your path along that Spacetime line, from your birth to your death, to be like a Digital Video Recording (DVR). You can use your remote control to go into the video and pick any scene you want to play. You and the other people in that scene believe themselves to be in the present time. They remember what happened to them in past scenes but have no idea of what will occur later, even though the video is complete, and all those future scenes are there and will not change.

Since all points in Spacetime, or the DVR, exist

simultaneously, one can imagine that there must be a way to move from one point to another, either forward or backward, and time travel would be achieved. With the example of the DVR, we use the remote control to move forward and backward in the recording. But how, exactly, can moving along our Spacetime line be done in real life?

The "Theory of Relativity" points to a mechanism that could be used to allow time travel. It is called a "wormhole." This is a structure that connects two different points in Spacetime and is based on a particular solution to the Einstein field equations.

To visualize how this would work, take a sheet of paper representing a Spacetime plane. Then draw two dots on one side of the paper separated by several inches. The action of the "wormhole" can be visualized by folding the paper (plane of Spacetime) so the two dots are touching each other. Now you can easily get from one point in Spacetime to the other by moving through the wormhole.

Will we ever have an operating time machine? History indicates that, since the laws of physics allow time travel, people will eventually succeed in building one that works. And, when they do, they will most likely come back to study us, their ancestors.

In fact, some scientists, such as Professor Michael Masters of Montana Technological University, speculate that we are indeed being visited by people from our future. Masters believes that, rather than aliens from some faraway star system, time travelers are the best explanation for the advanced technology UFOs, or UAPs as they are now called, that are being reported and studied by the Pentagon. Perhaps, when the scientists studying UAPs make some progress in their work, we will learn the answer.

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