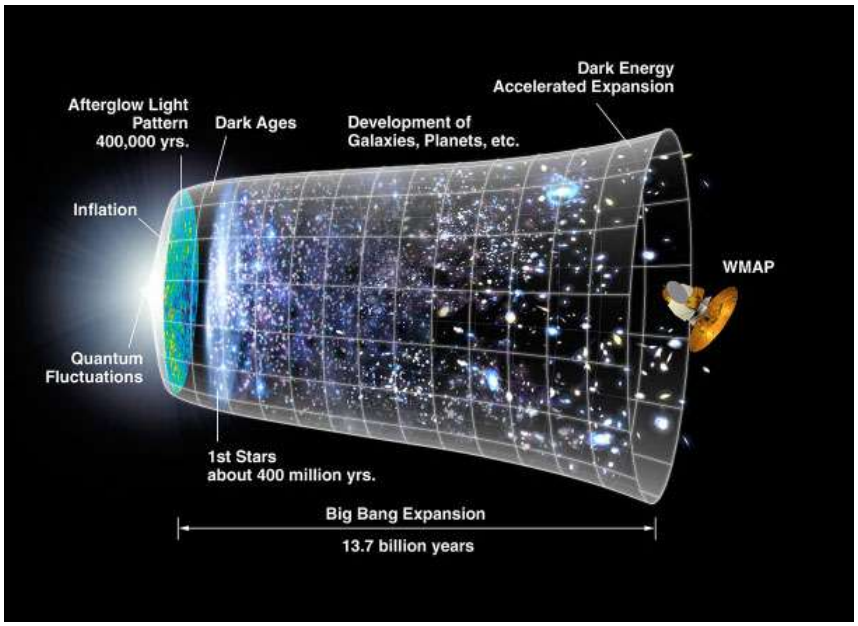
OUR SPECIAL TIME IN THE UNIVERSE



www.daviddarling.info

We know that we live in a special place. Earth is special as it supports the delicate conditions that have allowed us to evolve to our present state. I think it is fascinating to note that not only do we live in a special place, but the time in which we live is also remarkable.

Normally when we speak of time, we are referring to events that have or are occurring in a span that is relatively close to our own existence. Even when we discuss history, thousands of years ago, this is still*very* recent time as far as the universe is concerned. The time frame of which I speak is much broader, much deeper. We're talking billions of years. *Trillions* of years.

But trillions of years are peanuts for the universe. If the universe continues to be, and is not destroyed, then billions of years is still nothing compared to infinity. So here, when I say we live in a special time, I'm referring to a window of a trillion years, give or take.

So, what's so special about our time? In Laurence Krauss' book "A Universe from Nothing", he demonstrates how our time is one when our ability to accurately observe and quantify our universe is a luxury. We live in a time when it is still possible for us to determine the size of our universe. This is possible because we can still see to the far edge of the universe, to the cosmic microwave background (the radiation that is left over from the big bang). This may not sound terribly impressive, but keep in mind that future civilizations will not have this luxury. Our universe is expanding, faster and faster, stretching space-time out as it does so. Eventually this expansion, if it continues to accelerate (which all evidence suggests that it will), will be stretching space-time out at a rate that is faster than the speed of light. Once this rate of expansion is reached, it will be impossible for light from these regions to ever reach other areas of the universe. Therefore, in a future civilization, on a different world, trillions of years from now, the greatest scientists of their era will look out through the lenses of the most powerful telescopes ever constructed and see nothing beyond their own galaxy.

This has other implications as well. Not only will these future civilizations be unable to see anything outside of their own galaxy (which will remain intact due to the local effects of gravity within the galaxy), but this will also mean that the expansion of the universe will also be undetectable. Without being able to detect the expansion, the now infamous dark energy will also remain in the dark, so to speak.

So, our time is unique in that we are able to learn key aspects of our universe that will be simply out of reach of our universal successors. The universe is a wonderfully mysterious place, and I for one feel tremendously lucky to be alive when we can appreciate intricacies such as this.

Source: http://wondergressive.com/our-special-time-in-the-universe/