Putting millions of years into perspective

by Mark Pavilons

I've long known the truth about the Tooth Fairy. I even knew the Easter Bunny was a bit of a stretch.

But I was shocked recently to learn a couple of things that literally rocked my world, or at least the small portion of the couch I?inhabit.

The universe, it seems, is 2 billion years younger than previously thought.

New calculations suggest the universe could be a couple billion years younger than scientists estimated, and even younger than suggested by two other calculations published this year that trimmed hundreds of millions of years from the age of the cosmos.

What's weird is in how the calculations were made. I?always thought that mathematics was one of the constants in the universe ? 1 plus 1 equals 2 ? no matter what planet you're on. Calculating stuff in the cosmos is really just guess work.

?We have large uncertainty for how the stars are moving in the galaxy,? said Inh Jee, of the Max Planck Institute in Germany, lead author of the study.

Scientists estimate the age of the universe by using the movement of stars to measure how fast it is expanding. If the universe is expanding faster, that means it got to its current size more quickly, and therefore must be younger.

The expansion rate, called the Hubble Constant, is one of the most important numbers in cosmology. A larger Hubble Constant makes for a faster-moving ? and younger ? universe.

The generally accepted age of the universe is 13.7 billion years, based on a Hubble Constant of 70. Jee's team came up with a Hubble Constant of 82.4, which would put the age of the universe at around 11.4 billion years.

Jee used a concept called gravitational lensing, where gravity warps light and makes far away objects look closer. The team rely on a special type of that effect called time-delay lenses, using the changing brightness of distant objects to gather information for their calculations.

Another method of measurement is ?temperature.? Our universe is expanding and cooling today, but in the past it was hotter and denser. So, scientists look at how far apart objects have become, and the brightness. The father you go back in time, the temperature gets hotter.

There's a catch, of course. Most scientists peg the beginning with the hot, dense Big Bang.

Why is this important??Well, it all comes down to the nagging questions of existence.?We tend to define ourselves by our lineage ? our family tree ? and how far it stretches. Well, without getting into too much science, we're all part of the universe in that we're made of cosmic particles sent out into space when our sun was formed so many billions of years ago. These particles combined to create the earth and everything on it, setting the stage for all life, including our own.

Okay, so knowing the exact date this happened may not seem all that critical to our daily lives. But it could, if we want to delve deeper into our cosmic existence and the questions ? how did the universe form, what existed before it was born, is space infinite, will it all come to an end one day?

Whew. Do most people care about such things? No.

I have long found the concept of infinity to be quite perplexing. How do we wrap our heads about infinity ? the endless expanse of time and space? Conversely, when we pass away, how does one comprehend nothingness, a lack of well, everything?

The alpha and the omega.

Enough about the eternity of all things.

I?watched an episode of Nature of Things recently, where paleontologists now believe that the infamous Tyrannosaurus rex evolved into today's large, flightless birds, like the ostrich. From Tristan Otto, one of the best-preserved Tyrannosaurus rex specimens in the world, experts postulated a few things, using new CT scan technology.

They were able to find new information about the animal's sensory organs in that large head of his, along with more info about the giant's gait and posture, which apparently are close to that of a bird. They even speculated that T. rex could have been multi-coloured and even have had a mane, like a lion!

Okay, so who cares about 65-million-year-old bones?

Let's face it, dinosaurs are cool.?Who didn't have a plastic dino toy as a kid? I think I still have one or two to this day. To imagine that such interesting creatures roamed our world is so neat. Why were they so big? How did they evolve here??If they weren't killed off, would they still be walking the earth today??Will we ever build a ?Jurassic Park? like the movies?

For these answers we have to look at why paleontology is relevant.

This branch of science helps determine the evolutionary identity of living and past organisms. It helps to determine cause-and-effect relationships and how things changed over the eons. It can even help us understand the magnitude of climate change, something that's quite apparent today.

Animal biology is based on actual evidence, not speculation. The bones talk. The dinosaurs were here, then they died out from a natural disaster. This can happen again if the conditions are right and the next species vanishing from the planet will be us.

Chances are we won't be saddling up a T. rex anytime soon and taking one for a ride. As a correlation, I have witnessed a grown man riding an ostrich but that's a story for another day!

Science, in general, is pretty cool because it not only gives us plenty to think about, it's constantly revealing new things.

Maybe the cure to cancer lies in dinosaur DNA. Maybe our future depends on the cosmic winds that blow and the speed at which our world spins and the universe expands.

Maybe one day my great-grandchildren will sprout manes!