

Time. It is a phenomenon that we are all aware of. Each of us lives within the reality of time, and sometimes time appears to go fast – when your team is playing catch-up in a match with the clock ticking inexorably down, and sometimes it seems to go excruciatingly slow – when your team is ahead with 10 minutes to go....and those 10 minutes just drag on and on and on. What however is time?

Part of the problem with time is that it is not a constant. Einstein demonstrated this over 100 years ago. According to Einstein, the times of two individuals would agree if these two people were at rest in relation to each other, but not if they were moving. This is the theory of relativity. Thus, imagine 2 planes circumventing the globe. One plane flies east, and the other west. The clock in the aircraft flying towards the west records more time than its twin travelling in the opposite direction. The time taken for the passengers in the plane flying towards the east is less than for those in an identical plane flying the same length route in an identical plane towards the west. Alternatively stated, imagine 2 twin brothers standing on Cape Canaveral. One takes off in a rocket and heads straight up close to the speed of light, while his brother remains on the ground, looking up through a telescope. When the travelling brother returns to Cape Canaveral in the rocket, he will be younger than the brother who remained on earth, because time will have run more slowly for the brother in the rocket. This is counter-intuitive, but it is true....

This theory of relativity between time, mass and energy led to the most famous equation of all time, $E=mc^2$, the implications of which led directly to the atom bomb. Einstein then went on to develop the theory of general relativity, which postulates that spacetime is curved and curves. In this general theory of relativity, space and time are transformed from a passive background in which the stars and galaxies exist into spacetime being an active participant in the dynamics of the universe. In the theory of general relativity, the universe was transformed from a static entity to a dynamic entity, growing over time, and if the galaxies are moving apart now, it implies that at some point they were much closer together. Some scientists went further and postulated what became known as the “Big Bang” theory.

Time is now known to come to an end in black holes. When a star no longer produces enough heat to balance the force of its own gravity, which is trying to make the star smaller, the gravitational pull of the collapsing star causes warping around it by spacetime, and as the star contracts the warping increases, until you eventually have a black hole in which time ceases to exist. Einstein’s theory of general relativity ran up against the pressures of quantum theory, which forms the basis for modern light detectors and TV cameras. In quantum theory, scientists discovered a new picture of reality called quantum mechanics, in which no longer do tiny particles have a definite position and speed. To the contrary – the more accurately one could determine a particle’s position and speed, the less accurately can one actually determine the actual position and speed. Although counter-intuitive, quantum mechanics forms the basis for most of modern electronics. In addition to his Nobel Prize, Einstein was offered the presidency of the new State of Israel, which he refused, allegedly saying that “Politics is for the moment, but an equation is for eternity.” A wise man indeed!

Einstein’s theories impact our understanding of time. Isaac Newton was the first to write down a mathematical model for time in his work, *Principia Mathematica*, published in 1687. Newton was a professor at Cambridge University at the time, an era when theology was held to be the “Queen of the Sciences.” In Newton’s mathematics, time and space were a background in which events and people and historical realities happened but which were not affected by the time or the space canvas. Time as separate from space and was viewed almost like a single-line railroad track that was infinite in both directions. There was time, and then there was space in which the universe existed, with a definite beginning in time, and then one day, theoretically, the universe and space will be no more, but time will continue its inexorable onward march. Time as considered to be eternal, but space and matter were considered to be temporary and finite. This created philosophical problems in the 1700s and 1800s, e.g. if the universe had indeed been created, why had there been an infinite wait before it had been created? What had necessitated an infinity of eternity prior to the existence of space and matter?

Einstein's work on general relativity transformed our understanding of the universe and of space, matter and time. In general relativity, the time dimension is intimately linked with the three dimensions of space to form an integrated phenomenon known as "spacetime." The distribution of matter and energy warps and distorts spacetime, so it is not flat. Objects in spacetime try to move in straight lines, but because spacetime is curved, the objects move in bent / curved lines. Time and space are inextricably linked. One cannot curve space without involving time as well. Thus, time has a shape. In Newton's mathematical model, time existed before space and matter. In Einstein's mathematical model, time and space exist together, and not without each other, so that it makes no sense to ask what happened before the beginning of time / space / spacetime, because such time cannot be defined.

In the context of modern mathematics, Genesis 1.1 makes perfect sense. "In the beginning, God created the heavens and the earth." This simple sentence captures everything that ever was, is, and will be, in our universe. It portrays God as being outside of His creation, and thus not subject to time. He is therefore eternal. In creating space and matter, He simultaneously created time, i.e. Genesis 1.1. represents when spacetime came into existence. This "simple" sentence includes time, space and matter, and nothing in history is outside of these 3 basic constraints.....hence this simple sentence includes everything that ever was, is, or will be. God revealed Himself in the OT as YHWH, or the self-existent one. His personal name reveals that He has no beginning and no end. He simply is, and because He is not comprised of matter, He can never be constrained by time or space. And so the Holy Spirit can be with all believers simultaneously, and God really is already dwelling in tomorrow because He is not constrained by time. Prophecy may be prophecy to mere mortals like us, because we are matter and thus live within the constraints of spacetime, but because God already dwells in tomorrow, prophecy is in reality a description of what already is to Him, but is yet future to us. He knows the future because He is already in the future.

If this is mindboggling, don't worry. It really is. One day, according to Scripture, spacetime will come to an end, the earth and the heavens will be done away with, and God will create a new spacetime in which is a new earth and the New Jerusalem. And then we will all have the time to understand how this canvas on which our lives are lived out, called "spacetime" is intimately and intricately put together.

Until then, let us continue working on the general but faulty assumption that time is moving forward, and that there are 60 seconds to a minute, 60 minutes to an hour, and 24 hours to a day, and 360 degrees in a full circle, all of which comes to us directly from Babylonian mathematics which revolved around the number 6 (e.g. the statue in Daniel 3 was 6 cubits wide and 60 cubits high). Maybe when we get to heaven, time will be measured around the number 7 rather than the number 6!

Best wishes,

Conrad.