

This time gap is important in obtaining pictures of what the Universe looked like in the past. This only becomes apparent when we consider the vast distances between Earth and galaxies in far-off space. With modern telescopes we can look at a galaxy that is 2 billion light years away from Earth. Since what we see is the light itself, and since it took 2 billion years to travel to the telescope on Earth, we are actually seeing a picture of an event that happened 2 billion years ago. Similarly, we can look at another galaxy that is 4 billion light years away, or twice as far back in the past.

In this manner, scientists can actually obtain relics of past events. This observed data is correlated with mathematical models and projected farther back in time.

The farther back in time we go, as we approach the time of the Big Bang, the closer the galaxies come together. The pictures from telescopes become dimmer and theoretical physics takes over. The galaxies of stars become a muddled mass as they are compressed together. Matter, as we know it, disappears. Temperatures become so intense that elements and atoms no longer maintain their structure. The atoms break apart into subatomic elementary particles -- electrons, positrons, neutrinos, and photons; then quarks, leptons, and gluons. We have entered the realm of plasmas and particle physics. The orderly harmony we observe in the present Universe is gone. We are in the era of fiery primeval chaos.

As we go farther back in time, all matter, space, and energy become theoretically compressed into a volume smaller than a baseball. We are at the beginning: the threshold of creation! Beyond this point space and time, as we know them, cease to exist. Matter, energy, space, and time are simply not meaningful entities before the moment of creation.

The picture stops. There are no more relics, no footprints in the sand. There is no experiment that can be performed in the laboratory. Science has reached the barrier beyond which it cannot penetrate. We are at the beginning of creation and all is in darkness.

THE STUNNING IMPLICATIONS

Let's go back to our original question. Why does the Universe possess the highly unique properties conducive to the existence of life? This is perhaps the greatest mystery in modern science. All so-