metatarsal-phalangeal impression is visible in some footprints, where digits II and IV converge.'[6]

Further evidence for a bird interpretation is shown by comparing the tracks to modern waterbirds and waders that include a high footprint density without preferred orientation and a shallow water setting that helps preserve the tracks. The combined occurrence in the studied tracks of all these features is exclusive to birds.[6]

The researches found some minor features, which may not be in agreement with the tracks being from birds: '… the presence of distinct pad impressions in some footprints and the absence of associated feeding traces'.[6] Therefore, Melchor and colleagues opt for the tracks being 'bird-like' and '… only can be attributed to an unknown group of theropods showing some avian characters'.[6] This is really a case of missing the obvious because of a blind allegiance to evolution. The character of the tracks, including tracks on multiple strata, and the lack of feeding traces can be explained the same way as dinosaur tracks and eggs (exposed Flood sediments caused by oscillating sea level early in the Flood, as the waters were inundating the land).[7,8]

Circular reasoning

The interpretation of Melchor *et al.* also demonstrates the abundant circular reasoning in organizing observed data from the rocks and fossils into preconceived ideas. There has been a force fitting of data into pigeonholed evolutionary slots for many years. This is simply based on their assumption that evolution is true, and they call this *science!* The subject of origins is quite different from experimental science because evolution and the origin of the sedimentary rocks and their contained fossils have not been observed by man. To the student, or other people not familiar with the tendency to fudge data into agreement, the evolutionary story looks coherent and well verified. So much data, including multiple dating methods, seem to fit the evolutionary story. But beware, this neat-sounding story is a fabrication.

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Creation and curved space-time

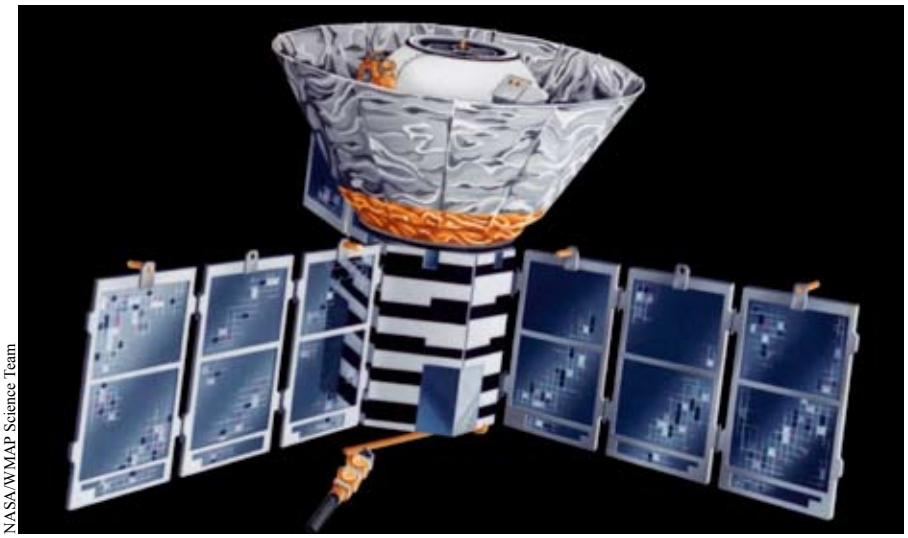
Don DeYoung

A decade ago the COBE (COsmic Background Explorer) satellite showed slight temperature fluctuations in the background radiation of space. The new satellite WMAP (Wilkinson Microwave Anisotropy Probe) has now revealed greater detail about these 'cosmic ripples'. One conclusion is that the overall geometry of space is *flat*.[1] To better understand this description of space, this article reviews the terms space-*time*, *warped space,* and *space curvature*. These concepts were first introduced in 1915 by Albert Einstein's general theory of relativity in an attempt to explain gravity. He wondered how the attractive force of gravity could act between objects widely separated in space. Isaac Newton had also struggled with this question two centuries earlier. Today, efforts continue to understand the gravity force and Einstein's explanation in terms of space curvature.

Space-time

Space itself refers to the familiar three dimensions of length, height, and width. Higher, unseen dimensions of space also may exist according to current thinking. Einstein's relativity theory fuses space with the passage of time. In this way time itself becomes a fourth dimension of the space-time *continuum*. Time (t) can be given the units of distance by multiplying by light speed *c*, *c*t. This space-time connection is made because the actual length of a time interval depends on one's location in space.

If positioned near a massive object, for example, time will pass more slowly than it does in empty space. The effect is called *gravitational dilation* or the stretching of time. This time alteration was measured in 1962 using atomic clocks. Identical clocks were placed at the top and bottom of a water tower. The clock at the bottom of the tower, slightly closer to the massive Earth, ran



NASA/WMAP Science Team

Artist impression of the COBE satellite.

nanoseconds slower than the elevated clock.[2] Another way to express the space-time connection is that local time is defined in terms of the distribution of nearby matter. Clocks also run slower when they are moving at very high speeds, a separate aspect of relativity theory.

Curved space

Remember how a curved mirror distorts your image in a funhouse? Einstein's gravity theory predicts that matter or energy likewise distorts the *fabric* of nearby space. It is as if the familiar straight lines of length, height, and width can be bowed or twisted. As often happens, the mathematics were already in place when needed later to describe nature. The equations for such non-Euclidean geometry were first published by Bernhard Riemann in 1854. Hermann Minkowski also prepared the way for Einstein by developing space-time ideas in 1907. This ongoing development of intricate mathematical relations, in anticipation of future applications, is clear evidence of intelligent design and mathematical precision in nature.

A two-dimensional analogy is helpful in considering the meaning of curved space. Think of the flat surface of a waterbed. Place a bowling ball on the bed and it will sink into the resulting depression. The entire mattress surface becomes curved or warped downward, most noticeably near the ball. If a marble is now dropped unto the bed it will roll toward the bowling ball. The marble also may be drawn into a spiral motion around the bowling ball, somewhat like a planet orbiting the sun.

The waterbed comparison with curved space is helpful but is deficient in at least three ways. First, the two-dimensional mattress surface is deformed into the third familiar dimension of depth. However, the curvature of space is into a fourth dimension and cannot be visualized. If space curvature indeed occurs, we do not observe it because we are *embedded* in space. A second problem, the bowling ball sinks downward into the bed due to the Earth's gravity pull. In space, however, the gravitation of matter distorts its space surroundings whether or not any other objects are present. Einstein reasoned that this warping of space was itself an expression of gravity. In the solar system, planets are said to then move along orbit-shaped geodesic slopes or depressions in space caused by the sun. Matter tells space how to curve, and the resulting space curvature in turn tells objects how to move. A third shortcoming of the waterbed analogy is that massive objects also affect the passage of time in their vicinity.

Evidence for curved space

The initial evidence, which catapulted Einstein to fame, came from a 1919 eclipse of the sun. Astronomer Arthur Eddington made a special trip to the coast of West Africa for observations. During the eclipse, starlight was found to be deflected slightly by the sun, just 0.0005 degrees, consistent with Einstein's prediction. The simplest interpretation is that space is slightly disturbed in the sun's vicinity. In recent years there have been additional examples of gravitational deflection or *lensing* of distant starlight. In some cases the distortions of space appear to separate light source into multiple images. A *twisting* or *dragging* of space has also been reported in the vicinity of dense, spinning neutron stars.[3] The very fabric of nearby space appears to become tangled and 'wound up', similar to batter being twirled by an eggbeater. Not all scientists accept the concept of curved space but it seems a plausible explanation of the data.

Related ideas

The term *space curvature* is also used to describe the overall geometry of the universe. If the universe is *closed*, its curvature then is said to be positive. Such a universe, if left to itself, would eventually stop expanding due to the gravity of all the matter in it, and collapse inward. Also, in a closed universe, parallel lines will eventually meet. If you travel outward in a straight line in such a universe, you would eventually return to your starting point. On the other hand, if the universe is *open*, its curvature is said to be negative and such a universe, left to itself, will expand forever. Parallel lines will diverge at great distances, and in straight-line travel you would never return to your origin. Thus far, measurements from the WMAP satellite suggests that the universe lies directly between the closed and open extremes, a geometry called *flat*.[1]

The discussion of the nature of space also includes exotic objects such as gravity waves (ripples in space-time), cosmic superstrings, white

holes, worm holes and black holes. None of these items have been detected with certainty, including black holes. If black holes actually exist, they are locations of extreme space curvature where matter and light have become trapped. All these strange features may exist in deep space, along with other unknown objects not yet thought of. The universe surely contains many unknowns and surprises.

Creation implications

Some scientists have suggested models where the gravitational disturbance of space-time may help us understand the literal Creation Week.[4] In such models, while 24-hour days passed in Earth's reference frame, billions of years of history actually transpired in deep space. The assumption is that there were greatly different time scales depending on one's location in space.

Such models also raise two interesting issues. First, just how far should we try to extend the current physical laws of the universe's *operation* to explain its *origin* during the Creation Week? We need to be aware that applying today's science to the initial events of creation may not be valid since supernatural activity took place on a grand scale during Creation Week. With regard to space-time, God my have added to the natural laws of operation by supernaturally stretching space.

The second issue concerns the extent to which time may be stretched by gravity. Accounting for *deep time* in space by gravitational time stretching, 10–15 billion years of history, is an extrapolation that is 10^{28} times greater than that observed so far with atomic clocks. Of course we haven't observed such changes on Earth today, because gravity is so weak. But general relativity specialists agree that there is no limit to the time dilation—for example at the event horizon of a black hole, time stops completely. Therefore an appropriate creationist cosmology can still make use of the principle. Humphreys' cosmology, for example, posits that during Creation Week Earth was inside such an event horizon, except of a 'white hole'—a black hole running in reverse.

Some may wonder if it would be possible in future to manipulate clocks by compressing or stretching time scales. Could a person, in this way control his own destiny? However, Psalm 31:15 declares that 'My times are in his [God's] hand.' If the warping of space and time do indeed occur, it must be by God's direction. All relativistic time changes measured thus far are very small, only a microsecond or less, though they are real changes. This is somewhat similar to quantum mechanical effects which become significant only on the microscopic level.[5]

Conclusion

For astronomers who are uncomfortable with a beginning for the universe, even a big bang beginning 10–15 billion years ago, the latest WMAP conclusion that the universe is flat may be something of a disappointment. They would probably prefer an eternal universe which continually oscillates inward and outward.

Three centuries ago Isaac Newton wondered about the cause of gravity. More recently, Einstein proposed that the measured gravity force is actually caused by matter distorting space-time. However, the basic question still remains *why* matter distorts space in the first place. Gravity, the 'glue' which holds the universe together, remains a profound mystery.

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Manual dexterity in Neandertals

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A recent article on Neandertals was probably the most important one in the entire 27 March 2003 issue of *Nature*. Yet, it was less than one page long, was given no hype, and was written by four rather obscure anthropologists serving in two low ranked universities. It had the prosaic title, 'Manual Dexterity in Neanderthals'.[1] For anyone not familiar with current issues in paleoanthropology, it was just another 'ho-hum' article. Evolutionists, based upon their presuppositions, would find the article easy to ignore. Creationists, based upon our presuppositions, would find the article not at all surprising.

However, just beneath the surface of the article lies, as Philip Lieberman called it, the 'Neandertal Storm'.[2] Although Lieberman was referring particularly to the issue of Neandertal speech, the term 'storm' could well refer to almost every area of Neandertal research. To refer to 'Neandertal Discussions' would be far too mild a phrase to use considering the emotions that these ancient people—worthy relatives of ours—evoke. After studying the Neandertals for thirty years, I still find myself shocked at the prejudice that exists against them in the scientific literature.

At the heart of 'The Neandertal Storm' is the question: 'Who were these Neandertal people who are so little understood by evolutionists?' The question, itself, is surprising because: (1) we have known about the Neandertals since 1856, (2) we have more fossils of them than we have of any other hominid category, and (3) they are the most recent of all of the 'extinct' hominids, and hence should be the easiest to understand and study.

Based upon the fossils and the artefacts found in association with them, there is no question that the Neandertals were full members of the human family and probably part of the post-Flood / Ice Age European and western Asian