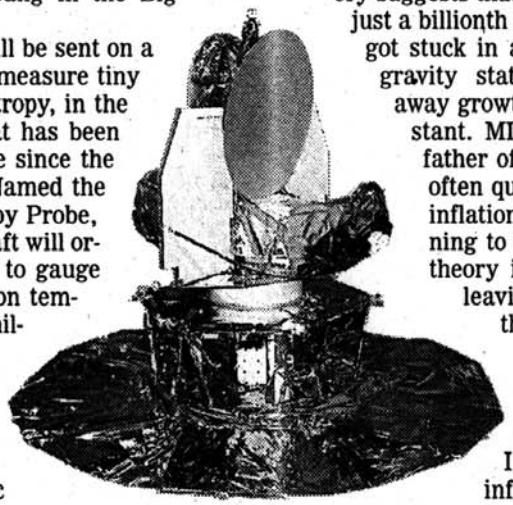
Religion Has Nothing to Fear From NASA

By Fred Heeren

This Saturday, NASA will launch a small spacecraft in hope of getting answers to big questions once thought to belong to the exclusive domain of religion. The discovery of the Big Bang—and the implications of an instantaneous creation—came as more of a surprise to cosmologists than to theologians. In a way, science has been playing catch-up to religion ever since. Now scientists hope to discover without help from the theologians just what put the bang in the Big Bang.

The new probe will be sent on a two-year mission to measure tiny ripples, called anisotropy, in the cosmic radiation that has been flooding the universe since the beginning of time. Named the Microwave Anisotropy Probe, or MAP, the spacecraft will orbit the Sun in order to gauge variations in radiation temperature of up to 20 millionths of a degree. These early temperature variations represent what cosmologists call the 'cosmic seeds' that were destined to grow into stars and galaxies.



MAP: *In search of the Big Bang*

This is not the first attempt to study the Big Bang's afterglow. In 1990, the Cosmic Background Explorer (COBE) satellite proved that cosmic radiation formed a perfect "blackbody" spectrum, a detailed pattern cosmologists expected to see only if the entire universe was once jammed into a very dense state. Now, MAP will observe one million slices of the sky, each an angle less than a quarter of a degree wide, yielding much finer measurements than COBE's seven-degree wedges could provide.

Those results brought scientists information from about 300,000 years after the beginning. But MAP should be able to detect gravitational waves, which could take us back to the tiniest fraction of a second after time began. With this information we can start to explain how the universe first started expanding.

The most popular explanation among theorists is called inflation. Inflation theory suggests that a quantum bubble, just a billionth the size of a proton, got stuck in a high energy antigravity state, propelling runaway growth in time's first instant. MIT's Alan Guth, the father of inflation theory, is often quoted as saying that inflation supplies the beginning to which the big bang theory is the continuation, leaving the impression that science is filling in the last spaces for faith in a divine creator.

However, when I asked Mr. Guth if inflation explains how the universe came out of absolutely nothing, he told me: "Inflation itself takes a very small universe and produces from it a very big universe. But inflation by itself does not explain where that very small universe came from."

If scientists do detect the right kind of early gravitational waves, and if Mr. Guth's new theory of "eternal" inflation is proved correct, our universe will be shown to be one of many universes, each breaking away from the one before as a newly produced bubble. It sounds as though "eternal" inflation, forever churning out new universes, could finally take science beyond the need for a beginning and a Beginner. (Although Mahayana Buddhists could claim that the existence of many universes pose no challenge to *their* theology.)

But it only sounds that way. At a conference about "The Nature of Nature" at Baylor University, Mr. Guth himself told a group of scholars: "Eternal inflation is eternal into the future, not the past." Those bubble universes may keep inflating forever into the future, but we're still left without an explanation for what caused the first bubble.

Stephen Weinberg, who won a Nobel prize for uniting two of nature's fundamental forces, spoke at the Baylor conference on behalf of the atheistic position. But even he conceded that "the most powerful point" for those more religiously inclined is "that the universe is intelligible, governed by extremely simple laws, so that we are left with the wonder."

Science is good at answering our "how" questions, but it often fails to account for why things happen. Even if MAP proves that the expansion of the universe was caused by inflation, we still won't know what caused inflation. We can elucidate the laws of physics that make life possible, but that doesn't explain why we have laws of physics.

Although he hopes for a final theory to unify all physical law, Mr. Weinberg actually made a convincing argument that religion has little to fear from NASA. "When we have it," he pointed out, "we will still have to ask, 'Why are things that way?' "

Mr. Heeren is a science writer in Wheeling, Ill.

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