

Reading Passage (208): Theories Regarding the Origin of the Solar System

Where did our Solar System come from? Is our Sun just an accident? Are the precisely balanced orbits of its moons and planets merely the result of random explosions and outer space traffic jams? Is it all the result of haphazard chance- a jumbled series of gigantic accidents? Among others, there are three scientific explanations for the origin of our solar system.

The Nebular Hypothesis states that the sun and its planets supposedly condensed out of swirling eddies of cold, dark, interstellar clouds of dust and gas. The Fission Theory asserts that our sun burst one day, and all our planets came from it. Then the moon shot out from each planet, stopped, turned sideways and began circling the planets they came out of. Our moon is said to have emerged from an explosion in the Pacific Ocean. The final theory, the Capture Theory, states that our planets and moons were wandering around in space, and the planets were captured by the gravity of our sun, and the moons were captured by the planets.

These are just three of many theories that attempt to explain the origin of our solar system. However it was formed, scientists will most likely continue to probe this question for many years to come.

Writing Prompt: How does the information in the lecture question the three theories mentioned in the reading passage?

Lecture (420 words): Problems with Each of the Three Theories

Of course, with every theory, there are criticisms of it.

With the Nebular Hypothesis, before any condensation of gas and dust could occur, the nebula would have diffused into outer space. According to Gerald P. Kuiper, a leading evolutionary astronomer, before gravitational attraction would become significant, the particles would have to be as big as the moon. In addition, this theory requires a complex system of roller-bearing eddies of gas and dust had to develop, which in turn gradually whirled out into suns and planets and moons. But this is an impossibility since such vortices would have to remain perfectly intact during essentially the entire period of planetary formation. On this point, Kuiper doubted that the vortices could last long enough to get the condensation building process of the planets underway.

And the Fission Theory is not without its flaws either. While the moon was moving outward toward the earth, gravity would have pulverized it into rings. Additionally, moon rocks are somewhat different in composition than the material on earth. Immense outward explosions would hurl material straight out into space; they would not circle and then form carefully balanced orbits. If thrown off by the earth, the moon should circle our world over the equator, but, instead of this, it orbits our planet at a tilt of 18-28 degrees to the earth's equator.

Finally, the mathematical probabilities of the Capture Theory are extremely low. Given the great distances between the objects in space, the likelihood that objects would pass so close to one another is very little. Millions would have to pass near the sun or planets in order for one to pass closely enough. Another problem with this theory is that we see no planets flying by us today. If it were occurring earlier, it should be happening with great regularity now. But they are not. And even if they did pass near enough, gravity would crash into planets and suns, or they would merely fly past us; they would not pause and begin orbiting within our solar system. For example, how is it that the Apollo rocket, after being launched into space, begins orbiting around the moon? Because closely monitored computerized jets, controlled by telemetry signals from earth, place it into a carefully predetermined orbit at a certain distance from the moon's surface. Nothing is left to chance, for scientists know that only failure would result.

Therefore, based on my discussion, now you know the criticisms of the three theories explaining the origin of our solar system.