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Essay 2

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The Raup Affair

Science is a community effort to understand, or to understand better, the inner workings of the universe. Observable and physical evidence are our basis of that understanding. Science, is done through observation of natural phenomena, and through experimentation that tries to incite natural processes under controlled conditions. Consider the following. A chemist examining the distribution of a particulate solution in a set volume of gas and an ecologist noting the mating behaviors of captive chimpanzees are both scientists making observations in order to find patterns in natural phenomena. Or an astrophysicist mapping distant planet’s orbits and a climatologist sifting data from weather balloons similarly are also scientists making observations, but in more separate of settings. Even as a paleontologist, David Raup considers himself one of these separated-scientists as his focus is in the distant past. It is he who first noted the amazing pattern in mass extinction to be roughly 26 million years apart. Yet in Raup’s work, he seems entrenched in his ideas of periodicity (influenced by confirmation bias) which reveals the inferiority in certain fields of science. As a paleontologist, Raup is making and recording observations of the distant past in order to learn more about how nature, in the broadest sense, works. In his book, *The Nemesis Affair: A Story of the Death of Dinosaurs and the Ways of Science*, Raup’s theories are contaminated by “cause-and-effect” and “moving-the-goal-post” fallacies which create incongruities, discredit his findings, and illuminate the greed of scientists.

In *The Nemesis Affair*, Raup theorizes the extinction of the dinosaurs was brought about ultimately by the existence of a sister star to the sun. Raup’s ideas are obviously misguided and easily disproven. As proposed by Raup, sixty-five million years ago, an asteroid, or a plethora of asteroids, rather, were supposedly hurtled towards Earth by a much smaller companion star of our sun. These asteroids, originating from the Oort cloud (a grouping of asteroids enveloping our solar system), either missed Earth, or collided with our home. One of these were large enough to destroy nearly all living creatures (Raup 1986). However, Raup neglected a common rule of science: correlation is not causation. Yes, a companion star to our own would explain some of the happenings in his theory, yet also disproves it. Raup proposed the idea of Nemesis to explain the extinction of the dinosaurs; however, the death of a large group of organisms doesn’t mean a star exists somewhere that threw and will throw more asteroids our way. Many problems arise with the theory of Nemesis. As it goes through its proposed elliptical orbit, its mass should have some effect on the celestial bodies within our solar system, yet none have been noted. The lack of its effects are concerning. Moreover, the jump to Raup’s theory of extinction, extinction caused by an unknown star, is a wild leap to a solution in comparison to other possible causes. Extinction events can be caused by any number of reasons, including disease, volcanic upheaval, and natural changes in the Earth’s climate (HubPages). Associating them with some far-off death star isn’t necessarily logical in terms of science. In fact, it is another use of fallacy in Raup’s work. He utilizes “moving-the-goal-post,” a technique to selectively acknowledge data. Raup barely accounts for other possibilities when many of these causes are observable and much more statistically plausible. A theory like that of Nemesis is an absurdity that makes a mockery of science and the community it was established by.

Of course, in opposition to the large number of astronomers and astrophysicists who find the Nemesis theory invalid, many proponents of Nemesis, like that of Raup, note the companion star remains hidden for a few reasons. The first I shall delve into deals with the proposed nature of the star itself: brightness, color, and size. Nemesis is thought to be a red or brown dwarf star. Red and brown stars, as Raup notes, are quite hard to visually see, even with a telescope, due to their color. Against a black back-drop they are much harder to spot than their white, blue, and yellow counterparts. Additionally, a star’s brightness is in direct proportion to its size. Larger stars of the same color tend to be brighter than smaller stars as they produce less light (Cool Cosmos) (HubPages). Even though Nemesis is predicted to be nearing the end of its elliptical orbit and turning back towards us, the proponents of Nemesis validly claim a star of these qualities would be hard to detect, especially in an area where many other large bodies exist. Detecting a dark body in a sea of millions of dark bodies is difficult work (Muller). Some astronomers are currently hard at work trying to locate Nemesis using data about its orbit and past extinctions. Many astronomers think they know where to look, but they haven’t spotted it as of yet. The use of infrared technology may help. The heat of a dim star will be easier to see in infrared than it would with the naked eye (About). Even with today’s advanced technology and a good understanding of where to look, we can’t find anything. Humanity is greatly developed and at our current state, if we can’t find the Nemesis star, then the likelihood of its existence is very low.

There is validity in some of the proponents claims, but may it be that because Raup’s idea is so “out-of-this-world” that many want to believe in it? Extraordinary claims are at the forefront of popular science, meaning that the general public is more fascinated with these propositions. Science is often times fueled by these kinds of fires; we look for Nemesis for the same reason we look for aliens, or new forms of particles. They would greatly change our way of thinking and create a paradigm shift in current and popular scientific research. The person who is accredited the discovery would be the most recognizable name of our day. In the search for new knowledge, science is clouded by greed and a need for greatness and some scientists have proposed ideas so exotic in hopes of simply preserving a legacy. Raup’s proposal of such an overwhelming notion as another star in our solar system is his claim to fame. Surely it would create a flood of new knowledge if Nemesis was found to be true and entrench his name in literature for the ages.

Science may have many right and wrong answers to a different number of questions, but Raup’s theory of Nemesis in *The Nemesis Theory* is still problematic at best. His theory has revealed the pursuit of knowledge can have a greedy nature, even if personal gain wasn’t truly Raup’s intention. Even if Nemesis existed, it’s not due back for millions of years, far out of our lifetimes or anyone’s you’d care about. As a species, we may end ourselves before Nemesis does. As frightening as Nemesis may seem, a vast majority of scientists agree it is nothing to lose sleep over. Researchers have not been able to find hard evidence of the existence of such a star. Our sun, it seems, is alone.

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