In 1979, a team of scientists from Berkeley working near Gubbio, Italy, discovered a layer of clay that revolutionized theories concerning the disappearance of the dinosaur, which had centred on the assumed gradual climatic change. Beneath the two-centimetre-thick layer lay limestone containing fossil organisms from the late Cretaceous, while above it was limestone with early Cenozoic fossils.

Positionally, then, the Berkeley group could place the clay in a period roughly contemporaneous with the disappearance of the dinosaur approximately 63 million years ago. They found that the clay stratum contained an iridium level thirty times greater than that of clays in adjacent strata. As iridium is distributed fairly evenly over time through micrometeoriticimpact, the researchers knew that the anomalous matter in the clay must have originated extra-terrestrially; the high iridium level, moreover, indicated a sudden deposition in an exceptional, catastrophic event.

Scientists are sharply divided on the possible causes of so cataclysmic an event. The possibility that the deposition occurred as an aftereffect of a supernova has been discounted: radioactive isotope Pu-244 was absent from the clay, and neither Ir-191 nor Ir-193 were present in significant proportions

Those who maintain that the material came from within the solar system contend that the earth must have collided during the late Cretaceous with an astral body large enough to have distributed the iridium-rich material over the globe. An asteroid of the required mass would have been approximately ten kilometres in diameter; a comet would have to have been twice as large, since comets are largely composed of ice water.

Trying to fathom the scale of such an event as this is mind boggling. It is true that from space, an object 10-20 miles across colliding with earth would be akin to something smaller than a grain of sand landing on a basketball, it is also the case that an object twenty miles across that landed on earth would be nearly twice as tall as Mt. Everest (the tallest mountain on Earth) and further across than the length of Manhattan. Furthermore, when the body came crashing to Earth it would have been ablaze in an inferno caused by the friction of entry into our atmosphere. To the argument that there is no geological evidence of the impact of such massive objects, Richard Grieve has replied that the clay layer could have resettled after the impact in the form of fallout. Frank Kyte of UCLA asserts that a comet, if disrupted by the earth‘s gravitational field, would have exposed the surface to a deluge of debris that would not have created major craters.
Alternatively, the Berkeley group suggests that an asteroid may have landed in the sea; such a collision would have produced tidal waves eight kilometres high, swamping large areas of the earth.

Whatever the type of body and mode of impact, Walter Alvarez of the Berkeley team argues that the primary effect of the catastrophe was to disrupt the planetary ecology through the suspension of vast clouds of matter in the stratosphere. The effects of the initial impact would have been greatly multiplied, Alvarez argues, as photosynthesis was impeded by the blockage of sunlight; there would then have been a massive disruption at the base of the dinosaur‘s food chain.