

Use of radiographic technology in the study of vertebrate fossils

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Radiographic techniques have been used to assist in the study of vertebrate fossils almost from the time the technology was applied to human medicine. In recent years the availability of high-resolution CT scanning has allowed researchers to probe fossils encased in rock matrix, study detailed internal anatomy otherwise not visible, and has even been used to discredit fraudulent fossils. Dramatic evidence of the increasing importance of CT technology in paleontology was offered at the most recent annual meeting of the Society of Vertebrate Paleontology held in Bozeman, Montana. There, an entire half-day seminar was conducted on the use of CT technology and the study of fossils.

The range of fossil subjects studied with this new technology is diverse. Several case studies will demonstrate how CT scanning is being used. The famous *Tyrannosaurus rex* popularly known as “Sue” was subjected to detailed scanning and analysis. Other researchers are working toward building “digital libraries” of anatomical data, as in a recently completed project informally called the “virtual crocodile.” Additionally, in 1999, a fossil came to light that was hailed by the media as dramatic proof that dinosaurs and birds were closely related because it contained characters of both groups. This new fossil, named *Archaeoraptor*, was soon shown to be a forgery through the use of CT scanning. Additionally, utilization of industrial rapid prototyping technology is offering new frontiers in paleontological research. These and other case studies will be discussed.