Puzzling Uncertainty: virtual reconstruction of fossil skulls

== Abstract ==

As fossils are usually found broken into many pieces, and only partially complete, a central topic of my work is the virtual reconstruction of fossils using high resolution scans. Combining digital data resources with statistical shape analysis, we go beyond the assembly of fragments on the computer. As in a three-dimensional jigsaw puzzle, we first assemble the virtual pieces manually. Then we use information from complete specimens to estimate missing coordinates and correct for distortion simultaneously. One can thus incorporate information from incomplete specimens in a comparative morphometric analysis while keeping track of the uncertainties that result from partial preservation or deformation.