

Fleshing out the Past: Reconstructing Fossil Faces

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Michael Anderson, “Fleshing out the Past: Reconstructing Fossil Faces,” *Discovery* Vol. 22 (1): 11-15, 1990.

Observers and skeptics of paleoanthropology have noted that theories of human origins often seem to reflect the biases of the investigators, or prevailing intellectual fashions (Lewin, 1987), and that the theories deliver conclusions rather more certain than the scanty data at hand would really support. “Paleoanthropology reveals more about how humans view themselves,” argued David Pilbeam (1978: 379), “than it does about how humans came about.”

For instance, how (one might wonder) do anatomists reconstruct the faces of extinct species, known only as fossils, with — obviously — no preservation of soft tissues? (That such reconstructions can differ widely is well-known: witness the history of the treatment of Neanderthal fossils.) Michael Anderson (Museum Preparator, Peabody

Museum of Natural History, Yale) critically surveys the two most commonly used methods of reconstruction — the “skin-depth” method and the “anatomical” method — and recounts his own experience employing both methods. Despite its apparent objectivity, the skin-depth method, Anderson argues, is seriously flawed:

On first examination, the skin-depth procedure is most appealing because it applies averaged data to the skull using standardized formulas and procedures to reconstruct the face. This standardization of the procedure seems to insure that any bias on the part of the sculptor will be controlled. Therefore, it appears more objective than “freely” sculpting the muscles and facial structures on the skull.

Later, my confidence in this method was shaken on several counts. While learning the

procedure in a program of Medical Illustration at the University of Illinois at Chicago, I saw a photograph of what six students had produced, after each had reconstructed identical casts of the same human skull. All six used the same data and standardized formulas and procedures leading one to expect very similar reconstructions. The results, however, were quite dissimilar, a situation that raised questions about the objectivity of the method. The quality of the reconstruction appeared to be based more on the sculptural ability of the person making the reconstruction than on the objectivity of the procedure. (p. 13)

A second problem with the skin-depth method stems from the skin-depth data themselves: "I could not duplicate my measurements on the same face on second measurement" (p. 13). These and other shortcomings with the skin-depth method have led Anderson to prefer the anatomical method:

By carefully following muscle origin and insertion lines and assessing the physical qualities and functional necessities of each skull, I believe an accurate reconstruction can be accomplished. (p. 14)

"The critical assessment of these methods," concludes Anderson (p. 14) "is possible only through direct application of the procedures and subsequent comparison and evaluation of the results." As Anderson suggests, if one finds a significant disparity in the appearance of reconstructions attempted by preparators working independently, but employing the same method, that disparity should count as evidence against the objectivity of the method.

Now *there's* an experiment we'd like to

see: give the same skull to several preparators, tell them to use the anatomical method, and see what the results look like. Interested, Michael Anderson?

REFERENCES

Lewin, Roger. 1987. *Bones of Contention*. New York: Simon & Schuster.

Pilbeam, David. 1978. Book Review. *American Scientist* 66: 378-379.