

LITERATURE REVIEWS

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ANCESTRAL DISSONANCE

UNIQUENESS AND DIVERSITY IN HUMAN EVOLUTION.
Charles Oxnard. 1975. Chicago: The University of Chicago Press. 128 p.

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Since the publication in the late 19th century of Huxley's *Man's Place in Nature* and Darwin's *The Descent of Man*, both of which took a determined naturalistic and evolutionary view of human origins, the search for man's direct ancestors has been intense. The fruits of this search have been relatively modest. Of great interest, however, to the question of the biological origins of man was the discovery by Raymond Dart in 1924 of a fossil he classified into a new genus, *Australopithecus* ("southern ape"). Dart was impressed by the transitional nature of *Australopithecus* and interpreted the genus as an ancestor of modern man.

Just what *Australopithecus* was saying (if anything) about human origins was debated with enormous animation and some animus right from the start. In fact, few anthropologists believed Dart at first. But by the late 1940s, Dart's "heresy" had become "orthodoxy." Nearly everyone agreed that some, at least, of the *Australopithecus* fossils were man's direct ancestors. Between 1950 and 1970, the interpretation of *Australopithecus* as ancestral to man became so strongly entrenched in anthropology that it was hard for many to take seriously those who "refused" to see the light. But recently almost invisible strains, then distinct fissures have begun to accumulate in the ruling model until suddenly it is neither difficult nor professionally hazardous to find full-fledged faults in it.

The book by Charles Oxnard, *Uniqueness and Diversity in Human Evolution*, will contribute to the slowly gathering momentum of the attack on standard views. In view of the new fossil finds by Leakey (1973) and others, its publication comes at an opportune time. Yet there is nothing opportunistic about its appearance. Charles Oxnard is one of a small group of scholars that never wavered in its rejection of the prevailing view of *Australopithecus*. The center of this resistance was the anatomy department of the University of Birmingham in England, and its vociferous leader Solly Zuckerman (1966). Oxnard, it should be noted, came to the University of Chicago via the anatomy department of the University of Birmingham.

As McHenry (1975) notes, Oxnard's book can be seen as a sort of scholarly tit-for-tat in the long controversy surrounding the Birmingham school's refusal to accept *Australopithecus* as ancestral to man. Early in the controversy Zuckerman and Ashton challenged the prevailing view of *Australopithecus* by publishing a study of *Australopithecus* teeth that contradicted the general assumption that these teeth were basically human in shape. (The man-like teeth and presumed upright bipedal gait of *Australopithecus* have long been cited as clear evidence of human ancestry.) In response, Lang and the late Bronowski, now well known for his "Ascent of Man" television series, claimed that Zuckerman's and Ashton's results were misleading because of the univariate methodology employed. Instead of making a series of measurements and comparing each measurement, Bronowski and Lang proposed the use of multivariate statistical techniques. Multivariate statistical analysis is very complex, necessitating the use of a computer, but the net result is that all the measurements made on a given specimen contribute simultaneously to the comparison, giving an over-all estimate of affinity. Bronowski and Lang analyzed the deciduous canine of an *Australopithecus* and, not too surprisingly, concluded it was basically human.

Oxnard and his colleagues have responded to the challenge by using multivariate techniques to study the *Australopithecus* shoulder, pelvis, talus, toe, metacarpal, and humerus. The results, it is claimed, do not support the idea that *Australopithecus* was ancestral to man. So now Oxnard could say (if he were less polite), "univariate or multivariate, take your pick, all analytic roads lead back to Birmingham and to the conclusion that *Australopithecus* is not ancestral to man." What Oxnard does say is this:

...The various Australopithecines, viewed as a single group at the higher taxonomic level, are generally more similar to one another than any individual specimen is to any living primate. They are uniquely different from any living form to a degree comparable at least to the differences among living genera. The manner in which they are similar to living apes and man is either such as is applicable to all living apes and man, or such that displays special morphological resemblances to a particular ape, the orangutan... (p 119).

...We may well have to accept that it is rather unlikely that any of the Australopithecines...can have any direct phylogenetic link with the genus Homo (p 122).

If Oxnard is correct, the Australopithecines do not have as much to tell us about human *origins* as has been assumed. However, these fossil bones can still be instructive about human *nature*. In reviewing the history of their interpretation, one is impressed with the inconsistency with which the critical powers of man (scientist and layman) are applied. The validity of evidence or interpretations that support one's viewpoints is accepted with astonishing ease. Critical analysis is perfunctory at best. Arguments submitted under the banner of opposing viewpoints are dissected with incredible energy and thoroughness!

This aspect of human nature makes openness to diverse viewpoints imperative in any scientific or scholarly community. Proponents of a particular viewpoint will not, indeed, usually *cannot*, probe the seamier sides of their theories. Normally, models are only really put to the test by advocates of opposing models — such are the psychological limitations of human nature. Therefore, dissidents must be cherished in science. Far from threatening the community, they are its irreplaceable creative catalysts. Any scientific community that does not cherish its dissidents, no matter how exasperating, blind, misguided or downright stubborn they may appear, has already taken the first step away from science. The Birmingham school, including Charles Oxnard, has obviously done anthropology a great service over the years in stoutly resisting the conventional wisdom concerning *Australopithecus*. We can be grateful that the scientific establishment, if it did not always really listen to them, did at least cherish these dissidents to the extent that it gave them a forum to be heard and financial and institutional support.

Most “creation scientists” will not find it difficult to cherish Oxnard and colleagues. In removing the Australopithecines from the ancestry of modern man, the result has been, as Duane Gish (1975) puts it, “to practically clear the field of supposed transitional forms between man and apes.” On the other hand, creationists committed (on religious grounds) to the discontinuity between man and ape may find it difficult to keep their critical powers functioning relative to the work of Oxnard. This would be a mistake, for there are serious criticisms that can be raised.

For all its sophistication and complexity, multivariate analysis of morphology is still relatively untested. There are numerous mathematical and procedural difficulties, not all of which have been satisfactorily resolved. It is not all that certain that results achieved are really better than the “intuitive” comparisons of form by the human eye and brain, which can automatically assimilate and integrate far more information than can be incorporated in even “multivariate” studies. In any event, any qualified analysis of form is only as good as the measurements that provide the raw data. The myth of objectivity is stripped from these methods when it is realized that the analyst must decide what to measure and how to measure it. Interpretation is already active as decisions are made to measure certain dimensions because these are the “critical” ones that reveal functional differences. For example, McHenry (1975) notes that “the unusual way Oxnard and his colleagues measure the pelvic bone...appears to bias the results so that one unique feature of the Australopithecine pelvis (wide flaring of the iliac blades) greatly affects a large proportion of the measurements.”

Creation scientists have repeatedly appealed to sample bias in rejecting anthropological interpretations of fossil man. The complaint that whole genera and species of early man have been raised from a few isolated

bones has been expressed often and eloquently. But this complaint is equally justified in evaluating Oxnard's work. Oxnard's conclusions concerning *Australopithecus* are based on the analysis of less than a dozen bones, some of which are considered apart from their larger skeletal context. The talus analyzed by Oxnard comes from a complete foot found at Olduvai that appears to my eye amazingly similar to the human foot. Likewise, the *Australopithecus* pelvic bone used in the analysis comes from a complete, although reconstructed, pelvic girdle which also looks strikingly similar to the pelvic girdle in man (see also McHenry 1975).

Because multivariate analysis of form is still in its infancy and isn't as objective as some of its practitioners would like to think, we shouldn't be too surprised if other scholars take up the multivariate challenge once more and using different measurements conclude that *Australopithecus* is ancestral to man. We probably have not seen the end of multivariate "one-upmanship" in the interpretation of *Australopithecus*.

I do not wish to disparage multivariate analysis of morphology. It is clearly a field of great promise and interest. Yet at this stage of its development, one is reminded of the tongue-in-cheek rejoinder of the geologist F. J. Vine. When asked if he had tested his material statistically, Vine retorted, "I never touch statistics. I just deal with the facts" (Vine 1968). Fortunately, an increasing store of facts is becoming available as new fossil finds are made, especially in East Africa (Leakey 1973). These finds suggest that Oxnard is correct in denying that *Australopithecus* was ancestral to modern man. It is these fossils, more than Oxnard's multivariate statistics, that will complete or abort the revolution in the interpretation of the Australopithecines that is aborning.

LITERATURE CITED

- Gish D. 1975. Multivariate analysis: man...apes...Australopithecines...each uniquely different. ICR Impact Series No. 29. Institute for Creation Research Acts and Facts 4(9):ii.
- Leakey REF. 1973. Evidence for an advanced Plio-Pleistocene hominid from East Rudolf, Kenya. *Nature* 242:477-480.
- McHenry HM. 1975. A view of the hominid lineage. *Science* 189:988.
- Vine FJ. 1968. Magnetic anomalies associated with mid-ocean ridges. In: Phinney RA, editor. *The History of the Earth's Crust*, p 87. NJ: Princeton University Press.
- Zuckerman S. 1966. Myths and methods in anatomy. *Journal of the Royal College of Surgeons of Edinburgh* 11(2):87-113.