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THE TAUNG AUSTRALOPITHECINE: CONTEXTUAL EVIDENCE

by

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In 1972 I circulated a provisional manuscript on the regional stratigraphic framework of the Taung site. In response Phillip Tobias kindly supplied me with a piece of matrix from the 1924 cranium. Eric Delson later also gave me access to a suite of matrix samples from the "Baboon Sands", collected by F.E. Peabody 1948–49. The results were published, after some delay, in *Current Anthropology* **15** (4), 1974. In that paper I outlined a tentative regional stratigraphy, suggesting a somewhat younger stratigraphic age than expected; I did not propose a date. I also emphasized that the paleoenvironmental implications were more important than the apparent chronological implications.

Since 1973 there has been continuing discussion of the taxonomic and phylogenetic implications of a "late" age for Taung, partly in response to Tim Partridge's hypothetical "geomorphic date" of 850 000 years (*Nature* **246**, 1973), partly in response to my MS and the subsequent paper. Since my protracted work on the Gaap has been finally published in definitive form in *Quaternary Research* **10**, 1978, and since David Helgren's definitive study of the Vaal Gravels has just appeared (*University of Chicago Geography Research Paper* **186**, 1979), it seems appropriate to place several matters into perspective.

The Taung fossil can be linked to the Norlim Tufa with some confidence, and, equally so, this tufa can be linked with the Vaal Younger Gravels A, a unit that includes Acheulian artifacts at Canteen Koppie (Helgren, *J. Archaeo. Sci.* **5**, 1978). This sets an upper terminus by way of a regional stratigraphy that I believe will stand the test of time. But it does not provide a "date". As Bill Bishop reminded a previous SASQUA Conference (*Ann. S. Afr. Mus.* **71**, 1976), geomorphology does not give independent dates; instead it contributes towards regional frameworks, that, ideally, can be dated directly by an isotopic technique or, less ideally, indirectly by faunal or climato-stratigraphic correlation to external, dated frameworks. Taung unfortunately falls into the latter category. Since the Norlim Tufa was preceded by a cold interval, the Norlim Conglomerate, I have now tentatively suggested correlation with a major southern hemisphere cold phase of ca. 1,2 to 1,0 My.

I hasten to reiterate that this is the least satisfactory dating procedure available. Palaeontological correlation is far better. The provisionally identified faunal assemblage, from the Baboon Sands, as Tobias pointed out in *Nature* **246**, 1973, and I also did in 1974, seems to suggest correlation with the Swartkrans Faunal Zone. This, in turn, has been compared with the Upper Bed II fauna at Olduvai by Elisabeth Vrba (*Nature* **254**, 1975) which spans an age of 1,6 to 1,1 million years. In 1977, Vrba obtained original bovid material from the Baboon Sands and J.K. Harris suid material. It is to be hoped that these bovid and suid remains will narrow down the range of uncertainty presently surrounding the faunal age of the Baboon Sands.

Another critical question is how the Baboon Sands relate to the Taung cranium. Peabody's inventory of proveniences for the Baboon Sands material indicates that items from several sources were grouped. These are classified as "Upper Cave", "Lower Cave", "Cave", and "Adjacent Dump", and I was unable to ascertain whether Upper Cave meant the australopithecine level or not. Only four of ten "Upper Cave" samples that I examined had flowstone interdigitations, suggesting a more complex derivation. Peabody's paper in *Bull. geol. Soc. Amer.* **65**, 1954, cited sediment analyses to the effect that the "wet" and "dry" phase deposits were distinct. I remain disturbed that the ten samples I selected for detailed analysis, as representative of the range of variation within 24 fossil matrix samples examined, proved to be essentially identical. The australopithecine matrix was distinctly outside of their range of variation.

Peabody's original classification of "wet" and "dry" phase deposits does therefore not stand up. Instead, all the baboon matrices are different from the hominid matrix. As a consequence the entire Taung faunal assemblage can only be regarded as a *terminus post quem*, providing a potential *maximum* age. However, I would be more comfortable if another large sample from the external hominid matrix were available for analysis.

This then is the status of information on stratigraphic placement. We can never hope to make up for the loss of microstratigraphic detail due to the early quarrying activities that destroyed the actual hominid site. Nonetheless, the range of possibilities has been narrowed down perceptibly, and future faunal study may provide the necessary precision to confirm whether or not the hominid cranium belongs in the late Bed II time range.

In concluding I would suggest that we not overlook a major contribution of the contextual evi-

dence. The cranium was embedded by mixed clayey flowstone at the time that the Norlim Tufa began to accumulate. This argues for significantly wetter conditions than now prevail along the Gaap Escarpment. Climate was rather more similar to that in subhumid parts of the Transvaal and within a range of variation comparable to that inferred for the sedimentary matrix of Swartkrans (Butzer, *S. Afr. J. Sci* **72**, 1976). The Taung australopithecine was not adapted to a semiarid environment as once believed, but to a vegetation mosaic comparable to that coeval with the Transvaal breccias. This point should not be lost in evaluating similarities and differences between the Taung specimen and other australopithecines.