

On Explaining the Supraorbital Torus

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Russell's (CA 26:337-49) is a very interesting paper, largely because it shows that paleoanthropology can be a *science* of prehistory and that even one-time-only events such as human evolution can be the focus of explanatory hypotheses if the conditions are right. She has clearly found a circumscribed case in which the conditions were right, formulated an explanatory hypothesis, and tested it. What she has given us as a result is an explanation of how certain combinations of force stimuli and biomechanical responses will result in browridges in the hominids. She has not indicated that these are the only combinations but only that these combinations are highly predictive with regard to the size of supraorbital structures. While she has been less than clear as to whether the biomechanical effect is developmental, evolutionary (the result of a history of selection), or some unspecified combination of these, her hypothesis provides an explanation that would work with either mechanism. (This is often the case with hypotheses about the form/function relation in bone, because this tissue will grow to resist the forces that normally act on it, while selection often acts to regularize specific growth responses.)

And how good is this explanation, beyond the Australian Aboriginal populations in which it is tested? It turns out that it fits the fossil hominids rather well. An example is *Homo erectus*, the first hominid species to have truly large supraorbital tori.

The great majority of australopithecines have poorly developed supraorbital regions, with minimal vertical thickness in the supraorbital torus and little projection of the torus anterior to the frontal squama. In contrast to the composite *afarensis* reconstruction, with its plaster chimpanzee-like frontal, this species actually does not differ from *Australopithecus africanus* in the supraorbital region. The centro-lateral portion of the AL-288 (Lucy) supraorbital region that was preserved is extraordinarily similar to the homologous region in other australopithecine females such as STS 5. This piece was inexplicably ignored in the Hadar composite reconstruction. We can take the morphology of the region in *afarensis* (the bone, not the plaster) to be primitive for the hominids.

H. erectus is characterized by a much less prognathic face but an only moderately higher frontal. While total masticatory

On Symbolic Dimensions in Cultural Anthropology

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There are at least two ways of understanding Taylor's (CA 26:167-74) "understanding" of anthropological "understanding." The first is as an insight into what might be termed anthropological relativism, and the second could be construed as a call for anthropological reflexivity. Far from being mutually exclusive, the former informs the latter, and both are a result of a dialectical process of eliciting interpretive and conceptual frameworks.

If sociocultural anthropology is to be regarded as a discipline underpinned by an accepted set of basic rules and a consensus as to the desirable code of practice to be pursued, then the first implicit objective of the paper not only has a commendable rationale to support it but also carries considerable didactic

muscle size is reduced, there is an increase in the horizontal loading of the anterior teeth that is evidenced by expansions in posterior temporalis and in the nuchal musculature. Greater vertical force through the anterior teeth is indicated by an increase in the size of the zygomatic processes that support the masseter attachment, especially in the males (compare ER 3733 with the much larger male ER 3883 or Sangiran 10 with the much larger male Sangiran 17). Ultimately there is an increase in incisor size.

In the earliest *erectus* sample the supraorbitals increase markedly both in vertical thickness and in anterior projection from the frontal squama. One could predict this from the decreasing craniofacial angle, the increased distance between the temporal fossae, and the increase in anterior loading. The former reduces the ability of the region to resist stress, while the latter two mark an increase in the stress produced. Moreover, there is marked sexual dimorphism in supraorbital size, and once again one could predict this from indications that for the masticatory system male muscularity is much greater than that of females.

Some of the latest australopithecines show how these changes may have occurred. While *H. habilis* specimens such as ER 1470 (male) and OH 24 (female) have an essentially primitive supraorbital morphology, others such as OH 16 (at least my reconstruction of this male) and ER 1813 (female) have a more *erectus*-like configuration of this structure and its relation to the region. The relevant changes in the late australopithecines seem mostly in the craniofacial angle, a consequence of the marked reduction in prognathism. The resulting faces are less able to resist stress in the supraorbital region, and in at least some of the specimens a more *erectus*-like configuration results. However, the tori are far from being as massive as in *erectus*, and this is surely because only later is there evidence for an increase in stress production (larger incisors, greater distance between the temporal fossae, more robust zygomatic processes of the maxilla, expanded nuchal planes, etc.).

The fossil record does not prove or disprove Russell's hypothesis. It should not and in fact cannot be used for this purpose. What is interesting is that the hypothesis seems to fit! One could ask what aspects of browridge size variation in *H. erectus* are unaccountable under this hypothesis, and within the limits of what is known it is far from clear that any are. This question and a number of interesting related ones about other hominid samples would be an appropriate focus for investigation now that there is an explanatory model with predictions that can be investigated.

weight. The study of culture and society could and should be accomplished through different symbolic prisms of *Verstehen*. But, given that such an idealistic view of anthropology is neither commonplace among practitioners nor considered particularly necessary or desirable, the analysis, illuminating as it is, provides no more than a "behind-the-scenes" intellectual glimpse into the underlying constitution of the work of two influential figures in contemporary anthropology.

The second implication of the paper touches upon a phenomenological-ethnomethodological matter (I arbitrarily juxtapose the two fully cognizant of the controversy regarding their interrelations). Numerous anthropologists have attended to this problem, and the challenge of formulating questions and issues concerning the dialectics between preconceptions and observations vis-à-vis description and analysis has been met, albeit with varying degrees of cogency. The paper would have benefited from consideration of the works, divergent as they are, of Murphy (1971), Sperber (1975), Crapanzano (1980), Myerhoff (1978), Auge (1982), Fabian (1983), and many others who have set out to explore the reflective qualities of an anthropological pursuit. What Taylor embarks upon is a