

Book Reviews

DENTAL MORPHOLOGY 1998: PROCEEDINGS OF THE 11th INTERNATIONAL SYMPOSIUM ON DENTAL MORPHOLOGY. Edited by John T. Mayhall and Tuomo Heikkinen. Oulu: Oulu University Press (paperback), 1999. 492 pp. ISBN 951-42-5481-3. \$100, including shipping.

The recent volume resulting from the International Symposium on Dental Morphology held in 1999 in Oulu, Finland exemplifies John Mayhall's observation that: "...dental morphology means many things to many people." The 55 papers in this volume cover a wide range of subjects and are divided into six sections: Dental Anthropology, Dental Evolution, Ontogeny, Technology, Morphological Integration within the Dental and Craniofacial Complex, and Dental Genetics. Each section's set of papers provides an interesting mixture of the latest research in a particular field.

The section on "Dental Anthropology" is the largest with 23 papers covering a variety of topics from traditional population comparisons (Nagai and Kanazawa) to development and eruption (Antoine et al. and Smith et al.). The paper that embodies the spirit of this section is Mayhall's. In his paper, Mayhall puts forth a "plea" for dental morphology researchers to remember that in many cases non-metric traits should not be scored as "present or absent" because they exhibit a range of variation in a population. Mayhall connects dental anthropology's past research with its future with his six recommendations:

1. Give complete frequencies for each identifiable variation
2. Use recognized standards for recording trait variations
3. Do not use presence/absence unless trait is truly dichotomous
4. Indicate the ranges of variation
5. Indicate the size of each category of variation
6. If results must contain combined data:
 - a) indicate the variability within the group and sub-groups
 - b) indicate the sources of variation
 - c) indicate the provenance of the sub-groups
 - d) indicate the sub-group size.

(Mayhall 1999:46)

The second section, "Dental Evolution," consists of 11 papers, the majority dealing with species other than *Homo sapiens*. Topics covered include gross morphology (Turnbull et al., Mazza) and the development of Hunter-Schreger Bands (Suzuki et al.). One of the few papers to examine *Homo sapiens* in this section is Niskanen's, "The Origin of the Anatomically Modern Human Face through Differential Rates of Tooth Size and Facial Size Reduction," in which two behavioral models are tested

as possible explanations for the anatomically modern *H. sapiens* pattern. This paper is a classic example of a biocultural examination of human evolution.

The seven papers in the "Ontogeny" section focus mainly on the developmental aspects and morphology of enamel and dentin of several different species. Harris et al.'s paper examines sexual dimorphism in the enamel and dentin thickness of human deciduous molars derived from different populations. One interesting aspect of this paper is the level of study: most studies of dental sexual dimorphism are confined to macroscopic analysis, while Harris *et al.* examine the actual dental tissue which may cause sex differences in the dentition.

While the fourth section, "Technology," is one of the smallest sections, with just four papers, it is also one of the most interesting. In each paper, a new technique for study is outlined and explained. The first and last papers present new imaging systems for dental measurements in comparison to standard techniques. The paper by Smith et al. examines growth of the DEJ and outer enamel surface of hominid permanent and deciduous molars using C-T scans. The paper by Willmot et al. examines developmental defects and post-eruptive defects in the enamel using imaging analysis.

The fifth section, "Morphological Integration within the Dental and Craniofacial Complex," consists of four papers dealing with the relationships of the dentition with other anatomical structures, e.g. the cranium. Other papers in this section are devoted to how the dentition is affected by biological processes, such as aging.

The last and smallest section, on dental genetics, contains two papers. The first paper, by Townsend, Dempsey and Richards, examines genetic and environmental contributions to the metrics (and one non-metric trait) of the dentition in twins. The second paper, by Heikkinen et al., is an investigation of the effects of race and sex on symmetry of tooth eruption in different populations.

There is no easy way to classify this volume because of its eclectic mix of subjects, but it will surely fulfill the editors' hopes to stimulate interest in various research areas. Unfortunately, since the majority of the pictures, diagrams, and charts are re-creations of slides from the presentations, the quality varies from paper to paper. Overall, however, the photographs are of superior quality, and function to enhance the text. This volume will serve as an exceptional resource: it provides the reader with the latest findings and technologies in diverse areas of dental anthropology research.

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