BOOK REVIEW

A World View of Bioculturally Modified Teeth. Edited by Scott E. Burnett and Joel D. Irish. University Press of Florida. 2017. 368 pp., $110.00 (hardcover). ISBN: 9780813054834.

There is great public and academic interest in intentional body modification. Interest is largely driven by the glimpse that bodily alterations offer into the belief systems of past and present societies. In focusing on the myriad populations that practice(d) intentional modification of the teeth, the edited volume, *A World View of Bioculturallu Modified Teeth*, offers readers a fascinating collection of chapters that illustrate the worldwide and temporal variation of an ancient practice. Four main types of intentional dental modification are discussed across 20 chapters: ablation (intentional tooth removal), filing, notching and incising, inlays (drilling the tooth to insert precious stones or metal), and tooth dyeing. The volume editors, Scott Burnett and Joel Irish, have the expertise and network to move such research in a much needed direction with the aim of pulling together population-level data rather than case studies of single individuals or sites, which have dominated the scholarly literature up to now. This approach fosters greater understanding of the social implications and biological consequences of intentional dental modification.

The book is divided into four sections covering different geographic regions: I) Africa, II) Europe and Northeast Asia, III) Southeast Asia, Australia, and Oceania, and, IV) the Americas. South America is, unfortunately, missing, though an Introduction written by Burnett and Irish provides a useful overview and ample references to work done in this region. Geographic coverage by the volume is, nonetheless, expansive. It is fitting that a foreword by Clark Spencer Larsen and a conclusion chapter by George Milner bookend the volume, as they published a widely read and highly regarded review of archaeological cases of dental modification in 1991.

There is a nice mix of early, mid- and late career scholars such that the volume contains chapters by the 'who's who' of dental anthropology but also brings newer researchers into the fold. As well, the authors come from different professional environments, including government ministries, museum curators, private companies, and various universities. Within the overarching theme of population perspective, the chapters have different aims, which exposes the reader to a broad range of methods that are used to explore diverse questions. The chapters are well written, clearly organized and blessedly concise. The most commonly discussed topics are (i) improved diagnostic methods (especially to distinguish causes of tooth ablation), (ii) the possibility that tooth ablation in some African groups was done because tetanus or infantile fever caused lockjaw, (iii) the effect of dental modification on oral health, (iv) the tools and methods used to modify teeth along with the proficiency of the person who performed the procedure, (v) the association of modification with sex, age, status, family/lineage, population and other identity categories, (vi) the role of modification as a physical signal to people/groups within (intra-) vs. outside (inter-) the population, (vii) the origin of the practice especially in regard to cultural diffusion vs. independent invention, and (viii) the use of spatiotemporal patterns of modification to infer movement and interaction amongst past populations.

The book is best suited to readers with some basic (bio)archaeological knowledge, but for the most part can also be understood by those without such knowledge. Most chapters contain evocative photographs of modified teeth and, if anything, one could wish for more of these. Other depictions of tooth modification are also compelling, including an image from the ancient Egyptian Tablet of Terura depicting a man being fed through a hollow tube placed in an opening possibly left by ablated teeth that were removed because of lockjaw (in the chapter by Bolhofner about Ancient Nubia) and a picture of an approximately 2000-year-old stone rain deity mask with clear evidence of inlays in the anterior teeth (in the chapter by Mayes and colleagues about Oaxaca, Mexico). Harvey and colleagues created useful drawings that reconstruct the face and smile of Jomon individuals from Japan with tooth ablation (to 'flesh out the skulls'). Many chapters include fascinating and informative accounts of tooth modification by past indigenous peoples and those with whom they came into contact (from sub-Saharan Africa, Southeastern Australia, Western Micronesia, Mesoamerica, and ancient Nubia) and the chapters on Taiwan, by Pietrusewsky and colleagues, and Bali, by Artaria, even include photographs of recent people undergoing tooth modification.

A valuable feature of this book is two chapters that explore intentional dental modification in modern populations, one living in Cape Town, South

Africa, in a chapter by Friedling, and the other living on the island of Java in Indonesia, in a chapter by Artaria. The ability to ask people why they chose to modify their teeth provides tremendous insight into what is often the most elusive question we have of past populations, which is "why did they do that?" Respondents gave a variety of reasons for removing or filing their teeth, most commonly involving notions of beauty, identity, and custom. I would have appreciated a chapter about modern-day dental procedures common in Western and other societies, often termed 'cosmetic dentistry', and including teeth straightening, whitening, replacement (i.e. veneers, caps including decorative gold crowns, bridges, dentures, etc.) and even the wearing of dental grills. Such chapters would serve to lessen the 'othering' that can happen with a book like this, as many readers will associate the examples with foreign places and peoples, and not think about dental modification for non-therapeutic purposes as a practice that is common in their own society.

The most common finding across populations that practiced dental modification is its occurrence during adolescence (circa 10-25 years of age), with the physical changes of puberty most closely tied to ceremonial events. Other findings common across populations proved elusive, as the association of dental modification with sex, status, and other identity groups is quite variable. An unexplored avenue is the comparison of skeletal markers of repetitive physical activity, such as long-bone cross-sectional geometry or muscle entheses, among those with and without dental modification, to identify different task or occupation groups, especially involving differential mobility. As well, at sites with skeletons suitable for radiocarbon dating, Bayesian modelling of each individual could illuminate fine-scale temporal patterns in dental modification.

The chapters that explored the effect of dental modification on oral health, perhaps surprisingly, did not always find a significant increase in caries or infection rates, although authors note these findings need to be substantiated with tooth specific data and by taking into account confounding factors such as age, diet, and dental wear. Radiographic and microscopic methods proved useful in detecting changes in the inner tooth layers (dentine and pulp) and alveolar bone. A future avenue to explore the impact of dental modification on oral health is via human and microbial biomolecules (proteins and DNA) in calculus deposits.

This volume demonstrates that isotopic methods can elucidate relationships between dental modification and aspects of identity, as shown by Kusaka who used stable carbon and nitrogen isotopes to reconstruct dietary differences among different Jomon sites; Hedman and colleagues who used strontium isotope ratios to determine the birthplace of individuals with dental modification at Cahokia; and Newton and Domett who reference oxygen and strontium isotope work being done to detect immigrants at several Southeast Asian sites. While there were no chapters in this volume that used ancient DNA data to explore genetic affinity and dental modification patterns, such work has recently been done and will no doubt become more common in the future.

All in all, the reader will undoubtedly come away with an appreciation of the wide range of insights, ranging from the 'how' to the 'why', that can be drawn by studying intentional dental modification. The editors and authors aptly demonstrate the utility of population-level investigations. As is often the case in bioarchaeology, much of the research raises just as many questions as answers. Yet, with new research broaching ever more sophisticated questions, as seen in this volume, our understandings are sure to grow and improve.

REFERENCE

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