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Book review

My Patients were Mummies: Focus on Civilizations and Cultures. Nova Science Pub Inc, New York (2017). 241 pp.

Michael Zimmerman's book consists of a series of essays recounting his research experiences with mummies. The book is not written for an academic audience; there are no in-text citations and the bibliography is limited. The book is generally a memoir, both in writing style and the presence of personal anecdotes. Given its construction, it appears intended for both general audiences and as a supplemental text for bioanthropology, paleopathology, or mummy studies courses.

Zimmerman is one of the founding architects of modern mummy studies. Finishing his medical training in pathology in 1968, and following three years in the military, he earned his PhD in Anthropology at the University of Pennsylvania (1971–1976). His dissertation research examined how the process of mummification affects tissue preservation and thus disease diagnosis.

Zimmerman's apparent goal for this volume is challenging — communicating the scope and focus of a highly specialized, and somewhat esoteric field to a broad audience while remaining true to mummy science. Such a text would be of value as there are few such works. Therefore, this review focuses on (1) how well Zimmerman communicates the scope and focus of the discipline of mummy studies (and by extension paleopathology) to a general audience and (2) whether he accurately represents the current state of the discipline.

As noted, the book is really a collection of essays describing some of Zimmerman's mummy research projects across his long career. There are no explicitly stated goals, except by inference from the title and subtitle of the book. Zimmerman's use of the word 'Patient' suggests that his approach is more biomedical than anthropological and also implies an analytical focus on *individuals* and *disease* rather than on the social determinants of *health* in a *population*. Zimmerman does allude to a broader examination of health in the subtitle "Focus on Civilizations and Cultures", which suggests that he will highlight how soft tissue paleopathology can be to reconstruct aspects of culture and behavior in the past. Indeed, in the first chapter, Zimmerman states that the primary reason we study mummies is to improve "our understanding of the evolution of diseases and their role in human biologic and *social history*" (emphasis added). I think these analytical 'pivot points' (i.e., disease:health and individual:population) capture some current tensions between mummy studies as paleopathology and bioarchaeology. An intensive, individual-level focus on paleopathology can reveal the presence and prevalence of disease in the past, but this is not the same as a bioculturally informed interpretation of health. The first decades of the modern scientific investigation of mummies were very much grounded in clinical, biomedical perspectives, and this is reflected in Zimmerman's presentation of his research; the essays are dominated by paleopathological descriptions and ultimately do not make strong connections to social history, culture, or behavior.

The first chapter represents Zimmerman's perspective on the 'why' and the 'how' of mummy studies; this chapter should therefore present an accessible discussion of the types of research questions that researchers engage with and current methods employed in this pursuit. In Zimmerman's opinion, the focus of mummy studies is the investigation of the co-evolutionary history between diseases and humans in the past. While this not unexpected given Zimmerman's training and disciplinary background, mummy studies has diversified in scope significantly since its inception in the early 1970s.

Zimmerman's discussion of methods used to investigate mummies is uneven. He begins with brief discussions of tissue rehydration, staining, and microscopy. This leads to an extended discussion of chronometric techniques, in particular radiocarbon and amino acid racemization dating, and a brief reference to electron spin resonance. He then turns to what could be considered regionally-specific, relative dating techniques, including a detailed discussion of Egyptian mummification styles and tattooing on Arctic mummies. The bulk of the remainder of the chapter is devoted to a discussion of age-at-death estimation. Single, brief paragraphs at the end of the chapter are devoted to sex estimation, stable isotopes and trace element analyses as it relates to dietary reconstruction, and ancient DNA analyses.

The remaining chapters detail Zimmerman's investigation of different mummies, from the Dahkkeh Oasis Project in Egypt to frozen remains of a family from Barrow, Alaska to a 20th century train robber. Most of these chapters begin with a short introduction about how he became involved in these different projects. These are the 'memoir-esque' features of the volume, and they provide the reader with a more personal view of his experiences as a mummy scientist. Although these are interesting and potentially engaging, they are quite short, with the bulk of each chapter being dominated by pathological descriptions. Further, the connection between the paleopathological results and the reconstruction of past behavior and culture is usually limited to a few short paragraphs at each chapter's end.

Although it is understandable that Zimmerman chose not to discuss certain methods not directly connected to paleopathology (e.g., stable isotopic reconstruction of diet and mobility), it is more concerning that there is no discussion of what are considered 'state-of-the-art' methodologies employed in soft tissue paleopathology. A particularly troubling omission is advances in paleoimaging/radiography and the central role these technologies play in detecting and diagnosing pathologies. Additionally, although Zimmerman mentions briefly that aDNA analyses have the potential to inform on paleopathology, there is no elaboration. Indeed, there is a large body of literature that demonstrates how significant molecular analyses can be in reconstructing disease in the past. Lastly, it is concerning that there is no discussion of how researchers are increasingly recognizing that the mummy itself is a culturally important artifact and are moving away from full-body autopsies. Destructive analyses raise serious ethical concerns that require the involvement of multiple stakeholders, including those groups that consider themselves culturally and/or biologically connected to the remains in question. Therefore, from the perspective of mummy studies and soft tissue paleopathology, Zimmerman's

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discussion does not reflect the current state of the field.

At a broader level, I feel that Zimmerman did not fully exploit the platform available to him. The public is drawn to stories about mummies, particularly to stories about disease and mummies. This type of research can be a venue through which we more fully engage with the public in order to talk about issues of broader societal import. There is no doubt that it is interesting and significant to document the presence and prevalence of diseases in the past. Still, this provides an opportunity to talk about an individual's experience or a community's response to illness and disease. No doubt the book will generate interest among both the general public and specialists in the field, but I found that I missed the engagement with the people whose lives are represented by the paleopathological data.

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