



The Forensic Anthropology Laboratory

Edited by

Michael W. Warren

Heather A. Walsh-Haney

Laurel E. Freas



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The Forensic Anthropology Laboratory

*To Sgt. Nicholas R. Walsh, 1st Reconnaissance Battalion,
1st Marine Division, I Marine Expeditionary Force, 1980–2007.*

Preface

Goals and Book Content

This book, *The Forensic Anthropology Laboratory*, was created as a survey of the various types of laboratories that support the practice of forensic anthropology. Our objective was to treat the reader, whether student, practitioner, educator, attorney, or forensic scientist, with an insider's view of functioning forensic anthropology laboratories as reported by practitioners. To this end, we have assembled works from some of the most respected and prolific forensic anthropologists in clinical, research, and academic settings.

Lee Meadows Jantz and Richard Jantz are co-directors of the University of Tennessee's Anthropological Research Facility. They discuss the motivation behind the creation of Dr. William Bass' research facility by highlighting Bass' first case. These authors also provide detailed descriptions of how body donations are received and processed by the facility from the perspective of the rules governing state regulations, the next-of-kin, students, and researchers. Jantz and Jantz also include extraordinary photos that document the steps taken to ensure that each body part is tracked from the moment it is transported to the facility through the decomposition and skeletonization processes. They have also provided information concerning the numbers of skeletons available for research and include the demographic data for each.

As full-time forensic anthropologists working within medical examiner's offices, rather than as part-time consultants, Dana Austin and Laura Fulginiti provide insights into how their daily activities and duties differ from their academic colleagues. Staffing, physical plant concerns, field recovery procedures, and laboratory processing of skeletal and decomposing remains are discussed. In order to have productive careers within medical examiner facilities, these authors stress the varied training they have been required to learn and use, which includes fingerprinting and other trace evidence procedures. Austin and Fulginiti also describe staffing interactions that occur while medical examiner personnel work collecting and analyzing the multiple lines of evidence used in medicolegal death investigations.

Thomas Holland and John Byrd and their colleague Vince Sava use their experiences within the Department of Defense's Joint POW/MIA Accounting

Command (JPAC) to shed light on the forensic anthropology standards they helped to design and implement in order to receive the American Society of Crime Laboratory Directors (ASCLD) accreditation. As the first forensic anthropology laboratory to undergo and receive accreditation, these forensic anthropologists provide a structured list of considerations for those laboratories with an eye towards accreditation. Importantly, these authors complete the accreditation process while fulfilling their JPAC mission—to achieve the fullest possible accounting of United States service personnel missing from past wars and conflicts. Holland and colleagues provide the history of the facility by underscoring the quality assurance, peer review, and research changes that occurred in the laboratory as a result of WW I, WW II, the Korean War, and the Vietnam Conflict so that each soldier's identification would be the result of clear and convincing evidence.

The University of Indianapolis' mission of "education through service" is at the epicenter of Stephen Nawrocki's discussion of the policies and procedures he uses in his capacity as laboratory director and undergraduate and graduate student mentor. Nawrocki presents the inner workings of his ~2600 square foot laboratory, from facilities management to recommendations concerning the utility of law enforcement training, in order to increase forensic anthropological participation in laboratory analysis and scene discovery and recovery. He also provides a superlative accounting of archeological principles that forensic anthropologists use when conducting scene recoveries that involve surface scattered or buried bodies. Nawrocki underscores the necessity of archaeological training especially with regard to capturing and deciphering the geophysical evidence from a scene.

Paul Sledzik and Patricia Kauffman provide information addressing how forensic anthropologists and pathologists work together as mass fatality responders. They discuss the practical issues that arise during most mass fatality deployments and provide examples from the World Trade Center, Hurricane Katrina, and the Asian Tsunami disasters. These practitioners explain how and where the mobile disaster morgue can be used, provide morgue floor plans, and list the equipment and forensic scientists found within the mobile morgue. Sledzik and Kauffman have scrupulously presented the positive effect that forensic anthropologists have on quality assurance measures used to establish positive identifications and noted the importance of mental health assistance for first responders and the victim's next-of-kin.

Erica Jones and Stephen Ousley shed light on the concerns of the myriad stakeholders (e.g., forensic anthropologists, next-of-kin, tribal representatives) the Smithsonian Institution's Repatriation Osteology Laboratory encounters in its effort to positively identify Native American skeletal remains. Jones and Ousley describe their data collection techniques, not only to share both new and established nonmetric and metric methods, but to draw attention to the legal and evidentiary importance of standard, testable, and credible

methods of skeletal analysis. Both forensic anthropologists present case studies as varied as their investigations of skeletal remains believed to be of a "Sioux Giant," a Nez Perce warrior, and a Modoc Indian prisoner, in order to provide real world examples of their repatriation work within the Smithsonian Institution.

David Hunt, the physical anthropology collections manager for the Smithsonian Institution (SI), writes about the history and development of the museum's skeletal collections. He also presents a history of SI forensic anthropologists with reference to each anthropologist's work with the Federal Bureau of Investigation and other state agencies. Importantly, Hunt provides a cumulative list of available study specimens and procedural cues requisite in gaining access and collecting data on these priceless human skeletal collections. Any skeletal researcher interested in conducting research within the SI collections will benefit from Hunt's information concerning destructive analysis, diagnostic imaging, casting, and all types of anthroposcopic and anthropometric data collection methods.

Mary Manhein and colleagues present their work within the FACES laboratory. In particular, they provide casework examples that document the technology they use to establish identifications through facial reconstruction, photographic superimposition, and age progression. The FACES laboratory sets the standard for age progression reconstruction.

Finally, the editors present a glimpse into a typical "working" forensic anthropology laboratory without the specialization illustrated by the authors and laboratory managers of the preceding chapters.

Therefore, what follows are overviews of the ways in which forensic anthropology practitioners run laboratories and collect data (e.g., the skeletal remains are used to collect nonmetric, metric, radiographic, and histological data) in order to arrive at an identification of unknown human remains, establish time since death, and conduct trauma analyses of legal significance. We hope the reader enjoys this tour of the interesting world of forensic anthropology.

Heather Walsh-Haney

Editors

Michael Warren, PhD, received his PhD in 1997 from the University of Florida, where he is currently associate professor of anthropology. His areas of interest include forensic identification and trauma analysis, human variation, and forensic examination of human cremated remains. He is a diplomate of the American Board of Forensic Anthropology and fellow of the American Academy of Forensic Sciences.

Heather Walsh-Haney is an assistant professor at Florida Gulf Coast University, in the College of Professional Studies, Division of Justice Studies. She is a fellow of American Academy of Forensic Sciences. As a DMORT (Disaster Mortuary Operations Response Team) member, she participated in the recovery of victims from the World Trade Center attacks and Hurricane Katrina. Additionally, she is the consulting anthropologist for the Bermuda Special Crimes Task Force and Florida Medical Examiner Districts 4, 17, 20, and 21, as well as a “mummy investigator” with the Discovery Channel’s television show *Mummy Autopsy*. As a mummy investigator, she has examined ancient remains from Egypt, Scotland, and the American West.

Laurel Freas received her BA from Cornell University and her MA from the University of Florida, where she is currently completing her doctoral studies in biological anthropology. She is the laboratory technician at the C. A. Pound Human Identification Laboratory in the Department of Anthropology. Her research areas include human variation, osteometry, and forensic examination of saw marks in bone.

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Contents

Preface	ix
Editors	xiii
Contributors	xv
1 Introduction	1
HEATHER WALSH-HANEY	
2 The Anthropology Research Facility: The Outdoor Laboratory of the Forensic Anthropology Center, University of Tennessee	7
LEE MEADOWS JANTZ AND RICHARD L. JANTZ	
3 The Forensic Anthropology Laboratory in a Medical Examiner Setting	23
DANA AUSTIN AND LAURA FULGINITI	
4 Joint POW/MIA Accounting Command's Central Identification Laboratory	47
THOMAS HOLLAND, JOHN BYRD, AND VINCENT SAVA	
5 The University of Indianapolis Archeology and Forensics Laboratory	65
STEPHEN P. NAWROCKI	
6 The Mass Fatality Incident Morgue: A Laboratory for Disaster Victim Identification	97
PAUL S. SLEDZIK AND PATRICIA J. KAUFFMAN	

7	The Repatriation Osteology Laboratory, National Museum of Natural History, Smithsonian Institution	117
	ERICA B. JONES AND STEPHEN D. OUSLEY	
8	History and Collections of the Division of Physical Anthropology, National Museum of Natural History, Smithsonian Institution	149
	DAVID R. HUNT	
9	The Louisiana State University (LSU) Forensic Anthropology and Computer Enhancement Services (FACES) Laboratory	181
	MARY H. MANHEIN, N. EILEEN BARROW, AND GINESSE A. LISTI	
10	The Working Forensic Anthropology Laboratory	195
	HEATHER WALSH-HANEY, LAUREL FREAS, AND MICHAEL WARREN	
	Index	213

Introduction

1

HEATHER WALSH-HANEY

Contents

Forensic Anthropology Defined by Kerley and Maples..... 1
Caseload and Legal Considerations..... 3
References..... 5

Forensic Anthropology Defined by Kerley and Maples

As defined by Ellis Kerley (1978:160), forensic anthropology is “the specialized subdiscipline of physical anthropology that applies the techniques of osteology and skeletal identification to problems of legal and public concern.” Yet, as editors, we trace our academic pedigrees to William R. Maples who was a forensic anthropologist keenly aware of the strengths and weaknesses of working as consultant, curator, expert witness, mentor, and laboratory director (Figure 1.1). Through his scholar-practitioner philosophy we expand Kerley’s definition with Maples’ views of forensic anthropology as an applied anthropology field that promulgates the view that its practitioners are educated in the subfields of physical anthropology (human and nonhuman primate anatomy, evolution, behavior), human osteology (the skeletal system on macroscopic and microscopic levels), and archaeology (analysis of material culture) in order to debate their findings concerning a decedent’s identification, time since death, and trauma analysis in a court of law.

Having worked as a consultant for the Central Identification Laboratory in Hawaii (now called the Joint POW/MIA Accounting Command); having collected, analyzed, and archived prehistoric Native American remains for the Florida Bureau of Archaeological Research and Florida Museum of Natural History; having testified as an expert witness in congressional hearings and national and international courts; having worked as an undergraduate and graduate professor and as director of the C. A. Pound Human Identification Laboratory, Maples knew the collaborative role forensic anthropologists must assume. More specifically, Maples stressed the importance of uniting field workers/technicians with bench analysts and researchers in order



Figure 1.1 Dr. Bill Maples holding a case of the Francisco Pizarro skull. (Photo provided by the William R. Maples Special Collections at Florida Gulf Coast University.)

to assist medical examiners in making correct judgments on issues of legal significance. This aspect of the practice of forensic anthropology is critical because many forensic bench scientists do limited fieldwork. Rather, crime scene technicians and investigators typically collect the physical and trace evidence *in situ* and then deliver these materials to the laboratory analyst.

Maples placed a premium on undergraduate and graduate student training through student participation, under his direct supervision, in active forensic cases. During the 1996 American Academy of Forensic Sciences' Physical Anthropology Section's business meeting, Maples spoke in strong support of the importance of practitioner-based field and laboratory training for both undergraduate and graduate students because instruction required both student and mentor to have access to skeletal material from myriad contexts. However, this philosophy was not met with universal approval among his peers as some believed that student involvement in forensic casework would inevitably lead to mistakes that would render the anthropological findings inadmissible.

The Maples perspective on training and practice in forensic anthropology arises from a niche other forensic scientists do not easily exploit—that

of the laboratory director in a university setting. The most widely accepted crime laboratory accrediting board in the United States, the American Society of Crime Laboratory Directors Laboratory Accreditation Board (ASCLD-Lab) currently does not provide for the accreditation of facilities that allow for undergraduate and graduate training through participation in ongoing or open forensic cases. As a case in point, JPAC had a long history of hiring forensic anthropologists with terminal masters degrees. Yet, JPAC's recent ASCLD-Lab accreditation required that the masters level practitioners acquire the PhD by attending universities with forensic anthropology laboratories that are not accredited. Therein lays the crux of the importance of this book: a comprehensive presentation of laboratory procedures and standards employed by a collection of well-regarded and respected forensic anthropology practitioners. The need to establish the underlying validity of these procedures and standards is central to the role that such laboratories occupy in the cross-disciplinary environment of forensic science.

Caseload and Legal Considerations

The forensic anthropologist's caseload has quickly risen over the past twenty years (Galloway et al. 1990:62; Reichs 1995). In the five year period from 1977 to 1981, preeminent forensic anthropologist, Dr. William Bass, reported that his forensic anthropology casework doubled over the previous five-year period (Bass 1983:28). Similarly, Drs. Wienker and Rhine (1989:647), reporting on a nationwide study, stated that the total number of cases handled in 1986 by forensic anthropologists who responded to their questionnaire "surpassed the total reported from 1967 to 1978 by more than 12%."

With the increase in the caseload of forensic anthropologists, there has been a significant upsurge in their court appearances as expert witnesses (Guthrie and Henderson 2007). However, the increase in courtroom appearances has not kept pace with the caseloads forensic anthropologists carry, even where the case has some juridical importance. This disparity has been explained either by the fact that lawyers may not be sufficiently familiar with forensic anthropology or by the forensic anthropologist's report being subsumed into the final opinion of a medical examiner or a coroner. This unexpected growth in the caseload of forensic anthropologists and their concomitant greater involvement in the legal process, both civil and criminal, have resulted in efforts to educate members of this scientific discipline to an awareness of their responsibilities within the legal system.

Recent court rulings have shed light on the need to for forensic anthropologists to follow generally accepted written protocols because the failure to do so may result in inadmissible evidence and preclude the case from proceeding to trial (*Murray v. State of Florida*, 838 So.2d 1251; *Higgins v. State of*

Florida, 899 So.2d 1251). Legal concerns regarding the efficacy of both the scientific evidence and subsequent expert witness testimony have been couched within rules of evidence that vary by state. The *Frye* opinion was the first to loosely establish the standard for novel scientific evidence (*Frye v. United States*, 54 APP. D.C. 46, 293 F. 1013, No. 3968). In 1993, the U.S. Supreme Court supplanted the *Frye* general acceptance test (of scientific standards) with their *Daubert* ruling (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579). Nevertheless, many states, including Florida, follow *Frye* and reject the *Daubert* standard. The former is considered a more stringent standard when the applicability of forensic techniques and procedures are called into question in court (Guthrie and Henderson 2007). Indeed, there is no dearth of publications that focus upon the aforementioned rules of evidence. Because we authors primarily work with forensic cases from Florida, we highlight the affect that *Daubert* has upon the handling of forensic anthropological evidence (e.g., the skeletal remains) within forensic anthropology laboratories from university, medical examiner, museum, and federal settings.

The *Frye* standard allows trace evidence and expert witness testimony into Florida courts when the following questions have been answered in the affirmative:

- Will the forensic anthropologist's testimony help the jury to understand the evidence or to determine a fact in issue?
- Is the forensic anthropologist's testimony based upon a scientific theory or discovery that is known and accepted by his or her peers?
- Is the forensic anthropologist qualified, as evidenced by education, experience, research, and peer-reviewed publications, to present evidence on the subject in issue?

If laboratory protocols and/or procedures used in the application of scientific principles are not followed, then expert witness testimony as well as the expert's qualifications comes into question. Specifically, the probative value of the evidence is compromised when procedures are not followed. If the evidence is discredited because of sloppy work or unapproved standards than the court must decide whether it is better to (1) exclude the evidence or (2) present the evidence because it will help the jury to understand the facts of the case. Also of importance is the fact that handling and processing procedures for the skeletal evidence have an impact on determining whether the forensic anthropologist's credentials are acceptable to the court. For example, even the most eminently qualified forensic anthropologist may not be able to testify if he or she failed to follow acceptable collection, analysis, and storage procedures because the basis for the scientific opinion will be considered flawed. Thereby, the *Frye* criterion has a bearing upon accepted standards