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# A Look at the History of Forensic Anthropology: Tracing My Academic Genealogy

**Stephanie DuPont Golda**

Ph.D. Candidate
Department of Anthropology
University of Missouri
Columbia, Missouri

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ABSTRACT

Construction of an academic genealogy is an important component of professional socialization as well as an opportunity to review the history of subdisciplines within larger disciplines to discover transitions in the pedagogical focus of broad fields in academia. This academic genealogy surveys the development of forensic anthropology rooted in physical anthropology, as early as 1918, until the present, when forensic anthropology was recognized as a legitimate subfield in anthropology. A historical review of contributions made by members of this genealogy demonstrates how forensic anthropology progressed from a period of classification and description to complete professionalization as a highly specialized and applied area of anthropology. Additionally, the tracing of two academic genealogies, the first as a result of a master's degree and the second as a result of a doctoral degree, allows for representation of the two possible intellectual lineages in forensic anthropology.

## INTRODUCTION

What better way to learn the history of anthropology as a graduate student than to trace your own academic genealogy? Besides, without explicit construction of my own unique, individual, ego-centered genealogy, according to Darnell (2001), it would be impossible for me to read the history of anthropology as part of my professional socialization. Although tracing my academic genealogy as a student of forensic anthropology may appear to require retracing just a few generations given the subfield's stage of infancy, this is not the case. Forensic anthropology is rooted in the work of some of the earliest physical anthropologists in America. This is because forensic anthropology is an applied branch in physical anthropology and the academic lineages traced in this paper begin in physical anthropology well before forensic anthropology is established as a discipline. In fact, much of the research conducted by members of my academic genealogy is found in traditional areas of study in physical anthropology such as human growth and development, physiological adaptation, anthropometry, and biomechanics (Snow 1982).

An academic genealogy, as defined for the purposes of this paper, is an account of the origin and historical development of scholars according to graduate student-advisor relationships. A graduate school advisor is usually synonymous with a thesis or dissertation supervisor, but in the event that academic programs do not assign such a position the graduate school advisor is someone who is an influential mentor in the academic training of a scholar. The term "genealogy" should not be confused with "lineage," which is defined as a group of individuals who can trace their descent from a common ancestor, or in this case a common graduate school advisor. Archaeologist Frederica de Laguna once suggested that students use the "direct historical approach" to trace an intellectual tradition or lineage (Lyman and O'Brien 2001:309). "Methodologically, the direct historical approach involves the elementary logic of working from the known to the unknown" (Steward 1942:337). Although the present study, like the direct historical approach, relies on historic documents and informant testimony to survey the past, for the most part the direct historical approach is not applicable. This is because the few pioneering efforts of a small field like forensic anthropology are usually reviewed in introductory-level courses. I think for most graduate students, like myself, it is the genealogies somewhere between the beginning of a discipline and its present status that are lost. The construction of my academic genealogy, therefore, involves working from two vantage points, one in the beginning and one in the end, and ultimately trying to link the two together. The beginning vantage point was established by reviewing biographical memoirs, obituaries (Garn and Giles 2007; Shapiro 1954; Keith 1939; Krogman 1939), and literature on the major developments in forensic anthropology (Buikstra et al. 2003; Snow 1982; Stewart 1979a; Stewart 1979b; Bass 1979; Bass 1969) with an emphasis on the work of T. Dale Stewart and a recent history of forensic anthropology (Buikstra et al. 2003). The literature review provided a history of forensic anthropology up until 1980. A review of curriculum vitas and personal communication with living members of my academic genealogy allowed me to trace the present vantage point back in time to where the literature review left off. Though my academic genealogy was reconstructed from two points of reference, for the purpose of describing major trends in the field of forensic anthropology my findings are presented from past to present.

A historic review of the contributions made by members of my academic genealogy not only illuminates how forensic anthropology was born out of academic physical anthropology, but it also shows the major events that led to the professionalization of forensic anthropology experienced both before and after it was recognized as a legitimate discipline. Episodes in forensic anthropology include description and classification, followed by a shift to application.

Additionally, a comparison of pedagogy illustrates that regardless of intellectual training, forensic anthropology is headed in a unified direction as an applied specialization in anthropology. Comparison of my academic genealogy from my master's degree with that of my doctoral degree, which represents each of the two possible intellectual lineages in forensic anthropology, puts me in a unique position to compare current scholars from both intellectual lineages who practice forensic anthropology in two different geographic regions of the country, locations that are further differentiated as urban and rural settings. Geographic location greatly influences the volume of forensic anthropology investigations (Snow 1982), and in my experience, caseload seems to directly affect both the training and focus of an academic program in forensic anthropology. From this point forward, the lineage associated with my master's degree is called Miller's lineage after my advisor, Elizabeth Miller, and my doctoral lineage is referred to as Wescott's lineage after my present advisor, Daniel Wescott (Figure 1).

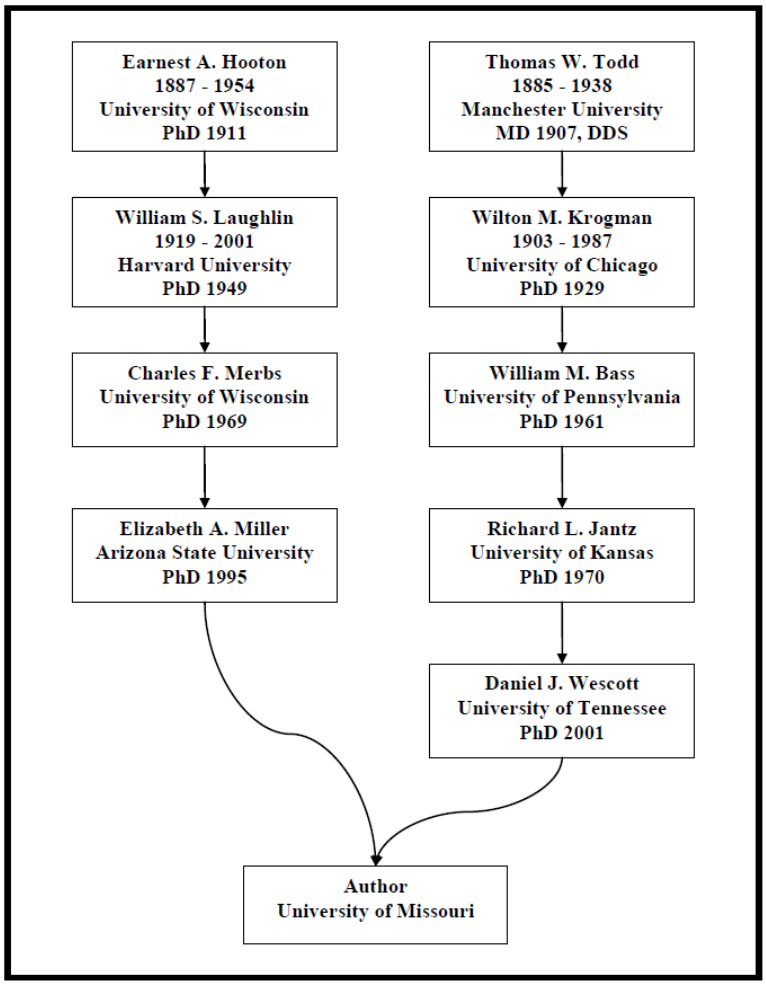


**Figure 1: Academic genealogy.**

## PHYSICAL ANTHROPOLOGY

In the early years of the twentieth century, most Americans did not recognize physical anthropology as a science (Stewart 1979a). This is primarily because ethnologists and archaeologists originally dominated the field of anthropology. Congress established the Bureau of American Ethnology (BAE) to record materials relating to the Indians of North America and to inventory the land acquired in the Louisiana Purchase. This scientific agency had a significant impact on American ethnographic, archaeological, and linguistic research. Although the founding of the BAE was a major step in the professionalization of anthropology, early emphasis on ethnology and archaeology overshadowed and slowed developments in physical anthropology (Spencer 1981). An important advancement in the early part of the century that contributed to the rise of physical anthropology in the United States was the establishment of the *American Journal of Physical Anthropology* (AJPA) (Spencer 1981). The journal, founded by Ales Hrdlicka in

1918, played an important role in publicizing the profession of anthropology, and for more than half a century was the main outlet for articles on forensic anthropology (Buikstra et al. 2003). Although Hrdlicka is not a direct ancestor in my genealogy, it is important that he be mentioned because his interests in anthropometry and his study of prehistoric America (Leslie and Little 2003) inevitably placed him in contact with early members of both lineages in forensic anthropology. In 1903, Hrdlicka became the first curator of physical anthropology at the United States National Museum, now known as the Smithsonian Institution National Museum of Natural History. At the Smithsonian, Hrdlicka recruited instructors to train medical graduates in the lab, in the field, and in anthropometric techniques (Spencer 1981). One of the workers whom he hired was Earnest A. Hooton, who was a physical anthropologist who was doing forensic casework at the time (Byers 2002).

***Earnest A. Hooton (1887-1954) and William S. Laughlin***

Earnest A. Hooton, the founding member of Miller's lineage, was another major contributor to the rise of physical anthropology in the United States. Around the time Hrdlicka established the American Association of Physical Anthropologists (AAPA), of which Hooton was an organizing committee member, Hooton was awarded a position as professor at Harvard University and curator of somatology at Harvard's Peabody Museum of Archaeology and Ethnology (Spencer 1981). Hooton was the first physical anthropologist to hold a full-time teaching position in the United States (Shapiro 1954). After receiving a bachelor's degree at Lawrence College in Appleton, Wisconsin, he continued his education at the University of Wisconsin, earning a master of arts and doctorate in classics. From 1910 to 1913, Hooton studied anthropology as a Rhodes Scholar at Oxford University (Shapiro 1954). He was hired as an instructor at Harvard University in 1913 and became a professor there by 1930; he remained at Harvard until his death in 1954. He was acting chair of the department for nearly 20 years (Shapiro 1954). From 1926 to 1951 Hooton trained an entire generation of graduate students, producing at least 21 doctorates, most of whom went on to teach at American universities during a time of major growth and expansion in higher education following the Second World War (Spencer 1981). Hooton and his students almost exclusively led the full development of physical anthropology in American academia. In fact, the only programs producing doctorates in physical anthropology established prior to 1939, with the exception of one, were organized by former students of Hooton or by students of Hooton's students (Spencer 1981). The one exception is the physical anthropology program at Pennsylvania that was formalized by Wilton M. Krogman. Thus two lineages in physical anthropology were produced, one leading back to Hooton and the other to Krogman, from which all members of my genealogy in forensic anthropology are traced.

Although all of the members in my academic genealogy can be traced back to these two lineages, not all early members of these lineages were active in forensic anthropology. As previously mentioned, most of the early members in my genealogy studied traditional areas of physical anthropology. Hooton's work, for example, ranged from the study of the ancient inhabitants of the Canary Islands to paleoepidemiological study of American Indian skeletal remains from Pecos Pueblo. The breadth of research conducted by early physical anthropologists, such as Hooton and Hrdlicka, was considerable and is reflected in the work of Hooton's students. William S. Laughlin, Hooton's student in the Miller lineage, spent his entire career researching aboriginal Eskimo-Aleuts in the Aleutian Islands. Though his actual doctoral advisor was Hooton, he also claimed to have learned a great deal from the field sessions he spent

with Hrdlicka in the Aleutian Islands[1]. In 1948, Laughlin directed the Northwest Coast and Arctic Expedition to the Aleutian and Pribolef Islands to report the history, culture, and language of the Aleutians and to excavate the site of a prehistoric village at Nikolski (Harvard University).

Besides the occasional skeletal identification, Hooton left few records of any activity in actual forensic casework (Stewart 1979b). In fact, one of the things Hooton is remembered for most, his traditional approach to human variation that reflects the racial and social biases characteristic of the nineteenth century (Leslie and Little 2003), may have slowed the development of forensic anthropology in the United States. Hooton was the leading student in human diversity during the eugenics movement, and his focus on within-group variation and polymorphisms rather than between-group variation to some extent drew attention away from racist views. However, his support of criminal anthropology, developed by Italian psychiatrist Cesare Lombroso, in the social context of the nineteenth century may have had a negative impact on the relationship between physical anthropology and the law (Snow 1982).

The eugenics movement, founded by English scientist Sir Frances Galton, who wrote *Hereditary Genius* (1892) to promote the selective breeding of superior people, gained political support throughout Western countries. Advocates of racial purity used morphological classification as an objective way to justify the superiority of certain ethnic groups. During the eugenics movement, criminal anthropology attempted to echo the efforts to cleanse society by identifying phenotypic characteristics that indicated a criminal nature. Lombroso, whose work was influential for Hooton, concluded after measuring the skulls of criminals in the prisons and insane asylums of Pavia that the shapes of the heads of criminals as a group of individuals were marked by certain anomalies (Thorwald 1965). Independent of Lombroso, French anthropologist Alphonse Bertillon developed the first criminal database that could identify repeat offenders by 11 anthropometric measurements (Saferstein 2001; Snow 1982). Eventually this system was replaced by the use of fingerprints for individual identification (Snow 1982). Ironically, it was the extensive research conducted by eugenics founder Sir Francis Galton on dermatoglyphics that replaced the Bertillonage system (Saferstein 2001). Although Hooton was correct in arguing that racial typologies of skeletons exist, which became an area of detailed investigation in forensic anthropology, his criminal study *The American Criminal* (1939) wrongly assumed the existence of criminal types. Today it is commonly held that there are no physical differences between convicts and law-abiding individuals. Hooton's adherence to the work of Lombroso may have ultimately slowed the development of forensic anthropology in the United States. Though forensic anthropology is deeply rooted in physical anthropology and anthropometry is traditionally an area of productive research in physical anthropology (Snow 1982), forensic anthropology is definitively the study of human remains in a medico-legal context (Buikstra et al. 2003). These early anthropometric studies strained the relationship between anthropology and the law (Snow 1982). It was not until the 1950s and 1960s that law enforcement agencies would regain an appreciation for the role that anthropologists can play in the criminal justice system.

***Thomas W. Todd (1885-1938)***

With the exception of Ales Hrdlicka, Earnest Hooton, and Thomas Todd, who were occasionally consulted by law enforcement agencies as experts in skeletal identification, American physical anthropologists in the first few decades of the twentieth century showed little interest in forensic aspects of their field (Snow 1982). Perhaps this is because at the time there

[1] Charles Merbs, e-mail to Stephanie Golda, April 2, 2007.

were no human skeletal samples of sufficient size for research. The largest original skeletal collection in the United States came from Hooton's analyses of 500 excavated American Indian skeletons from Pecos Pueblo (Garn and Giles 2007). It was not until 1912 that the founding member of Wescott's lineage, Thomas W. Todd, assembled a documented skeletal collection larger than any other in the world. The collection included 3,300 documented human skulls and skeletons, 600 anthropoid skulls and skeletons, and 3,000 mammalian skulls and skeletons (Krogman 1939). Todd assembled this collection of skeletons in a museum that had recently been built from the donations of Carl August Hamann (Keith 1939). The collection, regularly used today by scholars in anthropology, now resides at the Cleveland Museum of Natural History as the Hamann-Todd collection. Interestingly, the same year Todd started the collection he occupied Hamann's vacated position as an anatomy professor at Western Reserve University and he continued to receive administrative support from Hamann, who was then acting dean of the medical school at Western (Cleveland Museum of Natural History). Todd held the position as chairman of the department from the time of his hire at Western Reserve University until the time of his death in 1938 (Krogman 1939).

Most historians of forensic anthropology overlook Todd (Byers 2002), probably because he was not trained in physical anthropology. Todd was a medical graduate from Manchester University and held a second degree in dental science (Krogman 1939). Although he was not trained in physical anthropology, his contributions to the field on the growth and maturation of the human skeleton are remarkable (Keith 1939). To name a few, Todd's areas of study in osteology include the study of suture closure in the skull, the appearance of ossification centers, ontogenetic timing of eruption of teeth, and measurement of tissue thickness to correct for differences between analysis on bones and living individuals. Todd also developed estimates for age-related changes in morphology on the surface of the pubic symphyseal face. His documentation of age changes results in ten phases providing skeletal age-at-death estimates between 18 and 50 years of age. Todd's pubic symphysis scoring method is still used today in forensic anthropology and is described in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1991). Todd's office at Western Reserve University has been referred to as the "Mecca" of past physical anthropologists (Haviland 1994:299). His extensive research in physical anthropology and his development of the Hamann-Todd collection both would later become associated with a period of description and classification in the formative years of forensic anthropology (Byers 2002). Additionally, it was one of his students, Wilton Krogman, who would serve as the impetus to legitimize the field of forensic anthropology in the 1940s (Snow 1982; Stewart 1979a).

***Wilton M. Krogman (1903-1987)***

In 1928, Todd arranged a fellowship at Western Reserve University for Wilton M. Krogman, who at the time was a graduate student in physical anthropology at the University of Chicago (Haviland 1994). Todd and Krogman had met one year earlier, when Todd judged a term paper that was submitted by Krogman for prize money to the annual Morris L. Chalm Contest of the First District Dental Society of New York (Haviland 1994). Todd was so impressed with Krogman's paper on the evolution of the mammalian order that he went to Chicago to meet with him (Haviland 1994). In addition to winning prize money, Krogman's paper was published in volume 7 of the *Journal of Dental Research*. It was under the guidance of Todd that Krogman would develop his interest in forensic anthropology (Haviland 1994). Krogman's generation represents the time period in my academic genealogy where members of

both lineages become more focused on forensics rather than on physical anthropology even though their training was not yet specialized in forensics. Krogman's intellectual training was influenced by some of the earliest physical anthropologists. In fact, Krogman's association with Todd put him in contact with the most famous leaders in physical anthropology, including Hrdlicka, whom Krogman greatly admired. Krogman also had an opportunity to serve on the National Research Council at the Royal College of Surgeons in London with Sir Arthur Keith, he shared a lab with Louis Leakey, and after graduating from the University of Chicago he was an assistant instructor to Fay-Cooper Cole (Haviland 1994). Because of these opportunities, it is clear that most of Krogman's exposure to the field was in physical anthropology, thereby confirming that Krogman was the first in my genealogy to pioneer work in forensic anthropology.

### *The Rise of Forensic Anthropology*

By 1940, Krogman had served as a forensic consultant for various agencies for almost a decade (Snow 1982). It was at this time that he had enough experience in skeletal identification techniques that he could advertise his expertise as a service. Krogman published two articles in the *FBI Law Enforcement Bulletin* to inform federal, state, and local law enforcement agencies that specialists in physical anthropology were available to assist with skeletal identification (Snow 1982). It was also at this time that FBI agents in Washington, who were right across the street from the Physical Anthropology Division's laboratory at the Smithsonian, started to call upon physical anthropologists working at the museum to assist with the identifications of skeletal remains (Snow 1982). The concurrence of these events marked the beginning of the most scientifically active time in forensic anthropology (Iscan 1981). Krogman's efforts to make the government aware of forensic specialists in anthropology paid off when the U.S. Army Quartermaster Corps began recruiting physical anthropologists to aid in the identification of the U.S. war dead (Snow 1982). American military personnel established the Central Identification Laboratory in Hawaii and the Graves Registration Service to assist in the repatriation of American soldiers (Stewart 1979a). Access to the war dead during World War II and the Korean War gave physical anthropologists an opportunity to study the sex, age, and stature of thousands of known victims (Snow 1982). Skeletal measurements taken from the remains led to regression formulas and discriminant function analysis to determine growth changes in the human skeleton. Some of these methods such as Trotter and Gleser's (1952) stature estimates and McKern and Stewart's (1957) age estimates are still used today. Physical anthropologists did not play as large a role in the Vietnam War. By the time the United States began deploying troops to South Vietnam in the mid-1950s, the Army Graves Registration Units were fully staffed by technicians trained in methods of skeletal identification (Snow 1982). Furthermore, technicians were more appropriately trained for the rapid recovery of war dead due to the nature of the conflict (Snow 1982). Though forensic anthropologists are not formally trained to deal with the atrocities of war, those who choose careers in human rights, working for the UN International Criminal Tribunal, for example, are trained to exhume and identify bodies from mass graves.

## FORENSIC ANTHROPOLOGY

Although Krogman established the discipline of forensic anthropology by alerting law enforcement of the potential role physical anthropologists could play in the criminal justice system, it was not until the 1950s and 1960s that the discipline underwent complete professionalization (Snow 1982). One of the events that led to the professionalization of forensic

anthropology during this time was the replacement of coroners with medical examiners in medical examiner offices nationwide (Snow 1982). Coroners are elected officials oftentimes with no medical training whereas medical examiners are appointed, qualified, professionally trained pathologists (Snow 1982). Perhaps it is because medical examiners are educated in an academic setting that they usually budget to have specialists such as forensic anthropologists professionally staffed (Snow 1982). A second event that may have contributed to the professionalization of forensic anthropology in the 1960s was an explosion of students enrolling in U.S. universities and colleges as a result of the post-World War II baby boom, young men avoiding the Vietnam draft, and in part due to the 1944 G.I. Bill that provided college educations for returning World War II veterans. More students than ever before were exposed to the new forensic aspects of anthropology. Students of Krogman who were now professors, such as William Bass at the University of Kansas, were teaching methods for skeletal identification in human osteology and other physical anthropology courses (Snow 1982). Research from the period of description and classification of skeletons in the first half of the twentieth century in physical anthropology, such as Hooton's racial typologies, Todd's osteological techniques that he developed from his documented skeletal collection, and measurements recorded from the U.S. war dead during the formative years of forensic anthropology, were now being developed and taught as methods for assessing age, sex, and ancestry of skeleton remains in forensic anthropology nationwide.

As the caseload size grew for forensic anthropologists who were active medicolegal consultants and methodologies for skeletal identification became more specialized, physical anthropologists who studied forensics began to call themselves forensic anthropologists (Snow 1982). In 1969, Bass published "Recent Developments in the Identification of Human Skeletal Material" in the AJPA without any mention of the term "forensic anthropology." A decade later, in 1979, he published "Developments in the Identification of Human Skeletal Material (1968-1978)," also in the AJPA, but this time referred to "forensic anthropology" three times. The appearance of the term "forensic anthropology" in the 1970s (Buikstra 1977) in American anthropological literature coincides with the establishment of a Physical Anthropology Section in the American Academy of Forensic Science (AAFS). Before 1970, there were only two anthropologists who were members of the Academy: Krogman and Ellis Kerley (Snow 1982). Krogman and Kerley were both assigned to the General Section of the Academy. In 1971, Kerley worked with physical anthropologist Clyde Snow to recruit the minimum number of members required to form a new Academy section and in 1972 the first Physical Anthropology Section of the Academy met (Snow 1982). Shortly after the Physical Anthropology Section joined the Academy there was a remarkable increase in the number of publications by forensic anthropologists in the *Journal of Forensic Sciences* (Buikstra et al. 2003), another outlet of communication for forensic anthropologists to law enforcement and other forensic specialists. The same year that the Physical Anthropology Section joined the Academy William Bass founded the first Forensic Anthropology Research Facility in the United States.

***William M. Bass and Richard L. Jantz***

William Bass's career has come a long way since 1955, when Clyde Snow paid him 5 dollars from his 25-dollar consulting fee (Collins 2006). Snow, a professor of physical anthropology at the University of Kentucky, took Bass, who was a master's degree student at the time, on one of his field calls to assist him in the exhumation of a body (Collins 2006). Bass was so inspired by the call that he went to the University of Pennsylvania to work with Krogman; he graduated from the university in 1961 with a dissertation on skeletal variation in Plains Indians

(Collins 2006). After graduation, Bass taught at the University of Kansas from 1961 to 1971 (Collins 2006). In 1971, Bass moved to the University of Tennessee, where he taught until he retired in 1994 (Collins 2006). It was Bass's work at the University of Tennessee that has made him the most well-known forensic anthropologist in the world. Bass founded the first Forensic Anthropology Research Facility in the United States, referred to as "The Body Farm" just like the title of Patricia Cornwell's novel, in which a character in the book was created to resemble Bass. The Body Farm is an approximately two-acre enclosure near the University of Tennessee campus where human bodies from the William M. Bass Donated Skeletal Collection are brought so that forensic anthropologists, morticians, odontologists, and law enforcement can study forensic taphonomy. Forensic taphonomy, first defined by Wilder (1923) as the science of "necrodynamics," is the study of "the various conditions to which dead bodies are subjected, the forces that tend to displace the parts, and the responses of the parts to these conditions" (Wilder 1923:198). Bass's Forensic Anthropology Research Facility popularized the forensic anthropology program at the University of Tennessee. His program has educated 25 percent of the nation's certified forensic anthropologists and his *Field Guide for Human Skeletal Identification,* first published in 1987, serves as a core reference for all advanced students in this area of study. The reputation of Bass's academic program was strengthened when Richard Jantz, one of Bass's students who graduated from the University of Kansas in 1970, joined Bass as a faculty member at the University of Tennessee (Collins 2006)

Richard Jantz, presently the director of the Forensic Anthropology Center at the University of Tennessee, is best known for developing the Forensic Data Bank. Forensic anthropologists nationwide submit demographic information, including standardized metric and non-metric data, from their forensic cases. Measurements pertaining to assessment of sex and ancestry have developed discriminant functions for FORDISC 2.0. Jantz is also one of the creators of the FORDISC 2.0 computer program. FORDISC uses multivariate discriminant function analysis to classify the race of skulls using any combination of cranial measurements (Ousley and Jantz 1998). As the forensic data bank sample size grows, metric analysis may become favored over anthropometrics by forensic anthropologists. Using the skeleton to construct a bio-demographic profile to positively identify victims is fundamental in forensic anthropology. The ability to assess race is especially important in a forensic context because race is an important component of law enforcement profiles for body identification.

***Charles F. Merbs***

At the exact same time that William Bass was building his career, Charles Merbs, the third member of Miller's lineage, also gained considerable attention for his work on some high-profile forensic cases. In 1957, 12 years before he would earn his doctorate, Merbs helped identify human remains stolen from a grave by murder suspect Ed Gein, who was a handyman from a small town in Wisconsin (Kingsbury 1997). Ed Gein would later become the inspiration for the character Norman Bates in the movie *Psycho* and the serial killer in the movie *Silence of the Lambs* (Kingsbury 1997). Merbs explains that the public's fascination with forensic anthropology stems from the fact that skeletons take on many symbolic implications, from death to rebellion, and these symbols are powerful reminders of our own mortality (Kingsbury 1997). Despite Merbs's occasional consulting in forensics, his areas of interest include researching etiologies of congenital and developmental problems in bone, the relationship between degenerative pathology of the skeleton and behavior, as well as effects of trauma on the skeleton. Merbs graduated in 1969 from the University of Wisconsin and spent a summer working on the

Huron Ossuary material at the University of Toronto. He published a landmark study in 1983 on the Sadlermiut people that linked arthritis to specific activities such as hide preparation, harpoon throwing, and kayak paddling (Bridges 1992). Merbs was the first anthropologist to design a study that could interpret patterns of arthritis in light of behavioral reconstruction, thereby attempting to differentiate osteoarthritis caused by a response to localized trauma from osteoarthritis caused by overuse of a joint (Bridges 1992). Merbs's interest in skeletal pathology was embodied in the work of his student Elizabeth A. Miller, whose early publications focused mainly on paleopathology.

***Elizabeth A. Miller and Daniel J. Wescott***

Elizabeth A. Miller, who graduated from Arizona State University in 1995, became much more involved in forensics while teaching at California State University, Los Angeles. In 1999, Miller became the anthropology consultant for the Los Angeles County Department of Medical Examiner/Coroner. Miller works for the medical examiner's office as a member of their Special Operations Response Team. After her first year of consulting Miller reported that she worked 52 cases, 29 of which involved human remains. This number is astounding when compared to Bass's caseload. Bass worked an average of 50 cases a year worldwide during the 1990s for the Department of Defense, the FBI, and state and local agencies (Collins 2006). The fact that Miller encountered 52 cases in one year, in one city, and that this caseload remains the same if not increases each year thereafter is significant. One of the reasons that Miller has so much casework is because forensic anthropologists in her area have established a credible relationship with the Los Angeles County Coroner's office. When Miller took her position as an anthropology consultant in the Los Angeles area, she replaced forensic anthropologist Judy Suchey. Suchey is well known in Southern California as a diplomat of the American Board of Forensic Anthropology (Reichs 1998). The American Board of Forensic Anthropology was established in 1977 to regulate the practice of forensic anthropology and to encourage the judicial system to use only board-certified forensic anthropologists as expert witnesses (Snow 1982). The American Board of Forensic Anthropology modeled its certification process after boards that certify medical specialists; diplomat status is awarded based on training, experience, and research (Snow 1982). At present, William Bass is the only diplomat in my academic lineage.

It appears from the Miller example that higher professional standards with a certification procedure may result in an increased caseload. However, Miller's increased caseload is likely due to her geographic location, even though Snow (1982) claims that densely populated urban centers with very high crime rates, like San Francisco and New York, generally have fewer skeletal cases than rural settings. Snow explains, "Inhabitants of such sophisticated cities . . . who are inclined to tolerate or ignore many forms of bizarre behavior, are apt to draw the line at decomposition and call the police long before a body is completely skeletonized" (1982:125). Though Snow is correct that it is a rare occasion when a body is "improperly disposed" of, for example, under the floorboards of a front porch in an urban setting, I would have to disagree with his assessment that urban settings generally have fewer skeletal cases than rural settings. In my experience, as a student of forensic anthropology in both an urban setting and a rural setting like Los Angeles, California, and Columbia, Missouri, respectively, there were far more field calls in the former than the latter. Though Miller does respond to field calls in rural locations within the Greater Los Angeles area, such as in the Los Angeles National Forest or the Inland Empire deserts, a number of her field calls such as marine cases, fire investigations, and private airplane crashes are in highly populated areas. In Columbia, although there are plenty of places

that "improperly disposed" of bodies would go unnoticed, Daniel Wescott of the University of Missouri consults for law enforcement agencies in the central and southern region of the state and gets far fewer calls. I do not, however, anticipate that this will be the case for very long. There has been a recent increase in both field calls and in the number of cases brought to the lab from law officials, and with every case Wescott gains local publicity. His presence as an active consultant for law enforcement in central Missouri is becoming known. I imagine it will not be long before a team of forensic specialists, including Wescott, is established in the region to respond to calls.

### *Forensic Anthropology as an Applied Science*

Wescott, who graduated in 2001 from the University of Tennessee, studies long bone biomechanics and secular change of long bones and crania. He researches the cross-sectional geometry of long bones from prehistoric populations in an attempt to reconstruct behavior, such as mobility and other factors that may cause biomechanical stress on long bones. Wescott's program belongs to a department of anthropology that trains students in all four subfields in anthropology. This is especially important for students farther along in their education who will be looking for teaching positions in academia after graduation. While it may seem beneficial to continue expanding the discipline of forensic anthropology beyond traditional boundaries of academic laboratories and museums, especially in light of the recent congressional proposal to rescind several National Science Foundation grants in anthropology, Clyde Snow (1982:113) warns, "Overspecialization in anthropology, as in organic evolution, is a pretty sure road to extinction." The critical issue facing the future of forensic anthropology then, is the need for specialized knowledge while at the same time training practitioners in other subfields of anthropology (Buikstra et al. 2003). Modern students of forensic anthropology need training in bone biology, pathology, criminalistics, and histology, just as they need training in all subfields of anthropology. Will there eventually only be careers in this field for students willing to become proficient in all of these subjects, or will the discipline divide into those who do, trained as technicians, and those who teach, trained as anthropologists? This challenge has previously been encountered by other anthropological subfields, such as in archaeology, which in the 1970s and 1980s became much more applied as the result of increased cultural resource management positions. Fortunately, I do not think the demand for forensic anthropologists in the field, although increasing, will ever match the demand for archaeologists in cultural resource management. Furthermore, the American Board of Forensic Anthropology that certifies based on training, experience, and research helps to regulate professional standards.

## CONCLUSION

Though deeply rooted in physical anthropology, the scientific discipline of forensic anthropology is relatively young. A reconstruction of my academic genealogy shows that even though forensic anthropology is still in a stage of infancy, it underwent a period of classification and description and has become a legitimate discipline in its formative years. Forensic anthropology became established in the 1940s, when law enforcement agencies began to call upon physical anthropologists to assist with their cases that required identification of skeletal remains. Physical anthropologists were also recruited by the American military to identify the U.S. war dead during World War II and the Korean War. This active period in forensic anthropology represents the shift from description and classification to one of application in the field. However, the field did not become completely professionalized until the 1950s and 1960s,

when the replacement of coroners with medical examiners resulted in job opportunities for experts in highly specialized areas of forensic science. In 1972, the first Physical Anthropology Section met at the annual meetings for the American Academy of Forensic Science. The establishment of a Physical Anthropology Section correlates with an increase in the number of publications by forensic anthropologists in the *Journal of Forensic Science*. These events that led to the professionalization of forensic anthropology have ultimately expanded the discipline beyond its traditional boundaries.

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