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Review

Documented Skeletal Collections and Their Importance in Forensic Anthropology in the United States

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Abstract: Documented skeletal collections are the backbone of forensic anthropology due to their associated biohistories. This paper describes the identified skeletal collections and their relevance in forensic anthropological research, education and training in the US. The establishment of documented skeletal collections in the US can be distinguished into two modus operandi, depending on the stance towards the dead, legislation, and medical and forensic practices. In the 19th and early 20th centuries, anatomists amassed skeletons from cadaver dissections, shaped by European influences. Those skeletons compose the anatomical collections—such as the Robert J. Terry Anatomical Collection—predominantly representing impoverished and unclaimed individuals. Ethical concerns for the curation and research of African American skeletons without family consent are growing in the US. In contrast, since the 1980s, modern documented skeletal collections originated from body donations to human taphonomy facilities, such as the William M. Bass Donated Skeletal Collection. The establishment and testing of osteological methods essential to establish one's identity—such as age at death and sex—have been developed with skeletons from documented collections. Therefore, the analysis of identified skeletons has been crucial for the development of forensic anthropology in the US.

Keywords: human osteological collections; identified skeletal collections; biographical data; ethics; anatomical collections; human taphonomy facilities; unclaimed cadavers; body donations; biological profile; osteobiographies

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1. Introduction

Documented skeletal collections are tightly related to the development of American forensic and physical anthropology, born out of anatomy and medicine. In recent years, the word "physical" in this terminology has been replaced with the word "biological", conveying a larger spectrum of anthropological research, emphasizing an overarching study of humans as well as living and fossil relatives. The discipline has created a distance from the mere classificatory—and to some extent hierarchical—approach to human remains that was the focus of physical anthropology, and this distance has a strong resonance in forensic anthropology. In the US, as in many countries, physical anthropology provided the basis for the development of forensic anthropology, and the creation of many documented collections, anatomically oriented, aiming to explore human variation. In the US, remains of Native Americans and African Americans were extensively represented while forming collections. Michael Little and Kenneth Kennedy's [1] book, *Histories of American Physical*

Anthropology, offers an overview of the entangled history of these disciplines, and the relevance of documented collections to their growth. Some names that contributed to the development of US physical anthropology were Samuel Morton (1799–1851), Franz Boas (1858–1942), Aleš Hrdlička (1869–1943), Raymond Pearl (1879–1940), Earnest A. Hooton (1887–1954), T. Wingate Todd (1885–1938), Mildred Trotter (1899–1991), and W. Montague Cobb (1904–1990), amongst many others—for details see [1]. Of these, Samuel Morton is described as " ... best known for his collection of 968 human crania of Native American and other populations ... " [1] (p. 5). The Samuel G. Morton Cranial Collection emphasized research on craniology, which was essentially classificatory, with a fixation in racial identification and typology, akin to other European practices of collection creation and use, following the ideas of Johann Blumenbach [2,3]. Although, one is happy to acknowledge that anthropology is slowly moving away from such a classificatory approach to human remains, emphasizing human variation [4–6]. Alongside Samuel Morton, other names are associated with the creation of referenced collections, such as Robert J. Terry (1871–1966) and William Montague Cobb, amongst others discussed further in this chapter—see [1] and authors therein. An online search for documented collections in the US revealed approximately 26 documented human osteological collections (Table 1). Some collections are better known than others among scholars, such as the Robert J. Terry Anatomical Collection and the William M. Bass Donated Skeletal Collection. Most of these collections were built with body donations or from cadaver dissections, medical schools, private collections, and other contexts. Anatomical collections have a special place within the development of US physical anthropology, which will be addressed below. The diversity of provenance of the skeletons explains, to some extent, the composition of the collections known to exist in the present day. Some comprise complete to almost complete skeletons, but others are represented by specific anatomical regions, including pathological skeletal specimens. Most of these collections were not established with a research design in mind, i.e., they result from the accumulation of human remains made available by donation, or other practices, contrasting with collections, such as the Morton skull collection, which was constructed in an attempt to classify humans based on morphological typologies associated with racial profiling.

Table 1. The documented skeletal collections in the US.

Collection Name	Location of the Collection	Collection Origin	References/Data Source
	Complex for Forensic Anthropology Research at Southern Illinois University	Body donations	[7,8]
	Florida Forensic Institute for Research, Security and Tactical Training, University of South Florida	Body donations	[9]
Anatomical Collections	National Museum of Health and Medicine of the Armed Forces Institute of Pathology	Civil war, forensic	[10,11]
Boston University Donated Osteological Collection	Boston University School of Medicine	Body donations	[12]
Fetal and Infant Collection	Department of Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, DC		[13]
Forensic Investigation Research Station Donated Human Skeletal Collection	Forensic Investigation Research Station at Colorado Mesa University	Body donations	[7,8]
George S. Huntington Anatomical Skeletal Collection	Department of Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, DC	Dissection cadavers	[14,15]

Table 1. *Cont.*

Collection Name	Location of the Collection	Collection Origin	References/Data Source
Hamann–Todd Human Collection	Department of Physical Anthropology, Cleveland Museum of Natural History, Cleveland, Ohio	Dissection cadavers	[14]
Hamilton County Forensic Center Donated Collection	Hamilton County Forensic Center, Chattanooga, Tennessee	Donated skeletons and forensic cases	[16]
Hrytl Skull Collection	Mütter Museum of the College of Physicians of Philadelphia, Pennsylvania	Acquired in 1874 by the Mütter Museum from Viennese anatomist Joseph Hyrtl (1810–1894)	[10,17]
Human Identification Laboratory's collection	Arizona State Museum		[18]
John A. Williams Skeletal Collection	Western Carolina University	Body donations	[12]
Mann–Labrash Osteological Collection	John A. Burns School of Medicine of the University of Hawai'i	Body donations	[19]
Maricopa County Forensic Science Center (FSC) Collection	Maricopa County Forensic Science Center, Phoenix, Arizona	Autopsies and body donations	[20,21]
Maxwell Museum Documented Collection	Laboratory of Human Osteology of the Maxwell Museum of Anthropology, University of New Mexico	Body donations	[22]
Morphology Collection	Division of Anthropology, American Museum of Natural History, New York	Dissection cadavers	[11]
Robert J. Terry Anatomical Collection	Department of Anthropology, National Museum of Natural History, Smithsonian Institution, Washington, DC	Dissection cadavers	[23]
Southeast Texas Applied Forensic Science Facility (STAFS) Skeletal Collection	Southeast Texas Applied Forensic Science Facility at Sam Houston State University	Body donations	[24]
Stanford Collection	Office of the State Archaeologist, University of Iowa	Dissection cadavers	[10]
Stanford–Meyer Osteopathology Collection	Museum of Man, San Diego	Dissection cadavers	[10]
Suchey Pubic Collection	Department of Medical Examiner–Coroner, Los Angeles County	Autopsies	[11,25]
Texas State University Donated Skeletal Collection	Forensic Anthropology Center at Texas State, Texas State University	Body donations	[26]
Trotter Fetal Collection	Washington State University		[27]
William F. McCormick Collection	Forensic Anthropology Center, Department of Anthropology, College of Arts & Sciences, University of Tennessee, Knoxville	Autopsies	[28]
William M. Bass Donated Skeletal Collection	Forensic Anthropology Center, Department of Anthropology, College of Arts & Sciences, University of Tennessee, Knoxville	Body donations	[7,8,29]
William Montague Cobb Collection of Human Skeletal Remains	Howard University, W. Montague Cobb Research Laboratory, Washington, DC	Dissection cadavers	[14]

The associated biohistories have provided a context for the growing ethical discussion in the building of some of the documented skeletal collections. This discussion is in line with current growing concerns in the US, and serves as a reminder of the fact that some were built with the bodies of impoverished and unclaimed individuals without consent of families and/or communities [30].

This paper describes the origin of the documented skeletal collections, their associated ethical issues, and their importance in the development of forensic anthropological research, education, and training in the US.

2. The Documented Skeletal Collections in the United States

2.1. Anatomical Collections

As already stated, the development of physical anthropology in the US is associated with the establishment of documented skeletal collections and the study of skeletal variation in the 19th and early 20th centuries. These anatomical collections are still employed to this day, including in forensic science. To understand their creation, we have to look into the history of medical education, related legislation, and stance towards the dead in the United States. In late 18th and early 19th centuries, anatomists influenced by the practices of European doctors resorted to grave robbers due to the high demand for cadavers to teach anatomy; this led to populace uprising against the grave robbing of cadavers for dissection [31,32]. In 1831, Massachusetts passed the first Anatomy Act, granting legal access to unclaimed cadavers for dissection to help protect burials against grave robbing [32]. The other States followed suit by implementing their own Anatomy Acts [14]. The Anatomy Acts opened the legal path for the establishment of documented skeletal collections from unclaimed dissected individuals.

The conceptualization behind the origins of documented skeletal collections is correlated with the mentoring relationship among different generations of anatomists and anthropologists [10]. Robert J. Terry started the R. J. Terry Anatomical Collection in 1910, influenced by his mentors George S. Huntington and Sir William Turner [23,33]. Between 1893 and 1921, at Columbia University, Huntington collected between 7000 and 8000 human skeletons from unclaimed individuals [15]. As Huntington's health declined, bone elements from the collection were traded or gifted to other institutions [15]. Approximately 3070 partial skeletons that remained from the Huntington Collection are now housed at the National Museum of Natural History [14,15]. Huntington believed in a separate analysis per bone for racial and morphological studies [14]. Terry, shaped by Huntington's teaching, collected skeletons from dissections to research normal and pathological variation in the human skeleton at the Washington University in St. Louis [23]. After Terry's retirement in 1941, Mildred Trotter expanded the collection to 1728 skeletons, until her retirement in 1967. Trotter focused on increasing the number of skeletons of white females, which were lacking in the collection because of the scarcity of female cadavers [33]. Currently, the Robert J. Terry Anatomical Collection is curated at the National Museum of Natural History.

Influenced by Thomas W. Todd, William Montague Cobb established the W. Montague Cobb Human Skeletal Collection between 1932 and 1969 at Howard University, Washington DC [14]. Cobb was a PhD student of Todd at the Western Reserve University, now Case Western Reserve University, which curated the Hamann–Todd Osteological Collection. Currently, this collection is housed at the Cleveland Museum of Natural History. Although started by Carl A. Hamann in 1893, who collected over 100 skeletons from unclaimed cadavers, the biggest propeller was Todd between 1912 and 1938 [10,14,34]. Todd expanded the Hamann–Todd Collection to over 3100 human skeletons [14]. T. Wingate Todd's views differed from the mainstream research in morphological and racial variation. Todd believed that race, as a proxy for ancestry, was not the sole determinant of human skeleton biological variation, but environmental and social parameters would likewise affect growth and ageing [14,35,36]. Cobb, after his PhD in 1932, assembled over 970 skeletons from dissections, while taking a biocultural approach on the socioeconomic influence in morbidity and mortality [14,37,38]. As the first African American physical anthropologist, Cobb aimed to empower African American scholars on matters of race and human biology research, and improve health care [14,38,39]. The collection has fewer individuals than those assembled by Cobb (n = 970). Muller and colleagues state that "Due to improper storage and disuse, the number of individual skeletons is now reduced to approximately 680." [14] (p. 193); however, they offer no further explanation for this fact [14].

A decline in the supply of unclaimed cadavers started in the 1930s and intensified in the following 30 years [40]. The decrease was associated with welfare legislation and an improvement in the quality of life in the US [23,40]. During this period, although prejudice against dissection was prevalent, some people donated their bodies, or those of family members [40]. These reforms affected the anatomical collections, although efforts of amassing skeletons were still ongoing, especially in regard to the Terry Anatomical Collection and Cobb Human Skeletal Collection [14,23].

2.2. Modern Documented Skeletal Collections

In 1968, the Uniform Anatomical Gift Act (UAGA) standardized the anatomical laws across the US [40]. With UAGA, the body gained the status of property, thus allowing individuals to leave their body for science and/or transplants after death in their will [40], opening the legal path for the establishment of the modern documented skeletal collections with body donation programs. The anatomical skeletal collections were formed in a medical context concerning skeleton variation, while modern collections are linked with the study of human decomposition in forensic sciences. In 1980, the first human decomposition facility was created by William M. Bass, a forensic anthropologist at the University of Tennessee [29]. The first donation arrived in 1981 [41]. The Forensic Anthropology Center's mission was to lead research in human decomposition, advance forensic anthropology, train and educate, and provide consulting services [7]. Another purpose of the Forensic Anthropology Center was to produce a large collection of modern documented skeletons, the William M. Bass Donated Skeletal Collection [29,41]. In the US, body self-donations for transplants, research and education picked up at the end of the 20th century [40]. However, initially the William M. Bass Donated Skeletal Collection was chiefly composed by unclaimed individuals from medical examiners and state donations [41]. Subsequently, the facility changed its policy and currently only accepts body self-donations, or by legal next of kin [7]. The 1994 novel "The Body Farm", by Patricia Cornwell, and popular forensic television shows in the early 2000s were major game-changers in the rise of body donations at the University of Tennessee [7,41]. However, it is likewise rooted in a bigger acceptance of body donation and dissection among the American population [40], especially European-Americans. The William M. Bass Donated Skeletal Collection has over 1800 skeletons [42], comprising a higher number of older European-American males than females, or individuals of other self-reported racial groups [8].

Following the model established at the University of Tennessee, six other forensic anthropology facilities were created at Western Carolina University (2006), Texas State University (2008), Sam Houston State University (2009), Southern Illinois University, Carbondale (2012), Colorado Mesa University (2013), and the University of South Florida (2017) [7–9]. New forensic anthropology research facilities are being planned in the US [43]. According to Vidoli et al. [7] (p. 464) the Anthropology Research Facility of the University of Tennessee "has become a source of pride and recognition in the community". However, that is not always the case and the proposal of building a new human decomposition facility can meet community opposition [7].

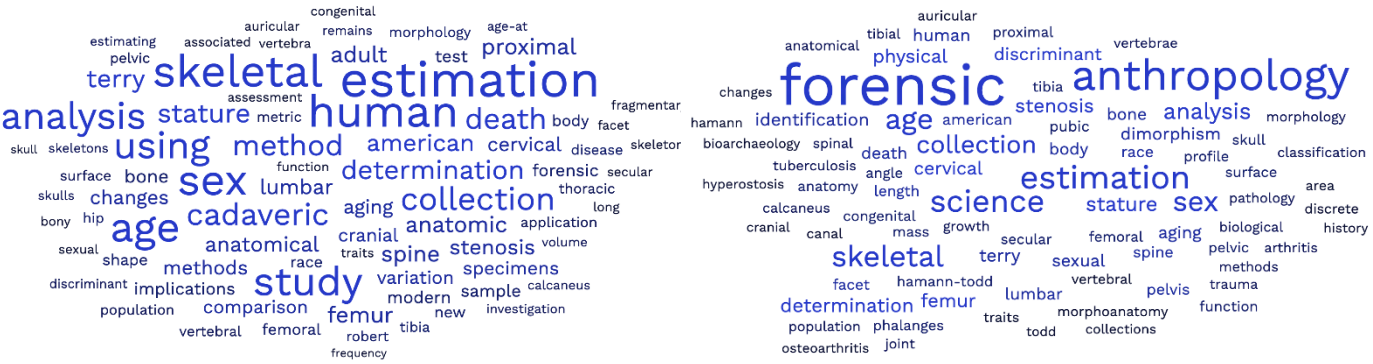
Not all modern collections are associated with a taphonomic facility to study decomposition, such as the Maxwell Documented Collection from the University of New Mexico, and the Boston University Donated Osteological Collection [12]. The Maxwell Documented Collection was created in 1975 by Stanley Rhine, whose donations came from self-donors, legal next of kin, the Department of Anatomy from the University of New Mexico, and the Office of the Medical Investigator [22]. In 2008, 15% of the individuals had no documentation about their donation source [22]. Donations to the Boston University Donated Osteological Collection are used for the education of students and for law enforcement [12].

3. The Research Value of Documented Skeletal Collections

Throughout the history of forensic anthropology, the development of methods of analysis closely relates to the establishment and research availability of documented skeletal

collections. Our early pioneers recognized that such collections were vitally needed to place the emerging science of forensic anthropology on a solid foundation, and to document variation [44]. As previously stated, this need led William Montague Cobb, Aleš Hrdlička, Robert J. Terry, Thomas Wingate Todd, and Mildred Trotter [1], among others, to assemble collections of human skeletons with detailed information about the individuals represented in those collections.

Despite the recent emergence of ethical concerns, these collections have enabled much of the research development of forensic anthropology over the past century. The William M. Bass Donated Skeletal Collection, the Robert J. Terry Anatomical Collection and the Hamann–Todd Osteological Collection are amongst the best-known US collections. A quick search on the Scopus online database, using the names of the collections as search keywords, revealed 226 manuscripts published between 1963 and 2021 (November), with most of the articles (n = 110) being published between 2010 and 2021. Although the subject areas in which these manuscripts were published were varied (e.g., social sciences, medicine, biochemistry, genetics, molecular biology, arts, and humanities), these mostly appeared in the *American Journal of Physical Anthropology* (n = 59) and the *Journal of Forensic Sciences* (n = 50), illustrating the importance of the collections within these research/subject areas. Many of the articles are related to the development and testing of age and sex assessment methods, once more highlighting the impact these collections have had in the development of this discipline. A word count analysis of the manuscript titles and author keywords are examples of this (Figure 1).



(**a**) (**b**)

Figure 1. Word count analysis of the (**a**) manuscript titles (**b**) and author keywords.

The practice of forensic anthropology requires the accurate estimation of sex, age at death, living stature, and ancestry, as well as recognition of pathological conditions and anatomical variation that can contribute to positive identification. Such estimates rely on published and accepted methods that reflect the errors and probabilities involved. Much of the data leading to the development of those methods have been gleaned from documented skeletal collections.

As noted decades ago by Dwight [45] and Stewart [44], methods in forensic anthropology must consider human variation, and for this reason the emphasis on the study of human remains is distancing itself from racial typology and focusing on human variation [6]. With this in mind, documented collections with known information on age at death, sex, living stature and other variables that allow osteological methods to be developed are being used with a new perspective. Data on human variation have allowed for the development of more complex, and accurate models of sexual diagnosis and age at death estimations based on human osteological remains. These methods emphasis a statistical approach to human variability, biological sex diagnosis and age at death assessment. They also provide data on associated errors and probabilities, as well as information on a method's accuracy; the information has become more biologically robust, and less subjective. Furthermore, reliable

methods must be based upon sufficiently large sample sizes. Thus, documented collections must be sizeable enough to provide meaningful samples when divided by sex, age at death, or other variables. Consequently, many collections tend to have more than 200 individuals or anatomical elements. In many cases, some collections continue to incorporate new individuals/elements aiming to increase variation representativity. There are however some limitations to the enlargement of the collections.

Historically, within the United States, documented collections reflect the regional efforts of professionals. As such, each collection does not represent the United States population at large, but rather a geographical and temporal subsample. Local laws and regulations, and the scientific interests of the individuals assembling the collection, shaped the demographic characteristics of individuals in each documented sample. For example, impoverished and marginalized individuals from the 19th century comprise some of the most important anatomical collections of the US, not reflecting the modern US population. Since the 19th century, secular changes in the cranial morphology and limb proportions of Americans have been recorded [46–50], thus making the anatomical collections challenging for establishing and refining osteological methods for forensic research [45]. Modern collections do not represent the diversity of the living American population either [22]. For example, Godde [51] plotted survivorship curves of data derived from the William M. Bass Donated Skeletal Collection, a cemetery from the same county as the individuals from the collection, the census data for deaths from Knox County in Tennessee, and the US census data for deaths across the country. The William M. Bass Donated Skeletal Collection plotted survivorship differed from the three other sources of data, showing that the collection's age-at-death profile is not representative of the US population [51]. The William M. Bass Donated Skeletal Collection is also predominantly composed of older European American males [8,29], although sex demographics will even out, as 65% of 4896 pre-donors are female [8], and self-donations of individuals of other self-reported racial groups have increased [7]. However, minorities and immigrants are skeptical and/or fearful of donating their bodies to science, due to past unethical and/or criminal practices in the US. Historically, research with the bodies of marginalized people without their consent was vastly employed in medicine and anthropology, including in the formation of documented skeletal collections. Winburn et al. [8] suggested a transparent conversation when relating with African American communities about forensic anthropological research and body donation. Winburn also recommended explaining how their donations may benefit their communities, and how forensic sciences do have a social duty and role in American society. Communication with minorities should as well involve the collaboration of scholars and students, family and pre-donors, and religious and community leaders from diverse groups [8]. Yet, community involvement should be a long-time commitment by forensic anthropologists. Research performed with the donors should be periodically reported back to the community to which the individual belonged while living. Institutions that curate the modern skeletal collections, and that are aiming for more diverse demographics, should also consider how they can support and finance the studies of people from marginalized communities to be part of the discourse regarding body donation, their rights as minorities and ethics in forensic research.

Sample profile and subsequent interpretative analysis may also be influenced by the reduced population variation representativity, and the limited number of individuals from diverse socioeconomic backgrounds in the modern collections. The quantification of socioeconomic variables in the assessment of human skeletons needs to be considered by those developing sex and age-at-death assessment methods. Research has proven that a significant correlation exists between bone development and socioeconomic status [52,53]. Documented collections allow control for some of the bone variability due to socioeconomic contexts relating to the individuals' known bio-history, further contributing to their value within forensic anthropology. For instance, if identification standards are developed from a subset of the American population, those may not provide the best results when used in individuals from a different population group.

Gradually, research use of these collections has recognized those, and other limitations. With the aid of modern computers and statistical procedures, such recognition has led to the development of metadata and large databases using multiple collections. Such databases include the Forensic Data Bank, which compiled metric and non-metric information of individuals from the documented skeletal collections and modern forensic cases within the US [46]. The Forensic Data Bank aims to support the development of osteological identification standards to be applied in forensic cases [46]. Alongside dry bone databases, isotopic databases are also being compiled, as is the case with the Forensic Isotopes Nation Database (FIND) created by Herrman et al. [54]. The FIND is a repository of isotopic data from individuals with known residential histories from the documented skeletal collections and resolved forensic cases in the US. FIND provides forensic anthropologists a comparative isotopic database with individuals of known residence. Imaging databases are also under development, and are being increasingly used in forensic anthropology for the identification of unknown individuals [55,56], as well as teaching tools. To date, 500 skeletons from the William M. Bass Donated Skeletal Collection have been scanned with computerized tomography (CT) for anthropological and biomedical research [29], and a larger CT-scan database—the New Mexico Decedent Image Database (NMDID)—has been developed. The NMDID was created between 2010 and 2017 at the University of New Mexico, and is composed of whole-body CT scans and metadata of residents in New Mexico with known biographical data, and information on health and circumstances of death, collected from autopsies and interviews with next of kin [57].

Recognition of the limitations of the classic collections in the United States and Europe has also led to the formation of documented collections in other parts of the world [58]. Methods developed within specific countries have limited applications elsewhere, especially in reference to estimates of ancestry, living stature or other morphometric features. The global growth of interest in forensic anthropology and its application has stimulated colleagues, especially in Latin America and Europe, to develop documented collections that are more relevant to local casework. These new collections supplement those from the United States in providing key evidence of human variation from different time periods.

4. The Educational Value of Documented Skeletal Collections

Documented collections also present training opportunities. Most forensic anthropologists rely on accepted, published methods in their casework. Indeed, the legal system calls for nothing less [59]. However, seasoned anthropologists and those in training benefit from testing their skills on documented collections. Such practice reveals the nuance of application and provides opportunities to examine the remains of individuals different from those they are most familiar with. Forensic anthropologists preparing for practical certification examinations find this experience particularly useful. Forensic anthropology is regarded as a subfield of biological anthropology that contributed to the non-standardized courses in higher education [60]. The Forensic Anthropology Facilities yield a valuable opportunity for students and professionals to be educated and trained on field recovery, forensic taphonomy, and human identification, with human cadavers and documented skeletons, a resource not available in most higher education institutions in the United States. The University of Tennessee offers its students training through simulation of forensic field experiences in the recovery of human bodies [7]. Students are also granted the opportunity to clean and label the human skeletons within the facility curation and body donation program [7]. Through public lectures and internship programs in forensic anthropology for local high school students, the center also provides a return to the community whose family members compose the William M. Bass Donated Skeletal Collection [7,29].

As a final note, it is also necessary to acknowledge that with technological developments alongside dry bones-based collections, virtual collections based on 2D and 3D models have been used as well as other imaging reconstructions of human bones. During the 2020/2021 COVID-19 pandemic lockdown, this availability of virtual human remains was a major teaching resource, as opposed to a hands-on approach with dry bones. That

transition has become a driving force in the greater use of 2D and 3D models of human remains for teaching.

Historically, documented collections of human remains have provided the foundation for research and training in forensic anthropology. Most of our current methods can be traced to research on these collections. Today, these collections are supplemented by clinical data, especially those derived from radiology and related imagery. Modern research values these collections but with enhanced focus on their limitations.

5. Ethical Concerns on the Inclusion of Skeletons of Unclaimed Individuals in the Documented Skeleton Collections

The Anatomy Acts, implemented before UAGA, assured that the source of cadavers for research and teaching came exclusively from the most vulnerable sector of the population. Anatomical laws targeted the impoverished, with the reasoning that poor individuals would pay their debt to society with their body, in service of science and education [15]. Dissection was a stigmatized practice at the time and perceived as capital punishment [32]. Therefore, the Anatomy Acts were also a means of social control against indigence [32]. Lawmakers could, in this way, protect the white middle class from being dissected, and guarantee a legal supply of bodies for medical schools [15]. Economically vulnerable individuals, without a support system, and whose voice was ignored in the matter, were the most likely to be a source of bodies [14]. The major sources of unclaimed cadavers were poorhouses, hospitals, morgues, prisons, long-term care facilities, and mental institutions, which guaranteed those institutions could avoid funeral costs [14,31,40]. Therefore, the skeletons of criminals and unclaimed individuals were accumulated from dissection practices to form the documented collections. Nystrom [32] argued that the establishment of the anatomical collections was based on structured violence against marginalized individuals. In fact, impoverished and marginalized individuals represent the vast majority of the individuals collected, especially African Americans, European immigrants, and individuals that partook in the Great Migration [14]. For example, 52% of the Huntington Collection is derived from immigrants, and 43% is composed of African American and Euro-American impoverished residents in New York [15]. Ethical concerns for the curation and research of unclaimed African American skeletons in the United States are growing. Dunnavant et al. [30] have called for the creation of an African American Graves Protection and Repatriation Act (AAGPRA) based on the Native American Graves Protection and Repatriation Act. With AAGPRA, Dunnavant et al. [30] argued it would guarantee the protection of graves and ensure the proper curation or repatriation of unclaimed skeletons of African Americans. The proposal would not prohibit osteological research of African Americans, but it would have to be performed ethically, respecting their dignity with the consent of descendants [30].

6. Conclusions

Documented skeletal collections have been an important resource for the establishment of forensic anthropology in the United States. The value of the documented skeletal collections lies in the biographical and metrical data associated with them. Those collections of known identities have allowed the establishment and refinement of osteological methods to aid in the identification of unknown individuals. Documented collections have also been a vital resource in teaching and training students and professionals in forensic anthropology and field recovery. In the United States, the older documented collections were assembled in the 19th and early 20th century, mostly from unclaimed individuals, for anatomical and anthropological studies. Modern collections were assembled in the late 20th century or 21st century, a process that is still ongoing. Modern skeletal collections are assembled through body donation programs associated with human decomposition research facilities. The anatomical skeletal collections do not reflect modern Americans, as secular changes in skeletal morphology and size have occurred since the 19th century. However, modern collections do not reflect the present skeletal variation, as they represent one subset of the population. The lack of diversity in the documented skeletal collections can have a negative

impact on osteological methods. To overcome the limitations of the documented skeletal collections, national databases have been created. Databases such as the Forensic Data Bank, with compiled metric and non-metric information, and the Forensic Isotopes Nation Database carry data from individuals from the documented skeletal collections and forensic cases conducted in the U.S. Ethical discussions surrounding the curation and research of unclaimed African Americans are growing. While the documented skeletal collections continue to play a key role in the professional development of forensic anthropology, the ethical discussions happening among scholars and collection-related communities will forge new paths in how research with and about the collections is carried out. This latter point will certainly address creation and curation issues, incorporating not only physical collections but also virtual collections.

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