forensic sciences

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Editorial

Topical Collection "The Rise of Forensic Anthropology and Documented Human Osteological Collections"

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1. Introduction

The idea behind this Topical Collection derives from the growing interest in forensic sciences, specifically forensic anthropology and the study of human remains, supporting the argument that forensic anthropology has favored interest in Documented Human Osteological Collections (DHOCs). The momentum of a "rise" in forensic anthropology, and its connection with documented collections, is not a novelty. In 1988, Mehmet Yaşar Işcan wrote an article addressing this topic [1]. Thirty-four years later, the "Rise of Forensic Anthropology" continues to be something worthy of discussion. Işcan [1] advocated the need for documented modern human skeletal collections to address issues related to identification and individualization factors such as biological sex, age at death, population affinities, and human variability. These assessment parameters and others were revisited in 2008 by Dirkmaat and colleagues [2]. They offered new perspectives, reinforcing the need for modern human samples of references to test established methods and develop new ones based on updated methodological approaches. Thus, three decades later, there has been a significant increase in documented collections worldwide [3], diversified in nature, e.g., not all documented collections are composed of osteological remains, some are virtual collections [4], and others are histological [5].

Documented Human Osteological Collections (DHOCs) are valuable due to the biographical data associated with each skeleton, or skeletal remains (if incomplete). The association between remains and biographical data enables the development of hypothesis-driven research on biological sex and age-at-death estimation methods, individual and population ancestry and variability, and other identifiable characteristics, which are all vital in forensic research. The DHOCs provide the necessary settings to foster and develop such research. However, documented collections are not without biases [6]. For example, many collections have skewed age-at-death distribution, self-reported biographical data, and inaccurate and/or historically outdated data/information. Additionally, ancestral and ethnic affiliation may hide phenotype bias classification and interpretations. Moreover, the cause of death and occupation at death may not relate to a pattern of bone changes observed on the skeleton/bones [6]. These biases may affect methods' accuracy in assessing biological age-at-death and biological sex and the development of ancestry and human variability classifiers. Furthermore, ethical issues associated with documented collections have raised several questions worthy of consideration and are only now being openly discussed [7]. These include issues related to the provenance of the remains, consent issues, preservation and curation issues, data dissemination, and replication, amongst others.

The findings of Alves-Cardoso and Campanacho [3] revealed existing connections between DHOCs and forensic anthropology worldwide. As collections serve as the bases

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for developing new methods in forensic anthropology, in the last few years, forensic anthropology growth has also promoted the creation of new DHOCs. This is further supported by the contributions to this Topical Collection dedicated to The Rise of Forensic Anthropology and Documented Human Osteological Collections.

2. A Synopsis of the Topical Collection Papers

This Topical Collection aggregates information on documented collections worldwide, focusing on, but not necessarily limited to, collections' profile descriptions, their contributions to forensic anthropology, and their legal and ethical contextualization; scientific contributions to sex and age-at-death estimation methods, and individual/ population variability; and the methodological and technological development of collections. For example, Alves-Cardoso and Campanacho [3] explored the scientific profiles of the DHOCs from bibliometric data of 376 articles published between 1969 and 2021 (November), showing that, since 2011, a rise in the number of publications favoring forensic journals. Bibliometric trends disclosed that the most cited DHOCs were from Portugal (with a focal point at the University of Coimbra), the United States, and the United Kingdom, predominantly from biological profiling research. Campanacho and colleagues [8] discussed forensic anthropology's scientific and educational growth in the United States, first associated with anatomical collections in the 19th and early 20th centuries and later, with collections from body donation programs linked to human taphonomical research facilities since the 1980s.

The significance of the DHOCs for research, training, and education is also prominent in the Topical Collection papers. For example, Belcastro et al. [9] remarked on the scientific value of the eight DHOCs curated at the University of Bologna in Italy assembled in the mid-19th and early 20th century [9]; and L'Abbé et al. [10] described the Pretoria Bone Collection with unclaimed individuals in South Africa linked to the opening of a medical school at the University of Pretoria in 1942 and their efforts to digitalize the collection [10]. Similarly, Plens et al. [11] emphasized the growth of collections in South America linked to research and forensic anthropology [9–11]. Much research undertaken with DHOCs aims to assess sex and age-at-death, as these are major parameters in biological profiling. This importance is highlighted in Alves-Cardoso and Campanacho [3] and Curate [12]. The latter traces the importance of sex estimation for forensic anthropology and bioarchaeology through a detailed literature review, highlighting the relevance of Portuguese DHOCs [12]. Ancestry and population affinities are also references to forensic anthropology, and DHOCs have significantly contributed to this discussion [6,13,14]. Within the Topic Collection, the paper of Kelley et al. [13] explores sex estimation methods and population affinity, while Albanese et al. [14] offer a critical review on the use of digital software to build on population and individual profiling.

The diverse nature of the collections has also been stressed. Many DHOCs have been built with unclaimed and/or abandoned human remains (e.g., bones and skeletons) from cemeteries, hospitals, and other institutions [6]. However, in later years, the nature and diversity of DHOCs have increased. For example, two collections were built based on whole-body donation programs derived from human taphonomical research facilities in the USA [15,16]. Gocha et al. [15] described the Texas State Donated Skeletal Collection at the Forensic Anthropology Center at Texas State, established in 2008 under the Texas Anatomical Gift Act. The Texas State Donated Skeletal Collection currently has 710 donated skeletons for research and educational purposes, growing at an annual rate of 60 to 70 individuals. George et al. [16] introduced the John A. Williams Skeletal Collection started in 2009 at the Western Carolina University, from whole-body donations too, but of a smaller size (presently 98 donated skeletons and 16 cremated donors). Although the John A. Williams Skeletal Collection is of smaller size (when compared to other collections), it has been used in diverse contexts including research, higher education, outreach initiatives, law enforcement training, and granting the community an environmentally friendly burial option. On the diverse nature of the collections, Stull et al. [4] introduced The Subadult Virtual Anthropology Database (SVAD), fitting with our digital age. It is

representative of the world's largest repository of osteological and dental data from contemporary sub-adults (2010–2019). It is an open access platform with the premise of being a collaborative data feed network and providing researchers with individual and country-specific demographic information, including entire datasets, medical images, segmented bone surfaces, and protocols of data collection [4]. The Andronowski Skeletal Collection for Histological Research (ASCHR) is another example of diversification [5]. It has been developed specifically for histological and imaging research, offering novel opportunities for research in biological profiling. The Topic Collections has further references to the recently lost—due to the fire that destroyed the National Museum of Rio de Janeiro in 2018—Brazilian human osteological collection, which included identified, archaeological and ethnographic collections [17]. Alongside the descriptive narrative of the losses, the authors highlighted the issues related to the legislation of assessing human remains, delving into the ethical issues involved in different types of donations.

Issues on the provenance of the human remains that compose the collections, and associated ethical concerns were transversal to almost all contributions to this Topical Collection. Ethical considerations were associated mainly with a country's legislation, colonialism, forensic and medical practices, funerary rituals, and stance towards the dead. For example, Belcastro et al. [9] referred to the ethical issues of the Modena "Criminals" and Dart collections reflecting social and ethnic inequalities and the Sassari Collection's potential ties with living descendants in Italy. In Campanacho et al. [8], ethical concerns revolved around the anatomical collections composed of impoverished and African American individuals without family consent, with calls for the repatriation of the latter. At the same time, L'Abbé et al. [10] mentioned the ethical issues of the unclaimed individuals from the Pretoria Bone Collection, pointing out that family members can claim the remains back anytime. An awareness of the ethical issues associated with the study of unclaimed individuals caused South African medical schools to currently only accept whole-body donations [10]. Consent by an individual or legal next of kin in DHOCs is becoming essential among researchers and scholars. George et al. [16] argued how research and teaching in biological anthropology should be interconnected with the donors, families, and communities based on a focus on respect and the need for consent by the living regarding the dead for better ethical practice within the discipline. Plens et al. [11] also reflected on the ethical dimensions of creating DHOCs in South America. Issues on ethics were also systemized in Alves-Cardoso and Campanacho's [3] overview of the growth of the collections in the last ten years, reinforcing the relationship between legislation and ethics.

3. Conclusions and Future Insights

We can easily argue that forensic anthropology and DHOCs share an historical path (or at least, many converging paths), supporting shared interests that have grown in recent years. The research based on human remains curated, and assembled into DHOCs has grown exponentially and will continue to do so with the added dimension of digital proficiency. Hence, it is expected that more DHOCs will be virtual, rather than built upon real bones/skeletons, in the coming years. Most importantly, the ethical and legal concerns regarding the assessment of data (either virtual or real) that compose DHOCs may change how these are assembled, curated, and used in research and teaching. We hope this Topical Collection will contribute to this discussion, aiming to bridge concerns with solutions. This Topical Collection is still open to accepting submissions that may greatly expand the discussion regarding the role of the DHOCs in forensic anthropology.

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References

1. Yaşar Işcan, M. Rise of Forensic Anthropology. *Am. J. Phys. Anthropol.* **1988**, *31*, 203–229. [CrossRef]
2. Dirkmaat, D.C.; Cabo, L.L.; Ousley, S.D.; Symes, S.A. New Perspectives in Forensic Anthropology. *Am. J. Phys. Anthropol.* **2008**, *137*, 33–52. [CrossRef] [PubMed]
3. Alves-Cardoso, F.; Campanacho, V. The Scientific Profiles of Documented Collections via Publication Data: Past, Present, and Future Directions in Forensic Anthropology. *Forensic Sci.* **2022**, *2*, 37–56. [CrossRef]
4. Stull, K.E.; Corron, L.K. The Subadult Virtual Anthropology Database (SVAD): An Accessible Repository of Contemporary Subadult Reference Data. *Forensic Sci.* **2022**, *2*, 20–36. [CrossRef]
5. Andronowski, J.M.; Taylor, J.T. The Andronowski Skeletal Collection for Histological Research: A Modern Anatomical Contribution. *Forensic Sci.* **2022**, *2*, 175–189. [CrossRef]
6. Henderson, C.Y.; Cardoso, F.A. (Eds.) *Identified Skeletal Collections: The Testing Ground of Anthropology?* Archaeopress: Oxford, UK, 2018.
7. Alves-Cardoso, F. "Not of One's Body": The Creation of Identified Skeletal Collections with Portuguese Human Remains. In *Ethical Approaches to Human Remains: A Global Challenge in Bioarchaeology and Forensic Anthropology*; Squires, K., Errickson, D., Márquez-Grant, N., Eds.; Springer International Publishing: Cham, Switzerland, 2019; pp. 503–518. ISBN 978-3-030-32926-6.
8. Campanacho, V.; Alves Cardoso, F.; Ubelaker, D.H. Documented Skeletal Collections and Their Importance in Forensic Anthropology in the United States. *Forensic Sci.* **2021**, *1*, 228–239. [CrossRef]
9. Belcastro, M.G.; Pietrobelli, A.; Nicolosi, T.; Milella, M.; Mariotti, V. Scientific and Ethical Aspects of Identified Skeletal Series: The Case of the Documented Human Osteological Collections of the University of Bologna (Northern Italy). *Forensic Sci.* **2022**, *2*, 349–361. [CrossRef]
10. L'Abbé, E.N.; Krüger, G.C.; Theye, C.E.G.; Hagg, A.C.; Sapo, O. The Pretoria Bone Collection: A 21st Century Skeletal Collection in South Africa. *Forensic Sci.* **2021**, *1*, 220–227. [CrossRef]
11. Plens, C.R.; Górka, K.; Lopez Quintero, Y.A. The Identified Osteological Collections of South America and Their Ethical Dimensions. *Forensic Sci.* **2022**, *2*, 238–252. [CrossRef]
12. Curate, F. The Estimation of Sex of Human Skeletal Remains in the Portuguese Identified Collections: History and Prospects. *Forensic Sci.* **2022**, *2*, 272–286. [CrossRef]
13. Kelley, S.R.; Tallman, S.D. Population-Inclusive Assigned-Sex-at-Birth Estimation from Skull Computed Tomography Scans. *Forensic Sci.* **2022**, *2*, 321–348. [CrossRef]
14. Albanese, J.; Dagdag, A.; Skalic, C.; Osley, S.; Cardoso, H. The Fall and Rise of Identified Reference Collection: It Is Possible and Necessary to Transition from a Typological Conceptualization of Variation to Effective Utilization of Collections. *Forensic Sci.* **2022**, *2*, 438–454. [CrossRef]
15. Gocha, T.P.; Mavroudas, S.R.; Wescott, D.J. The Texas State Donated Skeletal Collection at the Forensic Anthropology Center at Texas State. *Forensic Sci.* **2022**, *2*, 7–19. [CrossRef]

16. George, R.L.; Zejdlik, K.; Messer, D.L.; Passalacqua, N.V. The John A. Williams Human Skeletal Collection at Western Carolina University. *Forensic Sci.* **2022**, *2*, 362–370. [CrossRef]
17. Mendes, P.V.; Silva, H.P.; Bastos, M.; Bittar, V.; Reis, S.; Rodrigues-Carvalho, C. Osteological Collections of the National Museum in Brazil: Challenges and New Perspectives for a Historical Collection. *Forensic Sci.* **2022**, *2*, 287–301. [CrossRef]



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