



A146 Virtual Skeletal Data — The Ethical, Technical, and Legal Questions Anthropology Faces When Working With Virtual Skeletal Remains

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After attending this presentation, attendees will better understand the challenges the anthropological community is facing and will be facing in the future concerning ethical and legal questions regarding virtual skeletal remains data. Currently, there is no legal framework anywhere in the world that governs the gathering and storing of analysis or the storage of data that represents virtual skeletal remains. There are also no ethical guidelines or technical standards for setting up a virtual skeletal collection. Attendees will be presented with the open questions, the issues caused by a lack of answers, and possible solutions to a number of the issues.

This presentation will impact the forensic science community by starting a discussion about several of the numerous questions that need to be addressed if virtual skeletal analysis is to have a productive place in anthropology. Ethical, technical, and legal question regarding virtual skeletal remains need to be addressed soon or anthropological research and forensic anthropological casework will soon suffer from a lack of answers. Virtual skeletal anthropology cannot exist in an ethical, technical, or legal vacuum.

For more than a century, anthropologists have collected skeletal remains and built up collections. These collections have helped develop and test numerous methods in physical anthropology and without them, forensic anthropology would not be where it is today. In recent years, a new type of skeletal collection began to emerge: the virtual skeletal collection. Here, electronic 3D models of bones are stored, rather than the physical original. Such virtual data can be tomographic or topographic, can come with “skins” or without, and can be produced in various file formats, sizes, and resolutions. This is a very promising new research area, but one that is more or less entirely void of rules, regulations, guidelines, and laws.

There are three areas in which a multitude of questions need to be addressed: ethical, technical, and legal. The legal questions concentrate primarily on the issue of anonymity and on intellectual property rights. While the first of these two issues is familiar to anthropology and fairly easily dealt with, the second becomes more difficult. Who owns a virtual skeletal bone? The person whose bone it is if the person is alive, their family if the person is dead, the institution that is housing a physical skeletal collection that is being scanned, or the institution that put all the time, work, and effort into scanning and/or processing the bones? Can one institution share the bones with one or more third parties? There are many questions and so far very few answers.

The ethical questions may turn out to be more easily answered. It is likely that, in many ways, virtual bones can be treated just like physical bones; however, while in many parts of the world physical remains are being reburied, there appears to be no need for that to happen with virtual bones. Should communities that request the burial of physical remains have the right to have virtual ones deleted? Does anthropology have the right to keep the data? Such questions can be ethical ones, but they can quickly turn into legal ones as well.

Finally, there are technical issues to address. One of the greatest arguments for those in favor of virtual skeletal collections is their potential size. If the legal/ethical issues of sharing data can be solved and enough institutions cooperate, virtual skeletal collections could be thousands or tens of thousands of individuals large. If medical Computed Tomography (CT) scans are included, there could be millions of samples and the size would increase



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steadily; however, numerous technical standards for 3D model files exist and there is no specific technical standard agreement among those anthropologists who work with them. Should one of the existing file standards be used or should there be a particular anthropological file standard that can contain information on pathologies, trauma, etc. on top of the already existing xyz coordinates, texture, etc.? If so, detailed standards would have to be developed and that is a very considerable task.

Some of these questions can be solved by the international anthropological community, if they are willing to address them. Others questions need to be addressed by governments or international organizations but anthropologists will still need to lobby for change.

Virtual Skeletal Data, Ethics, Standards