

## **Narrative Final Report Format (Attachment C)**

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**Executive Summary:**

Osteoware is an easy to learn software program designed to assist in the documentation of human skeletal remains. It provides for the real-time data entry of quantitative and qualitative observations into a structured query language (SQL) relational database. When the database is established on a networked server up to five individuals may enter data at the same time.

Prior to the release of Osteoware to the academic, museum, and cultural resource management communities, there was no graphic user interface (GUI) for assisting in the capture of standardized data from human skeletal remains, nor a viable database management tool that would foster the comparison of data collected by different researchers across archaeological time and space. Because of individual researcher needs each investigator has a specialized set of variables specific to their study interests; however, having a common set of core observations is key to establishing broader comparisons among skeletal collections documented by different people. As human remains are discovered during economic/real-estate development, or continue to be repatriated from museum collections, capturing data in a standard format is an essential task; Osteoware provides an intuitive data entry system that prompts users to collect these core observations for study by future generations.

The public release of Osteoware in April 2011 has received great interest from the target user group, and has established an international following in U.S.A., Australia, Belgium, Canada, Chile, Denmark, England, Germany, Japan, Netherlands, New Zealand, Portugal, and the Republic of Korea. With grant funding from the NCPTT and the Smithsonian Web 2.0 Fund, an educational website has been created with a download portal for the software and related files, as well as an online support forum emulating a small software company model. This website and forum may be viewed at: <http://www.osteoware.si.edu> . It is forecast that people visiting the website and software support forum will share ideas, research interests, and create an online user community that will act to shape future versions of the software.

## **Introduction**

The need for a computerized data entry system became critical at the National Museum of Natural History (NMNH), Smithsonian Institution, with the passage by Congress of the National Museum of the American Indian Act (NMAIA) in 1989, predating the Native American Graves Protection and Repatriation Act (NAGPRA) by one year. Like NAGPRA, from which the Smithsonian is specifically exempted, the NMAIA Act mandates the repatriation of Native American skeletal remains, funerary objects, sacred objects, and objects of cultural patrimony, to culturally affiliated Native American tribes. Thus there was a need to inventory, document, and manage data from the 18,000+ Native American catalog numbers in the physical collections of the NMNH.

Like any project of this scale, Osteoware is built upon the efforts of many individuals and organizations. The foundations of a computerized data entry system were laid down soon after the establishment of the NMNH Repatriation Osteology Lab (ROL). The program was initially a DOS-based Paradox system with text screens and non-relational flat data tables. From the beginning it incorporated the Buikstra & Ubelaker (1994) "*Standards for Data Collection from Human Skeletal Remains*", which is a refinement of the work started by the Paleopathology Association (PPA) Skeletal Database Committee in 1988. The first ROL Data Entry Manual was compiled and edited in 1994 by former Lab Director Dr. John Verano with Dr. Javier Urcid, and predated the publication of "Standards" by a few months. During this time collaboration was on-going between the ROL, the Chicago "Standards" Group, and the University of Arkansas team led by Dr. Jerry Rose, who developed the now defunct Standardized Osteological Database, SOD, in FoxPro for DOS-based computers [<http://cast.uark.edu/home/research/archaeology-and-historic-preservation/archaeological-informatics/standardized-osteological-database.html>]

While Osteoware incorporates the Buikstra & Ubelaker (1994) "*Standards*", it is recognized that other guidelines exist for recording osteological data. In fact each researcher likely has a specialized set of variables specific to their own research needs; however, having a common set of core observations is key to establishing comparisons among skeletal collections documented by different people. Osteoware provides an intuitive data entry system that prompts users to collect these core observations.

The Osteoware database has evolved, developing into a full relational database utilizing Structured Query Language (SQL) under the guidance and programming skills of former ROL Director Steve Ousley. Some revisions have also been made to the standard dataset collected based on the experience and input of numerous ROL staff over the years. Osteoware has proven to be stable and has successfully collected well over 100,000 data records at the Smithsonian Institution.

## **Methods and/or Materials:**

With grant funding from the NCPTT and the Smithsonian Web 2.0 Fund, an educational website has been created with a download portal for the Osteoware software and related files, as well as an online support forum emulating a small software company model. This website and forum may be viewed at: <http://www.osteoware.si.edu> .

The name Osteoware has been trademarked and an End User License Agreement (EULA) has been created in consultation with the SI General Council's Office. The 'Terms of

Use' for the Osteoware forum follows established Smithsonian social media policy, and the forum has passed OCIO Privacy Risk Assessment (PTA). The forum will be administered by the Repatriation Osteology Lab Manager, and moderated by the project team.

**Results and Discussion:**

The public release of Osteoware at the Paleopathology Association and American Association of Physical Anthropology in April 2011 has received great interest from the target user group. An international following has been established in U.S.A., Australia, Belgium, Canada, Chile, Denmark, England, Germany, Japan, the Netherlands, New Zealand, Portugal, and the Republic of Korea. The website and forum will serve to provide educational material, software support, and expand the user community.

Osteoware has been trial-tested by one of the largest cultural resource management (CRM) firms in the USA, and several of the more adventurous Osteoware beta users in the academic community have incorporated the software in their undergraduate teaching of human osteology labs. This pragmatic use of Osteoware introduces students to the methods of the discipline and standardized data entry, potentially preparing them for further postgraduate research, or jobs in CRM or museums. This is only the beginning for Osteoware in the field and classroom.

**Conclusions:**

With the current success of the beta release of Osteoware in April 2011, we forecast that people visiting the educational website and software support forum will share ideas, research interests, and create an online user community that will act to shape future versions of the software.

The next stage in the website development is to create a searchable online multimedia database for paleopathology (diseases found on archaeological recovered remains). Dr. Donald Ortner, Physical Anthropology Curator at Natural History, has agreed to allow his career-spanning collection of images to be placed online within the Osteoware website. An additional searchable database of Taphonomy multimedia (postmortem alterations due to environmental variables) will be created specifically for user-submitted content.

**Acknowledgments:**

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**References:**

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