

Visualizing Antiquarian Excavations: Digital Reunification of the Mecklenburg Collection

Vizualizacija starih izkopavanj: digitalna združitev Mecklenburške zbirke

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Abstract: This article outlines the first stages of the project, *Visualizing Antiquarian Excavations: Digital Reunification of the Mecklenburg Collection*, which uses digital techniques to document and visualise archaeological materials excavated by the Duchess of Mecklenburg. This is an archaeological collection from Iron Age mortuary sites in Slovenia and Austria excavated prior to World War I, composed of artefacts, human remains, faunal material, and archives from the excavation and auction of the collection. The majority of this collection was auctioned off to foreign museums, and a small proportion remained in Slovenia at the National Museum of Slovenia. The dispersal of this collection has made analysing these assemblages as a whole nearly impossible. This project is publishing this material using 3D models, high-resolution artefact photographs, and archival documentation in an open-access format, allowing researchers to re-analyse a foundational European Iron Age archaeological collection.

Keywords: Iron Age, Mecklenburg Collection, 3D Scanning, Open Access, Antiquarian

Introduction

During the late 19th and early 20th centuries, numerous antiquarian excavations took place in continental Europe and the Mediterranean under the auspices of the German, Ottoman, and Austro-Hungarian Empires. These excavations provided the foundational archaeological collections of many museums in Europe and the United States. The artefacts are still held by these museums, and due to issues of distance and limited research funds, have remained largely unavailable to local scholars and the public in the countries of origin. This has been the case with the Mecklenburg Collection, which was excavated prior to World War I by the Duchess of Mecklenburg when the modern nation of Slovenia was part of the Austro-Hungarian Empire. Princess Marie Gabriele Ernestine Alexandra von Windischgrätz, Duchess Paul Friedrich of Mecklenburg, sponsored and participated in excavations of over 20 sites in her nine years (1905–1914) of archaeological work in Slovenia and Austria. While this work was far from today's standards of excavation, later in her career she and her assistant adhered to collection and recording standards of the time, marking her as an important figure in the development of archaeology in

Izvleček: Prispevek predstavlja začetne faze projekta *Vizualizacija starih izkopavanj: digitalna združitev Mecklenburške zbirke*, ki z uporabo digitalnih tehnik dokumentira in predstavlja arheološke materiale, ki jih je izkopala vojvodinja Mecklenburška. Gre za arheološko zbirko najdb z grobišč železne dobe v Sloveniji in Avstriji, ki so bila izkopana pred prvo svetovno vojno. Zbirko sestavljajo predmeti, človeški posmrtni ostanki, arheozoološko ostanki ter arhivska dokumentacija in dražbe. Večina zbirke je bila prodana tujim muzejem na dražbi, manjši delež pa je ostal v Sloveniji, v Narodnem muzeju Slovenije. Zaradi razpršenosti je zbirko skoraj nemogoče analizirati kot celoto. Projekt prinaša prosto dostopne 3D-modele, visokoločljivostne fotografije predmetov in arhivske dokumentacije, kar raziskovalcem omogoča ponovno analizo te temeljne arheološke zbirke.

Ključne besede: železna doba, Mecklenburška zbirka, 3D skeniranje, odprti dostop, starinarski

this region. This collection was put up for auction in the 1930s and purchased by the Peabody Museum of Archaeology and Ethnology at Harvard University and the Ashmolean Museum at Oxford University (Ložar 1934; Mahr 1934; Hencken 1968; 1978; Wells 1981; Greis 2006; Dular 2009). Only a fraction of the collection remained in Slovenia, given as a gift to the National Museum in Ljubljana (Ložar 1934).

This is an important collection for the study of the Iron Age in continental Europe, consisting of the contents of nearly 1000 graves from over 20 sites (Ložar 1934; Mahr 1934; Greis 2006; Dular 2009). In addition, the material from this collection is in unusually good condition, including the preservation of human and animal osteological material, which are only rarely preserved in more recent excavations at these sites.

Although these items represent some of the most significant and best-preserved Iron Age artefacts from Slovenia, only a handful of archaeologists have ever had the opportunity to study the entire collection in person due to its dispersed nature. The collection's lack of accessibility for research and public engagement is a product of the assemblage being outside its country of origin but also of



Figure 1. 3D Model of an iron axe from Tumulus VI, Grave 32, Preloge at Magdalenska gora (Peabody Museum inventory number 34-25-40/8721).

Slika 1. 3D model železne sekire iz gomile VI, grob 32, Preloge pri Magdalenski gori (inventarna številka muzeja Peabody 34-25-40/8721).

it literally being fragmented through space. Take for example the part of the collection recovered from Magdalenska gora Tumulus VI. Of the forty-seven graves identified in this tumulus, five have artefact assemblages split between the Peabody Museum in the United States and the National Museum of Slovenia. Grave 27 from Tumulus VI was a cremation grave that included a variety of bronze and iron personal ornaments as well as ceramic vessels (Hencken 1978, 47). While all the metal pieces are housed at the Peabody, a ceramic vessel remains at

the National Museum. In addition, archival documentation from the excavation, storage, sale, and re-housing of these materials over the last hundred years exists in both museums. This remains a problem with global collections that are fragments of larger assemblages, divorced from their original archaeological contexts. Physical repatriation of this material is not a feasible or desirable solution for the institutions involved; however, by utilising digital techniques for documentation and visualisation, this project facilitates the digital accessibility of this collection and makes the material available for widespread scholarly research and public dissemination.

Archaeological Context

The Duchess of Mecklenburg was a prolific excavator and investigated 19 sites in modern-day Slovenia between 1905 and 1914 (Ložar 1934, 6–7; Dular 2003, 71–83; Greis 2006, 5). Her largest investigations were at sites in the vicinity of Magdalenska gora, Vinica, and Stična, where over 850 graves were uncovered (Ložar 1934, 7). She should be considered an archaeological hobbyist and sponsor of archaeological work rather than a professional archaeologist, though her assistant Gustav Goldberg started keeping excavation records after 1906 and often, the later graves they excavated can be reconstructed (Hencken 1978; Wells 1981; Tecco Hvala 2012). The outbreak of World War I ended her archaeological career, and subsequently the excavated artefacts were put in storage until the 1930s, when they were catalogued for auction and sold to the Peabody Museum of Archaeology and Ethnology at Harvard University¹ and the Ashmolean Museum at Oxford University² (Ložar 1934; Mahr 1934; Hencken 1978; Wells 1981; Greis 2006). Some artefacts had already been sent to Berlin and Marburg³ after the Duchess gifted impressive artefacts to relatives and patrons including Kaiser Wilhelm II of Germany (Weiss 1999; Greis 2006, 33–35; Tecco Hvala 2012, 15).

There has been significant work done in Slovenia on systematically analysing the artefacts and records from old excavations to try to reconstruct original grave contexts, which has allowed a more complete understanding

1 Finds from Stična, Magdalenska gora, and Vinica.

2 Finds from Vače.

3 At the Museum für Ur- und Frühgeschichte [Museum of Prehistory and Early History] in Berlin and in the lecture collection for the prehistoric seminar at the University of Marburg.

of these sites (Tecco Hvala, Dular, Kocuvan 2004; Gabrovec 2006; Gabrovec, Teržan 2008(2010); Tecco Hvala 2012; Teržan *in press*). However, the reconstruction of certain contexts remains problematic due to the haphazard nature of antiquarian excavations and imperfect or missing archival records (Božič 2009; 2010; Tecco Hvala 2012, 28). For example, there are only a few maps of excavated tumuli, and so we cannot reconstruct the spatial distribution of most graves within the tumuli. In addition, the original excavation records were often cut up and re-assembled in the creation of discrete lots for auction, limiting their analytical utility in certain cases.

Project Methods and Goals

One of the primary goals of the Visualizing Antiquarian Excavations project is to make the reconstruction of grave contexts and the assessment of their reliability more transparent through the provision of all associated museum and archival records in addition to the archaeological materials. The authors are documenting artefacts using 3D scanning technologies and publishing these data through an open-access online digital repository and archive in order to provide access to the global research community. Three-dimensional representations of artefacts are dynamic datasets that enhance the research potential of traditional representations, such as photographs or illustrations. These 3D models will act as the centrepiece of an archaeological digital archive of the Mecklenburg Collection, removing the research barriers of funding and location, and providing widespread access to this material, which has not been possible since the 1930s.

The digital 3D models of artefacts will be created using the HDI Advanced R1X Scanner from GoMeasure3D, a structured light scanner which produces high-density scans replicating surface morphology with high-resolution colour-mapping that captures the surface appearance of the object. The use of 3D models in archaeology extends the long tradition of visual representation in the field, building on artefact illustration and photography (Garstki 2017). Each of these representational media bring certain benefits that help express features of an archaeological object. The level of manipulation afforded by a 3D model means that significant analysis can be conducted without physically holding the artefact, a prime concern when avoiding damage to fragile items

or trying to study an otherwise inaccessible artefact. 3D artefact models can be digitally measured, viewed from all angles, and visualised with different rendering options (such as without the photo texture) to illuminate features on the surface that are otherwise hidden. Moreover, due to the increase in web-based 3D viewers, digital 3D models can be viewed and interacted with by a much larger audience than solely academic researchers or local museum visitors. Providing opportunities to engage with these materials to those outside the academy increases public visibility and support for archaeology broadly.

The 3D models will be interacted with through the 3D viewer, 3D Heritage Online Presenter (3DHOP⁴), developed by the Visual Computing Lab of ISTI-CNR (Pozenziani *et al.* 2015). 3DHOP is an open-source software package for presenting 3D models, specifically developed for the cultural heritage field. This tool is meant to be used by institutions creating their own platforms for displaying 3D models, and in this case, 3DHOP will be embedded in the database on Open Context (see below). The second author has worked with Open Context to establish best practices for using 3DHOP on the platform.⁵

Not all artefacts are suitable for 3D scanning due to their shape, material, or state of preservation. In these cases, photos of the artefacts are used to facilitate study. The authors have produced high-resolution, publication-quality photographs of all the artefacts. Detailed physical descriptions and dimensions of all artefacts are also included. The aim is to provide scholars with the necessary data to study these artefacts remotely or to facilitate the pursuit of more detailed questions with the museums housing the artefacts.

One of the primary difficulties of working with antiquarian excavations is the lack of access to archival documentation to support reconstructions of artefact provenience, particularly in cases like the Mecklenburg Collection where documentation is held by multiple institutions. To facilitate the study and accurate reconstruction of provenience, all archival documents related to the excavation and auction of these items have been kindly scanned in high resolution by the Peabody Museum and the National Museum of Slovenia. Archaeological study of this collection in particular has been hampered by concerns

⁴ <http://vcg.isti.cnr.it/3dhop/>.

⁵ See <https://opencontext.org/media/3b702ac1-ffbf-4a92-aa96-762a2b6bff66> for an example.



Figure 2. 3D Model of a bronze neck ring from Tumulus VI, Grave 1, Preloge at Magdalenska gora (Peabody Museum inventory number 34-25-40/8624).

Slika 2. 3D model bronaste ovratnice iz gomile VI, grob 1, Preloge pri Magdalenski gori (inv. št. muzeja Peabody 34-25-40/8624).

over the quality and reliability of the Duchess' original excavations (Božič 2009; 2010; Tecco Hvala 2012, 28), and the only way for modern researchers to assess the reliability of items' provenience is to assess the original documentation in full. To this end, our aim is to make this material readily available for study and reconstruction by archaeologists around the world. The dynamic nature of this type of publishing platform will also facilitate the creation of a living data archive, where new discoveries made by scholars studying the collection can be incorporated into the online dataset in a citable way.

The compiled media and data will be published through Open Context,⁶ an open-access, web-based data pub-

lisher. Open Context takes a somewhat unique approach to open-access data: they have developed a system for open-access data publishing where data are not only curated but are first peer reviewed by an editorial board to assure data quality (Kansa, Kansa 2013). Open Context's approach to data publishing, where each object is given a unique and stable record, is best suited for this particular project. Each artefact, set of osteological remains, archival document, and grave/find context in this collection will have its own stable Uniform Resource Identifier (URI). A URI is a string of characters that are unique to a web resource, providing a stable web presence.

Each object record will come complete with a description of the find context, links to other finds and archival records from the same context, and links objects to related

⁶ <https://opencontext.org/>.

materials. The artefact records and archival documents will include high-resolution photographs and there will also be 3D models of many artefacts. These data will be hierarchically organised, allowing the artefacts or osseous remains to be understood in relation to various contextual scales (e.g., grave, tumulus, site), and in relation to similar finds. Since individual artefacts and osseous remains represent an individual database record with distinct URIs, each item can then be cited and linked to in future publications to facilitate scholarly dissemination of these data.

Current Progress

Due to the large scale of this collection, estimated at 20,000 finds,⁷ the authors are taking a site-by-site approach and have started with materials from the site of Magdalenska gora, to which the Peabody Museum and National Museum of Slovenia have both kindly provided access. During the summer of 2019, the authors began 3D scanning, photographing, and collecting archival documents for Tumulus VI from Magdalenska gora, which was chosen for its manageable scale, the variety of artefact types, preservation of human remains, and the relatively detailed archival records from the excavation (Hencken 1978, 41–51). Eighty-nine artefacts were 3D scanned using the structured light system at the Peabody Museum (Figures 1 and 2). It was not possible to scan the other artefacts due to their fragility. In addition, nearly 800 publication-quality photographs of the artefacts from the Peabody Museum will be made available along with photos of artefacts housed at the National Museum of Slovenia. The Peabody Museum also houses human remains materials from Tumulus VI, though there will not be photographs or 3D models of human remains to align with ethical positions in the discipline and to respect the Peabody Museum's restrictions on public dissemination of these data. The condition of the human remains, as well as the age, sex, and minimum number of individuals associated with each grave will be made available, and the authors maintain high-quality photographs of these remains for research purposes. Tumulus VI did not contain any preserved animal bones, though presentations of future tumuli will include detailed records and photographs of faunal remains.

Processing of the photographs and 3D models took place over the second half of 2019, and all models, images, and archival documents have been approved for use by the Peabody Museum. The authors are currently working with Open Context to populate the site. The project landing page can be found here⁸ and it is anticipated that the site will be live in early 2021.

Discussion

In order to use archaeological data to their full potential, archaeologists must think long-term when it comes to data management. Long-term storage, dissemination, publication, and interoperability are all aspects of a broader data management strategy, and all have unique challenges to overcome. The development of best practices and standards for preserving and sharing archaeological data in Europe has made significant strides in recent years. As a result, we are seeing the benefits for digital heritage management broadly, which have been expanded by following general frameworks for ethical data management, such as the FAIR data principles.⁹ Developed by an interdisciplinary group of international scholars, these principles represent a simplified framework for creating, maintaining, and reusing data (Wilkinson *et al.* 2016). The acronym stands for **F**indable **A**ccessible **I**nteroperable **R**eusable. These principles have been implicitly and explicitly applied to archaeological data, increasing the sustainability of digital data in archaeological practice. This project aims to adhere to these principles by using the Open Context platform, which allows us to organise and publish these data in responsible ways.

A significant limitation for archaeological open data is that many are not structured in ways that they are easily findable to a researcher searching for them online. It is important that these data are associated with human and machine-readable metadata¹⁰ that allow automatic discovery by search engines or digital infrastructures that collect distinct datasets. In the Mecklenburg digital collection on Open Context, each set of osteological remains, artefact, archival document, and find context includes extensive metadata and paradata that allows them

7 See Ložar 1934, 7 for discussion of the difficulty estimating the size of this collection.

8 <https://opencontext.org/projects/b0b44b5d-80f8-4aff-9306-22183c319710>.

9 <https://www.go-fair.org/fair-principles/>.

10 Data about data that can include anything from artefact metrics to archaeological contexts.

to be found when searched by a number of parameters.¹¹

Open Context also structures its metadata by utilising the CIDOC Conceptual Reference Model (CIDOC CRM)¹² as a standard schema for structuring and defining their cultural heritage data and their relationships. These shared standards for data organisation allow easy cross-platform interoperability (Kansa 2014). This means that this data is connected between systems, platforms, and content that allows it to be exchanged and utilised by other sources. In other words, other web resources or researchers can pull these data from Open Context for additional analysis or to combine them with larger, related datasets.

Accessibility of archaeological data has become an important aspect of heritage studies throughout the world, seen with the rise of open-access publication and data across the discipline. Publishing this project through Open Context allows these data to be accessed by anyone, at no cost. This also addresses the fragmentation of the collection, where artefacts, human remains, and archival documentation are spread among several institutions and multiple countries. This web platform allows these disparate materials to be analysed together, despite their global distribution.

As a number of recent projects have highlighted,¹³ while archaeologists produce an enormous amount of physical and digital data, there remains a gap in the actual reuse of said data – material culture is left to sit in storehouses for a generation and digital databases are lost to the curse of evolving technology or the lack of a digital curation strategy. Even those data that are properly archived and accessible through open-access platforms largely remain unused. Open-access data allows researchers to revisit the processes by which an archaeologist arrived at their conclusions, bringing different experiences and perspectives to the data (Beck, Neylon 2012). The project's aim is to (re)use the digital Mecklenburg Collection, facilitating researchers utilising artefact media and archival material to reinterpret the archaeological context or identify patterns in the dataset based on their own expertise.

Conclusion

The *Visualizing Antiquarian Excavations: Digital Reunification of the Mecklenburg Collection* project has a two-fold significance, both methodological and topical. The project takes an innovative approach to disseminating artefactual and archival data, focusing on reusability and accessibility of a dispersed collection. Artefact catalogues are not a new phenomenon in archaeological research, nor are digitally available archaeological datasets. The importance of this collection necessitates a hybrid approach to publishing these data that combines the strength of the artefact catalogue and digital dataset: sharing dynamic, high-resolution media is only possible through a digital platform (a printed publication could not handle the number of images nor would 3D models be useable). The uniqueness of Open Context's approach to data publishing, in which each object is archived with a stable URI, allows long-term reusability of this digital collection. While the entirety of the collection will require time to fully publish, the authors feel that this method of dissemination is forward-looking and fits well with a thorough and considered process of data publication.

In addition, this collection is foundational to understandings of the Slovenian Iron Age, from chronologies and typologies to our understanding of mortuary practices and the social identities of those interred at these sites (Gabrovec 1964–1965; 1966; 1987; 2006; Hencken 1968; 1978; Teržan 1980; 1985; *in press*; Wells 1981; Dular 1982; 2003; Tecco Hvala, Dular, Kocuvan 2004; Gabrovec, Teržan 2008(2010); Tecco Hvala 2012). This collection has been a touchstone for Slovene archaeology, yet there are long-standing concerns about the reliability of grave reconstructions and the provenience of many items. This project will allow scholars to address these issues, expand research on this collection and also facilitate increased use of this collection for education and public dissemination.

Acknowledgements

There are many people and institutions deserving of thanks, without whom this project would not be possible. The authors would like to thank the museums housing the Mecklenburg Collection for their support for this project. Specifically, we thank Laura Costello and Cindy Mackey who graciously facilitated our access to the

¹¹ Data about how the primary data was created. *E.g.*, the 3D scanning technique used in the case of a 3D model.

¹² <http://www.cidoc-crm.org/>.

¹³ See the Saving European Archaeology from the Digital Dark Age Cost Action (SEADDA): <https://www.seadda.eu/>.

Mecklenburg Collection materials and archives housed at the Peabody Museum of Archaeology and Ethnology, as well as Dr. Boštjan Laharnar, Dr. Janka Istenič, and Barbara Jerin who provided access to the materials housed at the National Museum of Slovenia. We also thank Riley Drechsler, who has been an exemplary research assistant in the early stages of this project. The support offered by Open Context has been invaluable, and we can't thank them enough. We must also acknowledge the previous scholars who have studied the Mecklenburg Collection, this project is only possible due to their hard work.

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Vizualizacija starih izkopavanj: digitalna združitev Mecklenburške zbirke (Povzetek)

Prispevek opisuje začetne faze projekta *Vizualizacija starih izkopavanj: digitalna združitev Mecklenburške zbirke*, ki z uporabo digitalnih tehnik dokumentira in predstavlja arheološke materiale. Osredotoča se na zbirko, ki jo je pred prvo svetovno vojno izkopala vojvodinja Mecklenburška, ko je bila današnja Republika Slovenija še del avstro-ogrskega cesarstva.

Vojvodinja Paul Friedrich v. Mecklenburg je devet let (1905–1914) arheološko raziskovala na ozemlju današnjih Slovenije in Avstrije. Izkopavanja več kot dvajsetih najdišč je finančno podprla ali pri njih osebno sodelovala. Pri svojem delu se je držala takratnih standardov zbiranja in dokumentiranja, vendar ti niso primerljivi z današnjimi arheološkimi standardi. Kljub temu se je vojvodinja Mecklenburška umestila med osebnosti, ki so pomembno prispevale k razvoju arheologije te regije.

Njeno arheološko zbirko je družina Mecklenburg dala v tridesetih letih na dražbo, na kateri sta jo kupila Peabodyjev muzej za arheologijo in etnologijo z univerze Harvard ter muzej Ashmolean z univerze Oxford (Ložar 1934; Mahr 1934; Hencken 1968; 1978; Wells 1981; Greis 2006; Dular 2009). V Sloveniji je ostal le del zbirke, ki ga je družina podarila Narodnemu muzeju v Ljubljani (Ložar 1934).

Čeprav vključuje nekatere najpomembnejše in najbolj ohranjene železnodobne najdbe iz Slovenije, je priljubljenost neposrednega preučevanja celotne zbirke dobila zgolj peščica arheologov. Zaradi hrambe zunaj izvorne države in prostorske razdrobljenosti je dostop do zbirke omejen, s tem pa tudi njeno raziskovanje ter vključevanje v javni interes. Tako je eden od glavnih ciljev projekta *Vizualiziranje starih izkopavanj* zagotoviti dostop do arheološkega gradiva ter vseh pripadajočih muzejskih in arhivskih zapisov z namenom preglednejše in zanesljivejše rekonstrukcije grobnih kontekstov. Avtorji predmete iz zbirke dokumentirajo s tehnologijo 3D-skeniranja, pridobljene podatke pa objavljajo v odprto dostopnem spletnem digitalnem repozitoriju in arhivu, s čimer omogočajo dostop zbirke svetovni raziskovalni skupnosti. 3D-modeli omogočajo natančne analize predmetov brez fizičnega stika in s tem preprečujejo morebitne poškodbe oziroma omogočajo dostop do drugače nedostopnih predmetov. 3D-modele predmetov je mogoče digitalno izmeriti, si jih ogledati z vseh zornih kotov in vizualizirati z različnimi možnostmi upodabljanja (na primer brez

fototeksture) ter tako osvetliti sicer skrite značilnosti na površini.

Zaradi svoje oblike, materiala ali stanja ohranjenosti vsi predmeti vendarle niso primerni za 3D-skeniranje. V teh primerih so izdelali visokoločljivostne fotografije vseh predmetov, njihova kakovost pa je primerna za objave. Poleg tega ima vsak predmet tudi natančen fizični opis in navedene točne dimenzije. Cilj projekta je zagotoviti potrebne podatke za preučevanje zbirke na daljavo, v primeru dodatnih, podrobnejših vprašanj pa olajšati komunikacijo z muzeji, ki hranijo predmete.

Ena glavnih težav pri delu s starimi izkopavanji je tudi pomanjkanje dostopa do arhivske dokumentacije, ki bi omogočila preverbo porekla predmetov. V primerih, kot je Mecklenburška zbirka, je težava toliko večja, saj dokumentacijo hrani več institucij. Arheološko preučevanje te zbirke je bilo ovirano zaradi dvomov v kakovost in zanesljivost prvotnih izkopavanj vojvodinje (Božič 2009; 2010; Tecco Hvala 2012, 28), zato je edini način, da raziskovalci lahko sodijo o pravilnosti porekla predmetov, v celoti dostopna izvirna dokumentacija. Posledično je dostop do tovrstnega gradiva nujen. Zato sta, za potrebe tega projekta, muzej Peabody in Narodni muzej Slovenije prijazno posnela vse arhivske dokumente, ki so povezani z izkopavanji kot tudi dražbo zbirke.

Zbrani mediji in podatki bodo objavljeni na Open Context¹⁴, spletnem založniku z odprtim dostopom. Open Context ima do odprto dostopnih podatkov nekoliko edinstven pristop. Razvili so namreč sistem, ki poleg skrbi za podatke vključuje tudi uredniški odbor, ki te strokovno pregleda in zagotovi njihovo kakovost (Kansa, Kansa 2013). Ta sistem je najbolj primeren za v prispevku predstavljen projekt, saj vsak predmet, zbir osteoloških ostankov, arhivski dokument ali kontekst groba/najdbe iz zbirke dobi neponovljiv in stabilen zapis ter lasten, enoten identifikator vira (URI), edinstven niz znakov spletnega vira, ki zagotavlja stabilno spletno predstavitev.

Zapis vsakega predmeta bo opremljen z opisom najdiščnega konteksta, s povezavo do drugih najdb in arhivskih zapisov iz istega konteksta ter s povezavo do sorodnega gradiva. Zapisi in arhivski dokumenti bodo vključevali fotografije visoke ločljivosti, na voljo pa bodo tudi 3D-modeli številnih predmetov. Podatki bodo hierarhično

14 <https://opencontext.org/>.

organizirani, kar bo omogočilo iskanje predmetov ali zbirov osteoloških ostankov glede na različne kontekstne kategorije (npr. grob, gomila, najdišče) in glede na podobne najdbe. Ker posamezni predmeti in zbir osteoloških ostankov predstavljajo posamičen zapis v zbirki podatkov z različnimi URI-ji, v objavah lahko vsako enoto opremimo s citatom in povezavo ter s tem olajšamo širjenje podatkov.

Zaradi obsežnosti zbirke, ki je ocenjena na 20.000 najdb¹⁵, avtorji uporabljajo pristop »od najdišča do najdišča«. Začeli so z gradivom z najdišča Magdalenska

gora, dostop do katerega sta zagotovila muzej Peabody in Narodni muzej Slovenije. Poleti 2019 so avtorji začeli s 3D-skeniranjem, fotografiranjem in zbiranjem arhivskih dokumentov za gomilo VI z Magdalenske gore. Gomila je bila izbrana zaradi obvladljivega obsega, raznolikosti predmetov, ohranjenosti osteoloških ostankov in razmera podrobnih arhivskih zapisov z izkopavanj (Hencken 1978, 41–51). Avtorji trenutno sodelujejo z Open Context in pripravljajo spletno mesto, ki bo v začetku leta 2021 zaživel na povezavi: <https://opencontext.org/projects/b0b44b5d-80f8-4aff-9306-22183c319710>.

¹⁵ Glej Ložar 1934, 7 za diskusijo o težavnosti ocene velikosti te zbirke.
