Unreviewed Mixed Matters Article:

RETOLD: Unlocking the potential of archaeological house reconstructions by standardizing documentation in open-air museums – experiences from the Museumsdorf Düppel in Berlin, Germany

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The Museumsdorf Düppel – a medieval archaeological open-air museum in Berlin – is a good example a bottom-up museum project from the 1970's. The idea to create an open-air

museum was born after the excavation of a medieval settlement had brought to light several house features, wells and objects ranging from pottery sherds to iron artefacts, in south-western Berlin. However, the museum institutions as well as the city council were not interested, paving the way for the foundation of a volunteer society. Founded in 1975, the friend's society for the Museumsdorf Düppel began building houses, making pottery, and rediscovering the different techniques of medieval textile production amongst other crafts, with volunteers coming from a variety of backgrounds. Although the city council eventually began to fund the museum project, the hard work was carried out by amateur enthusiasts with a strong passion for learning and presenting medieval building techniques and crafts to the public. Without these idealists, the Museumsdorf Düppel would not exist today.

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As in most excavations where structures are made of wood, the remaining traces of the medieval houses where only left as discolouration in the sandy soil. No surviving features were found except for postholes and traces of walls made from split planks, as well as some fireplaces. In order to reconstruct houses from such scarce evidence, archaeologists and historic building specialist were consulted for designing viable smaller models before the 1:1 structures were built. Due to the volunteer basis of the growing museums, documentation processes were not structured and most of these early steps were either not documented, or documented but the paperwork was done at home, and therefore not archived and got lost over the years. All archival material concerning the early years of the museum and the volunteer society, was collected privately, or was spread over the stock rooms and offices in the "temporary" shipping containers from the 1970's and 1980's.

It's a shame to have lost all this information. However, without these amateur enthusiasts, the whole project would never have happened, and creativity is often not a linear and structured process. The important aspect is that we are left today with a palimpsest of potential to work with. Not only the 1:1 house models, but also a medieval model landscape with different types of forests, fields, gardens and animals. To start harnessing more of the scientific potential it is not too late to start documenting in a more structured and standardised way. In this article, we will concentrate on house models only.

To start the process, we had a closer look at the available / remaining documentation. One of the most important documents is a word file on the "History of the reconstructed houses in the Museumsdorf Düppel" written and added to by a longstanding volunteer, Dieter Todtenhaupt. He gathered as much information as he could, added repairs and other work done to the houses and kept the document up to date until he had to retire from volunteering. He took photographs he keeps at home; the old slides are all numbered and

referred to in the word document. We are currently in the process of digitising all relevant slides Dieter keeps at home related to the reconstructed houses. Although this document is immensely important, it does not cover everything, especially the first years when the houses were built, as the information was already missing when Dieter started to put the document together.

A further source of potential information on the reconstruction process are the minutes of the board and working group meetings of the friend's society. As mentioned before, the archive material of the society was not collected in a structured way. In 2018 we were able to employ the retiring archivist of the Stadtmuseum Berlin to sort through and organise the archival material. As the society was founded in 1975, there is a lot of paper, but we are now able to sift through the minutes and other correspondence looking for clues on the reconstruction process of the houses. This work is not finished and will take some more time. However, we already have a much clearer picture of the life histories of the Düppel house models.

The material was as ready as it was ever going to be, and we started to think about how best to go about standardizing the documentation. In the everyday running of the open-air museum, questions on the durability of houses, charred wooden posts compared to plain wooden posts and different roof coverings were posed. Other colleagues working in higher education were also asking these questions. However, it was not possible to give clear answers that would withstand scientific standards. And even if our muses had collected data in a coherent way, the set would have been too small to give statistically relevant answers. If on the other hand other open-air museum would collect data in a comparable way, the data set would grow and be increasingly useful for researchers.

Between 2018 and 2019 I corresponded repeatedly with colleagues from other open-air museums about the need to standardise the documentation of reconstructed houses and how best to achieve this. When EXARC approached our museum to take on an EU project on documentation the answer was simple.

The application for the Creative Europe programme was successful and since December 2019, the Museumsdorf Düppel of the Stadtmuseum Berlin, as well as EXARC (Association of Archaeological Open-Air Museums and Experimental Archaeology, Leiden Netherlands as lead partner), the Universitat Autònoma de Barcelona, the National Folklore Museum ASTRA, Sibiu (Romania), the Nüwa Digital Media Content Production Studios, Dublin (Ireland), and the Dithmarschen Stone Age Park, Albersdorf (Germany) are part of the RETOLD project. The aim of the project is to help ensure that open-air museums can continue to provide important information about cultural heritage to a diverse audience in the future. For this purpose, those involved in the project are developing standardized workflows for documenting, digitizing, and sharing data about house construction, craft techniques and traditions.

The Museumsdorf Düppel was primarily responsible for developing parameters for documenting house reconstructions. After researching documentation strategies used by other open-air museums, both archaeological as well as ethnographic ones, the results of this survey were used - together with our own experiences - to create a first draft of documentation forms. These forms were evaluated and used as the basis for creating the web-based application in cooperation between the Universitat Autònoma de Barcelona and Nüwa. Prototypes of the application have been tested at different partner meetings, the aim is to make the application as easy to use as possible, while at the same time standardizing data in such a way that it is comparable when collected through the RETOLD application.

The Museumsdorf Düppel are currently preparing the digital files for inputting into the RETOLD application. Part of the RETOLD application is a tool based on 3D models of the reconstructed houses. The 3D models are used to place marks where maintenance issues have arisen, as well as for the annual documentation walk-through. We were lucky enough to apply successfully for a digitisation project in cooperation with the technical college HTW in Berlin to create 3D scans of the reconstructed houses at the Museumsdorf Düppel. After the historic houses were recorded from the outside as 3D scans by HTW as the first approved digiS project, the interiors of the houses were 3D recorded as part of a second project. The project “düppel:3D” includes the further digitization of cultural assets with a focus on the interiors as well as the digitization of additional artefacts and objects to impart knowledge using virtual reality and game technology in the form of an interactive 3D experience. This means that we have high resolution 3D models to use for testing the RETOLD documentation application. Most of the time open-air museums do not have easy access to 3D models of their houses. This is why, as part of the RETOLD application, there will be easy alternatives in the form of 3D sketches done from simple drawings.

In addition to the work carried out as part of the EU project, there was also a new development in the Stadtmuseum itself to collect experimental archaeological data. An “Experimental Archaeology” collection has been created in the collection database “Daphne” at the Stadtmuseum. Here, all data on the archaeological house reconstructions in the Museumsdorf Düppel, experimental reference collections as well as the results of experiments and experimental replicas are to be documented, archived, and made accessible via the online collection. Reference collections such as the “Pixothek” – a collection of pitch and tar samples created by the tar group of the friend’s society, are regularly requested by archaeologists as comparative material for archaeological finds. Making these materials accessible is a great step forward for experimental archaeology. Long-term data on historical house reconstructions, especially the frequency of necessary maintenance work, can be important not only for archaeological research, but also for research on monument protection.

To have more data on the present-day state of the house reconstructions at the Museumsdorf Düppel, we are currently carrying out a structural damage assessment to evaluate the condition of our reconstructed houses with the help of an external professional in order to obtain an accurate assessment of the houses. The findings can then be used to derive maintenance measures and set priorities. The tips from the professional building damage surveyor, can also help the team to better and more effectively assess the condition of the houses themselves in the future. With the launch of the RETOLD application, the results can also be easily recorded digitally and checked regularly in the future. So far, it has been established that above ground the houses are in a better condition overall than assumed before the assessment. However, the sub-soil parts of most wooden posts had critical damage and need to be replaced. The type of construction has a major influence on the state of the houses. Log houses are seemingly much less susceptible to damage than post and beam buildings. This due to the fact, that log houses do not have sub-soil elements, where moisture leads to rot. The damage observed above soil level was in some cases caused by moisture, which led to fungal growth and rot, but most of the damage was caused by insects. These included the longhorned beetle (Hylotrupes bajulus) and the common house borer (Anobium punctatum), which particularly attacks the sapwood. The results of the building damage assessment can help us in the future to build the houses more durably and effectively, identify repair needs and make maintenance measures more sustainable.

In conclusion we can say that the relative straight forward wish to standardise documentation and to get the archive and information on the house reconstructions in order has grown into a large-scale project with different facets and cooperation's. The aim of documentation using comparable methods will be met through the development of the RETOLD application. However, the different avenues and side projects which appeared along the way are just as valuable and will add to the overall goal of unlocking the potential of the archaeological house reconstructions at the Museumsdorf Düppel for researchers and visitors alike.

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Gallery Image

FIG 1. PLANNING THE FIRST HOUSE RECONSTRUCTIONS IN THE 1970'S (FÖRDERVEREIN MUSEUMSDORF DÜPPEL E.V.)

FIG 2. RENDERING OF A 3D SCAN OF THE INTERIOR OF A HOUSE BY THE HTW (HTW AND STADTMUSEUM BERLIN)

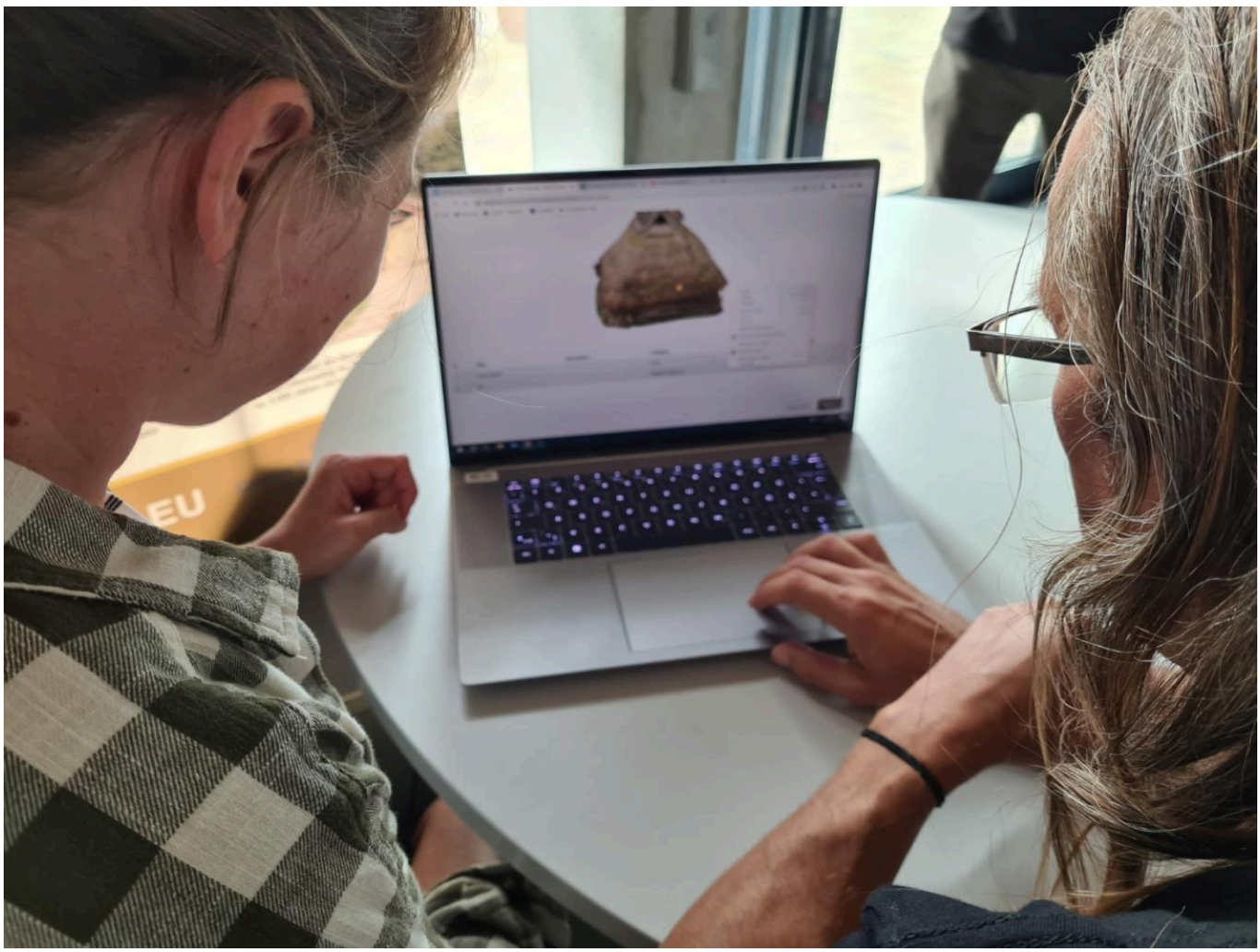

FIG 3. TESTING THE RETOLD APPLICATION (EXARC)

FIG 4. DIGITISATION PROJECT WITH THE TECHNICAL COLLEGE HTW (SCREEN SHOT)

FIG 5. CREATING 3D SCAN OF THE INTERIOR OF A HOUSE RECONSTRUCTION. (HTW AND STADTMUSEUM BERLIN)

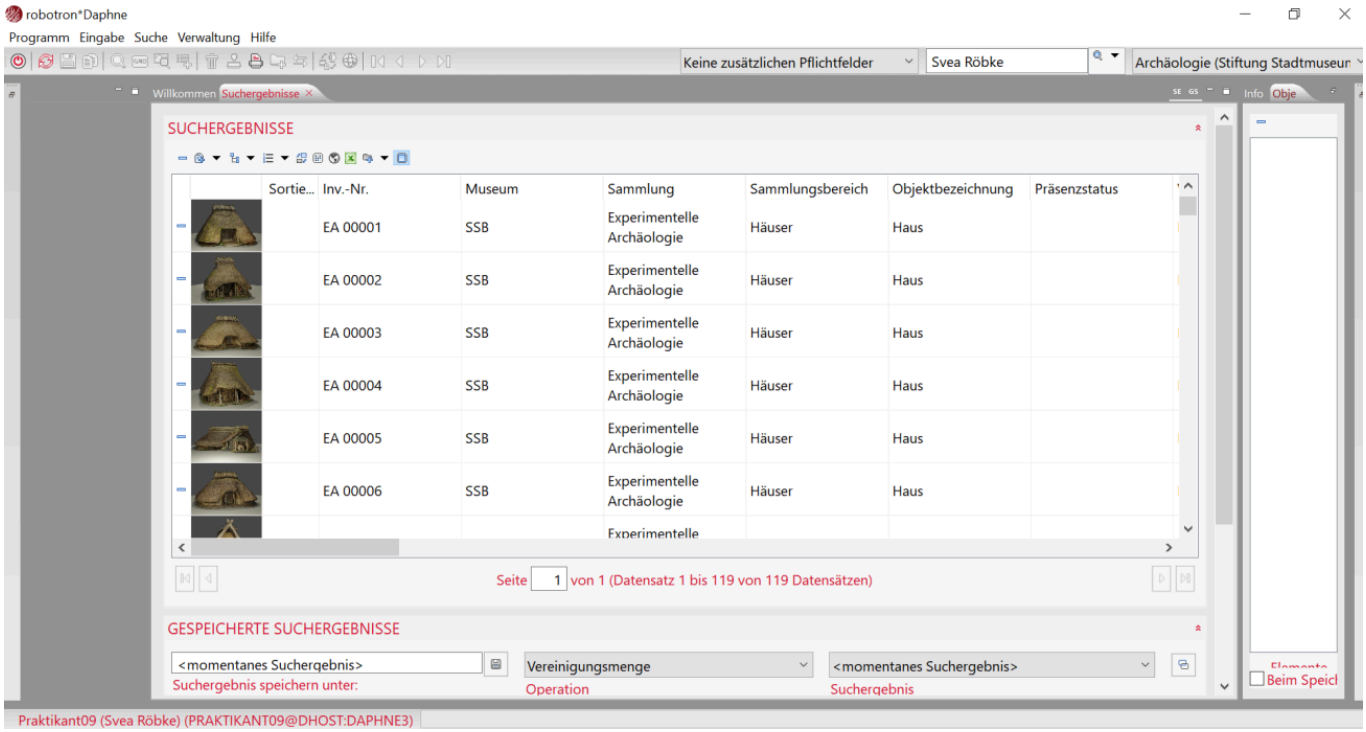

FIG 6. INPUTTING THE DATA ON HOUSE RECONSTRUCTIONS IN THE DATABASE OF THE STADTMUSEUM (STADTMUSEUM BERLIN)