

CHAPTER 8

Enriching Cultural Heritage User Experiences through 3D Interpretive Models at Tafilah and Jerash, Jordan

Safa' Joudeh

MAS design office, Jordan

Marta Lorenzon

University of Helsinki

Abstract

This contribution showcases the integration of digital and community archaeology in Jordan. We analysed the impact of 3D reconstructions on public engagement in archaeological projects, focusing on two case studies that involved diverse stakeholders and communities. Both case studies are central to understanding and discussing the impact on 'living' communities in modern-day Jordan of implementing digital tools and participatory practices.

Keywords: community outreach, 3D modelling, digital archaeology, participatory practices.

How to cite this book chapter:

Joudeh, S. and M. Lorenzon. 2023. 'Enriching Cultural Heritage User Experiences through 3D Interpretive Models at Tafilah and Jerash, Jordan'. In *Living Communities and Their Archaeologies in the Middle East*, edited by R. Bonnie, M. Lorenzon and S. Thomas, 193–210. Helsinki: Helsinki University Press. DOI: <https://doi.org/10.33134/HUP-19-8>.

Introduction

Artefacts, monuments and cultural objects can serve as representations of other places, stories, emotions and depictions of the object's instances and essences. Over recent decades, there has been a progressively higher demand for 3D modelling, recording and visualisation tools. These tools can also be used in community engagement, to involve the local community in decision-making processes regarding their past, its preservation and the research questions heritage specialists should try to answer through their research (Abu-Khafajah 2011; Atalay 2012; Lorenzon and Miettunen 2020). Community archaeology is an active collaboration between archaeologists and local communities not only on the topic of heritage preservation or management but also on research and academic pursuits, transforming archaeology into a multivocal, inclusive and decolonised discipline and enabling it to overcome its colonial roots (Lorenzon and Zermani 2016; Lorenzon 2020; Näser and Tully 2019; Thomas 2017). In the last few decades, digital archaeology and specifically 3D modelling have become an integral part of building community archaeology, specifically in working with the communities to co-create archaeological narratives regarding the heritage past and perceptions of it (Haukaas and Hodgetts 2016; Jeffrey et al. 2020; Lorenzon, Bonnie and Thomas 2022).

This chapter discusses the use of 3D modelling in Jordan as part of the public outreach in archaeological projects, by providing two case studies that focus on diverse communities and complementary participatory practices. We argue that 3D modelling is an active and effective participatory tool to generate interactive engagement in Jordan and provide the basis for co-curation and co-creation of the significance of material culture in the community (Jeffrey et al. 2020; Lorenzon, Bonnie and Thomas 2022; Trepal, Scarlett and Lafrenier 2019). The chapter also addresses the positive and negative aspects of each methodology and their impact on the selected groups and analyses online engagement as a possible alternative to site visits. This latter aspect is particu-

larly relevant, as virtual reconstructions allow material culture to be shared with a wider audience than just local communities and museum visitors, engaging news groups and communities while also providing them with the means to directly interact with a project and affect the co-creation of heritage narratives.

Our first case study is an interpretative project for Qaser al-Basha, a twentieth-century house in the governorate of Tafilah in the south of Jordan. The physical 3D model was directed at engaging the local community of Tafilah, particularly elementary school students, who are categorised here as a non-specialised audience. The second is the restoration, 3D modelling and public display of Roman statues in Jerash, a city in central Jordan. This latter is a high-profile project, which involved many stakeholders and received national and international attention in the media (Rawashdeh 2019) and in the academic debate (Al-Bashaireh et al. 2020; Lepaon and Weber-Karyotakis 2018). The goal in both case studies was to work with the communities to bring useful, informative and meaningful 3D models to different users and to enable them to access the past, define the narrative around it and collaborate to create a reconstruction of Jordanian heritage.

In order to achieve this, we needed to understand and reduce the gap between different archaeological communities:

- a) the archaeological/heritage community: experts who are traditionally concerned with cultural heritage (i.e., archaeologists, architects, conservators, art historians and librarians) and demand such geometrical documentation production;
- b) the digital community: computational specialists able to apply computational tools to the reconstruction of past material culture;
- c) Jordanian citizens and wider international audiences: local communities, who qualify as non-experts but are engaged with cultural heritage (i.e., schoolchildren, museum visitors, populations residing near heritage sites, etc.) (Atalay 2010; Hindmarch, Terras and Robson 2019).

Furthermore, we focus on understanding how cultural heritage objects were embedded within a community's narrative and the wider heritage context. This information may also be valuable in the future if the object is lost or damaged. Finally, we discuss and clarify the digital model's goals and purposes in regard to community outreach, estimate its necessary quality and properties, and, in the end, evaluate the model's success in fulfilling the specific purposes designed by the communities for the communities.

An Architecture Model for Community Engagement and Education: The Case Study of Qaser al-Basha, Tafilah

The al-Oran house – better known locally as Qaser al-Basha – is a prestigious twentieth-century historical house, located in the centre of Tafilah, a city in southern Jordan (Figure 8.1). The house is considered an important example of the prominent and rich cultural architectural style of the city. It is named after its owner, Saleh Basha al-Oran, a revolutionary, high-profile Jordanian political figure during the 1930s. Before being used as an elementary school for the town children between 1930 and 1970, the old house was a venue for private and public meetings, hosting several Tafilah community leaders and prestigious visitors. These included the late King Abdullah Bin al-Hussain, who used to stay as a guest of al-Basha while visiting the south. Therefore, this historical house contains preserved memories of the country's formative period and national history. The al-Basha family hosted important gatherings where high-profile political figures and members of the Tafilah community met to discuss important subjects, from culture to politics. On one level, the house's history and memories have clear significance for those who lived through that historical period and for the house owner's descendants. On another level, this building is also significant to the whole country, as its existence is a concrete reminder of Jordan's modern history and culture. Qaser al-Basha belonged to the great-grandfather of the partner of one of the authors (SJ), Toqaa al-Oran.



Figure 8.1: Qaser al-Basha, Tafileh, Jordan.
(Photo: Toqaa al-Oran.)

The author (SJ) and Toqaa worked on this project during their fourth year of architecture and engineering studies at the Hashemite University, specifically the heritage and archaeological sites management course.

The house is composed of two contiguous parts. The first part is the oldest, with an area of 542 square metres, and was built in two phases at the end of the nineteenth century. Nowadays, this part of the house is uninhabited/abandoned and requires conservation work, as some of its walls and the roof on the west side have partially collapsed. The second part was also built in two phases, with a total area of 230 metres squared. It is habitable, structurally stable and currently used by some family members during weekends and holidays.

The ultimate goal of the house's documentation and modelling process was to create concrete community outreach with the community of Tafilah and engage the community with their cultural heritage and history in order to collaborate on its pres-

ervation (Lorenzon 2015; Lorenzon and Zermani 2016). From the beginning, this project's first target audience was elementary school students. We focused on demonstrating the house's historical and rich architectural styles in an informative yet simple and compelling way that could attract children's attention. Hence, we worked on generating a memorable experience for the children by creating a sense of attachment to their history through an enhanced understanding of relevant aspects of their cultural heritage. We approached the Tafilah primary school and arranged a meeting with the school's principal and a number of teachers; in this meeting we shared our vision, to which they were incredibly responsive. We then collaborated in creating a participatory project in which the schoolteachers and principal took an active part in the archaeological decision-making process (Lorenzon and Miettunen 2021). They recommended the grades and class categories best suited to taking part in the project based on the class curriculum. Our plan consisted of having an initial talk in which the students were presented with the history and aesthetics of Qaser al-Basha house. The short lecture was targeted to suit a fifth-grade history class, therefore aimed at students aged 10–11 years. After agreeing it with the house owners, a school trip was planned to the site to allow students to explore the historical building. In the true spirit of partnership between heritage specialists and the local community based on enabling citizen participation in the project, we conducted multiple debates with the schoolteachers on how we should interpret the cultural heritage of the house and which narratives should be privileged and how, which led to many interesting ideas and possibilities. The chosen and implemented solution was to preserve the forms, history and significance of the house by creating a 3D model, which would allow us to fully engage the target audience while preserving the structures and not putting anyone at risk by roaming through the collapsed part of the building. Hence, a logo was designed for the house, multiple signs and – most importantly – a 3D interpretive model that illustrates the main features of the house. All of these products required intensive study of the house's historical, social,

scientific and aesthetic values (See the Burra Charter for a specific definition of ICOMOS recognised values, ICOMOS 2013; see also Chapter 6 in this volume).

The 3D model was then used to create a physical model to be presented to the students during the lecture and activate their learning during the school trip. In this process, scientific, historical and architectural documentation of the heritage house was conducted, including analysing both the first and second floor and producing plans, cross-sections and a detailed elevation of the façade. To give it a more antique look, the model was crafted from recycled materials and created by a 2D laser cut machine using the documentation drawings and the 3D reconstruction (Figure 8.2). Built dynamically with an open-sectional plan, the model was designed to be played and interacted with. We also strived to make the model informative, engaging and understandable. It helped us to better explain the house details and how its parts function together in interesting ways, and to avoid skipping information.



Figure 8.2: The interpretive model of Qaser al-Basha.

(Photo and model: Safa' Joudeh.)

In coordination with the teachers and the house owners, during our visit to the school we gave a brief presentation, which, using simple language, focused on the historical, social and architectural significance of the house. We emphasised the importance of studying and preserving such houses to understand their significance over time and what means we can use to preserve Jordanian cultural heritage. Afterwards, we gave a practical demonstration using the model itself. Students were encouraged to stand around it and we offered more detailed explanations of the different parts of the structure. These activities were documented through videos and photos. The enthusiastic response of the students and their numerous questions demonstrated that the 3D model helped to enhance the communication between us (as professionals) and the students (as a non-professional audience) and helped to fulfil the educational and engagement goals set by the community.

As the house is located within walking distance of the school, students had frequently passed by the structure long before the class. We took this opportunity to take them on an on-site visit and test their understanding of the structure based on the interaction with the model. The students were very polite, disciplined and eager to learn. The children were encouraged to wander around the house under the teachers' supervision and look for different spaces by using the 3D model to guide them, as we had brought it with us and placed it in the main room (Figure 8.3). This helped us to determine the level of information they understood from the presentation and the 3D model while consolidating their engagement with the historical structure. Their reactions were clear from their expressions, smiling, emotional involvement, engagement and repeatedly asked questions. One child kept going back to the model, pointing out rooms and architectural parts while asking where they were compared with the real house, and we noticed the happiness on her face when she got there by herself. Thus, we also created a game using the model as the starting point, asking students to identify different features in the real rooms, which achieved a higher level interaction among the rest of the students. A proper competition was created in which the children had to



Figure 8.3: Students' site visit to Qaser al-Basha.

(Photo: Toqaa al-Oran.)

discover each other's location and report it back using the model, orienting themselves by directing each other to various parts of the building and identifying features discussed in class.

The outcomes were more than we hoped for. The interpretive material achieved its purposes; we managed not only to bring the students to visit the old house as part of a community project: we also made their visit engaging, fun and educational. The parents of the students reported back to the teachers about how much their children had enjoyed the trip and described it as a 'thorough experience'. Hopefully, this trip will have created new memories of the house for the children, which could bloom into a sense of attachment to their culture and history. This experience will stay in their minds, hopefully making them more responsive to the preservation and revival of their town and Jordan's cultural heritage. Community archaeology projects conducted in other MENA (Middle East and North Africa) countries with similarly aged schoolchildren have resulted in positive outcomes and indicate an increase in community interest in archaeological preserva-

tion, the community's narratives about heritage and communities' archaeological engagement (Lorenzon and Zermani 2016; Näser and Tully 2019; Tully 2015; see also Chapter 3 in this volume).

Restoration and Public Display of Statues using 3D Digital Models: The Case Study of the Great Eastern Baths, Jerash

The second case study focuses on the reception of the 3D models of the classical statues recovered in Jerash. The project was part of the conservation campaign devoted to the restoration and public display of the nine outstanding marble figures from the Great Eastern Baths, a project realised as part of the Mission Archéologique Française de Jerash under the direction of Thomas Maria Weber in cooperation with the Department of Antiquities, the University of Jordan and the German Jordanian University. Creating the 3D digital models for displaying the statues played a significant role during the restoration work and in the process of presentation to a wider public (Weber-Karyotakis 2017).

The initial goal was to determine the best location to display these objects inside the galleries of the museum, which required consideration of several factors. These included the study of the statues and their morphology; the gallery outline, ceiling height, entrances and visitor circulation during a typical Jerash tour; other objects on display; and the materials and colours of the walls. Hence, the main purpose of creating precise digital 3D models was initially to help in accurately selecting the statues' optimal positions for public display and museographic purposes. It also played a significant role in connecting archaeologists and heritage specialists, by visualising different possibilities with the digital specialists who were creating the models and were able, through digital reconstruction, to illustrate different display options. Community archaeology is often implemented with diverse communities, and in this case it created a link between professional stakeholders and local communities in the form of accessible and virtual interaction.

The methodology used to create the virtual display in which the digital environment – i.e., the museum galleries – and cultural objects – i.e., the statues – were combined included three different steps:

1. Creating a to-scale textured 3D digital model of the eight marble figures, before and after restoration, using image-based photogrammetry techniques. The acquisition data process for a precise digitised model of millimetre accuracy occurred alongside the restoration process at the restoration camp.
2. Generating a detailed 3D model of the galleries using Autodesk 3ds Max based on the structure blueprint and on-site measurements.
3. Combining all the models in one digital environment (Figures 8.4–8.5).

The restoration team participated actively in the process of creating the 3D models. Weekly meetings occurred to review the work, share ideas and correct eventual errors based on their expertise, which in turn helped the modelling reconstruction thanks to the

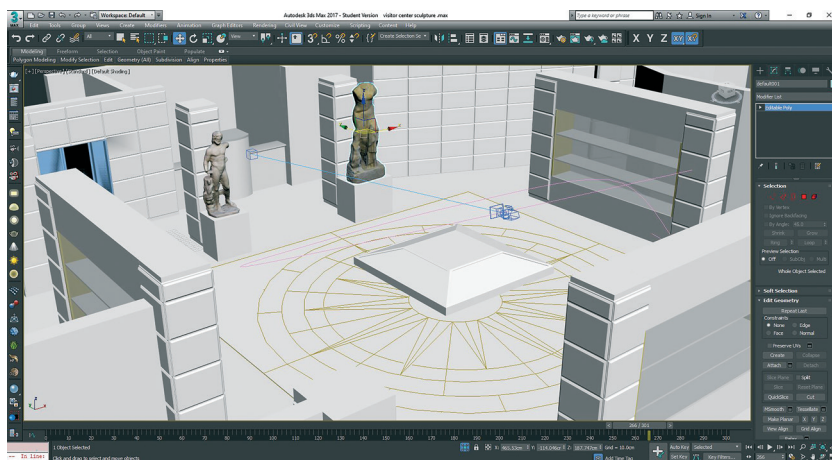


Figure 8.4: 3D digital environment of the Visitor Centre gallery with display of both Aphrodite and Zeus digital models.
(Image: Safa' Joudeh.)

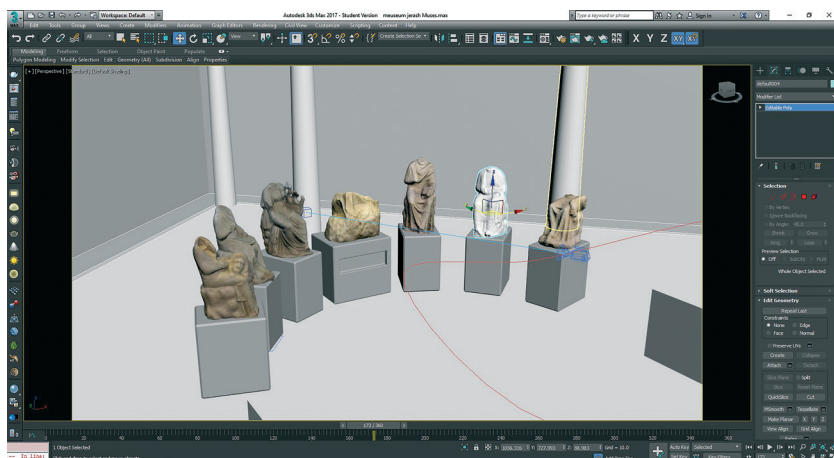


Figure 8.5: 3D digital environment of the Camp Hill gallery with display of the six torsos of the enthroned muses.
(Image: Safa' Joudeh.)

new features discovered during the restoration process. Figures 8.4 and 8.5 present virtual views of two 3D models: one of Aphrodite and Zeus, which are displayed in the virtual Visitor Centre, the other of the torsos of the enthroned muses displayed in the archaeological site museum.

During the restoration process, a number of interested communities visited the project, both specialists and non-specialist groups, such as the Minister of Tourism and Antiquities with a group of archaeologists from the Department of Antiquities, a group of fourth-year architecture students from the Hashemite University, master's students from the German Jordanian University, many fellow researchers, and a few local and international tourists. The 3D models were presented to all of them, which helped them to understand more of the renovation process while also visualising the final effects of the display that the project aimed at. Many questions and follow-up community discussions were triggered about the possibilities of combining the models, especially by the students, creating a co-curation of the future display and moving from simple tokenism to real collaborative museum exhibition.

After the renovation work was finished and the remarkable statues were successfully displayed in the galleries, the digital arm of the project moved forward to prepare the renderings, animations and 3D models for public presentation, and to showcase the project's goals and achievements in conferences and on social media platforms. The virtual display was targeted at both the researchers' community and the general public. While thinking about what kind of information should be highlighted, several approaches were discussed, and specifically we debated which narrative the statues should reflect. For instance, the high-resolution Orthomosaics and renderings were generated to be presented to specialists, researchers and restoration experts (Figure 8.6). This approach helped to illustrate the restoration work, which led to compelling discussions and a sharing of expertise with others, both nationally and internationally, but may have neglected other interested groups in its acute focus on restoration.

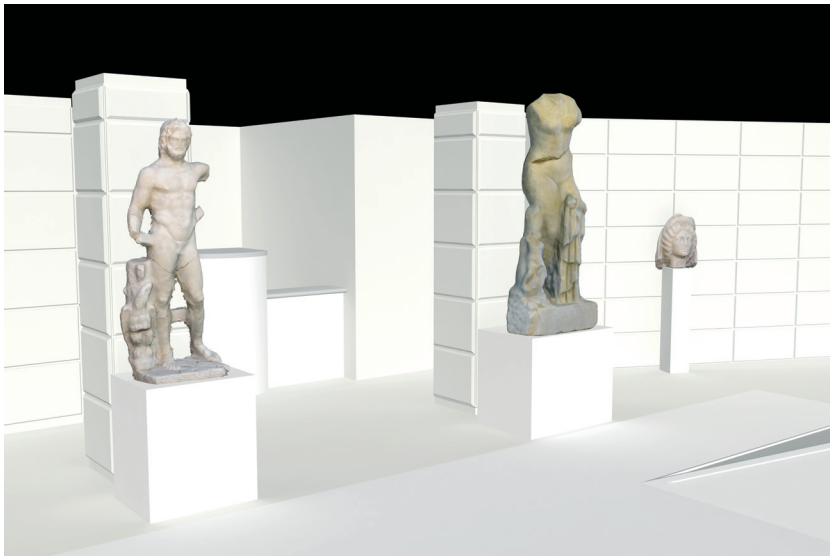


Figure 8.6: Digital display of the objects inside the Visitor Centre gallery.

(Image: Safa' Joudeh.)

We also created fly-through animations of the current display, using Autodesk 3ds Max's render engine, Arnold, and motion graphic programs in order to present the project to the wider public and gauge their reaction to the current display. The level of engagement was easier to observe while presenting at conferences, and harder to do on social media. On such platforms, the common difficulty is to get people to interact with the published content by using interesting techniques and engaging methods (Bonacchi 2017; Jeffrey et al. 2020). Thinking about new approaches and ways to promote the project led to finding more interesting websites and platforms: for instance, Sketchfab, an online platform in which it is possible to publish, share, discover, buy and sell 3D models and virtual reality and augmented reality content. This platform seemed ideal to test displaying the 3D models, with its ability and flexibility to share contents on other platforms as well, such as Twitter, Facebook and Instagram. Assessing the engagement on these platforms is usually based on prepared surveying and questionnaires, along with the number of views of posts, likes, comment, and shares (Bonacchi 2017). We ran an initial survey of the 3D model published on Sketchfab after after years without having promoted the content at all. The model counted 9 likes, 54 downloads, 372 views and only one direct message.¹ We purposely decided not to share the content on other platforms, in order to assess the level of engagement with limited or no input. This clearly verified our initial assumption that to create high engagement on social media, the content needs to be promoted and often linked through diverse platforms. Our future steps would be to actively promote the models in order to assess digital community interactions under different parameters.

Communities and Their Archaeologies

Using 3D tools to interpret cultural heritage objects can enrich communities' experiences when engaging with cultural heritage (Forte and Pietroni 2009; Hindmarch, Terras and Robson 2019; Jeffrey et al. 2018; Lorenzon et al. 2013). The al-Oran palace

project aimed from the beginning to engage the community of Tafilah with their own history and heritage. Therefore, the visualisation approach adopted low-budget techniques and recycled material to build and create the 3D model. Based on the reactions and actions of the students while interacting with the model, as well as the reporting from both teachers and parents, the interpretive model achieved its goals and the community outreach was a success. In the second case study, the restoration process of the marble statues directly benefited from the 3D modelling and visualisation tools. Using image-based modelling and combining this with other 3D and rendering software fitted the nature and the dynamic of the project. The 3D models have the added benefit of also helping with direct engagement with specialist recipients and interested visitors, a new target audience, carefully presenting and illustrating the marble statues while explaining their history and archaeological value. Furthermore, online outreach through several social media channels was undertaken and is still ongoing. The interaction with the content was light, but several groups that are part of the Jordanian community – i.e., colleagues, friends and local actors – were impressed with the work, and they were highly appreciative of the information provided. It is important to note that several groups were interested in both case studies and these communities clearly overlapped, such as community archaeology and heritage specialists.

Finally, the two case studies employed 3D modelling to engage and address diverse living communities active in Jordan who are engaged with archaeological heritage. The first case study's main goal was to involve children, teachers and parents, thus different groups within the Tafilah local community. The 3D modelling methods in the second case study were more advanced, articulated and oriented to benefit the project process and communication between its different specialist stakeholders. Thus, the focus was initially on heritage and digital specialist communities, but eventually it also became relevant to the non-specialist communities that constitute the wider national and international audience and helped in the co-curation of the project. Our case stud-

ies showcase how archaeologies in Jordan involve multiple living communities, and demonstrate that computational archaeology is an effective and compelling tool to engage them and provide fertile ground for archaeology co-curation.

Acknowledgements

We would like to thank our partner Architect Toqaa al-Oran and the Amuriya Elementary School and all its personnel, Professor Weber-Karyotakis, Director of the Jerash sculptural restoration, and the funder Gerda Henkel Foundation Mare Nostrum for their kind assistance and permission to present the statue models. We also would like to acknowledge USAID-SCHEP-ACOR for their financial support. All mistakes are our own.

Notes

- 1 See <https://skfb.ly/6XvIU>; data from June 2022.

References

- Abu-Khafajah, S. 2011. 'Meaning-Making Process of Cultural Heritage in Jordan: The Local Communities, the Contexts, and the Archaeological Sites in the Citadel of Amman'. In *New Perspectives in Global Public Archaeology*, edited by K. Okamura and A. Matsuda, 183–96. New York: Springer. https://doi.org/10.1007/978-1-4614-0341-8_14.
- Al-Bashaireh, K., T.M. Weber-Karyotakis, N. Abu-Jaber and T. Lepaon. 2020. 'Marble Sculptures from the Great Eastern Baths of Gerasa (Jordan): The Sources of the Marbles'. *Bulletin of the American Schools of Oriental Research* 384 (1): 21–43. <https://doi.org/10.1086/710386>.
- Atalay, S. 2012. *Community-Based Archaeology: Research with, by, and for Indigenous and Local Communities*. Oakland: University of California Press.
- Atalay, S. 2010. "'We Don't Talk about Çatalhöyük, We Live It": Sustainable Archaeological Practice through Community-Based Participatory Research'. *World Archaeology* 42 (3): 418–29. <https://doi.org/10.1080/00438243.2010.497394>.

- Bonacchi, C. 2017. 'Digital Media in Public Archaeology'. In *Key Concepts in Public Archaeology*, edited by G. Moshenska, 60–72. London: UCL Press. <https://doi.org/10.2307/j.ctt1vxm8r7.9>.
- Forte, M. and E. Pietroni. 2009. '3D Collaborative Environments in Archaeology: Experiencing the Reconstruction of the Past'. *International Journal of Architectural Computing* 7 (1): 57–76. <https://doi.org/10.1260/147807709788549349>.
- Haukaas, C. and L.M. Hodgetts. 2016. 'The Untapped Potential of Low-Cost Photogrammetry in Community-Based Archaeology: A Case Study from Banks Island, Arctic Canada'. *Journal of Community Archaeology and Heritage* 3 (1): 40–56. <https://doi.org/10.1080/20518196.2015.1123884>.
- Hindmarch, J., M. Terras and S. Robson. 2019. 'On Virtual Auras: The Cultural Heritage Objects in the Age of 3D Digital Reproduction'. In *The Routledge International Handbook of New Digital Practices in Galleries, Libraries, Archives, Museums and Heritage Sites*, edited by H. Lewi, W. Smith, S. Cooke, and D. vom Lehn, 243–56. London: Routledge.
- ICOMOS. 2013. *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Burwood, Victoria: ICOMOS.
- Jeffrey, S., S. Jones, M. Maxwell, A. Hale and C. Jones. 2020. '3D Heritage Visualisation and the Negotiation of Authenticity: The ACCORD Project'. *International Journal of Heritage Studies* 24 (4): 333–53. <https://doi.org/10.1080/13527258.2020.1731703>.
- Lepaon, T. and T.M. Weber-Karyotakis. 2018. 'The Great Eastern Baths at Gerasa/Jarash Report on the Excavation Campaign 2017'. *Annual of the Department of Antiquities of Jordan* 59: 477–502.
- Lorenzon, M. 2020. 'Architecture and Gender: Lessons from Building Archaeology in Africa'. *Postcolonialism, Heritage, and the Built Environment: New Approaches to Architecture in Archaeology*, edited by J. Nitschke and M. Lorenzon, 13–25. Cham: Springer.
- Lorenzon, M. 2015. 'Arica and Parinacota: A Successful Example of Integration between Cultural Tourism and Heritage Preservation'. In *Current Trends in Archaeological Heritage Preservation: National and International Perspectives, Proceedings of the International Conference, Iași, Romania*, edited by S. Musteață and Ș. Caliniuc, 91–96. Oxford: Archaeopress.
- Lorenzon, M. and P. Miettunen. 2020. 'Community Archaeology 2021: Building Community Engagement in Jordan at a Time of Social Distancing'. *Archeostorie: Journal of Public Archaeology* 4. https://archeostoriejpa.eu/2020_3b/.
- Lorenzon, M. and I. Zermani. 2016. 'Common Ground: Community Archaeology in Egypt, Interaction between Population and Cultural Heritage'. *Journal of Community Archaeology & Heritage* 3 (3): 183–99. <https://doi.org/10.1080/20518196.2016.1207833>.

- Lorenzon, M., R. Bonnie and S. Thomas. 2022. 'Discussing Ethical Practices in Archaeology: Decolonization, Open Data, and Community Interaction in Jordan.' In *Digital Heritage & Archaeology in Practice: Presentation, Teaching, & Engagement*, edited by E. Wathrall and L. Goldstein, 125–42. Gainesville: University Press of Florida. <https://doi.org/10.2307/j.ctv2pfq2jj.10>.
- Lorenzon, M., S. Chapman, R. Littman and J. Silverstein. 2013. '3D Modeling and Mudbrick Conservation at Tell Timai, Egypt.' In *Proceedings of the 18th International Conference on Cultural Heritage and New Technologies, 11 November*, 1–11. Wien: Stadt Archaeologie Wien.
- Näser, C. and G. Tully. 2019. 'Dialogues in the Making: Collaborative Archaeology in Sudan.' *Journal of Community Archaeology & Heritage* 6 (3): 155–71. <https://doi.org/10.1080/20518196.2019.1629742>.
- Rawashdeh, S. 2019. 'Great Jerash Baths Bear Marks of Human Destruction.' *The Jordan Times*, 10 September. Accessed 25 October 2022. <https://jordantimes.com/news/local/%E2%80%98great-jerash-baths-bear-marks-human-destruction%E2%80%99>.
- Thomas, S. 2017. 'Community Archaeology.' In *Key Concepts in Public Archaeology*, edited by G. Moshenska, 14–30. London: UCL Press.
- Trepal, D., S.F. Scarlett and D. Lafreniere. 2019. 'Heritage Making through Community Archaeology and the Spatial Humanities.' *Journal of Community Archaeology & Heritage* 6 (4): 238–56. <https://doi.org/10.1080/20518196.2019.1653516>.
- Tully, G. 2015. 'Community Archaeology in Sudan: Discovering Mogrart Island Together.' *Der antike Sudan. Mitteilungen der Sudanarchäologischen Gesellschaft zu Berlin*, 26: 201–04.
- Weber-Karyotakis, T. 2017. 'The Sculptures from the Eastern Great Baths: Old and New Finds.' In *The Eastern Baths at Gerasa/Jerash: Preliminary Report on the 2016 Campaign*, edited by N. Turshan, T.M. Lepaon and T. Weber-Karyotakis, 477–501. Düsseldorf: Gerda Henkel Stiftung. <https://doi.org/10.23778/ghs.edit.2017.1>.