

COURSE OUTLINE
ANTHROPOLOGY 4407G/9112B
i-ing the Past: Digital Archaeology and Digital Heritage
Winter 2021

Class Meetings: Thursdays 1:30-4:30 pm

Classroom: Zoom, Synchronous

Instructor: Neal Ferris

Office: SSC 3215

Office hours: After class or anytime Mondays – for Mondays, email me when you want to meet, and I will reply by inviting you to a Zoom meeting

Email: nferris@uwo.ca

Please note: *I am cross-appointed with the Museum of Ontario Archaeology, which means I have duties there (virtually or physically) on other days during the week that may preclude my access to Zoom. If you need to see me other than Mondays or after class, please email me to schedule a time to meet.*

Credit value: 0.5 credit

Please note: *This course is cross-listed with graduate and undergraduate students and has limited enrolment. An application is required for interested undergraduate students provided by the Anthropology Department.*

Calendar Description: This course will explore the implications of digitizing the practice of archaeology and interacting with the past digitally. How does this digital world change methodologies, analyses, and even how we interpret and think about the archaeological heritage? What are the implications for understanding the past and making the archaeological heritage accessible beyond archaeology, as it becomes engaged with, challenged, and re-imagined online and within social media and a global digital community?

The intent of this course is to understand the implications of digital archaeology and of a digital heritage arising from that archaeology. It is NOT a how-to course, and digital novices as well as seasoned digital mavens, will be able to manage the expectations for this course, including any hands-on experiences using digital equipment.

This course is cross-listed and will have both graduate and undergraduate students. Assignments will be differently valued between undergraduate and graduate students, and graduate students will be expected to lead class discussion once. The course will operate as a discussion seminar, combined with presentations. Keep in mind that a course on Digital Archaeology is somewhat open-ended, being easier to define what it is not than what it is. To make this

work, you need to come to class prepared with questions and observations about the day's readings and topical focus. We will be having a dialogue, NOT a text thread or me talking and you liking it or not.

Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Synthesize the history of how digital technologies have been used in archaeology and the unique opportunities those technologies provide for research;
- 2) Communicate the implications of an archaeology made digital, as a science, as a social media, and as a heritage consumed online, based on your exploration of what making archaeology and heritage digital encompasses, and as part of social media expectations for the course;
- 3) Synthesize the key issues and debates inherent in digitizing archaeology, from issues of accuracy, authenticity, and authority in presentation; challenges of making meaning from "big data"; negotiating intellectual property issues inherent in 3D models, immersive environments, and 3D printing; the potential of gaming, AR and VR as cultural heritage learning and empathy; and alternate archaeologies arising from re-purposing digital data;
- 4) Identify the limitations and real risks involved in embracing an archaeological heritage dependent on hardware and software that can be proprietary, transitory, and prone to obsolescence in a profession whose aim in part is to preserve the record of the past;
- 5) Apply the principles of an informed and reflexive digital archaeology through your use of digital technologies and media to preserve, convey, or re-imagine the archaeological record as heritage.

Course Evaluation:

1. Class Participation 10% for all:

This mark will be based on your engagement in class discussions and presentations. I will expect your ability to participate and help shape the direction we follow in class to reflect whether you are an undergraduate or graduate student.

2. **Blogging Digital Archaeology 20% undergraduate, 10% graduate:**

I have set up a blog page for this course:

<http://i-ingthepastarch.blogspot.ca/>

All students are expected to contribute 3 blogs at some point during the course. These posts can be on any dimension of digital archaeology and heritage you wish to highlight or debate, arising from something you tripped across online, class discussions, or whatever happens to be on your mind and can fall somewhere, somehow, within a box called "digital archaeology/heritage." You need to discuss the topic in a coherent, reflexive way for the post to count, not just describe a link or what someone said about something (you are welcome to also post humour or links without reflexivity, but those won't count). You are also free to exceed the minimum number of posts, if you'd like.

In addition, everyone will be expected to post comments **a minimum of 4 times** (please don't wait till the last week or two and jam everything in. That will affect your mark). Commentaries can be brief, informal, and written to either convey opinion or information and either expand on the original post or refute some point raised. Do make sure that all posts and comments are respectful of each other's perspectives. I will remind everyone a couple of times to participate in the blog, but I expect you to make it a regular part of your course prep!

I have a few entries up now, including from earlier versions of this course, to give you a sense of the range of posts that worked before.

Note: I will need your email address to allow you to contribute to the blog.

3. **Social Media/Website Review undergraduate 20%; graduate 15%**

The one certainty in the topic of archaeology, heritage, and the past is that there is an endless supply of web pages, Twitter feeds, TicTok videos, Facebook/Instagram posts, etc., from which to explore the diversity of these topics. They can run the gambit from archaeological organization sites, communities of practitioner pages, to avocational group forums, artifact collectors, heritage groups, and those who want the past to explain the present or reveal "truth," secrets and conspiracies that explains a personal sense of nihilism. So the other certainty is that, in an age where facts and "the truth" are just someone else's opinion, readily filtered out from personal exposure through simple "recommended for you" algorithms, ALL understandings of the past, no matter how fantastical, are accommodated online and consumed by like-minded audiences, while within

alternate algorithms one can find endless blogs, posts or pages devoted to debunking others' opinions.

In this assignment, students will review websites, channels, pages, feeds, etc., that explore some dimension of the archaeological heritage (**undergraduates – 2 sites; graduates 3-4 sites**). Your sites must reflect a common theme that "makes sense," are contrasting from each other, and somehow links the different choices you've made under that theme. Themes can include "Communities of archaeologists/archaeologies;" "Things/Peoples;" "Fantastical understandings of the past and the opponents;" or "Heritage as Inclusion/Exclusion." You will need to research and select the pages you want to talk about, and **email me the links to your choices by February 4th**, explaining how these pages fit a theme.

Starting February 11th, individuals will present to the class their CRITICAL EVALUATION of those pages and how they appear to engage the online world (1 presentation per class). You will need to consider who you think the site authors imagine their audiences to be vs who their audience actually appears to be; what is their stated messaging vs unintended messaging; do they facilitate discussion, promotion, or research about the past, assert a clear agenda, or they more about clickbait and generating revenue? And how do the differing perspectives across those sites convey archaeology and heritage differently? These can be relatively benign viewpoints, such as from metal detectors or artifact collectors and their assertion that they are legitimate researchers; to pages or channels devoted to beliefs of aliens, giants, the archaeology of Bigfoot, or fantastical explanations of archaeological phenomenon or heritage; to conspiracy-driven refutations of archaeological "proof" or heritage or explaining racial/ethnic membership/exclusion. So I am looking for a critical analysis of content and messaging. I am NOT looking for you to evaluate the general usability or appearance of the UX/UI, provide a descriptive summary of their content, or tell me what you liked/didn't like. So you are less analyzing the content and more critically thinking reflexively over the intent behind that content.

Note: For this exercise, we are not exploring heritage-based interpretations of the past by communities arising from oral traditions or written document records that refute archaeology.

Presentations should be 15-20 minutes long and will be followed by a class discussion. You will need to generate a Powerpoint or other form of presentation and provide us with a tour through those sites. Please make sure you have adequate internet service to share your presentation/tour with us, or share your presentation with me so I can do so for you.

Following your presentation, you will need to submit a short written report (2 pages) the following week. The written component should be restricted to

evaluating the main comments/thoughts/issues that came to light in the class discussion and provide your assessment of these issues.

4. **Leading Class Discussion on Readings (graduate students 15%):**

Over the duration of the course, graduate students choose a week's topic and then lead the class in a discussion on the topic/assigned readings. You will need to draw out the key themes, as you see them, that the readings collectively raise. You will be expected to generate a presentation (on the key themes related to the topic that you have identified from the readings), in order to start the class discussion off from there. Your introductory presentation should be no more than about 20 minutes long, or broken up to allow discussion under each theme topic. If you really wish, you can propose replacing up to 2 of the assigned readings with others you'd prefer to include in the discussion, but check with me first.

Feel free to bring in additional information, case studies, video clips, structure your presentation as a debate, bring in virtual cookies or prizes (!) to get people talking, etc. You'll be marked on your presentation, your ability to flag key issues, your ability to generate and sustain discussion, and your ability to help lead that class discussion. Much of the literature for these topics is available, not surprisingly, online, so make sure your additional readings are also accessible online. Students can begin leading class discussions in February.

5. **Digital Projects (Undergraduate 2 x 25%; Graduate 2 x 25%):**

These projects will consist of students doing "something" digital. Given the circumstances the course will be conducted under, it is not possible for us to undertake hands-on projects or take a trip over to the Museum of Ontario Archaeology to work with the digital technologies available there. Instead, I will ask you to undertake projects that you can undertake independently and online.

a) **Photogrammetry:** You will create a 3D model through the use of photogrammetry applications, either directly on your phone, or by importing a series of photos onto your lap/desktop. The idea is to create a 3D model of an object that you *could* argue is an artifact, archaeological context, or piece of heritage. To do this, I would like you, if you can do so safely, to go out in the world and find something you wish to make into a 3D model (e.g., a statue, plaque, found object, a cluster of litter, etc.). Then take a number of photos that can be formed into a 3D model.

Photogrammetry basically means taking a lot of 2D photos from every angle around a thing/area, that will collectively be stitched together within an app/piece

of software to create a 3D model of that thing. There are endless guides and tutorials online to [inform](#) how you should take those photos, and what can best be the subject of a future 3D model, depending on the app/software you use. Three video guides I've highlighted at random include this [one](#), this [one](#), and this [one](#).

As those tutorials suggest, you can access [Meshroom](#) to convert your photos into a 3D model. I find it clunky, slow, but it is also free, and far better than earlier software. And [Blender](#), likewise clunky and has a bit of a learning curve, can be used to clean up your model if you want to follow tutorials. [Meshmixer](#) is another free option for cleaning up 3D files. Alternatively, [ODATE](#) includes an exercise tutorial you can follow in [Section 4.1.3](#) to create a model using the open-access software application [Regard3D](#). It is a bit dated and definitely a clunky process, but feel free to follow this method, if you prefer, and want to go the extra mile.

Alternatively, you can create a 3D model simply using an app on your phone. Popular apps include [Trino](#) (video [here](#)), [Qlone](#) (video [here](#)), [Scandypro](#) (video [here](#) and [here](#) note this is less photogrammetry and more fixed scanning, so try this only if nothing else is working for you), Capture: 3D Scan Anything, and Scann3d for Android (video [here](#)). Of course, there are many other options, too, and more coming out all the time, while others get bought up or dropped. Some are free, while others have a small cost. Most take your photos to the cloud to render, while some do it on your device. Most will generate a 3D model in one of the standard formats (.obj, .ply, .stl), which is critical. Some of these options generate a model you can only see on your phone, others will allow you to upload the model as a file or to a website. Some, by the way, will charge you to see the rendered model or expect you to pay to get the model. But their advantage tends to be they are designed to work seamlessly with your phone and optimized for the photo standards phones use.

The aim of this exercise is to generate a 3D model that can be viewed in 360° orientation. I would also like you to try your hand at cleaning your model as best you can, then upload it as an .obj, .stl, .ply model with texture (i.e., colour) to [Sketchfab](#), since we also want to think about these DIY hosting sites. You will need to create an account with Sketchfab, but it will not cost you anything to upload one 3D model.

You will need to complete this assignment before **February 25th**. On that day, everyone will present their model to the class (so it will need to be viewable, one way or the other, as a 3D model). You will review how you went about selecting a method, what software you used (and rejected), what methods you used, what worked, didn't and what made you pull your hair out, and then make a case for your model being somehow archaeology/heritage in nature (humour here is fine!).

Everyone will need to submit, on the same day, **a written log or diary of the steps you followed**. I do want to know if you tried more than one method, what decided the choice you made, the UTM or latitude/longitude of the object or place scanned, how many photos you took, what, if any, camera settings you adjusted, how you cleaned up the model, and your experiences, if applicable, to uploading the model to Sketchfab. **Graduate students will ALSO need to include a 750 word critical evaluation of Sketchfab** as a source/place for accessing heritage models.

b) Developing a Mobile App for an archaeology museum On February 25th in class we will meet and hear from Museum of Ontario Archaeology staff about the range of digital archaeology initiatives they have developed or are developing, both to facilitate care and management of the archaeological collections they hold, or for educational content for patrons of the Museum. Following that class, your final digital project will be to conceive of and prototype an app concept for use on a mobile device that delivers a digital archaeology need specifically for in a museum context. For inspiration, this is a [link](#), and [another](#) about digital Museum apps generally, for [archaeological practices](#) and [fieldwork](#), and digitally making archaeology accessible [here](#).

The idea is for you to hear what the Museum staff are thinking about, then brainstorm ideas that might be useful to the Museum to sponsor the development of, either for visitors, staff, or researchers, to study, learn, or appreciate the archaeological heritage. Options can range from a digital comparative library of artifacts, reporting site finds or having objects identified, to learning about the archaeology of Ontario, to Augmented or Virtual Reality exhibits, to functions more for practitioners, such as e-forms, onsite databases, 3D augmented mapping, walkthroughs, to instant public feedback on field discoveries in less than a 140 characters. Well, the sky is the limit here since you are developing the idea, not coding the final product! Once you have come up with an idea, I want you to email me what it is before running with it (Please send me your idea by March 11th).

You will then need to lay out how the app would work by designing a “user flow” (how the app is engaged with by the user) - in effect a flow chart of app faces. Then you would need to wireframe or rough sketch out how the app works, that mock-ups individual app faces, and mimics what happens when a user clicks a button or opens a different function. There are really good guides online for doing this. [Here](#) is one example, and here are a couple of videos planning out an app when you have a good idea ([here](#) and [here](#)), but there are a lot (some designed to make you buy their software, others just helping), so feel free to find something that works for you. Warning: watch out for the “make you rich with no work” tutorials and “free” programs so you don’t get spammed!

Now, the easiest way to wireframe an app and even mock-up user experience and functionality is pen and pencil (yep, old school)! Draw app faces, provide the functions you think should appear on each, then photograph them and compile them into a Powerpoint presentation to mimic what happens when you click on buttons and such. So, if you are totally intimidated by using any wireframe programs, analog will work for the assignment.

But assuming you are game to make your wireframe digitally, do look into some of the many programs available for helping you develop your app idea. Several are not free, but typically offer a 30 day free trial. Of those, [Balsamiq](#) has been around for awhile, and is pretty slick. It does have a learning curve, but there are a lot of videos, tutorials, and group forums to support using it. It does offer a 30 day free trial, so if you are ambitious and want to try it, go ahead. [Mockplus](#) works well and has a number of phone or tablet face templates for you to design individual pages of your app. The basic version is free. [Justinmind](#) (see video tutorial [here](#)) also offers a 30 day free trial. Other programs that are open source include [PencilProject](#), while [frame box](#) is a mock-up site for creating app faces that is free to use, so a kind of digital pen and pencil way of mocking up an app. [Bubble](#), is a pretty slick program. It is designed more for web apps rather than mobile apps, but it also offers a free trial. Lastly, I haven't tried it, but [Glideapp](#) (video tutorial [here](#)) may be worth considering too. Of course, you may find a better option, so feel free to use what works for you.

During our last class on April 8th, each of you will be asked to present your app idea, and present the wireframe/mockup you've been able to create to demonstrate the operation and features of your app. You'll have 15-20 minutes to discuss your thinking behind the app, how you developed the app, how well (or how hard) it was to develop the idea to a wireframe, and why you think your app is something the Museum should use. You should present your project as a "pitch," since you will have developed the project to a concept stage, rather than completed the end project. You are pitching the app to the rest of the class, but I will also ask Museum staff to sit in on the presentations, and they can offer feedback!

Following the final class, I would like you to submit a 4-5 page (undergraduate) or 7-8 page (graduate) report reviewing your experiences and challenges. Graduates students will also need to reflect on the themes of authority and authenticity these digital tools convey in Museum contexts, especially the pluses and negatives of using these apps to communicate archaeology beyond just other archaeologists. Please also provide me with a link to your app, or copy of your presentation, so I can review how the app came about.

Final reports will be due April 15th (undergraduates) and April 30th (graduates).

Submitting Assignments: Please submit all written assignments as Word (.doc or docx) or Google docs files, submitted on OWL, **NOT as pdfs**. Please also provide copies of all presentations, again submitted on OWL.

Course Specific Statements and Policies:

Statement on Seeking Special Accommodations:

No accommodations will be granted retroactively after an assignment's due date. Please see your academic counsellor immediately if you will be seeking accommodations based on medical or compassionate grounds.

Statement on Plagiarism:

Students must write their assignments in their own words. Whenever students take an idea from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing. It is also a scholastic offence to submit the same work for credit in more than one course. Plagiarism is a major scholastic offence.

Institutional Statements and Policies

All students should familiarize themselves with Western's current academic policies regarding accessibility, plagiarism and scholastic offences, and medical accommodation. These policies can be found at <http://www.westerncalendar.uwo.ca/academicPolicies.cfm?SelectedCalendar=Live&ArchiveID=> or by clicking on this link: [Academic Policies](#).

CLASS Schedule:

Readings will be accessible online. Note: Readings will be augmented by students leading the class discussion as required

1. Jan 14th: Defining Digital Archaeology... sort of

We will go over the course outline, discuss course expectations, and review assignments. We will also discuss just what a “Digital archaeology & Digital heritage” means to each of us.

2. Jan 21st: Some Context and Introspection – Readings:

Beale, Garth and Paul Reilly

2017 After Virtual Archaeology: Rethinking Archaeological Approaches to the Adoption of Digital Technology. *Internet Archaeology* 44

<https://doi.org/10.11141/ia.44.1>

Graham, Shawn

2020 Digital Archaeology Raising the Dead with Agent Based Models, Archaeogaming and Artificial Intelligence. Berghahn. Read the Introduction Chapter. **Available online through Western Libraries electronic catalogue**

Huggett, Jeremy

2015 A Manifesto for an Introspective Digital Archaeology. *Open Archaeology* 2015 1: 86-95. <https://www.degruyter.com/view/j/opar.2014.1.issue-1/opar-2015-0002/opar-2015-0002.xml>

Huvila, Isto

2018 Introduction. In *Archaeology and Archaeological Information in the Digital Society*, edited by I. Huvila, pp. 1-12. Routledge. **Available online through Western Libraries electronic catalogue**

Tanasi, David

2020 The Digital (within) Archaeology. Analysis of a Phenomenon. *The Historian*. 82(1): 22-36.

<https://www.tandfonline.com/doi/pdf/10.1080/00182370.2020.1723968?nedAccess=true>

3. January 28th: On What we think “Becoming Digital” means in Archaeology and in Heritage

Batist, Z. et al

In press Figurations of Digital Archaeological practice in two Mediterranean Fieldwork Projects. *Open Archaeology*. **Paper available through OWL**

Caraher, William

2019 Slow Archaeology, Punk Archaeology, and the Archaeology of Care. *European Journal of Archaeology* 22(3): 372-385. **Available online through Western Libraries electronic catalogue**

Dallas, Costis

2009 From Artefact Typologies to Cultural Heritage Ontologies: Or, an Account of the Lasting Impact of Archaeological Computing. *Archeologia e Calcolatori* 20: 205-221. http://soi.cnr.it/archcalc/indice/PDF20/17_Dallas.pdf

Musiani, Francesca and Valerie Schafer

2017 Digital Heritage and Heritagization. *Patrimoine et patrimonialisation numériques*. 6. <https://journals.openedition.org/reset/806?lang=en>

Wilkins, Brendon

2020 Designing a Collaborative Peer-to-peer System for Archaeology: The DigVentures Platform. *Journal of Computer Applications in Archaeology* 3(1): 33-50. <https://journal.caa-international.org/articles/10.5334/jcaa.34/>

PLUS: Watch this brief video of some folks explaining how they “became” digital archaeologists: <https://www.youtube.com/watch?v=z6zJo4SHSv8>

4. February 4th: Archaeology as Social Media (Ashley Leading Discussion)

Bonacchi, Chiara, mark Altaweel and Marta Kryzanska

2018 The Heritage of Brexit: Roles of the Past in the Construction of Political identities Through Social Media. *Journal of Social Archaeology* 81(2):174-192. **Available online through Western Libraries electronic catalogue**

Caldarola, Giovina, et al

2020 Communicating Archaeology in Social World: Social Media, Blogs, Websites, and Best Practices. In *Developing Effective Communication Skills in Archaeology*, edited by Enrico Proietti, pp. 259-284. IGI Global. **Available online through Western Libraries electronic catalogue**

Maniou, Theadora

2021 Semantic Analysis of Cultural Heritage News Propagation in Social Media: Assessing the Role of Media and Journalists in the Era of Big Data. *Sustainability* 13(1). <https://www.mdpi.com/2071-1050/13/1/341>

Taylor, Joel, and Laura Gibson

2016 Digitization, Digital Interaction and Social Media: Embedded Barriers to Democratic Heritage. *International Journal of Heritage Studies* 23(5): 408-420. **Available through Western Libraries electronic catalogue**

Perry, Sara, and Nicole Beale

2015 The Social Web and Archaeology’s Restructuring: Impact, Exploitation, Disciplinary Change. *Open Archaeology* 2015: 1:153-165. <https://www.degruyter.com/view/j/opar.2014.1.issue-1/opar-2015-0009/opar-2015-0009.xml?format=INT>

5. February 11th: Photogrammetry, 3D Scanning and Printing Models (Xu Leading Discussion)

Adamopoulos, Efsthios et al

2021 A Critical Comparison of 3D Digitization Techniques for Heritage Objects. *International Journal of Geo-Information* 10. <https://www.mdpi.com/2220-9964/10/1/10>

Haukaas, Colleen and Lisa 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 & Heritage* 3(1): 40-56. **Available through Western Libraries electronic catalogue**

Cooper, Catriona

2019 You can Handle it: 3D printing for Museums. *Advances in Archaeological Practice* 7(4):443-447. <https://www.cambridge.org/core/journals/advances-in-archaeological-practice/article/you-can-handle-it-3d-printing-for-museums/5FDE2B8896E09D879B75D77C4530ED1A>

Magnani, Matthew, et al

2020 The Digital Revolution to Come: Photogrammetry in Archaeological Practice. *American Antiquity* 85(4): 737-760. **Available through Western Libraries electronic catalogue**

Waltenberger, Lukas et al

2021 Three-Dimensional Surface Scanning Methods in osteology: A Topographic and Geometric Morphometric Comparison. *American Journal of Physical Anthropology* Early access. **Available through Western Libraries electronic catalogue**

February 18th: No Class, Thanksgiving

6. February 25th: Presentations on your 3D Models & MOA talk

7. March 4th: Data Born Digitally In, On, and Above the Field (Lauren Leading Discussion)

González-Tennant, Edward and Diana González-Tennant

2019 Caribbean Heritage in 3D: New Heritage and Historical Archaeology in Nevis, West Indies. *Historical Archaeologies in the Caribbean: On and Beyond the Plantation*, edited by Todd Ahlman and Gerald Schroedl, pp. University of Alabama Press, Tuscaloosa. **Will be Available on OWL**

McCoy, M.

2020 The Site Problem: a Critical Review of the Site Concept in Archaeology in the Digital Age. *Journal of Field Archaeology* 45:518-526. **Available through Western Libraries electronic catalogue**

McCouston, Ashley, David Brown and Thane Harpole

2019 Archaeology in the Palm of your Hand: Using Photogrammetry and 3D Printing to Record and Recreate Excavations at Fairfield Plantation. *Historical*

Archaeology 53:762-770. **Available through Western Libraries electronic catalogue**

Pecci, Antonio

2020 Digital Survey from Drone in Archaeology: Potentiality, Limits, Territorial Archaeological Contexts and Variables. *IOP Conference Series: Materials Science and Engineering*. <https://iopscience.iop.org/article/10.1088/1757-899X/949/1/012075/meta>

Roosevelt, C., et al

2015 Excavation is Destruction Digitization: Advances in Archaeological Practice. *Journal of Field Archaeology* 40(3): 325-346. **Available through Western Libraries electronic catalogue**

8. March 11th: Visualization and Virtual Archaeology (Samantha Leading Discussion)

Beacham, Richard

2020 I Dreamt I Dwelt in Marble Halls. In *Digital Cities, Between History and Archaeology*, pp. 43-61. Oxford University Press. **Available through Western Libraries electronic catalogue**

Bekele, Mafkereseb Kassahun and Erik Champion

2019 A Comparison of Immersive Realities and Interaction Methods: Cultural Learning in Virtual Heritage. *Frontiers in Robotics and AI*. Vol 6, article 91. <https://www.frontiersin.org/articles/10.3389/frobt.2019.00091/full>

Carter, William Michael

2017 Getting to the Point: Making, Wayfaring, Loss and Memory as Meaning in Virtual Archaeology. *Virtual Archaeology Review* 9(16): 97-102. <https://polipapers.upv.es/index.php/var/article/view/6056>

Ferdani, Daniele, Bruno Fanini, Maria Piccoli, Fabiana Carboni, and Paolo Vigliarolo
2020 3D Reconstruction and Validation of Historical background for Immersive VR Applications and Games: The Case Study of the Forum of Augustus in Rome. *Journal of Cultural Heritage* 43:129-143. **Available through Western Libraries electronic catalogue**

Jensen, Peter

2018 Evaluating Authenticity: The Authenticity of 3D Models in Archaeological Field Documentation. In *Authenticity and Cultural Heritage in the Age of 3D Digital Reproductions*, edited by P. Di Giuseppantonio et al, pp. 57-74. Cambridge. <https://www.repository.cam.ac.uk/handle/1810/279665>

9. March 18th: Digital Data and Curation

Champion, Erik and Hafizur Rahaman

2020 Survey of 3D Digital Heritage Repositories and Platforms. *Virtual Archaeology Review* 11(23):1-15. <https://polipapers.upv.es/index.php/var/article/view/13226>

Huggett, Jeremy

2020 Is Big Digital Data Different? Towards a New Archaeological Paradigm. *Journal of Field Archaeology* 45:S8-S17. **Available online through Western Libraries electronic catalogue**

Huvila, Isto et al

2020 Archaeological Information Work and the Digital Turn. In *Archaeology and Archaeological Information in the Digital Society*, edited by I. Huvila, pp. 143-158. Routledge. **Available online through Western Libraries electronic catalogue**

Niccolucci, Franco

2020 From Digital Archaeology to Data-Centric Archaeological Research. *Magazén* 1(1). https://iris.unive.it/retrieve/handle/10278/3734879/223695/iss-1-1-2020_uFL3cWL.pdf#page=36

Seifert, Christin, et al

2017 Ubiquitous Access to Digital Cultural Heritage. *Journal on Computing and Cultural Heritage* 10(1): article 4. **Available through Western Libraries electronic catalogue**

10. March 25th: Digital Heritage and Archaeology as Museums (Teegan Leading Discussion)

Clerkin, Caitlin and Bradley Taylor

2021 Online encounters with Museums and antiquities. *American Journal of Archaeology* 125(1): 165-175. <https://www.ajaonline.org/museum-review/4249>

Quattrini, Ramona et al

2020 Digital Interaction with 3D archaeological Artefacts: Evaluating User's Behaviour at Different Representation Scales. *Digital Applications in Archaeology and Cultural Heritage* 18. https://www.sciencedirect.com/science/article/abs/pii/S2212054819301018?casa_token=3rQ-VN4T9dQAAAAA:LuK0jnVCM2jLVIBmCns_UHcjyO85hbVNGex6WzDE7BIFw1Qr040ZYXZItMv34EeDemISjpf1Q

Ress, Stella and Francesco Cafaro

2021 "I want to Experience the Past": Lessons from a Visitor Survey on How Immersive Technologies can Support Historic Interpretation. *Information* 12(1). <https://www.mdpi.com/2078-2489/12/1/15/htm>

Petersson, Bodil

2018 From storing to story-telling – archaeological Museums and Digitization. In *Archaeology and Archaeological Information in the Digital Society*, edited by I. Huvila, pp. 70-105. Routledge. **Available online through Western Libraries electronic catalogue**

Tzima, Stavroula et al

2020 Revealing Hidden Local Cultural Heritage Through a Serious escape Game in Outdoor Settings. *Information* 12. <https://www.mdpi.com/2078-2489/12/1/10>

11. April 1st: Digital Archaeological Communities

Howland, Matthew, et al

2020 Integrating Digital Datasets into Public engagement through ArcGIS StoryMaps. *Advances in Archaeological Practice* 8(4). **Available through Western Libraries electronic catalogue**

Laužikas, R., et al

2018 Archaeological Knowledge Production and Global Communities: Boundaries and Structure of the Field. *Open Archaeology*, 4(1), 350–364.
<https://doi.org/10.1515/opar-2018-0022>

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