Archaeology in the Digital Age

Cluster 70 CW - Spring 2017

Syllabus

Instructor: Caroline Arbuckle
Office Hours: Monday 1-3 Fowler A316
Class Time: Tuesday 12-3
Classroom: Pub Aff 1343

Resource Website: https://digitalarchaeologyweb.wordpress.com/

Course Description:

In this class, we will assess the integration of modern technological tools in the field of archaeology. In the last few decades, the digital revolution has had an impact on a number of scientific as well as humanistic disciplines. The interdisciplinary field of Archaeology is no exception. Advances in geography, geology, photography, the medical sciences and space exploration have been adapted in order to uncover the past. This new data can be organized and disseminated in online databases, providing access to information in an unprecedented manner. New imaging techniques, 3D scanning and printing, and virtual reality systems have allowed objects and sites to be preserved in new ways, and enable a much broader audience to interact with ancient civilizations; however, while most of these new tools have brought positive changes to the field, archaeologists must always question the reason they have chosen certain methods. Are the flashy 3D imaging techniques truly answering research questions? Are complicated technical computing methods always necessary to organize data? In this class, students will be encouraged to think critically about the design of archaeological projects and the integration of digital tools.

In addition, students will assess how this information has been presented to specific audiences. Despite the technological advances to gathering, storing, and presenting data, the method of choice for scholarly publication is still text-based books and articles. This class will also question the communication of research data and results, as students compose their own multimodal compositions.
Participation:
Students will be expected to attend every class with the assigned readings completed, and should be prepared to discuss the reading materials. All readings will be posted on CCLE. Any foreseen absences must be communicated at least four weeks in advance, and should be discussed with and approved by the instructor. Any absence due to illness must be verified with a doctor’s note. Participation is worth 15% of the final grade.

Multimodal Assessment Project:
In the first weeks of the course, students will be asked to complete a short multimodal assessment project that will be presented as a group in Week 3. The goal of this assignment is to help students better understand how to assess projects, and to start thinking about the presentation tools they might use in their end of quarter presentation and final paper. After the short presentations, the students will discuss how their larger projects should be assessed. Detailed instructions are provided separately. This short project is worth 15% of the final grade.

Discussion Leading:
Each week, a pair of students will help lead the discussion of the assigned readings. The pair should come to class having read the assigned readings particularly carefully, and have a number of discussion questions prepared. The discussion leading is worth 10% of the final grade.

Final Presentation:
In the last weeks of the quarter, students will present their research projects to the class in 10-minute presentations intended for a popular audience. The students are encouraged to choose a presentation format that they consider appropriate for their material. Some suggestions include Powerpoint, Slideshare, Wordpress website (or other web hosting site), blog, or video. Detailed instructions are provided separately. The presentation is worth 20% of the final grade.

Final Paper:
Throughout this quarter, students will be expected to work on a research paper. Students may choose to focus on a specific tool, a specific region, a specific site or project, and assess how technologies were used to investigate, preserve, or present the past. As this is a Writing II class, students will be expected to hand in a proposal, annotated bibliography, and two drafts of their papers throughout the quarter, before handing in the final product. Detailed instructions are provided separately. The proposal and drafts are worth 15% of the final grade, and the final draft of the paper is worth 25%. In total, these elements are worth 40% of the grade.

Plagiarism and academic dishonesty:
Any instances of plagiarism and academic dishonesty will result in a 0 on the assignment, and will be reported to the dean, where further disciplinary action will be discussed.

Grading Breakdown:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Participation</td>
<td>15%</td>
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<tr>
<td>Multimodal assessment project</td>
<td>15%</td>
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<tr>
<td>Discussion leading</td>
<td>10%</td>
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<tr>
<td>Final Presentation</td>
<td>20%</td>
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<tr>
<td>Paper (including all elements)</td>
<td>40%</td>
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<tr>
<td>Week</td>
<td>Date</td>
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| 1    | April 4   | **Introduction:**  
  - Introduction to the structure of the class  
  - General overview of the digital tools used in archaeology (lecture) |
| 2    | April 11  | **Papers and Presentations:** Tips on writing and an overview of the digital tools available to you for your presentations.  
**Computing and Archaeology:** Understanding the Past in the Present.  
**Readings:**  
    - Introduction (p.12-18)  
| 3    | April 18  | **Mapping and Surveying (Part 1: LiDar, Magnetometers, Drones, and the Total Station)**  
**Readings:**  
  - “Six tools that are revolutionizing archaeology by helping us find sites without digging”  
    - (very short overview of digital survey tools)  
  - Drones: SAA Special Issue: Drones in Archaeology:  
    - “Archaeological Topography with Small Unmanned Aerial Vehicles”  
    - “Processing a detailed digital terrain model using photogrammetry and UAVs at Cerro de la Mascara, Sinaloa, Mexico”  
**Group Presentations: An Introduction to Multimodal Projects** |
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>April 25</td>
<td>Mapping and Surveying (Part 2: GIS)</td>
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<td></td>
<td>Presentation by Joanna Chen – Emerging Literacies Librarian</td>
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<td>Readings:</td>
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|        | • Watch “Aspects of Archaeology: GIS”  
|        | https://www.youtube.com/watch?v=F6Sb11mi_lk |
| May 2 | Analyzing Objects (CT scans, X-ray, pXRF, digital microscopy) |
|        | Readings: |
|        | • “Examining Bodies” and “Grauballe Man: The Body in the Bog” (Box Features) 2016 in *Archaeology: theories, methods, and practice* (Seventh Edition) (total: 4 pages). |
|        | • Hawass, Zahi and Sahar N. Saleem 2016, “The CT Scan of the Mummy of Tutankhamun: New Evidence on the Life and Death of the King” in *Scanning the Pharaohs: CT Imaging of the New Kingdom Royal Mummies*. Cairo: The American University in Cairo Press, 89-103. |

**Proposals and Annotated Bibliographies Due**
<table>
<thead>
<tr>
<th>6</th>
<th>May 9</th>
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<tbody>
<tr>
<td><strong>Digital Imaging (Part I: 3D Scanning, PhotoScan, CAD and Modeling)</strong></td>
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<tr>
<td>Class to take place in Digital Archaeology Lab in the basement of the Fowler.</td>
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<tr>
<td><strong>Readings:</strong></td>
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<tr>
<td>• Rua, Helena and Pedro Alvito 2011, “Living the past: 3D models, virtual reality and game engines as tools for supporting archaeology and the reconstruction of cultural heritage – the case-study of the Roman villa of Casal de Freira” <em>Journal of Archaeological Science</em> 38: 3296-3308.</td>
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<tr>
<td>• Sanders, Donald 2008, “Why do Virtual Heritage?”</td>
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<td>o Make sure to click on all 5 “projects”</td>
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<th>7</th>
<th>May 16</th>
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<tr>
<td><strong>Digital Imaging (Part 2: 3D Printing, Virtual Reality)</strong></td>
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<tr>
<td>Class to take place in Digital Archaeology Lab in the basement of the Fowler.</td>
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<tr>
<td>• Bond, Sarah “The Ethics of 3D-printing Syria’s Cultural Heritage” <em>Forbes.com</em></td>
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<td>• Barsanti, S. Gonizzi et al. 2015 “3D Visualization of Cultural Heritage Artefacts with Virtual Reality Devices” <em>The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences</em>.</td>
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**First Rough Drafts Due**
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<tr>
<th>Date</th>
<th>Event</th>
<th>Notes</th>
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<tr>
<td>8 May 23</td>
<td>Case Studies – Technologies in Action</td>
<td>Formatting your paper: Citations, images, and editing.</td>
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Readings:

Çatalhöyük:

- Browse [www.catalhoyuk.com](http://www.catalhoyuk.com)
  - Watch Youtube clip on Digital reconstruction of Catalhoyuk shrine: [https://www.youtube.com/watch?v=pAV8z6NesOA](https://www.youtube.com/watch?v=pAV8z6NesOA)

- Berggren, Asa et al. 2015 “Revisiting reflexive archaeology at Çatalhöyük: integrating digital and 3D technologies at the trowel’s edge” *Antiquity* 89.344: 433-448.


Teotihuacan:


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<tr>
<th>9 May 30</th>
<th>Final Presentations</th>
<th>Second Rough Drafts Due</th>
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<tr>
<th>10 June 6</th>
<th>No Class (Replaced by one-on-one meetings to discuss projects and papers)</th>
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<tr>
<th>11 June 13</th>
<th>Final Papers Due</th>
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Assignment: An Introduction to Multimodal Projects

Goals:

In this assignment you will assess an archaeological project, and respond with your own multimodal reply. The goal of this assignment is to help you think about the strengths and pitfalls of using technological tools in archaeology and how archaeologists have presented their results. The responses are also intended to give you an opportunity to begin learning about the technological tools you will use in your own larger projects.

Summary:

In groups of three or four, you will choose one of the archaeological projects listed below to assess. After exploring the project, you will individually follow the steps listed below in order to post a response on CCLE. Your group will then discuss each of the responses online, and prepare to present your results to the class in a short, 5-10-minute presentation. Your presentations will take place in Week 3.

Archaeological Projects:

Each person in your group should select one of the following archaeological projects:

1) Raman spectroscopic analysis of historic cave art in Rouffignac St-Cernin, France

2) Aspects of Archaeology: GIS
   a. https://www.youtube.com/watch?v=F6Sb1lmi_lk

3) Airborne laser scanning as a method for exploring long-term socio-ecological dynamics in Cambodia

4) Digital Karnak
   a. http://dlib.etc.ucla.edu/projects/Karnak/

Detailed Instructions:

Individual task:

After you have explored your selected archaeological topic, post your individual response on CCLE in the forum entitled: “Introduction to Multimodal Projects”. You should post in the sub-folder that is labeled with your group’s number. Your response should include well thought out but brief answers to the following questions (a sentence or two for each one is sufficient):

1) What is the goal of this project? What was the author’s argument or point they were trying to make?

2) Who was the intended audience for the project?

3) What technological tools were used within the project? (GIS mapping, 3D imaging and reconstructions, etc.) In your opinion, how effective were these tools for answering the project’s research questions?
4) Which multimedia were used to present the project to an audience (images, videos, etc.)? How effective were they for communicating to their audience? Do you think they could have made better choices?

5) Take a screenshot of any images or a short clip of any videos that you think enhanced the discussion of the project, and post them in your response to the group on CCLE, explaining why you chose them.

Group Task:

After the members of your group have posted their responses, read through each one, so you have a good idea about the different projects and approaches. Use the forum to ask questions and clarify your thoughts about the different projects. In class on week 3, your group will present using your choice of presentation tool (powerpoint, slides, simple wordpress site, etc.). Your presentation should be based on your answers to the response questions. It is particularly important to note whether you all agreed on each point, or if you disagreed and why.

After the group presentations, we will have the chance to discuss these aspects as a class, and think about what makes a good project, and how best to present data.

Assessment:

Each person will receive an individual mark out of 20 based on their responses on CCLE, and their participation in the group presentation. This mark will be based on the following:

1) /10 – Completion – Did you complete all the steps described in the assignment?

2) /5 – Presentation – Were you prepared for the presentation? Were you clear? Did your group divide the work evenly?

3) /5 – Conventions – Is there evidence of editing? Were there spelling/grammar mistakes?
Assignment: Final Essay – Technology and Archaeology

Goals:

As a Writing II course, the essay is a very important part of this class. The goal of the essay is to demonstrate that you can not only assess the use of technologies in archaeological projects, but also that you can construct a well-edited, strong argument based on supporting evidence, and write with appropriate language for a specific audience. These are skills that can be used in any field and any profession.

Summary:

For the final essay, you may choose to focus on a specific tool (eg. GIS), a specific region (eg. Egypt), or a specific site or project (eg. Giza), and assess how technologies were used to investigate, preserve, or present the past. For instance, you might look at how GIS has contributed to archaeology, giving a few examples of where it has been of use, and where it could have been implemented to improve a project. You will develop your own research question, and submit an outline, annotated bibliography, and multiple drafts as the quarter progresses (see schedule for deadlines). Your final essay is due by midnight on June 13.

The essay should be 3000 words long, double-spaced with 12” font, in Times New Roman. As these are archaeological projects, I will expect you to follow the SAA (Society for American Archaeology) style guidelines (a style sheet is posted on CCLE).

Detailed Instructions:

1) Picking a topic
   a. For this paper, you will assess the use of technological tools in archaeology. You can choose to pick a specific tool, such as the use of GIS or CT scans and discuss their benefits and drawbacks for use in archaeology. You could pick a site or project, and discuss how its use of multiple or a single technological tool has enhanced our knowledge about the site, object or practice, or how it has used technologies inappropriately. You could also talk about how archaeologists choose to present their research, and what options might make their research more accessible.
   b. I recommend you run your topics by me by about week 3, either in person or by email.

2) Research proposal and annotated bibliography (Worth 5% of the final grade)
   a. A short research proposal (maximum 2 pages double-spaced) and an annotated bibliography with your first 5 sources is due in Week 5.
   b. You should include an introductory paragraph that discusses what you will look at, including a thesis statement that should be underlined.
   c. You should then outline what you will explore in the following paragraphs and what evidence you are planning on using.
   d. Your annotated bibliography should include at least 5 sources, with two or three sentences about what each one is about and how you will use it in your paper.

3) Drafts (each draft is worth 5% of the final grade)
   a. The drafts of your papers should be as complete as possible. The purpose of this process is to improve your writing and get thoughtful feedback on your work. I will spend time providing detailed feedback on each draft, but this is only useful if you have already done your best. The drafts are also not optional. I will not accept a final paper from a student who did not submit the two drafts on time.
4) Sources
   a. To receive full marks, you should have at least 10 sources in your final paper. While websites and blogs can be used for this project, they should only be used to demonstrate presentation styles and popular opinion. I will expect you to also include at least 5 peer-reviewed sources. It can be difficult to know what will count, so I recommend you run any choices by me to be sure, especially those found online. I encourage you to explore the Wordpress website for this course (https://digitalarchaeologyweb.wordpress.com/) to help you find resources.

5) Figures
   a. For this project, you are encouraged to include images, tables, and screenshots in your papers to be better able to discuss the digital tools. Figures should be added at the end of your paper in their own section. They can be referenced within your paper as (figure 1), etc.

6) Deadlines
   a. I am very strict about deadlines. If your work is submitted late, but within 24 hours of the deadline, I will subtract 10%. If it is more than 24 hours late, I will not accept the work, and you will receive a 0 on the assignment.

Assessment:

In week 3 we will discuss how this paper is going to be assessed, and design a grading rubric together as a class.
Assignment: Final Presentation

Goals:

In this assignment you will create a presentation based on the selected research topic for your final paper. You will choose the type of presentation and the format it will take, but design the presentation as if it were to be given to a popular audience. The goal of this assignment is to have you think about how presentations change based on the intended audience, and how you can best use simple, freely available technologies to communicate to this audience.

Summary:

You will be expected to present your research to the class in an 8-10 minute presentation in week 9. In addition to the presentation, you will hand in a very brief summary (maximum one page double spaced) explaining how you designed your presentation to best communicate with a popular audience.

Detailed Instructions:

After you have handed in the first draft of your research papers, you should start to think about how you could best present your findings to a public audience.

Whatever style of presentation you choose, it must include an audio or visual component, perhaps a powerpoint style presentation, a video, or a website. You must consider what types of media are needed to present your research. If you have been studying videos and virtual realities, you may wish to present clips, either on a website or embedded within a Powerpoint or Slideshare style of presentation. It is also good to include screen shots or images of the digital maps, microscopic images, CT scans, etc.

While you can choose whichever format of presentation you desire, you should be competent with the selected technology before you begin, or be confident about your ability to learn how to use the tools within the short amount of time you have. (For instance, if you are going to design a website, it is quite easy to use Wordpress, but very difficult to learn XML alongside doing your research). The focus of your presentations should always be on content, not on flashy presentation tools.

In addition to the presentation, a short write up (maximum one page double spaced) is due on the day you are presenting. In this write up, simply explain why you chose the selected presentation format, and what choices you made to present to a popular audience, as oppose to a professional audience.

Assessment:

Assessment for this project is based on how prepared you are, how well you communicate your ideas to your chosen audience, and how you integrate multimedia.

1) Writeup: /10 – Did you explain how your presentation was geared towards your chosen audience?

2) Design: /30
   a. Did the presentation incorporate enough engaging media? Was the project too largely focused on text?
   b. Did the chosen images/clips/etc. illustrate the points that were being made?
3) Content: /60
   a. Clarity /20 – Was the presentation easy to follow? Where the main arguments clear? Was the presenter clear, no (or few) “ums”, “ers”, or “likes”
   b. Audience /20 – Was the presentation appropriate for the audience? Were the appropriate terms defined? Were appropriate media incorporated?
   c. Organization /10 – Was the presentation logically organized? Did the presentation flow easily from one point to the next?
   d. Conventions /10 – Was the presentation edited? Were there spelling and grammar mistakes throughout?