ARCHY (485) 469
Geospatial Applications in Landscape Archaeology

Quarter: Sp 22
Time: 11:30– 2:00 Tu
Room: Savory 155
3 credits

INSTRUCTOR: MARCOS LLOBERA
Office: Denny MS242
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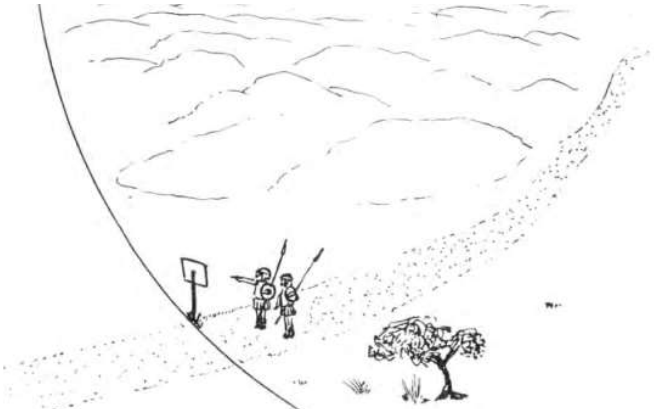
Office hours by appoint.



It appears to say “End of 5km catchment. Hunter-gatherers only beyond this point”.

INTRODUCTION

The use of geospatial technology such as GIS, LiDAR, Geophysical, Structure from Motion photogrammetry to mention a few has been growing rapidly in recent years. Some of these tools, particularly GIS, have been used to conduct studies that are not easily achievable otherwise. Many of these studies, however, often require some technical knowledge to be able to interpret their results appropriately. In addition, the have been seen as promoting certain theoretical approaches and not others.

COURSE AIMS

This course is to be taken concurrently with ARCHY 484 Archaeological GIS. The main aim of the course is to expose you to the theoretical background and discussions surrounding the application of GIS, and other geospatial techniques, to landscape archaeology. This will be achieved through a series of lectures, targeted readings and in-class discussions.

By the end of the course you will:

- Become familiar with the application of particular constructs used in GIS and landscape archaeology, e.g. cumulative viewshed, accumulated cost surfaces.
- Gain basic understanding of the workings and limitations, of various key GIS processes, e.g. viewsheds, LiDAR
- Review and discuss contemporary studies of the application of these technologies in Landscape Archaeology.
- Relate how these connect with each other historically and conceptually.
- Evaluate what is the role that material traces play in each theoretical approach.

TENTATIVE COURSE SCHEDULE

Use the following chart to see the overall organization of the course. **Be aware that the topics identified in this schedule are subject to change to accommodate for changes along the course!!**

Tentative Calendar

Class			Class Topic
Week 1	Tu	3 - Jan -22	Theory
Week 2	Tu	10-Jan-22	Visibility Analysis I
Week 3	Tu	17-Jan-22	Visibility Analysis II
Week 4	Tu	24-Jan-22	Mobility I
Week 5	Tu	31-Jan-22	Mobility II
Week 6	Tu	7-Feb-22	Landscape reconstruction I
Week 7	Tu	14-Feb-22	Landscape reconstruction II
Week 8	Tu	21-Feb-22	Locational Analysis
Week 9	Tu	28-Feb-22	Journal Club
Week 10	Tu	7-Mar-22	Journal Club

REQUIREMENTS

Class requirements include the following:

- Class Participations (30 %)
- Discussion Questions (40%)
- Journal Paper Proposal (30 %)

All assignment will be scored 0-100 unless otherwise specified.

Class Participation - CP (30 %):

You will be responsible for doing the reading/s and **actively** participating in discussions in class. Class participation means:

- Coming prepared to class (i.e., carefully read readings, **bring notes from the readings**)
- Raising questions and providing commentaries.
- Listening attentively to any discussions or commentaries made in class.
- Being respectful of other people opinions

Keep in mind that your grade will be based on active participation not on simply attendance.

Discussion Comment/Questions - DCQ (40 %):

In anticipation to each class, **you are expected to submit at least one question/commentary per reading** no later than 9pm the previous day the reading is due. Comments/questions should be bounded to the topic covered by the reading. Your questions and comments should:

- Aim at seeking further clarification of some aspect of the paper that was not cleared on lacked background discussion.
- Raise some critical aspect of the paper.
- Connect the paper with a broader discussion.
- Draw some comparison with other publications of a similar topic.

Overall, your comments/questions should demonstrate that you have critically engaged with the subject or focus of the reading.

Journal Paper Proposal– JA (30%)

The last (two) weeks of the course will be dedicated to cover readings you will have proposed. As part of this assignment, you will have to:

- Choose a journal article relevant to this class.
- In a single sheet of paper you will:
    - Provide reasons why you choose this paper and think it is relevant
    - Generate two questions about the topic covered in this paper.

To obtain a good grade you should choose a paper that extends (providing more details, presenting some new aspect or topic) what we have covered in class.

CLASS AND TEACHING OVERVIEW

Class Structure:

This is an upper undergraduate/ graduate level seminar course. You are expected to participate and contribute to the course content. As part of your participation you will actively engage with the readings and course discussions.

Readings:

Wk 1 – Some theory

- Gaffney, V and Van Leusen M. 1995. Postscript – GIS, environmental determinism and archaeology. In Archaeology and geographical information systems: a European perspective edited by Lock G. and Z. Stančič. London and Bristol: Taylor and Francis, pp. 367-382
- Llobera, M. 1996. Exploring the topography of mind: GIS, social space and archaeology. Antiquity 70(269): 612-622
- Verhagen, Philip. 2018. "Spatial Analysis in Archaeology: Moving into New Territories." In Digital Geoarchaeology: New Techniques for Interdisciplinary Human-Environmental Research, edited by Christoph Siart, Markus Forbriger, and Olaf Bubenzer, 11–25. Natural Science in Archaeology. Cham: Springer International Publishing. doi:10.1007/978-3-319-25316-9_2.

Wk2 – Visibility Analysis I

- Wheatley D.W., Gillings M. 2000, Vision, perception and GIS: developing enriched approaches to the study of archaeological visibility. In Beyond the Map: Archaeology and Spatial Technologies edited by Lock, G. Amsterdam: IOS Press,pp. 1-27
- Lake, M. and Ortega, D. 2013. "Compute-Intensive GIS Visibility Analysis of the Settings of Prehistoric Stone Circles." In *Computational Approaches to Archaeological Spaces*, edited by Bevan, A, and M. Lake, pp. 221–250. Routledge. doi:10.4324/9781315431932-15.

Wk 3- Visibility Analysis II

- Llobera, M. 2007. "Reconstructing Visual Landscapes." *World Archaeology* 39 (1): 51–69.
- Eve, S. J. and E. R. Crema. 2014. "A House with a View? Multi-Model Inference, Visibility Fields, and Point Process Analysis of a Bronze Age Settlement on Leskernick Hill (Cornwall, UK)." Journal of Archaeological Science. Accessed January 29. doi:10.1016/j.jas.2013.12.019.

Movement I

- Herzog, Irmela. 2020. "Spatial Analysis Based On Cost Functions." In *Archaeological Spatial Analysis*, edited by Mark Gillings, Piraye Hacıgüzeller, and Gary Lock, 1st ed., 333–358. Routledge. doi:10.4324/9781351243858-18.
- Güimil-Fariña, Alejandro, and César Parcero-Oubiña. 2015. "'Dotting the Joins': A Non-Reconstructive Use of Least Cost Paths to Approach Ancient Roads. The Case of the Roman Roads in the NW Iberian Peninsula." *Journal of Archaeological Science* 54 (February): 31–44. doi:10.1016/j.jas.2014.11.030.

Movement II

- Verhagen, Philip, Laure Nuninger, and Mark R. Groenhuijzen. 2019. "Modelling of Pathways and Movement Networks in Archaeology: An Overview of Current Approaches." In *CpG Islands*, edited by Tanya Vavouri and Miguel A. Peinado, 1766:217–249. New York, NY: Springer New York. doi:10.1007/978-3-030-04576-0_11.
- Manière, Louis, Maël Crépy, and Bérangère Redon. 2021. "Building a Model to Reconstruct the Hellenistic and Roman Road Networks of the Eastern Desert of Egypt, a Semi-Empirical Approach Based on Modern Travelers' Itineraries." *Journal of Computer Applications in Archaeology* 4 (1): 20–46. doi:10.5334/jcaa.67.

Landscape Reconstruction I

- Schmidt, Johannes, Lukas Werther, and Christoph Zielhofer. 2018. "Shaping Pre-Modern Digital Terrain Models: The Former Topography at Charlemagne's Canal Construction Site." *PLOS ONE* 13 (7): e0200167. doi:10.1371/journal.pone.0200167.
- Cerrillo-Cuenca, Enrique. 2017. "An Approach to the Automatic Surveying of Prehistoric Barrows through LiDAR." *Quaternary International* 435 (April): 135–145. doi:10.1016/j.quaint.2015.12.099.

Landscape Reconstruction II

- Van Lanen, Rowin. 2020. "Revealing the Past through Modelling? Reflections on Connectivity, Habitation and Persistence in the Dutch Delta during the 1st Millennium AD." *Netherlands Journal of Geosciences* 99 (January). doi:10.1017/njg.2020.12.

- Snitker, Grant. 2018. "Identifying Natural and Anthropogenic Drivers of Prehistoric Fire Regimes through Simulated Charcoal Records." *Journal of Archaeological Science* 95 (July): 1–15. doi:10.1016/j.jas.2018.04.009.

Locational Modeling/Analyses

- Carrero-Pazos, Miguel, Julián Bustelo-Abuín, Víctor Barbeito-Pose, and Carlos Rodríguez-Rellán. 2020. "Locational Preferences and Spatial Arrangement in the Barrow Landscape of Serra Do Barbanza (North-Western Iberia)." *Journal of Archaeological Science: Reports* 31 (June): 102351. doi:10.1016/j.jasrep.2020.102351.
- Verhagen, Philip. and Whitley, Thomas W. 2020. "Predictive Spatial Modelling" In *Archaeological Spatial Analysis*, edited by Mark Gillings, Piraye Hacıgüzeller, and Gary Lock, 1st ed., 231–246. Routledge. doi:10.4324/9781351243858-18.

CLASS POLICY + ETHICS

LATE ASSIGNMENTS:

No late assignments. No made-up assignments.

Academic Honesty:

All students will uphold the University of Washington standards of student conduct (http://www.washington.edu/students/handbook/conduct.html). The following web site has information on plagiarism, cheating, and guidelines for collaboration:
http://apps.leg.wa.gov/WAC/default.aspx?cite=478-121-107

Accessibility:

Please let me know if you need accommodation of any kind. We can work with the University of Washington Disabled Resources for Students (DRS) to provide what you require. The DRS webpage is
http://www.washington.edu/students/drs/

Religious Accommodations

"Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (https://registrar.washington.edu/students/religious-accommodations-request/)."

Class expectations:

The University of Washington is committed to fostering an environment where the free exchange of ideas is an integral part of the academic learning environment. Disruption or domination of classroom discussions can prohibit other students from fully engaging and participating. Any student causing disruption may be asked to leave any class session, and, depending on the severity and frequency of that behavior, an incident report may be filed with Community Standards and Student Conduct. As a condition of enrollment, all students assume responsibility to observe standards of conduct that will contribute to the pursuit of academic goals and to the welfare of the academic community. For more detailed information on these standards, please visit: http://apps.leg.wa.gov/WAC/default.aspx?cite=478-120.

Use of class slides, tutorials and video:

Class slides, tutorial and videos are not to be distributed outside of class, posted on the internet, or shared with third-parties outside of class without the explicit permission of the instructor.

COURSE WEBPAGE + INFORMATION

Course website:

GRADES

Grade Revision Policy. I am open to reviewing a grade if you feel that your grade was unexpected or undeserved. If so, follow the procedure outlined here.

- Submit in writing (paper or email) a (maximum) one-page describing what grade you found to be unexpected together with your graded work. Make sure you point out concrete aspects where your judgment dissents. Your argument should not be a matter of opinion but rather based on some concrete argument. Provide any documentation necessary to support your case (e.g. notes, books, previous drafts, class material, etc.) so that we can both review it together.
- I will contact you to set an appointment so that we can review and discuss the material together.
- Do not haggle for points! Fishing for points is simply uncool.

Use the following formula to keep track of your grade (G):

G= 0.30 * CP + 0.40* DCQ + 0.30 * JA

Use the following grade scale comparison to monitor your progress through the course. However, keep in mind that this table IS ONLY A GUIDE, final grades may fluctuate slightly.

UW	%	Letter	Criteria
3.9 - 4.0	95 - 100	A	Superior performance in all aspects of the course with work exemplifying the highest quality. Unquestionably prepared for subsequent courses in field
3.5 - 3.8	90 -94	A-	Superior performance in most aspects of the course; high quality work in the remainder. Unquestionably prepared for subsequent courses in field
3.2 - 3.4	85 – 89	B+	High quality performance in all or most aspects of the course. Very good chance of success in subsequent courses in field
2.9 - 3.1	80 – 84	B	High quality performance in some of the course; satisfactory performance in the remainder. Good chance of success in subsequent courses in field
2.5 - 2.8	75 – 79	B-	Satisfactory performance in the course. Evidence of sufficient learning to succeed in subsequent courses in field
2.2 - 2.4	70 – 74	C+	Satisfactory performance in most of the course, with the remainder being somewhat substandard. Evidence of sufficient learning to succeed in subsequent courses in field with effort
1.9 - 2.1	65 – 69	C	Evidence of some learning but generally marginal performance. Marginal chance of success in subsequent courses in field
1.5 - 1.8	60 – 64	C-	Minimal learning and substandard performance throughout the course. Doubtful chance of success in subsequent courses
1.2 - 1.4	55 – 59	D+	Minimal learning and low-quality performance throughout the course. Doubtful chance of success in subsequent courses
0.9 - 1.1	50 -54	D	Very minimal learning and very low-quality performance in all aspects of the course. Highly doubtful chance of success in subsequent courses in field
0.0 - 0.8	50 -	D- to E	Little or no evidence of learning. Poor performance in all aspects of the course. Totally or almost totally unprepared for subsequent courses in field