

# Joe Roe

I am a computational archaeologist specialising in Southwest Asian prehistory. I use data science to study [human ecology and cultural evolution in past societies](#); develop [research software](#) and [open datasets](#) for reproducible quantitative analysis in archaeology; and direct [field surveys](#) using digital recording and geoinformatics technology.

View this CV online with links at <https://joeroe.io/cv>



## Education

- 2017  
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2013
- **Postgraduate studies**  
UCL Institute of Archaeology University College London
    - Computational modelling of prehistoric human ecology in the Southern Levant
    - Part of the [Prehistoric Hunting Strategies in Jordan](#) project
    - Supervisors: [Prof. Louise Martin](#), [Prof. Andrew Bevan](#), [Dr. Andrew Garrard](#)
- 2013  
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2012
- **MA Archaeology (Distinction)**  
UCL Institute of Archaeology University College London
    - Dissertation: *Cultural phylogeny of kurgan burial mounds in the west Eurasian steppe*
    - Supervisor: [Prof. Stephen Shennan](#)
- 2011  
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2008
- **BA Anthropology & Archaeology (1st class hon.)**  
Departments of Anthropology & Archaeology Durham University
    - Dissertation: *Spatial analysis of intra-site surface collection data from a Cucuteni-Tripolye mega-site*
    - Supervisor: [Prof. John Chapman](#)
- 2008  
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2001
- **Secondary education**  
Woodkirk High School Leeds



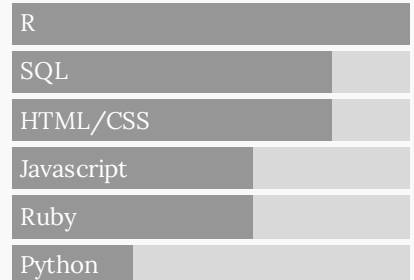
## Academic appointments

- current  
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2021
- **Research assistant (Projektmitarbeiter)**  
[Institute of Archaeological Sciences](#) University of Bern
    - Lead developer of [XRONOS](#), an open repository for chronometric data
    - PIs: [Dr. Martin Hinz](#), [Prof. Dr. Albert Hafner](#)

## Contact

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🎓 [Google Scholar](#)  
🐙 [github.com/joeroe](https://github.com/joeroe)  
@ [joeroe@archaeo.social](#)  
W [User:Joe Roe](#)

## Programming



2020  
|  
2017

## Research assistant (Videnskabelig assistent)

Department of Cross-Cultural and Regional Studies

📍 University of Copenhagen

- Responsibility for archaeological survey and spatial analysis components of major field projects in Iran and Jordan
- Developed databases and software interfaces for the projects' research data
- PIs: [Dr. Tobias Richter](#),



## Publications

- 2023
- Batist, Z. & **Roe, J.**, open-archaeo: a resource for documenting archaeological software development practices. *Journal of Open Archaeology Data* 11: 9. [doi:10.5334/joad.111](#)
  - Arranz-Otaegui, A. & **Roe, J.**, Revisiting the concept of the 'Neolithic Founder Crops' in southwest Asia. *Vegetation History and Archaeobotany* NA. [doi:10.1007/s00334-023-00917-1](#)
- 2022
- Arranz-Otaegui, A., Pedersen, P. N., Schmidt, A. F., Jørgensen-Lindahl, A., **Roe, J.**, Villemoes, J., Pantos, G. A., & Killackey, K., Identifying the *chaîne opératoire* of club-rush (*Bolboschoenus glaucus* [Lam.] S.G.Sm) tuber exploitation during the Early Natufian in the Black Desert (northeastern Jordan). *Journal of Archaeological Science: Reports* 47. [doi:10.1016/j.jasrep.2022.103677](#)
  - Jones, M., Richter, T., Rollefson, G., Rowan, Y., **Roe, J.**, Toms, P., Wasse, A., Ikram, H., Williams, M., AlShdaifat, A., Pedersen, P. N., & Esaid, W., The palaeoenvironmental potential of the eastern Jordanian desert basins (Qe'an). *Quaternary International* 635: 72-82. [doi:10.1016/j.quaint.2021.06.023](#)
- 2021
- Richter, T., Darabi, H., Alibaigi, S., Arranz-Otaegui, A., Bangsgaard, P., Khosravi, S., Maher, L., Mortensen, P., Pedersen, P., **Roe, J.**, & Yeomans, L., The formation of Early Neolithic Communities in the Central Zagros: an 11,500 year old communal structure at Asiab. *Oxford Journal of Archaeology* 40 (1): 2-22. [doi:10.1111/ojoa.12213](#)
- 2020
- Khosravi, S., Pedersen, P. N., Alibaigi, S., **Roe, J.**, Heidary Dastenaee, M., Miladi, B., Darabi, H., Richter, T., & Mortensen, P., Archaeological Landscape of Razavar Valley in the Neolithic Period: the survey of the 8th-6th millennium BC in the north of Kermanshah Province. *Pazhoheshha-ye Bastan shenasi Iran* 26. [doi:10.22084/NBSH.2020.21133.2094](#)
  - Nebbia, M., & **Roe, J.**, Landscape Studies. In Gaydarska, B., *Early Urbanism in Europe: The Trypillia Mega-Sites of the Ukrainian Forest-Steppe*. De Gruyter, pp. 60-107. [doi:10.1515/9783110664959-007](#)
  - Martin, L., & **Roe, J.**, The Kheshiya Cattle Skull Ring: Zooarchaeological Analyses. In McCorriston, J., & Harrower, M. J., *Landscape History of Hadramawt: The Roots of Agriculture in Southern Arabia (RASA) Project, 1998-2008*. Cotsen Institute of Archaeology Press, pp. 275-348. [doi:10.2307/j.ctvzgb8n3.20](#)

My publications reflect a number of ongoing collaborations with domain-specialist colleagues, bringing a data science perspective to addressing multidisciplinary research questions in prehistory.

- 2019 ● Henton, E., **Roe, J.**, Martin, L., Garrard, A., Boles, O., Lewis, J., Thirlwall, M., & Jourdon, A-L., Epipalaeolithic and Neolithic gazelle hunting in the Badia of north-east Jordan. Reconstruction of seasonal movements of herds by stable isotope and dental microwear analyses. *Levant* 50 (2): 127-172. [doi:10.1080/00758914.2019.1598764](https://doi.org/10.1080/00758914.2019.1598764)
- Jones et al., 20,000 years of societal vulnerability and adaptation to climate change in southwest Asia. *WIREs Water* 6 (2): e1330. [doi:10.1002/wat2.1330](https://doi.org/10.1002/wat2.1330)
- 2018 ● Arranz-Otaegui, A., González Carretero, L., **Roe, J.**, & Richter, T., “Founder crops” v. wild plants: Assessing the plant-based diet of the last hunter-gatherers in southwest Asia. *Quaternary Science Reviews* 186: 263–283. [doi:10.1016/j.quascirev.2018.02.011](https://doi.org/10.1016/j.quascirev.2018.02.011)
- 2016 ● Martin, L., Edwards, Y., **Roe, J.**, & Garrard, A., Faunal turnover in the Azraq Basin, eastern Jordan 28,000 to 9,000 cal BP, signalling climate change and human impact. *Quaternary Research* 86 (2): 200–219. [doi:10.1016/j.yqres.2016.07.001](https://doi.org/10.1016/j.yqres.2016.07.001)
- Roe, J.**, PIA at 25: A Retrospective. *Papers from the Institute of Archaeology* 25 (2): p.Art. 16. [doi:10.5334/pia.517](https://doi.org/10.5334/pia.517)
- 2015 ● Allentuck, A., Martin, L., & **Roe, J.**, Refuse Disposal in the Early Epipalaeolithic? Preliminary Zooarchaeological Evidence from Kharaneh IV, Eastern Jordan. *Bulletin of the Council for British Research in the Levant* 10: 67–69. [doi:10.1179/1752726015Z.000000000034](https://doi.org/10.1179/1752726015Z.000000000034)
- 2014 ● **Roe, J.**, Review of *Green Arabia: Human Prehistory at the Crossroads of Continents*. *Papers from the Institute of Archaeology* 24 (1). [doi:10.5334/pia.458](https://doi.org/10.5334/pia.458)

## Conference presentations

- 2023 ● Hinz, M. & **Roe, J.**, XRONOS: a global open repository enhancing reproducible research with chronometric data. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Amsterdam.
- Roe, J.** & Hinz, M., XRONOS: open chronometric data from archive to infrastructure. Presented at Digital Archaeology Bern 2023.
- Roe, J.**, Modelling the range of wild plants and crop progenitors in the Late Epipalaeolithic–Early Neolithic Levant. Presented at Digital Archaeology Bern – Ancient West Asia.
- Roe, J.**, More than just porridge: old materialism and the macroarchaeology of the Neolithic Revolution. Presented at 13th International Congress on the Archaeology of the Ancient Near East, Copenhagen.

See my homepage for [abstracts](#) and [posters](#).

2022

● Hinz, M. & **Roe, J.**, *Zoom and Enhance: high-resolution reconstruction of macro-scale processes with Bayesian hierarchical models*. Presented at European Association of Archaeologists (EAA) Annual Meeting, Budapest, 31 August – 3 September.

**Roe, J.**, *Are we what we eat? The Southwest Asian 'Neolithic Revolution' as macroarchaeological theory*. Presented at the European Association of Archaeologists (EAA) Annual Meeting, Budapest, 31 August – 3 September.

**Roe, J.** & Hinz, M., *XRONOS: challenges in building a global open repository for chronometric data*. Presented at the European Association of Archaeologists (EAA) Annual Meeting, Budapest, 31 August – 3 September.

2021

● **Roe, J.**, *Out with the new, in with the old: recent advances in palaeoecological modelling with open data*. Presented at the Association for Environmental Archaeology Spring Meeting 2021: Open Science Practices in Environmental Archaeology, Oxford.

**Roe, J.**, *A revised radiocarbon chronology of Ganj Dareh*. Presented at the 53rd Annual Meeting of the Canadian Archaeological Association, 'Ganj Dareh Then and Now: Integrating Past and Current Research'.

**Roe, J.**, *Nonequilibrium dynamics in models of human palaeoecology*. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Limassol (Virtual).

Batist, Z. & **Roe, J.**, *Open archaeology: a survey of collaborative software engineering in archaeological research*. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Limassol (Virtual).

**Roe, J.**, *Computational models of chronology and regional settlement in the Epipalaeolithic–Neolithic Zagros (20000–6000 BP)*. Presented at the 'Revisiting the Hilly Flanks: the Epipalaeolithic and Neolithic periods in the eastern Fertile Crescent' conference, Copenhagen.

Pedersen, P. N., **Roe, J.**, & Richter, T., *Free foragers? A case for transient social inequality at Epipalaeolithic Shubayqa, eastern Jordan*. Presented at the 12th International Congress on the Archaeology of the Ancient Near East, Bologna.

**Roe, J.**, *On uncertain ground: modelling human palaeoecology in the Azraq basin, eastern Jordan, 24,000–8,000 BP*. Presented at the 12th International Congress on the Archaeology of the Ancient Near East, Bologna.

- 2019 ● **Roe, J.**, *\*\*Gorram shiny!\* An accessible interface for reproducible landscape archaeology with R and fieldwalkr\**. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Kraków.
- Richter, T., Arranz-Otaegui, A., Jones, M., **Roe, J.**, & Yeomans, L., *Environmental Crisis and Societal Collapse: Was the Younger Dryas a significant factor in triggering the transition from the Palaeolithic to the Neolithic in the Levant?*. Presented at 'Culture in Crisis: Flows of Peoples, Artifacts and Ideas', the 14th International Conference on the History and Archaeology of Jordan (ICHAJ 14), Florence.
- Arranz-Otaegui, A., **Roe, J.**, Pantos, G. A., Santana, J., Araus-Cabrera, J. L., Le Roux, P., & Richter, T., *Locally available or imported? Identifying the provenance of Natufian plant food and fuel resources at Shubayqa 1 (northeastern Jordan)*. Presented at the 18th conference of the International Workgroup for Palaeoethnobotany (IWGP), Lecce.
- Buffington, A., Olson, K., **Roe, J.**, Al Kathiri, A. A., McCorriston, J., *Over Mountains and Through Woods: survey results and preliminary spatial analysis of the 2018 field season of the Ancient Socio-Ecological Systems in Oman (ASOM) project*. Presented at the 53rd Seminar for Arabian Studies, Leiden.
- Roe, J.**, & Richter, T., *Mutable mobilities: 15,000 years of nomadic settlement in the Qa' Shubayqa, eastern Jordan*. Presented at the 53rd Seminar for Arabian Studies, Leiden.
- Pantos, G. A., & **Roe, J.**, *A halfway house: open source tools for tidy photographic and 3D data management between the field and the archive*. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Kraków.
- Roe, J.**, *The Q Continuum: open source GIS tools for paperless field survey*. Presented at Computer Applications & Quantitative Methods in Archaeology (CAA), Kraków.
- Roe, J.**, Pedersen, P. N., Khosravi, S., *A survey of early prehistoric sites in the Razavar Valley (Kermanshah, Iran)*. Presented at the British Association for Near Eastern Archaeology (BANE) annual conference, Liverpool.
- 2018 ● **Roe, J.**, *Is there anything R can't do?*. Presented at the Computer Applications and Quantitative Methods in Archaeology (CAA) conference, Tübingen.
- Roe, J.**, *fieldwalkr: an R package for spatial sampling and field survey simulation*. Presented at the Landscape Archaeology Conference (LAC), Newcastle & Durham.
- Richter, T., Arranz-Otaegui, A., Boaretto, E., Jones, M., **Roe, J.**, & Yeomans, L., *Reconstructing Environmental Impacts on Late Pleistocene and Early Holocene Societies in the Marginal Zone of the southern Levant: A Case Study from Shubayqa*. Presented at the XVIII UISPP World Congress, Paris.
- Roe, J.**, *The Zagros in Prehistory: geography, chronology, demography*. Presented at the British Association for Near Eastern Archaeology (BANE) annual conference, Liverpool, 2019, and the KU Archaeology Day.
- 2017 ● Martin, L. & **Roe, J.**, *The Complexities of Mammalian Body Size Change in Late Pleistocene to Holocene Southern Levant, 35 years on*. Presented at 'From the Mediterranean to the Atlantic: themes in European zooarchaeology', Museum of Natural History and Science, Lisbon.
- 2016 ● **Roe, J.**, *A greener model of palaeoenvironments in the eastern Levant*. Presented at Unravelling the Palaeolithic, Southampton.

- 2015 ● Allentuck, A., Martin, L., **Roe, J.**, Domestic maintenance practices in the Early Epipalaeolithic of the Jordanian steppe. Presented at the 12th International Symposium of the ICAZ Archaeozoology of Southwest Asia and Adjacent Areas Working Group (ASWA), Groningen.
- Roe, J.** & Martin, L., Open season: modelling prehistoric wildlife dynamics in Epipalaeolithic and Neolithic Jordan. Presented at the British Association for Near Eastern Archaeology (BANE) annual conference, London.
- Allentuck, A., **Roe, J.**, Martin, L., Macdonald, D., & Maher, L., Zooarchaeological evidence for domestic maintenance in the Early Epipalaeolithic. Presented at the British Association for Near Eastern Archaeology (BANE) annual conference, London.



## Software & datasets

- 2023 ● **rpaleoclim: R interface for paleoclimate data**
- 2023 ● **open-archaeo: a list of open source archaeological software and resources**  
Zenodo
- 2022 ● **era: R package for years with an era**
- 2020 ● **c14: R package for tidy radiocarbon data**
- 2020 ● **rintchron: R interface to IntChron**
- 2020 ● **stratigraphr: R package for archaeological stratigraphy and chronological sequences**
- 2020 ● **evoarchdata: datasets from studies of cultural evolution in archaeology**
- 2019 ● **Data from Uerpman 1987, The Ancient Distribution of Ungulate Mammals in the Middle East, TAVO A27**  
Zenodo
- 2019 ● **Trypillia mega-sites of the Ukraine**  
Archaeology Data Service
- 2018 ● **fieldwalkr: R package for spatial sampling and survey simulation**

I am also an active contributor to a number of [other open source software](#) and [open data projects](#).



## Field projects

2019	● <b>Field director</b> Shubayqa Archaeological Project	📍 Jordan
2018	● <b>Field archaeologist</b> Ancient Socioecological Systems in Oman (ASOM) project	📍 Oman
2018	● <b>Supervisor</b> Razavar Valley Survey	📍 Iran
2018   2015	● <b>Field archaeologist &amp; supervisor</b> Shubayqa Archaeological Project	📍 Jordan
2015	● <b>Field archaeologist</b> Kharaneh IV Project	📍 Jordan
2014   2012	● <b>Field archaeologist &amp; supervisor</b> Tripillia Mega-Sites Project	📍 Ukraine
2012	● <b>Supervisor</b> Mirkovo Project	📍 Bulgaria
2009	● <b>Trainee</b> Tripillia Mega-Sites Project	📍 Ukraine
2007	● <b>Trainee</b> York Archaeological Trust	📍 England

In the field, I specialise in site prospection, intrasite survey, digital recording and GIS.

I was responsible for the survey component Shubayqa Archaeological Project (2018–2019), including designing the research strategy, planning and obtaining permits, and directing teams on the ground.



## Grants & scholarships

2022	● <b>Young Researchers' Promotion Fund</b> And other internal funds	📍 University of Bern
	• 7300 CHF to support conference organisation, 'Digital Archaeology Bern 2023'	
2019	● <b>Project grant</b> Danmarks Frie Forskningsfond	
	• "Connecting the Dots: Reconfiguring the Indo-European family tree"	
	• Named applicant. PI: Dr. Thomas Olander	

- 2018 ● **Fieldwork grant**  
Det Danske Institut i Damaskus
  - 115,000 DKK to support archaeological fieldwork in eastern Jordan (2019)
  - Co-applicant with Dr. Tobias Richter
- 2018 ● **Fieldwork grant**  
H. P. Hjerl Hansen Mindefondet for Dansk Palæstinaforskning
  - 50,000 DKK to support archaeological fieldwork in eastern Jordan (2019)
  - Co-applicant with Dr. Tobias Richter
- 2016 ● **Project grant**  
C. L. Davids Fond og Samling
  - “Tracking Cultural and Environmental Change: the Epipalaeolithic and Neolithic in the Seimarreh Valley, central Zagros”
  - Named applicant. PIs: Prof. Peder Mortensen, Dr. Tobias Richter, Dr. Hojjat Darabi
- 2015 ● **Institute of Archaeology Award**  
UCL Institute of Archaeology 📍 London
  - Individual grant (£1888) to participate in archaeological fieldwork in eastern Jordan
- 2014 ● **Research Students’ Conference Grant**  
London Centre for the Ancient Near East (LCANE)
- 2013 ● **PhD Studentship**  
Leverhulme Trust
  - Part of Research Project Grant RPG-2013-223
- 2012 ● **Research-preparation Masters Award**  
Arts and Humanities Research Council

## Teaching & public engagement

- current | 2022 ● **Course lecturer**  
Institute of Archaeological Sciences 📍 University of Bern
  - Lead instructor on BA-/MA-level courses [GIS in Archaeology](#) and [Statistical Methods for Archaeological Data Analysis](#) (SMADA)
  - Recognised for “Excellence of Teaching” for SMADA 2023 (top 14% of courses in the Faculty of Humanities according to student satisfaction)
- 2023 | 2020 ● **Instructor**  
“R for Archaeologists” winter school 📍 University of Pisa
  - For four years I have led an intensive [two-day workshop on data visualisation in R](#) for archaeologists

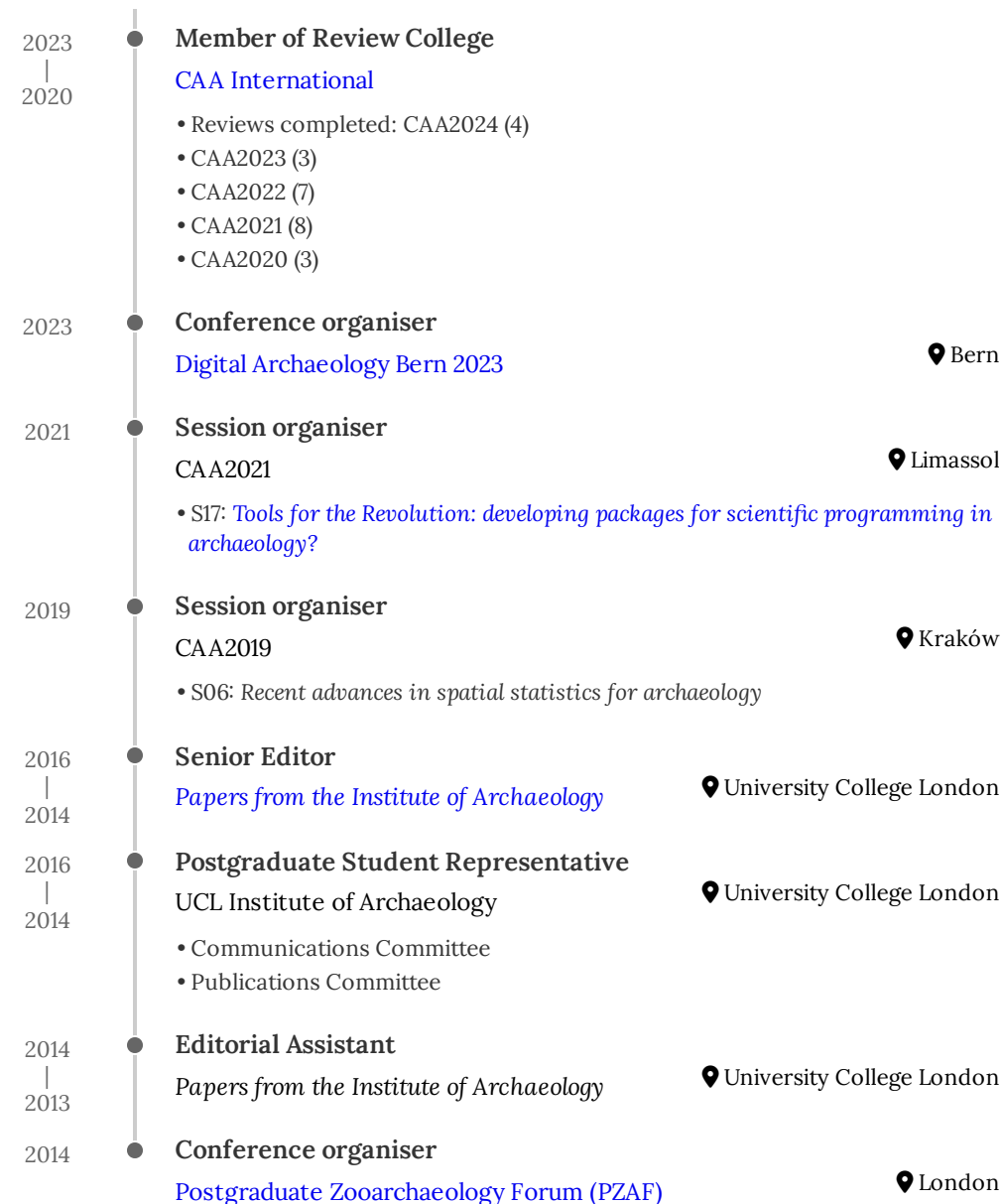
Promoting computational tools, and especially R, in archaeology has been a particular focus; I have experience in teaching at a range of levels, as well as informally mentoring students and colleagues.



- 2021  
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2018
- **Course lecturer**  
Department of Cross-Cultural and Regional Studies  
📍 University of Copenhagen
    - BA: "Practical Archaeology 1" (Arkæologisk praksis 1, [HNAB0100FU](#)), "Practical Archaeology 2" (Arkæologisk praksis 2, [HNAB0102EU](#)), "Science and Theory of Science" (Videnskabsteori, [HTOR0102FU](#))
    - KA: "Theory and Method in Near Eastern Archaeology" ([HNAK0101EU](#)), "Environments and landscapes in the archaeological record of southwest Asia" ([HNAB0102FU](#)), "Neolithic to Early Urban Periods in the Near East" ([HNAK0102EU](#)), "Project-based course" ([HNAK0100FU](#))
- 2020
- **Workshop organiser**  
Department of Cross-Cultural and Regional Studies  
📍 University of Copenhagen
    - Led an intensive two-day workshop on mobile GIS for linguistic field research
- 2016  
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2015
- **Postgraduate Teaching Assistant**  
UCL Institute of Archaeology  
📍 University College London
    - ARCL2028 Research & Presentation Skills
- 2016  
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2014
- **Tutor**  
[The Brilliant Club](#)  
📍 Schools in London
    - Designed and delivered a university-style tutorial course for primary and high school students
- 2015
- **Student Volunteer**  
*Maths and Archaeology workshop* 📍 Petrie Museum of Egyptian Archaeology
    - Outreach event for high school students organised by Dr. Alice Stevenson (Petrie Museum) and Dr. Luciano Rila (UCL Mathematics) and supported by the London Mathematical Society

## Professional service

- **Peer review**  
Journals
  - *Journal of Open Source Software*: [#4335](#), [#5811](#)
  - *Journal of Open Archaeology Data* (2)
  - *PCI Archaeology*: [#333](#)
  - *Advances in Archaeological Practice* (1)
  - *Open Quaternary* (1)
  - *PLOS ONE* (1)



## Professional memberships



I am especially active in CAA International and its [special interest group for scientific scripting languages](#).

current  
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2014

## Computer Applications and Quantitative Methods in Archaeology International

- Member of Review College (2018–present)
- Member of ‘Scientific Scripting Languages in Archaeology’ special interest group (2019–present)



## Workshop & seminar participation

- 2019 ● “Scientific Scripting Languages in Archaeology” Roundtable  
CAA2019 Kraków
- 2018 ● “Connecting the Dots”  
International Summer School Christian-Albrecht University of Kiel
- Development of the R package [moin: Modeling Interaction in Landscape Archaeology](#)
- 2017 ● Shubayqa Project Workshop  
Workshop University of Copenhagen
- 2016 ● Near East Climate Workshop  
Workshop University of Nottingham



## Other employment & volunteering

current  
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2010

- current ● Editor & administrator  
English Wikipedia
- Community-appointed administrator
  - Elected member of the Arbitration Committee (2019–2020)
- 2018 ● Gateway Advisor  
Kirklees Citizens Advice Bureau Dewsbury
- 2012 ● Curatorial assistant  
Gradski Musej Vršac Vršac
- 2012 ● Software engineer  
[TPP SystemOne](#) Leeds
- Front-end and data migration programming for a large clinical systems developer, working with Java and SQL

In my work with Wikipedia and other Wikimedia projects, I seek to promote engagement between academic archaeology and the free knowledge movement.