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HELEN DAWSON

Book Review: Network Science in Archaeology

Tom Brughmans and Matthew A. Peeples,
Network Science in Archaeology, Cambridge
Manuals in Archaeology. Cambridge: Cambridge
University Press 2023, ISBN 978-1-009-17064-2.
OA online companion: <https://book.archnetworks.net/>.

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Keywords Theory, methods, multilayer networks, deep mapping, interdisciplinarity

This volume, published in 2023 as part of the Cambridge Manuals in Archaeology series, introduces network science in archaeology and aims to teach readers how to conduct “critical archaeological network research” while avoiding “bad network science and bad archaeology” (p. 13, my emphasis). It serves both as a primer for non-specialists and as a handbook for experienced researchers, surveying the state of the art, outlining how to model theories and data, and providing a step-by-step guide to different methods.

The authors have evidently written the book with students in mind, making abstract concepts more accessible through the extensive use of summaries, exercises, and case studies drawn from their own work and that of others. An online companion (not included in this review) provides datasets, code, and descriptions (using R or other software), and is updated periodically. The style is clear, the tone encouraging, and the “how to read this book” section highlights efficiency from the start. The abundant colour illustrations are a valuable resource, adding clarity throughout; however, a list of figures would have made them easier to revisit while studying the book. Further reading expands the scope, while the appendix reviews software options, with mathematical formulae confined to the glossary.

Brughmans and Peeples have structured the book into eight chapters. Chapters 1 and 8 highlight the importance of theory, while chapters 2 to 7 are devoted to different aspects relating to data and methods, but with constant reminders of the importance of “staying critical”.

Chapter 1, “Introducing Network Science for Archaeology”, defines networks as “formal systems of interdependent relationships” and distinguishes “network analysis” (studying patterns of relations) from “network theories” (formal explanations of why and how relations matter). The chapter introduces the “relational perspective” at the heart of network science: relationships between entities are as important as the entities themselves.

Chapter 2, “Putting Network Science to Work in Archaeological Research”, outlines archaeological data types and themes such as material culture, transportation, spatial proximity, and visibility networks. The authors stress the limitations of relying on “proxies” and the probabilistic nature of the relations drawn between them.

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Chapter 3, “Network Data”, explains how to collect and turn archaeological data into network data, introducing key concepts such as “weak ties” and “small world networks”. This chapter, along with Chapter 4, provides clear exercises.

Chapter 4, “Exploratory Network Analysis”, leads the reader into more advanced territory, covering exploratory analysis, explaining how quantitative methods can test hypotheses while also emphasizing that results show plausibility, not proof.

Chapter 5, “Quantifying Uncertainty and Sampling Sensitivity”, distinguishes between “total” and “sampled” networks, discussing challenges with missing data and legacy datasets. The authors advocate open science and transparent data sharing.

Chapter 6, “Network Visualization”, explores visualization, tracing its history from early sociograms to modern network diagrams. While graphic representations are vital for interpretation, the authors caution against mistaking models for reality, reminding readers throughout that networks are probabilistic constructs.

Chapter 7, “Spatial Networks and Networks in Space”, highlights spatial networks, with examples from transport systems, visibility, and settlement patterns, building on earlier methods and culminating in more advanced exercises.

Chapter 8, “Uniting Theory and Method for Archaeological Network Research”, reflects on future directions, calling for stronger integration of theory and method, more computational modeling, and critical engagement with large archaeological datasets, which are often derived from legacy sources.

While the volume is an excellent teaching tool, it also raises significant questions regarding the broader state of the field. Ten years ago, Kristian Kristiansen identified a “Third Science Revolution” in archaeology, driven by big data, aDNA, and quantitative modeling (Kristiansen 2014). Network analysis has played its role in this revolution, with publications nearly tripling between 2010 and 2021 (p. 17, fig. 1.5). This growth makes the field a phenomenon worth studying in its own right. Yet, as Brughmans and Peeples caution, its popularity has often been “overly method-driven” (p. 264). Massive datasets and powerful analytical tools reveal striking patterns, but theory has largely lagged behind, a tension that sits at the heart of the book, and which the authors describe as the “growing pains” of network archaeology (p. 26).

This tension shows up in the authors’ use of the term “theory,” which they apply interchangeably to relational thinking, overarching research questions, and specific hypotheses. In a handbook, such a conflation risks confusing students about the best way to approach the research process. At the same time, the book

clearly distinguishes between data-driven and question-driven approaches. The former looks for patterns inductively within the data, while the latter proceeds deductively, moving from theory to hypothesis, to model, to results, and back again in an iterative cycle. Although students may find data-driven approaches easier at first, the authors emphasize that the true value of network analysis is its critical, question-driven application, which they demonstrate through numerous case studies. Strong interpretation ultimately depends on a clear theoretical framework to guide data selection and analysis (p. 107).

The authors trace key theoretical influences on network analysis, including assemblage theory, entanglement theory, and post-humanism, all emphasizing relationality. They admit that turning these perspectives into network models remains difficult. A promising avenue identified in the book is, in my view, the use of “multilayer networks,” which capture different relations simultaneously (p. 91). These networks of networks evoke the idea of “deep mapping” (Pearson and Shanks 2001), where tangible and intangible properties of places are layered by integrating quantitative and qualitative data, to examine the interaction of people, places, and memory. Both approaches highlight the potential of interdisciplinarity, exposing the tension between analytical models, lived experience, and perception (Corrigan 2021). The book’s cover artwork by Ian Kirkpatrick captures this tension with subtlety, hinting at both what network science reveals and what remains beyond explanation. These considerations underscore that networks are analytical tools rather than realities in themselves, and that it is archaeologists who ultimately “network” the past according to their interpretive frameworks (Terrell 2023).

Brughmans and Peeples articulate an ambition to produce “a sort of encyclopedia of the material residues of social networks” (p. 280). To realize this vision and unlock the field’s potential, they advocate a more extensive use of computational modeling. Yet this emphasis introduces a concern: as methods grow more technically complex, they risk alienating non-specialists through the “black box” effect, thereby widening the very divide between theory and method that the authors aim to bridge. Can relationality ever be adequately modelled, or does intensifying methodological complexity risk diminishing returns? At what point might network science devolve into a technical exercise applied to archaeological data rather than an interpretive framework?

Equally important are the social and ethical dimensions of network science in archaeology. Brughmans and Peeples (2017) showed that male authors outnumber female authors by more than three to one, reflecting broader structural imbalances within the discipline. While progress is underway, addressing such inequalities (both in terms of who conducts the research and who engages with its results) remains essential for the field’s development. A socially engaged perspective can open new avenues of inquiry that challenge dominant narratives and

incorporate historically marginalized voices, broadening participation to include more women and minority scholars.

In conclusion, I highly recommend this volume to students seeking to learn network analysis in archaeology. Its explanations, exercises, and online resources have been carefully drafted to support effective engagement with current concepts and methods. While they require a significant investment of time, they will enable readers to apply analytical and visualization techniques from the outset, facilitating independent study. The authors' sustained emphasis on critical network analysis is particularly welcome given the growing imbalance between the rapid advancement of archaeological science and the relative decline of archaeological theory. The central point, however, remains: for network science to fully capture the past as relational, archaeological data must integrate both quantitative and qualitative perspectives. Achieving this will require modeling the past in innovative ways that draw on interdisciplinary insights and push archaeological theory, as well as method, in new and potentially disruptive directions.

Bibliography

- Brughmans, Tom, and Matthew A. Peeples. "Trends in Archaeological Network Research: A Bibliometric Analysis." *Journal of Historical Network Research* 1, no. 1 (2017): 1–24. <https://doi.org/10.5072/jhnr.v1i1.10>.
- Corrigan, John. "The Inexactitude of Science." In *Making Deep Maps: Foundations, Approaches, and Methods*, edited by D. J. Bodenhamer, J. Corrigan, and T. M. Harris, 162–74. 1st ed. London: Routledge, 2021. <https://doi.org/10.4324/9780367743840>.
- Pearson, Mike, and Michael Shanks. *Theatre/Archaeology*. 1st ed. London: Routledge, 2001. <https://doi.org/10.4324/9780203995969>.
- Terrell, John E. "Network Models and the Past: Relational Thinking and Contingency Analysis." In *The Oxford Handbook of Archaeological Network Research*, edited by T. Brughmans et al. [Online edition]. Oxford: Oxford University Press, 2023. <https://doi.org/10.1093/oxfordhb/9780198854265.001.0001>.