



Imprint

Université du Luxembourg 2026

Luxembourg Centre for Contemporary and Digital History (C²DH)

Université du Luxembourg

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ISSN 2535-8863

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Published online at

<https://doi.org/10.25517/jhnr.v13i1>

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The Journal of
**HISTORICAL
NETWORK
RESEARCH**

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Book Review: Modeling the Past

John Terrell, Mark Golitko, Helen Dawson and Marc Kissell, *Modeling the Past. Archaeology, History and Dynamic Networks*. New York/Oxford: Berghahn 2023. ISBN 978-1-80073-869-0.

Journal of Historical Network Research 13 (2026), 57–62

How is research constructed? How does one move from data to hypotheses and then to models? These are questions that any researcher or student asks themselves at some point. *Modeling the Past* is a clear, concise, and engaging guide to understanding how to develop a coherent research pathway.

This book presents a step-by-step guide to moving from a research question to a hypothesis, and ultimately to a model. It does so with an explicit focus on relational thinking – exploring how relationships between people, places, and things can be traced to develop new understandings of human history. As the authors state, the aim is to address the questions of *why*, *how*, and even *so what*, in the study of human history through strategies of relational thinking and the evaluation of plausible models.

To this end, the authors introduce the concept of Dynamic Relational Analysis (DYRA), which serves as the leitmotif of the book. A key point throughout the book is to differentiate between DYRA and Social Network Analysis (SNA), which is increasingly popular in archaeology. In SNA, networks can be described as structured systems of interdependent relationships among a group of entities, where nodes represent the entities and edges indicate the connections between them (Brughmans, 2010, 2013; Brughmans & Peeples, 2023). In archaeology, network analysis is used in a range of ways, making it possible to explore data by focusing on relationships, rather than isolated elements (Brughmans et al., 2023). However, the authors criticise that SNA is often used simply to describe a network, without being taken further. In contrast, DYRA aims for a more theoretically driven approach to network analysis, using it not to describe the properties of a network, but rather to model complexity.

In this sense, DYRA (chapter 1) does not seek to collect or analyse relational data, but rather to “model and then investigate the relational contingencies that may have led to what evidently happened in the past” (pages 33–34). The authors aim to move beyond SNA, which has often been employed primarily as a methodology rather than as a means of interrogating or developing hypotheses about the

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Acknowledgements: This work has been carried out under the Vicenç Mut fellowship (POSTDOC2024_37) funded by the Conselleria d'Educació and Universitat of the Government of the Balearic Islands and the European Social Fund. This publication is part of the R&D project “*People make islands as islands make people. Assemblages and communities of practice in the Balearic Islands during Late Prehistory*”, (PID 2023-148651NB-I00) funded by the Spanish Ministry of Science, Innovation and Universities (MICIU/AEI/10.13039/501100011033/FEDER, UE).

past. Networks are thus understood as dynamic, used to describe or explore research questions, rather than as a methodology to describe relationships. Through DYRA, they seek to focus not on fixed networks, but on exploring changes in relationships over time. In a sense, this focus on changing relationships is somewhat reminiscent of ideas associated with assemblage theory, particularly the emphasis on understanding relations as contingent and ever-changing (Crellin, 2020; Harris, 2021). Although the book focuses on social network analysis (SNA) rather than Historical Network Analysis (HNA), the principles of DYRA can equally be applied to historical research, as they emphasise changes in understanding across networks.

The idea underlying DYRA is to understand networks in order to build models, and to treat their analysis as a means of exploring research questions, no matter the period or type of network that it is applied to. To do so, the book implements this way of thinking across six chapters (chapters 2–7), which focus on the different stages of research development. From research question, to modelling, developing hypothesis, gathering information or analysing the data, the book demonstrates how research can be conducted in a relational manner. As they point out, “this is why this book is not about interpreting the past. This book is about trying to understand and explain what happened in the past to be better prepared for what could happen in the future” (page 47). It is about thinking about research differently, and – more importantly – about putting forward why research about the past matters.

Chapter 2 outlines the importance of asking the right questions in historical research, in particular of moving beyond *what*, *where*, *when*, *how*, and *why* to ultimately ask *so what*? The chapter explores how to plan a research project, something that might be expected of any researcher or student yet is often the most overlooked stage of the research process. Chapter 3 explores different types of theory in relation to different types of networks, as well as the importance of human agency in shaping what happened in the past. This enables readers to understand how, through different models, archaeologists can arrive at different interpretations of the past, even when analysing the same data. It clearly demonstrates the importance of written history and of understanding the assumptions, models, and theories that underpin our research. Chapter 4 delves into the type of evidence that is needed to evaluate a hypothesis, and how to compare different models, while chapter 5 is focused on how to develop hypothesis, especially through Bayes’ theorem. The authors clearly state that “DYRA is a strategy for implementing Bayes’ Theorem and network modeling in the study of history where the state transitions are already reasonably well known, and the goal isn’t calculating [...] their likelihood, or probability, but pinning down the contributing causes and conditions” (page 127). One of the book’s key strengths is its emphasis on uncertainty and updating probabilities as new data are introduced, effectively linking Bayes’ theorem with DYRA and demonstrating how probabilistic thinking can inform historical research.

Chapter 6 discusses how to gather information, which I consider another key point emphasised throughout the book. Although archaeological research has long recognised that data do not provide a straightforward window into the past, theoretical discussion has recently stagnated, with research increasingly focused on methodologies rather than interpretation or explanation. As the authors illustrate, it is impossible to have complete information about the past – models and theories are thus always necessary in order to explain it. Finally, Chapter 7 addresses how data can be analysed, whether through typology, statistics, social network analysis, or DRYA, and emphasises that none of these approaches in itself can explain how or why something happened in the past. Rather, they are tools for evaluating hypotheses and models in relation to the available data.

As a conclusion (chapter 8), the authors state that the book's aim was to “endorse a more formal way of putting ideas and information together in the quest for historical understanding” (page 197); as a reader, this concept can be traced throughout the entire book. I would argue that the book can be read in two ways: first, as a tool to understand relational thinking, as well as how to apply the idea of Dynamic Relational Analysis (DYRA); second, as a guide to better construct research, assess each step in the process, and understand how to test models against available data. All in all, the book feels like a valuable read both for researchers and students. Moreover, it is an unequivocally good book for appreciating the importance of theory and modelling in the study of the past, an aspect that is increasingly overlooked in favour of ever-expanding and fashionable new methodologies. As the authors put it, “although it is popular nowadays to equate scientific model building with mathematics and numerical analysis, we have advocated for an open modelling strategy that does not privilege any particular form of hypothesis development and data analysis. What we have emphasized is the value of using relational thinking and model building as a way of being honest about what is uncertain and perhaps still largely unknown about the past” (page 197).

Each chapter opens with a series of quotations that set the tone, along with an overview of its contents, and closes with a summary of the chapter and the key points discussed within. Moreover, definitions are given for key concepts throughout the entire book. It also includes a thorough glossary of the terminology used, as well as a comprehensive index. These strategies provide a streamlined overview for the reader and help to identify the key takeaways from each chapter. Additionally, each chapter includes an example to illustrate the key points concerning how to build research in a more practical manner, which is introduced early in the chapter. These examples draw upon the authors' research backgrounds and address major research questions, including ancient voyaging in the Pacific (chapter 2), maritime interaction in the Bronze Age Mediterranean (chapter 3), explaining human diversity (chapter 4), what DNA can tell us (chapter 5), the Neolithic Revolution (chapter 6), and language, material culture and society in Papua New Guinea (chapter 7). This overview of research topics highlights the

versatility of the approach while also encompassing a broad range of subjects that may attract readers, all of which relate to current debates in archaeology.

Throughout the entire book, the authors make it clear that their vision of research – especially on network analysis – goes beyond methodology. They argue that research has often focused on the implementation of new methods, while the interrogation of broader hypotheses or models remains somewhat lacking. The central claim, therefore, is that DYRA should function not merely as a tool, but as a framework for understanding the entire research process. In this sense, one of the most compelling aspects of the book is that it extends beyond archaeology, drawing on examples from mathematics, biology, and physics to demonstrate how thinking through models can underpin any research question. This interdisciplinarity is also reflected in the book's writing style, with frequent quotations and examples drawn from a wide range of scholarship, making it relevant to any researcher or student seeking guidance on how to develop robust research.

All in all, the book is written in an engaging way, making it an enjoyable and stimulating read. By touching on a broad range of research areas, it is likely to appeal to many different readers. Its step-by-step approach encourages readers to reflect on how these principles might be applied to their own research, while the examples clearly show how relational thinking can shift our perspectives when seeking to explain the past. Most importantly, the book encourages readers to reflect on why we seek to understand the past and why this pursuit matters. Throughout, the authors emphasise the significance of historical research and show how carefully structuring our research can help our hypotheses to reach their full potential. In doing so, the book also invites reflection on why we should care about writing and understanding history, as well as the important role that discipline can play in today's society.

In conclusion, *Modeling the Past* is a clear and thoughtful contribution to current discussions about how research is designed and carried out. Its structured approach, interdisciplinary range, and consistent emphasis on relational thinking and modelling make it both accessible and intellectually engaging. By presenting dynamic relational analysis as a way of thinking rather than simply a methodological tool, the authors encourage readers to look beyond method-driven research and engage more directly with hypotheses, models, and explanations. Overall, the book offers a useful and timely resource for students and researchers seeking to develop a more coherent, reflective, and theoretically informed approach to research.

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