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Social Sequence Analysis

Social sequence analysis includes a diverse and rapidly growing body of methods that social scientists have developed to help study complex ordered social processes, including chains of transitions, trajectories, and other ordered phenomena. Social sequence analysis is not limited by content or time scale and can be used in many different fields, including sociology, communication, information science, and psychology. *Social Sequence Analysis* aims to bring together both foundational and recent theoretical and methodological work on social sequences from the last thirty years. A unique reference book for a new generation of social scientists, this book will aid demographers who study life-course trajectories and family histories, sociologists who study career paths or work/family schedules, communication scholars and micro-sociologists who study conversation, interaction structures, and small-group dynamics, as well as social epidemiologists.

Benjamin Cornwell is an associate professor of sociology at Cornell University. He received his PhD in sociology at the University of Chicago. His research has been published in journals such as *American Journal of Sociology, American Sociological Review*, and *Social Forces*. His work has been covered in many media outlets, including CNN, the *New York Times*, MSNBC, and the *Los Angeles Times*. In 2012, he taught one of the first graduate courses on social sequence analysis in the United States at Cornell.

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Social Sequence Analysis

Methods and Applications

BENJAMIN CORNWELL
Cornell University

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Preface

During a routine literature search a few years ago, I stumbled onto a prickly set of articles in a 2000 special issue of the journal *Sociological Methods & Research*. I was seeking methodological guidance for an analysis of the association between individuals' stress levels and their frequency of switching between social roles and contexts. Several of the articles seemed generally relevant to what I was trying to do, so I looked at the entire issue. As I read on, I noticed that there was a measure of antagonism among some of the issue's authors. This in itself is not unusual, as methodological debates are common in the social sciences and can lead to conflict (escalating, in some cases, to near vehicular assault in campus parking lots). Nothing so serious was going on in the case of this special issue. But the contributors were using markedly spirited terms – such as "trivial" and "silly" – to characterize each other's contributions. The subject of this particular debate was sequence analysis.

In the research that I had done to that point, I had never used the kinds of sequence analysis methods that were being discussed in that special issue – in particular, optimal matching. But I have long been fascinated by complex dynamic social processes, so the idea of learning more about how to detect general patterns in such processes appealed to me. My methodological training in graduate school focused primarily on multivariate analysis and social network techniques, and it seemed that these would not take me where I wanted to go with my new research. (I turned out to be only half wrong about that.) I broadened my literature search, and soon discovered numerous alternative approaches that are concerned with assessing the timing and order of social phenomena. They all shared a concern with sequencing. And yet, much of that work avoided the language of sequence analysis. As the pile of relevant references on the desk in my study grew taller, I became increasingly annoyed by the fact that I could not find a single source that tied all of this work together. So,

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I decided to write this book, both as a methodological reference and as a unifying conceptual framework.

This is a timely book. The growth of sequence-oriented approaches within the social sciences over the past few decades has been steady but slow. But from where I stand, it is apparent that things are about to change. The social sciences have entered a period that will likely be known in retrospect both for the sudden availability of massive streams of complex, real-time social data and for the challenge of making sense of them. The rise of computational social science, the accessibility of dynamic data, an increasing focus on real-time events and time use, and major improvements in analytic technologies call for methods that can make intuitive sense of detailed sequential data.

Perhaps even more importantly, these developments highlight the urgent need for a coherent conceptual framework that can serve larger theories about ordered social processes. The social sciences are full of well-theorized but seldom-tested ideas about the structural causes and consequences of the ordering of social events. Talcott Parsons's grand theory of a social system in which action is predictably coordinated via an interlocking set of social roles is one example. Another is Anthony Giddens's theory that everyday routine is crucial for maintaining individuals' sense of continuity and ontological security in an otherwise fast-paced world. There are many other prominent examples, some of which are addressed in the second chapter of this book. I believe that the best conceptual framework for moving these ideas forward can be found at the intersection of social network analysis and sequence analysis. This book provides the foundation for such a framework.

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Acknowledgments

This book has benefited inestimably from the encouragement and insights of many generous friends and colleagues. I will begin with those who had the most direct role in bringing this book to the light of publication. First, I owe a great debt to Robert Dreesen, senior commissioning editor at Cambridge University Press, for seeing the potential of this idea and encouraging me to pursue it as a book project. Mark Granovetter, editor of the Structural Analysis in the Social Science series, shepherded the book through the drafting and revision processes and provided indispensible feedback that shaped the book along the way. This book was only possible due to their highly responsive support, expertise, and good cheer. I also thank Brianda Reyes for providing able editorial assistance throughout the production process.

Cornell University has been an ideal setting for the development of this project. For one, because Cornell is rife with network researchers, there is a constant demand here for fresh and interesting network-related ideas. The basic notion of studying sequences as networks has met with great enthusiasm. Cornell also provided substantial institutional support. I am grateful to Cornell's Institute for the Social Sciences, in conjunction with the Department of Sociology, for funding my leave from teaching in the spring semester of 2013, during which the initial draft of this book was written. The opportunity to offer a new graduate course on social sequence analysis at Cornell also benefited this project tremendously by providing me with the impetus to develop and refine many of the ideas that are presented here. The course was first offered in spring 2012 at Cornell University, attended by Rachel Behler, Chris Cameron, Dan DellaPosta, Michael Genkin, Ningzi Li, Noona Oh, Kelly Lee Patterson, Victoria Sosik, and Dana Warmsley. Their critical engagement with the material and our discussions about potential applications had an immeasurable impact on my approach to this subject. Dan DellaPosta also provided valuable research assistance later,

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including tracking down references to empirical examples of whole sequence comparison techniques.

In many ways, this book has its roots in the Department of Sociology at the University of Chicago. As my advisor, mentor, and now close friend, Ed Laumann has nurtured in me an appreciation for the dynamic properties of social structure. He has continued to challenge me to think about and model these in terms of networks. Many of the new contributions of this book reflect his influence on me as a scholar. Obviously, the very topic of this book owes much to Andy Abbott and his decades of work in bringing sequence analysis to the social sciences. Throughout the development of this manuscript, Andy has been gracious in discussing sequence analysis methods themselves and in providing advice about some potential references and contacts.

My engagement with the topic of microsequences specifically was partly inspired by the work of Jay Gershuny, Director of the Centre for Time Use Research (CTUR) at the University of Oxford. He and his colleagues – including Kimberly Fisher, Teresa Harms, and Oriel Sullivan – graciously hosted me at the CTUR at St. Hugh's College in the fall of 2014. That was the beginning of what is sure to be a fruitful collaboration. This part of the book also benefited from the comments and suggestions of Matt Brashears, Tom Buchanan, Jessica Collett, Karen Danna-Lynch, Ed Lawler, Michael Macy, Brian Rubineau, Jeremy Schulz, and participants at the Perspectives on Time Use in the U.S. Conference at the U.S. Bureau of Labor Statistics in Washington, DC, in June 2014; the annual meeting of the American Sociological Association in Atlanta, Georgia in 2010; and the Cornell Population Program seminar series in March 2010.

A variety of colleagues played important roles in the development of this book by talking through sundry sequence-related ideas, helping me to recognize the theoretical and methodological scope of the work, and pointing me to related lines of research. At Cornell, Richard Swedberg humored me by engaging in discussions about the deeper theoretical relevance of sequential social phenomena, such as in the work of Talcott Parsons. Steve Morgan saw promise in this idea early on and arranged my initial introduction to Cambridge University Press. I am also grateful to Jim Moody for first introducing me to network analysis in general and the idea of narrative networks in my first year as a graduate student, more than a decade ago. Other scholars who discussed aspects of this work, responded to queries, supplied data, or otherwise engaged in exchanges about sequence analysis include Jason Beckfield, Cliff Brown, John Brueggemann, Chris Marcum, and Kate Stovel. The anonymous reviewers of the manuscript draft also made many wise suggestions that improved this book.

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Finally, I could not have done this without the understanding and patience of those closest to me. My extended family unwittingly did a great service simply by forcing me to explain my ideas to them in plain language. I am also particularly grateful to my wife, Erin York Cornwell, who provided infinite support and advice. Her influence on this work has been immense, and is absorbed into nearly every passage of this book. Erin provides the ultimate combination of wisdom, companionship, and inspiration. I cannot imagine getting through such an undertaking as this without knowing that there is someone like her, and our Watson, nearby.

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