Egocentric Network Analysis

Foundations, Methods, and Models

Egocentric network analysis is used widely across the social sciences, especially in anthropology, political science, economics, and sociology, and is increasingly being employed in communications, informatics, and business and marketing studies. Egocentric network analysis requires a unique set of data collection and analysis skills that overlap only minimally with other network methodologies. However, until now there has been no single reference for conceptualizing, collecting, and analyzing egocentric social network data. This comprehensive guide to study design, data collection, and analysis brings together the state of knowledge with the most effective research tools to guide newcomers to this field. It is illustrated with many engaging examples and graphics and assumes no prior knowledge. Covering the entire research process in a logical sequence, from conceptualizing research questions to interpreting findings, this volume provides a solid foundation for researchers at any stage of their career to learn and apply ego network methods.

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The series *Structural Analysis in the Social Sciences* presents studies that analyze social behavior and institutions by reference to relations among such concrete social entities as persons, organizations, and nations. Relational analysis contrasts on the one hand with reductionist methodological individualism and on the other with macro-level determinism, whether based on technology, material conditions, economic conflict, adaptive evolution, or functional imperatives. In this more intellectually flexible structural middle ground, analysts situate actors and their relations in a variety of contexts. Since the series began in 1987, its authors have variously focused on small groups, history, culture, politics, kinship, aesthetics, economics, and complex organizations, creatively theorizing how these shape and in turn are shaped by social relations. Their style and methods have ranged widely, from intense, long-term ethnographic observation to highly abstract mathematical models. Their disciplinary affiliations have included history, anthropology, sociology, political science, business, economics, mathematics, and computer science. Some have made explicit use of social network analysis, including many of the cutting-edge and standard works of that approach, whereas others have kept formal analysis in the background and used "networks" as a fruitful orienting metaphor. All have in common a sophisticated and revealing approach that forcefully illuminates our complex social world.

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To Rus Perry

and

Joe Pescosolido

and

Joe Borgatti

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Preface

Networks and network terminology are everywhere. The past several decades have seen a significant increase in the use of network theory and methodology to address complexity and interdependence in relationships between actors or organisms at multiple levels of analysis. A broad literature spanning multiple disciplines suggests that networks critically influence a variety of human, societal, and technical processes and outcomes. In the social and behavioral sciences, the social network perspective is concerned with the structure of linkages between individuals or other social actors such as households, organizations, or communities; the resources shared by these network members; and the ideas and information flowing through those networks. A social network can be defined as a "set of individuals who are either directly or indirectly connected" (Lin & Peek 1999: 243). Although the individual units in a social network can be any of a wide array of entities (e.g., insects, animals, family groups, corporations, nations), we focus here on people.

We live in a "networked society" where the spread of digital information and communications technologies have fundamentally changed the social, political, economic, and cultural nature of human life. Castells (2004) and Wellman (1999) see this as a new social form – one in which advances in technological communications, from computers to cell phones, have reorganized societies and the way individuals are connected to one another. Though it is clear that connectedness matters, perhaps more so by the day, that may be where the clarity ends. Given the ubiquity of "networks," it is hardly surprising that the term can evoke confusion for the public and researchers alike. Consider, for example, the business world's use (or misuse) of the term "networking," the popularity of the

notion of "six degrees of separation," the millennials' idea that social networks equal social media, as well as social scientists' concerns about "social support" and "social capital." Taken together, the result is a sense of mystification around what networks are, what they do, and what, possibly, "network science" might be.

That said, networks offer enough of a shared perspective and language to deconstruct terminological and scale differences that plague efforts at serious integration of insights across scientific disciplines (Pescosolido 2006). Perhaps most importantly, research on social networks is united by a common theoretical focus on ties between actors, but diverges methodologically. There are at least two distinct research designs: (1) whole (i.e., sociocentric) network analysis in which ties between nearly every member of a group or social context are represented, and (2) ego (i.e., egocentric or personal) network analysis in which individuals' connections to their own personal community network are measured. In whole network research, every node in the network is also a research subject. In ego network research, we collect data from a sample of individuals who provide information about their immediate "network neighborhoods." That is, ego network analysis diverges in its focus on individually bounded personal communities rather than a common boundary applicable to all respondents.

This book constitutes a comprehensive guide to ego network analysis, focusing on fundamental research design, methodological, and analytic issues. Ego network research has a long and rich tradition. It includes some of the most influential contributions to social network research, such as Bott's (1955) seminal study in the 1950s of husbands' and wives' personal networks and their relationship to the enactment of marital roles. Compared to whole network designs, ego network research allows for greater flexibility in data collection and analysis as well as a broader scope of inference. As a result, ego network analysis requires a unique set of data collection and analysis skills and considerations that overlap only minimally with other network methods.

Despite the importance of ego network research, there is no comprehensive manual for the design and analysis of ego network data and substantive applications of this approach (but see Crossley et al. 2015 for an introductory volume). In contrast, there have been at least a dozen books that systematically cover whole network methods and/or analyses (e.g., Wasserman & Faust 1994; Scott 2012; Borgatti, Everett, & Johnson 2013). The absence of even one counterpart resource for researchers seeking guidance on the best practices in ego network analysis is

disconcerting. This book – long overdue – fills this gap, synthesizing a diverse and diffuse body of knowledge on ego network methodology and its applications. Our aim is to provide a broad survey, covering everything from the conception of research questions to the analysis and interpretation of data. This strategy prohibits us from addressing all relevant topics, and sometimes limits the depth of the material we can provide. Consequently, we direct readers to additional references, where appropriate.

Many people in our own professional and personal networks helped make this book possible. We are grateful to Ann McCranie, Mark Granovetter, Isidro Maya Jariego, J. Scott Long, Ajay Mehra, Kate Eddens, Raffaele Vacca, Erin Pullen, and anonymous reviewers for their comments and contributions. We would like to thank Mary Hannah and Alex Capshew for invaluable editing and administrative assistance, and the Indiana University Network Science Institute for financial resources. In addition, we are appreciative of strong ongoing support for network science research and infrastructure from the Offices of the President, Provost, and Vice Provost for Research, the College of Arts and Sciences, and the Department of Sociology at Indiana University, as well as the LINKS Center for Social Network Analysis at the University of Kentucky. We offer special thanks to our immediate and extended families, and especially Brian, Erelyn, Harper, Joe, and Roberta.