Book Review

McCulloh, I., Armstrong, H., & Johnson, A. **Social Network Analysis with Applications**, John Wiley & Sons, 2013.

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The textbook "Social Network Analysis with Applications" was written by Ian McCulloh (Research Fellow at Curtin University in Perth), Helen Armstrong (Associate Professor in the School of Information Systems at Curtin University in Perth), and Anthony Johnson (Associate Professor in the Department of Mathematical Science at the United States Military Academy at West Point) and was published by John Wiley & Sons in 2013. The book starts with a short but very nice and almost thrilling introduction to the history and the crucial personalities of social network analysis. The authors span their historical overview from more than hundred years ago with Comte and Simmel to the foundation of the International Network of Social Network Analysis (INSNA) and its driving actors.

The actual chapters are organized into four parts. The first part covers centrality metrics and network topologies. The main concept of this textbook is obvious from the first page. The authors show many examples, draw network visualizations, and show matrices and network calculations in great detail. The authors are convinced "that an understanding of the mathematics leads to deeper and more complete understanding of the social concepts behind social network analysis" (p. xx). Although, the first part of the book has many equations, the algorithms, the math, and the underlying social considerations are discussed in every possible detail.

Part two is called "social theory" covering social forces (e.g. homophily, reciprocity, transitivity), grouping, and diffusion. Here, the authors try to walk the tightrope of including many well-discussed SNA concepts as well as rather new approaches, e.g. link optimization. Part three "data" covers briefly data collection methods and some related issues (data quality, anonymity). The larger portion of this part gives an introduction to multi-modal analysis using the meta-network approach that has been developed by Kathleen M. Carley and David Krackhardt and that incorporates knowledge, resources, etc. into social networks. The authors also describe the matrix algebra that is necessary to manipulate these meta-networks.

The final part of the book is dedicated to organizational risk and targets practitioners. The authors give instructions on how to interpret the results of network metrics from the perspective of assessing organizational networks. They also discuss the impact of possible network interventions, e.g. adding or removing nodes or edges. Finally, the authors provide a guideline for the process of organizational risk analysis including possible questions that can be asked during a network assessment (pp. 228ff). This part of the book can be of special interest for consultants or for people doing network analysis within a company. The book closes with an introduction to matrix algebra and an enumeration of all network data used in the book's examples.

At the end of every chapter the authors provide lab exercises that show how to accomplish the calculations of the chapter. These exercises are step-by-step instructions

(with screenshots) using the tool ORA (developed at Carnegie Mellon University) and can be used in class or for self-study. Checks on learning progress are sprinkled through the entire book; related answers are provided directly after the questions.

Compared to other recently published textbooks in the field of social network analysis the book by McCulloh at al. is easy to digest which makes "it especially appropriate for newcomers to the study of networks", as Katharine Faust states in the foreword (p. xvii). The basic concepts of SNA (e.g. centrality metrics) are much more detailed described than in other SNA books. This makes it perfect for self-study or newcomers to SNA. The key characteristic of this book is its unpretentious approach to network analysis – the authors use SNA as a toolbox. For instance, one of the first lab exercises uses a homonym network of words that have letters in common without discussing issues related to networks from words. But this would not make any sense at this point anyway.

In contrast to applications and exercises, the authors do not spend much time on discussing theories or methods without directly discussing applications and use cases. A side effect of this approach is that some "big" SNA concepts like social capital and structural holes are mentioned in one paragraph each. However, the authors provide information about related literature for the interested reader. On the plus side, the very practical approach is a very efficient way to quickly get a sense of achievement, especially, if you are a newcomer to SNA and you need to accomplish a network analysis for your class work or for your company by the end of next month. In a nutshell, if you are a self-study beginner or an undergrad lecturer and find other recently published textbooks too hard for yourself or for your students to start with, then this is your book for the first part of the studies. For the advanced social network analysis researcher who is not so familiar with algorithmic details of commonly used metrics, this book might offer some additional insights.