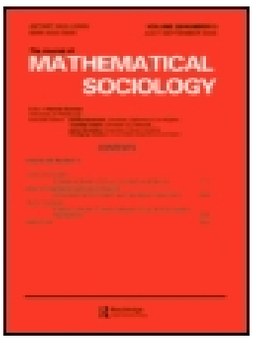

The Journal of Mathematical Sociology

ISSN: 0022-250X (Print) 1545-5874 (Online) Journal homepage: https://www.tandfonline.com/loi/gmas20

"How behavior spreads: the science of complex contagions"

Arnout van de Rijt

To cite this article: Arnout van de Rijt (2019): "How behavior spreads: the science of complex contagions", The Journal of Mathematical Sociology, DOI: 10.1080/0022250X.2019.1593522

To link to this article: https://doi.org/10.1080/0022250X.2019.1593522

Published online: 14 Mar 2019.

Routledge
Taylor & Francis Group

BOOK REVIEW

"How behavior spreads: the science of complex contagions", by Damon Centola, Princeton University Press, 2018

Damon Centola's *How Behavior Spreads* (2018) tells the fascinating story of why "viral" contagions like HIV, and information about HIV, diffuse so readily through populations, while vital behaviors, like ones that can prevent HIV, do not easily catch on. The answer, we learn, is that diseases and informational contagions are *simple* – a single contact is enough to transmit them – while behavioral contagions are *complex* – we do not change our habits until many of our friends have already done so, thereby convincing us to change, too. This distinction between simple and complex is compelling. Practitioners from marketing to medicine who seek to change consumptive behaviors or unhealthy lifestyles, as well as the scientists who advise them, regularly rely on notions of viral spreading. Centola emphasizes the pervasiveness of this intuitive, but false generalization from disease to behavior. In the practical examples that Centola develops, he shows how if we wish to instigate large-scale behavior changes, whether for social justice or for profit, we must learn to think instead in terms of "clustered seeding", "reinforcement", and "wide bridges."

The story commences with an introductory chapter that intrigues the reader with the promise of upending conventional thinking about networks. Centola explains his challenge using a counterintuitive visual illusion from Thaler & Sunstein's *Nudge*. We are told that even after our mistaken intuitions are corrected by compelling evidence, when we put down Centola's book and move on with our lives, our familiar intuitions will creep back in, and continue to point us toward a wrong understanding of how behavior spreads, suggesting that we will need to be continually reminded of the lessons of this book. In chapter 2, Centola brings this idea to life with great effect. All of the book's expert readers will be familiar with Centola & Macy's seminal paper on *complex contagions* from over a decade ago, yet we (myself included) still allow ourselves to be caught off-guard by chapter 2's counterevidence against the default perspective on diffusion. Even if the professional sociologist already knows how a single powerful insight can explain it all, s/he will still be burning to experience that resolution that just never feels obvious in chapter 3. Puzzle and solution are presented in a manner that is accessible to non-experts and replete with intuitive illustrations and vivid examples taken from contexts that many will easily relate to. These two chapters are suitable as introductory texts for undergraduate courses in social science and the social epidemiology of health behaviors.

What comes next is an impressive contribution of an entirely different sort. In chapter 4, Centola argues that a proper test of the chapter 3 theory requires all at the same time: A) large experimental populations, B) complete adoption data, C) complete network data, and D) replication. He then describes the first-of-its-kind network diffusion experiment published in 2010 in Science that accomplished each of these. In this experiment, a dozen subject populations, each composed of between 98 and 144 people, interacted over the course of many weeks on a health forum where they compared their diet and exercise achievements with those of their health buddies. Who was buddies with whom was controlled by Centola, allowing him to test the effect of network structure using the 12 diffusion processes as independent and controlled data points.

The sequence of chapters 2 (puzzle) –3 (theoretical solution) –4 (critical test) is an ideal trinity that many social scientists strive for but rarely accomplish: There often is not a real puzzle, the theory is more an intuition than an elegant formal exposition, or the empirical test suffers from lack of control or external validity. But for the puzzle to be so striking as the general failure of behavior to spread through weak ties, the theory to be so elegant and general as the theory of complex contagions, and the test to be so innovative and ingenious as the slotting of experimental subjects

into purposively created social networks in a natural setting is a remarkable accomplishment, and, for the reader, an intellectual pleasure to see unfolding.

Part II of the book turns to practical application. Chapter 5 walks the reader through the wide range of phenomena where the idea of complex contagions has already been found to be supported in prior research, from social movement mobilization to the diffusion of digital innovations to health interventions. Chapters 6 and 7 then show how a general strategy of clustered seeding and balanced identities may be more successful in achieving difficult behavioral change than the more traditional viral and exposure-maximizing approaches. While aimed at application, these chapters just as those from Part I firmly rest on formal foundations, which are provided to the quantitatively inclined social scientist as a technical appendix.

The conceptual ideas for practice from Part II rooted in the rigorous science of Part I are made concrete in Part III. Centola here takes the perspective of the social planner, marketing director or public health official faced with the challenge of bringing about behavior change. How do you really do it? Through several elaborate examples, the final chapters show how to concretely create reinforcement, relevance, and the right relational context for behavior change.

I conclude with what appears to be the only weakness of *How Behavior Spreads*, namely that it will probably not be able to explain its own viral success.

Arnout van de Rijt
Utrecht University
arnoutvanderijt@gmail.com http://orcid.org/0000-0002-4208-3452

https://doi.org/10.1080/0022250X.2019.1593522