Information Technology: Doctoral Theses

TITLE:

"Three Essays on Social Influence in Social Advertising Using a Large-Scale Randomized Field Experiment" – Shan Huang (2018)

COMMITTEE:

Erik Brynjolfsson (chair), Sinan Aral, Catherine Tucker, Yu Hu

ABSTRACT:

In this thesis, I examine the causal relationships among products, social influence and network-embedded human behaviors, in the context of social advertising. Social advertising places social cues (e.g., likes) in ads, utilizing the power of social influence (the effects of social cues in ads) to encourage ad engagement. I collaborate with a social networking app for a large-scale randomized field experiment on its social ads. In the experiment, the presence and the number of social cues were randomly assigned among 57 million ad-user pairs (more than 37 million subjects and across 71 products in 25 product categories). Integrating the experimental evidence and the data of individuals, products, ads and network structures, my studies address the incentives, magnitude, contagion patterns and viral factors (i.e., characteristics of products, behaviors and individuals) of social influence in social advertising and product adoptions.

TITLE:

"Truce Structures: Examining Cross-Professional Coordination in the Wake of Technical and Institutional Change" – Arvind Karunakaran (2018)

COMMITTEE:

Wanda Orlikowski (chair), Katherine Kellogg, John Van Maanen, JoAnne Yates

ABSTRACT:

This research examines the structures, processes, and mechanisms that facilitate cross-professional coordination during periods of technological and institutional change. My study draws on a 24-month ethnographic study, combined with historical data and quantitative analysis, of 911 emergency management organizations in the United States.

In Chapter 2, I focus on the mechanisms to facilitate cross-professional coordination in conditions that are marked by protracted jurisdictional conflicts. My findings articulate the importance of truce structures - an ensemble of truce roles and organizational forms - that are intended to address protracted jurisdictional conflicts among symmetrical professions such as police officers and firefighters. I further find that the coevolution of truce roles and organizational forms resulted in the emergence of a specific truce profession - in this case, that of 911 Public Safety Telecommunicators. The truce profession serves to triage, direct, and channel contested tasks among the conflicting professions without bringing those professions into direct contact with each during the initial stages of coordination when the "definition of the situation" is getting worked out.

In Chapter 3, I turn to examining how the truce professionals navigate what I call status-authority asymmetry in order to effectively coordinate with the focal professionals. Conducting within-shift comparisons of coordination encounters between 911 dispatchers and police officers, I identify that the bounded publicization tactic performed via the open radio channel allows dispatchers to generate peer knowledge about individual non-compliance. Through this process, dispatchers navigate the status-authority asymmetry and orchestrate effective cross-professional coordination.

My focus in Chapter 4 shifts to examining how truce professionals respond to the public's increased digital scrutiny, and consider the consequences for organizational accountability. My findings suggest that the public's increased use of mobile phones and social media to monitor and report on organizations and their workers can, under some conditions, end up worsening accountability. I unpack the processes that generate this paradox of public accountability, showing how these processes reshape the work of truce professionals and

produce a vicious cycle of coordination that worsens organizational accountability. I end with a concluding chapter that discusses the implications of my dissertation for research on cross-professional coordination, accountability, and technological change.

TITLE:
"Operating in the Shadows: The Productive Deviance Needed to Make Robotic Surgery Work" – Matthew Beane (2017)

COMMITTEE:
Wanda Orlikowski (chair), Katherine Kellogg, John Van Maanen

ABSTRACT:

Though a 2.5-year mixed-method study comparing robotic surgical practice to traditional surgical practice, I explore how crucial outcomes require productive deviance: norm- and policy-challenging practices that are tolerated because they produce superior outcomes in the work processes governed by those norms and policies. My empirical focus was fortunate - I show that productive deviance is likely especially important in the first ten to twenty years of significant technical reconfiguration of surgical work. I open my dissertation through a comparative empirical introduction to my context and a review of the literature on deviance in organizations.

The second chapter of my thesis is a history of how the surgical profession has relied on productive deviance for integrating new technologies since the early 1800s, ending with a deeper treatment on robotic surgery.

My third chapter focuses on how only a very few surgical residents managed to gain confidence and competence with robotic surgical methods given significant barriers to such learning. In contrast to what the standing literature on learning would predict and in tension with the norms for learning within the surgical profession, these residents engaged in a suite of practices I call "shadow learning" - involving premature specialization, abstract rehearsal and undersupervised struggle. I explore how each of these practices both allow progress and create unintended negative consequences for the profession.

My fourth chapter explores a case in which surgical teams routinely used new, well-maintained robotic surgical devices and occasionally faced the stressful and practically difficult task of using an under-maintained, unreliable surgical robot. In this chapter, I show quantitatively that patients did just as well on the degraded robot, and I outline the often invisible, undervalued "compensatory work" that professionals did to ensure such outcomes. The main contribution here is to explicitly treat affect as integral to coordinated work that is grounded in suboptimal material arrangements. Through these studies, I solidify and enrich our conception of productive deviance and show how it is critical for a range of professional and organizational outcomes.