Matt Beane

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ACADEMIC POSITIONS (August, 2017 - Present)

University of California, Santa Barbara, Project Scientist, Technology Management Program

Massachusetts Institute of Technology, Research Affiliate, Institute for the Digital Economy

EDUCATION

MIT Sloan School of Management **Cambridge, MA**
Ph.D., Management July, 2017
Information Technology major, Organization Studies minor

MIT Sloan School of Management **Cambridge, MA**
Master of Science, Management Research 2014

Bowdoin College **Brunswick, ME**
Bachelor of Arts in Philosophy 1997

RESEARCH FOCUS

In an age marked by rationalization of complex work through artificial intelligence and robotics, I study how deviance arises and makes a difference in work and organizational life. I rely primarily upon qualitative data derived from direct, longitudinal observation of work to address such questions, though I often complement this with statistical analysis of work-related data.

Broad Interests

Deviance; Technology and Organizing; Sociology of Work; Coordination; Practice Theory; Organizational Ethnography; Human-Robot Interaction

Dissertation

Operating in the Shadows: The Productive Deviance Needed to Make Robotic Surgical Work.
Committee: Wanda Orlikowski (chair), Kate Kellogg, John Van Maanen

JOURNAL PUBLICATIONS

Beane, M. and W. Orlikowski. 2015. What Difference Does a Robot Make? The Material Enactment of Distributed Coordination. *Organization Science* 26 (6), 1553-1573

Bettinelli, M., Y. Lei, **M. Beane**, C. Mackey, T. N. Liesching. 2015. Does Robotic Telerounding Enhance Nurse–Physician Collaboration Satisfaction About Care Decisions? *Telemedicine and e-Health*

MANUSCRIPTS UNDER REVIEW

Beane, M. "Shadow Learning: Building Robotic Surgical Skill When Approved Means Fail" [Dissertation, job market paper, R&R at Administrative Science Quarterly]

> How do trainees in a community of practice learn new techniques and technologies when approved practices for learning are insufficient? I explore this question through two studies: a two-year, five-sited, comparative, ethnographic study of learning in robotic and traditional surgical practice, and a blinded interview-based study of surgical learning practices at 13 top-tier teaching hospitals around the United States. I found that learning surgery through increasing participation using approved methods worked well in traditional (open) surgery, as current literature would predict. But, the radically different practice of robotic surgery greatly limited trainees' role in the work, making approved methods ineffective. Learning surgery in this context required what I call "shadow learning": an interconnected set of norm- and policy-challenging practices enacted extensively, opportunistically, and in relative isolation that allowed a minority of robotic surgical trainees to come to competence. Shadow learning practices were neither punished nor forbidden by the very community that held them to be problematic, and they contributed to significant and troubling outcomes for the cadre of initiate surgeons and the profession. This research expands our conceptions of learning in communities of practice by detailing how trainees learn new techniques and technologies when approved practices for learning are insufficient.

Beane, M. "Designating Deviance: How Organizations Allocate Expertise to Extract Value from Problematic Technology" [Dissertation, In preparation for journal submission]

> Work rarely gets done strictly by the rules. But who ends up challenging norms and policy to produce valuable work outcomes, and why? I explore this question via qualitative and quantitative longitudinal comparison of robotic surgeries performed via two surgical robots at a teaching hospital. One robot was a newer, well-resourced model, the other was an older, under-resourced model of the same system. Work involving the former was relatively untroubled, and drove norms and policy for robotic surgery at this institution. The material arrangements associated with the problematic model made it impossible to achieve acceptable results by adhering to norms and policy for the work. Yet my statistical analysis of outcomes data shows that patients did just as well with the problematic system. I show that these results were achieved through work practices that challenged norms and policy for the work at significant cost to the workers involved, and that these in turn were enabled by shunting those with most experience and skill to work involving the degraded technology. Ironically, these practices limited organizational learning and returns to talent, just as they allowed for key outcomes: top performers did not gather or report data on their deviant adaptations and managers did not seek detail on how these outcomes were achieved. Key expertise was thus increasingly and disproportionately allocated to this deviant work, at the expense of other potentially more fruitful allocations. I contribute to the literature by considering how organizations allocate expertise to enact sustained productive deviance given substandard material arrangements for the work.

WORKING PAPERS

Beane, M. "A Shady History: Expanding Surgical Practice through Communal Deviance from 1800-2017"

Beane, M. "User Acceptance of Mobile Autonomous Robots: Dueling Narratives Across the Uncanny Valley" [Data analysis and writing, to be submitted to Human-Robot Interaction (HRI, top journal)]

Beane, M. "What are Robots For? An Empirical Investigation of Robots' Value as Signals, Symbols and Tools" [Writing, trans-ethnographic, to be submitted to HRI]

REFEREED CONFERENCES

2015 The Material Enactment of Coordination in Robotic and Traditional Surgery. **Beane, M.** Showcase symposium, OCIS, OMT and HCM divisions, Academy of Management, *The Role of Information Technology and Work Practices in Relational Coordination*

2014 What Difference Does a Robot Make? Managing Ambiguity in Distributed Knowledge Work. **Beane, M.** and W. Orlikowski.
One of three Best Paper nominees, OCIS division, Academy of Management

2013 Accepted Paper, "Structuring Work in and around Organizations", EGOS:
Routes to Fractional Knowing: Evidence from Robotic and Phone-based Night Rounds in a Post-Surgical ICU, **Beane, M.**

INVITED TALKS/SERVICE

2017 Panelist, CHI, annual meeting. Robots in Group Context: Rethinking Design, Development and Deployment

2017 Co-organizer, co-facilitator: Boston Field Research Conference (since 2012)

2016 New England Section of the American Urological Association annual meeting. The Unintended Consequences of Robotic Surgical Practice for Resident Surgical Capacity.

2015 Human-Computer Interaction Institute Seminar Series, Carnegie Mellon University. Talk title: When New Technology is Old: Organizing Surgery in the Face of Legacy Robotic Surgical Systems

2014 Invited speaker, Robots: From Imagination to Market (industry conference). Talk title: Robots: from Market to Imagination. http://youtu.be/HIPfP6WGP7A

2012 Panel Chair, Human-Robot Interaction Pioneers Workshop, HRI (leading annual conference for human-robot interaction)

Ad Hoc Reviewer, HRI

2011 Invitee, Human-Robot Interaction Pioneers Workshop, HRI

TEACHING INTERESTS

Organizational Behavior, Technology and Organizing, Technology and Work, Technological Change, Deviance, The Business of Robotics, Teaming and Collaboration, Leadership, Organization Development, Research Methods

RECENT TEACHING EXPERIENCE

Teaching:

2014, 2015: The Business of Robotics. MIT Sloan.
Designed, administered and taught this intensive workshop for graduate and undergraduate students from across MIT. Sample panelists: Pete Wurman, CTO, Kiva systems, Charlie Grinnell, COO, Harvest Automation, Elaine Chen, VP Engineering, Rethink Robotics.

2011-2014: Distributed Leadership. MIT Sloan.
Taught a module in this highly-rated workshop-style MBA and Sloan Fellows course with Profs. Orlikowski, Malone and Ancona, redesigning a portion of the curriculum.

Teaching assistantships:

2015: Leading Complex Organizations, Prof. Nelson Repenning, Faculty Director, Executive MBA program. Capstone course involving intensive service projects with local non-profits.

2014, 2015: Leading Organizations, Hal Gregersen, Executive Director, MIT Leadership Center. Once in 2014 (Exec. MBA), twice in 2015 (Sloan Fellows and Exec. MBA). Assisted in course design.

2014: Organizations Lab, Prof. Nelson Repenning. Action-learning Executive MBA core course focused on improving a process in participants' organizations. Assisted in course design.

2014: Power, Influence and Negotiation, Prof. Jared Curhan. Executive MBA core course. Simulation and assessment-driven course.

2013: Leading in Uncertain Times, Profs. Ancona and Van Maanen. Executive MBA elective. Highly interactive, workshop-style course.

2013: Leadership Signature, Prof. Ancona. Sloan Fellows elective. Introspective, values and identity-focused, workshop-style course.

2013: Advanced Communication for Executives, Prof. Hartman. Executive MBA elective.

2011: Communications for Leaders, Prof. JoAnne Yates. Core Executive MBA course.

SAMPLE PRACTITIONER PUBLICATIONS

Beane, M. The US can't beat China's robots – But it can win by building the machines that make them 2017. Qz.com

Beane, M. Robots add real value when working with humans, not replacing them. 2016. Techcrunch.com

Beane, M. Robo-sabotage is surprisingly common. 2015. MIT Tech Review

Beane, M. Beyond safety: is robotic surgery sustainable? 2015. Robohub.org.

Beane, M. The avatar economy. 2012. MIT Technology Review.

RECENT INDUSTRY EXPERIENCE

HUMATICS **Cambridge, MA**
Chief Human-Robot Interaction Officer **2015-June 2017**

Founding executive for an MIT-connected startup building a new class of IoT sensor that provides hyper-precise, ultra-low-cost position data. Shaped strategy, co-raised 3m seed and 18m series A, led customer discovery for product-market fit, led business development, led a one-year DARPA project to develop the knowledge capture system for an airframe-agnostic robotic copilot.

iROBOT **Bedford, MA**
Strategy Consultant, Field Research Team Lead **2014 – 2015**

Led a team of five researchers on a six-month project to assess a potential new market for a semi-autonomous robotic telepresence system via situated, longitudinal study of human-robot interaction in an elder care facility. Delivered findings to CEO and his direct reports.

INTOUCH HEALTH **Santa Barbara, CA**
Design Consultant, Field Researcher **2014**

Provided research report on likely work implications/worker reactions to mobile, semi-autonomous robotic systems that include surveillance capability, including assessment of situated pilot testing in three west-coast hospitals.

ROGER SCHWARZ & ASSOCIATES **Chapel Hill, NC**
Principal Associate / Head of Sales and Marketing **2002 - 2010**

Revitalized a shrinking firm providing training, facilitation, coaching and consultation to globally-dispersed clients focused on fundamental, positive, sustained changes to organizational cultures. Crafted intellectual property core to the firm. Determined market direction and sales strategies. Led various intensive, long-term interventions to study and optimize group norms and culture.