Education, Design and Practice – Understanding skills in a Complex World

• Paper / Proposal Title:

Boundary Negotiating Artifacts for Design Communication: A Theoretical and Empirical Exploration

• Author(s) Name:

Kacey Beddoes and Todd Nicewonger

• University or Company Affiliation:

Kacey Beddoes – Affiliation changing to a new university that will be available soon

Todd Nicewonger – Virginia Tech

• Abstract (300 words):

Disciplines have their own unique cultures comprised of goals, perspectives, epistemologies, methodologies, and languages. Interdisciplinary teams must grapple with these differing facets of team members’ backgrounds and goals and find ways to successfully communicate with one another. Boundary negotiating artifacts (BNAs) are one way in which interdisciplinary teams can establish common ground and facilitate communication between team members. BNAs are artifacts and inscriptions that coordinate perspectives and align different communities of practice so that they can collaboratively solve design problems. BNAs facilitate transmission of information across disciplinary boundaries, allow team members to learn from other disciplines, create shared understanding of a design problem, and communicate important information. In an increasingly complex world, designers are called upon to communicate with
people from a wider range of disciplines. These trends make boundary negotiating artifacts a timely and essential concept.

This paper explores the theoretical and empirical basis for incorporating boundary negotiating artifacts into the communication practices of interdisciplinary design teams. It is a theoretical exploration of BNAs and their roles in design teams, supported by empirical examples from a long-term ethnographic study of a design project carried out in a university setting. The three-fold aim of this paper is to present BNAs as: 1) a theoretical and methodological tool for researchers, 2) a pedagogical tool for faculty members, and 3) a conceptual tool for team members themselves. The paper theorizes the importance of BNAs by connecting them to salient bodies of literature on: 1) interdisciplinary teamwork and communication, 2) engineering work practices and inscriptions, 3) shared mental models, and 4) boundary objects. In this way, the paper spans the fields of psychology, Science and Technology Studies, Engineering Studies, design studies, engineering education, and higher education such that it will have broad appeal across many audiences.

• Authors Biographies

Kacey Beddoes holds a Ph.D. in Science and Technology Studies (STS) from Virginia Tech, along with graduate certificates in Women’s and Gender Studies and Engineering Education. After graduating from Virginia Tech, Dr. Beddoes held postdoctoral scholar positions at Purdue University in Engineering Education and Oregon State University in Civil Engineering before becoming an Assistant Professor of sociology at University of Massachusetts Lowell from 2015-2018. She serves as Deputy Editor of the journal Engineering Studies and as Chair of the European Society for Engineering Education (SEFI) Working Group on Gender and Diversity. Her current research focuses on gender in engineering, interdisciplinarity, teamwork, and peer review. In 2016, she received an NSF CAREER award to study gender in engineering workplaces. Further information about her research can be found at www.sociologyofengineering.org.

Todd Nicewonger received his Ph.D. in Applied Anthropology from Columbia University in 2011 and has held postdoctoral fellowships at Parsons The New School for Design, the University of Gothenburg in Sweden, and the University of Massachusetts Lowell. Currently, he is the Project Director for Destination Areas at Virginia Tech, where he is working with the Provost’s Office to implement a university-wide initiative on transdisciplinary research and education. He is also carrying out fieldwork and writing about design learning processes. In this work, he is interested in how culture shapes and is shaped by the designers’ interactions with tools, materials, peers, and wider social forces. In the future, he hopes to bring his ethnographic work on fashion design, experimental bookmaking and architecture into a single book project that comparatively examines the interrelationship between learning and worldmaking in
order to argue that the shared investment in prototypes for alternate future worlds is related to wider political economies and social anxieties about impending change.