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Design Anthropology

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Introduction

What will the world look like when half the cars on the road are autonomous vehicles, when the driver is a robot and the humans are passengers? How will the human drivers and the robot drivers communicate with each other? What will people do during their commute when their car drives itself? What groups of people will lose out in a world with autonomous vehicles (AVs), and who will benefit?

These are all questions that design anthropologists are actively exploring, as they work for a variety of automotive companies and consulting firms. Although the development of AVs is in one sense a technology problem, it is also a social and cultural problem. AVs will only be successful if their design is based on a deep understanding of the forms of social life and cultural behaviors in which current driving practices and car use are embedded. At the Nissan Research Center in Silicon Valley, one of the places where AVs are being developed, a well-known roboticist said to an anthropologist: "Robotics is easy. What's difficult is the human stuff" (Jordan and Wasson 2015).

AVs provide one example of the many cutting-edge products and services on which design anthropologists are now working. This essay explores the specialization frequently termed **design anthropology** for readers who may be unfamiliar with that term. Design anthropologists usually conduct applied research, and they value the integration of theory and practice. They draw on scholarship from cultural anthropology, linguistic anthropology, and archaeology.

Definition of Design Anthropology

"Design anthropology" describes the practices of anthropologists who collaborate with designers and team members from other disciplines in order to develop new product ideas (Wasson 2000). The primary contribution of the anthropologists lies in the ethnographic research they conduct with users, or potential users, of the product being envisioned, in order to learn about the everyday practices, symbolic meanings, and forms of sociality with which a successful new product would need to articulate. Designers and other members of product development teams draw on findings from such research to develop design ideas that fit the lived experience of intended users.

Most design anthropologists in the U.S. are employed by corporations or design firms. Many work on high technology products, but there is a sprinkling of anthropologists in just about every industry, from retail to finance. Generally speaking, design anthropologists work at the "fuzzy front end" of the product development cycle. This is where exploratory research takes place that may lead to the conceptualization of new products; it precedes the actual product development process (Wasson and Squires 2012:26). There is a long and winding road between the initial product concept and the launch of the product; anthropologists have limited control over the twists and turns that may occur during this process.

> All they [can] do [is] try to influence key decision makers by evangelizing their insights and ideas. As one in-house practitioner explained, "You come up with some inspiration and some direction, and then you try to direct it in places where you think it will have influence. But at some point, you set it free" (Wasson and Squires 2012:267).

In Scandinavia and the U.K., it is more common than in the U.S. to find design anthropologists working in academia. In those countries, academic design anthropologists have sometimes distanced themselves from practitioners. However, these countries also have flourishing communities of applied design anthropologists.

Emergence of the Field

While design anthropology per se emerged in the 1990s, it built on a venerable tradition of anthropological studies of consumption, which originated with Marcel Mauss and experienced a resurgence in the 1980s. Design anthropology also built on the interdisciplinary field of computer-supported cooperative work (CSCW), which emerged in the 1980s and which in turn drew on science and technology studies, as well as Scandinavian participatory design.

Today's design anthropology emerged most directly from work at the Xerox Palo Alto Research Center (PARC), where a group of anthropologists and others "pioneered the use of ethnographic methods to understand how users interact with computers and related technologies" in the 1980s and 1990s (Wasson and Squires 2012:258, Suchman 1987). Through personal and professional connections, this approach diffused to design firms across the U.S. and internationally, and then to other corporations (Wasson 2000). Now, in 2016, anthropologists work in all major technology companies and most major design firms. It is a significant area of employment for our discipline.

In 2005 an annual conference was created for design anthropologists and their collaborators, symbolizing the emergence of this specialization as a community of practice, and further contributing to the development of the community. The conference is called the Ethnographic Praxis in Industry Conference (EPIC). Design anthropologists also connect online through the EPIC Forum and the Anthrodesign Yahoo Group.

To further illuminate the work that design anthropologists do, I offer three case studies. The first two are applied thesis projects of recent master's students, while the third comes from my own research.

Case Study 1: How Self-Driving Cars Communicate with Human Road Users

Logan McLaughlin conducted his thesis research in summer 2015 through an internship at the Nissan Research Center – Silicon Valley (NRC-SV), a lab at which self-driving cars are being developed (McLaughlin 2016). Logan's project built on research that my design anthropology class conducted for NRC-SV in fall 2014 (Jordan and Wasson 2015). Logan joined NRC-SV's Human Understanding in Design (HUD) team, which included anthropologists Melissa Cefkin and Brigitte Jordan.

The HUD team sought to understand how autonomous vehicles (AVs) might interact with other road users, such as human drivers and pedestrians. The team conducted ethnographic research to learn how people currently engage with each other on the road. The goal was to develop design ideas for how AVs might communicate with humans in ways that would integrate well with current practices. The HUD team observed and interviewed drivers and pedestrians. All research was videorecorded and analyzed. Some of the design ideas that emerged from this study were implemented in an AV prototype that Nissan showed at the Tokyo Motor Show in fall 2015. The Nissan IDS Concept Car included features such as an "Intention Indicator" that displayed messages for pedestrians like "after you." There was also a strip of lights around the AV that lit up when other cars were in the vicinity, communicating the AV's awareness of their presence.

Logan's thesis drew on multiple areas of scholarship. One was research on the built environment, including space and place, transportation studies, and urban anthropology. Logan found that the physical context of the roads and the organization of the road system had an impact on the ways in which people used the roads (Dourish 2006). He drew on the insight that travel paths depend on how

road users conceptualize the places through which they navigate. The video analysis methods that Logan and the rest of the HUD team used were shaped by interaction analysis, an approach originally developed by Brigitte Jordan and her collaborators, which in turn drew on conversation analysis.

Case Study 2: Space in Space

Jo Aiken conducted her thesis research in summer 2013 through an internship at NASA's Johnson Space Center. Her goal was to investigate how much space per astronaut should be planned for vehicles designed for long-duration spaceflight. The development of habitable environments suitable to long-duration trips has become a priority for NASA, as their focus has shifted from missions in near-Earth orbit to missions to Mars and beyond. The need for privacy had been identified as particularly important in defining the "minimal habitable volume" for long-duration crew performance (Aiken 2014:2).

Jo drew on a creative suite of methods in investigating this question. She conducted interviews with 11 astronauts and 33 people who had participated in "analogs" to spaceflight vehicles, defined by NASA as "isolated, confined and extreme" environments. Analogs included Antarctic stations, as well as simulated space habitats where crew members are confined to a small, sealed location for a set period of time, with no access to the outside world. Jo engaged in participant observation by joining the first crew of the Human Exploration Research Analog, a habitat within the Johnson Space Center. She also attended post-flight mission debriefs for NASA astronauts returning from the International Space Station, and reviewed transcripts of other debriefs (Aiken 2014).

Through her research methods, Jo was able to develop a participant-centered definition of privacy. At the individual level, she found that astronauts wanted to have some control over what information they shared and how they shared it. At the crew level, Jo discovered a collective wish for privacy from ground control, and a need for private conversations between the mission leader and subordinates. She also identified cultural and gender differences in privacy needs. Jo's insights drew on recent anthropological studies of material culture that examined the influence of the physical environment on the human body and behavior (Rabinow and Marcus 2008). She also drew on organizational anthropology and cross-cultural studies of privacy.

Jo's findings about astronauts' needs for privacy have clear implications for the design of habitats for long-duration spaceflight. Her clients for this study were two departments at the NASA Johnson Space Center--Human Factors and Habitability, and Behavioral Health and Performance. Both were extremely pleased with her findings, and used them in their subsequent planning. The full impact of her study will only take effect when a mission to Mars is implemented.

Case Study 3: User-Centered Design of Language Archives

More than half the world's 7000 or so languages are at risk of disappearing before the end of this century. In recent years, there has been a rise in digital language archives to provide long-term preservation of endangered language materials, such as recordings, manuscripts, and linguistic field notes. Such archives may also include educational materials that contribute to language revitalization efforts.

The majority of existing language archives are hard to use, based on the experience of the two major user groups: members of language communities and linguists (Wasson et al. 2016). These archives have often been developed by linguists who were not trained in web design, and they tend to have few financial resources.

User-centered design (UCD) is an approach to design that focuses on understanding and accommodating the needs of users. When design anthropologists collaborate with designers, their

work usually falls under the category of UCD. As someone with a background in this area, I saw a clear opportunity to redesign language archives in ways that would facilitate their use and improve their usefulness. I am partnering with documentary linguists on a research trajectory to bring together UCD and language archiving. Our ultimate goal is to encourage a paradigm shift in the field of language archives toward the adoption of UCD principles, parallel to the shift that occurred in the corporate world about twenty years ago. In February 2016, we held a workshop to initiate this research trajectory, funded by National Science Foundation Grant No. BSC-1543763. We have documented the workshop outcomes in a white paper, available on our website (Wasson et al. 2016).

One of the complex aspects of designing digital language archives is that they cater to diverse user groups. Most importantly, they are a resource for members of the language community, who may use archives for language revitalization efforts, or for access to their cultural heritage. In addition, language archives are used by linguists for research purposes. There are often additional user groups as well, such as students or artists looking for source materials. The challenge is to design language archives that accommodate the needs of all user groups. A user-centered design process could make language archives more accessible and more useful to larger numbers of users.

One of the key outcomes of the workshop was the development of a typology of language archives (Wasson et al. 2016). Four main types were identified, ranging from large archives with global collections to single language archives serving a particular community, which often store not only linguistic materials but also cultural and historical artifacts.

Our research builds on prior work in language archiving (Holton 2011) and UCD (Wasson 2000). It also draws on anthropological studies of archives and cultural heritage museums, and how they are situated in a history of colonial relations between archivists and indigenous communities whose cultural and linguistic materials were appropriated.

We are currently applying for funding to engage in the next step of our research trajectory. This will be the redesign of several language archives as a way to fully understand what a UCD process would look like. The outcome will be the development of a set of guidelines for the UCD of language archives. The final step will then be to disseminate these guidelines to relevant communities of practice.

Because this research trajectory is still in the early stages, I cannot yet report on any applications. However, our plans were received with enthusiasm by the workshop participants, who represented the major stakeholder groups involved with language archives. As one said:

> "In many communities as these languages become more endangered… the value of that documentation becomes so much more important because it's a rare thing, it gets rarer and rarer. So how crucial it is that we're developing effective processes."

Indeed, the research has excited interest in everyone I have talked to who engages with archives for endangered languages. We seem to be tapping into an issue that is widely perceived as urgent and challenging.

Conclusions

These three case studies illustrate three different contexts of design anthropology application. The first, industry, is by far the most common context in which design anthropology is practiced in the U.S. The second, government or the public sector, is more common in Europe, especially Denmark, which has both a flourishing design anthropology community and an expansive welfare state approach to improving citizens' lives. With the third context, we see a shift from large, powerful, institutions in the private or public sectors to small, often under-resourced organizations in the public or nonprofit sectors.

I would encourage more design anthropologists to engage in work that benefits sectors of society with few financial resources. At the same time, I recognize the financial constraints that practitioners face. As a professor, I am fortunate to be able to engage in research without needing to make a profit. It would be useful for the community of design anthropologists to try to develop innovative financial models that would allow us to better support projects that generate valuable social and cultural benefits without generating financial profits. I look forward to the continued development of our field.

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References

Aiken, Jo. 2014. *Space in space: Privacy needs for long-duration spaceflight*. Master's Thesis, Department of Anthropology, University of North Texas.

Dourish, Paul. 2006. "Re-space-ing place: 'Place' and 'space' ten years on." *Proceedings of the 2006 20th Anniversary Conference on Computer-Supported Cooperative Work*, 299-308.

Holton, Gary. 2011. "The role of information technology in supporting small and endangered languages." In *The Cambridge Handbook of Endangered Languages*, edited by Peter K. Austin and Julia Sallabank, 371-399. Cambridge: Cambridge University Press.

Jordan, Brigitte, and Christina Wasson. 2015. "Autonomous vehicle study builds bridges between industry and academia." *Proceedings of the 2015 Ethnographic Praxis in Industry Conference*, 24-35.

McLaughlin, Logan M. 2016. "Understanding road use and road user interaction: An exploratory ethnographic study toward the design of autonomous vehicles." Master's Thesis, Department of Anthropology, University of North Texas.

Rabinow, Paul, and George Marcus. 2008. *Design for an anthropology of the contemporary*. Durham: Duke University Press.

Suchman, Lucy. 1987. *Plans and situated actions: The problem of human-machine communication*. Cambridge: Cambridge University Press.

Wasson, Christina. 2000. "Ethnography in the field of design." *Human Organization* 59 (4):377-388.

Wasson, Christina, Gary Holton, and Heather Roth. 2016. *Findings from the workshop on user-centered design of language archives: White paper*. Denton: University of North Texas. https://designinglanguagearchives.com/workshop-products/.

Wasson, Christina, and Susan Squires. 2012. "Localizing the global in technology design." In *Applying anthropology in the global village*, edited by Christina Wasson, Mary Odell Butler and Jacqueline Copeland-Carson, 251-284. Walnut Creek: Left Coast Press.