# Doing Ethnography of Data Science & Algorithmic Systems

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## Case Study Prompts

The following are semi-fictional case studies of four different firms experiencing technical, organizational, and human resource challenges in their data work. They have heard interesting stuff about this thing called "ethnography," and have reached out to you for a first-glance proposal.

In small groups, develop a pitch an ethnographic study of their organization. In talking through your response, you may want to consider the following questions:

- What is the primary pain point here?
- Who are the relevant stakeholder groups?
- What information would you want to gather?
- What would be an appropriate methodological strategy?
- What are some potential stumbling blocks for doing ethnography in this context?
- How can you secure buy-in from stakeholders for research and implementation of results?

### CASE 1

**Mr. Kettle** is an established manufacturer of good ol' fashioned (analog) teapots. They have a solid product with a loyal following, decades of experience, but only have a modest share of the teapot market. They sell mostly in box stores, with some direct online purchases. Their parent company, ConglomoCorp, has mostly stayed out of the day-to-day of teapot manufacturing. Recently, however, ConglomoCorp acquired an Internet of Things startup with plenty of talented computer scientists and developers, as well as some innovative intellectual property. They have carved up the startup and parceled out these workers to some of their manufacturing concerns, including Mr. Kettle, instructing them to work on the design of a new, IoT enabled teapot. Although early in the project, frictions have already emerged between the startup personnel and existing Mr. Kettle employees. The startup folks, though wunderkind developers with big plans for monetizing customer data and constantly updating the teapot firmware, know very little about traditional manufacturing, considering it just "nuts and bolts stuff." Mr. Kettle employees, for their part, "just want to sell teapots." Neither is particularly enthusiastic about working with the other, and business model as well as product design have become deeply fraught issues.

### CASE 2

**BeatMatch** is a new dating app that promises to match users on the basis of their music taste. It was founded by a software engineer and a computer scientist just out of grad school, and currently employs around twelve people, split between software developers and "business-types." Their proprietary algorithm is their secret sauce, and has been extremely successful at producing long-lasting and exuberantly joyful relationships. This has led to rapid growth, and they have so far managed to keep their product up and running without too many hiccups through heavy reliance on Infrastructure-as-a-Service and Software-as-a-Service applications. As the business grows, however, they are increasingly interested in building their own in-house data storage and retrieval architecture tailor-built for their specific application. They are also interested in monetizing their data by selling it to partners in the music industry. However, they don't have a lot of large-scale software engineering, cybersecurity, or legal expertise. They are at a crossroads and experiencing high-level tension, with the computer scientist founder currently in informal talks with a larger platform to buy them out, and the software engineer working her networks to try and poach a big-name systems architect from another company and raise capital to build an in-house data pipeline.

### CASE 3

**CleverTown** is a mid-sized urban area on the Eastern seaboard of the United States. They recently won a large grant from the federal government to develop remote sensing infrastructure to manage air pollution and traffic, and partnered with **BlueChip Manufacturing** to design and implement the new system. There is a system of pollution sensors and traffic cameras wired all along the major arteries of the town, and a research lab from BlueChip has developed a sophisticated algorithm to time traffic lights, bus schedules, drawbridges, and the pricing of express tollways in order to keep traffic moving and minimize smog. They have established a command center, jointly staffed by data scientists from BlueChip and local city planners, to monitor this project in real time. The data scientists, however, are becoming frustrated with how often their local partners override the algorithm to make "adjustments" or "tweaks" to the model. The planners, for their part, justify these adjustments on their decades of tacit and expert knowledge about CleverTown and its citizens. The local partners feel that the data scientists' model "works well in its narrow domain" of managing pollution, but doesn't take into account things like walkability, pedestrian experience, or promoting alternatives to cars.

### CASE 4

**BigSoft** builds Customer Relation Management software and telephony systems tailored for mining and natural gas companies. They have traditionally used a very straight-forward waterfall development methodology, with all aspects of the software planned out and executed in stages in response to predetermined requirements and functions. BigSoft's CEO, however, recently attended an Agile methods conference, and has returned full of vigor and drive to "revolutionize the way our business does business." She has implemented a new, iterative development method based around short sprints, flexibility, and test-first approaches, as well as requiring every developer to go through a

weekly 360 meeting and daily scrums. Customers are happy with the new responsivity to their changing demands and experiences of the product, but developers are experiencing serious drop in productivity, frustration with management, and confusion about their newly independent role in shaping product code.