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Professor Wanderer

Anthropology of Science

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Lab Visit Response Paper

Mark Abbot is a professor of Geology and Planetary Science at the University of Pittsburgh who also runs his own research lab. Along with several postdoctoral fellows, graduate students, and an army of undergraduates, he primarily studies drought history around the world by analyzing core samples of “special mud” from lakes. As geologists, Mark and his team have a unique relationship with space, time, and nature which influences their ability to, literally and figuratively, dig up knowledge of the past and present.

Their data collection is conducted at three scales which are represented by the space in which each stage occurs. The initial, largest scale work is done out in the field, which is the vast and distant extension of their lab. Every summer the research team visits carefully selected lakes around the world to collect water and sediment samples. These lake samples are then transported back to the lab, with the occasional use of a Soil Permit and a Spongebob suitcase to get across borders and airport security. Their lab space in the Space Research Coordination Center, known as being one of the most difficult buildings to navigate at the University of Pittsburgh, consists of two rooms on separate floors. The room in the basement is primarily used for storage. There is a large, temperature-controlled closet stocked with “cores” which are metal tubes filled with the mud that has been collected from various lakes. The rest of the room looks much more like a workshop than a typical scientific laboratory, with large tools, chunks of wood and metal, labeled boxes in high cabinets, and an odd assortment of license plates and posters hanging on the walls, most of whose original owners are unknown. The upstairs room is where the cores are taken to be tediously analyzed layer by layer. This room looks much more like what one would probably expect a scientific lab to look like. When you walk in, you are faced with several large computer monitors on an island table, displaying detailed images of samples and graphs of results. The room is outlined with white counters and cabinets with various work stations including a chemical hood, a few microscopes, a Geotek machine, a sink, and the essential mini fridge and coffee maker.

By scaling down the subject of their research from lakes to cores to individual layers and minerals, Mark’s team is able to manipulate space and time to accumulate knowledge. In Chapter 6 of his book *Science in Action: How to Follow Scientists and Engineers Through Society*, Bruno Latour claims that “different spaces and different times may be produced inside the networks built to mobilise, cumulate and recombine the world.” If these geologists were confined to real time and real space, then they would only be able to study the present environmental conditions at the site of interest. Instead they turn the lake sediments into “immutable and combinable mobiles” which can be transported, analyzed, compared, and preserved. By continually collecting and storing samples from an increasingly large network of lakes, these geologists set up a cycle of accumulation that transcends space and time and allows them to pool knowledge about environmental history including drought patterns and pollution effects.

This process of data collection effectively changes the identity and purpose of the mud found at the bottom of lakes. In his article, *Sacrifice and the Transformation of the Animal Body into a Scientific Object: Laboratory Culture and Ritual Practice in the Neurosciences*, Michael Lynch discusses how killing rats through “sacrifice” for experimental purposes transforms them from “naturalistic animals” into “analytic animals”. The natural animal constitutes the everyday understanding of the creature. In the scientific community, this knowledge is subjugated and not included in scientific literature. In contrast, the analytic animal is the way in which the creature is constructed for science and represented through data, symbols, and graphs. Although the geologists in Mark’s lab are typically working with non-living species, an analogous ritualistic transformation occurs when the samples are removed from their natural environment and placed into a lab setting. In the hands of a geologist, the mud takes on new meaning and is translated into data. Knowing that our group of visitors to the lab did not have a strong background in geology, the research team often referred to their samples in natural terms such as mud and critters. However, when discussing data with each other and publishing papers, the analytic language is employed, including phrases like calcium carbonate and terrestrial macrofossil, while the naturalistic knowledge is subjugated.

While this lab is clearly a system which produces and accumulates knowledge by translating nature into data over time and space, some aspects made me question my own understanding of what is science and what is not. I have worked in both an astronomy and a neuroscience lab, and in both cases, the emphasis has always been on collecting present data to reach a future, clearly defined goal. In the astronomy lab, we tracked extrasolar planet transits in real time to help create predictive models. In my neuroscience lab, we manipulate genes in flies to study their effects in the hopes of finding preventative or curative methods for neurodegenerative diseases. When Mark and his team described their project, in my mind, it sounded much more like they were very active, hands-on historians rather than scientists. When asked about the larger purpose of their work and its relevance to our present and future societies, they vaguely described an attempt to understand overall causes of droughts for possible prevention. However, this future-based goal was not presented as the focal point of their projects. Based on my previous experience, I believe that a crucial aspect of science is that it is always directed toward the future. However, our visit to Professor Abbot’s lab has made me wonder if that definition is limited and biased towards the science I am used to.