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Mosquito Huts; Wundercabinets and Social Models

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Hello all!

I am sorry I have been a bit slow on the up-take. My scientific-wonder-and-awe has not, sadly, translated into technical aptitude; it has taken a bit of time to learn how to negotiate the blog-land that is Somatosphere. Thought I would introduce myself and my work by talking a bit about the ethnographic object that is currently at the focus of my attentions: the experimental hut.

For the past two years, I've been conducting research on two large-scale Larval Control Projects for Malaria Control in The Gambia and Tanzania – both run by investigators at Durham University, UK. My initial interest was with locally employed fieldworkers, who manage the day to day running of the clinical research and responsible for consent, recruitment, monitoring, and sample collection. In particular, I wanted to know how fieldworkers understood their role in a clinical research project and negotiated the imperatives of research institutions, the standards of biomedicine, and the demands of local health care. How did they regard their responsibilities in

relation to those of the researchers? Did they see their work as doing science? With their large number of staff, complicated protocols and labor intensive research activities, these larval control projects seemed to offer a great opportunity to explore these questions.

The fact that my research is funded by Wellcome Trust Bioethics Grant still sits uneasily with me. For one thing, it seems to call into question the anthropological character of my work. Whether I regard my investigations of these larval control studies in terms of the “ethics” or as “epistemology”; these framings, I would think have consequences for the corroborative and critical life of my data. This is a question I hope to return to in later posts: working with, within or around medicine or public health –how do we avoid merely becoming the instantiation of the public or a conjuror of the social? When brought alongside scientific research does our anthropological vantage on “the context” or “the everyday” become elided with a political or ethical stance?

Anyway, thoughts for a later date. Today, I simply want to describe these amazing experimental instruments I came across in the field (quite literally). When he heard I was going to be working with entomologists in The Gambia, a colleague of mine at the London School of Hygiene and Tropical Medicine (quite an ethnographically rich institution in its own right) insisted that I visit the experimental huts. “Perfect examples of the strange and weird world of entomological research”, he said. “And, as huts go, not a bad place to spend a night.”

Because their hosts tend to sleep indoors, anophelese gambiae are highly domestic. Designed by British entomologists working in Tanzania in the 1940s, experimental huts are classic instruments to investigate the ecological realities of malaria and pilot public health policy. First used merely to study the flight patterns and nighttime behavior of mosquitoes, the huts became quintessential techniques to evaluate the efficiency of residual insecticides, such as DDT, for the control of malaria. Their architecture consists of a rather ingenious assemblage inscription devises: open eaves, screened verandas, exit traps, entry baffles, concrete moats, white-washed walls and raised foundations render the flight patterns and feeding preferences of mosquitoes visible. However, as models of ‘typical’ homes, they are manufactured out of local materials and with structural imperfections; during experiments, they are inhabited by villagers paid to spend the night and ‘behave normally’.

An intermediary between the home and the laboratory, the version of malaria infection elicited by these huts is not merely as a natural process but a vector between natural and social landscapes. In other words, is not enough that mosquito huts demonstrate the efficacy of insecticides. If their design strays too far from the structure or environment of ordinary village

huts, then the behavior of mosquitoes may be atypical, rendering the data they produced unsuitable for evaluating the effect of insecticides in control campaigns. Provisional and prospective, the hut's persuasive power hinges upon its proximity to the everyday. Their inductive utility, therefore, is resolutely pragmatic.

I must say these huts blew – and continue to blow – my mind. The feats of engineering these modelling exercises require are only matched by the physical labour needed to make them work: mosquito collection takes place at odd hours and demands pain-staking attention to detail. Entomological facts are, therefore, only one species of relation these experiments demonstrate. As centres of social and material exchange, objects of international funding and national concern, experimental huts in Gambia and Tanzania instantiate distinct visions of the public and its collective wellbeing.

Let me illustrate this point with two quick vignettes. In The Gambia, the researcher whom I worked with wanted to test the relative efficacy of screened ceilings. His hypothesis was that regardless of insecticide use or compromises to the netting (in this case, five fist size holes) screened ceilings would remain highly effective. The six participants were taken from the neighboring villages, a selection process that took some sensitive negotiations with the village alkalos, as there were a number of men who wished to participate. Initially, I attributed this enthusiasm to the nominal payment they would receive (50 dalasi, roughly $2) at the end of the month. But though clearly a strong incentive, discussions with participants described the huts in terms of a privileged social space: "an opportunity", one participant said, "to get away from the troubles of family life. Here, even my wives voices do not reach." Indeed, three of the men selected had participated in mosquito hut experiments in the 1980s and had fond memories of relaxing around the campfire in the evening, sharing rice and telling stories. Others also praised the design of the huts as being particularly amenable to a good night sleep. One of the youngest participants, a school boy of 17, scrawled "the best house" in chalk next to the number 3 above his door. He was usually the last to leave the huts in the morning, having stayed up late writing in his workbook on agricultural techniques by candle light. "No bugs, no rats," he once said. "If I could, I would build my compound like this."

For the researchers, hut life was a bit more grueling. When we arrived in Walikunda, the huts had been out of use for over ten years. The traps were moth eaten and torn, the moats cracked, the hut floors covered in dirt and the walls mottled with termite nests. Leaving aside the extensive re-construction work required before the experiments could take place and the principal investigators lengthy discussions with the carpenters about the advantages of Velcro over screws, the daily work of running the

experiment was intense. Before participants arrived in the evening, the ceiling screens had to be removed from the huts where they had been placed the previous night and set up in the hut allocated by the Latin square. The water in the moats – either evaporated or drunk by the neighboring villagers' sheep and goats – had to be refilled with a hose or, when the water tank ran out, with buckets from the river. After participants finish their dinner and retire to their respective huts, the veranda traps have to be closed and window shutters opened. Temperature readings are taken and the water for the barometers was refilled and their filter papers changed. Before sunrise, the window shutters had to be closed. An hour later when the participants wake up, temperature and barometer readings had to be taken and when they left, the wooden blocks removed and the doors shut completely.

Catching mosquitoes takes place over the following two hours. Mosquitoes are sucked from the walls, screens, bed nets and floors with an aspirator and blown into one of two plastic cups – for the dead and for the living. 15 minutes are allotted for the catch in the interior of the hut and 7.5 minutes for each veranda. The process takes considerable patience and stealth; observed from the outside it looks a bit like Thai Chi. The mosquitoes are then placed in a cooler for two hours, after which time they are identified; the blood-fed anopheles gambiae preserved to be taken for PCR analysis at the laboratories at the coast and the rest discarded.

These labors were split between the principal investigator, a Gambian masters student working for the National Malaria Control Program and supported by the University of Durham, and an undergraduate from Durham who had been selected to come to The Gambia for her third year summer project. Unfortunately, after two weeks in Walikunda during the driving rains, the later quickly discovered that entomology was not her calling and returned to England. The Gambia student continued to run the experiments on his own until his wife fell ill, forcing him to travel up to the coast. With his attentions focused on another project in Farafenni and with limited options, the principal investigator asked if I take over for a few days with the help of a Peace Corps worker, Grover. We ran experiments as best we could; though getting up at 5am was never easy for Grover, and after seeing a cobra in the lab, I was less than useful when it came to identifying the frozen mosquitoes in the afternoon. But with the help of a couple of young boy from the neighboring village, who was quite gifted at catching mosquitos, we managed something approximating what I imagined was scientific rigor. At night the boy would would help us read the barometer, reminding me to bring the filter papers. In the morning, he would often wake me up by loudly sing the "condom song" some NGO workers had taught him in school.

The Walikunda experience made me reconsider the location of science in

this landscape. Though my zeal for experimental huts was never in question, I have often wondered, why the principal investigator trusted me with managing the project. I believe now that part of my discomfort stemmed from my tendency to mystify scientific practice, through the very process of ethnography. In other words, while the goal of truth-making as my object might have been to take scientific process out of “the black box”, in focusing my attention on the production of facts, I implicitly bracketed some of the other forms of connection and processes of signification captured by these huts.

So what was else was going on in Walikunda? My summer working in the huts in Tanzania brought something by way elucidation. The difference in the institutional landscape was startling; the Ifakara Health Research and Development Center, IHRC (just this summer, christened an institution – IHI), formally Swiss, was now a national endeavor. The research projects run under its auspices are, therefore a great deal more embedded in public health infrastructure. The civic potential of science in this context was particularly apparent in the running of experimental hut trials. Rather than collect and identify the mosquitoes, the public health entomologists paid and trained local “sleepers” from the neighboring village Lupiro, to do the work themselves. The CDC light traps, which were being used to compare the different ‘blends’ a Kenyan scientists had developed to mimic human scent were calibrated to Swahili time to facilitate their work. One example of this collaborative practice hangs in my memory: Robert, a farmer, showing Fredros, a Kenyan PhD student – who had, at one point, been a ‘sleeper’ in huts built in Kenya and who had been noticed by entomologists and supported to continue his education – how to differentiate between a mansoniae and an aedes aegypti, by pointing to the length of the palps, the hair on the proboscius and striations on their legs. He clearly also tried to teach me.

As I begin to think through Walikunda and Lupiro, I am struck that in these two places, and to differing degrees, scientific research is, on one hand, collective and synthetic, but also generative of a kind of a social and political life. From the colonial period and the advent of DDT to independence and the Gates Foundation Grand Challenges, these experimental huts builds factual continuity between administrative practices, techno-scientific innovations and global economy. Though it could be a stretch, I am trying to think that here democracy and science considered as two moments in a pragmatic aesthetic; where inquiry is oriented to positive domestic action and stable national futures.

I will stop rambling. One other thought is in trying to capture a vector between natural and social landscapes, what these huts might teach us about our own units of analysis: how we negotiate the relationship between the everyday and the general, the mess and model.

I promise I will never again bore you with such long winded notes from the entomological wundercabinet.

Though, I must confess, there is a lot of great stuff in there.

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