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# WHEN CULTURES MEET: MICROBES, PERMEABLE BODIES AND THE ENVIRONMENT

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## INTRODUCTION

OVER 700 PEOPLE FROM FINLAND PARTICIPATED IN A DIARRHOEA VACCINE trial in West Africa between 2017 and 2019. Groups of 10 to 30 tourist-participants at a time spent two weeks in a small coastal village on the Gulf of Guinea, sunbathing, going on short excursions, eating and drinking, like on any holiday. Half of them had received a tentative vaccine to prevent diarrhoea, the other half had received a placebo. While the tourists were not intentionally exposed to *E. coli* bacteria or any other enteric pathogens, the likelihood of falling ill was high, as is often the case when one travels from Northern Europe to the tropics. The trial had selected Finnish research participants because they are rarely exposed to these bacteria at home and therefore have not acquired immunity against them, unlike most adults living in environments where these bacteria are abundant. The aim was to test a vaccine that was being developed to prevent both traveller and infant diarrhoea; the latter being a major cause of global childhood mortality. The trial not only created an enormous pool of data about gut reactions to a new environment in the form of laboratory specimen containers and

health records, but it also generated endless chatter about ‘poo’ and bugs among the Finns.

The trial offered a unique possibility for us social scientists to study ordinary Finns’ thoughts about and ways of living with microbes. This group was not ordinary, as people who volunteer to participate in a trial of this unique sort are perhaps ‘slightly crazy’, as they often joked, or more ‘curious’ and ‘adventurous’ than most. They agreed to test the vaccine and to give blood and stool samples before, during and after the trip, and to fill in a health card that recorded their daily bodily functions in detail. Consequently, they also agreed to talk extensively about faeces, mainly with each other, in mostly humorous ways, but also with us, more seriously. Presumably, people with strong negative or fearful attitudes towards microbes, or new places, would not have taken part in the trial in the first place.

The data for this chapter was collected in a village in West Africa, hereafter referred to as Ville. Interviews with and participant observations of the embodied practices of the trial participants offer a unique opportunity to have a closer look at how human-microbial relationality is negotiated by tourists in a new environment. The specific design – a vaccine trial conducted in West Africa on a group of Northern Europeans – is unique indeed, but we also argue that it further offers an exceptional setting to analyse lay accounts of bodily contours, fragility, immunity, hygiene and the role of the environment on human-microbe coexistence. The sociological data tells us something more general about the variety of ways in which people relate to bacteria. The analysis displays a plethora of complex and contradictory modes of discussing, embodying, embracing and resisting encounters with microbes.

The vaccine trial involved a large research group that worked not only in a laboratory setup in Ville but also in Europe and the US. Participants were recruited mainly via news and social media to identify a diverse population within the 18 to 65 age bracket. A noble aim of the vaccine was indicated in the recruitment advertising: this is about African children. The project was featured in a four-page article in the Sunday section of the biggest newspaper in Finland, and later advertised on social media, at bus stops and on commuter transport. Finally, enough volunteers signed up despite the cost of the trip (close

to €2,000) and a careful selection followed. The criteria for exclusion consisted of limitations regarding the applicants' health, medication and previous travel.

The outcome of the recruitment process was a trial population that was slightly over-represented by middle-aged women, and somewhat better educated and older than the national average but diverse enough for medical – and sociological – purposes. Many worked in health care professions and education, but builders, lawyers and taxi drivers were also among the volunteers. They were socio-economically unexceptional. What characterised them was an interest in health, science and 'Africa', as the location was often referred to: 'Africa', rather than the specific country. Further, 'opportunity to travel to Africa' was given as the most usual reason for participation, followed by an interest in being part of the trial, either for the sake of science or for the potential advantages of the vaccine. Although a lot of our data deal with the encounter with the study location, 'Africa', this chapter will focus on the microbial encounter, which is also mediated by geopolitics (Haraway 2016). Social relations, including processes of racialisation or othering, are present in microbial encounters (Anderson 2006; Roy 2018; Chigudu 2020). The ways microbes are experienced, imagined and narrated have consequences for imaginaries of, and relations to, selves, others and what is considered a 'good life'.

Histories of colonial and post/neo-colonial medicine and experimentation (Vaughan 1991; Tilley 2011; Geissler and Molyneux 2011), and the recent 'scrambling for Africa' (Crane 2013) in search of masses of research participants with varying access to biomedical health care, frame this Nordic and touristic vaccine trial. In practice, though, it was rarely articulated in this way. The public discourse around histories of Nordic colonialism tends to be characterised by complicity, rather than seeing Nordic countries at the centre of colonial forces (Vuorela 2009). Hence, explicit discussions about how contemporary science carries on such legacies are rare. This silence is evident also in this case. The trial differs from the usual trial arrangements in that the recruited participants were not local but healthy Finnish adults. Unlike trial participants living in contexts without access to health care in sub-Saharan Africa (see e.g. Kingori 2015), Finnish participants here were not compelled to take part to access medical care. On the contrary, Northerners even considered themselves as donating

their body fluids for the sake of African children and, hence, the concern about exploiting the poor appears to be inverted. Processes of inequality and racialisation are complex, however, as Adia Benton (2016a), for example, shows in her work on racialisation in professional humanitarianism, where race is both invisibilised and hypercentral. This applies here, too, with the humanitarian tourist-participants hoping to do good, which leads to a variety of racialising and anti-racist encounters taking place.

Our project gathered an extensive, mixed-methods dataset between 2017 and 2019. The data was collected during ten months of participant observation in Ville and six months in Finland, generating more than 500 pages of field notes, 195 qualitative interviews with staff and tourist-participants, and a survey. The focus of this paper is on vaccine study tourist-participant experiences. In the analysis, specific attention is given to the segments of data in which human-microbe relations are enacted: the shifting ways participants negotiate bodily contours and assumed embodied integrity, porousness and fragility in their relationality to the microbiota at the study site, as expressed in daily practices, from breakfast to night cap. The practices channel and mediate the context into bodies, and more specifically, guts. The gut is neither inside nor outside; it is the site where microbes blur the contours of the body as an entity. As can be imagined, the richness of feelings expressed about the gut in our data goes beyond a traditional social science analysis, as such feelings are verbalised only to an extent.

## SOCIAL SCIENCE IN GUT RELATIONS

Two classic texts in feminist sociology of the body have shaped the study of the politics of human-microbe relationality profoundly: Donna Haraway's *Simians, Cyborgs, and Women* (1991) and Emily Martin's *Flexible Bodies* (1994). Both analyse ways in which popular, lay and scholarly images depict the human immune system as a militarised field of warfare. The human body is described using metaphors of the nation state during the Cold War. By this definition, the immune system fights bacteria like a nation state defending itself from outsiders violating its borders. Bacteria are attackers, intruders invaders; the immune

system's white blood cells are protective killer cells that battle the attacking bacteria. In the context of international relations, these studies show how the Cold War influenced the metaphors pertaining to the human immuno-defence system, reflecting societal tensions of the time. Our analysis also points to the ways in which ideas of microbes and immunity are entangled with broader societal and global relations, such as how (racialised) imaginaries are at play when notions of purity, hygiene, dirt and illness are negotiated in everyday encounters, experiences and practices.

Since the 1990s, microbiology and immunology, and feminist readings of them, have taken new directions. New metagenomic methods utilised from the 2000s have demonstrated that microbes are among us, in, and on us in hitherto unimaginable quantities. Now, the emphasis is on abundance, relationality, interaction and mutualistic outcomes. Discourses that Haraway and Martin earlier described as discourses of war against microbes have now been complemented with what Haraway (2016) describes as human-microbial coexistence, where microbes are crucial for human wellbeing. It is worth noting, as for example Pradeu (2019) argues, that there are great differences in how the relationality of self and the microbiota are described within scientific publications. A wider debate on the ontological shift in how the contours of the human body are fluid, open-ended, porous and processual (e.g. Åsberg 2018; Fishel 2017; Roy 2018) guides us as we study how Finnish tourist-participants in West Africa understand their bodily relationships to microbes, and what practices they enact to mediate that relationship.

## THE SPECTRUM OF MICROBIAL RELATIONALITY

We identified an array of encounters with bacteria. The spectrum includes enactments (e.g. Mol and Law 2004) of human-microbe *relations*, through daily *practices* of maintaining body-boundaries and *discourses* through which tourist-participants spoke about microbes. Microbes were rarely explicitly spoken about in and of themselves; instead, they were alluded to through other domains such as illness and illness prevention, hygiene practices, food and water.

The spectrum, therefore, outlines the ways in which people described how bacteria materialised to them through the practices with which they navigated the external conditions.

The trial orients the tourists towards being conscious about microbes in both practical and verbal ways. Before travelling, they had conversations with research nurses about travel hygiene as though travelling to the tropics as ordinary tourists. As part of the trial procedures, participants provided data about their daily bodily sensations and symptoms in a way that guided them to think about microbes. In Ville, they recorded practices that might have involved microbial transfer, such as the foods they ate. The trial gave them a somewhat uniform framework to think about and live with microbes. Therefore, it is even more significant to note that despite the homogenising circumstances, they interpreted and fitted this information to their pre-existing notions about bacteria through diverse enactments. The participants were neither hyper-cautious nor hyper-adventurous as a group, as one might expect, but displayed a full spectrum of enactments from very cautious to very relaxed. The trial circumstances enabled diverse practices: the tourists were free to spend their days in Ville as they pleased, with a few pre-organised activities to nearby historical sites in buses owned by the trial.

Two small, neat but not luxurious French-owned beachside hotels were selected by the pharmaceutical company to hopefully meet the expectations of Finns: tidy and simple. In both hotels, the rooms had water closets and showers but not potable water. Frequent power cuts in Ville were remedied by the hotel's generators, yet they sometimes experienced water outages. For such occasions, buckets filled with water were typically set in the bathroom corner. The rooms were cleaned upon request, which was a little uncomfortable for some guests having to ask for services and toilet paper. Both hotels were equipped with pools, and these were frequently used by the participants, whereas swimming in the sea was considered dangerous due to strong currents. Overall, the hotels were regarded as plain in a good way, with few complaints about standards. The groups gathered each morning for a French-style breakfast with omelettes and fresh fruit – despite the constant half-humorous discussion about how long the service took. The hotels catered for an experience of touristic caution, as

well as exploration of the local circumstances: one tourist spent a whole week drinking by the pool while another participated in hauling in the fishing nets and sharing meals with the fishermen.

At one end of the spectrum, we have placed practices that could be summarised as immersive *coexistence* with microbes. At the other end of the spectrum are those who are *at war* with microbes and see microbes as uniformly dangerous. In between is an approach that seeks a *controlled engagement* with microbes, i.e. trying to control the permeable contours of one's body. This middle ground comprises a range of practices that mediate the human-microbe relationship to avoid illness and to be selective about which microbes to mingle with and how, recognising the difficulty or even impossibility of doing so in the face of everyday situations.

The enactments varied between both people and situations. The value of ethnographic observational data lies precisely here: we could observe how one person enacts different versions in different situations and for different audiences. A firm position expressed by a participant during an interview was often contradicted by their behaviour when observed. For example, someone who strongly emphasised a relaxed attitude about contact with bacteria might have been rather strict in using hand sanitisers, and vice versa. The spectrum is, therefore, a dynamic analytic, capturing snippets of shifting and coexisting enactments. Crucially, it is not a stable typology of individuals. Furthermore, we do not claim that the trial collected a certain type of traveller, nor did it create uniform behaviours. We argue that this spectrum, from immersion to elimination, shows that multiple relationalities are present in lay practices and that these relationalities need to be understood within the historical and social contexts of dynamic encounters.

## WILFUL IMMERSION AND COEXISTENCE

At one end of the spectrum, we find those enactments where the participants describe immersing themselves within the local microbial ecosystems with as few restrictions as possible. Microbes cannot and should not be avoided; humans



rather naturally coexist in an environment where microbes are bountiful and teeming. Microbes were described as essential for wellbeing. Several tourists explained that they rely on their gut microbiota and natural immunity to manage a balanced coexistence. They made attempts to be exposed to microbes, hoping that this would add diversity and complexity to their gut flora. Some of this type of joyful immersion talk resembles recent popular scientific literature where Western guts are said to be lacking in microbial diversity, which ultimately makes them ill and vulnerable (Parajuli et al. 2018).

In an interview, while sitting on the porch of Elina's hotel bungalow, watching the staff clean the yard, knowing the dry leaves would be burned, one tourist-participant brought up her interest in composting and an ecological lifestyle, in which she wished to engage even the hotel staff in Ville. In a follow-up question by Elina, the participant connected composting to the logic of gut health, where coexistence with rich microbiota was key for her.

E: Do you see a connection between composting and immunity?

M: Yes, I do, exactly! That's precisely why I let my body work of its own accord and hope that this would become explicit so that we could rely on it and benefit from it. Relying on their immunity is how the locals here must go about treating diarrhoea because they don't have the vaccine. And that's the beauty of it. I do understand that small children here can become seriously ill and would benefit from medication or a vaccine, but on the whole, I think these two are closely interconnected, like how to support the immunity of our own bodies – bacteria are our friends after all, our bodies are full of them.

E: OK, what about some of the bacteria which are not our friends?

M: Well, there is a balance in the stomach. Hold on, I'm looking for the right words to say this. There needs to be a balance between the gut bacterial species, probiotics, and other (f)actors and when there is balance, the human body works in the best possible way. Digests fibres and all.

In this interview, gut microbes were intimately connected with the environmental microbiota. In other accounts that we have identified as exemplifying

immersion, local foods were consumed with enthusiasm and curiosity. The participants were offered a few organised meals as part of the trip or included excursions, but mainly they sought their food on their own, often in small restaurants, sometimes in less touristic food stands. Food was constantly discussed among the participants; it was monitored (but not restricted) by the trial. One participant explained how the group embraced the context with all its features, depicting this move as something rather adventurous:

We went on a day trip and while we were exploring the place, we saw that there was a guy selling ice cream. We looked at each other and were like ‘We know that ice cream is a risk’, but the idea of ice cream was so delicious, so we looked at each other and were like, ‘What the hell, that’s why we are here!’ Since then, we had no restrictions, instead we celebrated it and like announced to the rest of the group if someone had had diarrhoea and drew a line on the wall. The one who had most [bouts of diarrhoea], got an award at the end.

The young person relaying the story had won the playful ‘diarrhoea competition’ on his trip. While the fearless attitude indicates that they saw themselves taking a risk against a normative cautiousness regarding microbes, in its entirety, the story underscores an attitude where coexistence with the local environment is regarded as possible, desirable and fun in the context of this trial. Once back in Finland, this participant was diagnosed as having one of the more serious bacterial diarrhoea-causing pathogens; however, he felt that this was not an inconvenience, as the group dynamic and the purpose of the trip made it worthwhile. Disease-causing microbes were not seen as too scary a prospect when considering the overall purpose of the trip and in pursuing scientific progress.

While most of the ‘immersion’ talk referred to the positive or neutral side of coexistence with bacteria in general, the immersion in this story is slightly different. This quote underlines that microbial abundance is something only a daredevil can stomach, quite literally – not so much signalling an appreciation of positive diversity but rather more in the manner of a classic heroic adventurer narrative. He combines a reckless ‘into-the-wild’ spirit with a faith in his own ability

to cope with immersion, and yet this faith is backed by the presence of Finnish doctors. The availability of Finnish doctors made taking the ‘risk’, considered as a *provisional* one (Benton 2016b), an option in the first place. This example shows that immersion can be exoticising and signal a position of (white) privilege, in terms of access to health care and more generally, of being secure and safe.

At the immersion end of the spectrum, we include refusal of antibiotics or taking them only as the most extreme measure against illness. For example, one participant, whose diarrhoea would have met the criteria for taking antibiotics in normal circumstances, agreed with the study doctors that they would just ‘keep observing the situation.’ The rationale was that the body’s immunity would eventually regain stasis, with hopefully stronger capability against whatever was causing the diarrhoea to begin with. Another participant stated that he was reluctant to take antibiotics because antibiotics destroy gut bacteria:

Gut microflora can be really cool stuff. I have read that it almost equals our mental health, that our brains can kind of like locate in our gut, that the bacteria can be quite fantastic, actually. So, I’m pretty cautious about the idea of poisoning the whole damn thing with some unspecific antibiotics.

In one of the interviews, natural coexistence was explained with the caveat that some bacteria, of course, are pathogenic:

Microbes are an entirely natural part of life, and they are everywhere and in our guts in astounding measures. We would not cope without them. But there is the difference which ones are the pathogenic and cause diseases and which ones are good for us. Not all bacteria cause disease. Some make you ill and some do not. Some people are just carriers and some fall more ill and it’s like finding a balance.

While some enactments of immersion displayed an interest in diversifying the gut microbiome, others regarded microbial encounters in neutral terms. For example, in the following account, a participant refuses to see the microbial environment as dangerous, despite Elina’s prompts:

E: How do you feel about coming to a place where the bugs are different?  
Does that worry you?

N: Very little. Not sure how much of it is sort of having learnt to assess risks, how much of it is in my personality of not worrying, but if I look at the situation here, it is the traffic that is the risk, and not the diarrhoea. Of course, diarrhoea would be inconvenient, but no, I'm not worried about it, whereas the traffic...

What this excerpt further exemplifies is how the context, 'Africa', and its relative lack of infrastructures and facilities were often deemed as the risky part of the trip, instead of the trial participation or possible illness. To summarise, the main feature in the immersion enactment is an awareness, even appreciation, of microbes, and a trust that a healthy defence system can find its balance. Pathogenic diseases are mentioned but not in focus; they can be tolerated in a balanced system. The human contours are porous in these accounts and attempts to control microbes are futile. This attitude towards microbes did not, however, necessitate a neutral or positive attitude towards the social, human environment of Ville. Immersion could include exoticising, othering and racialising remarks, alongside the more respectful and appreciative ones.

## CONTROLLED CONTACT IN EVERYDAY PRACTICES

In the middle of the spectrum, we have identified attempts to moderate how the human-microbe relation was organised. These enactments follow the logic that the environmental microbiome challenges the notion of clear borders of the self; the body is permeable and contact is inevitable, *but* it is useful to try to regulate how much and what kind of contact one is exposed to in a given environment. Here, the tone regarding microbial contact is not outright fearful or negative, but it is cautious.

The participants engaged in constant conversations among themselves about some bacteria being potentially harmful, but they equally constantly noted that they did not need to be 'paranoid' or 'hysterical' about them. There

were continued efforts to prevent potential bacterial infection, and new ways to manage the human-microbe connections were discussed and shared. One participant explained that, due to the trial, her way of protecting herself had changed. She used to think that immunity could and should be developed and when in Ville she had learnt to, in her own words, '*micro-protect*'. These micro-protections were everyday, recurring, constant moment-to-moment practices aimed at managing the assumed human-microbe boundary. These gestures of micro-protection included hand sanitising, choosing particular foods, avoiding raw salads and using bottled water to clean her teeth.

These negotiations were varied and subject to revision. Some described becoming more confident with the local context over time. Many said they were more conscientious of hygiene at the beginning of their trip, but once they became more familiar with the village and the Finnish trial team, they relaxed. We witnessed this change in attention to hygiene as a very general trend over the two-week holiday. One of the participants described the 'essential' practices for bacterial control but then said that, at some point, one could also relax because ultimately the battle is futile:

At first, I was really cautious, but it went pretty quickly. Like I ordered a vegetarian meal at the restaurant but then it turned out to have salad and tomatoes and other raw vegetables and I was like, 'Hmm ...', and just ate it. So the cautiousness dispersed pretty quickly. Of course, hand sanitiser and other basics, no tap water etc, but then I thought that if I eat in the restaurants etc, if it's going to come, it's going to come ...

This example presents a movement between different kinds of practices that illustrate the flexibility in micro-protections. Certain participants who might have initially been more relaxed about micro-protection became more restrictive about bacterial contact after they fell ill. The following excerpt illustrates these navigations:

E: Has this trip made you think about bugs and how they move about more than you would have otherwise?

L: No, no, I have travelled a fair amount and know so much about things that I would say no surprises here. There is always some new information along the way but I'm not super hysterical. I eat pretty sensibly and try to avoid the worst bacterial traps. Then again, like yesterday, when we were on this river boat cruise, we had our picnic foods with us that were prepared and packed in the morning and by the time we had them it was the afternoon. The food was made of rice and prawns which, when it cools down, is a real bacterial hotspot. It was really tasty but as the serving temperature by then was like... I was like let's see what happens....

E: And?

L: Well, when we were on the excursion, indeed, during the trip it felt a bit like, now my stomach is a bit sore. So before we left, I went to the loo and thought, 'Goddamn, is this where the party begins'?! Especially with the toilet the way it was.... But I just went to the toilet once and that was that. And even yesterday, I had the courage to eat bravely, but some people are more cautious and avoid certain foods and that is good.

Giving up protections was described either as a move towards positive immersion into the new context or a resignation in the face of a hopeless battle. 'Avoiding diarrhoea' did not mean an attempt to be completely untouched by microbes but an optimising of microbial contact, labelling of microbes as 'good' or 'bad' and estimating the quantity of 'bad' microbial intake. The following remarks from another participant show how making these choices was not always straightforward, and also illustrate the sliding nature of transitions on the spectrum:

K: And how do you prepare for getting sick here, or getting diarrhoea? Is it on your mind a lot?

V: Before coming over, sure, but not now I'm here.

K: How did you, beforehand, how was it in your mind?

V: I read the Facebook site,<sup>2</sup> like 'take along diapers', it [diarrhoea] can come on quite suddenly and so on. I have had severe traveller's diarrhoea three times before this, so I know, it's not that bad.

- K: OK, and do you take some kind of precautions here, or how are you dealing with that? Are you trying to avoid, or...?
- V: Yeah, I try to avoid, hmm, but I have even eaten salads, yes, and then I spray these insecticides, but I haven't really skipped any [tourist activities] or anything.
- K: Yeah. Do you use hand sanitiser, or...?
- T: Not much, the hand sanitiser, I don't like it too much because it kills the good bacteria, too. I wash my hands and then I use the freshen-up towels.

Though the relationship between ideas of dirt and race is not a simple or stable one (Newell and Green 2018), a link can be seen in constant comments on dirtiness. Waste management, 'shocking' amounts of waste on the beach, and kitchen hygiene were often bemoaned and joked about while waiting for food to be served. These are mundane, passing examples of the ways processes of race were at play in the context. On one such occasion, a participant went to 'explore the kitchen conditions', as he said, in the rather small restaurant-bar set on the sand and intended for tourists, serving mainly rice and fish dishes. He photographed the kitchen and the phone circulated in the hands of the hungry participants, bringing about surprised comments, snorts and laughs. In the end, everyone ate, though some complained of a loss of appetite. Resonating with Newell's (2020) suggestions about the ways the idea of dirt mediated moral evaluations in colonial and postcolonial eras, here, notions of ignorant, unknowing or poorly equipped locals affected the ways participants thought about eating and dealing with bacteria.

A personal need to address a bodily discomfort in the face of a situation where one is cautious about food is of course not disrespectful or racialising as such. Often the mode of discussion when speaking about difficult practices regarding disgust or sensitive issues with locals was humorous. Adia Benton discusses the ways in which 'Africa' and race (blackness) tend to be conflated and analysis of race is elided in humanitarian or development contexts, often by using humour. Drawing from Donna Goldstein, Benton (2016a: 269; 2016b) suggests that 'jokes often get their punch by expressing perspectives that would

otherwise be inexpressible. Statements made in the process of “only joking” can often provide a window into deeply held and troubling feelings, such as those that deal with race. Sometimes humour expresses a respectful confusion, too; a sincere sentiment of not quite knowing, in terms of both local practices, culture and one’s own habits around purity in the new context.

Most participants said that the presence of Finnish doctors in Ville had a calming effect. Consultations before the trip, the Finnish instructions and the presence of a Finnish laboratory and doctors in Ville were important when the decision to participate was made. It was often mentioned that this support made them feel more confident to ‘travel to Africa.’ For many, Africa had been a lifelong dream that had been unattainable until this opportunity. The assumed safety produced by the trial circumstances substantially lowered the threshold of what seemed otherwise risky. ‘Africa’ appeared both attractive and difficult, and fear of diseases was cited as part of the difficulty. Access to a doctor not only reduced concerns, but also seemed to make symptoms and the experience of illness more bearable. In addition to the micro-protections that comprised everyday actions to control contact with microbes, the presence of Finnish doctors and health care access could be defined as a reliance on ‘macro-protections’ of a more structural kind.

Of course, ethical guidelines prevent the design of a trial exposing people to unnecessary risk. In this trial, however, the somewhat organised nature of the human-bacteria encounters created a framework of naturalised exposure as acceptable. The environment in ‘Africa’ and a possible contamination by the local bacteria were not defined as dangerous from the outset. This logic was enhanced by the advice given during the trial. In practice, however, the constant awareness of diarrhoea and general health strengthened the middle ground micro-protection talk and caused a lot of movement between these enactments. Stereotypical notions of risk, disease and ‘Africa’ possibly heightened the micro-protective practices. Appreciation of local ways of dealing with hygiene was extremely rare, which could be slightly surprising, knowing that the trial design presumes that the local adults, after all, have a stronger immunity than the Finns.



## AT WAR AGAINST MICROBES

‘Why would anyone want to take a holiday just to get ill’?! was a frequently mentioned response from the participants’ friends, families and colleagues. Comments about health risks in West Africa were said to have been a common subject of discussion prior to the trip. Fears and suspicions might have prevented those most concerned about microbes from joining the trial and, hence, our sample of participants does not include those whose attitudes towards microbes are the most negative. With this in mind, it is interesting that accounts which echo the Cold War combatant attitude documented by Emily Martin (1994) can still be identified today.

At one end of the spectrum, we characterise human-bacterial relationships that could be identified as being ‘at war’ (Martin 1994), even if the participants did not use these explicit terms. Here, microbes are described only as dangerous, harmful, contagious and dirty, while the village was similarly portrayed as dysfunctional and insanitary. Taking a certain set of hygiene standards as a given norm, and minimal bacterial life as a goal, resulted in perceptions of a lack of development in infrastructure and housing. Lack of plumbing, drinking water and toilets were deemed as sources of risk and evidence of lack of hygiene. The microbial levels in the area were taken as a negative feature. Such views show poignantly the context-specificity of microbial relationality. Exoticising, stereotyping and othering accounts, and images of ‘Africa’ were frequent in conversations and interviews and will be further discussed in later publications. One participant described her worries as follows:

I have been more cautious on this trip than my past travels because I have not travelled in the tropics that much and because I’ve understood how different the bacterial pool is here, and that hygiene standards are lower. So I’ve tried to be more careful about hygiene. [...] There is so much here, like everything possible. So maybe I was thinking about it more before travelling; that I might be constantly, like bitten by mosquitoes etc, like there are so many diseases here that one might be infected with. But now that I’m

here, I'm not quite as paranoid. But in Finland, I had a mild fear that I might bring home something severe.

This participant, while in Ville, explained her concerns about hygiene and infections ahead of the trip, using language that indicated severe concern. She deemed the perceived bacterial abundance in West Africa to be an infinite source of disease and risk that could potentially be brought back home to what she clearly regarded as a 'safe' Finland.

In accounts of a war against bacteria, antibiotics are the obvious weapon. The trial participants explained that normally, when travelling, their key method of controlling risks and pathogenic human-microbe relations is by using antibiotics. In our survey, we asked how regularly people had used antibiotics. Altogether 7% of the respondents said they wanted to have antibiotics every time they fell ill. We also asked about independent use of antibiotics and medications during the trip to Ville, but none were reported. Adherence to the study protocol was taken seriously. We were told that some participants had brought their own antibiotics from Finland, reflecting a concern that drugs might be unavailable or of the wrong kind in Ville. They were prepared to self-medicate if needed, but such a need did not arise. 'My commitment to the trial does not override my own health,' said one participant in private conversation, emphasising their belief in the importance of antibiotics as a general cure.

During one of the research clinic consultations, one participant explained that she usually takes antibiotics to prevent a urinary tract infection every time she has sex. The participant was meticulous in observing her bodily aches and pains and reported different conditions and self-medications during the weekly trial checks where symptoms and medications were recorded. At this end of the spectrum, antibiotics were seen as a self-evident technology that can be used in order to ensure health and wellbeing.

Although she did not bring up antibiotics specifically, another participant also discussed her desire to guard her bodily boundaries and described a general wariness towards almost anything around her. Even so, she emphasised that she was not afraid, just highly aware of the risks. Interestingly, she described the importance of trying to maintain *a feeling* of cleanliness, and especially clean

hands, with the help of hand sanitisers and freshen-up towels, 'If there's a slimy feeling, for example'. In an interview conducted by Katriina, while waiting for lunch in a restaurant popular among the participants, right next to the kitchen area, she and the participant noticed a live hen. This was a typical sight, which often brought about a joke about whether it was the lunch-to-be. On this occasion, it led the participant to talk about her ways of relating to the environment. She talked about her constant awareness of the surrounding health risks and her attempts to manage them because she wished to stay in good health in order to go straight back to work upon returning to Finland:

K: Have you noticed that you think about health risks more, more than usual when you travel, for example?

R: [...]. So, not like, I'm not too scared but you realise that you think about it a lot more.

K: In what ways do you think about it, or in which situations do you notice that?

R: Well... I like to walk barefoot, and that's something you're really reserved about here. Like, sometimes it feels weird, there in my, just in my bathroom, to walk barefoot, and that somehow...

K: Yeah, can you tell me why, why does that feel weird?

R: Well, that's probably because, just before coming here I read – I read surprisingly little before the trip, I left everything to my travel companion's responsibility and s/he read everything possible – and I happened to read one tiny article about hookworms, and now I'm always thinking that there are hookworms or something on my bathroom floor.

K: OK, so is it like you're all the time thinking about lots of other kinds of things, not just diarrhoea?

R: Yes, yes. Everything else that there could be here, things that are not really even talked about. [...].

This type of concern was less frequent in formal recorded interviews, but in informal small group encounters disgust and worry were commonly mentioned. In those chats, war was not so much about destruction of the enemy as it was

about guarding borders. A key issue seemed to be the difficulty of knowing the enemy; microbes really might be anywhere or everywhere. In attempting to know, and thereby avoid, the microbes – and other possibly health-threatening creatures – one needs to merge scientific knowledge, popular knowledge and one's own sensory experiences.

Practices of avoiding local bacteria often meant bringing foodstuffs from Finland, such as dried bread, biscuits, porridge, nuts, raisins and coffee powder. For most, these were consumed when ill with diarrhoea. One participant cooked her own porridge and stayed in her own room for several days when she felt sick. For some, nausea and physical weakness enhanced the war talk, but for others the perky immersion talk of not being worried continued despite illness.

The most extreme example of preventing contamination and illness by maintaining the bodily boundary through controlling food intake was that of the film crew who came to make a documentary of the trial. During their two-week trip, everything they ate was brought with them from Finland, except for some fruit that they disinfected before eating. As artists, they were neither trial participants nor part of our 'data' in the strict sense, but the example is illuminating for this end of the spectrum among the Finns in Ville. They explained that they could not risk getting ill, assuming that such an event was likely. Similarly, one participant endured a day-long excursion outside Ville without eating anything at all because outside Ville he did not want to take risks.

## CONCLUSIONS

The analysis presented in this chapter displays a plethora of modes of discussing, embodying, embracing and resisting encounters with microbes by Finnish participants in a vaccine study in West Africa. The analysis reveals the complex and even contradictory ways of living with microbes among lay people. There were differences in understandings and practices towards and with microbes, which we observed during the ethnographic fieldwork in Ville.

We have called these relationships with microbes, consisting of both explicitly articulated understandings and situated accounts and practices, enactments.

The combination of both participant observation during a two-week holiday and (sometimes repeated) interviews reveals the complexity and diversity of human-microbe relationality. Here we show that when doing research with and on 'Western' notions of bacteria, they should indeed be studied in all their rich complexities.

We have constructed a spectrum of enactments from immersion to controlled contact to war. This is of course a simplification of the multitude of enactments that shift between situations, contexts and perceptions of personal wellbeing, but it is a useful reminder of the importance of being aware of the whole range. Multiple human-microbial enactments existed simultaneously in the spectrum, rather than forming a binary. It is of particular interest that in a trial context where one might expect only brave accounts of microbial immersion – as this was explicitly the starting point for participation – there were also war metaphors and accounts of full avoidance of any contact with local microbiota.

Our analysis shows how relationality with microbiota cannot be detached from context, being formed and re-formed in complex historical, social, political, economic and institutional relations. Ideas of dirt, dirty places and cleanliness are not coincidental or ahistorical (Douglas 1966), and racialised and racialising imaginaries feed into notions of purity and vice versa (McClintock 1995; Xin 2019). The sense of safety that the participants often mentioned was linked to the unusual trial arrangement of Finnish collective care for the body in Ville. Some participants may have discussed the differences between Finland and Ville much less were they not travelling in a group, and furthermore, defined specifically as Finns by their trial participant role. This points to how microbial relations are inevitably contextual and subject to constant negotiation and change, and anything more general is always already specific.

Indeed, the specificity of the trial context (Finns in West Africa in a biomedical study) cannot be dismissed. This setting is unique and particular, which is precisely why it enables the study of lay enactments of human-microbe relationality in a context where microbial abundance can be imagined in various ways. Tourists from northern Europe perceive both the local context and their home environment, with human and non-human actors and infrastructure, with a wide array of ideas, and these influence their bodily practices. Both fearful

and appreciative attitudes to the new context were possible. One's body, work and everyday practices did not follow one's explicit ideological or moral beliefs in any systematic manner. This study of trial participants' microbial relations within a unique biomedical project reveals the complex ways ordinary people negotiate the contours of their bodies. The trial did not limit the richness of encounters, but a full spectrum of human-microbial relationships from war to joyful immersion was enacted.

## NOTES

- 1 The author names are in alphabetical order and the work was shared equally.
- 2 This was an informal Facebook group set up by and for participants', which was not moderated by staff.

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