SWIMMING, LEPTOSPIROSIS AND ME

An autopathography

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The Preamble

Just in August 2021, I contracted leptospirosis, although I didn't know it at the time. Wrong time, wrong place. All I had were my experiences of the rapid changes to my physiology, to my physical and mental state, and my interactions with the United Kingdom (UK) national health service (NHS) while I underwent illness. I am a professor of anthropology at the University of Oxford who works in both biological and social arenas, mostly on nutrition, obesity, but also in the past on infectious diseases as they relate to undernutrition. My lines of research have taken me to many countries, including India, Bangladesh, Sarawak, the Cook Islands, Japan, Australia, Poland, the United States, Mexico and Papua New Guinea. It is in the last of these that I contracted malaria. Three times in total, twice on returning to the UK after stopping taking anti-malarials. I am also a very keen open water swimmer, and have been for most of my life. My brush with Weil's Disease, or leptospirosis – brought these two worlds together for me in August 2021. I scribbled many notes across this vile week of severe illness, often in the grip of fever, after dreaming and when drowsing, such that realities seemed to merge and mingle. This account of my treatment-seeking experience is based on these notes, as my condition worsened, into sepsis, and out again, with the expertise and integrated hard work of the medical staff of the University of Oxford's John Radcliffe Hospital (the JR).

I came to Oxford from Australia in 1999, having swum in the ocean regularly there, and continued swimming, initially in the River Thames at Eynsham Lock from the that first summer of living in Oxfordshire. Since then, I have swum in many lakes and rivers, mostly in the south of England, as well as across Europe. These days I mostly swim in Oxford and Oxfordshire, in the River Thames and in Lake Hardwick, ten minutes drive from where I live in a beautiful honey sandstone village in West Oxfordshire. I never expected to suffer from leptospirosis, although I know that it is a risk. A comment I sometimes hear from passers-by while swimming in the river is "you know you can get Weil's Disease, don't you?" My internal response, never spoken, is "Yes, but…" it is so rare that it is hardly on my swimmer's radar. In retrospect I am surprised by how it took me by surprise, even though I thought I knew what it looks like. The lived experience of a disease is always very different to what it says in the textbook, although the textbook is essential to knowing how to treat it. So, despite knowing the symptoms of leptospirosis (reading and talking with other open water swimmers) it surprised me how quickly it took hold of me, how quickly it became distressing, and how quickly I started to lose my mind while at the same time thinking that I was holding it together. And how unlucky. The first confusion was

that I thought it was a passing fever, and thus was reluctant to seek medical advice early. The second confusion was with the old enemy met three times previously, malaria. It felt like malaria, in intensity of both fever and in feeling ice-cold and shivering. The third confusion was that it initially felt like the post-swim effects of winter swimming (which I have practiced for over a decade, swimming in open water throughout the year, in the past five without a wet-suit), which can involve intense shivering then later a transition into deep warmth. In a way, it was a perfect storm, and I was self-deceived into ignoring it for a day, long enough for it to progress and intensify and to make me a hospital case.

Leptospirosis risk, according to Public Health England, looks like this:

> 'Humans mainly acquire infection by direct contact with the urine of chronically infected animals, particularly the brown rat *Rattus norvegicus*. Infection occurs when spirochaetes in urine, contaminated water or soil enter micro-abrasions in healthy intact skin, intact mucous membranes or conjunctiva. They may also cross the nasal mucosa and pass through the lungs (from inhalation of aerosolised animal body fluids). Individuals at increased risk include those working in the farming and water sports communities, with animal and water exposures. Person-to-person transmission is not known to occur. Leptospirosis has changed over the years from being a predominantly occupational infection to one now more commonly associated with recreational activities. The risk of acquiring *Leptospira* infection is increased with exposure to inland surface waters both at home and abroad, especially involving water-based and adventure sports and where the risk of skin abrasions is high'.

This is all stuff that open water swimmers kind-of know and from time to time think about before swimming, usually in the broader context of river contamination and whether it is safe to swim in. In London, for example, there is often concern about whether there has been recent sewage discharge into the River Thames – this can sometimes be enough to cancel or reschedule a swim. At the Serpentine Swimming Club, I have heard people say they won't swim because they have a cut or an abrasion. What swimmers rarely think about is the possible severity of leptospirosis, if they were to become infected.

Infection by the most common form of the disease in the UK is described by experts in the field in the following way:

> 'Following exposure to *Leptospira interrogans* there is an incubation period of between one week and one month before onset of symptoms, usually

beginning with sudden onset of fever. Myalgia (lumbar area and calves) and headache are the most common symptoms in this early 'septicaemic' phase. Nausea, vomiting, and conjunctival suffusion are also common. After a few days the symptoms resolve as antibody responses develop. The illness may end there or progress after three to ten days to the immunological phase, with return of fever and myalgia and the sudden onset of complications including renal failure, jaundice, pulmonary haemorrhage, and aseptic meningitis'.

Heavy stuff. As a swimmer you kind-of know the risks, but not in the kind-of detail given by Public Health England. But it helps, in that if you become sick within a day or two of a swim, it is unlikely to be due to that particular swim. As someone who contracted this very form of the disease (confirmed with a blood test), I have no recollection whatsoever of being in an early 'septicaemic' phase. Small fevers come and go, and they are hardly something I would worry about. Muscle pains in the back and legs – well, aches and pains are part of everyday life when you are in your late sixties. So nothing unremarkable there. But boy, the 'immunological' phase was full-on, in a lot of ways just as it is described above. This short account is my experience of it, the real and the fantastical, how it progressed and was resolved, and how I sought to understand it through the eyes of medical anthropology and open water swimming. Given the narrative nature of this account, and the extent to which my experience recruited memory to meaning, I am tempted to call it an autopathography, which is to say, an illness autobiography. The term was coined by G. Thomas Couser in 1997, to describe autobiographical narratives of illness or disability, often as a form of life writing and of recording memories and experience related to the experience of illness. Autopathographies have been described variously as 'medical confessionals', 'patient's tales' and 'plain tales from the ill'. They often give accounts of diagnosis, treatment and outcomes, and frequently share how an illness relates to the sufferer's wider life course, their social networks and their views of health care institutions. Perhaps the best known autopathography is 'Prozac Nation', a memoir written by Elizabeth Wurtzel, published in 1995 and turned into a movie in 2001. In the few days that I developed what was diagnosed as leptospirosis, I saw myself comparing it to both my past experience of contracting malaria and to what I understood about the infectious disease of the day, COVID-19.

Paul Garner, Professor of Infectious Diseases at the Liverpool School of Tropical Medicine, is someone I know from Papua New Guinea in the 1980s. His recent posts in the opinion section of the British Medical Journal on his recovery from long covid collectively forms the most recent autopathography of infectious

disease in the UK. His observations of his own experience of COVID-19 across the best part of a year is currently helping to widen the conversation about this new disease, its symptoms, its longer-term progression, and recovery from it. Like Paul, I have both experienced severe infectious diseases, and am a scientist. Unlike him, I have not experienced the same extremes of malarial infection, nor have I been (knowingly) infected with COVID-19. But Paul has always put himself out there. At the height of his illness, Paul sent me an email to say that he could only do electronic correspondence for twenty minute stretches maximum, three times a day. Beyond that, he was fatigued. I had asked him to comment on something I had written with colleagues for the Lancet medical journal on COVID-19. I wished him well and didn't pursue it. He didn't have the capacity to deal with any but the most immediately important matters. He kept notes of his circumstances, and of the correspondence he had with others, with experts, with people formerly ill with COVID-19. He is now recovered, to my immense joy. Likewise with my experience of leptospirosis, I scribbled notes, sometimes very brief and telegraphic, sometimes longer, while I moved across the stages of disease – at home and in the community, in the emergency room, on the night wards, at the day clinic, and then back home again. As an anthropologist, I have always kept field-notes. Now was no different – the field had come to me in the form of leptospirosis. This is a reconstruction of what I perceived to be happening, and of my relations to the past, with the medical profession as I interfaced with it, and with the broader open water swimming community, for whom leptospirosis is most usually a background issue, mostly framed within the context of contaminated open water.

In this (what I choose to call) autopathography, I layer the practical and the mundane with flights of fantasy at the height of infection and into recovery, something that I experienced as being very real at the time, layering biochemical and physiological facts as I saw them upon my often feverish and mentally-contorted recollection of events. The most important thing I take away from this episode is that since a lot of things can cause fever, the very best thing I did was to disclose to the medics very early on that I am an open water swimmer. Open water swimming matters to me, and I hope that in presenting this reconstruction of events and imaginings, my experience of this vile disease can be of some use to others.

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The Prelude

I had swum that afternoon, on my own, a mile in Lake Hardwick, and started to shiver a little even while I was coming to the end of the swim. I didn't think much about it, but perhaps I should have done. It was August, not a month I usually associate with swim-shivering. I went home - my son had arrived from London for the night, his very large-sized Stan Smith sneakers in the hallway signalling this as I walked through the door. An unexpected pleasure. The evening was unremarkable – we ate a simple supper together as a family, then my son and I watched the cricket together on the television. Very pleasant, but unremarkable. All evening I had a gentle shiver, but didn't think anything of it. As a winter swimmer, shivering gently is part of the practice. You even get to enjoy it. You learn to calibrate how much you swim in relation to how much you shiver, all in relation to the conditions on the day. This slight shiver would be unremarkable in winter, but this was August. I put on a jumper and this helped. By the end of the evening the slight shiver was supplemented with heat. I was burning inside, making huge heat, starting to sweat in the way you might if you have too many layers of clothing on in an over-warm room. Except that, unlike with clothing, you can't take any more off to cool down. I get this kind of burn sometimes hours after a cold water swim, after initially getting cold and subsequently recovering from that cold. This is something that is very pleasurable to me, almost addictive, an internal heat that turns on readily after a cold water swim. A cold water swimming adaptation – technically, it's called brown fat activation. You probably know that not all body fat is the same. As someone that does research into obesity, that's something I know well. Brown fat is extremely special, in that it's job isn't especially to insulate, but to produce heat when it is triggered by cold conditions. If you swim through winter, then your brown fat might well be triggered by cold exposure, as mine is. Again, this was to my mind unexceptional – except that it wasn't winter.

I went to bed, lying with all the covers off, still gently shivering and my metabolism, my bodily heat generator, set high like someone had reset the central heating thermostat to keep running when the house was already plenty warm enough. And still thinking that it was due to getting cold while swimming that afternoon. But I couldn't then get to sleep, as the burn didn't ease but just intensified, as did the chill-shivers. After winter swimming, the shivers generally go down as my metabolism gets turned up. In retrospect I can see that I was doing just what most people do, which was to minimize and explain away what was happening to me until I couldn't rationalise it any more. The parallel with this and with what people did in the early days and weeks of the COVID-19 pandemic is quite

striking to me – which is deny that they were ill, often infecting many others while trying to normalize what was happening to them. We are still doing this with COVID-19 collectively in the UK and elsewhere, downplaying the pandemic as it continues, now especially in the largely unvaccinated global south.

I stayed in denial all that night, as the combined freezer-oven of my physiology and metabolism stayed with me through the night. I woke, I peed, I woke, I peed, I woke, I peed. More than three times, but couldn't remember exactly how many times because I couldn't think any more by the early hours, now out of my mind with the body heat. You know, the kind of tropical heat that doesn't let go? And there you are in the sunlight with no shadow to get into? Maybe sometime into the early morning it let go of me, the heat. I stopped burning and just felt exhausted-tired, falling asleep and over-sleeping easily. I was useless for anything, so went back to bed, hoping this was a transient fever which I might now sleep off and get back to business as usual. I have had them before, fairly non-specific fevers, which resolve themselves within a day or two. So that morning I wrapped myself in my sweat-soaked sheets and tried to sleep. I had no appetite, and it was as much as I could do to hold down a glass of water and a piece of flapjack. Pauline, my wife, brought me a cup of tea and it tasted like swamp water. Something was shifting.

The rest of the day was unremarkable, beyond being tired and sleeping a lot. I have learned not to try to do work that involves decision-making when I feel like this because easily-made bad decisions often need time for their undoing. So I did some very routine tasks in and around the laptop, and that seemed to be enough, to tread water.

The night started in the right way, with bright new sheets and a shower, clean and nice. But at some unclearly defined stage I think of as being 'the middle of the night', in rolled the waves of fever again, one after another. And shivering, like strong rain showers on the rolling ocean. And headache. Again, I tossed and turned and shivered and sweated. One clear thought helped, which was to take a shower, to dowse myself in cold water, which indeed helped. Cold showers are part of a winter swimmers' routine too, so this felt extraordinarily good, once I persuaded myself to turn on the water. To bring down my skin temperature, like in summer, when my office under the roof at Oxford University's School of Anthropology is a sweat box in the afternoon, and I take myself down to the close-by River Thames at Port Meadow for a dip to cool off. I was back in my comfort zone mentally and physically. I settled and slept, but in a slightly off-my-mind way, like after a night's partying when the euphoria of alcohol has given

way to headache and exhaustion. Not that I have done this much in my life – the last time being nearly half a century ago.

I woke around seven in the morning, still hopeful that this was a transient fever. Pauline – we have been married for over thirty years now - was already awake and worried, waiting long enough to ask me how I felt before calling 111 to get help. In Papua New Guinea, she had been a midwife to women in a rapidly-modernising local population, and she knew her 'tropical' diseases, as they were then known. An ambulance came and the paramedics did some on-the-spot tests, probably routine stuff for them, but reassuring for me. Pauline had taken my oxygen saturation first thing, and it was low - a sign of COVID-19 - and that's what alerted her in the first place. I had taken a lateral flow test in the meantime and it proved negative. I was starting to wonder if it was malaria all over again, like a twenty-year anniversary, 2001 – it was possible. The paramedics measured my oxygen saturation, and it was within the normal range. But then they found my blood pressure to be low and found signs of a chest infection. They phoned my general practitioner with this news, and she prescribed broad-spectrum antibiotics for this suspected infection, and with that, the paramedics left. I showered and dressed and shuffled slowly to the pharmacy in the village, the two hundred meters' walk feeling like a mile. I went back to bed once I took my first antibiotics; it was the only thing I felt I could do.

I woke up confused – apparently I had been talking in the night about going to the lake, and just then I had been talking again in my sleep to Pauline that we should get ready to go to the lake. I ate a little flapjack, not because I was hungry but because I knew I should eat. I tried to drink some water, and then threw it all back up again almost immediately, trying to hold it in my mouth as I shambled to the bathroom toilet. I was convinced it was night-time, and was surprised to learn that it was only three in the afternoon. Back in bed it wasn't long before the next wave of fever took grip, reducing me to a sweating ball, knees tucked up to stop shivering while sweating profusely at the same time. This went on for I don't know how long. It was still going on when I stirred awake upon having my name called out. I raised my head expecting to see Pauline, but instead saw two paramedics, a different two from the morning. They asked questions, they did tests, and concluded the same as the paramedics who were called in that same morning, but worse. My blood pressure had dropped since the morning's low measurement. Back pain – that was new. I had packed a bag in the morning ahead of the first paramedic's visit, anticipating the possibility of being taken to hospital. I hadn't unpacked it, so was hospital-ready, in tee-shirt and trackies. They just needed to make a couple of calls and then we were off to hospital,

exactly where, yet to be determined. It didn't really matter because Pauline couldn't visit anyway, because of COVID-19 security.

The Emergency Room

Today it was my turn in the back of the ambulance, carving through the traffic to the JR. Across many years of cycling into work in Oxford along these seven kilometers of the A40, I have seen many ambulances do exactly what mine was doing right then. Thinking 'one day that will be me', I have repeatedly imagined what drama might be enacted within a tiny mobile theatre such as this one. I have watched ambulances, with sirens and flashing light, making drama of the rush-hour, parting the traffic and forcing drivers to reflect on the fragility of their own lives, if only just briefly, just as the ambulance came through. I have imagined cardiac arrests, blood, carnage, overdoses and vomiting, Shakespeare's Titus Andronicus in a twenty minute ambulance ride. There wasn't much to see in my ambulance drama. Less Shakespeare, much more Samuel Beckett and Waiting for Godot - watching my blood pressure drop in real time. Watching the meter drop, then drop some more. There have been times when I have pumped up my cycle tyre half-way to Oxford along this very road, to get me to a repairers before the tyre gave out altogether. Today I was that rapidly deflating bicycle inner tube.

The JR was much more the F1 pit than a bicycle shop – the pit crew were the clinical staff coming and going in a confusion of uniforms and attire, each with their particular role, duty, place in the hierarchy, job to do. I was on the trolley bed, now not paying attention to the drama around me, drowsing off, falling asleep at the theatre. I was startled awake by an imperious-sounding question – "Who is the Prime Minister?" I was immediately in Lewis Carroll's Alice in Wonderland. Expecting the Mad Hatter in front of me as I opened my eyes, I saw instead a vivacious uniformed medic, who asked my age and was immediately flattering – "You don't look 67!". I could take that. As she took my records – date of birth, address – she took note of my outdoor swimming. She said, dropping a look to her colleague at one side while simultaneously dropping her hips - "We're active girls!" I could see that. They talked about their gym-work briefly as she typed up. She was keeping me awake and aware, wanting to see if I had my wits about me - in retrospect I can see that, but at the time I just asked for a scrap of paper and a pen. She was writing, making notes, and so was I, if short telegraphic scribbles count as notes. At least it was keeping me awake. The thought of Boris Johnson had been effective in disrupting my drowsing anyway. I felt oddly

content, with interavenous antibiotics going into one arm by cannula and fluids into the other, with blood pressure meter and oxygen saturation monitors in place, taking regular readings. Exhausted but somehow content – it was well out of my hands and in the hands of the professionals. It was sweet relief to have handed myself over to them. In retrospect again I guess this happens all the time, resisting going for care or waiting-and-seeing until it gets so dire that getting any help is a relief. But there is also the implicit expectation that good available care is there when it is needed that makes it easier to try and tough it out. At the peaks of infection and hospitalisation with COVID-19, this expectation was abruptly disrupted - imagine if I had been this ill this quickly at the height of the pandemic?

More blood was taken, then taken again – if it wasn't COVID-19, could it be malaria, could it be leptospirosis? 'Blood samples – blood vials - vials' disease – vile disease', the word-play was rolling in my mind, keeping me alert. The uniformed medics were actively sticking electrodes to my chest, ten or so it felt like, hooking up leads to each of them, like threads connected to an embroidery machine, so that the background music of my everyday life, my heart, could also be measured, watched. I became aware of the noises – the bleeps, the rustlings, the clangs and the breathless whistles – what was me and what was machine became very blurred. Then I drowsed, slept, to wake again who knows how much later, as another uniformed medic came to check on me and my machine outputs and inputs.

In the pause, now, the lull. The uniformed medics had taken their attention to another person, to the next stall, and I was left alone in the rumbling-humming half-quiet to reflect. I was brought back in memory to the malaria I had a previous time, in London in the mid-nineteen eighties. I had been working at the British Council then, and had experienced periodic night-time fevers and shivers which kept me awake. I remember struggling to get into work, tired as with a hangover after nights of malaria-fever, in denial of disease, hoping I would shrug it off.

Then one day I slumped over my desk at the end of the working day with the shivers and sweating – rigors, they call them – the shiver-fever had called in early that day. At the next desk was my boss, a no-nonsense woman with many years' experience of working in India. "He's got malaria" I remember her calling out, "get him to hospital!". And so I was hospitalised, at St Thomas's, London, bedded in a room with a view across the River Thames to the Houses of Parliament, for several days. And was treated for malaria. As with Pauline and her ringing 111

this time round, I was eternally grateful for the intervention of a good woman, because without her intervention I would have ignored it and ignored it while all the time my health would have continued to deteriorate. St Thomas's hospital then, was merging in my mind with my present experience. As I drowsed I saw in my mind's eye Boris Johnson in the next stall, with drips and cannulas being stabilised after being brought in with COVID-19 infection. Yes, he the Prime Minister had been in St Thomas's hospital at the start of the pandemic. I thought to ask him if they had asked him too 'Who is the Prime Minister?' I imagined him pondering over the question. I twisted my head expecting to see the Prime Minister, flat as a slab in the next bed, but instead watched the blood pressure monitor give its fifteen-minute read-out. Disappointed, I turned what very limited energy I had to working out how to scratch my nose without disturbing any of the many leads connecting my body with the machines. And struggled with scribbling just a few notes, trying to make some sense of it, even while I was given to flights of strangeness and surrealism.

And what sense was I able to make of it, now in the pause? Well, it started the day before yesterday. The burn, the heat, hadn't subsided, but had just grown and kept on growing through the night. By the despairing hour of four in the morning I was burning, hotter than you could imagine a body could be, sweating enough to drench the sheets and giving me headache enough to stop me lifting my head and body. This was so much like the malarious rage of past infections, so similar to it. Bringing back memories of fevers past, I tried to pin down whether I had the cold shower that night, or on the previous night. Or both. It seemed important for to me to be able to remember, if only to stop drowsing away, it seemed important to try and stay awake.

When drowse I did, which I couldn't stop myself doing, I was in a different kind of theatre, a movie-theatre, watching a movie you can't stay awake to. I was that movie. I saw myself through the scratchy brown-smeared glass as the lean youth I had been maybe half a century ago, talking to me, but not in a way I could hear. I tried to say hello, but it was a movie, one of those flash-back movies. This must be purgatory, I figured out, the movie theatre where my medieval human spirit was purging itself to prepare for heaven. Or elsewhere. Death seemed to be winning, but it was a comfortable feeling, watching my younger self on the big screen, behind smudgy brown glass.

"Who is the Prime Minister?" - that question again, jolting me out of movie theatre purgatory. I opened my eyes, slow and little, and then wider. "Boris" I spat. I was in Alice in Wonderland, and this was not the Mad Hatter; it was the consultant,

she who controlled my fate, I was to find out much later. “Professor Ulijaszek. You are a medical anthropologist”. A statement of fact; I concurred. Then more questions; the same questions again. I was careful to make sure I gave the same response each time, or as close to it as I could. If this were a television quiz, and I were a contestant on stage, I might get eliminated if I got one response wrong - so I answered with care. More questions - “How much do you swim in – fresh - water?” She sought for the best term, non-judgemental. In my medical notes it says ‘between three and five kilometers in the Thames in London each weekend for the prior three weekends’, which must be close enough to what I said. She continued “You must know about Weil’s Disease, and know the risks?” Of course. Almost in passing as she left, I heard her mention to a junior doctor that “There is a lot of leptospirosis in this country, not just in Bangladesh”. On one level I felt reassured that what I might have had may not have been so very uncommon; but on another level I felt disturbed by the comparison. It felt like another example of the kind of thing I lecture on in disease ecology, an infectious disease that is common in the global south that is now resurgent in the global north.

In the pause I kept scrolling through events, again if only to stay awake, making some scrawly telegraphic notes to my self. That morning’s paramedic responded to my disclosure of being an open water swimmer with “It’s supposed to be good for you!” I had replied then that I very much hoped so, fearing the thought of Weil’s Disease. The Consultant returned to examine me now, confirming the observations of the senior house officer earlier. She was there too, the senior house officer, standing in the background nodding with each confirmed observation, with each pain located, with my narrative staying consistent, even if I wasn’t quite sure of what was true anymore. I felt like a kid in kindergarten, getting the teacher’s smiling nod of approval for each correct answer I gave. It felt reassuring, against the fierce clinical gaze of this, The Consultant, in whose hands my fate lie.

Then what happened? More clinical silence, a non-silence really – the white noise of machines, the ping and pop of monitoring. Drips dripping, mind drifting, head spinning, in a swirl down the rabbit-hole. Then time elapsed, passed, stretched, contracted, and again I was asked “Who is the Prime Minister?” I flinched again, spitting out “Boris”. I felt for a moment that everyone was asking me who the Prime Minister was because they really didn’t know themselves, and that I was the only one who did. Down the rabbit-hole with Boris Johnson, time was topsy-turvy, and where the Mad Hatter was the Prime Minister. ‘And this is where the Mad Hatter’s tea party will take place!’, I was suddenly convinced. I felt like

asking the uniformed medic adjusting my drip-feeds to come back with a tea-service, with tea and cake. I turned my thought to working out how to set up for afternoon tea on my trolley bed without dislodging any of the leads and cannulas. It would soon be six o'clock, I thought, when time would stay by my side forever, perpetually six o'clock, tea-time in purgatory.

The Night Wards

I was awaiting a tea-set to arrive, with neither pleasure nor dread - time in this wonderland was approaching six o'clock and I was falling asleep, into one of those deep sleeps, when along came a porter. He woke me, to let me know what was happening with me next. I couldn't take it in properly – 'take me from the tea-party to a holding ward' I remember thinking. To a holding ward, bay fourteen. I remember this big number above me. This turned out to be a dim liminal space made dimmer by the porter lowering the blinds while still daylight outside, shut away from the wider world to the place where it is forever tea-and-cake-o'clock purgatory.

I drowsed, I slept, I turned and tangled, a ball of feeds and leads. A face close to mine as I opened my eyes slightly - which then pulled back. I smiled - I didn't know who it was, and tried to look friendly and harmless. I looked up a little and there were four of them, The Queen of the Night and her attendants, watching me from the distance of a few meters. Or was she the Queen of Hearts, the ruler of Wonderland? No, she was the Queen of the Night, and this was a night at the opera - but I wasn't sure if it were they, or me, on stage. It looked like it should be me - I half-expected them to fall into song, but instead they were watching me. I looked to them and slurred 'it's great to be getting all this attention…' 'Quite' said The Queen of the Night. She had come out of Mozart's opera The Magic Flute, with a mission. She was really The Consultant, I realised when she started talking. The three ladies in her service departed very quietly to stage left, but within a moment one of them returned to inform me that The Consultant wanted me cannulated for urine flow.

"Does that mean?" - I was suddenly very awake - "A tube up the penis?" The answer could only be "Yes". This issue had come up earlier, when I pulled the vilest of faces – Onryō-like, twisted, writhing and contorted in disgust, like the Japanese Noh theatre spirit of the dead. In Japan, usually on the grounds of Buddhist temples, in the Bon Festival, the souls of dead ancestors return to visit earth once each year in August. It was August; was this Noh-figure really me? I

was wake-deadened, confused, still at the opera, dancing with death at tea-time.

I have had this procedure before - a cannula up the penis is very difficult to describe. It is a tube, a line sent somewhere deep in the body - perhaps to the land of the spirit of the dead, perhaps to the heart of darkness. All you know is that you should not go there without real purpose. I turned down the offer – would that life were so simple – when I learned that this was not a matter of choice. The Queen of the Night returned quickly on hearing this and insisted firmly, with emphasis, that I-must-have-a-line-up-my-penis. There really was no other way - I was persuaded immediately. And was I wide awake? There was no other way I could have been.

The penis cannula came on a tray with trimmings – it wasn't Sunday lunch - brought by the doctor in night-charge. He said "I hear you do a lot of swimming?" I concurred - "outdoors, yes". I hestitated to say more, expecting some form of moral judgement, but no, it didn't come. "You'd be close to the angels with doing the swimming" is all he said. Ex-Baltimore, we talked about East-Coast United States, a form of small-talk as he snaked the cannula to the heart of darkness. I was very wide awake. Inner and outer worlds were connected by the narrow plastic tube that rankled and disturbed my mind every time it moved even just a little. The downstream end of the small plastic tube was attached to a bag and a meter, both held together on a coat-hanger affair, which was hung low-down at the end of my bed.

At two in the morning, another porter came for me, silent in the night. He woke me up - I must have fallen asleep despite all the tubes and tangles and the penis-cannula. I stirred from dreamless sleep, to find that I gained an oxygen feed to my nostrils. My blood oxygen saturation had been dropping in recent hours. I counted - 'one, two, three, four, five, six'. Six tubes, maybe ten ECG leads, a line up the penis, an oxygen feed to my nose. I was a medical line-and-lead puppet. Drowsy and sleep deprived, near-death dream and memory coalesced. The Queen of the Night was now again at my trolley-bed – 'how did she do that so stealthily?' I drifted back into the night and she followed, singing her own aria from 'The Magic Flute'. She presented me with a dagger - I must kill Sarastro, the force for good in this particular opera. She had earlier pressed the penis-cannula upon me, and now the dagger. Where would it end? I was just hopeful she wouldn't ask me the memory questions again; or 'Who is the Prime Minister?' - I was afraid of being eliminated from the quiz show - I really didn't want to be on stage; but nor did I want to be eliminated.

So I took the dagger. In my hospital robe, I was Pamina, seeking Sarastro, all goodness, knowledge, wisdom, I was to kill all of that. Stalking the corridors of the JR on my hospital bed, pushed along by the silent night porter, seeking to kill all reason. In truth, the porter was taking me to the John Warin Ward, infectious diseases. But in dream and delirium, he was taking me to the Heart of Darkness, along corridor after corridor, up the elevator, to the source of the Congo River. Joseph Conrad's novel starts on a boat on the lower reaches of the River Thames, in London, where Charles Marlow, the narrator tells the story. 'The old river… …spread out in the tranquil dignity of a waterway leading to the uttermost ends of the earth'. My river madness, my leptospirosis, probably came from the lower reaches of the River Thames too. I was flying now, in my fall-asleep state, looking down on a body as Joseph Conrad spoke to me again - 'the form of the white man… …was covered with a mosquito-net that was itself illusory like everything else, only more so.' I was that man, that body, on the edge of the Darkness, outside the John Warin Ward, a place I already knew from two decades previously.

How did I know it? Malaria took me there. I had returned then to Oxford from Papua New Guinea, a work trip into its hinterlands, a place with very intense transmission of malaria. I dutifully took anti-malarials and slept under mosquito nets, applying the heaviest of heavy-duty insect repellent each morning and evening. But it was impossible to avoid being bitten. Each night, the one mosquito, whose job it was to find a gap in the mosquito net, would buzz in my ear, sing high and low, settle briefly, sing high again, settle, take a bite, take a blood meal. At which point I would take a sleep-deprived slap against my face to try and kill it. And off it would fly again, singing in my ear, announcing that it was still there, ready to dine on my blood. Slapping myself on the side of face repeatedly never killed the mosquito. I would eventually fall asleep anyway and the mosquito would then dine fully. So it was every night. In the morning I would examine my body – face, neck, ankles and wrists mostly – for new mosquito bites. I would be happy with less than twenty at any time. I stopped taking the doxycyclin antimalarial a few weeks after returning to Oxford, whereupon I came down with malaria. I already knew malaria from two previous times, and it felt something like this. Shiver-fever, intense shiver-fever, sweating out my soul while covering myself with blankets to try and stop feeling so intensely cold. For hours. And then the storm would pass, leaving me exhausted and very, very hungry. That time, in 2001, getting a bed in The John Warin Ward was quite easy. Getting out, well – I suggested to a nurse that time that I should be out in a few days, and she said "I wouldn't think so", placating my dillusion. The John Warin

Ward at the time had mostly patients with AIDS, the ones for whom the then recently developed protease inhibitor anti-retrovirals didn't seem to work so well. She hadn't checked my notes and thought I had AIDS. Which I hadn't.

The trolley bed jolted and I was awake again, fist clenched around a fictional dagger. I was ready to kill all reason. There was a grim familiarity to the entrance to John Warin that night in 2021. Not its physical location, but its association with the most common infection of the day. In 2001 it had been AIDS, twenty years later it was now COVID-19. There might as well have been a large red skull and cross-bones sign on the door that night. I held the dagger tight and drowsed again as Dante's Inferno rose large above the door, in neon - 'Lasciate ogne speranza, voi ch'entrate' – abandon all hope, ye who enter. But enter we did.

You know how you can work yourself up over nothing. The Heart of Darkness, through that door, turned out to be shades of grey. Joseph Conrad again – 'I have wrestled with death. It is the most unexciting contest you can imagine. It takes place in an impalpable greyness, with nothing underfoot, with nothing around, without spectators, without clamour, without glory, without the great desire of victory, without the great fear of defeat'. I couldn't really know if I had or I hadn't wrestled with death that night. I knew they had been worried about me, in the emergency room. The Consultant told me so the next day.

Now in the grey light of the night ward, I was received by a uniformed medic who was soon joined by another. What ensued was a fairly routine but urgent scrambling around me to make sure that the ECG leads, the blood pressure monitor, the oxygen saturation meter, cannula bag, drip-feeds of fluids and of antibiotics were all in place and working. It was an especially uncomfortable few minutes – every little disturbance hurt. But at least I was awake. The penis cannula seemed to be the worst – every little movement found a corresponding pain floating deep within me. In the Upper Congo River, John Conrad's protagonist, Marlow, said that 'you lost your way on that river as you would in a desert, and butted all day long against shoals, trying to find the channel, till you thought yourself bewitched and cut off forever from everything you had known once -somewhere- far away in another existence perhaps'. Perhaps every little movement, every little pain was that of trying to find myself again after a wrestle with death. Finishing their work, the uniformed medics left me, still a long way away from the River Thames, the start of Conrad's story and the origin of leptospirosis and me.

Then as if in a dream, a uniformed aide, smiling and bright as a pin, came into my room to take my order for breakfast, lunch and dinner the next day. Maybe I was dreaming - maybe finally I had gotten my appetite back? Difficult to tell, but I remember that the thought of regulation white bread and processed cheese sandwiches seemed very appealing just then. Or maybe something was shifting. I was still disconnected from the world and connected to the life machine by many leads and tubes, in a place where breakfast is in the middle of the night and dinner maybe takes place at breakfast time. But it was not forever six o'clock any more, and no longer was I expecting to host the Mad Hatter's tea party. I placed my dream-like order for breakfast, lunch and dinner the next day – I wanted everything at once and right now, and was disappointed when she said that I would have to wait until morning.

She left, and now calm and alone, I fell asleep finally to the periodic inflation and deflation of the blood pressure arm band and the intermittent bleeping and burping of the life machine. I woke less and stirred less, but turned my head when prompted by the life machine, to read off my blood pressure measurement, each one reassuringly and more consistently climbing, or rather steadily walking uphill. I was in the grey light of early morning, dreaming of ice-cream and a plastic beaker of water, gazing across to the adjacent hospital block, to the points of light in ward-windows, imagining each to be a life machine with its cannula puppet, each, if not in the same ward as me, then in the same boat. I drowsed, no longer in anticipation of never waking. I woke as the shutters to my room were fully raised to let in the daylight, and there were cornflakes and a cup of tea for breakfast, served by another aide. I thanked her, as I had everyone. I sat up and saw that I had a room with a view, looking down on two trees and the entrance to the JR, two ambulances and their paramedics standing an talking, on call, ready to go. I wondered if any of them had been the ones that had helped me yesterday.

The Queen of the Night swept by on her way to her morning shift, now again The Consultant, my ship's captain through the storm. She wanted to see how I was. "You are looking so much better!" she beamed. "I was so worried about you!" I was deeply thankful, to her, to everyone. I had ridden the storm, but really it had been her quick, insightful and intelligent thinking that pulled me through in the right direction – The Consultant, my ship's captain. I felt amazing. Beaten-up, but amazing. From the heart of darkness to the bottom of my heart, from the depth of despair to the depth of my soul, I thanked her, The, My, Consultant. I told her of my 'Queen of the Night' delusion, and she laughed. She went on – "stranger things can happen; the mind can take you over some unlikely

landscapes, especially when you have the kind of severe inflammation you have just experienced; I'm glad you landed here". Here - in the John Warin Ward, with its memories and resonances. Here – at the JR, how it might have turned out so very badly for me if I didn't live so close to this amazing hospital. 'Landed here' – in this world of people and things. So was I – happy to be here, here in all its forms. We talked about Sri Lanka. I had spent ten days there in the mid-nineteen eighties when the civil war stopped all ferry crossings into India. I took to renting rooms in people's houses and cycling around much of the south of the island while waiting to get a flight out. The same civil war resulted in My Consultants' family migrating to the UK when she was a small child. An accident of politics and history had brought her to the UK. This was home and her work was her duty. There was not a word about me swimming in the River Thames. Later in the day, at the end of her shift, she dropped again to say goodbye, and to ask a small favour. How could I possibly refuse her?

That morning saw leads and cords being removed, one, or several at a time. The drama had ended, and now they were tidying up the stage. Last night's Bangladeshi clinician came by and asked "aren't you bored?". "No", I said. "I have my phone, a little radio, and a book. I am content". And I was.

An aide brought me cups of tea, which I accepted every time, and then came lunch, on a tray. I felt like I was flying business class to Tokyo. I was now eating. No, I was dining, after struggling to keep down even a piece of flapjack on any of the previous days. The lunch I had ordered in the dream world of the middle of the night turned out to be very a very decent one of properly-made quiche and real mashed potatoes, not at all like the hospital food of days gone by. The day's consultant and his much younger junior doctor side-kick came to my room as I took my third mouthful. "Perfect timing", said the (new) consultant, offering to come back later. I put my food to the side, and we talked, I didn't want to be wasting their time, and I said as much. But first, I made my request to have the penis cannula removed. I had asked earlier, but no-one I asked was empowered to do so.

The Monitor at the Heart of Darkness could only be inserted or removed by high authority. We continued the conversation, The High Authority and me, discussing the likelihood that this was leptospirosis. "Suspected, but yet to be confirmed" – the lab results hadn't come in yet. So many bloods had been taken across the past twenty four hours – 'Vials Disease' I had called it. They didn't call it that, not even Weil's Disease. Why not? Because Weil's Disease is the most extreme expression of this infection, and it's not really helpful when trying to

pin it down as a condition. That's what he said. The new consultant didn't seem worried about making a confirmation now. He was satisfied with what they had done across the night, that it had worked, that it had brought up my blood pressure, that it had stopped the fevers and the shiver-chills, that they had stabilised me and more. That was enough for now. This had echoes of my experience of malaria in this very ward twenty years previously. They couldn't find a malaria parasite then, across the days I was confined, struggling with the fevers and the shivers and the sweating. In the end it was the consultant of the day to make the call, without a parasite having been identified – a consultant with experience in Africa who knew what malaria looked like, even without identifying the parasite in a thick blood smear on a microscope slide.

The good news was that I could go home, and return to the day clinic for more blood tests in a few days' time. Again, I raised the issue of swimming in the River Thames. Again, like everyone else, the consultant was non-judgemental. He noted the feverish scribbles by the side of my bed, the ones I made across the previous day and through the night. "Spider-scribbles", I said, "in the grip of the fever". "You and John Keats", he said. Again the memory of my two decade-previous experience of malaria here at the John Warin Ward - 'Touch has a memory - O say, love, say, What can I do to kill it and be free - In my old liberty?' so Keats had written, scribbled, through the fevers and night-sweats of tuberculosis. Keats and Hampstead Ponds would be swimming conversation for another time; I held my thought back from speech.

Across the afternoon, further leads and tubes were removed, the penis-cannula withdrawn, leaving an irritant memory of this disease event every time I went to pee for the week that followed. A final bag of antibiotics was put through me, and I dined again on JR hospital food. How much I had ordered in the middle of the night! Soup and shepherds' pie, apple crumble, cheese and biscuits and a cup of tea. I ate it all, and was grateful. I thanked everyone that came through my door. By the early evening I was no longer a cannula-puppet and was free to go. But there were many unanswered questions. They could wait until Tuesday; meanwhile, I should rest.

The Day Clinic

It was Tuesday and I didn't feel recovered, but I was at the JR again for the follow-up. In the days that had passed since being discharged, I took oral antibiotics morning and evening, rested, slept, but continued to feel pretty-well beaten-up.

That was OK, I wouldn't have expected otherwise. I was alive, and having read some dire accounts of leptospirosis infection in humans, was happy to be where I was now – discharged and following up. Happy to have one of the world's top infectious diseases outfits on the doorstep. Happy to be in Oxford, a place I have never regretted coming to. Just happy to be here, period.

Having arrived early, I was in the lobby taking a mouthful of tea from my flask. Taking tea with me is a habit from outdoor swimming, and one which I extended to many other contexts during the COVID-19 year-and-a-half. I hadn't been to an airport for nearly a year now, but sitting close by the 'M and S Simply Food' store, and the W H Smith outlet, I felt close to how I remember Arrivals at Gatwick South Terminal, to be. The gauntlet of gaunt-looking smokers close-by the entrance, hanging onto their lives, hanging onto their privilege of smoking right next to the No Smoking signs, the smell of stale nicotine breath, also reminded me of Gatwick. Track suits and comfort clothes, bouncy trainers, those as well, all reminded me of what it feels like to be in 'the South London Airport'. It wasn't the foyer of the Royal Opera House, Covent Garden. I hadn't been to either for over a year and a half because of the COVID-19 pandemic, and was nostalgic for the latter but not for the former. So I sat in Arrivals, but really didn't yet know if I was coming or going.

The Daily Diagnostic Unit (DDU) was easy to find, right by the John Warin Ward, where just a few days ago I sought to kill Sarastro, dagger in hand, in the middle of the night. But how differently things now looked in daylight, a few days on. Killing Sarastro would not, could not, have helped. I was here now, seeking to gain from all that Sarastro's Temple represents - knowledge, wisdom, truth. In truth, I had been in Sarastro's Temple all along, from the time the paramedics and the ambulance brought me to the JR to the time they discharged me – a temple of healing through knowledge. Maybe there is wisdom through delirium. Maybe John Keats had it right - maybe the interplay of dreams and reality is closer to the reality of the mind than any kind of rational thinking that we use to shape and understand the world. It felt like a conversation going on in my mind with my mind, like a conversation I had with Claudio, a leading researcher in immunogenetics and aging at the University of Bologna, now in his seventies, sitting in his daughters' kitchen one evening before the pandemic. About how, if the mind constructs reality based on perceptions of the physical and social world, why should it not also do so with perceptions of the internal world, and dreaming? He thought that to dream is to make the world real. I didn't do more than agree at the time, lacking in words then to express myself, but right there,

about to go into the day clinic, it struck home. Me and John Keats - rational words were wrong for the task.

I felt very humble indeed, at the DDU. I am no John Keats, but nor was I likely to burn out with fever, which is something he did at the young age of 26 years. I felt like crying, but of course I held it back. I thought instead to a time I saw Mozart's opera The Magic Flute, also in Bologna. So clever, that production - it used three dimensional mapping to create a theatre stage within a stage, then on the (real) stage, real-life singer-performers interacting, acting, with 3D-mapped figures, including an enormous serpent, which is killed by the (real) Queen of the Night's attendants. And then there was also opera as we know it, on the theatre stage as we know it, real-life singer-actors singing and acting, scenes opening and shutting like the shutters on a camera, with costumes straight out of Milan Fashion Week. And then there was the third theatre stage, the auditorium itself. In the finale, set in the Temple of Sarastro, the audience was discretely surrounded by members of the chorus, all dressed as front-of-house personnel - cloakroom attendants, ticket collectors, programme sellers, ice cream vendors and baristas – striking up the final chorus in the aisles, gangways and stairs, in the auditorium. These uniforms had been worn by the real-life front of house personnel all along, I just didn't pay attention to what they were wearing. Until I realised, at the very end that the opera house in its entirety had been the Temple of Sarastro all along. The lesson learned from this seemingly flighty but oh-so serious opera production was to recognise when I am in one of the many Temples of Sarastro in the modern world. In the Magic Flute, The Queen of the Night is cast out by the light of the rising sun – knowledge - while Pamina is hailed for enduring the ordeals of darkness - in the end, wisdom prevails. And so it was with 'Leptospirosis and Me', my opera, still in its roll-down to the end. I mentioned this to the consultant who signed off on my discharge from hospital, that I felt the JR was one of these modern world temples of Sarastro. He laughed; felt he couldn't comment – "if you like!" he said. I liked.

I still liked this thought, as I pushed open the door to the DDU. They were busy, but quick to get me registered - name, address, date of birth. No question about 'Who is the Prime Minister', although I was ready for it. A uniformed medic took seven more vials of blood for further analyses. And then the wait; I was more than happy to wait, to slow down to this form of hospital time, knowing how close I had been just a few days ago to Alice in Wonderland Time, all topsy-turvey and six o'clock all the time. Here in the day clinic, time was slow and steady, under control. The wait for some of these bloods to return with results

would be at least an hour - more than fast enough, I thought. I gained permission to go to get myself a cup of tea. I didn't really want it, but this was a legitimate reason to spend much of the wait away from the busy day clinic. I just had to let the receptionist know – "enjoy!", she bid me. One banal word, but a comforting one.

I felt so much better than in the previous week, I reflected over my tea. Not yet right, but so much better. Today I was hoping for some more explanations, and many were forthcoming. I saw the senior registrar twice, he was happy to give me the time I wanted. He said that they ruled out malaria once they saw that the antibiotics that I had been given had taken a big bite out of my fever-chills that night of the fire-bombing. "Leptospirosis?" It was now confirmed as the agent. "Open water swimming?" Yes, that's probably how you got it. Like Agatha Christie's detective protagonist Hercule Poirot, the senior registrar lead me through the detective-work. My role was to be Arthur Hastings to his Hercule Poirot on this film-set, being initially slow to see the significance of the clues on offer to those that can see them, but marvelling at Poirot's evident truths when they appeared.

At his desk, Senior Registrar Poirot turned to the screen, and to a red line graph showing my C-reactive protein (CRP) across the time I had been in hospital, and today. This had been over twenty five times the normal level on the night of the criminal beating by Leptospirosis. Extremely vigorous inflammation. The senior registrar called it a 'cytokine storm', probably with lots of other immune system proteins going crazy, not too dissimilar to the cytokine storm which is key to the fever you get with malaria. There is also a cytokine storm with severe COVID-19 infection, of an intensity that puts people on ventilators, fighting for their lives. The print-out results of my inflammatory response that night and the days after gave clues as to what had been happening. This had been my body as battlefield. This cytokine, CRP, was fire-bombing the spirochete bacteria to bring them to submission, but in so doing, also doing a lot of collateral damage to my body. It was a bit like – 'we know the spirochetes are in this building - let's try and get them by burning the building down'. I had been that building, up in flames. My immune system pitting myself against myself in a potentially self-defeating way.

The term 'cytokine storm' is evocative, of waves lashing a boat out at sea – sink or swim. Maybe. But I didn't feel out at sea with my team at the JR, who were putting out the flames, stopping the fire-bombing.

An evocative image presented itself – of the city of Dresden, fire-bombed. Dresden has recovered the damage that was inflicted upon it in 1945. I have been there, I have swum there, in the River Elbe, one of the two great rivers of Germany. Dresden is thoroughly gracious and lovely again. Would that I could be so once rebuilt after this infection. Maybe not lovely like Dresden, but hopefully at least gracious. If not, then there is always room for improvement.

My white blood cell count confirmed the infection, the size of it. The headaches – it could have been the start of meningitis, said the senior registrar. This had been the first phase of the disease, he continued – "we were worried that you were entering the second phase of infection. Your chest and kidney pains suggested that this is what was happening". My Consultant on the night of hospitalization was right to be concerned, to do everything to bring me back from the edge of phase two. Fever, chills, aches and pains, all growing, blood pressure dropping. If they had done nothing, the disease would have spread – to the kidneys, the liver, and the meninges of my brain. And the fire-bombing would likely have burnt me out.

"What type of leptospirosis did I have?" - I knew there were variants. The senior registrar was straight-forward – "We'll know next Tuesday, once we have your latest bloods analysed". The following Tuesday I followed up – "*Leptospira interrogans*" was the answer. The most prevalent type in the UK. "That means I have some resistance to it?" I probed at that follow-up appointment. "Well yes, but there are other variants in this country and you will have no resistance to those". It turns out that infection with *Leptospira interrogans* is the one that most usually leads to kidney damage if it is allowed to go unchecked. It was all coming together. *Interrogans* had carried out a thorough interrogation on me, and I was still hurting a week later from the beating it gave me.

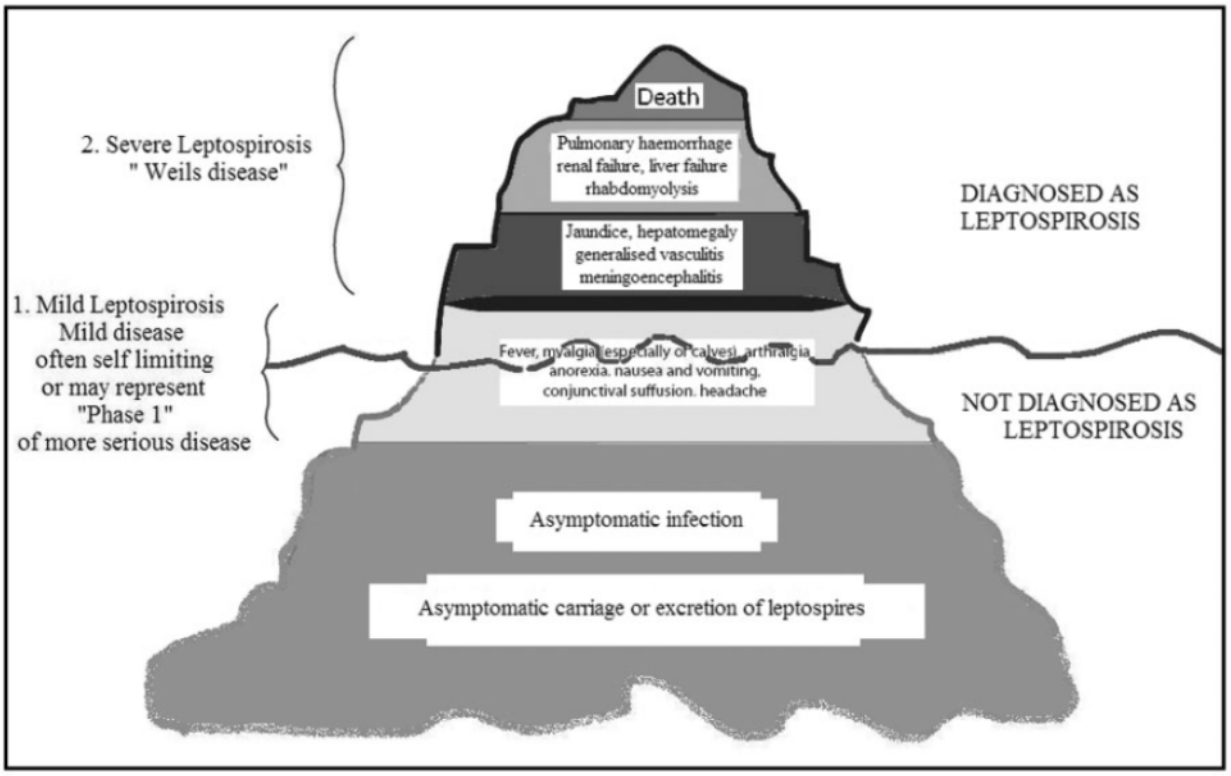
Back in the day clinic with the senior registrar, sitting at the screen, he pointed to my blood creatinine levels, now clearly back in the normal range. Their high values on the night of the fire-bombing suggested that I had been on the way to acute kidney injury, and the confusion, pain and low urine flow that go with it. My low glomerular filtration rate on the night backed that up. That penis-cannula had given very important information about renal flow – My Consultant that night was absolutely right to insist on me having it. After the appointment at the DDU I went for a pee before leaving, and the burning sensation it gave me linked me very directly to what might have been, without the timely intervention – serious kidney injury.

"Alanine aminotransferase" – the senior registrar enunciated. A term I recalled from my biochemistry undergraduate years. This is hugely important in nutrition, being the enzyme that allows many amino acids to be interconverted from ones that are not immediately needed by the body into ones that are, as well as preparing amino acids for breakdown to other more needed molecules when we eat more protein than our body needs. We wouldn't be alive without it – "So having a lot of it should be OK, no?" I quizzed. "No", he responded. The senior registrar's enunciated mouthful had been very high on the night of the fire-bombing, but it had dropped by more than half since then. Importantly, alanine aminotransferase does its vital work in the liver, and too much of it in the blood suggests liver damage. Luckily, my liver was not far gone, and recoverable. The senior registrar closed the screen, and turned his eyes to me. "Last Thursday we couldn't know how far gone you were when you came in. The biochemistry has helped us sort it out now, but on the night it was the emergency response, the antibiotics, the fluids and the constant monitoring, that brought you back". I asked, almost as an after-thought "What about the falling blood pressure?" This was the bomb-shell – "Septic shock. We thought the infection was spreading fast, and your immune system was dangerously over-reacting – sepsis. It can lead to heart failure, failure of the kidneys and other organs, it can make you lose your mind too". That's why they kept asking the questions about whether the pains were spreading, about whether I remembered that Boris Johnson was Prime Minister. A few days later I talked with a medic, a swimming friend, whose specialism is inflammation and inflammatory diseases, understanding them and knowing how to treat them. She said "You were lucky…" The emergency crew had been my life-savers, the A-crew of emergency, I said as much to the senior registrar. He was glad to hear this, said that he would pass this on to them. Whether he did or not is irrelevant, my gratitude was expressed. Again, and many times over again, I was thankful.

I had more questions and the senior registrar was patient with me. I had to ask about how the bacteria got into my body - the river-bank, scratches and scrapes, rat urine, swimming distances in the Thames coming into London, all the likely suspects. Exhaustion leaving an open window of immune suppression for infection? Unlikely. But a cytokine storm can, and sometimes is, followed by immune suppression, he said. It was a relief to hear that I should accept that this my infection had been the result of bad luck, and that outdoor swimming and leptospirosis do not automatically go together. That I should stop beating myself up over it. On the night My Consultant had said "You know the risks?" and I said yes I did. But only now was I really finding them out. The senior registrar at the day clinic had answered all questions he could – I had many. He excused himself

as he went off for a short while to do other business, asked me if I was happy to wait. I was more than happy to do so. He returned over an hour later, having been able to ask the consultant of the day some of the questions he wasn't able to answer. He relayed the responses. The risk of leptospirosis is very low – reassuring to hear, even though I thought I kind of knew that already. But additional data was welcome. According to the senior registrar, the John Warin Ward, a referral centre for infectious disease, takes in maybe five cases a year, while the UK as a whole an average of around 80 cases per year, sometimes a few more, sometimes a few less. He went on – "Of diseases passed from animals to humans, leptospirosis is only one of around fifteen that are found in the UK, so not so special". Unless you get it, I thought to myself, hugely grateful and mindful of the medical intervention that I had received.

"And the swimming?" I asked directly now, what could be done to help? He shared a research article with me, published in 2012, which summarises how the disease presents itself. He thought it might be useful for thinking about leptospirosis and swimming. Most people who get it don't even know they have had it, and no-one knows how many of those there are, because they don't turn themselves in for treatment, and why should they, how would they know? As is the case with those who get brief uncomplicated fevers, even very high ones – it comes, it goes, who knows what caused it, but its gone, so why waste time with medical services? The same with the early septicaemic phase – how would I know I had it, and why would I bother anyone with it? But then there is the iceberg that you can see above the water – phase one, phase two, and on top of that the polar bear of death. You can see the whole iceberg in the diagram just here, but without a polar bear on top.



Clinical features of leptospirosis, from the article 'Leptospirosis and Weil's disease in the UK', by Forbes, Zochowski, Dubrey and Sivaprakasam (2012).

Since a lot of things can cause fever, I was told, the very best thing I had done was to disclose very early on in the piece that I am an open water swimmer. This helped them to come to some decisions early, to move to a management plan quickly, and to move towards a diagnosis, confirmed or not at the time. If they had had to work through a list of possibilities for the varied package of symptoms that leptospirosis presents with, that would have lost time while the fire was stoked and it built towards a fire-bombing.

"Could it have been avoided?" I asked, immediately seeing this was a pointless question. The senior registrar again - "Well yes, of course it could". But mainly in the same way that you might avoid being in a serious car accident by never getting in a car or going near a road. Open water swimming is mostly a very healthy activity, and it was just dumb bad luck that I got it. Neither the senior registrar nor any of the medics I came into contact with had anything negative or judgemental to say about my swimming, nor about outdoor swimming in general. Given how much I swim in open water, and across so many decades, the risk of getting infected is very low indeed. How low? Well, don't take my figures as in any way definitive, but I took a little time to calculate, after leaving the day clinic, some very approximate life-time risk figures of getting very ill (but

not necessarily dying from) a number of ‘exposures’, as epidemiologists would frame them, alongside leptospirosis. Starting with flying in a passenger plane. The chances of being in an air accident across the course of a lifetime is around one in eleven million. At the other extreme, the chance of being in a serious motor accident once in a lifetime is about three in a hundred. The chance of contracting serious leptospirosis across a lifetime in the UK I worked out to be around one in ten thousand. Which is around three times less likely than being struck by lightning once in a lifetime. Of course, the risk increases with exposure – the more you do something the more likely you are ‘exposed’ to the risk factor. If you are attracted to smoking your risk of developing lung cancer across a lifetime is about two in a hundred. So across a life-time, using a car is more risky than as smoking, but many people see using a car as being an essential part of their lives – the benefits to them outweigh the risk. And so it goes with swimming.

Of course, it isn’t an either-or kind of decision – if you smoke and drive a car, your overall risk of ending up in hospital is far higher than if you do either of these things individually. What the risk-benefit analysis for open water swimming looks like is far from clear-cut, even for individual risk factors, and of course the risks are multiple and layered upon each other. Leptospirosis is mostly spread by contact with water or soil or mud which is contaminated by the urine of infected animals, most commonly rats, cattle, pigs, dogs, horses, but also raccoons, opossums, and buffalo. OK – you are unlikely to come much into contact with contaminated buffalo pee unless you are a buffalo farmer or live in many parts of the global south where they are routinely used for labour, milk and meat. And as for opossums, you would have to have to work hard to be exposed in this way, even in the Americas where they are native species. But then again, dogs? Which river swimmer has not seen a dog peeing on the river bank? And cattle? Well, I have swum in the River Thames when it is in full flood, and the run-off from the fields, populated with cattle, must have been huge, surely? Swimmers are fair game, because they leave their flesh exposed, and they are in contact with water and natural ground when getting in and out. Open cuts and skin grazes are open season for leptospirosis infection. Chlorine kills *Leptospira*, as does salt water, so swimming in a pool or the ocean is safe.

But then how do you turn all this into numbers which you can use to calculate the risks of contracting leptospirosis? Number of dogs peeing on the river bank? The number of cattle in fields prone to flooding? Testing the water? And if so, exactly where and when? I wouldn’t know how to start thinking about measuring exposure to rat urine – should we all be out sighting rats or catching them?

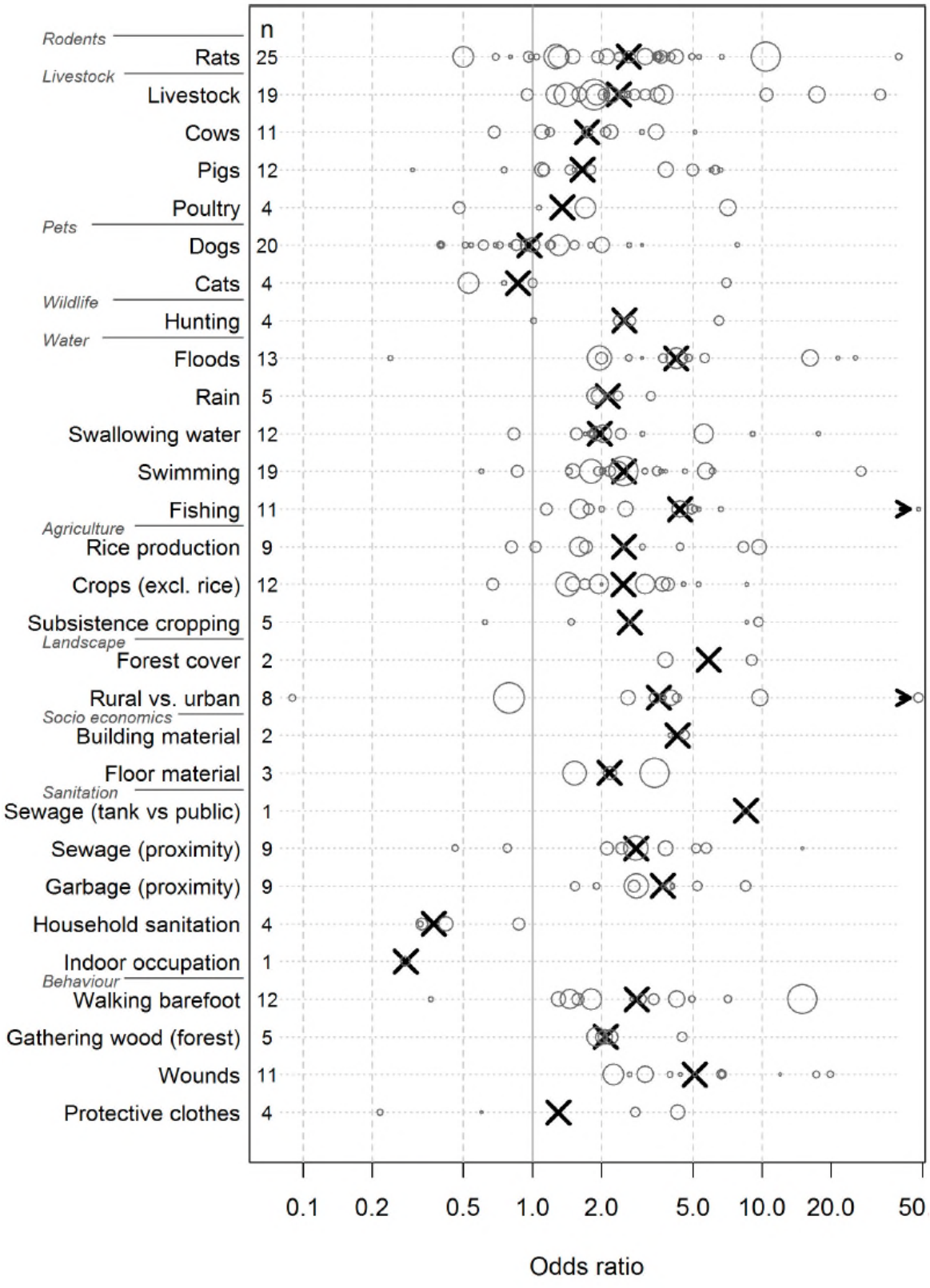
Alternatively, should you measure dodgy get-in places, as defined by muddiness, or squidgy-ness of the river bank? Or of kilometers swum? And of where those kilometers are swum? These latter two things seemed to be of value for the medics in coming to a decision in my particular case. And even if you measured all of these things, so few people develop leptospirosis, especially in relation to outdoor swimming, that you might not be able to come close to an estimate, because the numbers would be too small for any meaningful statistical calculation of risk. Except.

Except that researchers in Basel, Switzerland, and Amsterdam have managed to do just that. They used combined results from all the good research done across the world in this area to come to some view. I checked this out later, after leaving the day clinic. It came down to just 64 really good research articles that they could analyse, so with a cautionary note that a lot more work is needed, what did they find? The odds ratios calculated for over twenty different environmental or behavioural exposures is in the diagram below. 'But what is an odds ratio?' you might ask. Formally, it is the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure. I know this is as clear as mud harbouring *Leptospira interrogans.* Well, think of it like betting on a horse. Odds of five to one give the horse one chance in five of winning. The odds of getting leptospirosis are five to one higher if you have to walk, paddle or swim with exposed limbs in floodwaters (as people often do in Bangladesh or Sri Lanka for example) than if you don't. Five times higher are also the odds of developing leptospirosis if you have an unprotected wound, than it you don't have a wound at all. This sounds high and almost alarming, for sure, but a number of these 'exposures' are specific to the global south and related to structural poverty, which for the purposes of understanding leptospirosis and swimming in the UK we can put to one side. But then again, if you are in a tropical country and an open water swimmer, you might want to count them in. To put these odds ratios in perspective, human leptospirosis is seldom seen in the UK, so these odds actually only translate into a very small number of cases of the disease.

Exposure to sewage also carries a high risk, and among all the animals that could pass on leptospirosis through their urine, rats top the list, followed by livestock in general, then cows and pigs. And dogs? Well, they don't seem to add any risk of leptospirosis infection to humans at all. What a relief – dogs relieving themselves on the river banks don't count. Swimming? Well, there is a two-fold higher risk of developing leptospirosis if you swim in open water than if you don't. But all of the studies involving swimming were carried out in topical

countries, where rates of infection overall are higher than in countries at colder latitudes. There doesn't seem to be any good analysis of leptospirosis risk and swimming in colder countries like the UK, or even in the Scandinavian countries, where open water swimming is so much more popular than in the UK, even with the growth of numbers of people doing it in the UK.

The fact that the Swiss and Dutch research was published in a journal titled 'Neglected Infectious Diseases' speaks volumes about where it lies in the hierarchy of infectious diseases of concern - AIDS and COVID-19 have more popular attention than the ones that kill most people, mostly in the global south – tuberculosis, malaria and flu. Leptospirosis isn't a high priority disease; it is rare, but catastrophic when you get it. Like being struck by lightning, but rarer. Which I think is why none of the medics passed any moral judgement or censoriousness about my swimming in open water – just dumb bad luck. I am in general thirty times more likely to suffer badly in a car accident, a category of medicine that the emergency services have to deal with on a routine basis as compared to leptospirosis, which they only see very rarely.



Environmental and behavioural 'risk factors' for developing leptospirosis, from Mwuachui, Crump, Hartlskeerl, Zinsstag and Hattendorf (2015).

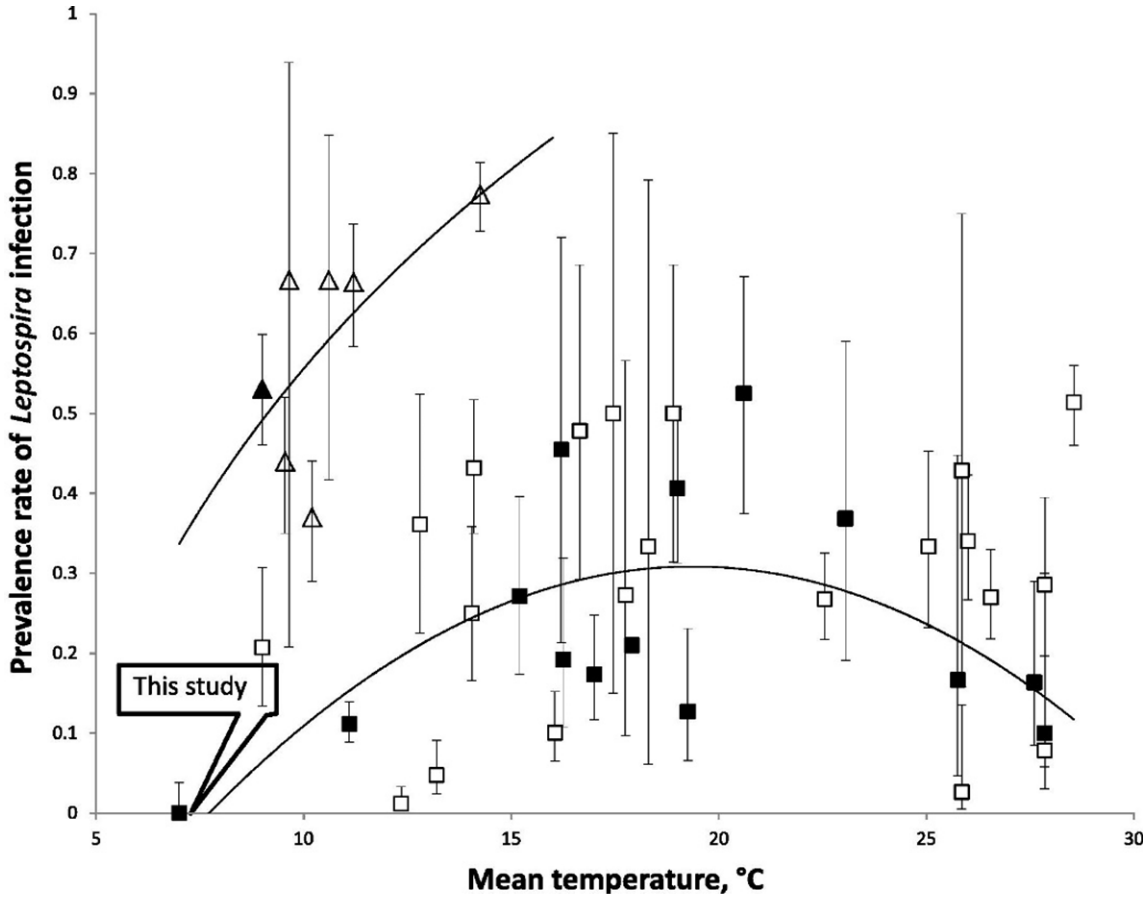
"So what can I do into the future, to reduce my risk?" I persisted with the senior registrar. No-one at the JR was remotely interested in stopping me swimming, some of them quite the opposite. He now stepped onto the stage on which people talk about the mental health benefits of outdoor swimming. "For many people it's a great help" he offered, although mental health wasn't his area of expertise, he acknowledged. I thought back to swimming in Lake Zurich one November a couple of years ago, where I met a sole woman getting changed to swim on the lake shore - "Do you get depressed too?" were her opening words, more or less. How could I not swim with her when she invited me like this? We had shared a companionable melancholic swim together, which suited us both – few words were spoken, shared feeling was shared, the water was felt and sensed, the water was healing – then, and then so often again over and over again. 'You never regret a swim' – something that is said over and over again among open water swimmers. I am not sure about depression and me – I have gotten deeply unhappy into my deeper past, not something I have experienced in more recent decades. I think the daily swimming must have something to do with it. I didn't want a mental health conversation with the senior registrar, so didn't offer these thoughts up – I just smiled as I thought about post-swimming cake at Zurich's Café Odeon. My melancholic lady in Zurich also smiled when I asked her about cake, and was very helpful in suggesting a good cafe.

The senior registrar looked at me quizzically as I smiled – I shouldn't bring cake into the discussion, I thought. I just shrugged and said I had a happy memory of winter swimming in Switzerland – "It's not relevant to the conversation that we are having now" I said. Thinking of swimming in Switzerland in early winter brought me to the next, now obvious, question - "Is the risk of leptospirosis lower in winter?" Yes, he said, but he seemed to think that was because far fewer people swim in winter, but again this might be worth chasing up, which I did. In connection with this, I found research in which Danish scientists had posed an interesting research question - 'Is it too cold for *Leptospira interrrogans* transmission on the Faroese Islands?' The Faroe Islands are far north of Denmark, and almost certainly a great place to swim if you want to avoid catching any disease from the water. The answer to the question was 'Yes'. It is too cold for *Leptospira interrogans* transmission there. The work was done on rat transmission of the bacterium, an important upstream factor for human exposure – if rats carry less of it, then there is less of it to be exposed to. As part of this research they published the coolest graph, which I show below. Each point on the chart represents a study where the infection prevalence of brown rats has been published, against the average ambient temperature across the year for the country the study was done in. The circles represent data for rural

rats, and the triangles represent data for urban rats. The open symbols represent studies where the prevalence was estimated from blood samples, and the closed ones where it was estimated from DNA or bacterial culture analyses. The error bars show how much variation there was in infection rates among all the rats in each study represented by each point on the chart. I apologise for all this technical stuff, but it helps to get to the implications of this work for open water swimming.

Which is that urban rats carry three to five times more *Leptospira* than rural ones, at any level of average annual ambient temperature. For the UK, which has an average annual temperature of around ten degrees Celsius, *Leptospira* infection rates in urban rats are around five times higher than in rural rats. The chart is only indicative and should be interpreted with caution, but I figure that swimming in the Thames in London, rather than the rural Thames, almost certainly carries much higher exposure to *Leptospira*. Peak *Leptospira* infection rates among rats is between around 17 and 22 degrees Celsius, mostly in tropical countries, but not in the very hottest ones.

Now that's not the full answer, because *Leptospira* can survive a long time in the soil, maybe six months or a year, depending on who did the study and under what conditions. But if far fewer rats are infected, then the transmission rates are also far lower.



Climate (mean temperature) and rates of *Leptospira* infection in brown rats, from Jensen and Magnussen (2016).

Going on, still questioning the senior registrar - "Would it help to rinse off at the end of a swim?" – maybe; it couldn't do any harm and it might actually help. The questions were flowing – an important part of my job as an anthropologist is to ask often seemingly obvious questions to get to understand how people frame an issue, often without questioning, trying to understand their logic and the extent that it is shared by people they know, to understand the social and societal basis of a phenomenon. So it was here – I knew I could get deeper answers by digging into the literature, which I did subsequently. But I could ask for informed opinion from an expert practitioner in treating infectious diseases, like this one in front of me now. I could get leads from him, and a sense of how they, in the JR, frame this problem – me and my leptospirosis, layered upon the public health and clinical ways of seeing it, much as I describe it in the prologue here. So I carried on - "Would it help to rinse your mouth out at the end of a swim?" - probably not. "Would it help to try and not take water into your mouth?" - yes, these bacteria love soft mucous membranes, and the pH in the mouth is just about right for them. "But to try to avoid swallowing water?" – sure but, the acidity, the low pH of the stomach, would probably kill most of

them. “What about the river banks and the lake-edge? Maybe avoid treading in mud when getting in or out?” - that could help, in fact it makes a lot of sense. “Avoid swimming where you think there might be a lot of rats?” - yes, for sure, if you can have any sense of that – human population density close by the river might offer some indication, but there he was really guessing, he admitted freely. I offered that the River Thames in London might have carried a higher risk of leptospirosis for me simply because of the likely greater rat population there. “Could well be”, he said. The link between leptospirosis risk and exposure to sewage and garbage is strong, as the Swiss and Dutch researchers showed. Also that rats carry several times more leptospirosis infection in urban waters than in rural ones, as the Danish research has shown. He repeated the message that others had given me, that “Saying that you swim, where you had swum, was helpful for us to working out what was happening to you”. “Avoid rat urine?” – this felt like a hopelessly strange and surreal question, almost out of Alice in Wonderland, but he answered without a hint of humour. “Of course, if you know how to do that, beyond swimming in places where you think there may be a lot of riverside rats”. This made me think of the children’s book ‘Wind in the Willows’, set by a place the author Kenneth Graham calls ‘The River’, which has to be the River Thames downstream of Henley, perhaps close to where he lived either at Cookham or Pangbourne. The kindly and personable character of ‘Ratty’ in this story is actually a water vole, but despite this, is still a possible spreader of leptospirosis.

I thought to myself that I didn’t know anyone who willingly came close to a urinating rat, nor yet a water vole, and personally have never seen a rat urinating. “Cattle, pigs, runoff?” – I continued, expecting wisdom but getting common sense. “It makes sense to avoid swimming in a river in flood”, he stated, without broadening the answer to other risks associated with swimming in flood water. Wisely so, I thought, flood planes are not his area of knowledge, while infectious diseases, even rare ones like leptospirosis, are. But the Swiss and Dutch analysis of leptospirosis risk backs up his view.

The senior registrar now took charge of the conversation. I focussed my interest intently on what he was saying, ready to write everything down, much in the way that Lewis Carroll claimed he did after telling the tale of Alice to Alice while rowing up the Thames at Port Meadow, from Oxford to Godstow, that golden summer afternoon. Maybe I was concentrating too hard and he could sense that, so he carried on, speeding up. “Don’t, if you can avoid it, swim when you have cuts or abraded skin” – check; a mental note, a nod of my head. “Treat any abrasions with an anti-bacterial before and after” – check; a serious nod of my

head. “Shower soon after swimming” – check; generous nod of agreement from me. He went on to say that some people take a prophylactic one-dose capsule of the antibiotic doxycycline, the one I was put on to take after I was discharged from the John Warin Ward. But I was told that this is not for me, because I swim far too often, and the likelihood of doing some gut damage or developing antibiotic resistance through taking intermittent one-off antibiotics is far higher than the risk of leptospirosis. No, doxycycline prophylaxis is for the iron men and women who only occasionally swim in likely-infected tropical waters. “Having had it once doesn’t mean that you are now risk-free. No, the risk stays the same, except if you were infected by exactly the same strain of the disease, when you would have some level of resistance”. I nodded again. I longed to follow up with a question about types of leptospirosis and got a research article instead, at least a lead to be able to find it. The article was published just this year, and was on exactly this issue, by researchers in Sri Lanka, the United States and France. Apparently Sri Lanka is a hot-spot for leptospirosis infection, having annual epidemics and an annual hospitalisation rate of 52 per hundred thousand people. If the UK had the same rate, then every year over 30,000 people would be hospitalised with leptospirosis. It continued to fall into place - My Consultant, who was born in Sri Lanka, who had family there, was well-informed on the health problems of the Sri Lankan population, and was already sensitised to the possibility of my infection being leptospirosis in the first place. The leptospirosis hospitalisation rates in Sri Lanka would put it on an equivalent footing as influenza in the UK, a disease which is taken very seriously by the NHS, and which is vaccinated against.

Which begged the next question – “Is there a vaccine?” The senior registrar was now a little more thoughtful, weighing up what to say – “ In the UK? No, it isn’t routine, I’m not even sure how easily you could get it if you ordered it specially. No - and there are problems there, because the existing vaccines are very specific to particular types of leptospirosis, and I’m not sure there is one that would cover them all”. I wanted to follow up with another question, but didn’t. Instead I followed up later by asking someone who knows, and going into the vaccines research literature, a huge and growing area, especially since the start of the COVID-19 pandemic. So what did I find out? Well, for starters, over a million people are hospitalised with it globally, and each year around 60,000 people die from it. So like My Consultant said on the night of the fire-bombing, it is not so extraordinary, but mostly concentrated in the global south. There had been a presentation on human vaccines against leptospirosis at the Global Risk Forum in Davos in 2013 – I found it among my notes. It didn’t seen important to me at the time, but now it was falling into place. China made leptospirosis a

matter of concern around half a century ago, infection rates having gone down dramatically since the nineteen eighties, mostly through improved sanitation and increased environmental protection of waterways. But also through mass vaccination since 2007. Japan was the first to develop a vaccine, way back in the early nineteen nineties, while China developed two of the existing five licenced human leptospirosis vaccines in the mid two thousands. Vaccines were developed in Cuba and France at pretty well the same time, also licensed.

'So why can't we have one in the UK?' If you go you the NHS web page on leptospirosis, it says there isn't a human leptospirosis vaccine. Why do they say that when it is clear from reading the scientific literature that there are? Beats me. But I could see a big demand for a leptospirosis vaccine in the UK. Some forgiving thoughts presented themselves to me. There doesn't seem to be a vaccine that can protect against all types of the bacterium - this is something researchers in Brazil have written about. I looked to the National Institute for Health and Care Excellence (NICE) to see what they say. NICE is the central body that guides treatment, management and prevention of disease for all public bodies involved in health in the UK, especially the NHS. I read what they say about leptospirosis vaccination for the UK, and then dug a little into their sources of evidence, which turned out to be sparse. The NICE evidence base is guided by the World Health Organization, whose report, published in 2003, states that 'Vaccines have been reported to give some degree of protection, and this is particularly important in areas where more serious forms of leptospirosis occur and where access to medical services is limited or delay in receiving treatment is likely. However, protection is of relatively short duration, and boosting at regular intervals is necessary'. Maybe the cost-benefit analysis for human leptospirosis infection implicitly accepts the 'rare but potentially catastrophic if you get it' scenario. But the World Health Organization advice is nearly two decades old now, and there are so many more recreational swimmers now, while the prospects for better vaccines are also improving.

In France, leptospirosis is recognized as an occupational disease, with gamekeepers, fishery guardians, trappers, maintenance work on water courses, canals, marshes, ponds and lakes, natural reserves, reservoirs and lagoons, all offficially viewed to be at risk. In 2005 the French High Council for Public Hygiene issued recommendations for the prevention of contracting leptospirosis among these occupational groups, including collective and individual hygiene protective measures and vaccination. Recommendations for anti-leptospirosis vaccination were later extended to people who regularly practise freshwater sports including swimming, kayaking and canoeing. The most prevalent

leptospirosis causing species in France is *Leptospira interrogans,* the same as in the UK. The vaccine isn't fully effective, but then what vaccine ever is? The French authorities view such vaccination as being worth-while.

The French vaccine is called 'Spirolept', and was initially developed with sewage workers in mind. A comparison with swimming in inland waters of the UK was hard to miss. In the UK, authorities openly and brazenly permit the open dumping of sewage into its rivers. In fact, there were over 400,000 acts of dumping sewage into UK rivers in 2020, often raw and untreated, as well as the dumping of sewage illegally and in breach of contract. There is a real need to clean up the rivers in this country. From a swimmers perspective, that is a no-brainer - swimmers need environmental protection too. I think it's shocking that The Environment Agency, which manages UK rivers, openly says that overflows are 'not a sign that the system is faulty', but that they are 'a necessary part of the existing sewerage system'. The Environment Agency is a non-departmental public body, accountable to the UK Parliament through government ministers. So the government agency that regulates the UK waters, which is accountable to Parliament via government ministers, sees the inland waters of this country as an open sewer. Does that potentially put river swimmers in the UK in the same or similar leptospirosis risk category as sewage workers?

In China, well, they have been cleaning up their act, cleaning up their lakes and rivers since the nineteen nineties, and they have been vaccinating against leptospirosis since the two thousands. Chairman Mao's self-promotional swims (actually they were mostly float-downs) of the Pearl River, the Xiang River and the Yangtze River between 1956 and 1966 would have carried some risk of leptospirosis as well as a range of other water-born infections. The big rivers of China at that time were said to have been filthy with contamination of all kinds, including visible signs of human and animal faeces, and probably invisible levels of rat and livestock urine rich in *Leptospira*. These days, China's President Xi Jingping, who according to China's People's Daily, likes to swim a kilometer each day 'if there is time', would have much lower health risk than Chairman Mao if he cared to swim in the Yangtse River. France has similar problems of pollution and contamination of inland waters to China and the UK, but has been cleaning up across recent decades. The River Seine is currently undergoing a clean-up, and it is intended that the river be swimmable by the time of the 2024 Paris Olympic Games.

In the UK, not everyone thinks that the rivers should be considered part of the sewage system. A policy briefing to the UK Parliament, released in September

2021, on sustainable land management, states that agriculture causes around a third of all river and lake pollution, and that in 2020, only 16% of England's waters - and only 14% of rivers - met the criteria under the Water Framework Directive for good ecological status. Good ecological status is what the European Union (the UK has retained this Directive since Brexit) would want all inland waters to have – to be clean biologically and chemically. Knowing the nature and scale of the problem is a good start, even though there is a lot to be done.

Much of this I learned in retrospect, after reading, re-reading, reading between the lines and asking questions of people who might know some of the answers, or at least know where to look. In the day clinic I was pretty well done for now. And there we were, the senior registrar and me, talking about leptospirosis and me. I thanked him for his time and patient explanations. And said that I looked forward to knowing more when the results of next set of blood tests were available, which would be in a week's time. Risks- life is full of them. Did I take unnecessary risks in swimming in the River Thames? Probably not. Did I know the disease risks involved? Well, not as much as I know now. Did anyone blame me for taking unnecessary risks? No, they didn't. That was that for now, except to get home now and rest and to digest what had happened, what was done, what was said, and what was not said.

Post-script

Over a week later, I got into the water again, at Oxford's outdoor Hinksey Pool. Chlorinated, clean of leptospirosis. This was the first day I felt the urge, only a gentle one as I woke up, to get back in the water. It was clear blue water, poolside, twenty four and a half degrees Celsius on that day, the Indian summer extending the season as so often it does in the UK, almost to the point where you can depend on it happening. I eased myself in, and swam an old man's breaststroke, slow and easy, my muscles soaking up the gentle movement in silken water like blotting paper soaking up an ink spill. My mind drifted as often it does when I am swimming. I recalled the days, the years and the decades when I used a fountain pen, writing texts long-hand, one sentence after another, each one following from the previous one in logical sequence, coming to the end of a sequence of thought at the full stop of the paragraph. The computer, the laptop, has largely disconnected me from this logical parcelling of thought. I try to replicate it when I am writing something for formal academic publication though. The past practice of having done so serves me well. The process of completing a thought before writing it down, without correction, is something

that is probably lost to most people, I muse. I couldn't say for sure. But this parcelling into units of meaning to be shared with a reader (initially a fictional one, or someone whose work and writing I respect, either known to me or fictional) is fundamental to turning loosely milling thoughts into structured readable text. Like the spider-scrawl note-taking that has shaped this account - in retrospect, I am surprised at how coherent it is, now that it is becoming a story, an opera, Leptospirosis and Me. I have people, colleagues, who have commented on how fast I can write; I put it down to having learned to write, and persisting with writing with, a fountain pen. I learned in my early adult life that you have to care for a fountain pen to make it talk. In a similar way, I think you have to care for your swimmers body, to make it work, mind and body. Which is what I was doing with this return to swimming, in this first post-leptospirosis swim. Exhausted but swimming.

A few days later again, I was at the side of Lake Hardwick, watching Anne and Ilyan swimming eight hundred meter loops in this – fresh – water. Ilyan tried to tempt me, "Are you not going in? The water is so clean". No, I am not, I dare not go in. I would be ashamed of myself if I were to contract this vile disease again. I know the risk is so small, but. But if you are the one… I imagine I would be onto medical services like a shot with the very first sign of fever, the very first shivers. But how would I separate the effects of post-swimming exposure to cold water from that of the disease? Better not to even think about swimming in the lake while my body sorts itself out.

I would imagine the Emergency A Crew at the JR would be much less forgiving a second time around. I had asked the senior registrar if or when I might be able to get into open water for winter. "When you are ready", was the sage advice. "Take it easy until you know…" was the advice from a very eminent swimmer a yet a few more days later. More words, this time from a German swimmer-friend, a week or so yet later again - "It will come". I know it will.

This brush with leptospirosis, with the emergency medical services has helped me learn more about choice, risk, and judgement. It is my choice to swim in open water. I know it's a passion, but nonetheless, I could find other passions. I do an activity that is very healthy, but one that also carries a risk, with very low odds, I grant you. I can't ignore the fact that I have had malaria three times, all because of work-related risk. Again, I could have tried to work in places with lower severe health risk. The caregivers I came into contact with were uniformly supportive, or at least non-judgemental. I know several medical doctors who regularly swim in open water, so the practice is not so strange to medicine as a whole, I think.

Their support, or lack of judgement, might have something to do with my position as a scientist colleague and professor at the same university, but this hasn't stopped me feeling concerned about being judged for having made some wrong choices and being blamed for getting it wrong. If I can take avoiding action so that I don't get struck by lightning, or find myself in a car-accident, I think I should be able to do the something about avoiding leptospirosis into the future. When I was in the pharmacy just earlier, I bought some waterproof plasters – on the packet, one of the two selling points was 'Ideal for swimming'. Even a sticking-plaster fix is something in the right direction, but it doesn't fix the state of the rivers in the UK. That is much more political, but even there it is possible to be involved locally. There is a conversation about river swimming ongoing in Oxford, and contamination and infection are part of it. This is a bid to gain 'bathing river' status for the city, which if granted would require constant bacterial monitoring of the waters. This would make it only the second river in the UK with such bathing water status. Whether it happens or not, this is contestation of an implicit view that rivers of the UK can be regarded as part of the sewage system.

Paul Garner, in his blog post on 'Long Covid' in the British Medical Journal, said that he stopped his constant monitoring of symptoms. Instead he spent time seeking joy, happiness, humour, laughter. This is what I am doing, as I move towards 'becoming ready'. Three weeks after my 'night at the opera', I was by the River Thames at Port Meadow, guarding a picnic while friends from London were swimming upstream and down. It was another beautiful warm Indian summer day, and I had had my old-man's swim in the Hinksey open air pool already that morning. The leptospirosis conversation continued that afternoon - we talked about near-death experiences, about sepsis, about being so happy to see everyone, about how good life can be when you can keep it simple. About how it is (mostly) impossible to protect yourself against a lightning strike such as leptospirosis infection - but you can use common sense and take precautions. Back in the village, there had been another River Thames swimmer in hospital with leptospirosis just recently, but much less severely infected than me. There had been a third Thames swimmer locally who had experienced a transient high fever just a few days later - this subsided quickly, although the account of it was quite dramatic. Could it have been leptospirosis, just further down the iceberg, just above the water's surface? How would you know?

The rhetoric of choice is something that shapes everyone's life, and I am in a position of privilege to have many choices open to me. With open water swimming, I know I should exercise that privilege carefully. I know the risks

beyond knowing them in writing, they are writ upon my flesh. So how should I enact that knowledge – do a risk assessment, identify circumstances and conditions under which I will not swim? Maybe make some decisions about the type of water I should and should not swim in? I was doing this already, by having my first swim outdoors in a lido with chlorinated water. A couple of weeks ago I was on one of Scottish Islands, swimming in the ocean every day. Again, decisions made. Life itself involves risk, and it can't be avoided. But there was a time when cars didn't have seat belts, and people died because of that. Seat-belt use is now taken for granted, it has been for decades, and there is moral pressure applied from others if you don't put yours on. Is there an equivalent of the seat belt for open water swimming? No there isn't; only waterproof sticking plasters - it is very patchy. Inland waters are increasingly used for recreational purposes, and medical services pick up emergencies such as me. Maybe we should investigate the possibility of vaccination against *Leptospira interrogans*? In the longer term, there is knowledge at the policy briefing level of the scale of pollution in the UK inland waters, and groups are pushing for bathing status for some UK rivers. It is all encouraging to know.

Open water swimming is overwhelmingly physically and mentally healthy – so many people picked up swimming outdoors during the lock-downs of the COVID-19 pandemic – but it carries risk. I would rather know about risks and mitigate them through knowledge, than to be stalking knowledge with a dagger in the dark, hoping to ambush it and kill it, like I thought I was that night on the night wards.

Up to the end of the summer season, I continued to swim at the Hinksey pool three times a week, and became accepted as a regular. I met there a Serbian who spoke eloquently about the cleanness of the rivers for swimming in his country. I met a woman who extolled the beauty of swimming in a lake in Tibet. Scratch the surface, and everyone has a story to tell. Scratch it by the water, and the story may well include swimming. I can't stop being a swimmer nor a medical anthropologist, even while recovering from illness. My feverish scribbles were seeking meaning through the shiver-fevers of swimming-induced leptospirosis and its aftermath. Beyond my own sense-making, I hope this account will help inform the conversation about what is acceptable disease risk in relation to open water swimming.

Resources

The Preamble

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