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Y-Dang Troeung [00:00:08] Welcome to season two of The Ways of Knowing podcast, I'm Y-Dang Troeung Assistant Professor in the Department of English Language and Literatures here at UBC. And my co-host today is M.V. Ramana, who is at the School of Public Policy and Global Affairs and who is the director of the Liu Institute for Global Issues. Ramana and I were in the 2020 cohort of the Wall Scholars programme. Hello, Ramana.

M.V. Ramana [00:00:36] Hi Y-Dang, good to be here with you.

Y-Dang Troeung [00:00:38] Good to be here with you, too. Our guest today is Dr. Rafi Arefin, who is with the Department of Geography here at UBC and who is an incoming Wall Scholar. Rafi is a geographer whose research and teaching is focused on urban environmental politics with a particular focus on sanitation systems. Born in London to parents of British and South Asian descent and raised in New York City, Rafi has undertaken research across North America and the Middle East. Rafi's interest in perhaps the most material of urban things, waste is inspired by his time living and working in cities from New York and Cairo to Madison, Wisconsin, and Tucson, Arizona. Welcome, Rafi.

Rafi Arefin [00:01:22] Thanks so much for having me.

Y-Dang Troeung [00:01:24] Ramana and I became interested in Rafi's work, in part because it is intrinsically interesting, but it is also because the two of us have been engaged in a series of conversations about various forms of waste, starting with one about a military base in the province of New Brunswick, where Agent Orange, possibly produced in conjunction with the US war on Southeast Asia, is reportedly buried and also the challenges of dealing with radioactive nuclear waste. But before going on to the actual interview, I would like to start by acknowledging that the three of us are located on the traditional ancestral and unceded territories of the Musqueam people. I'd like to start this podcast by asking you, Rafi, if you could tell us a little bit about yourself and your life's trajectory that brought you to UBC and the Wall Institute.

Rafi Arefin [00:02:13] So I was born in London and I grew up in New York City, which already, as an urban scholar interested in waste, is really fascinating place to grow up. My education took me far and wide. I did three years of my undergraduate degree at UC Berkeley a year that undergraduate degree also in Cairo at the American University, did my master's in geography in Tucson, in Arizona, and then my Ph.D. in geography at the University of Wisconsin, Madison. My research and teaching interests on waste really began in Cairo, where in 2009, I was much younger, I worked with a grassroots NGO called Spirit of Youth, and that organisation worked to provide education for the children of Cairo's semiformal and informal garbage collectors and recyclers. This community is often referred to around the world as the Zabbaleen. So many of these children themselves work in the trade in garbage collecting and recycling, and we're often excluded from formal schooling. So that grassroots organisation sought to fill that gap. And it was there in Cairo with that organisation, with that community, where I really learnt that waste was much more than just an incidental of production or consumption. But itself really this final product of a broader system and logic of disposal and disposability, which was about hierarchy, power, exclusion, inequality, but then also really importantly, a whole sphere of sociality. And I would find later in my research resistance as well. So it was there through that work that I began my more academic work on the historical production and contemporary politics of sanitation in Egypt. So I studied the place of waste in protests in Egypt, deeper

in history through one hundred years, really culminating in the revolution in 2011, studied the commodification of waste in Egypt, how waste went from this valueless object into a sought after frontier for capital accumulation, the complexities of waste, labour, and then multiple failed attempts by the government to try to successfully manage Cairo's waste. And it was really in that project, that now I've been working on for about ten years that I became really familiar with different and shifting understandings of contagion, sanitation, waste and health. So over a long period of time. And towards at the end of that project, I started to notice that the place of waste in scientific thought and engineering, but also how it was treated by urban residents was shifting. Right. So there was an increased popularity in recycling and things like composting. But then on the science side, there was also innovations in microbial ecology and microbiome science, which was positing symbiotic relationships with microorganisms and bacteria that we once thought of as purely disease causing could maybe offer some kind of benefit to human health, to the stigmas around waste, we're slowly transforming into something else. So that's the question that my work today is really driven by. How is the relationship between waste health and the environment changing in this moment? How is it shifting urban governance? And then I think most importantly, the focus of most of my research is what are the implications of the shifts for urban inequality and questions of social and environmental justice.

M.V. Ramana [00:05:58] These days we think a lot about the pandemic. And last year, as covid emerged, many scientists started testing waste water and sewage to track covid its prevalence to distribution of different variants and so on. Even just last month, there was news about a UBC group showing some results in this field. Given your long history of engagement with the topic of waste, how did you react to these efforts?

Rafi Arefin [00:06:24] I mean, I found these efforts fascinating because what they really sought to do was to transform wastewater from this really abject threat to the city or to urban health and transform that into this river, really, of biomedical data that could be analysed very quickly, producing not just insights about what's in water, but epidemiological data about population health that then could be translated into policy in a timeframe that is somewhat unprecedented. I'd also say, though, that I did have some concerns the way that the field, which is now called wastewater based epidemiology, was presented in popular media and then to a certain extent in science media was that it was novel or new. And that's something that I think as a geographer, as an Urbanist who's interested in how history informs the present really sets off an alarm. Also, as someone interested in inequality when we see these fields or technologies that are being introduced as novel or new in a moment of crisis and it's rolled out so quickly, that's when really lessons learnt from the past are ignored or unintentionally forgotten because it's told as a disconnect from ways we manage waste in health and the environment in the past. So this summer, my research group, which is myself, geography grad student Chris Reimer, and two geography undergrads, Daphne Stams and Ben Ansari, have been looking closely at the historical emergence of this field. And what we found so far is that some of these practises and technologies dating back to even the 1920s and were really in use in the 1980s as well, in the global fight against polio in places like Egypt, Pakistan and Israel. But this field also actually has a more recent history as well. And that's about the use of detecting the prevalence of illicit drugs in urban areas. So wastewater has been tested in places like China, all throughout Europe, Australia and the US as well, to not only discover the use of illicit drugs, but then also figure out how to govern the usage of illicit drugs. So before covid, actually this field is really expanding quite quickly to fight the US opioid epidemic. The focus of my new research, it's driven by the question how wastewater epidemiology is ushering in this dramatic shift in the relationship between waste health and urban governance. I guess it's inspired then by a concern that social, ecological and

biomedical implications of this technology are relatively unknown, even as the tool is being widely used to combat all kinds of health issues at the population level. And it's being expanded rapidly throughout the world. Some kind of project or plan for a project exists almost in every major large city on the planet.

Y-Dang Troeung [00:09:36] What kinds of surveillance capabilities come along for the ride with the ability to monitor waste products, quite often when such concerns are raised, the typical response amongst those in power is to say, of course, we have to put in safeguards to make sure that the technology is not misused. So do you see this technology, such as the auto sampler that you write about in your work as being controllable and who has the power to impose these safeguards?

Rafi Arefin [00:10:05] This is an open question that I don't have all the answers to today, it really is one of the driving questions for my next year in residence at the Wall Institute as a Wall Scholar. But I do have some preliminary findings. So when issues of surveillance are often brought up, the common retort is that this testing is being done on such large of scale as to make those concerns a non-issue. I think as critical scholars and also as residents of cities where this technology is being used, we shouldn't be suspicious of that response. So I think first, the line of reasoning is suspect insofar as if you are hooked up to a municipal wastewater system and you use the bathroom every day, right, you can't opt out of collection. So no matter what scale the data is being collected at, you have no power to say, yes, I would like my waste to be analysed or not. But I think even more than that, urban residents are not being informed or have no way to understand how this data about them at the population level is being used to inform governance decisions. So in some places like New Haven, Connecticut, and other cities actually throughout the globe, the data is being made available and close to real time, in most of the cities, the availability of the data is quite spotty. In Vancouver, for example, there is a way to access the data, it's not updated in real time, but more than just access to the data, we still don't know how municipal officials or other public health officials are using this data to make decisions about our lives. Are there punitive policing decisions or are they decisions that empower communities to make real choices about their exposure to things like Covid when they leave the house? I think that's something we have to ask a lot more questions about. There's a plethora of other concerns. I mean, the technology is now being proposed to be installed in very specific sites like prisons in the US, schools, elementary and high schools, but then also college dormitories across North America, in my mind, this should require serious and engaged scrutiny before these kinds of surveillance devices and systems were set up. Unfortunately, a lot is going forward in the name of crisis and management without that serious evaluation. That is something actually that my research group has found this summer, is that even though this technology and these tools have a long history, there's very, very little talk of ethics and privacy, I mean, to date we found one research group out of Europe that has published an ethics document on wastewater based epidemiology and that document itself was driven because the scientists reported that all different kinds of ethics committees and boards at the universities or governments didn't see the need for regulation. So that that is one finding that we can say there's a long history to this technology and it's been very little talk about ethics. And now in crisis, it's being rolled out very fast. So for me, there's a lot of red flags and that's where my research group is going to start a big part of our work.

M.V. Ramana [00:13:26] Thanks that was fascinating, there seems to be some parallel with the claims about the NSA and the stuff that we learnt from Edward Snowden. But in this particular case, I was curious, how can they say we are only collecting at a mass scale because you could in principle take samples upstream and downstream of a certain house

and then if there's a difference between that, then you can pinpoint exactly which house the infection or the drug is coming from.

Rafi Arefin [00:13:54] Exactly. So the question of where samples are taken is a contested one and that's something that in more depth ethnographic and on the ground research we're going to be looking to do is go to communities where this technology is being used and find out how much people know and where these samples are being taken. But I think a lot of this goes under-scrutinised because people maybe aren't aware how much you can tell about a person, a community, a population from waste. So waste is waste water specifically and all different kinds of genetic information about you and your community and human population, but also all kinds of traces of foods that you've eaten, chemicals and pharmaceuticals that you've ingested and I think that's something that's overlooked and maybe one reason why this is seen less scrutiny than other forms of surveillance, possibly.

M.V. Ramana [00:14:47] So I want to turn to the geography scholarship, which I know has engaged with waste, and particularly I know about a decade ago, the geographers Vinay Gidwani and Rajyashree Reddy, showed how waste, which is commonly seen as a problem for capitalist accumulation, can be a source of surplus value extraction. How does your work on waste management in Cairo add to this insight?

Rafi Arefin [00:15:13] Thank you for this question. I first want to say that this paper by Gidwani and Reddy was perhaps one of the most important papers in a little corner of the critical social sciences called Discard Studies to be published in the last 10 years. I actually still remember reading this paper. It was one summer in Cairo I was trying to make sense of my fieldwork interviews I've collected and then picked up this paper and things seem to coalesce. So by definition first, waste is the opposite in many versions of dominant Western knowledge and science, waste is the opposite of value, it's defined as something that's valueless, that's been used up of its value. But that's quite abstract. You can also think of more everyday examples. So we know that capitalism requires the circulation of capital to create value, to extract surplus. And circulation is a geographical process that we all live with, you see every day. Right. And so capital encounters all kinds of obstacles and blockages. Waste is a serious obstacle, serious blockage so we should we can think about if a city streets are not clean, people can't get to work, goods can't be transported, your Amazon delivery package is not going to show up. If there's a sewage pipe that's leaking in street, there's ports that are blocked, through all different kinds of waste. There's also more maybe indirect ways that that waste could arrest circulation. Think about waste coming back in the form of climate impacts and pollution. So on a day with really bad air quality, it might be hard to labour outside or workdays might be cancelled. We could think of a heat wave connected to climate change that connected to the use of fossil fuels for wasting disposability, which again interrupts labour, interrupts capital, interrupts circulation. What Gidwani and Reddy demonstrated was that rather than a purely antithetical relationship, waste is the opposite of value. The relationship between waste value is a lot more fluid and that boundary between what is waste and what its value can be dissolved quite easily in the name of making more value of expanding capital. What one day could be waste, the next day could be quite valuable, what they called the waste value dialectic. So I took this question of the waste value dialectic to Cairo and used it to help me explain why to this day there are still long debates over how to properly manage Cairo's waste. And it's one of the largest cities in the world without a comprehensive, solid waste management system. And a lot of the government officials will say, well, we need a modern system of management for a modern city. And a lot of the people that I work with in the semi-formal, an informal waste management sector in Cairo say that's not quite

right. There's a perceived modernity and this is the word of one of my interlocutors specific. There's a perceived modernity of Western sanitation systems. And really a big part of my research was launched by this simple phrase, the perceived modernity of Western sanitation. And my question was, where did that come from? How did that emerge? How did it take hold? How did it become such a powerful discourse that's actually stopped the emergence of effective sanitation system? So I traced it one hundred years back to the colonial construction by British engineers of Cairo's first major wastewater systems. I read the plans and the personal musings of these engineers, and they were definitely concerned with health in a very unequal and racialized way. It was the health of maybe British colonial officials and maybe upper class Egyptians, but even more so than health, they were really kind of enamoured and obsessed with turning sewage into value. So they were looking at the increased connexions of households to the system as a way to, say, garner more wastewater, which then they were going to use in a sewage farm, which would create kind of in their plan, large amounts of produce, which could then be sold back to market and in part pay for the construction of the system. But also then in the calculations, in the budgetary documents I read, they were doing much more than actually meeting ends. This was during the British colonial era in Egypt. But what I found was that was a really formative time. So it came to inform policy to the present.

Y-Dang Troeung [00:19:59] I was particularly interested in your work on race and microbiome science, you make the interesting point in one of your essays that race is not a valid biological category, but racism has a consequential effect on biology. So in my own work, I have been thinking a lot about how fields like psychiatry or neuroscience and the medical industrial complex more generally targets the brain as bio-political regulation. And in your work, you call race a ghost variable in microbiome studies. So I was wondering if you could say more about how racism impacts biology and how do you think the greater inclusion of scientists from diverse backgrounds could help change the situation?

Rafi Arefin [00:20:46] Yeah, thanks for that question. April was the fifth year anniversary of a feminist science and technology studies journal, Catalyst, and there was a big event around it. And a very prominent feminist scholar, Donna Haraway, was asked about some of her regrets over her highly successful and long career. She regretted that she was studying science and working alongside science, but had fell out of conversation with scientists. And so a lot of my work was following that trajectory. It was critiquing dominant scientific understandings of waste and sanitation in medicine and epidemiology, but also engineering. And what I really didn't want to do was just dwell in that world of critique, which is for me this is super important, but it felt incomplete. It felt like I hadn't finished some of the work. So this paper that you're mentioning that that's forthcoming in *mSystems*, it's written by myself, a geographer, a biomedical scientist who works in microbiome science, an ecologist and then also a medical anthropologist. And in that paper, we closely examined how race functioned in microbiome science. And we found that there was a significant portion of the field which explained microbial differences in our gut, on our skin, in our noses, explain those differences through racial variables so either through race or ethnicity. And what concerned us most was not just the deployment of those variables, but that those variables were never contextualised within the structure or system of racism, which in effect produces a racial science, a science that says race has some biological truth through the microbes that live in your gut or in your nose or on your skin. And that was something that was quite concerning. But even more than that, the direct deployment of race or ethnicity, we found all of these variables in the literature that we said functioned as those two variables. So instead of using race or ethnicity, we see variables like 'inner city populations' 'industrialised people', which I'm not sure how a person can be industrialised, Western people, traditional societies. These are all variables

which didn't explicitly say race or ethnicity, but are variables that are racialized, meaning that race has an impact on how they are read, received and deployed. So what we're really urging microbiome scientists to do is reconsider the use of race as a variable without connecting it to racism. So whenever you use race as a variable or science, there should be a justification and a relation to how that is not a biological truth, but a product of racial and racist structures. But then also encourage microbiome scientists to look at these other variables that use like inercity, industrialised, Western and maybe consider how they're pretty imprecise. And actually what they might be naming are things like urban segregation, the inequalities of citizenship, imperialism, colonialism, environmental injustice.

Y-Dang Troeung [00:24:18] Your discussion earlier about how the auto sampler, which seems like this benevolent technology, really is not neutral at all because it has all of these implications for urban inequality and for surveillance and privacy. And similarly, the microbiome is also not this neutral source of biological truth. It's wrapped up in these complex structures of race and colonialism, imperialism, global capitalism. It's really fascinating how you're trying to weave all of these different structures of power together.

M.V. Ramana [00:24:53] One way to conceptualise global warming is to see it as a result of the inability of the biosphere to absorb the waste produced by our economic system. So more generally, what lessons can be people who are thinking about dealing with climate change learn from your analysis of waste?

Rafi Arefin [00:25:13] I think the most important one in the field of discard studies or waste geography from my own work, but other scholars like Max Liboiron, Sarah Moore, Rosalind Fredericks, is that we should always be very suspicious of campaigns that seek change on the level of individual consumption or even sometimes aggregate consumption, as if consumption and household consumption is the key site of structural change. That has been an area that's been critiqued in studies of waste and waste management for a long time. And I think it has a lot of lessons for climate justice and climate change.

M.V. Ramana [00:25:54] Can you elaborate on that?

Speaker 3 [00:25:56] So at least in discard studies, we now know across the world there are all different kinds of campaigns aimed at reducing consumer waste, everything from the use of straws to different kinds of single use plastics to even the practises of composting. But what we find actually in the literature is that the problem of waste and pollution, of course, there's lots of consumer waste created, but the vast majority of waste we're talking about, a city or national scale is in most places in the world, industrial waste, military waste, construction debris, medical waste, all of these waste streams that are actually not targets of campaigns like bring a water bottle, bring a metal water bottle to work, or don't use plastic straws, all different kinds of zero waste or minimal waste campaigns that are aimed at the consumer is really targeting a waste stream, an important waste stream but when we look at the aggregate numbers, not the primary offender. So, again, industrial waste, medical waste, construction debris, military waste. Then you talked a little bit about toxicity and pollution, the war and the military, military waste is a massive problem both for atmospheric pollution, the pollution of water, but then if you live in a town with a military base, all different kinds of waste products are produced by these mini cities in and of themselves.

Y-Dang Troeung [00:27:27] If I could just jump in here. Another by-product of wars are the refugee populations that are produced as a consequence of these imperial wars. And I've

been writing a lot about the global migrant situation, so I'm quite intrigued by the idea of discard studies and how refugees and displaced peoples potentially fit into this paradigm that you're working in. Your work had me thinking about how refugees are also the consequence of this logic of disposability, where imperial powers like the US military have deemed certain places around the world expendable wastelands for wars. As climate change accelerates, the future generations are all on a path towards becoming refugees for the first time, or perhaps yet again. So I was wondering if you could say more about the logic of disposability and how it cuts across multiple and intersecting forms of power.

Rafi Arefin [00:28:27] Yeah, I think when people hear about waste geography or discard studies, they think we necessarily study things like garbage or or sewage. And that is the case for a lot of us like myself. But the field is quite wide and I think one of our most important concepts is disposability. This logic of disposability really goes back to this text by Mary Douglas, a mainstay of structural anthropology called Purity and Danger. And in that text, Douglas argues that Dirt is not an essential trait of objects or people or landscapes. It's anything that is defined as a matter out of place. So anything that is outside our understandings, our systems of categorisation, anything that basically challenges our norms or our common sense understandings of what the world is and how it should be ordered so discard studies scholars. Really importantly, I think that the first major critique of this text was by Max Liboiron, came out and said, well, it's not just a matter out of place, rather it's about power and hierarchy. And that's what creates our understandings of dirt and therefore waste and discards. And so really, then what disposability is all about is about how power functions not just through discipline, but also through disposal, how logics of rendering some people, some places, landscapes, animals, disposable in service of benefiting other people, places, landscapes and beings. That's quite abstract. So we can think about any kind of more concrete terms so we can think about planned obsolescence, right? The fact that these pods that I'm recording this podcast on right now, the batteries not replaceable. So they're going to last, they're quite expensive and they're going to only maybe last three years and then they'll be thrown out into a landfill. So planned obsolescence is that idea, the convenience of this wireless headphone will benefit me and other mostly urban users on their commutes to work and eventually will have to be disposed of, are not long term use items and will be in a landfill. And we know from decades of research at the siting of landfills and the consequences and the pollution of landfills disproportionately impacts marginalised communities. So that's a logica of disposability right there. We talk a bunch about climate change, the idea that our continued investment in fossil fuels, fossil fueled ways of life, which is going to render certain places on this planet uninhabitable within our lifetimes. That calculation is based on the logic of disposability that renders coastal nations people who live in informal housing on coastlines, for example, disposable.

Y-Dang Troeung [00:31:28] I wonder what you think about this idea that we're all on a path towards becoming disposable populations. Does that sound too far fetched or exaggerated for you or

M.V. Ramana [00:31:42] dystopian, perhaps?

Y-Dang Troeung [00:31:44] You know, people who know me know that my favourite topic is dystopia.

M.V. Ramana [00:31:50] Well, I was quite interested in asking you as a geographer and a specialist in discard studies, whether it's something that we really need to be concerned about at the present moment.

Rafi Arefin [00:32:03] I think that's the apocalyptic reading of disposal and logics of disposability, but I think a really important wrinkle to that is the inequality involved against certain populations, places, beings, are rendered disposable in the service of propping up continued status quo ways of life or others and by others, it's the powerful, so to say, that logics of disposability render us all disposable populations, I think one of the takeaways from discard studies would be maybe yes, in the long run. But really the way this functions is to prop up the status quo ways of life for some at the expense of others.

Y-Dang Troeung [00:32:45] That's a really good way to put it. We really need to bring in equality and race and colonialism into thinking about disposability, because for many people around the world, it's not some future dystopia to be anticipated or feared, but it's something that people live with or have already endured. Universalist claims about this logic really oversimplifies the issue.

M.V. Ramana [00:33:11] Yeah, I would like to add to that to say quite often so much of our discourse, even about climate change, there's a use of the word 'we' when there's really not a common sense of agency there. So I'd like to end by asking you to tell us something about what you're excited to do next year as a Wall Scholar.

Rafi Arefin [00:33:34] Yeah, I think we have almost every topic that we've touched on today from the problem of waste in cities, health and waste, space epidemiology, climate change, displacement and the production of refugees all throughout the world, I think they exceed my disciplinary training in geography, at least, which is itself quite an interdisciplinary field. And I think they exceed kind of all of the disciplinary training that all of us have in our degrees on this podcast. So what I'm really looking forward to at the Wall Institute is to ask these questions that exceed my own discipline but also exceed any other one discipline or way of producing knowledge to get at some of these really interesting and important insights about waste, about the environment, about health. And I think that the Wall Institute will be a place that makes that kind of endeavour possible.

Rafi Arefin [00:34:32] Thank you Rafi. That was a very interesting interview. I'd like to thank you for participating in this.

Y-Dang Troeung [00:34:38] Thank you so much Rafi. It's been a pleasure talking to you today.

Rafi Arefin [00:34:41] Thanks so much to both of you. This was a great conversation.

M.V. Ramana [00:34:45] Thank you for joining us. You can find links to the materials discussed, as well as more information about this podcast and the Peter Wall Institute on our website. If you enjoyed this podcast, please help us spread the word. Tell someone else about it, share it on social media, or rate it on iTunes or wherever you get your podcasts. We welcome your suggestions for future guests and themes. This episode was produced by the Peter Wall Institute for Advanced Studies and hosted by Y-Dang Troeung and M.V. Ramana, members of the 2020 Cohort of the Wall Scholars Programme at the Institute. Until next time.