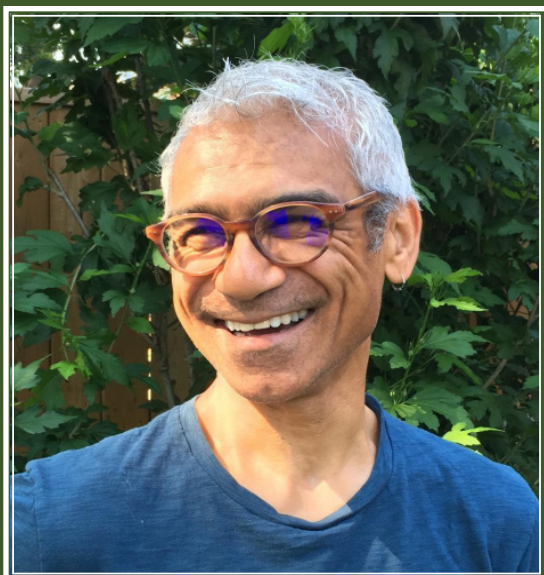


Toxic Water, Toxic Systems: How Science Can Serve Justice For Toxic Policies

INTERVIEW WITH: DR. MICHAEL MASCARENHAS

BY: HAIFA MYANTO MUANG, RAMI KABAKIBI, SANIA CHOUDHARY, AND TANYA SANGHAL



Michael Mascarenhas, PhD, MSc, BSc, is a professor in the Department of Environmental Science, Policy, and Management at UC Berkeley's Rausser School of Natural Resources. He has taught undergraduate courses like "Environmental Justice: Race, Class, Equity, and the Environment," and studies how racist and inequitable systems in our society perpetuate environmental injustice—specifically, environmental racism, or the intentional targeting of communities of color to produce harmful environmental conditions. Most of his research career has focused on questions concerning water access for BIPOC communities. His most recent book, "Toxic Water, Toxic Systems," published in 2024, explores the myriad of systemic political, economic, and societal factors that led to the Flint Water Crisis. Mascarenhas was an expert witness at the Michigan Civil Rights Commission in 2017 on the Flint Water Crisis, and an invited speaker to the National Academies of Sciences, Engineering, and Medicine's Committee on Designing Citizen Science to Support Science Learning.

BSJ: What prompted your interest in environmental justice?

MM: It was a long journey. I have a Bachelor of Science in Geology, and I was always interested in water, particularly hydrology. After university I worked in the business world for a couple years and it was not very satisfying. I was disappointed with it. So I looked at environmental sciences as a way to continue what I started to learn in university. I ended up doing a post baccalaureate in environmental studies, and for me, that really cultivated more interest in learning about the environment, and I took courses like toxicology, environmental policy, and public resource decision-making processes.

From there, I became more interested in water, but also around the distribution of resources: who gets water under what conditions. I did a second master's in Forestry at the University of British Columbia, but it wasn't really about forestry as much as it was about resource decision making and planning processes around forests, and who got to participate and whose values were embedded in those sorts of management plans. At that time after my second master's, the lightbulb for me that went off was: environmental problems are really social problems. There is always some social, institutional, and systemic reason why environmental bads and harms happen to some people. So at that point, it was like, okay, in order to understand society, a PhD in sociology was what I wanted to do. I ended up doing a PhD in environmental sociology to understand the systems, institutions, and structures that created environmental injustices, and then I did a post baccalaureate in environmental ethics.

I am a working class kid. I am an immigrant, a first generation scholar, and I have experienced environmental injustices in my life as a kid and living and working in these structures of white supremacy. I have struggled all the way through. The education part of that helped me understand my own personal experiences, but also helped me understand how different groups of people — Indigenous communities, African American communities, low income communities, disabled communities, Asian American communities, all different historically disadvantaged communities — were constantly being the recipients of environmental harm. It helped me do both things: it helped me understand it personally, but also helped me understand how these systems worked and how they inherently are patriarchal and racist.

When I was doing my PhD dissertation, I researched a small rural community called Walkerton. In a population of 5,000, 2,500 people got E. coli, and about 11 or 12 died. It kind of came out of this agricultural runoff situation. I started to do some research on this, and I thought, "this is going to be my dissertation topic," but as I started to find out more and more, it became obvious that what happened in this predominantly white rural community happens once every day in Indigenous communities in Canada. There are 433 indigenous communities, and even right now, there are 95 boil-water advisories on any First Nations community. So at that point, my work kind of pivoted to really understand how the social systems and governance policies, at that time called neoliberalism, were impacting First Nations, particularly around issues on water, health, sovereignty, and self determination. That was the first book I wrote, "Where the Waters Divide: Neoliberalism, White Privilege, and Environmental Racism in Canada." I continued to do that type of work, so my second book looks at humanitarianism, but it looks at it through a lens of water provision.

Most people in the world do not get their water like we do, through public institutions and turning on taps. They get it through humanitarian means: people bringing water to their communities and lots of nonprofits providing water provision under certain circumstances. It is very precarious, in other words. It depends a lot on the goodwill of people and institutions, and it also depends on the ups and downs of the market. If the market is doing really well, people give a lot of money to philanthropy, and philanthropy then provides food, water, and health care to these billions of people. But it is also a very precarious way to live. Governments are no longer doing that work and a whole set of other actors are involved in that. So I wrote my second book around that contradiction about doing good in terms of water provision, but also doing well, because a lot of these donors and nonprofits have to do well — they have to exist and continue to exist in the future.

But what happened in 2014 when the waters in Flint started to turn brown, after Governor Schneider and the Michigan Department of Environmental Quality switched to the Flint River for drinking water, is that I started to get calls from people in the area. At that time I was at Rensselaer Polytechnic Institute, I had two graduate students from Detroit and one from Flint, and so our phones were ringing. We knew that this was an urgent matter of environmental justice. So I asked the community members: what can we do? How can we help? We ended up going to Flint, several times over two or three years. We collected data, helped provide water, and I did my research. I was a key witness at the public hearings and I met with many members of the state legislature to discuss how this was not just environmental injustice, but environmental racism. I also worked with community members, particularly from We The People of Detroit, and asked them how to help, how to facilitate this. One of the things that we discussed was to write the book with We The People of Detroit, but after a long set of conversations, we decided that all profits would go to them and that they would start to use any of the royalties from the book to do further community-engaged research, but I would just be the sole author.

The book was a way to elevate grassroots voices. The other piece of it was to be a little bit critical of the environmental justice field, in part because the field has been very conservative. For example, it has often tried to measure a public health inequality, whether it is air or water or housing, and then quantify that inequality as it impacts a particular type of community, and then advocate to the government for better policies. That has been helpful, it has worked. We have environmental legislation, we had an Environmental Justice Office at the EPA, but when the government is poisoning you, or implicated in the particular harm that is being done to the community, who does the community go to? So we need to be critical of the government as well, and part of that is what is called “critical environmental justice,” which is a way to also highlight the role of government and its policies, whether it is redlining or how zoning and permitting contributes, and has historically contributed, to violence in these communities.

BSJ: “Toxic Water, Toxic Systems” takes a very comprehensive and investigative approach in examining how a multitude of political and societal factors compounded the Flint Water Crisis. How did you even begin approaching this investigation and coming up with a process to address all those factors?

MM: It is never an easy task to write a book and you do not really know what the end outcome is going to be. One of the things I try to do and tell my graduate students is you have to stay close to the data. So in this case, the data are the people. What are the

people saying? How are they conceptualizing? Because environmental justice is just a framework, right? It is a framework for understanding harm in a community, or a framework for understanding a particular set of social relationships. So when I was listening to what community people in Flint were saying, they were saying a few things. One is, “this is not just environmental justice, this is environmental racism.” There’s a chapter on genocide in the book. People were saying that this is a consistent, long project of American empire, or settler colonialism in particular, that is about elimination of a particular group of people. So these things that the community folks were highlighting, they would say to me: ‘Follow the money. This is really about right wing politics. It is about the Heritage Foundation. It is about the Mackinac Center. It is about the Cato Institute. It is about the Koch brothers and the ways in which municipal policy and state policy has really been taken over by these types of think tanks.’

The book is actually, in many ways, haunting to some extent, because what happened in Flint, in terms of racialized austerity measures, the tenants of which were written by these think tanks, ended up being a part of Project 2025, and are now being implemented at the national level. Trump is effectively doing what Schneider did to Flint. He is doing it to the United States. And so that is kind of haunting. One of the things that was fascinating about the book that came up that I wrote about was that Schneider was actually preparing to run for the presidency in the 2016 elections, given how well a lot of his austerity policies were received, particularly by white suburbanites in Michigan. I think people thought at the time he was going to be a real opponent to Trump’s candidacy. So that is what is daunting with the book. That is how popular this kind of white supremacy — now it is populism, it is nationalism, it is wrapped up in a whole set of other things — has become.

But to answer the question more specifically, I have a theoretical grounding of the theories I want to advance and be in conversation with, and then I try to bring those theories to explain what is going on in Southeast Michigan in particular. And the more you follow the money, the more you understand the history, the more you understand the questions of how water became provided throughout Southeast Michigan, and who paid for it, and how it was taxed, and the politics of suburban versus urban areas. That all plays out to what ultimately happened with the poisoning of Flint and bankruptcy of Detroit. So it was to try to write that story and provide some historical context to it.

BSJ: In the first chapter of your book, you talk a lot about how the privatization of water occurred in Flint, Michigan. How do you think water distribution should be handled in America, and who should have ownership of it?

MM: I think there are certain things that should not be simply under the purview of the market, whether that is water, healthcare, public education, or those sorts of things. You can not totally take them

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outside of the market economy, but you can limit that. We “solved” the land problem. We have totally commodified and privatized the land. That is done. I mean, it is still happening in certain areas in the world, but in the U.S. it is largely done.

But water presents a unique problem to capitalism and privatization. It moves around. One person’s drinking water is another person’s wastewater. It is used in agriculture and in industry, and it has three different forms. We can put it in a bottle and sell it, and we have done that, but groundwater and river water present problems to privatization. They are the last frontier of what Marx would call “primitive accumulation.” Water interests me because it means so many things. It is not just simply an economic value, it is also a value of social reproduction. You can not live without water. Water was made a public infrastructure in early industrial England, Paris, and New York, in part because people recognized that it was integral to public health and safety. If you did not have people who were healthy and safe, they would not be able to work. It was this observation that it had to be funded publicly, it had to be supported publicly, and that was in the public good.

For me, that is how I think about water from an infrastructure perspective. It is something that public utilities need to manage. If you look at public versus private water utilities in the country, public utilities always charge less. If you do an analysis of it, you will see how much less they charge per cubic meter of water than private utilities, because the motivations are different. Private institutions need to make a profit. A public institution does not necessarily need to make a profit. Part of the problem we have today is a result of the lack of public support, public resourcing, and financial support to public infrastructure, whether it is roads or water infrastructure or electricity. What ends up happening over decades and decades of a lack of funding is you have these systems now in a crisis. 60- or 70-year-old infrastructure is crumbling and states do not have the resources to actually build these things again. Part of the reason is that tax policies have failed to tax corporations and people. For example, from about 1945 to about 1970, the richest 1% owned about 12% of the wealth in this country. These days, the richest 1% own a lot more. The 1 to 12 ratio was not inherent. It was a negotiated outcome between nonprofits, public sector, unionized labor, private sector, and government. It was something that we agreed on. During that time, we built national electrical grids, public education systems, and the interstate highway.

I do not have rose colored glasses; those systems did not include people of color, redlining happened, so I am not romanticizing the past in that sense. But I also think that there is something to be said about the ways in which money flows that allow private industry, businesses, government, and civil society to do the types of work that need to be done. We are in this moment right now, particularly with this trillion dollar budget that is going to tax the rich less, that is going to be really harmful. It is always going to harm those that are disadvantaged, or historically disadvantaged, the most.

BSJ: Your book focuses a lot on how policy was a major factor that drove the Flint Water Crisis. How can policymakers work with researchers and scientists on making decisions that prioritize public safety? What role should science play in policy, and what are some current barriers to that role?

MM: There are a couple ways I think about it. I think about it in terms of science, as in the discipline, and then I think about the *establishment* of science: who funds it? What types of questions should we ask? Science needs to be funded and science needs

to direct policy, but I would also say it is kind of an unfair question, right? It is an unfair question to ask scientists. Because science can tell us the amount of lead in water. Science can tell us the degrees in which a certain exposure of uranium will cause environmental harm. Scientists can tell us and predict the rate of climate change and even predict how that’s going to impact certain groups of people. That is the role that science plays, and there is no question about that.

The question of whether we want to accept those risks, whether the “acceptable level” of lead in water is five parts per billion or 10 parts per billion, that is not a scientific question. That is a political question. That is a question that only elected officials, or maybe activists and groups of other folks who are pushing for change, can answer. It is about political interest and political parties. It is about that establishment, right? That question is a question of risk, not science. You could argue risk as a science, but I want to draw that divide for a second, because whether we accept those risks or not are political decisions. And so knowing that, I think we need to embolden activist groups, nonprofits, and other groups to advocate to policy members, to agencies, in the same way that private interests do the same thing. We need to advocate for science-based, evidence-based research that shows the huge inequalities that are caused by this.

At this point, we need to do at least that. We probably need to do a lot more. But that is the difficulty for me right now. There has not been any debate around climate change, how it is anthropogenically caused — we know what the consequences are, we know who is going to be impacted more disproportionately than others. Yet we fail to act. And part of that is, the science is very clear, but the politics behind that, and the *establishment* of science is not. So that is where we need to spend more of our time. And part of this is changing. I think a lot of scientists historically have gone, ‘I just need to do my science. The science is the truth, and we’ll change our behavior accordingly.’ But we have found out quite clearly, particularly around climate change and the reaction of the fossil fuel industry, that that is not the case. So it is that tension between science and knowing this, and then actually acting on that knowledge.

BSJ: How do you think the healthcare system can better work in tandem with environmental justice to address accessibility to healthcare and reproductive health for disadvantaged and minority communities?

MM: The American healthsystem is a massive contradiction. One, it is the most expensive system in the world and the most inaccessible, yet, if you have access, it can be the best system in the world. I got sick last year and I had amazing health care. I was in the hospital for a week. I think it cost \$500,000, but it cost me only 250 bucks, that was my deductible. If I did not have healthcare, I would be on the street. This is what bankrupts people. I think we need to have a version of healthcare that is affordable and is not based on your income. That is hard to even fathom in this current political context, let alone what has happened to the Affordable Care Act. But recognizing that these are not just patients, that they are people, and they come from different histories, backgrounds, and resources, is important. It is tremendously difficult. I have talked to activists who say, ‘I am poor, I am unemployed, but I do not qualify.’ So if you are poor enough to qualify for Medicare then you can get that service, but if you are just above that poverty line, then you do not get it. That is a really difficult way that people do not get the care they need.

What the healthcare system and the biomedical model does is

say, ‘What is your ailment? Here is your pill,’ as opposed to more of an epidemiological model that says, ‘What member of the social group are you? What are your exposures? How could we access that?’ Moving towards that more community-based healthcare system is going to take a lot of creativity and political will. That is a fight that we all need to roll up our sleeves and be a part of.

BSJ: What frameworks can scientists in academic institutions use to prioritize people’s lived experiences and stories in shaping scientific research?

MM: That perspective has to come from the community. They are the experts in that sense. I always see myself as an academic, but I also see myself as someone who can facilitate that kind of understanding. Typically, if you think about what the academy has done, they have gone out into these communities doing something called “studying down.” You study homelessness, you study alcohol abuse, you study all these sorts of ills of society in a way in which the scientific perspective is brought to understand the community experience. We need to flip that way of understanding a little. We need to, as scientists, go in with a more inductive mindset, instead of operationalizing variables, to understand meaning and understand the experiences that people have in these particular places in order to shape policy. I am thinking about Matthew Desmond’s book, “Evicted: Poverty and Profit in the American City.” He talks about eviction, and he spends a lot of time in Milwaukee, talking about and following people as they are evicted from their houses and talking about precariousness of living in and through a part of the criminal justice system. Michelle Alexander has done the same with her book on colorblind racism in the criminal justice system, “The New Jim Crow: Mass Incarceration in the Age of Colorblindness.”

Understanding the experiences that people have with housing, with crime, with water, helps us understand how science needs to change, if it wants to advocate and be a part of social justice research. UC Berkeley had a social justice task force, in part because I think the university was recognizing that we are not doing that translational work, or that the science being done here is not building a just society in the way we envisioned, that is consistent with our principles. I think there is a recognition of that that is happening and there is a move to some extent, but I would argue that there needs to be more institutional motivation or encouragement of that. There needs to be more support

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from the university to encourage faculty to do that work, because the work is hard. The work is slow. You have to build trust with communities and for a good reason, they do not have a lot of trust with us. And that is understandable, given the history of eugenics and universities and the way that has played out. In academia and science it is “publish or perish”; you have got to get work done, you have got to produce, and

so to offer alternatives to that model within the institution I think will help make that change.

BSJ: Your book discusses topics like reproductive health that require community members to be vulnerable and feel safe enough to share their experiences. In your experience of talking to many individuals about these issues, what is the best way to connect with and make people feel comfortable sharing their stories?

MM: There is no easy answer to that. I think for me, research is about relationships. To give you an example, I got an email from Monica Lewis-Patrick, who is in the book, saying ‘something is going on in a town in Alabama, here is the activist, can you call them?’ I think a sensitive ethnographer or scientist will recognize the vulnerability we are putting participants in doing this work. There are ways in which you can provide confidentiality and anonymity and those sorts of things, but that is not getting at what you are asking. How do we advocate without making folks vulnerable or how do we advocate without putting the burden on these communities that are already burdened?

There is no formula to that. I cannot give you an answer, other than to say that when we are doing this work, we think about how to be responsible scientists. I am working now in the Oakland Unified School District with a woman named Wanda Stewart from Common Vision who is doing community gardening. The idea is these are urban kids, and we think about how to help them with engagement, learning, and maybe even thinking about themselves as scientists, understanding environmental justice and environmental sciences, at an early age. So that is the project, but what I have been doing as someone who cares and someone who wants to be seen as caring is that I show up at all of the community events that I am invited to. We meet every Friday at a food distribution network.

I have started to develop more than just trust. I have developed relationships with those people now. And I think that helps me understand their experiences, their vulnerabilities, and how I can share those vulnerabilities with people not in the community. Community is complicated. There are people in positions of power, people in positions that are very vulnerable, and sometimes even within the community there are tensions there, and sorting out some of that matters as well. But I think going in with an eye of genuine curiosity and solidarity is a way in which we can expose how these institutions are harming certain vulnerable populations.

BSJ: What are some of the lessons and takeaways that the whole process of writing your book has given you?

MM: We are storytellers. What changes people’s minds are people’s stories. And to the extent that you can write a story that is genuine and impactful, you open the door to empathy. You open the door to the idea of someone thinking the world is not how they thought it might be, and I think that is important. I tried to write a little less academic in the book, to make it more accessible. The idea was to have more people in the community buy the book rather than 50 or 60 academics who sit in the classroom and theorize about it. I think the thing that has struck me about the book and my experience in Flint and Detroit is that this is depressing stuff, and you can easily adopt a narrative of bitterness and apathy. I think of what is going on in Palestine right now.

But one of the things that I was struck by was the amount of care that goes on in these communities. And I think we forget that. Part of my reasoning for being in the community and going to all these events in Oakland is because I look forward to them. I get to talk to people and people care, they are doing things to make the world a better place, even if it is just planting a garden. You could argue that it is not going to amount to anything, and you might be right, but I also think that it has to start with your community and it has to start with care and love, right? James Baldwin, one of my personal heroes, writes, “We’ve been through hell and genocide. But had we not loved each other, we would never be here.” That for me sums it up.

BSJ: We know that what happened in Flint is not an isolated issue. Communities across the entire country and beyond are experiencing very similar crises right now. How do you think we can go about addressing all these issues, and what are some things that everyday people who feel like it might be too overwhelming to even think about can do to get involved?

MM: There are multiple ways. The biggest one I would say is to join a union if you have a job. Or just support organizing—it does not have to be a union. But I think that has to happen. We have to join groups. We have to, at the very minimum, vote, but the other part of that is to protest and to be part of community organizing.

People in power have never given up that power without resistance. We can write the history of capitalism as one of advancing privatization, but the underbelly of that is that it is a history of resistance. Everything we take for granted today, including public education, kids not working in factories—although that still happens in some places—healthcare, and voting rights have all been things people have fought and died for. I think we need to remember that. As there is a systematic attack on all of our civil rights right now, we need to, again, pick up pitchforks and knives or whatever it is and fight back.

The whole issue of capitalism is it is an alienating system that makes you feel like an individual that has no power. And now more than ever, we have to recognize, regardless of what we have or who we are, that we have more in common than what divides us, and we are much stronger together. Organizing and joining coalitions is the only thing that is going to stop what is coming.

BSJ: How do you think your book and the work you have done studying water will shape future studies on environmental racism or water distribution, and what do you think those future studies should look like?

MM: We still are just scratching the surface in terms of the ways in which this late phase of capitalism is harming our bodies, our communities, and our environment. We are really just now starting to understand that. That is not because we do not have the science, but it is really because of how science has been funded. It has largely been funded to produce technologies that uphold our economic or military advantage. The Department of Defense does a lot of funding of science, the Department of Energy does a lot of funding, so we built all of this science that helps us produce things and arguably live a better life, particularly for many of us, but we have not had the commensurate investment in science around the consequences of living in a risk society.

We do not know how pollution travels through particular mediums, or how it enters the body and impacts the body in particular ways. We are still learning that science as we go. Clearly the science is showing that we are our biggest enemy, but I think we need to put more effort and resources into that kind of consequential science. To give an example, there are 27 Institutes and Centers that make up the National Institutes of Health, but there is only one National Institute of Environmental Health Sciences. So you can see how funds are being spent and not being spent. We need to really think about resourcing and financing and supporting work like this that shows the inherent risks in this late phase of capitalism.

I think work is increasingly being done now on this topic. I view knowledge as something that continues to grow and develop and scientists build on each other’s work, so we do see work that is being done that looks at environmental justice, at global environmental justice, at the ways in which people and pollutants travel across borders and things like that. So you can see my book as being part of that.

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I would like to see this book as something that is an example of how austerity measures can harm communities, but also how communities can mobilize to push back and resist — not as a unique case, but as part of a resistance that needs to continue. If people can gain some level of confidence, knowing that communities have done this in the past, then I hope that can be one of the contributions of the book.