Yale Talk: Conversations with Peter Salovey

Episode 5: “Earth Day”

**Peter Salovey**: Hello, everyone. I’m Peter Salovey, and welcome to Yale Talk. This month we are observing the 50th anniversary of Earth Day, a global event dedicated to environmental protection. This is a time for reflection and for action. When we look at the effects of human accelerated changes around the world, we see increases in extreme weather events, evolving and migrating diseases, and sea level rise and flooding. Climate change threatens our access to basic necessities like clean air, water, and food.

At Yale, we’re taking action to mitigate the effects of climate and environmental change through research, education, and practice on our own campus. This is one of Yale’s top five science priorities. We’re calling this university-wide effort “Planetary Solutions.” Faculty and students in the School of the Environment, law, health sciences, architecture, engineering, economics, and the natural sciences are all working to inform cutting-edge policy and practice.

Today I’m joined by Karen Seto, a leading faculty member contributing to Yale’s planetary solutions project. She is the Frederick C. Hixon Professor of Geography and Urbanization Science. She studies how urbanization affects the planet. Her work informs the building of resilient cities. Professor Seto, thank you so much for joining me today on Yale Talk.

**Karen Seto**: Well, thank you for having me. It’s a pleasure to be here.

**Peter:** Let’s jump right in. Today the population of our planet is 7.7 billion people. Just over half live in urban areas, but by 2050, the world population is expected to grow to 9.8 billion people, and 68% of us will be living in urban areas. That’s 2.4 billion people moving to urban centers over the next 30 years. So how does this boom in urbanization affect how we address climate change, and what are the challenges and opportunities presented by urbanization that would help mitigate threats to our planet?

**Karen:** Well, first it might be helpful to contextualize that. About one-third of the future urban population growth in the next 20 years will be concentrated in just three countries.

**Peter:** Wow.

**Karen:** India, China, and Nigeria. So in India we’re going to see somewhere around 400 million more urban dwellers. China, by 2050 will have, it’s estimated, over a billion people in urban areas. Nigeria is going to add about 200 million, something like that. So in these three countries, what we’re going to see is remarkable levels of urban development, infrastructure development, in a way that the world has just never seen in such a concentrated period. So in a nutshell, it’s going to be essential how these countries build their cities, what the infrastructure looks like, the energy systems, how people get to work, where they live versus where they work. That’s going to have a huge impact on both the future energy demand of these countries and the cities in them, but also the resources that are required to build them.

**Peter:** So say a little bit more about that. What is going to be taxed as we as we build our cities?

**Karen:** On the one hand we’re going to see the demand for resources, simply to build the built environment. The United Nations had a report published just a couple years ago—I might add that several of our faculty at the School of the Environment contributed to—and the UN report, which was called the International Resource Panel, “The Weight of Cities”—they basically estimated that by 2050, the annual requirements of resources to build cities is going to increase to 90 billion tons a year of resources, up from 40 billion a year in 2010. And essentially the United Nations says, just the resources alone to build these cities will overwhelm what we can sustainably supply. So the construction of new cities will require a lot of resources. That doesn’t even touch the land resources. So the land resources that are going to be required will have a significant impact on things like biodiversity, the ability of a forest, just a question carbon, and the layout of these cities, and again where people live versus where they work will have a significant impact on the demand for energy resource for transport as well as for buildings.

**Peter:** Yeah, that’s what I was thinking about, the energy demands of both the building projects and the migration and there [are] a lot of knock-on effects.

**Karen:** Well, I mean, it’s also important to keep in mind that urban areas account for somewhere around 75% of CO2 emissions from final energy use. So that’s you know, the light switches and such. Not for production of energy but from final energy use. And so, it’s really essential that we build the cities of tomorrow differently than the cities of the past, and at the same time we need to radically change how we are utilizing the cities that we have already built, whether it’s through urban renewal or decarbonizing our existing cities.

**Peter:** What happens to rural areas when everyone moves to the cities? Who grows the food? Who feeds all of these people living in cities?

**Karen:** Most of the discussion about food security today has focused primarily on how we can provide sustainably for planet of 9 or 10 billion people. But in fact, there’s significantly less attention paid to the fact that about 6.5 billion people will live in urban areas and urbanization is going to completely transform the food system. We’re going to see that, and so as you’ve just mentioned, we’re going to see migration of people who are currently farmers moving into urban areas, but urbanization is actually going to affect the food system in two other ways that are really essential, if we think about sustainable food systems or food security. And one is the physical expansion of urban areas. So that’s on the supply side, and the other is how urbanization will change diets, and that’s on the demand side. And we’ve seen that the growth of cities and urban expansion will result in widespread loss of croplands all around the world, but it’s going to be acute in a few countries, such as in Vietnam, it’s expected in Egypt, Pakistan, where urban expansion is expected to take place in the most fertile land. At the same time, we’re expecting to see that urbanization is going to alter what people eat, how they eat, what they buy. Food waste is another big issue here. The other thing that we’ve seen is that there’s significantly more food consumed away from home as populations urbanize and so there’s a pretty strong correlation. People who live in cities tend to consume more food away from home, and there’s a relationship between food away from home and again energy use and wastage.

**Peter:** Yeah, I mean you can see it even in cities like New Haven, which have had a bit of population growth over the last few years, not a lot, but we’re the only city in Connecticut with positive population growth. And the restaurant scene that has grown up around this city. For people who are listening who lived in New Haven decades ago, they wouldn’t recognize the food options that are now in the city. And that’s a good thing in a certain way, right; we all are able to eat a lot better than we once were. But it also reflects a different kind of lifestyle where people aren’t growing their own ingredients and making fresh food in their own kitchens, but are rather getting in their cars, let’s say, and driving to restaurants and that has an impact on the environment.

**Karen:** Absolutely, urban planning and land use zoning greatly affect the food retail landscape. So if we think about things like the street connectivity or land use mix, all of this affects how often people shop for food, where they go shopping, where they eat. And what we’ve seen is that in cities where the street connectivity is really high—so if you think about, like, smaller blocks, shorter distances that are really walkable—there’s more convenience, a higher accessibility, and usually lower energy costs of getting food.

**Peter:** So Manhattan, actually, from this perspective is laid out in a more ideal way.

**Karen:** Oh absolutely, I mean, places that are more walkable generally have more diverse foodscapes that enable smaller-scale, independent food shops and, again, higher convenience.

**Peter:** And we’re certainly seeing that in New Haven as well with younger people choosing to rent in new apartment buildings that are springing up all over the city and to walk, many of them not even owning a car.

Let’s turn to the question that’s on all of our minds at least as we record this conversation, and that is about the spread of COVID-19 around the world. And that brings up a question about urbanization. How can cities be built in ways that optimize hygiene and protect health? If you bring people together, are you making it easier to spread diseases? That’s certainly what we’re worrying about with coronavirus, but is there a way to use urbanization in an opposite way to actually spread health among the people living in that city?

**Karen:** Well, one of the world’s experts on urban health is actually at Yale in the School of Nursing, David Vlahov. He and I have talked quite a bit about this. Three factors really affect health in cities, and it’s important to think about this in the context of the coronavirus and COVID-19 right now. There’s the physical and built environment, so this is things like the density of development, the scale of streets, the availability of sanitation, urban design. And the physical built environment is really essential for shaping the health of urban populations. And at the same time, there is something that’s really essential, which is the urban social environment; so social capital, social networks, poverty, the presence of poverty, inequality, that’s really essential for shaping both mental as well as physical health. And then the third aspect of cities that affects health is access to health and social services. In wealthy countries, what we see is that cities are characterized by the availability of health and social services. But in poor countries and in poor cities, cities are characterized by poor environments, and often really poor health. And in fact, if you look at the literature from the eighteenth and nineteenth centuries, cities were seen as places that were incredibly disease-ridden. These cities were seen as places that were harboring diseases and illness, and we’ve completely turned that around in most cities around the world. But that’s clearly really linked to affluence. Now the question that you asked about whether urbanization makes it easier for diseases to spread? Absolutely, I mean the concentration of people can make diseases easier to spread. At the same time, what we’re also seeing, especially in this case right now with the COVID-19, is that in cities where you have really good governance, we have really good delivery of health systems. And where you have a high percentage or high availability of health services, like in Singapore, like in Taipei, like in Hong Kong, there could be a rapid delivery of health services. And so there [are] a lot of positive aspects of urbanization for health. It really depends on these three different aspects that I just talked about: the physical environment, the social environment, and the access to health and social services. It’s certainly not black and white, and I think that we can see that right now with how the COVID-19 and the coronavirus is being handled across very different cities and very different governance regimes all around the world.

**Peter:** So we have some good examples of the building of new cities around the world. I’m thinking in Asia, I’m thinking in the Middle East, and when we look at city building, are there particularly good examples? Are there cities that formed and grew in sustainable ways?

**Karen:** Yes, there are many examples around the world of sustainable, healthy cities, and it all really boils down to how they were designed. That’s really, at the end of the day, what it boils down to.

**Peter:** If they were designed.

**Karen:** If they were designed at all, absolutely. And you know most cities today are built in very haphazard ways, informally as well. New Haven is actually a very walkable city.

**Peter:** A planned city.

**Karen**: Yes, a very walkable city, and that’s at the end of the day, when we think about sustainable healthy cities, it boils down to the individual. How can individuals access the services, resources, the destinations, that they’re interested in if they are only accessible through car and only accessible through long distances? Then they tend to be not healthy for themselves as an individual as well as for the environment. But there are a number of examples. If you look at the media, oftentimes the media focuses on cities in Scandinavia, so often it’s Stockholm and Copenhagen, these cities often are at the top of the list as being sustainable. But these cities are relatively homogeneous, they’re relatively small. I think we have to look at examples in the Global South for sustainable cities. There are some really good examples all around the world. And if you look at a place like Curitiba in Brazil, it’s an example of a city where a single mayor in this case, Jaime Lerner, who was trained as a planner and an architect, when he became the mayor of Curitiba, he very quickly turned around the city, made it a much more transit-oriented city, made it more walkable, initiated efforts to build parks and more green space. So Curitiba has been heralded as a city in South America that is now one of the world’s leaders in green development and sustainability. But there are other examples in Asia. I mean, I think Dehradun in India is an example. Dehradun has recently developed a plan to become more commuter-centric, reduce traffic; again, it’s about accessibility. Increasing investments in public transportation and safety. And so I just want to emphasize that there are lots of examples in the Global South, and I think we need to continue looking towards those.

**Peter:** I was just thinking about New Haven when the early founders planned the city as nine squares around a green. It sounds like they were on the right track given what they knew at the time. Is that true?

**Karen:** Absolutely! Absolutely, so I live exactly one mile from my office, and most days I can walk to work, and if I’m not walking, I bike. And if I’m not biking, I’m taking the Yale shuttle, especially when it snows because I’m from California. You definitely don’t want me behind the wheel when it snows. [laughter] But in many of the cities in the U.S., the only way to get to work is by driving. It’s not even an option to walk. It’s not even an option to bike. And so this is really essential for us, to transform how we build our cities. Now if we take the 50 top-emitting cities and if it were a single country, it would rank third in emissions behind China and the United States. So there is a significant opportunity to mitigate climate change through cities, and a lot of that has to do with how cities are designed and planned.

**Peter:** Let’s finish by talking a little bit about the barriers to making cities more sustainable. Are the barriers governance issues? Is it just human behavior? Is it lack of infrastructure in older cities, for example? What keeps us from making cities more energy efficient and more resilient to climate change?

**Karen:** You just laid it all out. [Laughter]

**Peter**: Say a little more. You’re the expert.

**Karen:** I mean, we think about cities in urban lifestyles, they’ve emerged out of a co-evolution. So our urban lifestyles emerged out of a co-evolution of the layout of the city—so think about the layout of transportation, of buildings, the street network—along with social institutions, cultural practices within cities. Cities are created out of long-lived infrastructure. You know, buildings, the transportation infrastructure. We can see these things from space hundreds of years after they’ve been built. And so the design of cities interacts and has coevolved with our behavior in cities, and it’s very difficult to change our behavior, even if urban form changes. So there’s this coevolution. Just as an example, you know, when I moved from California to New Haven, I was driving. Even though I only live a mile from my office, I was just used to driving because I’m from California. But then I realized it’s 20 minutes to walk to my office, and so I had to change my behavior. But my behavior has also coevolved with infrastructure and with institutions, and so these institutions are transportation policies, subsidies for highways, subsidies for energy infrastructures. And so once these patterns are established—the lifestyle patterns, the infrastructure patterns—it’s really difficult to break out of them. And in fact we have a term for this, which is “lock-in,” “carbon lock-in.” It’s very difficult to break out of carbon lock-in once we have the basic urban infrastructure in place. It’s very difficult to break out of the lifestyle patterns, but the good news is that the lock-in can be beneficial for the environment as well. There could be positive behavioral inertia. What we see in East Asian cities, like in places like in Tokyo and in Taipei and Hong Kong, is that private car ownership is low. There’s lots of alternatives to private vehicles like buses and subways. And so the behavior inertia in some of these cities is not to use the private vehicle. And given the fact that we’re going to build a significant number of new cities in the next 20 years in places where infrastructure lock-in is not in place, where high energy consumption is not locked in place, there’s really quite an opportunity to build cities of tomorrow in a way that is much more environmentally sustainable, that’s low carbon, that’s better for both human health as well as environmental health, and a lot of this is going to start with the designed layout, the form of these cities, as well as the materials are used to build them.

**Peter:** Karen, I thought maybe we could end a little bit on the growing interest in urban studies among our students these days. I have noticed that we now have more courses in the School of the Environment, what used to be called the School of Forestry and Environmental Studies, in the School of Architecture, in the School of Management, in Yale College. The issue of living in cities, of urbanization, of urban studies, seems to be one that’s capturing the imagination of our students. So I’m wondering if you want to say just a word about how we educate in this area?

**Karen:** Yale is a pretty exciting place to be studying cities and urbanization. We have faculty across Yale College, expertise across all the professional and art schools, so we’re really in a unique position in terms of training students as well as doing collaborative research. There’s an exciting new urban studies major in Yale College. The School of the Environment has a new specialization on the urban environment. As I mentioned before, one of the world’s foremost experts on urban health is in the School of Nursing. The School of Architecture has several new hires. The School of Public Health has an interest in and expertise in urban health as well, in urban epidemiology. So it’s quite exciting across the schools.

**Peter:** I know it’s great to see, and it has certainly captured the imagination of our students; they are enrolling in good numbers.

**Karen:** Well, one thing is going to be essential if we think about sustainable urbanization and sustainable cities. We’re going to need people, leaders and citizens, who understand that a sustainable, healthy city is not just about human health or environmental health or economic health; it’s actually all of these combined. At Yale students can actually take classes through the School of Architecture, School of the Environment, [School of] Management, and get this very interdisciplinary training that’s really essential for understanding and developing sustainable urban development strategies for the future.

**Peter:** I love that you can combine the science here, you can look at social policy, public policy, you can look at architecture and design. You’re really working from the sciences through the social sciences, to the arts, and the very same student can study all of that with a focus on cities. And we have such amazing breadth here that it’s hard to imagine a better educational experience for students with these interests.

Professor Seto, I know you’re on leave this semester, and we’re having this conversation with you in Taipei as you noted, and so I especially want to thank you for taking the time to join me in this conversation.

**Karen:** It’s my pleasure, Peter. Looking forward to being back in the fall.

**Peter:** We look forward to having you back on campus.

To our friends and members of the Yale community, thank you for joining me for Yale Talk. Until our next conversation, best wishes and take care.

The theme music, “Butterflies and Bees,” is composed by Yale Professor of Music and Director of University Bands Thomas C. Duffy and is performed by the Yale Concert Band.