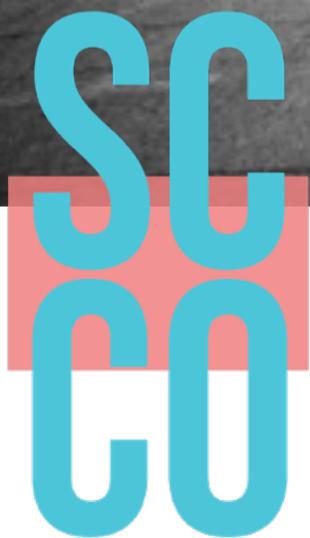


SMART CITIES

for city officials

A SOCIAL SCIENCES APPROACH



<https://smartcitiesforcityofficials.com/>



Published with CC BY-NC-ND license: Attribution-Noncommercial-No Derivatives 4.0 International License

Smart Cities for City Officials- A Social Sciences Approach, 2021.

Editors:

Guy Baeten, Institute for Urban Research, Malmö University
Chiara Valli, Institute for Urban Research, Malmö University

Research assistant and graphic design:

Adriana de la Peña, Institute for Urban Research, Malmö University

Contributors:

Germaine R. Haleboua, University Of Michigan
Bianca Wylie, Centre for International Governance Innovation
Jennifer Clark, The Ohio State University
Andrew Karvonen, KTH Royal Institute Of Technology
Rob Kitchin, Maynooth University
Ola Söderström, University Of Neuchâtel

Published by the Institute for Urban Research at Malmö University
with support of FORMAS grant REF. 2017-01422.

Cover picture titled "Busy Street Double Exposure" by Nick Page Photos.
Licensed under CC BY 2.0

<https://smartcitiesforcityofficials.com/>



MODULE 8

Post-Pandemic Futures

In this last module, we discuss the future of Smart Cities. What will the consequences of the Covid-19 pandemic on our cities be? Will governments leave Smart City projects aside and shift their priorities towards economic recovery? Or will Smart City projects be fast-tracked by the accelerated digitalisation wave? With social inequalities coming even more to the fore in the crisis, are cities learning how to become more inclusive and just? And what will the role of technology be in all of this?

Module 8

Post-Pandemic Futures

CHIARA VALLI - This has been a rich and exciting journey, at least for us, and we hope you have enjoyed it too. In this last module, we will talk about the future of smart cities. And we cannot talk about the future without discussing the consequences of the current Covid-19 pandemic on our cities. Since February 2020, willingly or not, cities have been forced to navigate a new normal made of lockdowns, telework, curfews, travel restrictions emptied city centres and new care duties.

The legacy of Covid-19 in our cities and in the smart city program in particular is highly debated. Some people say that after the pandemic and in the midst of budget and revenue uncertainty, governments will be leaving aside smart city projects and shift their priorities towards economic recovery. We can see that scenario, where investing large amounts on autonomous driving infrastructure, or a deployment of smart bins can feel "out-of-touch".

GUY BAETEN- Other people say that Covid-19 could help to fast-track the support for smart city policies. Or that the pandemic has shown the need for technology, not only to keep us connected when social distancing is required, but also to face the restructuring that cities will need in the wake of COVID-19. People supporting this side of the debate, believe that the upcoming austerity policies will push municipalities deeper into the hands of private service providers.

CHIARA VALLI - We asked smart city scholars and experts their opinion about the impact of Covid 19 on smart urbanism. We start with Andrew Karvonen.

ANDREW KARVONEN - I was reading recently that we can see parallels here with the 1920s. And I'm thinking particularly the United States and Europe. So after World War I, they came out from the 1920s with a period of huge spending, and then the 1930s came, and no so good then. We get this great depression. So potentially, we are going to come out of COVID, and it was this crisis, and everybody is going to celebrate, and we're gonna do all kind of spending. And then, five or 10 years from now, is when we're gonna have a big crash. So it might not happen immediately after COVID. But it could happen within five or 10 years. that is we are going to have a big crash.

I think what's interesting with COVID, is that it has really jumpstarted some of these things that we've been talking, about digitalisation, for the past 30 years. So this idea of working from home, last year, we did it occasionally. This year, that's all we do. This is just thinking that's an academic, I know that some people still go to their jobs. But it has really normalised this idea of digital communication that we didn't have. It was novel last year, this year it's normal. And so the genie is out of the bottle. We are not going to go back. I have colleagues that say that they are never going back to the office, that they are just going to work from home from now on.

But we are moving into this hybrid worlds, and COVID has really pushed the digital agenda. So I don't see that going away. In terms of the smart cities projects, if we're going to have economic constraints, it means that the autonomous vehicles and the real challenging and sexy projects are going to be the ones that are going to go away. But we're going to continue with ones that save us money today. So e-payments, and government services, e-governance, that you can provide services online rather than in person, those are going to remain, and we're going to see those as cost savings. But it's going to be kind of the bigger moonshot projects, that really require a lot of research money, and a lot of investment, the ones that we are going to set aside.

But overall, the smart urban development will just continue, gradually, to move on. And every day, we're getting a new layer of digitalisation into our lives. And we have seen it very quickly, with ourselves and our phones and our fit-bits. And these kinds of personal technologies, we are starting to see in our homes, with speakers with being able to talk to Alexa and ask her questions about whether, and bus buses and things like that.

The changes to the urban environment, to the built environment, are much slower. But they are going to continue. It's going to be a continual gathering of digital tools. So I don't think it's going to stop. But we might get rid of some the more sexy, more expensive, more ambitious projects.

GUY BAETEN - So, Andrew Karvonen argues that COVID-19 has accelerated the digital agenda, and in terms of smart cities we will continue to see investment in projects promising to save money in the long run, but a decline in other types of innovations. Professor Ola Söderström has a similar opinion, arguing that the pandemic has been an accelerator and a legitimising element for smart city technologies.

OLA SÖDERSTÖM - On the first aspect of your question, I think— and this is also clear from our field work— that the pandemic has an effect on the smart city in two ways: 1) as an accelerator of the introduction and the roll-out of technologies, and 2) as legitimising arguments. In Switzerland, for instance, there's a problematic, because unreflective, discourse about how backwards Switzerland - Come on!- is in terms of digitisation. I think that, broadly speaking, we have been seeing the acceleration and legitimising of the digital.

You may know about the well documented piece by [Naomi Klein in The Guardian](#), where she shows, not only argues, how Google has been active in the Trump administration to use the pandemic as an accelerator, and as a way of deregulating the activities of Google. And this is an application of something which might be more disputable, but she calls it Shock Doctrine, the idea that capitalists entrepreneurs know better well that you should never waste a crisis.

“If we're going to have economic constraints, it means that the autonomous vehicles and the real challenging and sexy projects are going to be the ones that are going to go away. But we're going to continue with ones that save us money today. So e-payments, and government services, e-governance, that you can provide services online rather than in person, those are going to remain, and we're going to see those as cost savings.”

But if we take that idea more concretely, we look at the the field work we did in India, what we did when the pandemic hits India in March last year, is that we switch to online field work. So we looked a lot at webinars, for instance, webinars organised by the local state or by the Central State, where you found a lot of people discussing about smart cities and the public health crisis. And what we witnessed there is the role of these IT companies like ESRI, and like Microsoft. And they were very active in positioning themselves and packaging solutions to use their technologies for the management of the pandemic. And you could see how they reshaped these control rooms in now 47 cities, and it's going to be rolled out in 100 smart cities in India. These control rooms and dashboards have been transformed in what the Smart City Mission director in India calls COVID war rooms. And in this COVID war rooms, they track the cases, and they track also the compliance to quarantine. So if you're subject to quarantine, these dashboards are used to track with apps that you stay at home and you comply to to the quarantine. In one of the webinars, the director of the Smart City Mission said candidly, that the pandemic has accelerated the use of drones by two or three years in India. The use of drones in urban control and surveillance. So a strong effect.

“The pandemic has an effect on the smart city in two ways: 1) as an accelerator of the introduction and the roll-out of technologies, and 2) as legitimising arguments.”

And of course, again, this should be modulated, and not only modulated in terms of Global South versus Global North. But also looking at the dividing lines between what's happening, for instance, in South Korea, and it's about what's happening in China, and what is happening elsewhere. So the rolling out, and the acceleration, and the legitimising is, of course, different in relation to the forms of government under which you live.

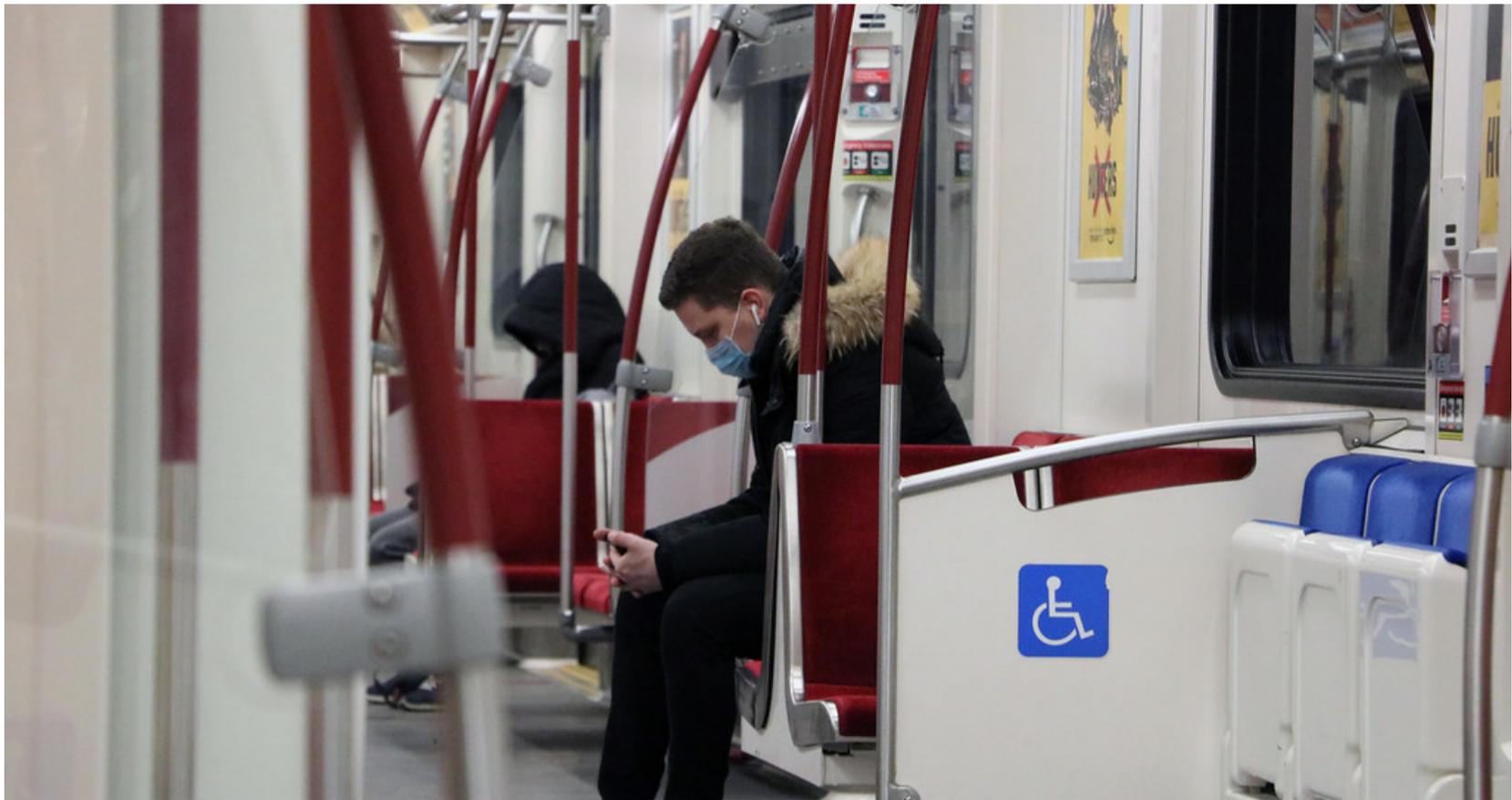
To get to your question about what's happening in terms of austerity politics, I think, my take is that the pandemic has worked as a fantastic PR for smart cities. So a fantastic PR for digitisation in general, because we all do what we are actually doing now, we speak through tools like zoom and others. So I think smart cities have been pushed and have been promoted by the pandemic in many ways.

That is my guess, but as you say, is not a crystal ball, is that in post pandemic austerity politics, I'm not sure that the digital and the smart urban technology, the toll will not be taking by on these technologies, primarily, I think we might see a strong push on digitalisation in general and on smart urban technologies in particular, even though we will live in austerity times in terms of political economies.

But that's a guess.

CHIARA VALLI - Ola Söderström describes the pandemic as PR for digitalisation and promotion for smart city technologies. He sees a scenario where tech companies are taking advantage of the situation to introduce new technology in cities, and he doesn't see austerity as a stopping force.

We asked the same question to Bianca Wiley, who also thinks that COVID-19 is not stopping the smart city, but that it will change its shape:



["Faces of a paralysed / paralyzed world during the Covid 19 pandemic" by Can Pac Swire is licensed under CC BY-NC 2.0](#)

BIANCA WILEY - I think we just going to have some shape shifting happening. The enthusiasm for technology and innovation isn't going anywhere. What it calls itself will probably evolve. I think it's completely reasonable that you get into safety tech, health tech, home tech for labor support, like all of the new proliferation of systems to support increased public health. Because there are new, very real issues. It's going to be the same problems with new clothes on.

There is something that I see at the municipal level that makes this really hard to manage in the future, and in the current moment, which is, technology vendors aren't coming in and lobbying just to the technology shops, or the technology division. They're coming in from every door right now. When I look at the lobbyist's registry, you have one company coming into social housing to talk about the thermometers they want to install at the front. They are coming in through housing, they're not coming in through tech.

And it's what's happening in society. And part of some of the arguments I make is that we need to drop the word digital, because this is everything now. IT used to be in charge of task such as, and this is why this stuff is so hard to imagine from other cities, vantage points. s , is your software up to date, does your email work, is your browser functional. And that organisational structure has not changed, but now technology is in every product that's being sold. So, we have to reconsider how we manage what's inbound, because parks, housing, whatever, they are all going to be getting stuff coming in through these different doors and how you manage that inbound, is just another reason to stop being a defended, mitigating thing and start saying what do you want, and then go and get it.

I think post pandemic, all of what is going to happen, is the same underlying problems that happened through software, but they will just be coming in with new clothes. Regulation and policy right now are fundamentally defensive. They are protecting things that are known. And they are saying, "when we have a product, it will not harm your privacy. This is how it's secure," or whatever else. And those are important things. But what we need to shift to in this era is the builder. To say what do we want instead. This is not building back, this is building differently. To define what do we want our systems to do for us. And we need to make policy work in that way, which is intentional, proactive, and this is what is so hard.

There is no reason not to be getting everything we need from technology from a public interest perspective. But we have to write the rules and quiet all the noise. Everyone's spending all their time mitigating and defending. You don't do good work on your back foot. When you are spending all your time saying, "there are three risks here, let's spend most of our staff time on those two, and hopefully that things fine". That is not going to get us there. That's going to get us more of where we are.

I think taking those granular opportunities to consider, for example, how do we build the systems we want?

How do we get public interest technologists in power? We have a human resources organisational problem with the structure of technology and governments. That is not an appealing task, I get it. But someone needs to know that the way we are going to solve these problems is organisational. It's human. It is not going to be that it comes in the products or the services or it's done with some kind of policy. If we don't fundamentally reorganise how humans work within cities on technology, we are not going to get where we should, we are just not. You might have increased a bit of participation here. A little bit of that there. But the opportunity cost of not doing a proactive, intentional, public technology strategy, has huge, huge consequences. And this is so frustrating because nothing about software and computer code is inherently capitalist. It doesn't have to be commercial; you can just use it to do the things we need to get done. That's it, it does not need to be productised. We need to get that through leadership's minds. And this is not easy for people who don't work with it. So, I get it, I don't mean to sound like something is wrong. I'm just saying that the strategy of this being commercial doesn't map to what we need to do. So, we need to confidently assert what we want in our municipal public technology strategies and go and get it and hire for it and pay people to do it and make it good protected labor. Go for it. Because this mitigation thing? No, it's not working.

GUY BAETEN - So, Bianca Wiley argues that the pandemic will have tech companies knocking on every door of the local government to offer all kinds of new technical solutions. And that this will make a lot of noise and create a lot of pressure on local governments. She insists that local governments need to write the new rules of the game and define what the technology should do for the city, and not the other way around.

“The opportunity cost of not doing a proactive, intentional, public technology strategy, has huge, huge consequences. And this is so frustrating because nothing about software and computer code is inherently capitalist. It doesn't have to be commercial; you can just use it to do the things we need to get done. That's it, it does not need to be productised. We need to get that through leadership's minds.”

Jennifer Clark is urging cities to think about public health as part of urban planning.

JENNIFER CLARK - Yeah, it's interesting, because the from the US side of it, we have been in this austerity for so long in terms of public investment. And it's actually just now that we're starting to see some ideas and some proposals around significant infrastructure investment for the first time, I would say probably in 15 years, and some actual political will to potentially do that. And then, for us, there have been industry driven projects for this entire period. Meaning that the people who are primarily footing the bill are the firms in the end, and not the localities. So that has created a power asymmetry that has been highly problematic.

And so, if it's the case that in Europe this is about to happen, I would say we can talk about the negatives around those power asymmetries in terms of the choices when you really do have to rely on the private sector for what investments are possible. That is highly problematic.

That said, I think the pandemic has done a couple of things that I think are important in this regard. One is to create a reminder about what's really important about civic infrastructure, in addition to public infrastructure. So this understanding that technology -- and this goes to the previous question about, are you solving my actual problem? are you solving a problem I don't have -- what did the pandemic tell us about the problems we actually have, that technology can help us solve? One of them really is about this question of how do we reach people? are we reaching everyone?

Do we actually have ICT when we have gaps? We call them in the US the digital divide. People who don't have access to the technology. When we have a crisis, there's people we can't reach. And that's not just their problem. That's everybody's problem. There's nothing like a pandemic to remind us that we're all in it together. So the fact that we don't have national systems, or local and regional systems that actually are reaching everybody, is something you can just pretend doesn't matter.

And there is a component of the last 40 years of neoliberal priorities in terms of public investment and understanding the public sector that we can do 80%. You can get the people under the normal curve, and it's okay if you don't get the tail of the distribution. It isn't when you're talking about public health. And it's an interesting thing for urban planners, because there is this debate within urban planning of, how close is urban planning to public health? Sometimes, public health and urban planning have been really closely linked together. You think about the early 20th century, another pandemic, there was a very tight conversation going on about public health and urban planning. That conversation really fell apart in the mid 20th century to the end of the 20th century, partly because neither one of those fields had a lot of public investment in them. So they kind of had to go it alone.

“What did the pandemic tell us about the problems we actually have, that technology can help us solve? One of them really is about this question of how do we reach people? are we reaching everyone? Do we actually have ICT when we have gaps? [...] There's nothing like a pandemic to remind us that we're all in it together.

Now we're back to a question that maybe public health is part of urban planning. Maybe it's critical. I think that this is one of the areas where the technology is really good at. you think about how much investment has gone on in terms of health services, it's a huge industry. Providing health is a huge industry. They have incredibly sophisticated technologies that are available for medical devices, but also medical tracking public health records, but it is tailored for a very high end. It's not tailored for 100%. It's tailored to very high end services. If you look within the US between people who have access to high end private health care, and people who are accessing general health care, it's vastly different in terms of how much of the quality, in terms of what the technology can do. We are going to have to make some decisions about that.

Now, whether those are smart cities projects, or whether those are public health projects. I think that's one of the things we're going to have to think about, how we define what our responses as cities and regions to this is and what we demand our national governments. I mean, there is this question of devolution here, which is, can you devolve this kind of activity to cities and regions? Or do you have to say that there's got to be a national standard, and cities and regions that are part of the implementation strategy, but they are not here defining this as one-off conversations with the private sector, about one service or one product at a time. It may have to be a much more comprehensive conversation.

CHIARA VALLI - Jennifer Clark warns us about the power asymmetries created when the public sector relies on the private sector to make public investment. She describes it as highly problematic and the culprit of deep inequalities.

She told us that speed transition to digital economy in the pandemic has exposed these inequalities- the digital divide- between societies. So, she believes that there needs to be a comprehensive conversation between national, regional and local governments to forefront civic infrastructure in addition to public infrastructure.

“A lot of what has happened is the legitimisation of surveillance capitalism.”

We asked Rob Kitchin the same question about the post-pandemic future of smart cities. He gave us a different angle, related to the use of surveillance technologies to tackle the spread of Covid-19 and the potentially dangerous legacy of this.

ROB KITCHIN - I think the pandemic is or has been a big vehicle for these technologies already. I can send you a paper I had in Space and Polity on COVID technologies as solution to the to the pandemic, and the ethical, governmental questions around them. What you had was things like smartphone apps, thermal cameras, permission apps, there was a whole range of surveillance technologies, which actually surveillance of places, and of mobility technology that has been put in place to try and contain the spread of the virus.

That kind of normalises these technologies as a means to control location and movement and to monitor them. A lot of what has happened is the legitimisation of surveillance capitalism, because the state turned to some of these companies to say, "we know you have this data, We want to use it to monitor people in relation to the spread of COVID". So

that deepens the relationship between the state and companies, around how some of the smart city technology was being used.

And it has also given a pathway for some of these companies into health data, into one part of State's data that was pretty contained before. A bunch of companies got access into NHS data in the UK, for example. There is the question as to whether this technology will get rolled back. There were the control creep questions, like the technology being used for purposes for which it wasn't generated. Smartphones weren't invented for most of the things that they do. But it wasn't invented to attract people to public health, and to monitor it, and to do things about that. Some of the apps were introduced on the basis that they would only be live for the duration of the pandemic, and the data would be only used for the purpose of public health. We already know there are cases, like in Singapore for example, where the location tracking in the COVID app is now being used in a murder trial. So it has crept from public health into policing.

There are the control creep questions around how some of this infrastructure has been put in place and gets moved into other domains. And then there are questions around whether it will get decommissioned. So the Chinese authorities have already said that some of its movement technology won't be decommissioned. So one of the things they did in China is this QR code scanning. You have your level -- green, yellow, or red -- on your health. So if you haven't been in contact with anybody you're green. If you got COVID, you're red. And if you've maybe been in contact with people, if you live in a particular area, you might be yellow. And so you're going to get on the bus, or you're going to get on the metro, you scan the QR code, and it will tell you whether you can go. So its permission to move.

They did that in Moscow as well, you would pre apply for a route. So you pre applied to say, I want to go from here to the other side of the city, and I want to go on this route. And you'd be given a QR code and you would scan as you went along. And it would make sure that you had permission to move and that you were moving along the designated route. That is very strong surveillance technology. And the Chinese have already said they are not going to necessarily remove some of that stuff will stay in place as part of their surveillance, security infrastructure.

So the pandemic has actually been a pathway for introducing and normalising some technology and normalising the relationship between states and companies around legitimating some of that level of surveillance. And that has privacy implications. it has governmentality implications. So it deepens disciplining, and it helps shift towards control. It will be interesting to see to what extent it gets rolled back afterwards.

And that's why at the beginning of the pandemic, you had organisations like Privacy International, American Civil Liberties Union, Electronic Frontier Foundation, the Ada Lovelace Institute -- there are a whole bunch of civil society, civil rights organisations-- very quick on trying to push back against the kind of mobile phone apps and some of that infrastructure. Not necessarily because they were against the public health, but because they wanted to ensure that rights and entitlements around privacy and around civil liberties were being protected. And that they were being embedded. So that's one of the reasons why you got the shift from centralised to decentralised apps. That was coming out

of those organisations saying this data should be stored on the phone and not on the government server. It should only be there for 14 days, and then it should disappear.

I was part of the group in the Irish case campaigning around this, and the government eventually agreed that he would publish the code. So the Irish app is completely open source, you can see all the code. It would do the data protection assessment first. So that's another thing that cities can do, to actually do the data protection assessment, to do privacy impact assessment. They did the data protection assessment and they published it. And so you could see what was going on and you could push back against, then you could challenge it. So it's one of the reasons why the Irish app has been adopted by a number of other countries, is because the the code was open source. So you could see exactly what was going on with it. And they've agreed that it will be completely discontinued when the pandemic is over, and any other technology in place will be taken back out again. But that's not the case in authoritarian regimes. And not the case in some other places.

GUY BAETEN- Rob Kitchin sees a danger in the fast-track treatment of surveillance and control technologies with the pandemic. He underlines that there has not been sufficient consideration of its consequences to civil liberties.

Finally, Germaine Haleboua gives us a somewhat positive scenario after COVID-19 in smart cities. Let's listen to what she thinks could be the futures of smart cities after the pandemic.

GERMAINE HALEGOUA- One thing that I think probably we are not going to see, is more of these smart from the start cities. Right now, we have examples like NEOM in Senegal, Akon City outside of Dakar, New Songdo was an example of a smart from the start city, a city that's built from scratch with network technologies in mind, or smart city plans in mind. In this particular time of austerity, we're probably not going to see a lot of those mega projects moving forward. We have already seen a lot of them installed. So I think that model has been agreed upon as a little bit outdated, and impractical. Partially because of the time that it takes, but also, we haven't really seen return on our investment there. And it costs a lot of money. So I don't think that we're going to see that as a fix to this sort of particular moment of austerity and crisis.

But I think we've already seen, "smart technologies" being implemented around the world in the service of tracking the pandemic. Mainly in the form of contact tracing, but also visualisations and dashboards that aim to slow the spread, or track the spread, or monitor contagion, the number of cases, and areas of the city in which are more susceptible to surges in COVID-19, as opposed to other places. And we've seen a lot of predictive analytics about where surges might happen next. All of this are relying on similar smart technologies to do so.

And we've also seen pushback, a considerable amount of pushback against these technologies. In light of perceived privacy violations, inaccuracies in the data produced,

“What we might end up seeing as some form of social cities, potentially, of deliberative and pared down uses of investments in technology. And more attention to vulnerable populations as a result of these public health crises.”

but also the lack of trust in these technologies and the systems they represent, and people's refusal to use them at all. And I think a lot of these echoes some of the issues that we've seen in smart cities previously. So there's some sort of overlap there.

On the other hand, like previous smart city justifications, we have a crisis condition that might make technological solutionism, very attractive, and very appealing to budget tight municipalities. This is what we've seen in the past, with smart city initiatives popping up around economic crises, around the construction of perceived crises, around environmental sustainability, or economic prosperity.

But at the same time, I think corporate driven smart cities are expensive. And as I mentioned, I don't think we're gonna see a lot of models for these mega projects of smart from the start cities. But I think what is going to become very important now, and that's what we're paying a little bit more attention to than we did in 2008 2009, and the years up till now, is that we really haven't seen a return on our investment with a lot of these expensive smart city initiatives. That they haven't been shown to yield substantial outcomes.

What we might end up seeing as some form of social cities, potentially, of deliberative and pared down uses of investments in technology. And more attention to vulnerable populations as a result of these public health crises. And as a result of this pandemic, I think a lot of cities are sort of realising that we have differential access- at least this is something that's happening in the US- to digital infrastructure, very basic digital infrastructure. What COVID revealed in a lot of US cities, is the disparity between the digital haves and have nots that once we were forced to work from home, it became evident that there were a lot of students who couldn't do homework because they didn't have access to a reliable internet connection at home. There were a lot of people who couldn't work from home because they lacked sort of access to broadband, and things of that nature. Also, what the pandemic has emphasised is the vulnerability of certain populations in public health terms, in economic terms, and in digital infrastructure terms that maybe weren't as listened to before. They existed, but that weren't on the radar in the same way as before.

“I wonder what sort of a minimal computing version of the smart city would look like?”

So I'm a little bit, maybe we could say, optimistic, that maybe not that feminist model, but maybe we might see a little bit more of inclusive and intentional models, and pared down, stripped down, flexible models of smart development, that are actually more meaningful and outcome driven and goal driven than we had before.

I was just thinking about this earlier this morning, when I was thinking about talking to all of you about alternative visions. And one of the things that I've been thinking a lot about for another project is this idea of *minimal computing*. And I don't know if that's something that people are familiar with, but I wonder what sort of a minimal computing version of the smart city would look like. So minimal computing: [Jentery Sayers, talks about this](#), [Alex Gil talks about this as well](#). A lot of other people who work in digital humanities, particularly around developing countries or impoverished populations, will talk about computing

done under some set of significant constraints in regard to hardware or software, or education, or network access, or electric power, or some other sort of factors that might constrain or limit the way that we have access to or ability to use computational systems. So what minimal computing does then is aimed to simplify computing experiences at lower costs, and sort of de-emphasise maybe things like flashiness and speed, for greater access, based on the simplification of the computer, whereas simplification of the hardware and software or network needed in order to participate in digital activities.

And in many ways, I think that the austerity in public health, economic disparities that we are facing right now in relationship to access to digital infrastructure, and the literacy disparities that were exposed through the pandemic, and disparities exposed through vaccination efforts - who is being vaccinated and who is not- will set the stage for a more resourceful, civic minded version of the smart city. And whether that's a feminist version or a minimal computing version, who knows? But I do wonder what a pared down, more intentional version of a smart city might look like.

And I think that the time of austerity that we're finding ourselves in, might lend itself towards thinking in those realms, rather than wholly embracing technological solutionism as we have before. I don't know if it's a second wave, a third wave, fourth wave of smart city development. But I think that it's definitely time, and then enough time has passed that we could pause and think about and reflect on our failures and false starts, or things that didn't work out for us in the past, and how might we adjust these elements towards alternative models for urban development around technological interventionism the future. So I'm hopeful for alternative systems, but we'll see what we get.

CHIARA VALLI - Germaine Haleboua argues that smart city mega projects, or "smart from the start" city projects, will not attract support anymore. She argues that these types of projects haven't shown fruitful returns and in austerity they will be very hard to justify. She also highlights the pushback against smart technologies that are being used to track and monitor contagion, after perceived privacy violations and lack of trust in these technologies and the systems they represent.

Haleboua recognises that a crisis condition makes technological solutionism very attractive. But she feels positive by acknowledging that Covid-19 uncovered the technological divide connected to vulnerability of certain populations. She believes that these issues are going to receive more attention from now on, and that this awakening might guide towards more inclusive models of smart city development.

CHIARA VALLI - The researchers we talked to believe that covid-19 will not stall the smart city model, but on the contrary, it will accelerate it. Nevertheless, they all agree that it will change its form. We leave with five main ideas and speculations.

GUY BAETEN- The first one is that even though the pandemic will have tech companies offering cities all kinds of technical solutions, cities will be more selective in what they adopt. So, there won't be much space for mega projects or unessential projects.

CHIARA VALLI- Second, there is concern about the fast-track taken on the adoption of surveillance and control technologies to mitigate the pandemic. The possible impacts of these technologies on civil liberties and privacy have already a considerable amount of backlash. This will require close observation also in the future.

GUY BAETEN- Third, austerity also means that governments might rely on the private sector to make public investments, possibly exacerbating power asymmetries. In this sense, cities should be clear in their role of determining what the technology should do for the city, and not the other way around.

CHIARA VALLI- Fourth, the pandemic has uncovered a clear digital divide, showing on one hand that the investments in digital infrastructure might increase existing social inequalities and, on the other hand, that there are urgent demands for investment in civic infrastructure to ensure equal access to services and technologies.

GUY BAETEN- And fifth, now that the pandemic has shown us even more clearly the vulnerability of specific populations, this awareness should drive cities towards a more inclusive smart city model.

CHIARA VALLI - It feels like there is a momentum for a renewed digital agenda in cities, and that the pandemic has brought to the forefront a desire for a more inclusive, equal, and somehow also feminist approach to cities and technologies. We hope that the conversation will continue in this direction, and that “smart cities for city officials” has provided some food for thought and some tools for enhancing the conversations in the working practices of cities and city officials.

GUY BAETEN- Thank you for staying with us in these conversations, we look forward to meeting many of you at the next events of Smart Cities for City Officials. Goodbye!

REFERENCES

Kitchin, R. (2020). Civil liberties or public health, or civil liberties and public health? Using surveillance technologies to tackle the spread of COVID-19. *Space and Polity*, 24(3), 362-381.

Minimal Computing | Jentery Sayers. (n.d.). *Jntry.Work*. Retrieved August 26, 2021, from <https://jntry.work/minimalcomputing/>

Naomi Klein: How big tech plans to profit from the pandemic. (2020, May 13). *The Guardian*. <http://www.theguardian.com/news/2020/may/13/naomi-klein-how-big-tech-plans-to-profit-from-coronavirus-pandemic>