

Smart Cities: Embedding Values into Tech

Implementing the Smart City: An Evening of Discussion

by Felice Ling



Every few months, THE MEME Design hosts a panel discussion in its studio – the latest of which was titled *Implementing the Smart City*. This discussion brought together a group of four panelists, each with their own vision for the “Smart City,” and each with a plan to contribute to its implementation. As the discussion went on, however, the very title of the gathering was shown to be flawed.

To start, what is a “Smart City”? To put it in the simplest sense possible, the consensus seems to be that it involves the gathering of data and enabling some kind of reaction to that data. But to what purpose? To minimize inefficiencies and therefore improve quality of life? To reduce our carbon footprint? To create art?

While none of our four panelists spoke of the Smart City as a thing in and of itself, they did speak of smart city solutions to the specific challenges of urban life: they spoke of utilizing sensors to help elderly men and women maintain independent lifestyles, of helping citizens connect with city employees as they worked to identify and repair public spaces that needed attention, and of helping cities fit better within their natural environments.

One of our panelists, Nicola Palmarini of IBM Accessibility and Research, aptly described this pattern: “The Smart City is a consequence.” It is not a goal but an attempt to solve the problems that manifest in concentrated, urban spaces. Nicola went on to explain, “We’ve been talking about smart cities in the last seven, ten years because one of the mega-trends was people migrating to urban centers.” In that sense, the Smart City is this generation’s attempt to address the challenges of densely-populated city life.

Which brings us back to that imprecise title of the event. To “implement” the Smart City is to assume that the smart city is an end in itself, as a target (or at least the next destination in the journey of modern civilization) that we are all surely but slowly marching towards. While that story makes for good marketing, the reality is not so straightforward nor certain. Today, the components of what is termed the “smart city” is being constantly negotiated and renegotiated. What drives these negotiations isn’t a single vision of the ideal Smart City; instead, the Smart City (whatever it ends up being) will be built from the particular problems and challenges faced by its inhabitants.

So, to follow Nicola’s line of thought, and to better understand how the the Smart City in itself isn’t a goal but, rather, a consequence of real challenges, we’ll look into the example of Soofa. Jutta Friedrichs, Soofa’s co-founder and another one of our panelists, pointed out that the Soofa bench “is one of the few manifestations that you can touch and talk about” because “otherwise, [the Smart City] is a very abstract concept.”



Soofa's smart bench uses solar energy to give urbanites easy access to power and wifi.

Capturing the Smart City in a Smart Bench

Cities are spaces that are teeming with billboards and canvassers, garbage trucks and dumpsters, traffic cops, panhandlers, traffic lights, buses, pigeons, taxis, bicycles, people, people, people, and more people.

With all this going on around us, the only way to remain productive is to filter it all out, to completely ignore most of the things that we see [1]. As such, there are places in the city that matter more to us than others: where we live, where we work, where we kick back and relax... but the rest of them are just routes between destinations. We rush through public spaces in order to get to the places that actually matter.

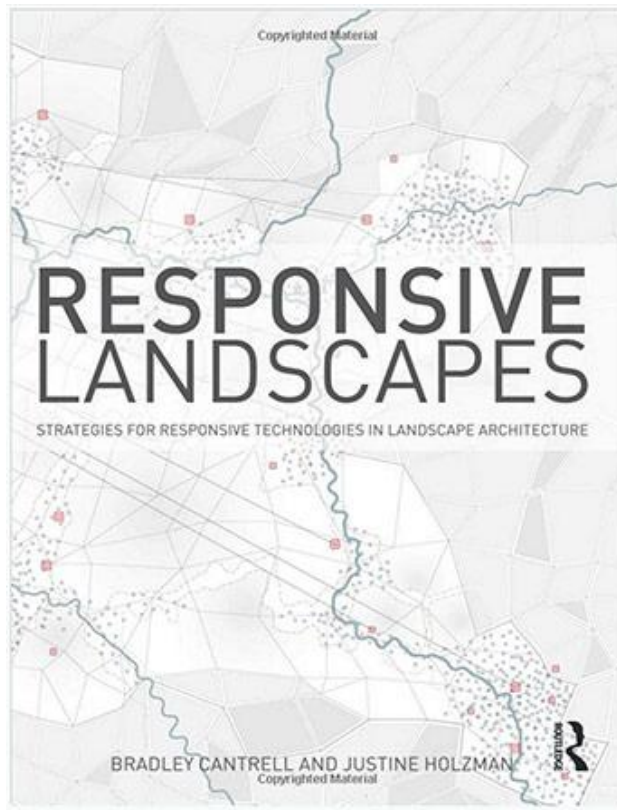
It is in this context that Jutta and her co-founders saw an opportunity to change how we use our public spaces; they saw the potential to transform these 'routes between destinations' into destinations in and of themselves. She declared that, by moving into cities, "we had given up our backyards. Now I think it's time to explore the city as our new backyard again."

That's where the Soofa bench comes into the picture. Each of Soofa's smart urban benches collects environmental data and provides power outlets to enable passersby to charge their phones. That's their purported value, but their real value – at least to the challenge at hand – is that they give passersby a reason to linger.

Soofa benches, since they have launched in Boston, have facilitated conversations between strangers looking for a place to charge their devices; with the plugging-in of speakers, they have become entertainment systems and engaged people in the way that only music does; and they have even been used as a source of power for scoreboards at public basketball courts to turn a game between locals into a spectacle for an audience.

"Giving people the tools to really engage in a public," Jutta said, "creates a different kind of community that can be sustainable, that can take care of itself." While interactions around the Soofa bench may not result in lifelong friendships, they are a step towards getting people to identify with one another as a kind of community.

Given the tendency of city environments to breed an attitude of indifference or anonymity among its residents, that's a big step. The Soofa bench, then, is an attempt to solve a problem that already exists in the city.



Bradley Cantrell co-authored *Responsive Landscapes* in 2016 to look into the role that technology might play in molding our landscapes.

Why are we still talking about “Smart Cities”?

If we are moving away from the the idea of the “Smart City” as an end in itself and talking about it as a means towards a solution, why are we still talking about the “Smart City? What makes the “Smart City” so compelling?

The argument here is twofold. One: the technologies of today are flexible in a way that they haven’t been before. Two, and this is crucial: that flexibility is nonetheless limited by a set of choices that we as a society have made in the past and will make in the near future.

To the first point, Jutta’s description is eloquent: “Here you’ve got concrete blocks that don’t move, and here you’ve got technology that just evolves so quickly. Maybe we can use tech to think about how to program the city in a more dynamic way.” There is thus a quality inherent to the technologies of today that contrasts sharply with the “concrete blocks” of yesteryear. If a solution to a challenge isn’t working, the effort needed to update code is far less than the effort needed to knock down a physical structure and start again from scratch. On top of that, a human doesn’t necessarily need to be present to change the code; we are at a point where our technology can take in data, make a decision with little human input, and essentially tackle problems on its own.

Panelist Bradley Cantrell, Associate Professor of Landscape Architecture at the Harvard Graduate School of Design, follows this line of thought to its larger implication: “Technologies aren’t static. They’re constantly evolving. It’s more important to react, in that sense, then try to come up with the ideal solution.” In other words, instead of planning everything and launching the Smart City all at once, individual components can be tested and connected with one another at the moment when that connection makes the most sense. When new challenges arise or new technologies come into the picture, the flexible nature of technologies allow us – or it – to reassess and change course as necessary.

But that flexibility only goes so far – and that brings me to my second point: there is a countervailing force to be taken into consideration. While technology is far easier to update and change than concrete blocks, so much goes into each decision to connect one thing with another, that as more and more “things” become connected, that flexibility diminishes. In other words, decisions behind how “things” are connected, who connects them, how that connection is accessed, why certain “things” are connected and others are not... all of these choices build off of one another, creating a version of the “Smart City” with very distinct characteristics that will be difficult to un-make.

In using smart city solutions to address today’s urban challenges, we are thus simultaneously making what sociologist Paul Starr calls “architectural choices” [2] that will impact our ability to tackle tomorrow’s problems – and therein lies the reason for the hubbub behind both the Smart City and the Internet of Things. “Architectural choices,” after all, “are often politics by other means.” [3] What is at stake is an entire approach to how we will solve urban challenges in the future. Today, we spend our time developing apps that promise to do just that. The debate for tomorrow is over what the “apps” of the smart city will look like.

As such, to say that the “Smart City” isn’t a goal in and of itself is not to diminish its value but, rather, to recognize that, with each choice we make, with each smart solution that we test, we are building the groundwork from which future innovations will extend. While the sky may be the limit, it’s important to consider which sky. In this way, each city is constructing the character it will have as it becomes progressively more aware.



At IBM Accessibility and Research, Nicola Palmarini utilizes new technology to increase accessibility for the elderly and those with disabilities.

How Values are Reflected in Technology

The choices we make with regards to the “Smart City” are not simply questions about form. Embedded in each smart city innovation is a series of decisions that reflect our values as a society.

After all, discussions around what platform to use, where data should be stored, or who has access to that data aren’t simply conversations about logistics. They are, instead, debates over issues of privacy, transparency, security, and – as we go deeper – over values like fairness and equity.

Panelist Nicola Palmarini spoke about how these debates over otherwise abstract topics materialized, for him and his team at IBM, when he worked on creating technological solutions for Italian seniors living alone in Bolzano. The seniors who participated in the project enjoyed the sense of security that new technology afforded them; they could live independently knowing that, if something were to go wrong, someone would check in on them. However, while they valued that sense of independence, they wouldn’t adopt any technology that they felt intruded into their private lives. Nicola explained what that meant for him and his team: “We were trying to hide all the technology we could... [so that we could] preserve a little of [their] privacy.”

The solution that they finally designed did both: it gave the seniors a sense of security and independence while preserving their privacy. “Instead of cameras,” Nicola explained, “we were able to [use carbon dioxide sensors to] detect if someone was alive or not.” Such discussions guide designers away from the most direct solutions (i.e.,

cameras) and towards other creative solutions that better align with people's values.

Beyond the Human Experience

But whose values? Or, as Panelist Bradley Cantrell might say, what's?

Bradley raised a question that shakes the foundations of so-called "human-centered" design: how central should the human experience be to the design and running of smart cities? "Everyone is talking about people as the center of [the Smart City]. In some sense, a lot of the work we're doing decenters humanity from the equation. Humanity's just one actor in a whole set of other things."

For instance, if cities get to a point where they can manage themselves, shouldn't a city's relationship with the surrounding environment also come into play? And what is more efficient for the human denizens of a city may not be what is best for the surrounding habitat. There is, in essence, a negotiation of values – not just human values and how people fit into cities, but also the city's values, and how the city fits on the planet.

That said, Bradley doesn't see these negotiations as a wedge that will drive us apart. "There's an idea that all of these technologies can bring us closer to other species and other habitats.... It's about letting those boundaries be a little closer."

THE MAYOR'S OFFICE OF NEW URBAN MECHANICS



Kris Carter works with his team at New Urban Mechanics to put Boston at the cutting edge of civic innovation.

Negotiating Values

But Bradley will have to compete with a myriad of other visions. Even without taking into account how a city can act to benefit a river or a neighboring forest, there are already disagreements among human actors over their values as a society.

Take, for example, debates over access: Is equitable access to smart city solutions so highly valued that it should be treated as a public good and therefore managed and distributed by the government (like utilities, the mailing service, and transportation systems sometimes are)? Or is the entrepreneurial spirit the driving force here, and innovations should therefore be protected and sold as such (ala patents and copyrights)?

As these debates and others like them rage on in panel discussions, blogs, and other forms of media, it is also playing itself out in the marketplace. After all, some smart city products succeed whereas others falter.

Panelist Kris Carter (Co-Chair, Mayor's Office of New Urban Mechanics at the City of Boston), for instance, spoke of his capacity as a government official to partner with different startups in order to create innovative smart city solutions.

"We are constantly pushing, whenever we work with a company or partner, to make that data open," he explained. "That's sorta fundamental to who we are." Given this value for public access to data, Kris concluded with an example of what happened once when a potential startup partner offered the city a valuable service – but in return, they would be asked to make their data unavailable to the public: "We had to walk away from the project."

This conflict is ongoing and never clear-cut. Kris used another example to discuss the intricacies of such decisions: "You have to weigh – what's more important? Redesigning the streets for pedestrians or [a real estate company] seeing the public data and jacking up the rates because of it? Sometimes you gotta trade off to get your worth."

Bradley Cantrell, however, exhibited some optimism when he pointed out the potential of Smart City technology to help us work through these conflicts of values: "With values, I think they evolve. They meet a set of necessities we have as a society. And so this idea that technology is... flexible enough to take on a range of values is the key."

"It's just about change."

If our architectural choices are dependent on our values as a society, then we shift once more away from the technology and the capabilities of the "Smart City" and back to those (human and non-human actors) who must engage with cities – to their problems and their values. By focusing on the experiences of urban actors, and by thinking about the Smart City not as an end in itself but a means of solving problems, we arrive at an entry point through which we can improve upon the experience of urban life: piece by piece.

Through this piecemeal method of urban innovation, the technology eventually gains a life of its own that is far larger than the sum of our problems. When enough objects are connected, and a city becomes "smarter," all those little decisions we've made that reflect our values will manifest in the larger "personality" of the city.

In the meantime, Bradley sums everything up nicely: "Rather than thinking that everything can be thought out beforehand, many of these technologies gives us a way to act, to monitor, to confirm. These small apps allow us to iterate. It's not about large-scale change. It's just about change."



From left to right, Jutta Friedrichs (soofa), Carlos Cardenas (THE MEME), Nicola Palmarini (IBM Accessibility), Kristopher Carter (New Urban Mechanics at the City of Boston), and Bradley Cantrell (Harvard GSD)

[1] See Simmel, Georg. 1903. "The Metropolis and Mental Life" In *The Blackwell City Reader*, edited by Gary Bridge and Sophie Watson. Oxford and Malden, MA: Wiley-Blackwell, 2002.

[2] See Starr, Paul. 2004. *The Creation of the Media: Political Origins of Modern Communications*. New York: Basic Books.

[3] *Ibid*, Page 6