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The Digitalization of Cities: Sketching a Future Urban Scenario

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The recent history of urbanization has evolved quite contrary to common expectations. In the 1990s, scholars speculated about the impact of the ongoing digital revolution on the viability of cities. The mainstream view was that, as digital media and the Internet had killed distance, they would also kill cities. Technology writer George Gilder proclaimed that "cities are leftover baggage from the industrial era" and concluded that, due to the continued growth of personal computing, telecommunications and distributed production, "we are headed for the death of cities."

As it turned out, not only did they survive -- cities are now undergoing the largest scale of growth in human history, with more than 60 percent of the world expected to live in urban areas by 2020.

Yet, digitization has a profound effect on cities. Small and distributed computers have become an integral part of our lives. With the ubiquity of wireless connectivity, they now recombine with our physical environment. Information about urban conditions can be captured in real-time, processed, and fed back into cities, enabling new ways to monitor, understand, and impact them. These transformations are on their way to revolutionize urban life; from the analysis of traffic and energy consumption to citizen empowerment and participation.

We can illustrate this change with an analogy to the world of Formula One car racing. Until recently, success on the track had been primarily credited to the car's mechanics and the driver's capabilities. But then telemetry technology evolved and the car was transformed into a computer that could be monitored in real time by hundreds of sensors; it became "intelligent" and better able to respond to the driver's conditions, the car, and the race in general.

If cities are becoming like 'computers in the open air,' we can start to program them so that they become more sustainable, and cater better to our needs. The introduction of data flows and analytics can allow systems to synchronize better and improve their management in a top-down manner. At the same time, new technologies empower the somewhat chaotic, bottom-up processes of individual initiatives and citizen engagement through a new capacity to self organize. All this presents an opportunity for broad-based participation, at an unprecedented scale, in the shaping of urban life.

But how do we go about this? Cities are complex. Spaces and fluxes of people, vehicles, goods, resources and many other things overlap and interact; continuously giving shape to the concert we call the city. This complexity has played an important role in forging the multidisciplinary nature of the field of urban studies and planning as it evolved over time. Now, throw computers and data flows into the mix. While the opportunity at hand seems vast, it poses challenges as it calls for the development of new sets of skills and approaches so we could harness it in an optimal and sustainable way. For example, city hall employees need to learn about digitization and data analytics, while architects begin to design apps, and computer engineers find applications in urban scenarios for the development of new technologies while learning to adhere to measures of socioeconomic equity and public safety.

As the emerging fields in urbanism develop collaborative approaches, new methods of research and experimentation are also being introduced. Government organizations work with industry members and academic researchers together with city inhabitants toward the deployment of demo-projects in the city, outside the controlled environments of the office or the lab. Aside from enriching projects with real-world context, this stages an important public debate about the possible implications of different types of urban interventions.

From a practical standpoint, working in teams with such multitude of expertise and constituencies may sometimes yield merely incremental progress rather than new and unexpected ideas. However diverse a group is, the unexplored nature of this field of work suggests that some expertise will be lacking. More importantly, as Buckminster Fuller once stipulated: in a synergistic system the behavior of wholes is unpredicted by the behavior of parts. Inspired by this idea, when we began to develop projects at the Senseable City Lab, rather than piecing together solution around a problem, we decided to try the reverse. We begin by sketching a future urban scenario by identifying trajectories of technological and socio-cultural developments. Then we work back to figure out what problems and solutions might arise in such future scenario as well as what are the scientific and engineering grounding that needs to be in place for its realization.

This post is part of a series produced by The Huffington Post and The New Cities Foundation, to mark the New Cities Summit in São Paulo, June 4-6, 2013. The summit highlights what works to solve the great urban challenges facing all cities. For more information on the New Cities Summit, [click here](#).