> Clemens de Olde

Urbanism in a digital reality

> About the author

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As urban researchers, professionals and policy makers we should take seriously the digital reality we now live in. Urban studies and practice all too often remain locked in a view that considers technology as a single new variable influencing urban life. In order to increase policy impact and research relevance we should conceive of the urban as the integrated domain of humans and technology. This essay explores concepts and directions for doing so.

A few years ago a meme did the rounds on the internet. It represented Abraham Maslow's classic hierarchy of needs with WiFi added as its base. As it spread quickly, variations on the theme appeared, replacing WiFi by internet or adding battery as an even more basic level.

Figure 1, Maslow's updated hierarchy of needs - Image: the author

The meme can be taken as a witty critique of the dependency of many of us on wireless connectivity, yet it can also be interpreted more seriously as a sign of a fundamental change in our human condition. For in the past decade-and-a-half we have entered a digital reality where we can no longer view smartphones, sensors and all the possibilities of contemporary digital technology as mere tools serving the species. Rather, they are remaking the species.

> A digital reality

The theme of the 2016 World Economic Forum (WEF) is indicative of digital reality. It was dedicated to the fourth industrial revolution "characterised by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres" (Schwab, 2015). Among many others, there are huge opportunities for urban application of this increasing integration. 3D-printed smart building materials are being developed with integrated sensors that detect heat and moisture. Other such sensors track motion and inactivity to keep us appraised of the situation of the sick and elderly. We are already used to fully automated dynamic traffic signage systems that point the quickest route to a free parking spot. These systems can also reroute traffic at particularly congested moments to keep air quality at safe levels. In the course of 2016 a number of virtual reality headsets will hit the market that besides gaming applications have relevance for urbanists as well. They allow

urbanists and end users to walk through a design before the investment is made of realising it. Finally, various forms of e-government have the potential to make city life easier.

Digital reality also holds a number of serious threats however. Digibesity is the fashionable term introduced to describe the almost perfect integration of new technologies that keep us constantly distracted in professional and leisure contexts. Robotisation may lead to the evaporation of jobs, the massive loss of purchasing power resulting in economic crises and social unrest. The addition of a new axis of technological exclusion to the growing divide between rich and poor may hamper "(…) possibilities of political engagement, participation and activism of citizens; limit equal access to information; and restrict citizens from being fully included in the public life." (Mariën and Prodnik 2014)

Figure 2 Ubiquitous surveillance: the Rio de Janeiro operations center - Photograph: Sam Churchill (2014)

One of the most chilling threats is that of lethal autonomous robots that make life or death decisions without human intervention. Once the stuff of science fiction films, these are now in full development by military forces around the globe. The UN was called on to instigate a ban on such devices by two of its special rapporteurs and an international 'Campaign to stop Killer Robots' has gathered support from major NGOs, engineers and scientists. These robots and other applications of urban warfare, as well as ubiquitous urban surveillance, are well described in the domain of surveillance studies. (Graham 2011, Murakami Wood and Webster 2009).

The fact that the recent World Economic Forum was dedicated to these opportunities and threats indicates that they do not remain on the fringes of society's attention. And even if we turn from the 'haves' at the WEF to the 'have-nots' on the seas of the Mediterranean, we see refugees entering Europe with little more than a smartphone. Poignant as it may be, this is illustrative of the importance of being connected when you have lost almost everything else. (Djuhari 2015)

> Just-in-time urbanism

A thought experiment may serve to illustrate the need to rethink the urban public domain in digital reality. The unexpected has always been an essential element of city life. Now the urban is being digitised as well, leading to a form that I call just-in-time-urbanism (JITU). The JITU-view builds on the logic of the Internet of Things where many devices possess sensors, have computing capabilities, and are connected to each other via the internet. Combined with Big Data's predictive statistical capabilities we can theorise that these characteristics open up the way to tailor the urban experience as-we-go. A current example is dynamic forms of crowd control during large-scale events, but one can also imagine optimisation of a regular weekend shopping trip.

Imagine you are guided along a path of shops most likely to catch your fancy. There is no need to find your way by constantly looking at your smartphone, a heads up display (HUD) on your Google/Samsung/Apple glasses or bionic contact lenses simply points the way. The selection of shops is based on previous visits or on what others with profiles similar to yours have liked. Since it might be busy, the path can be dynamically altered as you go to avoid large crowds, an improved version of the existing dynamic traffic directions. When you're feeling tired, hungry, or thirsty, suggestions for cafés are available through a single voice command. Again, these are based on previous choices and profiles but there is always the possibility of selecting an 'I'm feeling lucky' option to break out of the box of likely suggestions – or at least have the impression you are doing so. At least you will never find yourself at a closed establishment again since opening times and seating options are automatically processed in generating the choices available. Seats, of course, can be immediately reserved once you reach a decision. During your trip you might receive personalised offers on your HUD. Some urban screens now already detect the type of audience to show tailored ads, once the consumer can be reliably identified and targeted this will radically increase the potential value of advertising. And if a certain size is out of stock, you will immediately be able to see whether the branch a few streets down might still have it so you can go there to pick it up or have it

delivered by drone to the boot of your car while you continue your trip. When you're tired and almost ready to go home you call your self-driving car to come and pick you up. It won't take long since it has tracked your progress and already moved to a parking spot nearby.

The JITU-perspective proposes a view of a dynamically generated urban experience and it is important to stress that none of the individual elements of this thought experiment are imagined. Some of the technologies are mainstreamed already and others will be widely available within the space of a few years. Shopping was chosen as an example but similar perspectives can be applied to taking a heritage tour or a sightseeing trip. Will JITU mean that, as in its inspiring model of just-in-time manufacturing, there is hardly any 'stock' of urban experiences left? That seems unlikely as there are always sufficient bids for attention in the urban environment. Conversely, a business model may actually develop based on time spent in completely unconnected domains that are free of sensors and wireless connections, as can already be seen in some coffee shops banning laptops.

Yet this connected and adaptable urban environment also precludes some experiences. Perhaps what is getting lost, is getting truly lost. The aimless wandering and discovery of the urban experience and its 'uses of disorder'. In line with some of the threats identified above we should also consider the position of those who cannot afford the hardware or those who are simply content with things as they are. If anything is to be learned here, it is that we need the conceptual tools to think through the developments that characterise urbanised digital reality.

> *New concepts for digital reality*

Contemporary social theory increasingly jumps the boundary of online and offline reality to consider humans and technology as interacting elements in a single system. It is from these studies that we can draw inspiration for new analytical perspectives on digital reality. A first concept is that of 'net localities'. These designate the interlinkage of digital and material realities such as navigation systems, geolocation-based games, and Quick Response matrix barcodes to instantly call up more data on the urban environment that confronts us. Net localities are described by Gordon and Souza e Silva as '(…) a cultural approach to the web of information as intimately aligned with the perceptual realities of everyday life'. They continue: 'We don't enter the web anymore; it is all around us' (2011). While the authors retain a conceptual division between humans and technology, the concept of net locality serves as descriptor of how technology increasingly interacts with and changes our lives.

Sociologist Nathan Jurgenson takes a step further in proposing the term 'augmented reality' to theorise the integration of the online and offline worlds. He argues 'that digital and material realities dialectically co-construct each other' and therefore have become enmeshed. This is the opposite of what is termed 'digital dualism': the point of view that considers the online world as virtual and the physical world as real. In Jurgenson's opinion digital dualism still pervades much of social science that focuses on the influence of technology on human relations (Jurgenson 2011b, Jurgenson 2011a, Jurgenson 2009).

If indeed digital and material realities need to be thought as one, the notion of 'Assemblage Urbanism' that has recently circulated in urban studies proves a viable way of doing so (McFarlane 2011, Farías and Bender 2009). Assemblages can be defined as multiplicities of heterogeneous human and non-human components in a temporarily stable composition. These are networks in which the component elements mutually define each other. As in other theories employing a network perspective, assemblages always remain fluid to a degree. In assemblage urbanism it's processes of becoming that matter, rather than fixed states. While the assemblage concept may seem rather indeterminate at first glance, structure can be found in myriad forms, for instance through power balances, the flow of information or distributions of resources (McFarlane 2011). These structures are not presupposed however, but unpacked as the analysis takes shape. Brenner et al summarises: "As urban theory, assemblage thought asks how urban 'things' – including, quite appropriately, the urban itself – are assembled, and how they might be disassembled." (Brenner et al. 2011).

Since its focus is on investigating networks made up of heterogeneous human and non-human elements fused in 'a relational process of composition', the urban assemblage approach is exceptionally suited to investigate digital reality (McFarlane, 2011). Returning to just-in-time-urbanism we could apply urban assemblages to make sense of this thought experiment. By considering the shopping trip as a particular assemblage we can look at the interplay of factors involved in creating this dynamically constructed urban-digital journey. To unpack

the experience the connections of the human (consumers, attendants in shops and cafés, the urban staff, i.e. cleaning and security personnel) and the non-human elements (contact lenses, wireless networks, shop inventory systems, big data sources including consumer preferences, restaurant reservation systems) are analysed. Structure can be found in the commercial interests at play, political dimensions of privacy and the public domain, the flow of information, or considering who exactly uses which options the systems provide.

Figure 3 Pigeon Air Patrol measures London pollution
Photograph: DigitasLBi

Though opinions differ on whether assemblages should be attributed ontological status, at the very least they have the power to open up the human-technological divide that still pervades so much of the urban technology discourse. The Paris-based startup Plume Labs is a further case in point. Monitoring air pollution worldwide, it has recently formed a 'Pigeon Air Patrol' by equipping London pigeons with the same wearable air quality sensors it offers people. The sensor can be monitored real-time via smartphone while other users can view aggregated pollution levels through the site, app, or Twitter and decide when it's safe for certain activities such as running or going out with the baby for a stroll. Though intended as a media event to draw attention to its crowdfunding campaign, the Pigeon Air Patrol illustrates that nature can be an element of urban assemblages as well.

> Updating our visions

Urban assemblages allow researchers, designers and policy makers to think through digital reality beyond a digital dualist view of humans and their technology. If concepts for understanding the urban-digital reality are already available however, it is remarkable that that we see so few of them in visions for urban (re)generation produced by designers and supported by politicians today. Often they are filled with the same tropes about the street as a stage, safe communities and neighbourliness with technology cast in a supportive role. Why is this?

Two reasons come to mind. First, assemblage theory and the other concepts attempting to unify the online and offline environments in one analytical framework are still young, not yet widely canonised into handbooks and course syllabuses. Secondly, assemblage thinking requires a de-centring of the subject in favour of an abstraction. That the critique of the anthropocentric focus of social sciences in Actor Network Theory, from which urban assemblages draws inspiration, is one of its most contentious elements is no coincidence (Law 2009, Latour 1996). Therefore the language of assemblages does not connect naturally to the liberal-humanist discourse present in most urban planning processes and politics in European cities. Stating that a design caters to "optimise the new urban socio-material reality of human-machine assemblages characterised by processuality and emergence" just does not ring the same as stating it wishes to "provide a safe, accessible, and exciting urban environment where everyone can feel at home."

Over the past fifteen years an ontological shift has been realised - is still realised every day. It doesn't make us any less human or any less social, but it presents a new mode of being human with its associated opportunities and challenges. Digital reality materialises in the urban environment and fundamentally reforms the medium through which the public sphere comes into existence. This means that the modern conceptions of ideal public space that still inspire much urban planning and design need to be radically rethought. As European researchers, professionals and policy makers we need to think about this much more than we are doing at the moment. In ever 'smarter cities', there is need for smarter urbanism as well. One that does not just view technologies as at the service of consumer-citizens and does not fall prey to narrow digital fetishism, but as a force that fundamentally changes our dwelling in cities and our social relations so we can look developments in the eye and attempt to shape them in the best way possible.

References

- BRENNER, N., MADDEN, D. J. & WACHSMUTH, D. 2011. Assemblage urbanism and the challenges of critical urban theory. City, 15, 225-240.
- CHURCHILL, S. 7-7-2014. Control_Room_Rio. Published under Creative Commons 2.0 (CC BY 2.0). Picture was converted to grayscale. Available from: https://flic.kr/p/ogQ3bz
- DJUHARI, L. September 7, 2015. Mobile apps are a lifeline for young Syrian refugees. Unicef News [Online]. Available from: https://blogs.unicef.org.uk/2015/09/07/refugee-crisis-syria-mobile-apps/ 2016].
- FARÍAS, I. & BENDER, T. (eds.) 2009. Urban Assemblages: How Actor-Network Theory Changes Urban Studies, Abingdon/New York: Routledge.
- GORDON, E. & SOUZA E SILVA, A. 2011. Net Locality: Why Location Matters in a Networked World, Chichester, West Sussex, Wiley-Blackwell.
- GRAHAM, S. 2011. Cities Under Siege: The New Military Urbanism, London, Verso.
- JURGENSON, N. October 5, 2009. Towards theorizing an augmented reality. Sociology Lens [Online]. Available from: https://thesocietypages.org/sociologylens/2009/10/05/towards-theorizing-an-augmented-reality/ 2016].
- JURGENSON, N. April 29, 2011. Defending and Clarifying the Term Augmented Reality. Cyborgology [Online]. Available from: https://thesocietypages.org/cyborgology/2011/04/29/defending-and-clarifying-the-term-augmented-reality/ 2016].
- JURGENSON, N. February 24, 2011. Digital Dualism versus Augmented Reality. Cyborgology [Online]. Available from: https://thesocietypages.org/cyborgology/2011/02/24/digital-dualism-versus-augmented-reality/ 2016].
- LATOUR, B. 1996. On actor-network theory: A few clarifications. Soziale Welt, 47, 369-381.
- LAW, J. 2009. Actor Network Theory and Material Semiotics. In: TURNER, B. S. (ed.) The New Blackwell Companion to Social Theory. Malden/Oxford: Wiley-Blackwell.
- MARIËN, I. & PRODNIK, J. A. 2014. Digital inclusion and user (dis)empowerment: a critical perspective. info, 16, 35-47.
- MCFARLANE, C. 2011. Assemblage and critical urbanism. City, 15, 204-224.
- MURAKAMI WOOD, D. & WEBSTER, C. W. R. 2009. Living in Surveillance Societies: The Normalisation of Surveillance in Europe and the Threat of Britain's Bad Example. 2009, 5, 15.
- SCHWAB, K. 2015. The Fourth Industrial Revolution: What It Means and How to Respond. Foreign Affairs. Tampa, FL: Council on Foreign Relations.