# Chapter Eighteen: Truly Smart Cities. Buen Conocer, Digital Activism and Urban Agroecology in Colombia

Juan-Carlos Valencia and Paula Restrepo

**Abstract**

This chapter comes out of two research projects carried out in Colombia, South America. One of them, finished in 2017, was called *City of Data*. It was an exploration of government-led, centralized Smart City projects being implemented in the cities of Bogotá and Medellín. The other one, still ongoing, is called *Communication Practices in the Medellín’s Gardeners Network: Knowledge, Territory and Social Fabric.* It is an exploration of knowledge construction, and virtual and real territorialization through grass-roots gardening initiatives in Cali and Medellín. Both research projects had to do with approaches to public data: some ‘centralized’, government-led in the form of Smart City projects and others, more in the form of citizen-led initiatives. We analysed project documents, conducted semi-structured interviews with dozens of officials and citizen group leaders, and carried out participatory research with a citizen collective in the city of Medellín. Our main goal was to analyze government-led and grass-roots-led initiatives producing and managing data to empower citizens in Medellín and Bogotá. Our theoretical perspective comes from Critical Data Studies, Surveillance Studies, Decoloniality and Relational Ontologies. We found very closed and centralized data production practices in the government-led, smart city initiatives studied, but discovered what could be described as promising ‘good data’ citizen-led approaches in Medellín’s Gardeners Network (RHM). We also found some issues and challenges arising from the particular, non-western, highly unequal context of these citizen-led initiatives.

## A Brief Review of Smart City Literature

Smart City projects are being implemented around the world, from Amsterdam to New Delhi, from Los Angeles to Rio de Janeiro. The definition of what a Smart City is differs from place to place, from project to project and between theoretical perspectives. The concept has evolved from a sector-based, corporate or government focused approach to a more comprehensive view that pays more attention to governance and stakeholders’ involvement at the core of strategies.[[1]](#footnote-1) According to some proponents and to optimistic academic perspectives, Smart City projects promise to improve the quality of life of urban populations and, at the same time, to make better use of both tangible and intangible resources and public infrastructures.[[2]](#footnote-2) Networked infrastructures would improve economic and political efficiency and enable social, cultural and urban development,[[3]](#footnote-3) but this would only happen when Smart City projects take all the stakeholders’ opinions into account and seek a compromise between their views and the implementation of the strategies. This literature still believes in Smart City approaches that are government-facilitated but purposefully citizen-centric or even citizen-led. There is a growing emphasis on collaborative economies and innovation.[[4]](#footnote-4) It remains to be seen whether these later approaches fulfil their goals thoroughly and if there are socially successful, really democratic and participative Smart City projects being implemented around the world.

But from the perspective of Critical Data Studies and Surveillance Studies scholars, to whom we feel closer, these projects are based on an illusion of technocratic efficiency and a highly suspicious discourse of digital democratization that hides the economic interests of technology corporations and the designs of neoliberal governments around the world. Daniel McQuillan explains that the Smart City ‘is inscribed by an endless stream of heterogeneous data points that pour from our networked daily experiences’.[[5]](#footnote-5) It marks a shift in government intervention in social space from discrete forms of ‘intermittent and/or specific information-gathering to continuous processes of management based on total and unremitting surveillance’.[[6]](#footnote-6)

Data is produced by citizens even when they are not specifically creating content: their use of public transport cards and public hot-spots, the traffic they generate while driving, the amount of taxes they pay, their consumption of power, water and other utilities, the crimes they report to the police, their location coordinates;[[7]](#footnote-7) all these activities are being translated into data flows that are correlated with other sources of information to manufacture metadata that could be understood as data commons and should be available to all,[[8]](#footnote-8) but that in fact are the domain of government agencies and corporations.

## Top-down Smart City Projects in the Global South

In the Global South, Smart City projects are promoted by resorting to the decades-old myth of Development:[[9]](#footnote-9) traditional societies must embrace new technology and science to finally modernize and join the ranks of developed nations. This myth, denounced by Decolonial scholars and activists such as Esteva and Escobar, dictates that it is necessary:

[…] to take knowledge to an uneducated society under the assumption that the life of citizens is impoverished by the lack of scientific and technological know-how. It is also based on the idea that science and technology are naturally beneficial and are not related to political and economic interests.[[10]](#footnote-10)

But both in the Global North and the South, data collection enables what McQuillan describes as a colonial mapping that extends to our feelings, our physiology and even our faces. For analysts like Kitchin and Lauriault,[[11]](#footnote-11) the data captured, processed and constructed by technologies are never neutral; they are immersed in ideologies and worldviews, and get their meaning in concrete socio-historic contexts, where data serves particular goals. What is considered relevant and significant, and constructed as useful data, ignores the perspectives, goals and concerns of different social actors.

Critical analysts are also concerned about the biopolitical implications of Smart City projects: the increased surveillance, the privatization and exploitation of the commons, the neoliberal necropolitics that data-supported governance could allow, the consolidation of what Lash has called ‘Algorithmic power’.[[12]](#footnote-12) Smart City projects serve ‘the purposes of power, and as the sensors of the smart city see more deeply in to our lives, they colonize the new spaces that they find’.[[13]](#footnote-13) We agree with Colding and Barthel when they propose that Smart City literature and research should include analysis around social sustainability issues for city dwellers, reflect more about whom the Smart City is for, address issues of cultural diversity, resilience and cyber security, and think about the impact of Smart City projects on human-nature relations.[[14]](#footnote-14)

The implementation of Smart City projects differs greatly from place to place, their scopes are diverse, and the uses given to the data and metadata collected are not monolithic and sometimes not even coherent or thorough.[[15]](#footnote-15) This happens both in the Global North where projects and applications fail, are based on racial prejudices,[[16]](#footnote-16) and targeted by special interests, as in the Global South,[[17]](#footnote-17) so diverse and culturally rich, but so uneven, chaotic and plagued by corruption.

Our research of Smart City projects in Bogotá and Medellín analyzed the work of city government agencies and hybrid private and public institutions like Empresa de Telecomunicaciones de Bogotá, the National Police, *Medellin Ciudad Inteligente* and *Ruta N.*[[18]](#footnote-18) It was difficult for us to establish a relationship of trust with governmental or public-private institutions. For example, the Medellín Metro never agreed to give us information, *Ruta N* stopped responding our requests for additional interviews when we refused to organize a meeting of grassroots organizations to have a *Ruta N*-lead conversation about data and collaborative work, and *Medellín Ciudad Inteligente* was dismantled and reorganized soon after our first and only visit. With Medellín’s Gardeners Network we established a relationship that allowed us to get closer to what they were doing, and to also understand the complexity and some of the internal conflicts in the organization. For these reasons, this chapter takes a panoramic look at government and public-private led Smart City projects, but delves much more into a citizen-led initiative, the RHM case.

In the case of government-led Smart City projects our interviews with officials, members of citizen collectives and individuals allowed us to discover a complex situation: conflicts and rivalry between government agencies and institutions result in the misuse of data or in its transformation into abstract figures and charts, confusedly mentioned to legitimize policies and political propaganda. New administrations discard previous and ongoing efforts, dismantle research and policy units and force projects to start from scratch. Sophisticated data that contradicts special interests is ignored or discarded. The capacity to collect and process vast amounts of data overwhelms the capacity of existing political institutions and agents to analyze it and use it. Smart City projects may buy and use complex sensor systems and software but people, working in stressful and contradictory conditions, run them. The Smart City projects that we selected and studied in Colombia seem to be developed in a vertical, fragmented and discontinuous way. They are not citizen-led at all and it is dubious that they could be described as purposefully citizen-centric. At least in the case of a Latin American city like Medellín, the projects are full of contradictions, lack transparency and in some cases become pockets of corruption that benefit corporations and an industry of mercenary international advisers. This does not mean that big data are not used by some government agencies to try to control populations for questionable purposes. We just want to point out that the control grid is not completely sealed.

The government and public-private-led Smart City projects that we selected as case studies largely considered citizens as disempowered, uneducated, disorganized individuals whose capacities and knowledge could be fostered and canalized by the institutions. Some officials considered citizens as a potential threat in case they were given access to public data. They insisted that data could be released to the public only when solid organizations and initiatives emerge, but not before. We understood that they feared that adopting open data policies or even just releasing limited sets of data would give ammunition to their political foes and make government initiatives, agencies and policies vulnerable to partisan, intolerable scrutiny. This was the case, for example, of the Medellín Metro system. It is a public company. We and other researchers and citizen collectives have been requesting access to simple data such as station congestion, peak traffic hours and power consumption with no significant response.

*Ruta N Corporation* considered that citizens could be convened to help co-create solutions to urgent urban problems. Their officials distrust top-down smart city projects that did not connect somehow to the local population and did not take into account their cultural context. They celebrated the fact that at the time of our field work, more than 15,000 citizens of Medellín had become involved in co-creating solutions to city problems, together with *Ruta N,* interacting with officials through social networks and in special events. But nevertheless, it was the agency that played the role of identifying the key problems, recruited citizens to create solutions and recognized them as such.

Another agency called *Medellin Ciudad Inteligente* (Medellín Smart City) has gone through different reorganizations, depending on the local government in turn. When we contacted them in 2015, the agency had become a sort of local news outlet: a group of more than sixty web designers and journalists collecting and publishing information about Medellín and its citizens. They were training people in the city’s neighborhoods in basic internet tools, digital photography and writing, to get them to produce local content. A year later, this goal was abandoned and most staff were sacked. Currently, this is the name of the public internet network of the city, but it is not possible to find an agency with such a name.

## Social Movements, *Buen Conocer*, Good Data and Postcolonial Computing

But are citizens so unknowledgeable about data technologies? Are they unaware of its potentials? Do they lack the organization and ideas to develop alternative, more democratic uses of data? Aren’t they producing any form of *Good Data*?

Most critical approaches to Smart City projects leave little room for agency on the part of citizens. This is why we agree with Couldry and Powell when they argue that ‘emerging cultures of data collection deserve to be examined in a way that foregrounds the agency and reflexivity of individual actors as well as the variable ways in which power and participation are constructed and enacted’.[[19]](#footnote-19) As mentioned, our research also focused on citizen strategies for building alternative economies of information. We tried to underscore human agency in relation to data and technology.[[20]](#footnote-20) We did find pockets of resistance to datafication but more interestingly, we came across some urban collectives fighting for the release of public, high quality, socially relevant data. These citizen organizations create communities of resistance and action that demand open data and transparency from public administrators. They also strive to achieve different forms of technological appropriation, the creation of citizen technologies, the production of *Good Data* and the constitution of networks that materialize new forms of communality and become spaces of collective intellect. They demand that government proposals be ‘based more on bottom-up approaches in which cities provide access to data and allow citizens to make their own decisions’.[[21]](#footnote-21)

Their efforts are creating more diverse Smart City projects from the bottom up and could be understood as what some theorists in Latin America are describing as *Buen Conocer*, ‘an interesting process of creative collaboration, ‘significant collective intelligence’ that mixes knowledges, avant-garde challenges and contextualized solutions to everyday realities’.[[22]](#footnote-22)  Some Global South digital activists are engaging in what academics have called Postcolonial Computing:[[23]](#footnote-23) a way of creating software that is critically aware of its context of production and its power relations, not as something to ignore or solve technocratically but as a reality that must be taken into account. They propose a shift from expert designed software and privatized, capital-enhancing data that fundamentally follow the prescriptions of corporations and the Eurocentric worldviews of IT specialists[[24]](#footnote-24) to community designed software and open data that benefits all, humans and non-humans. Truly Smart Cities would operate from the bottom up, taking into consideration the well-being of all, humans and non-humans. They work based on the Marxist idea that general [social knowledge](https://en.wikipedia.org/wiki/Social_knowledge) has become a direct [force of production](https://en.wikipedia.org/wiki/Productive_forces). Truly Smart Cities could only emerge from citizen-led, communitarian efforts, an expression of the general intellect arising from social practice, of the real life process.

## Red de Huerteros Medellín

We will focus now on the work of an independent network of urban agriculture, the Medellín’s Gardeners Network (Red de Huerteros Medellín or RHM for its initials in Spanish). First we will offer a brief description of Medellín, the context where this citizen-led initiative operates.

Medellín is the second largest city in Colombia. It has been an important industrial hub since the early 20th Century. Textile, chemical and plastics factories were established in the area. The population rose from 358,189 inhabitants in 1951 to more than 2.5 million in 2017, a sevenfold increase. The industrial sector has taken a hit due to competition from Asia, but factories still operate in the city, many of them with poor waste and pollutant management practices. Cars and motorcycles overflow the streets and this, together with large migration from the countryside and a construction boom, has resulted in a serious environmental crisis. Air pollution has triggered alarms frequently since 2017. Furthermore, Medellín, like so many cities around the world, has been experiencing an increased symbolic and material privatization of space. The dangerous levels of air pollution, the persistent violence and real estate speculation generate visible and invisible borders and deepening socioeconomic gaps. But the city has also become a pocket of environmental resistance, where various citizen collectives are pushing for alternative ways to manage urban space, denounce and monitor air pollution and criticize the felling of trees.

The RHM is a citizen collective that emerged around 2013 at the initiative of residents of central-western Medellín. They started orchards in their terraces and front yards, and later in abandoned buildings, sidewalks and parks. The members of the RHM come from different backgrounds, professions, genders and economic conditions, but share the goal of making Medellín greener. With the passing of time, the network grew and spread. Interest in different forms of urban agriculture, strategies to manage organic waste, concern with the quality of food, the survival of bees and other insects, the defense of traditional, non-genetically-modified seeds, the control of air pollution and urban soil contamination by heavy metals and the strengthening of communities became topics of discussion and action. Some members consider that despite the examples of Cuba[[25]](#footnote-25) and Argentina,[[26]](#footnote-26) urban agriculture cannot fully supply the demand of such a big and polluted city as Medellín. But they want to do something, they want to learn, meet and take action.

The Network has been growing gradually, adding various parts of the city and connecting with people around the world. It has turned its original urban planting and gardening activities into spaces of social articulation, construction of commonality and knowledge dialogues.[[27]](#footnote-27) They use different communication means to organize their activities, to foster social links in a city with so many scars dating from the years of drug cartel wars and the many conflicts of Colombia. The Network organizers do not know exactly how many people compose it, but current membership in the RHM Facebook group tops 6800 people. Like any network, the RHM is composed of nodes and relationships between them. Some of these nodes work to keep the network well connected, while others are dedicated to maintaining their individual and group projects. In this way, the RHM is not a homogeneous structure. However, there is a node that calls itself the base group, and that has more or less homogeneous intentions, articulated in a Manifesto called ‘Sowing Sovereign and Solidarity Worlds’.[[28]](#footnote-28) Some of the nodes are aware and subscribe to the ideas of the Manifesto, others do not know it, do not understand many of its ideas or do not fully subscribe to them. When we refer to the network of ‘huerteros’, we refer then to the base group and the activities that it develops in articulation with other nodes and grassroots organizations.

## Territory, Data and Relational Ontologies

One of the sections of the Manifesto refers to open data and free knowledge, and states: ‘We promote the use of open data, software and free knowledge without barriers as a way to transform culture, to grow as a society and to rescue the community values of collective sharing and doing’. This section is articulated with others related to the Earth as a living organism, food autonomy, food as a political act, agroecology as practice and as social movement, free seeds, food diversity, territorial connection through the activity in the gardens, creativity, community learning, collaborative work for the common good, rural-urban solidarity, conscious consumption practices, re-use of organic waste and bicycles as a form of transport.

The members of the Network reject the understanding of territory as just a commodity. Urban planning views the city as a place for the realization of Capital through real estate projects and other actions aimed at stimulating economic growth and development, regardless of their consequences. The RHM is involved in an ontological struggle that takes place in the urban space.

Proponents of an ontological turn in the Social Sciences have been largely focused on exploring alterity in Indigenous and to a lesser extent Afro-descendant communities, but following Marisol de la Cadena,[[29]](#footnote-29) we consider that we can analyze the dynamics of some non-Indigenous and non-Afro-descendant urban actors as ontologies. De la Cadena puts on the table the dispute between those who seek to preserve ‘the networks of emplacement that enable local life’ in their dynamics of action (or enaction as Escobar, following Varela, explains),[[30]](#footnote-30) and those who destroy them while converting territory into immaterial assets that support financial speculation[[31]](#footnote-31).

For the RHM the urban territory is a *network of emplacement*.[[32]](#footnote-32) The Network views the city as a melting pot where it should be possible to rearticulate the social fabric and where human and non-human actors could coexist. Furthermore, the city cannot be understood in isolation from the surrounding countryside that supports it. For these reasons, the RHM is constantly developing initiatives that connect people, non-humans and spaces with the goal of protecting the environment and the life that inhabits it.

Resistance to economic and political power arises from micro-territories inhabited by active, empowered communities. While knitting a micro-territorial network,[[33]](#footnote-33),the RHM is trying to redistribute power and to replace a hegemonic mercantilist vision with a different set of relations between the environment, urban nature and people. The activities that allow these micro-territories to intersect and overlap also occur in virtual spaces; but virtual interventions in social or personal spaces are necessarily guided by the real contacts occurring in material, defended territories. These contacts catalyze the virtual interactions.[[34]](#footnote-34)

The RHM has been slowly redefining space through a combination of various activities: bike tours of the network’s gardens, communitarian activations of gardens, workshops and organic waste management. But to direct and support their *guerrilla gardening*,[[35]](#footnote-35) territorial appropriation and social fabric enhancing activities, the RHM has been increasingly collecting, producing and using what could be called *Good Data*. The Network considers citizen-produced, not for profit data as a key element in the dispute over the urban territory of Medellín. Data such as the location coordinates of gardens, their dimensions and crops, the people taking care of them, their waste management initiatives, the productivity and the local suppliers of agroecological products that reinforce the ideas of the RHM are being stored in open source, free software systems. A few members of the Network with computer programming knowledge manage these applications. They are currently using tools such as OpenStreetMap,[[36]](#footnote-36), Mapillary, OsmAnd and OSM Tracker. They designed a platform called Tupale, totally open and free, that has become the computer base for the work of the Network.

The RHM resists data manipulations that create a world in which humans are opposite or outside nature and are in permanent search for its domination. In this sense we can speak of an articulation between territorial networks, data and worlds (ontologies) defended, appropriated and lived.

Besides its commitment to food sovereignty, the redesign of cities, agroecological food production and reduction of the carbon footprint, the RHM is also turning orchards into multifunctional spaces of social articulation, construction of communality and knowledge dialogues.[[37]](#footnote-37) Some members of the Network create applications designed with free software to store information about their activities, agroecological techniques and databases of the gardens that they are establishing in public and private spaces, through social mapping tools such as OpenStreetMap.[[38]](#footnote-38)

The Network members have grown increasingly conscious of corporate and government data mining and undemocratic, technocratic Smart City initiatives and have switched most of their communications to highly encrypted platforms like Telegram. Yet, the RHM is very active in Facebook as this platform is widely used in Colombia and it allows new nodes, gardens and people to connect with the Network. Google applications are also used but the long-term goal is to have all the Network activities based on open source, free platforms, not only to store information but to create *Good* metadata and visualizations to communicate the RHM activities and objectives.

However, sometimes, the open data and the other ideas of the RHM’s Manifesto collide or result in contradictions. Since there are few members of the RHM who possess the knowledge to follow the rules of free software and open data, the registration of activities by other means such as forms or Google email account end up being the most expeditious and effective way to advance the work. The difficulty of using messaging programs that are more respectful of open data such as Telegram, has ended up causing the communications of the base group to be re-channeled via WhatsApp at the suggestion of the majority. This generates frictions between different members of the group. We identified three factions that are frequently disputing: those closest to the discourse and the technical knowledge of open data constantly try to convince the others of the dangers of proprietary and of the benefits of migrating to computer tools that respect privacy; the less informed often do not understand the discussion and do not participate in it; a third faction which is quite informed about the principles of open data but pragmatically wishes the work to continue and thinks that sometimes open data principles have to be sacrificed to obtain results.

Although the goal is the free circulation of knowledge and a strong articulation of do-it-yourself, maker cultures, the reality is complex. The defense of open data, the fear of corporate and government data mining and the design of free and open platforms all demand specialized knowledge. The hacker and maker culture ethics assume that a large number of people are autonomous and knowledgeable, that they never use and do not trust private platforms despite the fact that they are tried and tested and very user-friendly. However, the level of expertise required to produce, update and maintain free software applications and visualization tools is high. Data activists in the Global South develop apps in contexts of extreme inequality and job insecurity. They are volunteers working in their scarce spare time, and their activism collides with the normal work they do, the one that allows them to make a living. Sharing their knowledge with other activists and training more of them is very difficult. These conditions close the door to greater participation of other volunteers and the public. Therefore, technology remains a domain of experts and maintains an air of complexity and inaccessibility. This is why the creation of apps and the production of *Good Data* at the RHM are still in the hands of few people.

The Network is currently exploring the development of sensors and applications that could be categorized as forms of participatory sensing,[[39]](#footnote-39) citizen data collected by citizens and used by them in a decentralized way for democratic purposes. They are counterpoising commonality to markets and self-governance to distributed assimilation.[[40]](#footnote-40) Besides promoting food self-reliance and commonality in urban spaces, the Network is contributing to the creation of data countercultures that challenge the mainstream readings of reality produced by Smart City projects.

## Final Thoughts

The *Good Data* produced by the RHM is transforming the vision of the city for its members. Paraphrasing Milan and van der Velden,[[41]](#footnote-41) data activism supports the new visibility of alternative epistemic cultures and ontologies present in Latin America, making sense of data as a way of knowing the world and turning it into a point of intervention, from the bottom up. The cartographies being created, shared and commented contribute to *enact* a world that clearly differs from that lived by entities such as *Medellín Ciudad Inteligente* or *Ruta N*. In this other world, humans are not outside nature, they are not striving to dominate it. This is why we speak of an articulation between territorial networks, data and worlds (ontologies) defended, appropriated and lived: of truly Smart Cities.

This discussion and our enthusiasm for the results of our research do not mean that we are not finding contradictions and challenges. Not every member of RHM is aware of the risks of datafication, of the privatization of seeds by corporations, the colonization of space by real estate developers and the monopolization of knowledge by governments. In this kind of urban social movements, there are different discourses in different layers and nodes. The Network’s purpose and actions are understood differently by its members.

We also conclude that hacker philosophy and ethics must be read with a healthy dose of skepticism in order to develop more realistic approaches to citizen technologies that produce and use *Good Data*. Social movements attempting to follow maker culture ethic manifestos to the letter could find themselves in dead ends or find that their efforts at incorporating technology to their efforts become paralyzed.

Our ongoing participatory research with the RHM aims to help the Network collect *Good Data* from gardens and gardeners in Medellin, make most of it available to everyone in the Tupale platform and allow the Network to make strategic decisions to achieve its goals and turn Medellín into what the RHM’s manifesto has described as a *gardening territory*. We planned this research together with members of the RHM for more than two years. We are trying to meet the requests and concerns of the Network organizers and we have become organizers and gardeners ourselves as well. We as researchers and the Network are trying to understand how communication flows among the members. We have come to realize that communication occupies a central place in the dynamics of social movements. At the same time, we are trying to understand what information and knowledge is required in the long term by the RHM, in order to construct a research program that allows organizers to make decisions, plans and to respond the permanent demands of academics, journalists and filmmakers, curious about the Network.

## References

Altenhain, Claudio. ‘Tropicalizing Surveillance: How Big Data Policing “Migrated” from New York to São Paulo’, *Big Data from the South: From media to mediations, from datafication to data activism, IAMCR Preconference Paper*, Cartagena, Colombia, 15 July 2017, <http://cartagena2017.iamcr.org/big-data/>.

Amar, Dario. *Estudios de casos internacionales de ciudades inteligentes,* Documento para discusión No. IDB-DP-443, Banco Interamericano de Desarrollo, 2016.

Amayo Caldwell, Glenda and Marcus Foth. ‘DIY media architecture: Open and participatory approaches to community engagement’, in Peter Dalsgaard & Ava Fatah gen Schieck (eds.) *Proceedings of the 2014 Media Architecture Biennale*, Aarhus: ACM Denmark, pp. 1-10.

Browne, Simone. ‘Digital Epidermalization: Race, Identity and Biometrics’, *Critical Sociology* 36.1 (February 2010): 131-150.

Caragliu, Andrea, Chiara Del Bo and Peter Nijkamp, ‘Smart cities in Europe’, *Journal of Urban Technology* 18.2 (August 2011): 65-82.

Cohen, Boyd, Esteve Almirall and Henry Chesbrough. ‘The City as a Lab. Open Innovation Meets the Collaborative Economy’, *California Management Review* 59.1 (November 2016): 5-13.

Colding, Johan and Stephan Barthel. ‘An urban ecology critique on the “Smart City” model’, *Journal of Cleaner Production* 164 (October 2017): 95-101.

Cuff, Dana, Mark Hansen and Jerry Kang. ‘Urban Sensing: Out of the Woods’, *Communications of the ACM* 51.3 (2008), pp. 24-33.

De la Cadena, Marisol. ‘Naturaleza Disociadora’, *Boletín de Antropología* 31.52 (July-December 2016): 253-263.

Escobar, Arturo. ‘Territorios de diferencia: ontología política de los “derechos al territorio”’, in Sheila Gruner et al (eds), *Des/dibujando el País/aje. Aportes Para la Paz con los Pueblos Afrodescendientes e Indígenas*, Medellín: Ediciones Poder Negro, 2016, pp. 91-108.

Esteva, Gustavo. ‘Development’, in Wolfgang Sachs (ed.), *The Development Dictionary: A Guide to Knowledge as Power*, London: Zed Books, 1992, pp. 1--23.

Fernandez-Anez, Victoria, José Miguel Fernández-Güell and Rudolf Giffinger. ‘Smart City implementation and discourses: An integrated conceptual model. The case of Vienna’, *Cities* 78 (August 2018): 4-16.

Franco-Avellaneda, Manuel and Tania Pérez-Bustos. ‘Tensiones y Convergencias en Torno a la Apropiación Social de la Ciencia y la Tecnología en Colombia’, in Tania Pérez-Bustos and Mayali Tafur Sequera (eds.), *Deslocalizando la Apropiación Social de la Ciencia y la Tecnología: Aportes Desde Prácticas Diversas,* Bogotá: Maloka-Colciencias, 2010, pp. 30-61.

Haesbaert, Rogério. ‘Del mito de la desterritorialización a la multiterritorialidad’, *Cultura y representaciones sociales* 8.15 (2013): 9-42.

Irani, Lilli, Janet Vertesi, Paul Dourish, Kavita Philip and Rebecca Grinter. ‘Postcolonial computing: A lens on design and development’, *Proceedings of the 28th International Conference on Human Factors in Computing Systems*, Atlanta, Georgia, USA, 10-15 April 2010, <https://www.cc.gatech.edu/~beki/c50.pdf>.

Kitchin, Rob and Tracey Lauriault. ‘Towards Critical Data Studies: Charting and Unpacking Data Assemblages and Their Work’, in Joe Eckert, Andrew Shears and Jim Thatcher (eds), *Geoweb and Big Data*, Lincoln: University of Nebraska Press, 2014.

Koont, Sinan. *Sustainable urban agriculture in Cuba*, Heidelberg: Springer, 2011.

Lash, Scott. ‘Power after hegemony: Cultural studies in mutation’, *Theory, Culture & Society* 24.3 (May 2007): 55–78.

McQuillan, Daniel. ‘Counter Mapping the Smart City’, *Livingmaps Review* 2 (2017): 1-7.

Milan, Stefania and van der Velden, Lonneke. ‘The Alternative Epistemologies of Data Activism’, *Digital Culture & Society* 2.2 (10 October 2016).

Neirotti, Paolo, et al. ‘Current trends in Smart City Initiatives: Some Stylised Facts’, *Cities* 38 (June, 2014): 25-36.

Red de Huerteros Medellìn, *Manifiesto red de huerteros Medellín. Sembrando mundos soberanos y solidarios* (3 March 2017), <https://ia601601.us.archive.org/17/items/ManifiestoRedDeHuerterosDeMedelln/Manifiesto_Red%20de%20huerteros%20de%20Medell%C3%ADn%20.pdf>.

Sassen, Saskia. *Expulsions: Brutality and Complexity in the Global Economy*, Boston: Harvard University Press, 2014.

Spiaggi, Eduardo. ‘Urban Agriculture and Local Sustainable Development in Rosario, Argentina: Integration of Economic, Social, Technical and Environmental Variables’, in Luc Mougeot (ed.), *Agropolis. The Social, Political and Environmental Dimensions of Urban Agriculture*, London: Earthscan and the International Development Research Centre, 2005, pp. 187-202.

Székely, Iván. ‘What do IT Professionals Think about Surveillance?´, in Christian Fuchs, Kees Boersma, Anders Albrechtslund and Marisol Sandoval (eds), *Internet and Surveillance. The Challenges of Web 2.0 and Social Media*, London: Routledge, 2011, pp. 198-219.

Vila-Viñas, David and Barandiaran, Xabier (eds). *Buen conocer. Modelos sostenibles y políticas públicas para una economía social del conocimiento común y abierto en Ecuador*, Quito: FLOK Society, 2015.

1. Victoria Fernandez-Anez, José Miguel Fernández-Güell, and Rudolf Giffinger, ‘Smart City implementation and discourses: An integrated conceptual model. The case of Vienna’, *Cities,* 78 (August 2018):4. [↑](#footnote-ref-1)
2. Paolo Neirotti et al, ‘Current trends in Smart City Initiatives: Some Stylised Facts’, *Cities* 38 (June 2014): 27. [↑](#footnote-ref-2)
3. Andrea Caragliu, Chiara Del Bo and Peter Nijkamp, ‘Smart cities in Europe’, *Journal of urban technology* 18.2 (2011): 69. [↑](#footnote-ref-3)
4. Boyd Cohen, Esteve Almirall and Henry Chesbrough, ‘The City as a Lab. Open Innovation Meets the Collaborative Economy’, *California Management Review* 59.1 (1 November 2016 ): 5. [↑](#footnote-ref-4)
5. Daniel McQuillan, ‘Counter Mapping the Smart City’, *Livingmaps Review* 2 (2017): 1-7. [↑](#footnote-ref-5)
6. Nick Couldry and Alison Powell, ‘Big Data from the Bottom up’, *Big Data & Society* 1.2 (July 2014): 1. [↑](#footnote-ref-6)
7. Nick Couldry and Alison Powell, ‘Big Data from the Bottom up’, 3. [↑](#footnote-ref-7)
8. Dana Cuff, Mark Hansen and Jerry Kang, ‘Urban Sensing: Out of the Woods’, *Communications of the ACM* 51.3 (2008): 29. [↑](#footnote-ref-8)
9. # Gustavo Esteva, ‘Development’, in Wolfgang Sachs (ed.), *The Development Dictionary: A Guide to Knowledge as Power*, London: Zed Books, 1992, pp. 1-23.

   [↑](#footnote-ref-9)
10. Manuel Franco-Avellaneda and Tania Pérez-Bustos, ‘Tensiones y Convergencias en Torno a la Apropiación Social de la Ciencia y la Tecnología en Colombia’, in Tania Pérez-Bustos y Mayali Tafur Sequera (eds), *Deslocalizando la Apropiación Social de la Ciencia y la Tecnología: Aportes Desde Prácticas Diversas,*  Bogotá: Maloka-Colciencias, 2010, p. 13. [↑](#footnote-ref-10)
11. Rob Kitchin and Tracey Lauriault, ‘Towards Critical Data Studies: Charting and Unpacking Data Assemblages and Their Work’, in Joe Eckert, Andrew Shears and Jim Thatcher (eds), *Geoweb and Big Data*, Lincoln: University of Nebraska Press, 2014. [↑](#footnote-ref-11)
12. Scott Lash, ‘Power after hegemony: Cultural studies in mutation’, *Theory, Culture & Society* 24.3 (May 2007): 55–78. [↑](#footnote-ref-12)
13. Daniel McQuillan, ‘Counter Mapping the Smart City’, *Livingmaps Review,* 2 (2017): 1-7. [↑](#footnote-ref-13)
14. Johan Colding and Stephan Barthel, ‘An urban ecology critique on the “Smart City” model’, *Journal of Cleaner Production* 164 (October 2017): 95-101. [↑](#footnote-ref-14)
15. Nick Couldry and Alison Powell, ‘Big Data from the Bottom up’, *Big Data & Society* 1.2 (July 2014): 1. [↑](#footnote-ref-15)
16. Simone Browne, ‘Digital Epidermalization: Race, Identity and Biometrics’, *Critical Sociology* 36.1 (February 2010): 131-150. [↑](#footnote-ref-16)
17. Claudio Altenhain, ‘Tropicalizing Surveillance: How Big Data Policing “Migrated” from New York to São Paulo’, *Big Data from the South: From media to mediations, from datafication to data activism*, *IAMCR Preconference Paper*, Cartagena, Colombia, 15 July 2017, http://cartagena2017.iamcr.org/big-data/ [↑](#footnote-ref-17)
18. Dario Amar, *Estudios de casos internacionales de ciudades inteligentes,* Documento para discusión No. IDB-DP-443, Banco Interamericano de Desarrollo, 2016. [↑](#footnote-ref-18)
19. Nick Couldry and Alison Powell, ‘Big Data from the Bottom up’. [↑](#footnote-ref-19)
20. Stefania Milan and Lonneke van der Velden, ‘The Alternative Epistemologies of Data Activism’, *Digital Culture & Society,* 2.2 (2016): 57–74. [↑](#footnote-ref-20)
21. Paolo Neirotti et al, ‘Current trends in Smart City Initiatives: Some Stylised Facts’, *Cities* 38 (June, 2014): 8. [↑](#footnote-ref-21)
22. David Vila-Viñas & Xabier Barandiaran (eds), *Buen conocer. Modelos sostenibles y políticas públicas para una economía social del conocimiento común y abierto en Ecuador*, Quito: FLOK Society, 2015, p.8. [↑](#footnote-ref-22)
23. Lilli Irani, Janet Vertesi, Paul Dourish, Kavita Philip & Rebecca Grinter, ‘Postcolonial computing: A lens on design and development’, *Proceedings of the 28th International Conference on Human Factors in Computing Systems,* Atlanta, Georgia, USA, 10-15 April 2010, https://www.cc.gatech.edu/~beki/c50.pdf [↑](#footnote-ref-23)
24. Iván Székely, ‘What do IT Professionals Think about Surveillance?´, in Christian Fuchs, Kees Boersma, Anders Albrechtslund and Marisol Sandoval (eds), *Internet and Surveillance. The Challenges of Web 2.0 and Social Media*, London: Routledge, 2011. [↑](#footnote-ref-24)
25. Sinan Koont, *Sustainable urban agriculture in Cuba*, Heidelberg: Springer, 2011. [↑](#footnote-ref-25)
26. Eduardo Spiaggi, ‘Urban Agriculture and Local Sustainable Development in Rosario, Argentina: Integration of Economic, Social, Technical and Environmental Variables’, in Luc Mougeot (ed.),

    *Agropolis. The Social, Political and Environmental Dimensions of Urban Agriculture,* London: Routledge, 2010. [↑](#footnote-ref-26)
27. http://tupale.co/e50 [↑](#footnote-ref-27)
28. Red de Huerteros Medellìn, *Manifiesto red de huerteros* Medellìn (March 2017), https://ia601601.us.archive.org/17/items/ManifiestoRedDeHuerterosDeMedelln/Manifiesto\_Red%20de%20huerteros%20de%20Medell%C3%ADn%20.pdf [↑](#footnote-ref-28)
29. Marisol de la Cadena, ‘Naturaleza Disociadora’, *Boletín de Antropología* 31.52 (July-December 2016): 256. [↑](#footnote-ref-29)
30. Arturo Escobar, ‘Territorios de diferencia: ontología política de los “derechos al territorio”’, in Sheila Gruner et al (eds) *Des/dibujando el País/aje. Aportes Para la Paz con los Pueblos Afrodescendientes e Indígenas*, Medellín: Ediciones Poder Negro, 2016. [↑](#footnote-ref-30)
31. Saskia Sassen, *Expulsions: Brutality and Complexity in the Global Economy*, Boston: Harvard University Press, 2014. [↑](#footnote-ref-31)
32. Marisol de la Cadena, ‘Naturaleza Disociadora’. [↑](#footnote-ref-32)
33. Rogério Haesbaert, ‘Del mito de la desterritorialización a la multiterritorialidad’, *Cultura y representaciones sociales* 8.15 (2013): 9-42. [↑](#footnote-ref-33)
34. Rogério Haesbaert, ‘Del mito de la desterritorialización a la multiterritorialidad’, 29. [↑](#footnote-ref-34)
35. Glenda Amayo Caldwell & Marcus Foth, ‘DIY media architecture: Open and participatory approaches to community engagement’, in Peter Dalsgaard & Ava Fatah gen Schieck (eds.), *Proceedings of the 2014 Media Architecture Biennale*, Aarhus: ACM Denmark, pp. 1-10. [↑](#footnote-ref-35)
36. https://www.openstreetmap.org [↑](#footnote-ref-36)
37. https://tupale.co/e50 [↑](#footnote-ref-37)
38. https://www.openstreetmap.org [↑](#footnote-ref-38)
39. Dana Cuff, Mark Hansen and Jerry Kang, ‘Urban Sensing: Out of the Woods’, 28. [↑](#footnote-ref-39)
40. Daniel McQuillan, ‘Counter Mapping the Smart City’. [↑](#footnote-ref-40)
41. Stefania Milan and Lonneke van der Velden, ‘The Alternative Epistemologies of Data Activism’, *Digital Culture & Society*, 2(2016): 57–74. [↑](#footnote-ref-41)