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Smart Cities or Smart About Cities

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1 ABSTRACT

This paper builds on the one towards CORP 2014 'Plan it Smart' which attempted to define 'smart cities' for the purpose of planning and against other city typologies. It concentrates on how ICT or 'smart technology' is applied in cities and discusses its critiques. It explores who benefits from 'smart' interventions: the ICT industry, governments or the users and whether there are inherent contradictions between top down and bottom up urban interventions. It explores the preconditions of improving living conditions for all by 'smart' technologies, including the role of discourse analysis, and raises issues of equity and social justice. Lastly, the paper discusses Hajer's alternative of 'smart urbanism' expressed in his agenda for planning and design in 'Smart about cities' and concludes that the growth ideology still prevails despite promising excursions into decoupling it from urban resources.

2 WHY 'SMART CITIES'?

It is only fair that the conferences on "Urban Planning and Regional Development in the Information Society" (CORP) initiated by ICT-savvy academics who have an interest in physical development should focus on the role of ICT in planning. It follows that 'smart cities', or more generally 'smart urban technologies' were discussed at CORP in 2014 and pursued further in 2016.

'Smart' as a concept related to urban development gained widespread adaptation. Wikipedia defined 'smart cities' as: "a smart city is an urban development vision to integrate multiple information and communication technology (ICT) solutions in a secure fashion to manage a city's assets[1] A techno definition of 'smart cities' is proposed by ARUP[2]: "…smart cities is where the seams and structures of the various urban systems are made clear, simple, responsive and even malleable through technology and design…"

Akin to the definition of 'smart cities' the purpose of 'smart cities' is in the eyes of the beholders, the main protagonists being global ICT industry and government. Both parties claim that the main beneficiaries are the users of ICT driven 'smart' solutions for the delivery of urban services, ranging from e-governance and citizen services to waste, water and energy management, as well as urban mobility. More recently other services have got 'smart' treatment, such as tele-medicine, tele-education, tele-skill development and ICT driven trade facilitation. All these 'sustainable service provisions' are deemed to improve people's quality of life and wellbeing, besides freeing the environment from man-made problems. Many other international ICT industry associations coined their own definitions and staked out their own objectives of 'smart cities' to advance their common interests[3] further served by commercial conferences.[4] 'Smart cities' remain a regular subject of public debate among industries and increasingly in dialogue with government,[5] and they became even the subject matter of academic degrees thereby qualifying for establishment status.

The next step of advancing 'smart cities' consisted of operationalising them. Among the many protagonists who are contributing to this is the European Union by creating a Digital Single European Market.[6] For Sam Musa, the success of 'smart cities' rests on people, processes and technology. His linear road map proposes an operational progression starting with the study of the community to determine the expected benefits of a 'smart city' initiative. This is followed by a 'smart city' policy driving the initiative which determines the roles, responsibilities and objectives of plans and strategies to realise the overall goals. Lastly this process engages the citizens through the use of e-government initiatives, open data and events.

[1] http//en.wikipedia.org/wiki/Smart_city
[2] http://www.arup.com/services/smart_cities
[3] Some of these are discussed in Judith Ryser's paper on 'Planning Smart Cities… Sustainable, Healthy, Liveable, Creative Cities… Or Just Planning Cities? towards CORP 2014.
[4] https://www.re-work.co/. e.g. Future Cities Summit, Docklands London 2014. Smart to Future Cities & Urban IoT, London 2016
[5] ARUP. 2010. Smart Cities, transforming the 21st century city via the creative use of technology. p4
[6] https://ec.europa.eu/digital-single-market/en/smart-cities

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International consultancies specialising in urban development are key players in operationalising and promoting 'smart cities'. ARUP's[7] techno-operational conception is that "…a 'smart city' happens when three specific networks interact: the communications grid, the energy system and the logistics internet which can track people and things through transport and supply systems".

3 MAKING 'SMART CITIES' OPERATIONAL AT ALL LEVELS

What had started with anodyne remote controls of home utilities, such as space heating or lighting, has evolved into city-wide centralised digital control mechanisms. Even individual home controls are linked to centralised 'big data' beyond the control of those from whom it is extracted without their consent. Such big data is used by commercial utility suppliers and whoever these databases of behavioural information are sold to, usually without the knowledge or permission of the 'subjects' of such data.

It is argued that traffic lights and their control were the first large scale, sectoral ICT use in city management.[8] Since then ICT uses, or 'smart' urban service management have proliferated to other urban sectors, such as public transport, utilities, waste disposal, energy, water, health, education, communication, and have significantly permeated cities with random CCTV without specific purpose. ICT systems were also applied citywide. An example is the IBM built quasi 'Nasa mission control system' for Rio de Janeiro which amounts to a high tech control centre for the entire city, or what some consider a massive 24/7 '1984 style' surveillance system.[9] Many attempts at introducing 'big data' collection and management systems into the public sector, such as the health service have failed though at great tax payers' expense. This led Leo Hollis to the view that 'smart cities' are perpetual beta cities[10] where accidents will happen due to over-reliance on technology and interconnections between sub-systems, and are prone to bugs which will continue to take down whole operating systems.

Regardless of the spatial level of 'smart' technology application, be it the city as a whole, operational sectors such as public transport and energy supply, or sustainable use of individual homes, Simuldyne[11] suggests that those who devise and control these systems should try them out first in virtual reality using simulations and visualisations before rolling them out at large. It is not clear though whether this would create greater trust between the providers of such systems and users involved in these experiments, as all such data is exclusively held by the company which produces the simulation models. Tyler Lyon[12] who claims to be able to predict group behaviour from his digital games imagines that people may prefer to live in city simulations rather than in the real world, albeit with the proviso that they may become unaware of material changes affecting them directly. The way the younger generation is using smart phones may serve as a preview of such 'virtual' urban living disconnected from physical reality. At all these levels, ICT driven 'smart cities' are conceived to be managed top-down, from centralised positions with hold over command and control.

4 'SMART CITIES' CRITICS

Predictably critics of 'smart cities' raised their voices.[13] Peele found that smart cities, predicated on ubiquitous wireless broadband and the embedding of computerised sensors into the urban fabric may destroy democracy as we know it.[14] According to Steven Poole a battle between techno-utopians and postmodern flaneurs is fought over whether the city should be an optimised panopticon with citizens reduced to unpaid data clerks, a smooth moving pixel and 3D graphic display, or a melting pot of cultures and ideas.[15]

'Smart city models' based on the 'internet of things', such as Dongtan in China, Masdar in Dubai, or Songdo in South Korea were promoted mainly in the developing world by Western consultants (respectively ARUP,

[7] ARUP. 2010. Smart Cities, transforming the 21st century city via the creative use of technology
[8] Tom Saunders & Peter Baeck. Rethinking Smart Cities From The Ground Up. 2015. NESTA.
[9] http://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase
[10] http://formtek.com/blog/smart-cities-living-in-a-world-of-perpetual-beta/
[11] http://www.simudyne.com/
[12] of Watch Dogs Play station/ SimCity - https://tylerjlyon.wordpress.com/tag/watch-dogs/
[13] e.g. Adam Greenfield. 2014. Against the Smart City. ISBN: 9780982438312 e-book. See also critique of 'smart city' in Judith Ryser's paper towards CORP 2014
[14] e.g. http://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase. Steven Poole, The Guardian, 12/12/2014..
[15] http://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase op.cit.

Foster + Partners, and KPF, all with headquarters in London) and developers in cooperation with global ICT companies, and were interchangeably advocated as eco-cities.[16] Here 'smart city rhetoric' is all about efficiency, optimisation, predictability, convenience and security. Usman Haque[17] claims that the smart city industry aims at city managers who can claim 'big data' for their decision making. For Dan Hill of Future Cities Catapult[18] 'smart city' is the wrong idea, pitched in the wrong way to the wrong people. He extends the notion of 'smart city' to a 'low carbon city' with jobs and housing conceived so as to facilitate sustainable movement. Bottom-up critics are concerned that the 'smart city', relying on sensors amounting to millions of electronic ears, eyes and noses can become a vast arena of perfect and permanent surveillance for whomever has access to the data feeds. An illustration of this is an article entitled "Privacy alert after expert hacks into 'smart' hotel room" which shows how easy it is to get access to such data feeds.[19] Conversely, another article shows how a "Burglary victim's smart way to keep out thieves" relies on a bag lock which digitally recognises him, containing a motion sensor to alert him of thieves.[20] All these devices are vulnerable though as they rely on charged batteries, and many critics claim that these remote control instruments divert attention from everyday living.

Nesta undertook to rethink 'smart cities' from the bottom up[21] and made the case to move on from a purely technology driven 'smart city' to a people centred 'smart city'. For Nesta the best use of digital technology is by applying collaborative technologies and above all by citizens powering them. They propose to set up a civic innovation lab for this purpose and use open data and open platforms to mobilise collective knowledge. They state that human behaviour and necessary change are as important as technology in achieving 'smart city' goals. Ultimately it is 'smart people' who mobilise innovation and if they feel that they have ownership they will support it. What needs changing is to put urban challenges before technology, generate evidence, open up to alternative initiatives to improve cities and cooperate more closely with citizens. Data collection has to evolve using new technologies such as 'thing sensing' instruments, but needs to be complemented by more integration, analytics and visualisation. Besides better data city resources generally have to be harnessed better to work towards a collaborative economy by using and sharing time, skills and everyday belongings. Already established tools are civic crowdsourcing for data collection, mapping, and building up collective intelligence through participatory planning, budgeting and policy making. Nesta believe that collaborative technologies and actions can help raise awareness by using environmental sensing, or through interactive facilities such as the London Datastore of the Greater London Authority. Nevertheless, Yet Nesta has still a strong technological bias, despite proposing to take human behaviour as seriously as technology and investing in smart people, not just smart technology.

5 'SMARTNESS': BOTTOM-UP, DEMOCRATIC, ACCOUNTABLE, COLLABORATIVE?

It may be revealing that community-centred ways of devising and/or managing 'smart cities' are difficult to find on the internet, and examples from the developing world are even rarer, although bottom-up 'smart' initiatives and experiments are undertaken there in urban as well as rural environments.[22] UNEP touches upon such alternatives in its work on sustainable alternative lifestyles.[23] In its study on creative communities for sustainable lifestyles (CCSL) UNEP explores 9 scenarios: mobility (car sharing, bicycle centre, car pooling on demand); food (urban gardens, vegetable bag subscription, family take-away); and housekeeping (urban composting, energy management, collective laundry). Some of these scenarios have the potential to

[16] Judith Ryser. 2013. Asian Eco-Cities, a Critique, In: FuturArch 26/1. Judith Ryser, 2014, Eco-cities in Action, sustainable development in Europe: lessons for and from China? "EU-Asia Dialogue, Konrad Adenauer Stiftung, et.al.
[17] http://www.haque.co.uk/info.php
[18] https://www.google.co.uk/search?q=future+cities+catapult&ie=utf-8&oe=utf-8&gws_rd=cr&ei=1o71VsXiJISz-wHZ2qOIBw
[19] London Evening Standard, 24/03/16.
[20] London Evening Standard, 05/02/16.
[21] http://www.nesta.org.uk/sites/default/files/rethinking_smart_cities_from_the_ground_up_2015.pdf.
Rethinking smart cities from the ground up. Tom Saunders & Peter Baeck . Nesta (Geoff Mulgan), and Intel China, UNDP, 2015.
[22] Marteen Hajer gave examples of community managed and owned ATM systems, mobile phone networks and charging facilities, as well as credit unions to give local communities access to ICT use in his keynote address at the ISOCARP congress 2015, Rotterdam, 2015.
[23] http://www.unep.org/pdf/DTIx1321xPA-VisionsForChange%20report.pdf

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use ICT for sharing and disseminating experiences. The Journal of Community Informatics also publishes articles on bottom up approaches of ICT use in the development process.[24]

In "Smart cities vs smart communities", Mike Gurstein[25] argues that it is necessary to empower citizens instead of propping up market economics. He is critical of the way governments, the ICT industries and, to some extent, academics are incorporating digital technology into traditional practices of urban development and management. This is done sector by sector, by focusing separately on smart energy, smart buildings, smart mobility, smart technology, smart healthcare, smart infrastructure, smart governance and smart citizens. In his opinion, citizens are unlikely to get involved unless they have an interest in embracing smart and green solutions in their day-to-day work schedule. Refuting the techno-industry driven approach he proposes alternative criteria focusing on 'smartness' at community level.

They include seven smart community aspects. For him, 'smart community planning' is to support citizen involvement in the delivery of “smart services". 'Smart community governance' is to provide a means for public scrutiny of municipal budgets, including funding for training and support for those with little education to review budgets and ensure that they are being spent appropriately and equitably among citizens. 'Smart community health' is to assist decentralised health support workers and facilities. 'Smart community citizenship' is to ensure support for location-based electronic interaction among citizens around issues of local interest, with information (government data) being structured (geo-tagged) in such a way that information could be directly accessed and locally aggregated to foster participation and intervention in municipal planning and programme design processes. 'Smart community infrastructure' is to deliver incident reporting facilities to enable citizens to report on issues concerning public infrastructure in an aggregated way based on location and where these electronic facilities are transparent to the user. 'Smart community resources' are to provide digital support for administrative decentralisation to structure governance as to being responsive to local circumstances and requirements, including established processes for citizen participation in localised decision making. Lastly, 'smart community dwellings' are contributing to digitally enabled public land use and dwelling records, including rentals, renter complaints, work orders, etc. and make them accessible to, and usable by local communities. He sees these 'smart community alternatives' as opportunities for politicians and government officials, albeit without developing his ideas into the realm of practicalities. His overall purpose is to apply ICTs to empower citizens in transforming their cities from the bottom up.

Paul Mason[26] considers that "…we cannot allow the tech giants to rule 'smart cities'…". Although people wear tracking devices voluntarily so far, it is important to establish democratically who is controlling and minimising the risks of the 'smart city project and its big data' and with what legitimacy. Unlike in the commercial world which hides itself behind commercial secrecy, the 'smart city' needs data to flow freely across sectors. Only open source city data will be conducive to foster innovation, prevent stultifying monopoly formation and long term lock-in, and guarantee democratic participation and public ownership of data generated from public services. Mason evokes the current Madrid government which encourages an ecosystem of competing uncontrolled human networks believed to lead to creativity and diversity and provide the basis for publicly agreed priorities of dealing with social problems. For that reason the city of Madrid is supporting open source collaborative technologies instead of funding proprietary systems with public money.

Katie Allen[27] also addresses the issue of big data, its legitimate ownership and access. She claims that the UK big data project is 'playing money ball' to build smarter cities. From the arguments she heard at the Big

[24] http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1015&context=poli_fac
The use of mobile phones for development in Africa, top down meets bottom up partnering. Laura Hosman, Elizabeth Fife. In: Journal of Community Informatics, Vol 8, no 3 (2012).
http://ci-journal.net/index.php/ciej/article/view/1090/1114
Neighbourhood planning of technology, physical meets digital city from the bottom up with aging payphones. Benjamin Stokes, Francois Bar, Karl Baumann, Ben Caldwell. In: Journal of Community Informatics, Vol 10, no 3 2014.

[25] https://gurstein.wordpress.com/2014/11/06/smart-cities-vs-smart-communities-enabling-markets-or-empowering-citizens/
Smart Cities vs Smart Communities: empowering citizens not market economics. 14/11/06.

[26] The Guardian 25 October 2015.

[27] The Guardian 3 January 2016.

Bang Data exhibition it becomes clear that human accountable decision making has to be decoupled from ICT tools and their holders. Big data carries a lot of unresolved problems, which include survey techniques, quantity and quality of raw data, accessibility and transparency. Processed data is seen to be under pressure of being subjected to future proofing economics, as economic sectors and techno specialists are promoting public streamlining of big data. It could be argued that any data set is being collected with a specific purpose in mind, but much data, whether in the public domain or purchased, is used by third parties for different agendas. This leads to discrepancies between' facts and figures' and their alternative end use, and sometimes to the distortion of objectives to fit the data set. Nevertheless, many cities have already garnered comprehensive databases for their own purpose and are sharing them with the public which has shown to benefit overall quality of life.[28] Helsinki was one of the first city to experiment with such open source city data.[29]

6 BEYOND TOP DOWN AND BOTTOM UP DICHOTOMY

Time may have come to disown the assumed myth that only large scale, centralised interventions resort to high-tech while small scale diffused actions are confined to low- or no tech. Both rely on change in human behaviour. Thus it can be argued that the role of ICT is a mere tool and certainly not an aim in itself, when improving quality of life in cities. However objectives differ between the key players and it has to be recognised that there is asymmetry between the top-down and bottom-up approaches to better urban living, with or without access to technology.

The big players are the ICT companies and governments, and only in a minor role people, and even then not as individuals but as a collective, organised labour, voters, consumers. In the top down scenario of 'smart cities' ICT companies are in the business of selling their ex-ante mass produced ware globally and governments associate with them with the aim to increase efficiency, reduce expenditure and maintain control of their cities through feedback from big data, while citizens are seen as passive consumers having to adapt their behaviour even in their own homes. What are the impacts, for example, of metering utilities? For industry it provides valuable free big data to optimise supply chains and target marketing. Governments may have to adjust regulation in favour of business to benefit from big data. Greater awareness of their consumption may lead passive citizens to reduce consumption, albeit with likely loss of comfort, or to shift utility usage to the detriment of their time budgets.

Conversely, active citizens can decide for themselves to change their behaviour to their advantage by engaging in projects of their own making, in collectives of their own choosing, sometimes out of necessity, but not without having the possibility to resort to ICT. Such actions may bring about important changes in governance from the bottom up. For example guerrilla food growing in Los Angeles led the city to change the law regarding the use of public and semi-public space, and the 'food to spare' project in Denmark assisting food growers to sell produce rejected by their market outlets led to changes of commercial rules regarding types of food they sell. Both initiatives used social media to disseminate their effects which are taken up in many other places.

Bottom-up use of ICT is not confined to the developed world. In Africa and Asia ICT is used even in remote dispersed places.[30] Groups of people resort to solar powered ATM machines and solar powered dispensers of drinking water, electricity or other utilities. They create their own networks of communication with second hand mobile phones and sim cards. However, none of these life improving initiatives among the poorest people in the world would be possible without the top-down technology and networks.

[28] Eleanor Ross, The Guardian 15 October 2014 referring to a comparative city study by Dietman Offenhuber, Boston Mass.

[29] Early "I-Hubs" providing open city data formed part of the Study of Ecosystems of Innovation, led by Judith Ryser at Fundacion Metropoli 2007.

[30] for unbanked mobile money in Africa, see https://www.weforum.org/agenda/2015/01/how-mobile-money-is-transforming-africa For people centred Internet, see http://peoplecenteredinternet.org/2015/12/ For solar powered ATM see http://www.greenprophet.com/2011/02/solar-atm-abu-dhabi/ for solar powered decentralised water supply see http://www.scidev.net/global/water/opinion/solar-powered-water-atms-deliver-at-the-last-mile.html

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It could be argued that international institutions such as ITU which are tri-partite in nature[31] were instrumental in disseminating technology globally and deeply also to developing countries, guided by the principle of equal, equitable or universal access/ service negotiated between the three main interest parties which constitute ITU. This was a precondition for availability of ICT in bottom up development initiatives, such as solar powered ATMs to assist community credit provision, or kiosks to charge mobile phones for interaction in dispersed, remote places with sparse services such as health or education. Thus bottom-up actions are taken up to cope with availability, accessibility and affordability of services. While they depend on ICT providers and their networks even for informal operations,[32] the top down operators do not depend on bottom up action. Free market principles and competition dominate also 'socially useful' ICT use, despite a fund for 'smart' subsidies to launch new universal access projects.[33] Even ITU continues to advocate the economic growth model for 'the south', leapfrogging the north exponentially by resorting to advanced technologies but according to the discipline and profit motivated objectives of the free market. However, the World Telecommunications and Information Day[34] is promoting ICT entrepreneurship for social impact. This is based on the conviction that ICT entrepreneurs, start ups and SMEs have a role to play in ensuring economic growth in a sustainable and inclusive manner. From this evidence it seems appropriate to look for alternatives to contrarian top-down and bottom-up 'smart' development and find new ways of combining those approaches into viable projects and actions.

7 URBAN ECOLOGY: ALTERNATIVE VANGUARD TO 'SMART'?

Taking the side of the planet and its survival instead of unlimited economic growth when conceiving 'smart cities' may be a third way. This is where approaches to 'smart cities' and eco-cities converge. 'Smart' management of urban resources could reduce the ecological footprint and bring cities closer to a balance between the planet's capacity and human consumption. ICT could contribute positively to that goal, helping people to reduce consumption of non renewable energy, contribute to full cycle water management, shift from car journeys to cycling, walking and public transport and optimise their travel generally. By its nature the ecological standpoint is holistic and encourages a more integrated approach to 'smart' solutions, especially at the level of the city as a whole. Eco-city planning attempts to network the various strands of resource management by merging sectoral measures into more comprehensive planning strategies. Not only is land use and transportation dealt with together, but many other sectors are incorporated in urban development strategies to respect the longer term ecological capacity of a city. The ecological standpoint's critique of modernism is its functional segregation, unrestrained urban sprawl onto agricultural land, together with stress on efficient use of service networks. The idea of the compact city with mixed uses and higher densities at public transportation nodes is but one example of this shift in planning thinking.

Emanating from the USA, new urbanism[35] is a variation of this evolution of mainstream planning and urban design towards a more eco-friendly approach. It adopted ten principles which would deliver places with higher quality of life. They are: walkability, connectivity, mixed use and diversity, mixed housing, quality architecture and urban design, traditional neighbourhood structure, increased density, smart transportation, sustainability and quality of life. Its followers have adopted a 'smart code' based on environmental analysis.[36] The philosophy behind new urbanism reminds the garden city movement and relies on small scale neighbourhood initiatives although it claims that its principles apply to all scales. Its critics call it 'neo-traditionalism',[37] trying to create communities where there were none. Even its 'smart' code is focusing on communities and ecological principles, rather than technology. In this sense it can be associated with the

[31] ITU, International Telecommunication Union, an intergovernmental agency of the United Nations which brings together governments (as regulators), industry (as suppliers of innovative technology) and organised labour (as factor of production). All these intergovernmental institutions are paying lip service to people, the users, the consumers, but they do not have a collective seat at the table equivalent to the other interest groups.
[32] e.g. 'umbrella people' in Nigeria which sell second hand mobile phones and prepaid sim cards but which depend on licensed networks to function.
[33] ITU_universal_access.ppt
[34] http://www.itu.int/en/wtisd/2016/Pages/default.aspx
[35] http://www.newurbanism.org/
[36] http://smartcodecentral.com/
[37] U.S. News. 2012

'cittaslow' movement[38] and other bottom up autonomous community initiatives promoted by Etzioni or Putnam[39] aiming at a better living environment with less reliance on non renewable resources.

Maarten Hajer[40] for one, argues that the ecological constraints of 'increasing acceleration' worldwide is presenting daunting conditions which require fundamental change, similar to those of industrialisation in the 19th century and the modern movement and its reliance on the motorcar in the 20th century. The sanitary reform movement intervened in the former and became the foundation of spatial and urban planning as we know it. Neither post-modernism nor the green movement were able to tame the latter though, nor its blind belief in technological fix and infinite exploitation of nature, nor its inevitable inequality gap between rich and poor as argued in 'The Spirit Level'.[41] What is needed is a decoupling of the economic growth ideology from resource consumption. According to Hajer, technology is unlikely to be able to disentangle the fossil fuel based 'lock-in' which is characterising existing urban infrastructures, as their institutional embeddedness hampers any transition toward a more ecologically appropriate urban metabolism. The diffusion of this hegemonic growth model to the developing world is compounding the adverse ecological impact of the on-going and accelerating urbanisation process. UNEP is also making the case against the false trade-off between economic development and environmental and social sustainability. It supports decoupling natural resource use and environmental impact from economic growth[42] and is critical of measuring 'progress' by adding environmental and social considerations to GDP measures.[43]

8 'SMART CITY' AS DISCOURSE

One way of preparing the path to necessary transition from current ecologically 'out-of-sinc' urbanisation and what Hajer calls 'the next economy'[44] is to resort to discourse analysis which he considers a powerful base of changing current influential language into new concepts more appropriate for an ecologically sound urban future. According to him, the 'smart city' discourse includes five key concepts: a managerial take of the city, expressed in notions such as 'smart' grids, or efficiency and dominated by ICT technology which Swilling calls 'algorithmic urbanism';[45] discourse coalition in fora between business, government and knowledge institutes who then adopt the same language; public-private partnerships as the default organisational structure of 'smart' opportunities; innovation as an essentially technological matter, discarding the importance of debate leading from problems to solutions without transplantation of solutions may be inappropriate in other contexts; and lastly a weak discourse on historical awareness. Maintaining the predominant discourse would mean continuing with the current 'default model' of cities. He proposes 'collaborative smart urbanism' instead, still to be invented, as the means to transform the cities of the 21st century into ecologically sound, liveable cities. This presupposes new ways of planning, as well as cities of the south leapfrogging to reconfigure the urban metabolism worldwide.

Discourse analysis has become popular among urban researchers as an alternative to statistical and numeric comparative urban analysis. Akin to the top-down bottom-up dichotomy, it may be useful to consider discourse analysis as simply another tool towards the toolkit of generating knowledge and understanding of urban processes, including the role of 'smart cities' and related technologies as a basis of future urban development policies. In this regard, UN and its specialised agencies such as UNEP may well have been influential in changing the current discourse by introducing the concept of 'decoupling' with focus on

[38] http://www.cittaslow.org/

[39] see Amitai Etzioni's communitarianism –The Essential Communitarian Reader, 1998. Rowman & Littlefield; or Robert Putnam's trust in the community, - Bowling alone: the collapse and revival of American community, 2000. IN: Journal of Democracy 6 (1): 65-78.

[40] Marteen Hajer's concepts discussed here in connection with 'smart cities' are elaborated in his essay in Maarten Hajer & Ton Dassen, Smart About Cities, visualizing the challenge for the 21st century urbanism, 2014, nai010 publishers/ PBI publishers.

[41] see for example the gini index debate. Richard Wilkinson & Kate Pickett, 2009, The Spirit Level: why equality is better for everyone. Equality Trust.

[42] UNEP, Decoupling Natural Resource Use and Environmental Impacts from Economic Growth, 201

[43] UNEP, 2012, Sustainable, Resource Efficient Cities – Making It Happen!

[44] 'The next economy' at the intersection of public policy, urban development and environmental design is the theme of the 2016 IARB (International Architecture Biennale Rotterdam) which Hajer is curating.

[45] Swilling, 2014, Towards Sustainable Urban Infrastructures for the Urban Anthropocene, In" Allan A, Lampis A., Swilling M (eds) Untamed Urbanism, Routledge, quoted in Hajer 2014.

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sustainability of consumption and production when translating millennium development goals into the urbanisation process. Nevertheless, the power of globalising free markets, including ICT applications to 'smart cities' may well overwhelm the findings of scientists[46] and government policies. This may be reflected in the fact that even alternative strategies advocated by UNEP are built on growth, albeit with the proviso that it would have to be sustainable and resource efficient, as well as equitable.[47] The UNEP International Resource Panel's study on sustainable cities stated success factors as innovation, public participation and 'socio-economics' of urban divide, but it maintains the 'smart' discourse in terms of 'smart' urban logistics and spatial planning, as well as 'smart' design, finance, technology, skills transfer and development.

9 'FROM 'SMART CITY' TO 'SMART URBANISM'

Hajer's tentative solution to evolve from the techno-driven 'smart city' concept towards a broader, more encompassing approach to urban development proposes to move to the idea of 'smart urbanism'. He expresses his understanding of 'smart urbanism' in an 'agenda for planning and design'[48] which includes seven considerations and he gives concrete examples to illustrate their role in reaching a more ecologically sound urban metabolism. The considerations are: decoupling as strategic orientation; coming up with a persuasive story line about the (urban) future; the use of urban metabolisms as framework for strategic decision making; focusing on the default in infrastructure; designing the 'smart city' outside the box; engaging in new open collaborative politics, and creating a globally networked urbanism. They are briefly discussed below.

Decoupling prosperity of a city from the use of resources, or more generally wealth from resource use, may be the most effective means to shift to a new sustainable urban development paradigm. Hajer thinks that this could be best achieved through a separate Urban Sustainable Development Goal. It has to be kept in mind though that such laudable global goals tend to slide and remain without implementation, due to lack of commitment from the private sector and lack of both powers and means of cities which are de facto in charge of transforming such goals into reality.

Hajer's persuasive story telling about the future is along the lines of Throgmorton's[49] idea that "planning is persuasive story telling about the future", away from science and the experts. Perhaps the custom of architectural project presentation to clients may be a precursor of this practice. It could be argued that self declared 'smart cities' have already adopted such story telling to convince citizens to change their behaviour. However, it may be unwise to substitute sole speculation about the future for a knowledge base rooted in long range history when aiming to realise cities resilient to future shocks.

Using 'urban metabolism' as a framework for strategic decision making sounds promising. However, without foundation in scientific knowledge and empirical evidence it is hard to see how an abstract notion of urban metabolism could persuade citizens as 'good to have'. Metabolic flows, such as water, electricity, traffic, information may be more relevant to cities as places of human improvement, creativity and exchange. The second part of 'Smart About Cities' contains an impressive compendium of easy to read representations of such flows which could attract popular agreement needed to curb the adverse effects of waste and emissions of metabolic flows.

As infrastructure is shaping the way of life of citizens Hajer believes that connecting 'smart city' discourse to urban metabolism may stand a better chance of changing the 'default in infrastructure'. This would apply to infrastructure hardware as well as rules regulating the use of infrastructure to achieve decoupling resource efficiency from wellbeing and access to services. Both hard and soft infrastructure are under political control which could shift from favouring business to user benefits. This could be done by providing access to a broader range of independent suppliers which, in Hajer's view, would stimulate innovation. However weak government may have difficulties in intervening in the rapid pace of urban change and bring about the necessary shift from blueprint ex ante planning to pragmatic intervention based on experience, including

[46] e.g. the reports of the expert panel of UNEP disseminated in UNEP's Our Planet, "Rio+20, from outcome to implementation", 2013, with significant disclaimers regarding the path to a green economy.
[47] UNEP, 2012. Sustainable, Resource Efficient Cities (pdf). Incorporating findings of the International Resource Panel, including the Cities Working Group in Cities and Decoupling.
[48] Maarten Hajer, 2014. Smart About Cities. Smart urbanism: an agenda for planning and design, pp29-42.
[49] James Throgmorton, 1996. Planning as persuasive story telling: the rhetorical construction of Chicago's Electric Future, University of Chicago Press. http://press.uchicago.edu/ucp/books/book/chicago/P/bo3616995.html

spontaneous bottom up initiatives. Nevertheless, in an increasingly interdependent world most local actions are dependent on networked supra-structures which supply and dominate provision, such as connectivity for mobile phones or non piped water.

Thinking outside the box is not new but difficult to penetrate the mainstream. Hajer postulates that social innovation is as necessary as technological one and considers it a disruptive force capable of uprooting existing vested interests, for example by shifting from aspiration of car ownership to car sharing. However, his proposed shift from the car as a life structuring status to the mobile phone is not liberating but perpetuating the same generic dependence on global corporations.

Alternative actors have pleaded for open and collaborative politics for a long time. History shows that usually their groundswell actions have ended in a return to the status quo of power relations. How would Hajer's approach differ? He criticised the model of an elected council with monopoly of knowledge, but it is hard to see how technological and social innovations will provide a more democratic and equitable alternative relation between the most powerful vested interest groups and citizens. While the classic model of decide – announce - defend has lost credibility, no viable model using 'intelligence of energetic citizens' as Hajer proposes has replaced it yet. The defection of the young generation from voting may signal the redundancy of the old model. Yet no positive alternative will arise while they are excluding themselves from participating in creating a new discourse, thinking out of the box and imposing their own ideas on the mainstream. Accumulation of decentralised autonomous alternative interventions – what Hajer calls 'radical incrementalism' - into a critical mass capable of changing 'soft' infrastructure, rules and regulations has not happened to date. Even Hajer acknowledges that at present the organisations promoting 'smart cities' are too powerful to be forced to include the wants and needs of citizens. His Amsterdam example which lets all flowers bloom alongside large scale high tech urban interventions may not stand the test of time, as signs are already apparent that the 'smart city' industry and even the traditional protagonists of urban (re)development are taking over the small scale operations, thus what he calls 'creative combination and implementation' is not happening just yet.

Finally, Hajer's proposal to create a globally networked urbanism remains realistically still out of reach. It would be worthwhile to remember the many attempts of local groups to network their experiences and build collective memory, well before the age of the computer and try to find out the reasons for their disappearance, if not outright failure. The phenomenon of 'exhaustion' comes to mind, besides other internal structural limitations of shifting from direct democracy to a more remote model of decision making while keeping control over the future. All these phenomena have attracted far less attention and research than techno-based developments to bring about the 'smart city'. If the recognition that social as well as technological dimensions matter for the sustainable future of cities, perhaps more attention to understanding the soft aspects is needed in both research and practice.

10 CONCLUSION

'Smart about city' instead of 'smart cities', 'smart urbanism' instead of urbanisation driven by 'smart' tech industry may still be a long way off, considering the evidence and the arguments of current 'smart city' discourse. 'Smart' technology may well be able to make a useful contribution to shifting the soft and moving boundary from 'need to have' to 'nice to have'. However, 'smart' technology alone is unlikely to deliver the story line of a liveable urban future embedded in ecological sustainability and regional bio-economics, and may well exacerbate the socio-economic divide.

This does not mean that such a goal is not desirable, or not doable comprehensively in the longer term. It would presuppose though work on operationalising the alternative principles assisted by progressive politicians, enlightened scientists, strongly driven environmentalists, and would need to encompass the large amount of disenfranchised people left out of the benefits of 'smart' technology. Decoupling wealth from resource use is a promising and scientifically endorsed premise for staying in a 'safe operating space' within planetary boundaries. However such a scenario beyond the 'smart' discourse could only become sustainable of it was also socially just.

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