# No need to fix: strategic inclusivity in developing and managing the smart city

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## Introduction

The prevalent discourses around the concept of the smart city often describe it as a long-awaited revolution in urban planning and management needed to 'fix' increasingly large, wasteful, chaotic and unsustainable civic environments across the globe through the deployment of high technologies. The emergence of located informatics, the 'Internet of Things', the creation of 'urban operating systems' and the addition of sensing and intelligent functions to everyday objects and spaces will – it is argued – change rules and improve quality of life, urban attractiveness and the related economic development potential, to fix an otherwise critical situation. These remedial aspects of the smart city are becoming entirely dominant in global debates as well as in many proposed real-world initiatives involving large-scale interventions, including the shaping of brand new urban centres.

This chapter looks at how the current urge to evoke an urban crisis and the consequent need of major fixes – this time of the 'smart' type – is, essentially, nothing new. The history of urbanism, however has shown how the push of top-down, idealized models and solutions has tended to make urban space and inhabitation 'stiffer' and less – rather than more – resilient. Reflecting on this can have important implications within the same battleground of the smart city's major selling point: successful urban management. The urban futures of large-scale smart city proposals so often discussed by large tech companies and their municipal clients tend to be based on hierarchy and centralisation, a vision where 'big data' might be collected locally, but it serves centrally conceived and controlled systems. How really flexible and able to adapt is such a model of the smart city? A model where 'good' management is based on economy of scale efficiencies and expert algorithms can be put into question.

This contribution outlines an alternative outlook for future smart urban management and development. This stems from the ability of organisations to engage in low-risk, context-aware trial-and-error developments and continuously learn from them, enhancing adaptability. The city can then be looked at as a 'learning' organisation that can thrive – and has historically thrived – on the dialogue between a series of smaller-scale interventions with the public good drive and holistic breadth of institutional involvement and planning. Urban designers have looked at ways to stimulate change and revitalisation through localized design and construction, which sometimes has been effectively branded as 'urban acupuncture'. Similarly, a 'smart' approach can be more effective, grounded and sustainable only by articulating successfully and strategically the institutional and the 'acupunctural' dimensions, through facilitation, incubation and coordination.

**The call for the smart city**

The 'digital city' movement of the second half of the 1990s thrived, with all the hype associated to it, at a time of economic growth and during a high-tech financial 'bubble' which was characterized – amongst other things – by strong discourse over the 'death of distance' (Cairncross 1998) and the replacement of physical with digital (see for instance Benedikt 1991 and Negroponte 1995). Overall, there was an over-optimistic outlook at the base of those developments, one which identified the rise of an 'information society' and its knowledge economy as a greatly beneficial – and somehow unstoppable – revolution and opportunity on economic, social and environmental grounds.

The current case for pushing major smart city projects however is being taken forward against the backdrop of a strong financial crisis and a steep reduction in public spending for most post-industrial economies. For most cities of the Global North, the burden of further investing in new technological infrastructure has become harder to justify. A set of more critical reasons is therefore employed.

The large-scale urban ICT platforms and 'solutions' being envisaged and marketed by large companies are described, as we can read in numerous websites, blogs and documents, as urgently needed to avoid a crisis. The case for the smart city is therefore made by employing emergency, dystopian discourses that represent the urban condition as quasi-terminal, and highlight the need for technological fixes. Cities are described as 'ill-equipped to deal with the shift in population and lack the necessary scale of infrastructure required to support it' (Living PlanIT 2011). Anil Menon argues on the CISCO blog that 'With limited resources, obstacles that range from traffic congestion and pollution to infrastructure constraints and overcrowding are increasingly amplified – all of which requires a paradigm shift in how we approach and manage these types of situations' (Menon 2013, CISCO blog). Similarly, Schneider Electric argues on its website that 'Cities face huge challenges: congestion, pollution, blackouts, crime, debt and rising costs - while competing with each other for investment, jobs and talents. Cities need to become smarter: more efficient, sustainable and livable' (Schneider Electric website on smart cities), and GSMA remarks that 'To ensure that the cities of the future are safe and healthy places to live and work, smart city initiatives are being established globally' (GSMA Connected Living website).

Whilst statements might slightly differ depending on the actors making them and their agendas, some general traits of the smart city rhetoric can be identified. We – it is argued – have created cities that are too large (and ever expanding), polluted, unsafe and fundamentally out of control. Such a dystopia can be counter-balanced by the utopia of smart fixing. Digitally-assisted urbanity brings with it the benefits of the de-materialisation of otherwise polluting processes (as Benedikt himself had argued in 1991), universal services, and above all expert systems which assist living and manage the otherwise spiralling chaos.

**The constructed urge to fix the city**

Feeling the need to fix the city in a major way, through the widespread introduction of innovative visions and interventions, is nothing new. But for this to be justified it takes the declaration of some major crisis. As Dear argues talking about the dawn of modernist urbanism:

> The origins of this emergent social rationality lay in the post-Civil War era, when reconstructionists worried how to discipline and regulate the urban masses, and how to

> control and arrange the spatial growth of cities (Boyer 1986: 9). It did not take long before a host of urban ills were associated with industrialisation and urbanisation, and an intense anti-urbanism was born. (Dear 1995: 31)

Many times throughout history there have been calls for applying fundamental changes to the way we conceive and organize the city. These have always been associated with societal transformations as well as technological advancements, and have created a synergy between the needs of functional adaptation, and the ideological drive to affirm new ways of looking at, and dealing with, urban space.

Renaissance urbanists had to deal with a city which of course needed some updating (for instance with sanitation), but whose medieval morphology also contrasted ideologically with how the new 'man' and his place in the World were defined by humanist philosophy. A major fix had then to be pushed, through the geometrical device of central perspective, restoring a much-desired order to urban space. Various experiments of new, ideal, towns were proposed and eventually built, such as Palmanova in Italy, designed in the sixteen century by Vincenzo Scamozzi. However, instead of being a resounding success, the experiment surfaced all the limits of a rigid, over-planned approach that put ordered morphology before actual, messy civic life as Muir (2007) argues.

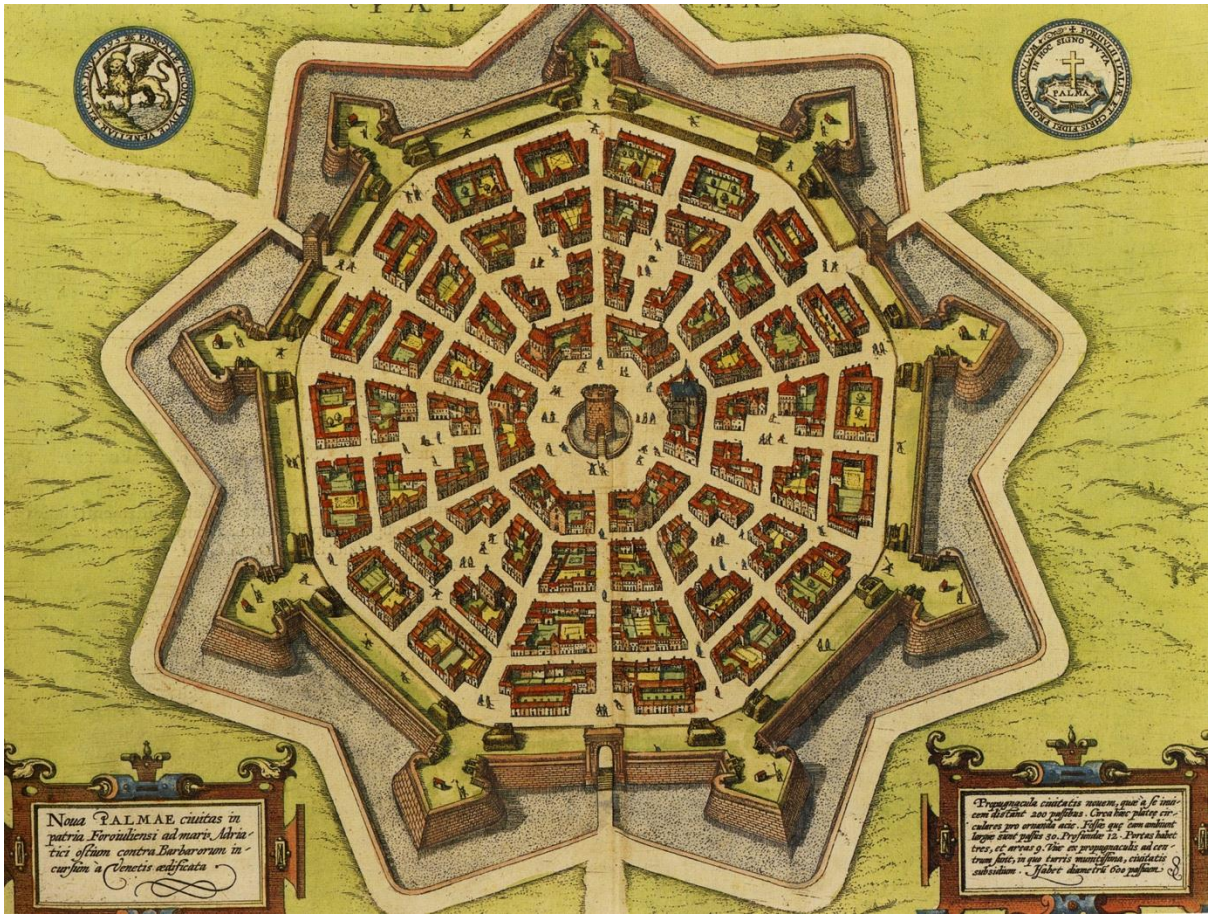


Figure 1: Plan of Palmanova from the seventeenth century (source: Wikimedia Commons).

Pre and post-Second World War modernist urbanism can offer another example of constructed 'crises'. As conceptions about society, technology and our present and future place in the World

evolved, so did the accepted civic visions and needed 'remedies'. Neo-classical built environment was not compliant with the rapid acceleration in the progress of modern science and technology, and the rise of an increasingly rationalistic, 'mechanical' World. A major, unescapable crisis was declared:

> [The man of today] finds himself still disconcerted, still inside the old hostile framework. This framework is his home; his city, his street, his house, his apartment rise up against him and, unusable, prevent his tranquil pursuit (…) of the organic development if his existence. (Le Corbusier 1928: 307)

Surely, cities as well as buildings needed upgrading and adapting but, again, this had become more than a practical issue. A relatively un-planned, un-controlled, organically developing city could only be dissonant with modernistic interpretations. As Raban notes: 'In the bibliography of the Chicago School compilation, The City (1925), Louis Wirth flatly asserted that: "There is a city mentality which is clearly differentiated from the rural mind. The city man thinks in mechanistic terms, in rational terms, while the rustic thinks in naturalistic, magical terms"' (Raban 1974: 181). The chance to fix the 'usability' and legibility of the city came by reorganising it in zones that could work together as the cogs of a rational machine, reducing irrational complexity. This was fixing by zoning**,** by creating clear, fixed land uses and their relationships, whilst pushing for the making of the 'international style' of an often context-neutral built space.

**Smart fixes**

The modernist legacy resonates strongly within the smart city movement. Postmodernist thinking and practice, rather than rejecting modernism tout-court has embedded it in a wider perspective (Jencks 1996: 30) and, with the machine paradigm shifting from the physical to the digital first, and then re-combining the two through ubiquitous computing – or 'everyware' as Greenfield (2006) brilliantly defined it – the modernist vision can still hold. As Dear notes 'By the beginning of the twentieth century (…) planning discourse had been realigned to emphasize "unity", "control" and "expert skills"' (1995: 31). The emergence of early discourses on the application of the internet and virtual reality to urban spaces naturally ended up connecting and extending this logic of expert control to new, high-tech practices. Computer scientists joined in fuelling visions of top-down overview and control, envisaging what it now is called 'big data': 'When you switch-on your city Mirror World, the whole city shows up on your screen, in a single dense, live, pulsing, swarming, moving, changing picture' (Gelernter 1991: 30). This top-down control ability has inspired mainstream smart city discourse and proposals as their main selling points. In 1999, Bill Mitchell acutely observed:

> In the design of smart things and places, form may still follow function – but only up to a point. For the rest, function follows code. And if you need to alter these code-enabled functions, you don't rebuild, reshape, or replace material components; you just connect, fetch, and load. (Mitchell 1999: 50)

'Coding' the city can then become an augmentation – and a new lease of life, a 'remediation' (Bolter and Grusing 1999) – for functionalist planning approaches. Perspective and zoning are now remediated by algorithm, and the new 'ideal' city is a digitally-enhanced one.

In South Korea for instance, cities like Songdo or Sejong – the latter earmarked to become a 500,000-people administrative centre for the country - have been conceived as smart cities, characterized by a strong impact of ubiquitous digital technologies over their successful management. It should not be too much of a surprise that in such plans a fundamentally modernist-looking masterplan strongly relies on the twenty-first century smart fix. Jung Hoon Han for instance highlights how 'innovative changes in urban form and land use patterns are achieved through the planning and development of built ubiquitous computing environment' which is defined as 'programmable spaces' (Han 2009: 39). These cities are conceived very much as machines with spatial, physical, digital and human gears and an urban operating system. They are the Ubiquitous City, or *U-city*. In the U-city, high technology is seen as directly – and deterministically – linked with the offer of a better lifestyle. The promotional video outlining various aspects of the 'smart' high quality of life promised in Sejong refers to this approach as 'Happy City'. In smart Happy City, the *trait d'union* is the maintenance of a clean and efficient urban space through data gathering, central control and information broadcasting, and the ability to engage in a series of smart transactions. Citizens and visitors – and the difference between the two is interestingly non-existent - rely on a civic operating system to assist and give them directions, whilst international investors are happy to pour money into a safe and well-organized place. The words 'control' and 'expert', as referable to the various urban expert systems, are entirely central to the city's vision for a functional 'happiness'.

Figure 2: The masterplan model of Sejiong City (source: author).

Yet, a sanitized smart city of big data and expert algorithms has its limits and drawbacks. As Manuel Fernandez puts it in his blog : 'Masdar, Incheon or Songdo are large projects that give us an idea of

the nature and scale with which we are capable of intervening in this territory. But they are no more than contradictory ideas to the very concept of cities as places with memory, history and conflict' (Fernandez 2012). Cities might just be too lively, messy and rich to re-interpret them as hi-tech machines. Yet they do need management, and the tools to adapt successfully to an ever-changing set of challenges. And, indeed, cities are becoming more and more digitally-augmented as a result of widespread adoption of networked and mobile technologies. If not by some major paradigm shift and rational restructuring – however 'soft' and electronic – does it make sense to think of alternatives?

**Beyond the ideal organisation**

When it comes to looking into models for managing institutions and companies, with a focus on making them responsive and adaptable to change, economist Tim Harford is critical about 'ideal' models of organisation. These are described as based on a rational hierarchy of line management and communication:

> First [a leader] should take advantage of the fact that he's in a position to see the big picture. The more technology he devotes to this task, the better he can see how everything fits together, enabling him to coordinate what's happening on the ground (…) The leader should also be surrounded by a supportive team with a shared vision of where the organisation is going. And to ensure that the strategy is carried out effectively, reporting lines should be clear. Information should flow to the top and be analysed, and instructions should flow back in response – otherwise nothing but muddle and chaos lie ahead. (Harford 2011: 41)

This amply resonates with the 'mainstream' ways to see the smart city as the ultimate digital urban rational machine. Systems able to capture and analyse data to construct the 'big picture' used by civic managers, and then 'coordinate what's happening on the ground', are the major feature in the smart city scenario. However, Harford argues that, when adaptability is at stake 'ideal organisation' models can be counterproductive:

> Every one of these [top-down control] assets can become a liability if the task of the organisation is to learn from mistakes. The big picture becomes a self-deluding propaganda poster, the unified team retreats into groupthink, and the chain of command becomes a hierarchy of wastebaskets, perfectly evolved to prevent feedback reaching the top. What works in reality is a far more unsightly, chaotic and rebellious organisation altogether. (Harford 2011: 42)

This has parallels in urbanism. The flexibility and ability of a city to learn and adapt is clearly affected by the way it is conceived and managed, and by how its spatial organisation and regulations facilitate – or fail to do so – change and initiative. Rationally zoned cities – places shaped through some top-down vision – seem to be particularly non-resilient unless they stray away from the purity of their initial model. In modernist Plymouth, UK, for instance, the rationally planned, all-commercial/shopping-dedicated city centre has crumbled under the pressures of economic changes. An impressively growing numbers of downtown shops has closed down and now lay empty, as zoning constraints have imposed rigid land uses to entire quarters and limited alternative, bottom-up ideas, and ultimately inhabitation. Where shops close down and nothing else can happen, people

will tend to use the streets less. This will disincentivize further business or retail uses. Or, as Jan Gehl puts it in a simple and powerful way: 'nothing happens because nothing happens' (Gehl 2011: 75).


Figure 3: Abandoned shops in Plymouth city centre (source: author).

**Beyond the top-down smart city**

Urbanists have become sensitive to such a conundrum, and processes of civic design which are people and life-centred, rather than machine-inspired, are being advocated for: 'A much better strategy would be to consider initially the "Life", then the "Spaces", then the "Buildings"' (Gehl 2006: 75). For the smart city too, a vision where people and their lives are central and actively participating in the shaping of environment and systems is not to be taken for granted. Current visions of big data-driven smart urban systems rely on the power for large transactions of simple information – derived from sensors as well as produced by people's mobile devices acting as data 'feeds' to pre-determined central systems. Prevalent big-scale proposals in fact tend to be about smart tools having the agency's lion share. For instance, the Living PlanIT documentation is interestingly more concerned with the 'city' engaging with citizens, than the other way around : 'One Urban Report™ and its associated PlaceApps will also dramatically improve the level of engagement a city has with its citizens' (Living PlanIT – Cities in the Cloud 2011).

Greenfield however argues that

> We want to use networks and sensing and computation and visualization to help people understand the power they already have over the circumstances of their lives, and to

> enhance that power. That's a pretty significant variance from the model of “the smart city” inscribed in, say, Cisco's promotional material — which treats these technologies as tools for city managers, and ordinary people as, at best, individual data points. (Greenfield 2011)

Moreover, an emphasis on bottom-up qualitative influence could indeed extend to the designing of the systems themselves, rather than stopping at the information provision phase. It has been argued how

> The “shared” digital city [model] does not just limit itself to acknowledging that citizens and local communities have information to provide or things to say within a certain pre-defined framework. It implies that the framework should not be pre-defined at all (…) and that communities should be empowered to design their own digital city and prioritize its aims. (Aurigi 2005: 21)

Similarly, Usman Haque promotes a citizen-centred discourse that highlights the importance of bottom-up, spontaneous interactions:

> We, citizens, create and recreate our cities with every step we take, every conversation we have, every nod to a neighbour, every space we inhabit, every structure we erect, every transaction we make. A smart city should help us increase these serendipitous connections. It should actively and consciously enable us to contribute to data-making (rather than being mere consumers of it), and encourage us to make far better use of data that's already around us. (Haque 2012)

Saskia Sassen, somehow linking with Gehl’s argument on ‘life and people first’ but referring more specifically to the shaping of smart cities, has also envisaged configurations in which ‘Rather than allowing the technology to control the urban environment, the environment shapes the technology’ (Sassen 2011).

So, what type of smart city approaches allowing to successfully manage a complex, humane, strongly contextualized and ever-changing organism could this translate into?

**Smart urban acupuncture for the adaptable city**

As examples on the push to apply major fixes to the city can be drawn from the history of urbanism, so can ideas for inspiring alternative ways to shape the smart city. These are also relevant because it is important to keep in mind that, however augmentable by high technology, we are still dealing with real places and their qualities, and that is central to it all. What is interesting here is the need to affirm again how envisaging a ‘circular’ relationship between the shaping of physical, social and digital spaces and facilities, is an immensely better way to frame any discourse and practice on the smart city, as opposed to the frequent deterministic and smart solution-based logic informing current debates. The too nonchalant jettisoning of what we know about urban design in the name of an unexplored ‘digital’ world and its alleged new rules, is not a good starting point towards shaping the digitally-augmented city (Aurigi 2013: 132).

Processes and practices of spatial design can therefore help here. The concept, and design practice of what has been referred to as ‘urban acupuncture’ indicates a series of minor but well-targeted interventions within limited, precise, and valued existing contexts, acting as catalysts for stimulating

urban renewal. This has been formulated – in different ways – by the Finnish architect Marco Casagrande and by the Brazilian architect and urbanist Jaime Lerner. Casagrande exemplifies 'acupuncture' by describing his own hands-on efforts, quickly turned contagious and participated, to re-inject hope and energy into Treasure Hill, an urban farming community earmarked for demolition in the heart of modern Taipei. His approach aimed

> to reinforce the existing urban farming qualities of the Treasure Hill with state of the art high environmental technology solutions and so view the Treasure Hill settlement as a living laboratory of sustainable urbanism. The new technologies and solutions must respect the way of life of the Treasure Hill veterans – the active solar panels and mechanical biological treatment units of organic waste must make room for the grandmothers. (Casagrande, mimeo on web)

Talking about the approach by Jaime Lerner, Landry notes how

> urban acupuncture involves identifying pinpointed interventions that by being accomplished quickly can be catalytic by releasing energy and creating a positive ripple effect. (…) The fast acupuncture approaches had a purpose: "preventing the inertia of complexity sellers, of pettiness and of politics from stifling critical opportunities and public projects". (Landry 2006: 378)

Such concepts resonate strongly with the reflections in this chapter, to the point that they can be translated and extended into a digitally augmented version: a 'smart urban acupuncture' as a desirable approach towards the shaping of a more context-sensitive, experimental and adaptive smart city.

This on the one hand relates with much of what is happening at the moment in urban informatics and located digital art. From the 'relational architecture' work of artist Rafael Lozano-Hemmer (Dekker 2009: 223-224), to media façade and urban screen installations such as *Aarhus by Light* or the *Confession Booth* by Daalsgard and Halskov (2010: 2278-2279), or the dysfunctional and provoking urban furniture of *Too Smart City* by Jimison and Paek (2011), it would be easy to fall into the temptation of dismissing most of this work as transient and of low practical impact. Interventions like these can present many pluses in terms of potential for public and community involvement and participation (and be useful as critique and provocation). But they are also valuable as part of an adaptable approach to city management and design, offering potential for low-risk widespread experimentation and trial-and-error. They are characterized by context grounding and the ability to obtain high-quality local feedback, organic development, and the increased resilience that can come with it. Smart acupuncture provides an alternative to big data, big platforms and big control. These localized experiments can gain adoption and be further customized (in an open-source way) and they bring clear advantages from a point of view of being smart at managing – in a facilitative way – the city. They can succeed or fail, but carry lower overall risks when they go wrong, hence even failures are safe enough and good for overall learning. They allow many different ideas to be tried out, are highly agile and initially independent of each other, so they can add resilience to the city. They are born or embraced locally, and work for – and within – a specific place, people, culture, and set of assets. These experiments do not try and apply any major fixes, and tend to be more additive than curative, more suggestive than definite. They also can, thanks to their scale and relative transitional nature, be 'interstitial', boosting a much-needed urban feature:

> Interstices represent what is left of resistance in big cities – resistance to normativity and regulation, to homogenisation and appropriation. They embody, in a sense, what is still "available" in the city. Their provisional and uncertain status allows for hint, a glimpse of other ways of creating a city that are open and collaborative, responsive and cooperative. (Nicolas-le Strat 2007: 314)

Within current debates, Anthony Townsend has recently argued in favour of a vision for the smart city as characterized by extreme flexibility so that it 'can be rapidly re-purposed [whilst promoting] activities that cultivate a maker-culture [through] a community [which] will embrace its role as a civic laboratory for testing the smart solutions it seeks to create' (Townsend 2014). And interestingly, even from within large corporations, awareness exists towards the benefits of more flexible and engaged approaches, potentially aligning with an acupuncture discourse where larger institutions can play an important role. IBM's smart city former 'architect' Rick Robinson, for instance, advocates for the 'refactoring' of the software and applications that can populate augmented urban space:

> Agile approaches embrace the fact that when we start to create a new system, we don't know exactly what the final result should be. Traditional approaches to software development attempted to address that challenge through the lengthy analysis of stakeholder requirements. In contrast, agile approaches address it by quickly presenting a first working solution to stakeholders for feedback, and asking them what should be changed. The final solution is co-created by developers and stakeholders through many iterations of that process. (Robinson 2013)

**The smart city of strategic inclusivity**

What we have just discussed suggests that it would be easy but dangerously reductive associating urban acupuncture – and its smart variance – with a bottom-up approach as opposed to the top-down one of the corporate smart city. On the one hand, Casagrande's discourse is suggestive of the idea of facilitating local laboratories of augmented urbanity stemming from context and revitalising grassroots energies. On the other hand, however, Lerner's approach to urban acupuncture complements this by introducing and valuing institutional roles. His vision involves a proactive and vigorous participation of institutions and local government in facilitating and supporting local change, as well as disseminating and extending good practice. It is important to note how Lerner's own personal successes in promoting acupunctural interventions were crucially dependent on the proactive and facilitative involvement of the institutional level. He describes how the quick and impactful local projects in Curitiba, like the Opera de Arame, built in an abandoned quarry, happened thanks to his own influence at institutional level, and with the municipality's involvement (Lerner 2014: 111).

Figure 4: The Opera de Arame in Curitiba, Brazil (source: author).

Approaching the design and production of a more adaptive smart city therefore needs to take into account two only apparently contrasting dimension: it needs the strategic, empowered and public

good-oriented ethos that an institutional involvement should provide, whilst at the same time it needs the agility, inclusivity and trial-and-error benefits of the local, acupunctural interventions.

Strategies need to abandon a focus on corporate, city-scale major fixes to the 'whole', to value and facilitate experimentation at the local, neighbourhood dimension. Such context-sensitive strategies require the multi-disciplinary, holistic and re-combined intelligence of artists, built environment and design professionals, social scientists, computer scientists and indeed community organisations, rather than being limited to the solutions offered by a large IT company. Yet, projects and ideas will still benefit from coordination, dissemination and the empowerment available through the presence of institutions and large companies too. These can have a vital role in making things real and more impactful, by facilitating the networking of local initiatives, extending the sharing of good practice, supporting the incubation of innovation and creativity, understanding spatial implications better and being able to learn more deeply from many socially embedded trial-and-error experiences.

A successful example that resonates well with this vision was for instance the approach of the Office of the New Urban Mechanics in Boston, USA. As Townsend describes it, this had been set up as a municipal-funded agency that 'instead of micro-managing (…) stayed strategic' by steering design and policy through a civic overview whilst encouraging localized prototyping and mobilising bottom-up ideas through 'an almost guerrilla approach to smart-city building' (Townsend 2013: 214-215).

**Conclusions**

Although many initiatives exist within the urban informatics arena that try to develop aspects of the smart city from the bottom up, prevalent discourses and drive by large municipal and industrial players point at the need for all-encompassing, corporate projects. We have seen in this chapter how such need is invoked through the construction of a discourse of crisis and emergency, and how – after all – this is nothing particularly new in the history of civic transformations. This chapter has however argued that major sudden fixes to urban environments – however fascinating prospects – have not worked well and have created serious adaptability deficits for cities. Our most successful and liveable places remain those that have developed organically and in a progressive way, rather than those fruit of a quick, major and rigid plan of change. The city is never a terminally ill patient in need of major surgery, and questions must therefore be raised about similar potential pitfalls in smart city development.

This means that rather than 'adding' major new systems to the city and deterministically expect positive change, it would be way better to create the conditions for high adaptability, fostering the unfolding of new context-sensitive and gradual ecologies of space, people and high technologies. In this sense, fragmentation is good. It can allow trying many new and diverse interactions of the three components mentioned above, with reduced risks for the city as a whole, increased resilience, and a more ecological unfolding, benefitting from the wisdom of place and community.

This is where the concept of a 'smart urban acupuncture' can come in. Beyond labelling, this implies a re-thinking of the processes involved in shaping and designing of the smart city. Fragmenting this into local labs and projects ensures experimentation, a rich range of ideas, and contextual, organic, adaptive development. But to close the loop this also needs to be enriched by multi-disciplinary, holistic strategic thinking (rather than one-expertise monologues), facilitated by municipalities, large institutions and businesses. So, far from envisaging an absence of institutional or industrial presence,

what this chapter is trying to highlight above all is the need for smart city visions to transcend any top-down versus bottom-up dualism. Smart urban acupuncture in the city is likely to be much more effective if supported and maximized through multi-dimension and multi-agency strategies, to become organically and inclusively smart, and foster an ecology of innovation.

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