Smart Legal Mechanisms for Sustainable Cities

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Abstract

The reality of “smart cities” is being spread all over the world as an obvious acquis, once populations are more and more gathering in urban areas. According to most recent reports from the United Nations, the largest part of the world’s population lives within the territories of cities and, by 2050, these numbers may reach more than 70% of the inhabitants on the surface of Earth. The aggregation of people in small territories, such as megacities, represents a greater problem for present and future generations, once there are questions of health, pollution, safety or welfare that must be dealt with more effectiveness. Therefore, environmental and spatial planning laws and policies are a concern for political and judiciary powers. Public officers are, obviously, concerned with people’s well-being, balance between various factors and resources in the nature, efficient use of those resources, cohesion and territorial sustainability, the future of the world we live in and the guarantee of meeting the needs of future generations. Consequently, the mechanisms used for fostering the development of “smart cities” (which are to be sustainable, inclusive and resilient territories), such as the use of new technologies, open data, monitoring and public participation, must be adopted by legal systems in urban areas. Adaptive legal mechanisms will play the catalysing role of articulating the wide range of the traditionally idiosyncratic elements of cities. Adaptive, flexible, participated, perceptive legal instruments are the most innovative secret for enhancing the future of people’s lives in smarter and more sustainable cities.

Keywords: Smart Cities, Adaptive Law, Sustainable Urbanism, Well-being

1. INTRODUCTION

For millennia, large numbers of human beings have tried to gather themselves in local communities, which would be later developed into urban communities, until the current most widely spread and common reality of towns and cities. Recently, the United Nations Human Settlements Programme (UN-Habitat), while preparing the Quito Conference “Habitat III”, published the World Cities Report 2016 - Urbanization and Development: Emerging Futures, which characterizes cities as a “gathering force” in the world, once the trend of a global urban growth “is not new, but relentless and has been marked by a remarkable increase in the absolute numbers of urban dwellers—from a yearly average of 57 million between 1990-2000 to 77 million between 2010-2015. In 1990, 43 per cent (2.3 billion) of the world’s population lived in urban areas; by 2015, this had grown to 54 per cent (4 billion)”¹ [1]. And, in fact, UN projections indicate that by 2050, 66 per cent of the world’s population will be living in urban areas. [2]. Facing all these new realities regarding cities, it should be also emphasized that, according to some other recent indicators, almost 75 per cent of the world’s cities have higher levels of income inequalities than twenty years ago [3]. This has been indubitably caused by the increasing population around the world and, simultaneously, the gathering in larger and larger cities (megacities when with more than 10 million inhabitants). Because each year more human beings choose to live in cities, being forced to adapt their lives to new challenges, new realities and continuous change. In fact, on this issue, Robert Park noted that “man’s most successful attempt to remake the world he lives in more after his heart’s desire. But, if the city is the world which man created, it is the world in which he is henceforth condemned to live. Thus, indirectly, and without any clear sense of the nature of his task, in making the city man has remade himself” [4]. From water to sanitation, decent housing, infrastructures, electricity, health, schools, waste, police services, fire departments, traffic, social action or environmental protection, in smaller or larger urban spaces, there is a myriad of rights, services or goods that are or should be assured and provided to citizens by public authorities. And local elected officials have been trying to use “smart city technologies” to decrease crime rates, improve air quality, manage and control road traffic, foster new businesses and start-ups through opening data, develop municipal infrastructures, or even to develop new city planning models for present and future generations. One of the first examples of predictive crime analytics was the IBM Predictive Software, used by Memphis Police Department [5], and in what regards open data the Lisbon City Council, in Portugal, launched an open data portal, named Lisboa Aberta (Open Lisbon) [6]. At this point, one of the most relevant questions of analysing the reality of the cities of the future is to know if legal and governance systems in cities are able to provide every inhabitant and citizen the adequate services and protection (from rights to public amenities or goods), while fostering, at the same time, sustainable development and well-being within the territories of cities, which are more and more populated, especially in these times of climate, social and economic change, that challenge the everyday efforts of public officials, legislators, judges, companies, associations and (primarily) citizens.

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2. LAW AND CITIES

Remembering the Latin maxim ubi societas ibi jus (where there is society, there is law), it is nowadays widely accepted that any social organization needs law to persist in time. And cities can be no exception to such principle. Regarding this issue, English jurist Gerald Fitzmaurice, who was member of the International Court of Justice and of the European Court of Human Rights, considered that: “The view that seems to be closest both to the realities of the matter and to the historical facts is the ‘social’ view, or in other words the idea embodied in the maxim ubi societas ibi jus. This maxim is more than a statement of mere fact (…). It is not simply that where society is found, law is found, but that it must be so found – that law is a necessary condition of any systematized form of inter-relationships” [7]. Depending on the constitutional law of each state, urban realities may be regulated by national (at federal or state level), regional or local law, being also possible that all these layers may share jurisdiction on the same reality, though in different areas. And even international or supranational law (such as European law) may affect, in some cases, cities. In addition to that, and once most of the world’s population is gathered in cities, it is extremely likely that most of legal issues, statutes and litigation are related to facts and realities that occur in urban areas. Therefore, law and cities will always be indubitably inseparable. From the assurance of human and fundamental rights [8, 9], through the application of international instruments, such as the Universal Declaration of Human Rights, or national constitutions, to national or local norms that authorities, companies and citizens must comply with, cities are, in fact, very often in the centre of the application (and also the adjudication) of law. In what respects securing rights of inhabitants in the cities, especially regarding environmental issues, reference must be made to a more recent right of the public to participate in decision-making processes, under the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, which was adopted on 25 June 1998 in the Danish city of Aarhus. The Aarhus Convention entered into force on 30 October 2001, establishing a number of rights of the public (individuals and their associations) with regard to the environment. States which are parties to the Convention are required to make the necessary provisions so that public authorities (at national, regional or local level) will contribute to these rights to become effective. The Convention provides for the right of everyone to receive environmental information that is held by public authorities (“access to environmental information”); the right to participate in environmental decision-making; and the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general (“access to justice”). It is, in fact, a form of increasing the ties between law- or decision-making and the people, once “the public sphere can best be described as a network for communicating information and points of view (i.e., opinions expressing affirmative or negative attitudes)” [10].

Following the words of Anne Barron, who certainly would agree with this viewpoint, clearly demonstrating the connection between law and the world around, it is essential to emphasize that: “[S]ince law also speaks the language of the system, it can function as a bridge between lifeworld and system, and a vehicle for the former’s defence and reinvigoration. In particular, law can serve as the ‘transformer’ that converts the ‘communicative power’ generated by discursive processes in the lifeworld into the ‘administrative power’ of the state” [11]. Within the so-called autopoietic theories, various authors such as Niklas Luhmann and Gunther Teubner [12], consider that there is an idea of legal “closure”, in which law operates autonomously from other disciplines and practices, reproducing and validating itself. As Cotterell would explain: “To adopt an idea of legal closure is to claim that law is self-standing and irreplaceable or has an independent integrity which is normally unproblematic, natural or self-generated, not dependent on contingent links with an extralegal environment of knowledge or practice” [13]. However, after trying to test autopoietic processes to the reality of cities, from an environmental perspective, Philippopoulos-Mihalopoulos correctly concludes that “autopoiesis does not attempt to change anything, only describe” [14]. Consequently, the connection between legal systems and the lifeworld, and in this specific case the urban reality, in its various elements, such as social, ecological or technological, must be absolutely emphasized, once law may certainly play a paramount catalyst role for solving the most varied problems within urban areas. One particular example of the importance that law and governance may represent in city life is the famous Portuguese judicial case RLx 1-Fev.-1957, in which the Lisbon Court of Appeal confirmed the judicial order, on a provisional procedure, to suspend the public works of the Lisbon underground train (Metroplativo de Lisboa) in an important avenue of the Portuguese capital (Avenida Columbano Bordalo Pinheiro), between midnight and 7 a.m. The reason of that suspension was the continuous working of the machines, which affected the inhabitants’ sleep and their “right of existence” (foreseen in the Civil Code and the Constitution of that time) [15]. In 1960, that decision was followed by a similar one, regarding the construction of tunnels for the underground, in which the Lisbon Court of Appel reaffirmed the recognition of the above-mentioned right to existence [16]. Other interesting occurrences of this connection between law and the city in other countries of the world may be referred, such as the Mabulako v. City of Johannesburg case [17], in which the High Court and subsequently the Supreme Court supported the claim and declared as unlawful, discriminatory and unfair the city policy of implementing prepaid water meters. Nevertheless, the Constitutional Court reviewed the previous decisions of the lower courts [18], legitimising the enactment of that policy, namely the application of prepaid meters to poor communities. The same theme was discussed in the United Kingdom, though with a happier ending, once the Water Industry Act 1999, s. 1, definitely prohibited the disconnection for non-payment and the use of prepayment metering devices, after an application for judicial review by six urban councils against the Director-General of Water Services [19].

3. GOVERNANCE AND CITIES

From the area of law to the fields of governance, it is essential at this point to highlight the role that local public officials (namely those who are elected) play in order to comply with those principles and norms that law sets out for them to govern urban territories [20]. How city mayors and representatives are selected, which powers and competences they are entitled to, which services and rights local governments provide and secure (transport, water, electricity, waste collection, etc.), are only some of the
characteristics that may differ from one city to another and that, as matter of fact, depend on historical, cultural or social factors [21]. And administrative procedures, commercial, industrial or environmental licensing, planning and land use are examples of what mayors and their officials must deal with, while having to, simultaneously, be subject to public scrutiny. And each time this referred scrutiny is more and more stringent. Nowadays, with the advancing ICTs, populations have more and more access to information and different realities from other countries and other cities. Consequently, it is easier to compare and benchmark governance models and economic, well-being or sustainability indexes. Therefore, the literature sets out a large number of criteria to evaluate governance structures in urban and metropolitan areas. From economic efficiency to fiscal capacity, regional coordination, land use planning or access and accountability [22, 23, 24]. However, the truth is that in recent times the fields of access and accountability turned to be considered as more and more essential in what regards the relation between public officials and citizens. That is why open data policies [25] have been gaining so much followers in some groups of mayors and their communities. And this new stream in city governance only stops when faced with difficulties caused by privacy and data protection. In what respects privacy and data protection, it should be highlighted that the EU institutions have recently approved a new General Data Protection Regulation (GDPR), through the Regulation (EU) 2016/679, which intends to strengthen and unify data protection for individuals within the EU. As a matter of fact, national and local governments, largely in North American and Europe, have been experimenting sharing their data, what has generated the spread of a vast number of civic-based applications, the forging of new partnerships between civic organizations, and also an increased involvement in civics by the technology community. In effect, open data has been allowing national and local governments to generate city infrastructure outside formal governmental structures, creating new possibilities for innovation and increasing information sharing, which fosters the generation of new partnerships, more innovation, more start-ups, and civic action [26]. At the same time, open data, public participation and engagement represent instruments of enhancing transparency and accountability, which, while following the recommendations of the Aarhus Convention, also close the relation between public officials or representatives and citizens, giving these latter more opportunities of asserting their rights and claiming for a better provision of governmental services.

4. SMART, FAIR AND SUSTAINABLE CITIES

4.1 Defining “smart cities”

The term “Smart Cities” is widely considered as broadly inclusive. In fact, it encompasses “almost any form of technology-based innovation in the planning, development, and operation of cities” [27, 28]. Within the European Union (EU) the term “smart city” almost has an official status, with the European Parliament having issued a study ranking cities based on their performance in governance, human flourishing, liveability, mobility, economy, and environment, assuming that: “the idea of Smart Cities is rooted in the creation and connection of human capital, social capital and information and Communication technology (ICT) infrastructure in order to generate greater and more sustainable economic development and a better quality of life” [29]. According to the referred study, the European Parliament adopted the following working definition for “smart city”: “a city seeking to address public issues via ICT-based solutions on the basis of a multistakeholder, municipally based partnership.” Nonetheless, other suggestions have been presented, such as the idea that a city is smart when the use of information and communications technology (ICT) makes: “the critical infrastructure components and services of a city — which include city administration, education, healthcare, public safety, real estate, transportation, and utilities — more intelligent, interconnected, and efficient” [30], as well as the approach “that cities are systems of systems, and that there are emerging opportunities to introduce digital nervous systems, intelligent responsiveness, and optimization at every level of system integration” [31]. Other interesting definition is based on the idea that a city may be called “smart” when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure are used to “fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance” [32, 33]. As a matter of fact, according to the possible definitions presented above, the inclusion of urban fairness or inclusiveness [34], public participation and sustainability is absolutely accepted to be included in the term of “smart city”, if the so-called intelligence that is present in the city (from ICT to open data) is used for improving those indicators, through innovative, open and analytical solutions, which are available for all.

4.2 Application to practical realities

As a matter of fact, in order to promote a more general movement of building smarter, but also fairer and more sustainable cities, there have been approved and released several instruments, reports and agendas regarding urban policies for more sustainable communities and consequently improved well-being of urban populations. One of the first relevant documents of the new millennium in this area was the Bristol Accord (December 2005), which was approved by the Ministerial Informal Meeting on Sustainable Communities in Europe, under the British presidency, and consisted of eight characteristics of a sustainable community, and a commitment to share good practice case studies. The mentioned characteristics were the following: (1) Active, Inclusive and Safe – fair, tolerant and cohesive with a strong local culture and other shared community activities; (2) Well Run – with effective and inclusive participation, representation and leadership; (3) Well Connected – with good transport services and communication linking people to jobs, schools, health and other services; (4) Well Served – with public, private, community and voluntary services that are appropriate to people's needs and accessible to all; (5) Environmentally Sensitive – providing places for people to live that are considerate of the environment; (6) Thriving – with a flourishing, diverse and innovative local economy; (7) Well Designed and Built – featuring quality built and natural environment; (8) Fair for Everyone – including those in other
5. CONNECTING ALL THE ELEMENTS

However, even domestically countries are implementing strategies for fostering urban sustainable development. A recent comprehensive effort of connecting law, governance and cities was the Portuguese Strategy for Sustainable Cities 2020, which was approved by the Resolution of the Council of Ministers no. 61/2015, of 16 July [36]. Based on the previously released international and European legal and policy instruments, the referred strategy recommends the appliance by national and local governments of solutions to inform and integrate citizens in the design and implementation of sustainability measures and urban efficiency, making cities able to be more sustainable, more resilient and greener, where governance and citizenship reach high levels of excellence, and following similar lines as the recent norms ISO 37120:2014 – Sustainable development of communities Indicators for city services and quality of life, and ISO 37101:2016 – Sustainable development in communities – Management system for sustainable development – Requirements with guidance for use, which represent an important step forward in measuring sustainability indicators in urban communities.

This strategy presents cities as extremely complex systems, gathering in the same space a multiplicity of actors, goods and activities, which interact with each other in a profusion of fluxes and interchanges. Consequently, capturing the way cities operate is an increasingly fundamental issue to improve the performance of urban systems and to mitigate the effects of the urban footprint on the environment and on people’s lives. In this sense, the mentioned Strategy suggests: more prosperity; more resilience; more health; more justice; more connection; and more cognition in the cities.

In effect, exactly basing their ideas on the challenging theme of resilience, some authors from different latitudes, such as Craig Anthony Arnold [37] or Jonas Ebbesson [38], have been trying to suggest solutions and methodologies, at legal and government levels, in order to enhance the so-called social-ecological resiliency, which could be briefly defined as the capacity of a system to withstand a disturbance and maintain the same basic processes and structures, dealing with change and continuing to develop [39]. Consequently, from a social-ecological perspective, it should be possible to give inhabitants the chance of participating in different processes, such as planning, government decisions and law-making in the city, in order to improve well-being and social-ecological quality. At this point, once the capacity of cities to build social-ecological resiliency and adaptive capacity will depend, at least in part, on the legal system and frameworks that shape and constrain cities, Arnold suggests a new paradigm, which he calls “adaptive law,” to replace features of the legal system that are usually seen as rigid and ignore interrelationships among social and ecological systems, emphasize front-end prescriptive rules, and generally are ill-equipped to

The Bristol Accord was followed by the Leipzig Charter on European Sustainable Cities, under the German presidency of the EU in 2007, where ministers recommended to: (i) Making greater use of integrated urban development policy approaches, through (i) Creating and ensuring high-quality public spaces, (ii) Modernizing infrastructure networks and improving energy efficiency, (iii) Proactive innovation and educational policies; and (ii) That special attention is paid to deprived neighbourhoods within the context of the city as a whole, through (i) Pursuing strategies for upgrading the physical environment, (ii) Strengthening the local economy and local labour market policy, (iii) Proactive education and training policies for children and young people; (iv) Promotion of efficient and affordable urban transport [35]. In 2010, the Toledo Declaration was approved, under the Spanish presidency of the EU, with the following principles: (1) on addressing the current urban challenges and implementing the Europe 2020 strategy by achieving a smarter, more sustainable and socially inclusive urban development; (2) on supporting the continuation of the Marseille process and the implementation of the European Reference Framework for Sustainable Cities (RFSC); and (3) on the need to consolidate a European urban agenda in the future. In addition, the ministers of the EU also Reference Document on integrated urban regeneration and its strategic potential for a smarter, more sustainable and socially inclusive urban development in Europe. Following these initiatives, the European Commission (EC) released in 2011 a report named Cities of tomorrow - Challenges, visions, ways forward, which tried to assess the state of the art of European cities, as well as contribute with solutions in the following themes: (1) Towards a European vision of the city of tomorrow; (2) A European urban development model under threat; (3) The main challenges for the Cities of tomorrow; and (4) Governance – how to respond to the challenges. Among its conclusions, it should be emphasised that a coherent approach to smart, inclusive and green growth strategies must be adopted, and once social exclusion and increasing spatial segregation will affect a growing number of regions and cities, governments (particularly local ones) should pay special attention to deprived neighbourhoods in order to foster more equality. The relevance of urban policies is, therefore, demonstrated through the choice of introducing in the Strategy Europe 2020 the theme of sustainable urban development as a priority intervention domain. Although the EU has developed a large array of “soft-law” solutions for fostering sustainable and inclusive urban development, the World Bank has also released relevant documents in this area, such Cities and Climate Change: An Urgent Agenda, in 2010. Moreover, the World Economic Forum created the Global Agenda Council Future of Cities Progress (2014 – 2015), which released the Top Ten Urban Innovations: (1) (Digitally) Re-Programmable Space; (2) Waternet: An Internet of Pipes; (3) Adopt a Tree through Your Social Network; (4) Augmented Humans: The Next Generation of Mobility; (5) Co-Co- Co: Co-generating, Co-heating, Co-cooling; (6) The Sharing City: Unleashing Spare Capacity; (7) Mobility-on-Demand; (8) Medellin Revisited: Infrastructure for Social Integration; (9) Smart Array: Intelligent Street Poles as a Platform for Urban Sensing; (10) Urban Farming: Vertical Vegetables. At the same time, the UN-Habitat’s Cities and Climate Change Initiative (CCCI) continues seeking to enhance the preparedness and mitigation activities of cities in developing countries, in order to foster well-being and equality in urban territories, which continues to be a real challenge these days. As a matter of fact, the already referred UN-Habitat’s World Cities Report 2016 and the launching of the “City Prosperity Initiative” – which aims to promote innovative approaches to urban governance and management to assist metropolitan leaders in guiding their cities towards economically, socially, politically and environmentally prosperous urban futures – are examples of the work developed by this UN programme.
adapt to rapid, unexpected change [40]. Therefore, arises the proposition of the implementation of new mechanisms of law and governance, following the same characteristics of adaptive planning, which is:“(…) an iterative and evolving process of identifying goals and making decisions for future action that are flexible, contemplate uncertainty and multiple possible scenarios, include feedback loops for frequent modification to plans and their implementation, and build planning and management capacity to adapt to change. It is planning that seeks to adapt to the complexity of systems and actors, conditions of uncertainty and unpredictability, and the dynamism of environments characterized by instability and rapid nonlinear changes” [41]. Simultaneously, Ebbesson states that, although not homogeneous in its conclusions, literature on resilience widely agree on the following factors and conditions:

“1. Flexibility in social systems and institutions to deal with changes.
2. Openness of institutions so as to provide for broad participation, not least in local decision-making and administration.
3. Effectiveness of multilevel governance.
4. Social structures that promote learning and adaptability without limiting the options for future development.”

These flexible, adaptive and open mechanisms are, in fact, essential characteristics that law and governance must have if intending to play a relevant role in the construction of smarter cities. In effect, communities will have access to new dynamic mechanisms and to a revolutionary reality of adaptive or even (why could it not be said?) “smarter” law and governance [42].

6. CONCLUSIONS

Being adaptive is no more than being smart, perceptive or responsive. With the reality of “big data”, social media and the continuous changes of a fast-moving society and an extremely uncertain environment, legislators and decision makers must be more aware than ever of what happens around them. Because people who live in smart cities want fast and precise responses to their daily questions and problems.Following the words of Benjamin Cardozo, who was an Associate Justice of the Supreme Court of the United States from 1932 to 1938:“Existing rules and principles can give us our present location, our bearings, our latitude and longitude. The inn that shelters us for the night is not the journey's end. The law, like the traveller, must be ready for the morrow. It must have a principle of growth” [43]. Therefore, legal systems and governance models of urban areas must be always prepared to grow, to evolve and to adapt to changes and uncertainty – from energy and microgrids, to interwebs, local service delivery and local political participation. Being smart, flexible, open, multileveled and capable to learn with the so-called feedback loops of society and nature, using new legal and decision-making mechanisms, is the secret for legislators and public officials to better respond to the needs of the population and providing them the best quality of city services and granting them the maximum level of well-being, which all human beings need and deserve.

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REFERENCES

[7]. Gerald Fitzmaurice, “The general principles of international law considered from the standpoint of the rule of law”, Recueil des cours, 92, Académie de Droit International de la Haye (1957).
[15]. RLx 1-Feb.-1957 (Sousa Monteiro), BMJ 67 (1957), 307-310 – RT 75 (1957), 381.
[16]. RLx 2-Mar.-1960 (Cardoso de Figueiredo), JR 6 (1960) 1, 225-228 (227/II).