Lucía Álvarez Enríquez* and Gian Carlo Delgado Ramos*
Cities, management, territory and environment

THE STUDY of cities and their place in the crosshairs of world society development strategies is a matter that has become more and more relevant over recent decades as cities have asserted themselves not only as centers of political and economic power, but also as meeting points of great populations and numerous migrations.

The data is revealing. In 1900 urban population represented only 13% of world total, in 1950 it reached 29% and today it is around 52% (United Nations 2011). Due to migration and population growth, 185,000 inhabitants are added daily to the urban population, so that cities have become the virtual receptacle for twenty first century society. Projections for 2050 indicate that urban population could reach between 64 and 69 percent of the world total (United Nations 2011), moment in which urban surface could double or even triple, depending on population and economic dynamics (Angel *et al.* 2011). Urbanization would be more intense in certain regions that so far haven't experienced important urbanization rates, like in the U.S. (89%), Europe (73%) and Latin America (78%), but which promise at least relative economic growth in the future (United Nations 2011). That is, in Asia, essentially countries like China and India, but also certain regions of Africa that are in the same sort of process, as nowaday those continents are averaging 45 and 40% of urban population, respectively (United Nations 2011).

The nature of cities, in their form, structure and type, but also regarding their socio–economic, political and cultural traits, will become increasingly important in the conception of viable and resilient alternatives for confronting the multiple and complex challenges, both present and future, including of course environmental, climate related and social justice issues.

The challenge clearly demands interdisciplinary approaches that take into account the complexity of the present situation and its possible future outcomes, the feasible alternatives and their implications. Although this primarily entails an analysis centered on the urban phenomenon, it also calls for an in depth revision of the rural ambience, and the urban–rural relationship, not only

* Centro de Investigaciones Interdisciplinarias en Ciencias y Humanidades, Universidad Nacional Autónoma de México. **E–mails:** alvarez@unam.mx, giandelgado@unam.mx

in terms of dependence on energy and resources, but also of the degrees of sub-ordination between the dynamics of some territories in relation to others (including national, regional and international subordinations, and of the North–South and South–South type), the existing power structures, vested interests, lack of symmetry in the distribution of benefits and damages, and even consideration of conceptions of quality of life associated with urban and rural life and their real potential in the short, medium and long terms.

The analysis needs to be, apart from multi–temporal and capable of involving multiple criteria, of a multi–scale type. This is so because the proliferation of activities and the creation of urban corridors and networks of cities that connect different points of the globe are economic global links that involve, in a non–symmetrical way, cities from all over the world. Global cities and globalized cities reproduce internally urban structures that concentrate and simultaneously disperse in extensive external urban areas the activities that support the world economy. The creation of megacities is the mark of this era, and these urban concentrations function virtually as contact points with national economies but, above all, with the global economy.

The data concerning imbalances between urban settlements and the rest of the territorry is clear. Today, cities cover an area of between 0.2 and 2.7% of ice–free global surface (Schneider, et al. 2009), they account for 80% of GDP, consume two thirds of world energy and are responsible for the emission—directly or indirectly—of four fifths of greenhouse gasses, known as GHG (Newman, Beatley and Heather 2009).

North–South asymmetries are also drastic. Only 380 of the most relevant cities in developed countries account for about 60% of world GDP (McKinsey Global Institute, 2013). Similarly, it is estimated that about a fifth of world population, the richest and practically totally urban, consumes 85% of all natural goods and resources (Davies, et al. 2008). Therefore, it can hardly be considered fortuitous that 783 million people lack access to sources of water, and 2.5 billion lack sanitation systems (www.unwater.org/statistics_san.html). Similarly, it is clear that modern forms of energy can be inaccessible not only to many rural areas in the global South, but also to certain parts of the poorest cities where the population depends on traditional biomass sources, as is patently the case in Sub–Saharan Africa (50%) and South Asia (23%). Thus, it is arguable that the flow of energy and materials that cities demand are mostly appropriated by a privileged part of the population, which has benefitted from the urbanization or construction processes of what Mumford (1961) has called *the second nature.*

Urban metabolism and political ecology

Urban settlements, principal sources of residues and pollutants in general, can be analyzed as systems open to flows of energy and materials; that is, they take energy and materials from outside the (urban) system, and eject dissipated energy and degraded materials. This process has been called urban metabolism in the literature. Different metabolic analyses have been made since Wolman (1965) attempted the first empirical approach to the case of a hypothetical American city of one million inhabitants. Studies carried out so far generally cover cases of cities in developed countries and focus on certain or various metabolic flows (water, food, energy, construction materials, etc.). Contributions by Baccini and Bruner (1990 and 2012) as theoretical and methodological forerunners, and later by others like Bettini (1998), Kennedy, et al. (2007, 2009 and 2011), or Minx, et al. (2010) must be mentioned, as they enable us to have a broad and integrated vision of the evolution of studies on urban metabolism. Other studies are also of value, especially that of Kennedy, et al. (2011), as it provides a meta–analysis of publications in this field; Minx, et al. assess the issue from an European perspective; Delgado (2013) establishes a comparative analysis of metabolic flows in certain Latin American cities; and Zhang (2013) contributes a review of the evolution and grade of complexity that characterize the methods employed in the principal analyses of urban metabolism to be found in the literature.

Other studies have focused on finer aspects; for example, on the assessment of energy, water, soil nutrients or food flows in different cities; on the problem of waste and its management from a metabolic point of view; on the demand of energy and materials from the transport sector, among many other topics (See *Suggested reading* on page 233).

Growing urban consumption of energy and materials and the subsequent emissions of residues makes the study of metabolic dynamics a must, as it enables a finer reading of the present state of the situation of individual human settlement in bio–physical terms, as well as its future projection. It simultaneously offers the chance to model more or less efficient ways for using resources and generating waste, thus allowing us to better focus our efforts. An example of this could be the planning of metabolic processes from the design process itself of this or that infrastructure (or the urban stock), by means of incentives or even restrictions or coercive or regulatory measures of another type. However, as has been described, even if the study of metabolic flows has received most attention, more recent analyses already recognizing the need to take into account the material stock of cities too (Baccini and Bruner 2012; Bristow and Kennedy 2013; Müller, et al. 2013).

It must be stressed that approaching the urban issue from the point of view of urban metabolism is clearly an interdisciplinary venture and, as Castán, Allen

and Rapoport (2012) describe, it overflows to various fields of knowledge — some of them hybrids in themselves, like industrial ecology, ecological economy, urban ecology and political ecology. From each field and interpretative point of view, different traits are stressed but, taken as a whole, we can see how growingly complex readings are beginning to take shape, in which it is possible to discern synergies between one and another emphasis, as for example in the cases of analyses regarding (1) flows of materials, energy and stocks in cities, (2) the city as an ecosystem, (3) economic and material relationships within cities, (4) rural–urban relationships and their economic drivers, (5) reproduction of urban inequalities, and (6) attempts to give new meanings to cities by means of novel visions based on socio–ecological relationships.

A broad range of authors have shown that more useful conclusions can only emerge from broader approaches and complex methods

According to this perspective, the key challenge is to find better forms of organization and more efficient and integrated modes of human settlements in such a way that, considering present need to diminish social asymmetries, a trend towards reducing bio–physical metabolism, both in per capita and total terms, is established. This generates a scenario in which small and medium cities in developing countries will play a central role, on the one hand because, in general terms, they are the ones that will experience higher growth rates and, on the other, because they are spaces where metabolic planning has better chances of success in the short and medium terms. The megacities, not only as very large but also mature settlements, will instead have to struggle with a complex and gradual transformation process of their great accumulated stock of materials towards something more efficient and resilient, at the same time as they will be compelled to modulate their demand for energy and materials by means of reducing their consumption patterns and increasing their recycling practices.

Urban political ecology, therefore, comes through as a useful analytical perspective with which to accompany metabolic planning, as it enables us to account for, as has been stated, the degree of social and environmental (in)justice associated both with the procurement of energy and materials on the part of the cities, as well as the generation of waste. As Heynen, Kaika and Swyngedouw (2006: 6) specify, "...urban political ecology more explicitly recognizes that the material conditions that comprise urban environments are controlled, manipulated and serve the interests of the elite at the expense of marginalized populations". Consequently, urban political ecology asks questions concerning who generates what sort of socio–ecological configurations and for whom; in

this context, as the authors point out, this type of unequal power relationships generally result in oppressive socio–ecological processes that, however, are highly contested (Heynen, Kaika and Swyngedouw 2006, 2–3).

It is hardly a minor matter that such socio–ecological configurations are generated in concrete socio–political contexts that promote specific lines of reasoning and detailed understandings on what "urban" means. Thus, at present, generally it is not recognized the prevailing social inequalities and their causes, their implications and possible root solutions; so tension is observed between prejudiced and ostracizing urban proposals, on the one hand, and demands for social and environmental justice, resulting from unequal distributions of benefits and encumbrances, on the other.

Urban political ecology, considered positively, enables new regulatory pathways for eco–political action conceived for thinking and, in a more concrete vein, advancing towards improvements in quality of urban life for the majority of the population; that is, attempting to re-

Present trends in urban development indicate a gradual excerbation of social conflict, that a new design of cities could conceivably mitigate

duce existing inequalities and increasing citizens' participation and quotas of power in the decision making process (thus competing with the dominant power structures). This is, and it must be stressed, a degree of participation in decision making that should be progressively better informed (from a dialogue of knowledge based on information of the best possible quality). In this context, focused analyses are no longer sufficient to cope with the growing complexity and amplitude of the challenge posed by growing urbanization of territories and the subsequent increase in the flows of energy and materials which are thus demanded.

Social and economic asymmetries as the central trait of urbanization processes

Contemporary cities appear as dual enclaves, divided and disintegrated, where populations with great privileges are concentrated and coexist with great groups of the dispossessed. This is why it is arguable to claim that megacities particularly condense the best and the worst in society: they serve as connecting nodes with global networks, but internally they generate pronounced disconnections between local activities and the different sectors of society. Cities attract elite sectors, professional and specialized, but also great groups of poor immigrants. At present the destination of nearly all migrants is not this or that country but

instead cities in particular. The great migratory movements converge on cities because they are thought to be the *locus* of economic opportunity, and that they concentrate major proportion of chances to get a job (Taylor 2010). The arrival of immigrants emphasized the intrinsic duality of these urban centers, causing drastic social fractures, expressed by growing social inequality, housing and urban services crises, increase in urban poverty and different social exclusion phenomena.

On the one hand, the presence of immigrants enriches social diversity and emphasizes multiculturality, and this consolidates another prototypical trait of the urban centers of our era, and becomes a major challenge for the administration of cities. Elite migrations do exist, but there can be no doubt that the most numerous ones are those made up by great marginal groups and workers that arrive in search of employment and better opportunities in life, who settle in qualitatively unequal conditions vis à vis the rest of the population. By and large, these major sectors settle in the suburbs of cities or in segregated enclaves where they tend to reproduce the cultural practices of their places of origin. This occurs in all big cities, but is particularly noticeable and more acute in American and European urban major settlements (although it can also be observed in Asiatic cities, like Tokyo), where the globalizing processes have increased the attraction of national and international populations. The concentration of underprivileged ethnic minorities generates socially conflictive urban groups in which poverty, unemployment and precarious living conditions cause high rates of criminal behavior and stigmatize ethnic groups, accentuating their segregation and levels of discrimination. The hegemonic social groups also segregate themselves from these criminalized ethnic groups and the social fracture becomes deeper, causing the proliferation of areas of inequality. This fractured society drifts farther and farther away from social cohesion and solidarity, accentuating disintegration (Álvarez 2013a).

In the economic ambience, apart from the effects generated in international relationships, analysis has shown that one of the most relevant transformations is that, contrary to the previous capitalist pattern of development in which the original accumulation implied amassing private property, globalization has generated social relationships linked to production in which legal property is not the central issue; the critical factor is the liberation of space and workforce for its use and profit. It's what David Harvey (2006) has called "accumulation by dispossession", referring to transnational capital that may not have the legal property of the means of production, but does have the capacity to appropriate the available resources. In this sense, some peculiar urban phenomena have occurred, that involve disputes over territory and its appropriation by large investors. In the face of these disputes national and local (municipal) governments

have played a central part in the implementation of public policies that favor the neoliberal pattern of deterritorialization, thus responding to global dynamics.

Global forces operate in big cities, such as real estate investment that reorganizes the use of urban land; the brands and companies that homogenize consumption and life style; the re–orientation of the actions of the state. These are spaces regulated principally by market forces or specific economic interests, and the territorial reorganization we are going through is a result of this process, in which mercantilizing space, increasing productivity, making activities more competitive, reducing the state and enlarging markets are all expressions of the same impulse and the same vision. Consequently, today big cities are competing for positions of leadership in various fields (financial, economic, services, cultural) and thus producing a new social geography (Portal 2012).

In these conditions, the city becomes a venue for disputes and demands for new spaces and better living conditions. The "right to the city" is brandished by different minorities and underprivileged sectors, exposing the accumulation of conflicts and contradictions that the city represents. Alongside the big investors and real estate financiers—who demand spatial, financial and economic privileges—women, the unemployed, the young and some ethnic groups generate demands for social and public space, for urban assets and employment.

Capital, citizenship and culture

Urban concentrations in the new century coincide also in their social ambiences with the trends in global cities, in which we find high levels of concentration of income and power, that generate imminent enclosures of poverty and exclusion, environmental destruction processes, contributions to climate change, and acceleration of migrations and urbanization processes, social and spatial segregation, and the privatization of common assets and the public space. This is the city in which great concentrations of power and capital coexist tangibly with enclaves of poverty and conditions branded by inequality (Álvarez 2013b).

Characteristics acquired by the city in terms of urban structure, economy, the social dimension and culture, have become etched into the trends exhibited by great contemporary metropolis', that show an overall picture that is qualitatively different from that of the Fordist cities in the second half of the twentieth century, thus representing new challenges to governability and construction of citizenship.

In contemporary cities influenced by globalization, transnational capital and the workforce drawn from less favored sectors of the population are two decisive players that clash in the city with opposing requirements and demands,

which express the right to the place from different points of view. This occurs because the global city has become a place for posing new demands: on the part of global capital, which uses it as an "organizational consuption article", but also on the part of players in the disadvantaged urban population, who frequently have exhibited a presence that is as internationalized as capital itself (Sassen 1995).

New demands concerning the city have enabled the emergence of new forms of citizenship and demands for rights, placing special emphasis on the *locus*. The city as a space for investment and achievement of capital, and the city as a space for getting jobs, settling, recognition of cultures and exercise of capacities. In this polarization immigrants are dynamic players which feed the social demands as well as exercising new urban practices.

In the cultural field, concern has focused on the impact that the great urban transformations have had—within a framework of profound inequalities—on the reproduction of social identities, on certain key aspects of everyday life, on intercultural relationships and cultural diversity. The issues of interconnection and flows, of what is transformed, of what is changing, have strongly disturbed the very conception of identity, of culture and citizenship. This poses new problems in the construction of collective identities, because previous reference parameters have been brought into question, causing the boundaries between identities to become progressively more fragile, imprecise and blurred, consequently determining social movements which seek to achieve for their members access to urban assets, and that seem to respond to the necessity of certainty in terms of belonging to the city (Portal 2012). Fragmented and unequal access to material and symbolic assets, widens the chasms between social groups and cultures, making way for specific phenomena that generate differences, inequalities and disconnections as prototypical traits of globalization (García Canclini 2004).

In parallel with these processes, civil society spawns initiatives that dispute globalizing processes on different levels, attempting to generate new forms of belonging, new proposals for urban development, and diverse survival strategies. All this causes considerable impact on the construction of very varied forms of citizenship, which promote new modes of appropriation of produce in accordance with the very parameters of neoliberal global society.

Final reflection

The wherewithal to transform urban spaces in rich countries is incomparably greater than that in poor ones, not only because they have greater economic resources, but because they can allow themselves to "export" or internationalize

many of the hidden or indirect socio–environmental and climatic costs (not-withstanding that all cities do it in lesser or greater degree with their own adjoining spaces).

The urban challenge in poor countries, like those in Latin America, tends to be more problematic and complex due to the limited or compromised capacity to take measures or initiate actions. It is a context in which Latin America — contrary to Africa and South Asia — is highly urbanized, as it exhibits comparable percentages with the rich countries, but with strongly primarized economies, which is to say relatively limited in the best of cases. Thus, economic means are quite restrictive, and political conditions highly complex and deficient, at least in comparative terms. It is a scenario in which, additionally, the poverty variable, especially in the slum belts but also in rural areas of the cities, represents an enormous challenge to any type of reconfiguration of urban life towards anything with more humane, environmentally friendly and culturally diverse features.

We are facing a massive challenge which, as we have mentioned, compels us to embark on interdisciplinary reflection and work, which must be specific and tailor–made for each region, country and city. Generalizable prescriptions are not valid, even when certain factors are repeated in many proposals, like, for example, the conservation of ecosystems in urban and peri–urban areas, efficient use of resources, implementation of "green" technologies, integral planning of land use, transformation of the built environment, and the design and setting up of more sustainable, durable and resilient infrastructure, or the management of "urban governance". Thus, although with certain differences, imaginary scenarios are proposed, underlying proposals for resilient, sustainable, ecological, green, low carbon cities, or for the promotion of new urbanism or sustainable urbanism, among others (see *Suggested reading* on page 233).

In any case, design and execution of public policies necessary for transforming the present trends in building, operating, managing and living in cities should be imaginative and propositional, and on the basis of integral planning of cities — including indeed a metabolic planing (Bettini 1998) — of their rural spaces and their conservation areas, since thinking in terms of urban life as a self–contained process doesn't make any spatial or territorial sense, neither in socio–economic nor environmental terms. The sum of multiple actions, if these actions are rooted in the mentioned integral planning process for urban territories and their uses, could be a decisive factor for enabling synergies and co–benefits of different kinds. This is why traditional management by sectors is neither sufficient nor viable.

The matter involves, apart from integral planning of land use, new modes of governance, genuine citizen participation and inclusiveness, assessment of

the pertinence and viability of new forms of design and construction of infra-structure, utilization of modern "green technologies" (for example, alternative energy and new ecological materials), and familiarity with traditional and popular knowledge and alternative technologies, expansion of public transport and quality non–motorized transport, from the point of view of socially accessible and affordable mobility, the promotion of energy saving mechanisms and diverse materials (and, when appropriate, recycling), the preservation of green spaces and environmental restoration in urban peripheries, the care and recovery of rivers, canals and flood drainage areas, stimulation of programs to inform, educate and encourage social participation; among other actions and instruments that would enable the reconversion of cities, according to the path each settlement works out for itself, in conformity to its own reality, in territorial spaces that need to be progressively less greedy for land, materials and energy, more livable, with a greater capacity for reacting in the face of climate change and the environmental crisis, apart from being more socially fair and integrating.

Summing up, the triad made up of cities, territory and environment is undoubtedly one of the major and more complex challenges of our age.

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