Population and Environment: selected issues

Urbanization & Environment:
trends and patterns in contemporary Brazil

Heloisa S.M. Costa & Roberto L.M. Monte-Mór

1. Introduction: an overview of Brazil's territorial occupation

For centuries Brazil settled along its extensive Atlantic coast and marched west to establish territorial rights and claims over natural resources. Occupation followed export resources exploitation, from early dye-wood days to gold and gems, "drugs" and rubber, as well as land, for sugar and coffee plantations and cattle ranching, which opened room for and supported those various regional economic cycles. Local towns and hamlets became central places connecting the extensive rural areas to the coastal centers that channeled production abroad. A few port towns and cities concentrated the export mercantile capitals and facilities, and the state apparatus to control and unify America's Portuguese colonial territory.

Although urbanization played a central role in Brazil's recent industrial transformation, it is not a historical trait. The country was characterized by extensive rural occupation only counter-pointed by the few coastal cities and isolated towns that captained the fragile urban networks amidst the savannas and tropical forests. Non-concentrated riches for colonial exploitation prevented in-land settlements for nearly 200 years[1].

Permanent settlement began in northeastern slave/sugar plantations in the sixteenth and seventeenth centuries, but the eighteenth century gold mining de-located that centrality to the economic concentration in the São Paulo region that has re-shaped Brazil for over two centuries into its present socio-spatial configuration. Several "marches to the west" led to further territorial occupation from the southernmost Paraná-Paraguay river basin to Amazonia, although the great majority of the Brazilian population still resides less than 300 kilometers from the Atlantic coast. However, the recent occupation of the Central Plateau and Amazonia has meant a rather radical reorganization of Brazil's political territory and social and economic space. Millions of migrants followed resource-oriented capitals and government investments to Center-Western and Northern states in search of socio-economic opportunities and a better life, in spite of continued (re)concentration taking place in São Paulo's extensively polarized states and regions.

Socio-cultural and political unity has always been a concern for all central governments. However, only after the 1930 Vargas Revolution did economic and spatial integration become a major issue for federal policies. The 1946 Constitution strengthened regional policies, as did the construction of Brasília in the late 1950s, a political city from which industry was ruled out, but whose weight and strength

on the State economy made it a *de facto* growth pole, constituting effectively Brazil's most significant regional project. The *green revolution* also began to change the land use pattern by extending and multiplying land rents, thus reinforcing land concentration and rural-urban migrations while resource-oriented industries moved westwards following federal investments in infrastructure and therefore consolidating the long-desired spatial integration.

Brazil's 20-year military rule extended the capitalist general conditions of production previously concentrated only in the few urban industrial areas. State investments in transportation, energy and communications infrastructure and services reached all regions, with a particular emphasis on the Northern and Western agricultural frontiers. The 1967 Constitution made the country more attractive for foreign capitals and opened the path for the intense Fordist industrial growth known as the *Brazilian Miracle*. Levels of dependency deepened as required industrial imports increased, but cheap international credits and foreign capital financed the productive investments for those peripheral markets in an attempt to escape low profit rates in the central economies. Brazil's industrial patterns changed dramatically as previous investments in import substitution industries located at the base of the productive chain, capital and intermediary goods, gave room to diversified durable goods production increasing both income and spatial concentration. At the same time, a state sponsored system of compulsory and voluntary savings financed the production of urban industrial space beyond cities and major towns while new forms of credit reached modernized middle-class consumers in metropolitan and urban areas as a whole. Labor regulation, social benefits and urban social services reached even those frontier urban-rural and regional spaces attempting to extend the Brazilian selective welfare state and peripheral Fordism to the country as a whole[2].

By the end of the 1970s (urban) general conditions for (industrial) production and (collective) reproduction had been *extended* much beyond city limits to encompass all metropolitan regions and reach the urbanized rural areas along the major roads, thus connecting previously isolated regions, their towns and countryside, to the urban-industrial centers. Such *extended urbanization*[3] took over urban and rural areas and regions spreading along with the energy, transportation, and communication systems, the *urban tissue* that had come to virtually encompass the entire national space. In 1978 Francisco de Oliveira emphatically stressed Brazil's new hegemonic urban character in a provocative essay in which he acknowledged the roots of that radical socio-spatial transformation:

> There are no more agrarian problems. There are now urban problems on a national scale. ... The urbanization of the Brazilian economy and society is nothing but the extension, to all corners and sectors of national life, of capitalist relations of production; although it still is, in many cases, only a tendency, its mark is rather clear: there is no turning back. (Oliveira, 1978: 74)

Soon, the new international division of labor came to place tremendous strain on peripheral countries as they were forced to compete in a global market based on capital attraction and technological advances. The 1980's fiscal crisis of the State and the 1990's neo-liberal policies both contributed to drive the federal

government away from its role as the main economic actor and welfare provider. Economic restructuring deepened the consequences of four decades of surmounting concentration of wealth bringing socio-spatial inequalities to unbearable levels. In a few decades widespread urban life, relying on capitalist relations of production and collective consumption, took hold of the country accompanied by high levels of unemployment and social exclusion, while increasing conditions of poverty fueled urban and rural unrest and violence. The impact upon the environment has not yet been fully acknowledged or measured albeit the extensive recent literature about Amazonia's deforestation and local environmental problems in metropolitan areas and/or major river basins. In the following sessions some of those impact is discussed within recent urbanization trends and patterns, eventually leading to the identification and evaluation of prospective urban-environmental policies.

2. Contemporary trends in Brazil's urbanization

Brazil's contemporary urbanization suggests the emergence and consolidation of diverse and complex spatialities at local, regional, and national levels that reinforce patterns already observed in previous decades. The first important feature to highlight is that the "urban transition" is virtually completed. Census data show impressive urbanization levels in all major regions, including the North and the Northeast, which together accounted for the greatest increase in Brazil's urban population in the nineties.

Table 1
Urban population (%) - Brazil and Regions
1950-2000

Brazil and Regions	1950	1960	1970	1980	1991	2000
Brazil	36.16	45.08	55.98	67.70	75.47	81.23
North	29.64	35.54	42.60	50.23	57.83	69.83
Northeast	26.40	34.24	41.78	50.71	60.64	69.04
Southeast	47.55	57.36	72.76	82.83	88.01	90.52
South	29.50	37.58	44.56	62.71	74.12	80.94
Center-West	25.91	37.16	50.94	70.68	81.26	86.73

Source: FIBGE – Censos Demográficos.

From 36.16% in 1950, Brazil's level of urbanization progressively increased to 81.23% in 2000. This is due to both the concentration of urban population in the Southeastern developed and populous states and the intense process of urbanization in the Northern and Western regions. Even if in quantitative terms the remaining totals of rural population are quite expressive, around 32 millions, it is difficult to access exactly to what process such figures refer: in one extreme there are people living off of traditional rural systems of production and reproduction. On the other, they include rural dwellers linked to modern export-oriented agrarian/industrial productive networks. In between, a are a wide range of situations, including metropolitan populations[4].

The second important point to highlight is that such high levels of urbanization are the material expression of decades of high and increasing urban growth rates until the early eighties, in rhythms and intensities that vary according to the larger process of regional extension of urban-industrial capitalist relations of production throughout Brazil. Table 2 summarizes such differences by showing the regional annual growth rates for total and urban population during the last five decades. Different urban-oriented patterns of migratory flows provide the demographic analytical category to express such spatial distribution of population and economic activities. Classic rural-urban migration, population movements following the frontier of resources expansion, urban to urban mobility, intra-metropolitan rearrangements following property developments, daily commuting, and seasonal or return migration are some of the forms taken by that process.

Table 2
Population annual growth rate by regions
1950-2000

Brazil and Regions	1950/1960		1960/1970		1970/1980		1980/1991		1991/2000	
	Total	Urban	Total	Urban	Total	Urban	Total	Urban	Total	Urban
Brazil	2.99	5.15	2.89	5.22	2.48	4.44	1.93	2.97	1.61	2.44
North	3.34	5.04	3.47	5.44	5.02	6.44	3.85	5.37	2.57	4.75
Northeast	2.08	4.63	2.40	4.57	2.16	4.10	1.83	3.55	1.30	2.77
Southeast	3.06	4.91	2.67	5.19	2.64	3.99	1.77	2.34	1.60	1.92
South	4.07	6.44	3.45	5.29	1.44	4.98	1.38	2.98	1.41	2.41
Center-west	5.36	8.90	5.60	9. 94	4.05	7.69	3.01	4.30	2.37	3.11

Source: Anuário Estatístico do Brasil, 1995 and IBGE-Censo Demográfico do Brasil 2000.

Although urban growth rates for the country as a whole were significantly reduced in the 1980s, rates of urban growth in the North and Center-West were still quite high in the last decade. In terms of patterns of urbanization, from the fifties to the seventies urban agglomeration in major centers was the dominant trend, together with emerging urban forms associated to the expansion of the resources frontier. The incomplete Fordist industrial model mentioned above required metropolitan concentration of the conditions of production, particularly in the Southeast. The nine metropolitan areas comprising 22% of the country's total population in 1960 grew at a rate of 4.59% to reach 26% of total population in 1970. Although metropolitan population growth dropped to 3.73% in the 1970's, it already represented 29% of total population in 1980, and since then it has maintained the same participation by systematically extending metropolitan boundaries.

The eighties and the nineties were marked by a decreasing rhythm of population concentration in urban agglomerations and a de-concentration of medium-size cities and even small towns articulated in local and/or micro-regional sub-systems. In fact, spatial economic restructuring had made it possible for industry to locate anywhere where the basic conditions of production existed; whereas, metropolitan industrial losses to middle-size cities and smaller towns

reflected growing agglomeration diseconomies and spatial fluidity[5]. Both tendencies point toward a growing complexity in the urban network in which affluence and social inequality can be identified in all urban settlement patterns, thus extending typically *urban problems* to the country as a whole.

A recent study of Brazil's urban network identified twelve metropolitan agglomerations (200 municipalities) that respresent 33.6% (52.7 million inhabitants) of the country's total population. In addition, thirty-seven other urban agglomerations (178 municipalities) comprise 13.1% (20.6 million inhabitants) of the total population while sixty-two (isolated) urban centers (over one hundred thousand inhabitants) comprise 8.5% (13.3 million people) of the total population. Those 111 metropolitan and urban agglomerations and (isolated) urban centers comprise 440 municipalities, less than 10% of Brazil's 5,656 municipalities, and hold 55% (86.6 million people) of the country's total population (Ipea/Unicamp/Ibge, 1999). In addition, new municipalities have been recently created showing that urban concentration also takes place in villages and hamlets that eventually grow to become new municipalities[6].

Therefore, in terms of the spatial configuration of urbanization in the last decade, the following patterns can be identified:

- The growth of *metropolitan areas and urban agglomerations* and the expansion of their functionally integrated areas encompass surrounding municipalities. The result has been an increase in the country's metropolitan population and the emergence of new non-metropolitan urban agglomerations, mostly in the more populated states[7]. The growth of metropolitan population, particularly in the largest metropolitan regions in the Southeast, has occurred in spite of a progressive decrease in the annual rates of growth of their central municipalities, mainly state capitals, and consequently, a substantial demographic increase in border municipalities, which usually account for the most deprived areas. The extension of metropolitan boundaries to include new municipalities indicates that both conurbation and metropolitan growth continue extensively throughout regional space. Also, with the rearrangement of productive activities and services, new and existing sub-centers within metropolitan boundaries gained economic and demographic importance and led to the subdivision of municipalities, thus making metropolitan governance more complex. Metropolitan centrality also reached out to encompass regular commuting movements of population and goods in cities and towns further away forming *metropolitan rings* that extend as far as 200/300 kilometers from central cities. Therefore, current levels of metropolitan integration and extension point to levels of urban-regional complexity and socio-spatial integration not before seen.

- The number of *large isolated urban centers* (over 100,000 people) is growing in all macro-regions. In fact, while urban agglomerations are concentrated in the more populated regions, isolated urban centers are more evenly distributed among all five regions. The Northeast, the Southeast and the South, the most populated regions, concentrate 35 out of 37 urban

agglomerations (97%) as opposed to 45 out of 62 isolated urban centers (70%) (Ipea/Unicamp/Ibge, 1999).

– *New micro-regional urban organizations*, formed by middle-size cities and towns where socio-spatial integration and/or extended conurbated areas call for cooperative responses, have produced *metropolitan areas without metropolises* (Monte-Mór & Drummond, 1974; Costa & Monte-Mór, 1995)*.* Municipal districts or rural peripheries seeking political, but not necessarily economic, autonomy and striving to become new municipalities are a by-product of such a process of deepening urbanization, not only in industrialized areas but in the agricultural frontier towns as well, i.e., wherever extended urbanization propitiated and deepened the *inter-urban* division of labor. Intensified collaboration means sharing equipment, facilities, human resources, health and education services as well as developing complementary local economies and urban environments and organizing municipal associations and/or informal cooperation.

- The proliferation and/or expansion of *small and medium-size towns*. This is due to the creation of new municipalities (particularly in Amazonia and the Center-West) and to the growth of local and micro-regional urban centers. As a result of the new demands for the expansion and articulation of production and consumption services, smaller urban centers tend to develop new forms of inter-municipal cooperation institutionally innovating to strengthen the provision and management of services. The consequence is the development of new socio-spatial patterns in which urban networks are reorganized according to the new directions and intensities of flows of goods and services at both micro- and macro-regional levels. At the micro-regional level urban sub-systems tend to arise as the various urban centers develop complementary roles and articulate their actions in associations of municipalities and joint programs for specific purposes (education, health, sanitation, road construction, etc.). At a broader regional level, middle-size towns tend to grow fast and develop an urban network around them to channel production and provide services within a hierarchical central place structure.

- The pattern of *extended urbanization* through which the *urban tissue* extends from the cities and metropolitan areas to gain the rural and regional spaces and subordinate them to the urban-industrial logic (and its requirements) [8]. In doing so, it redefines and integrates former rural spaces to the production and consumption systems generated in the multiple centralities (and peripheries) of major urban agglomerations. The blurred urban (-rural) tissue that results from those various social space-time combinations within extended urbanization creates difficulties for socio-spatial classifications, both in metropolitan peripheries and in frontier areas such as Amazonia. Unexpected socio-spatial combinations between traditional pre-capitalist rural and forest dwellers and city & town modernized industrial capitalist urbanites defy traditional classifications: "urban" rubber-tappers? rural

services nuclei? People commute from rural areas to work in cities and towns and vice-versa while dense rural communities may present much better collective conditions of living than booming towns and urban peripheries. Attempts at classification come up with expressions such as rural agglomerations, rural nuclei, rural slums, areas of urban extension, isolated urban areas, among others. Local diversity builds up underneath the extended urban- (post) industrial tissue.

3. Environmental implications of the present pattern of urbanization

Urbanization measured solely in terms of residing inside or outside urban boundaries hinders social and cultural aspects of the process that are paramount to the understanding of environment-urbanization relationships. What is the meaning of having more than 80% of urban population living in such a diversity of forms of urban areas? What are the acceptable conditions of urbanity? They certainly include access to housing, basic sanitation, education and health services, among other items of extended social reproduction. Access to work, leisure, consumption, political organization and citizenship are also important components of such a list. Are those conditions extended to various forms of settlements in rural areas? In a society characterized by enormous socio-economic internal inequalities, segregation, and exclusion issues related to the environment are necessarily linked to questions of social justice and citizenship. Different forms of conflicts between society, the state, and capital are usually mediated in social space by urban/environmental policies and legislation leading to new forms of management and governance. Particularly, different forms of production, consumption, and appropriation of space do result in diverse urban-regional spatialities with multiple environmental implications (Monte-Mór & Costa, 1997).

The above overview emphasizes the fact that contemporary Brazilian urbanization presents apparently contradictory spatial tendencies. On the one hand, there are observable movements towards new forms of concentration of population and activities, the growth of urban agglomerations, metropolitan areas, medium-size towns, selected intra-urban high densities. On the other, there are tendencies towards increasing de-concentration, spatial fluidity, fragmentation[9] and extended urbanization. In fact, both can be identified simultaneously and in various scales confirming that they constitute the two opposite and complementary manifestations of a single dialectical process, i.e., power and command concentration in dense urban areas and the extension of urban industrial forms throughout regional space. Some of the environmental constraints and gains of each of those forms will be discussed from a perspective of political change and implications for public policies.

3.1. THE TENDENCY TOWARDS RENEWED AGGLOMERATION

General common sense sees the large congested city as the archetype of third world urbanization. In fact, our historical urban experience provides enough evidence of decades of production of the built environment with little concern for

natural resources or the maintenance of use values in the urbanized areas. Viewed from a contemporary perspective, such utilitarian appropriation of nature in the urban areas has a long tradition, largely incorporated in city and building projects, in technology or urban design. City and quarter plans have been developed with little consideration for the physical environment, topography, hydrology, etc; native remains of forests have been wiped out before construction takes place; rivers have been closed into pipes and covered by roads; very rarely formal architectural patterns have reflected concerns with the climate or use of energy; and applied research on urban environmental issues has been very timid in actually coping with profound social differences. The list is endless with punctual exceptions. Particularly within our hegemonic modernist tradition ranging from architecture and engineering to comprehensive urban planning, criteria of functionality and efficiency have always prevailed, in order to guarantee the minimum necessary conditions of (industrial) production, at the expenses of enlarged social reproduction.

Massive urban migration[10], informal processes of occupation, squatter settlements, extensive land developments, and social struggles for the extension of minimum conditions of urbanity in the periphery[11] are some of the various features that contribute to the construction of a specific image of urbanization in large cities, metropolitan and urban agglomerations, and more recently also in medium-size and small cities. Such an image, which necessarily equates urbanization to a low quality and socially unjust built environment, is usually taken for granted as inevitable. However, as the outcome of a wide field of social, cultural and environment conflicts, it can be reversed and changed, particularly through collective action and public policies.

As far as central consolidated urbanization is concerned, usually referred to as the *formal city*, the prevailing logic is that of the property market, reproducing a traditional center-periphery pattern: more densely built and occupied well equipped and highly valued central areas contrasting with low density and low environmental quality peripheral developments[12] encompassing various levels of legality and informality. It seems that from a socio-environmental perspective, the distinction between the *formal* and *informal* - or not formally produced - areas, continues to be a relevant one, inasmuch as the possibilities of public intervention in each of them may vary considerably. The acknowledgement of the *real* and not the *ideal* city[13] has been an important claim for social movements since the late eighties and comprehensive accounts of the contemporary metropolitan areas stress such need (Maricato, 2000). And yet, seen from within, several other complexities do emerge.

The continuous growth of urbanized areas is very intense in land consumption, a unique natural resource. It changes previous land use, extending land development and triggering land rent mechanisms. It also raises urbanization costs by demanding from the state and developers investments related to services availability, sometimes as a precondition for occupation[14]. As urban land and property play an important role as financial assets and as individual and family savings reservoirs for all social classes, both a potential exchange value that embodies land rent and a guarantee against uncertainty, very often new land

developments remain unoccupied for long periods without preventing other ones from being launched and sold, thus favoring ownership concentration and further urban development. Low density in such a context leads to less returns to public investments and overall rise in urbanization costs.

Containing urban sprawl as a means of reducing urbanizing costs, particularly in energy and transportation, and of obtaining lively diverse urban centers through higher densities of occupation is part of the discourse of the *sustainable city*[15] in industrialized countries. Such an approach implies universalizing minimum urbanization standards; therefore, discussions related to environmental implications of urban sprawl tend to be associated with a new rationality in the use of natural resources, land included. As for the Brazilian patterns of urbanization, further complexity must be brought into the discussion since it presents quite differentiated forms of urban sprawl[16], from low-income peripheral developments to closed-gates luxury residential developments. All of them have experienced major increases in population and building densities with far reaching environmental implications. As far as energy is concerned, it was only during the past two years that a countrywide electric energy crisis introduced notions of rational resource use. Debates around the extended urbanization pattern linked to the use of fossil fuel and private and/or individual transport systems are still very rare.

A substantial part of the continuous spatial growth of urban agglomerations can be conceived as incomplete urbanization, a dominant feature of what is usually called peripheral urban growth pattern, where several items of infrastructure and services are missing and various levels of illegality and informal housing practices occur – unfinished dwellings, plot subdivisions, room rentals and other low quality high density occupation forms. Also, legally required institutional and environmental preservation areas within developments have systematically been occupied by homeless groups in the form of peripheral slums, the worst of both worlds.

The peripheral urban growth pattern typical of Brazilian urban agglomerations was formed by the continuous production of residential land developments directed to the low-income sectors of the population. Given the lack of access to adequate housing through public policies, the purchase of a plot without urban facilities followed by self-help building schemes became the most important form of access to housing for large sectors of the fast growing metropolitan population. It was not a *spontaneous informal* process, but rather the outcome of a perverse combination: on the one hand, the systematic absence of the state in providing public housing policies (and urban social policies in general) for an increasing popular demand in a context of structural economic exclusion, and, on the other, the prevailing rationale of a particular fraction of property capital, the popular developer, whose product, the popular plot, embodies the least investment possible in order to make it affordable to a larger share of the low income population. The well-known outcome was the production of enormous extensions of urban peripheries: incomplete urbanized areas without basic sanitation, social services, public amenities or concern for the environment. Such a process, although not particularly directed to urban migrants, can be considered the social-spatial

outcome of high rates of urban growth, particularly metropolitan urban growth from the fifties to the early eighties. Since then, as prevailing profit conditions for popular land market developers changed for several reasons, the expansion rate of such urbanized areas also paced down (Costa, 1994). Urban growth rates in peripheral municipalities of urban agglomerations began to express mainly a process of increase in demographic densities, rather than mostly spatial expansion.

However, neither center nor periphery present homogeneous patterns or urbanization. Many squatter settlements, slums, and other forms of occupation are located in central consolidated formal areas with all sorts of legal status or urbanization investments. Some involve considerable risks for the population. Others occupy public land, raising conflicts related to private/public rights. Some have already experienced public intervention eventually including land ownership rights. Most have locally based organizations struggling for their share of state intervention in basic urban services.

The notion of a uniform peripheral urbanization is also being questioned, both theoretically and empirically. In the first case, specific aspects of everyday life and urban praxis contribute to internally differentiate places within the urban tissue; whereas in the second, the slow improvement of environmental conditions over time in the more established areas is confronted with the cumulative effects of extreme poverty and risk urban and environmental conditions[17]. Given the persistent lack of effective popular housing policies for decades, such urbanization patterns account for an important part of demographic urban growth of the metropolitan areas in the last decades. Not surprisingly, it is increasingly referred to as a *virtual ecological bomb.* Besides the unacceptably hard conditions of daily reproduction, such patterns of urbanization imply several other far-reaching environmental implications at various scales. At the local level, there is widespread degradation of natural resources, such as land, water, and vegetation, raising the costs of sanitation policies when they do exist. On the other hand, local municipal governments in the periphery of urban agglomerations are very often financially and technically unprepared to cope with such demands. Issues concerning provision of water for different uses, sewage treatment, adequate disposal of rubbish, or land preservation, which certainly require a regional approach and are vital for the whole agglomeration, become more acute and difficult to solve in the context of the peripheral pattern of urbanization.

The so-called gated-communities are fragmented portions of mid to high-income residential housing developments in extended urban and metropolitan agglomerations, which have experienced booming growth particularly during the last decade. From alternative housing sites directed to those seeking seclusion from urban congestion and closeness to nature, such developments have evolved from second residences into luxury exclusive highly-secured bunkers, effectively fueling property capital investments and being re-created by them[18]. Such spatial form of apparent denial of the city, but not of its urbanity, is usually wrapped by a shortsighted environmental discourse and by increasing concerns over security and violence.

As far as water as a natural resource is concerned, there has been a significant change pointing to a more comprehensive conceptual and geographical

approach. Until recently the availability of basic sanitation services, mainly water and eventually sewage, was the dominant concern of public policies, particularly at state level[19]. Thus, evaluation and analyses privileged the identification of sectors of the population not attended and/or parts of the urban areas where the services were not provided. Questions related to water pollution and sewage treatment, although having long been an object of contentious disputes and demands, were not actually a priority of public policies.

During the last decade, however, the idea of rational use of water emerged, encompassing availability of water for different uses and the maintenance of clean water after use (therefore stressing the need for treatment after urban and industrial use), together with integrated policies related to sewage, drainage and garbage collection and disposal. Questions related to inadequate housing provision, land use and regulation, poverty or socio-spatial segregation (usually seen by the media and public in general, as a distant structural question or as an issue confined to local urban politics), once they were linked to the rising costs of water, to occupation of public and protected areas or to prevention of access to natural resources[20], could therefore be redefined within a broader urban-environmental approach of urban metabolic processes. Regional and river basin planning and administration of water resources, and of natural resources in general, superseded the previous strictly urban services provision approach, thus reinforcing the need for invention of new forms of urban-environmental administration and governance at metropolitan and micro-regional levels.

3.2. THE TENDENCY TOWARDS URBAN-REGIONAL SYSTEMS

The extension of the capitalist urban industrial conditions of production to the national territory as a whole brought up new environmental aspects related to both the (de) concentrated industrialization and extended urbanization itself. On the one side, the proliferation of metropolitan and urban agglomerations has placed new and strong demands upon natural resources both in terms of industrial inputs and plants as well as in terms of arable and grazing land for food produced for the densely populated urban areas. On the other side, as extended urbanization comes to encompass both traditional and frontier agrarian areas, environmental and resources exploitation control become much more difficult and less effective.

The ways in which regions and the organization of production have been affected by global economic (industrial) restructuring varies considerably, with spatial implications not yet very well known. It seems that one general tendency is the increasing lack of concern by (industrial) capital, and also by the state, with items related to social reproduction. During previous phases of capitalist development the production of the built environment played a more central role both in the reproduction of the general conditions of industrial production and in the levels of control exerted over labor. From a historical perspective, industrialization and urbanization have always been closely related phenomena, the built environment playing an important role either as a means of reproduction of labor or as an important area for capital investment, or even as a means of production itself (Lefèbvre, 1991). The contemporary *laissez faire* regarding the

built environment has dramatic implications in societies like Brazil, where the level of investment in social reproduction has been traditionally low (housing, for instance) if compared to other items more indispensable for production, such as the economic infrastructure (energy, telecommunications and/or transportation). In fact, except for some successful localized experiments, little improvement can be observed in the overall quality of life in the urban areas in recent years with an ever increasing polarization of situations as far as accessibility to adequate housing and urban services and facilities are concerned.

Research results show that spatial implications of economic transformations are intensely felt in areas where both state and capital were very active in the previous phase and withdrew or became less present in recent years[21]. The case of Vale do Aço and its surroundings, in Minas Gerais, is emblematic in terms of showing such change in approach. As the outcome of the very particular ways in which work, residence and citizenship are intertwined in the historical geography of the region, the metropolitan agglomeration that derived from two industrial cities planned as the urban support for large scale steel mills is presently extended regionally to included several pieces or fragments of urban periphery that emerged mostly associated with other specific forms of industrial production not formally concerned with the urbanization processes (Costa, 2000; Costa & Monte-Mór, 1996).

Such a picture does not differ very much from many other cases considered typical of recent Brazilian urbanization. Political organization and action, however, are affected by new patterns of urbanization and different levels of insertions in the spheres of work and everyday life. Fragmented peripheral urbanization differs from the concentrated urban form in a number of important ways: dispersed over the territory, many of those urban fragments have limited access to institutional or even clientelistic channels to express their demands and collective action is more difficult to articulate. In spite of that, some local initiatives to deal with shared problems are beginning to flourish. Questions related to the environment, and not "traditional" issues such as wage levels or housing and provision of urban services, are the motifs around which new regional political possibilities are emerging. A (re) definition of environment that matches with a sound agenda for social action seems therefore to be the present challenge.

In traditional agrarian areas, the extension of the urban conditions and ways of living onto the countryside produces an array of new demands that place additional burdens and new levels of competition upon local resources such that *free goods* (potable water, grazing land and clean air, among others) may be brought to the market with additional costs for the local population, thus eventually reducing their access and life quality. In addition, the proliferation of food processing industries may add stronger colors to that scenario changing the very nature of the local society. Furthermore, the new urban-industrial patterns of consumption not only require better infra-structure and means of collective consumption (roads, electricity, communications, productive and social services, leisure facilities, among others necessary for individual consumption itself) as it also destroys older local forms of socio-spatial organization without providing adequate alternatives to deal with new consumption levels (increasing and changing

patterns of garbage production, of toxic disposal, of water demands, and of sewage production and collection, among others).

It should also be stressed that many traditional rural areas may have come to host, in the past decades, weberian resource-based intermediate-good industries that privilege inputs' transport costs in their locational decisions therefore increasing the pressure upon local natural resources and extending urbanization requirements beyond reproduction needs to include industrial demands. Given the low population densities and the immense influx of industrial capital into those formerly rural areas the capability of local municipalities and communities to set limits upon industrial pollution is much reduced, giving room for very high levels of resource exploitation and environmental degradation.

New forms of local and micro-regional socio-political and spatial organization seem to be one of the possible positive answers to the tendency of extensive environmental degradation. As towns and communities begin to see themselves as complementary in using and caring for their common social space and environment they also begin to cooperate in producing local and micro-regional articulated responses. As the area of co-management is extended beyond municipal limits, eventually to an entire river basin, the design of more integrated policies and concerted actions is likely to happen. However, although improvements have taken place in practically all regions, at local, state and federal levels, they are not yet integrated under adequate urban-environmental planning schemes as to guarantee widespread efficacy. Instead, successful experiences tend to be the result of isolated local leaderships, be it municipal or state sponsored or led by labor unions and/or other non-governmental organizations.

The Amazonian frontier must also be listed among significant examples of environmental impact associated with urbanization, as its occupation in the last three decades has been based on natural resources exploitation as well as on intense processes of urbanization, both in its extended form and in concentrated urban areas/nuclei. In fact, the recent occupation of Amazonia has taken place in a context of extended urbanization connected to major urban areas both within and outside that region, overcoming in its own terms the old city-and-country dichotomy. Instead, that agrarian frontier is a very clear extension of the capitalist urban-industrial tissue that has São Paulo and other major metropolitan areas in and outside Brazil as its major springboard, both for the input demands and for the output markets. The environmental and human destruction in Amazonia much denounced worldwide (and much more the first than the second) can be thus seen as nothing but the extension of those capitalist conditions of production onto that region to meet the needs posed by accumulation elsewhere in Brazil and abroad in today's globalized urban world.

In addition, the obstacles represented by the jungle itself for contemporary urban-industrial occupation make it particularly difficult for sustainable environmental conditions to develop in the region. In fact, deforestation and destruction of local natural conditions to give room for urban-industrial socio-spatial forms which tend to be a primary requirement for both production and reproduction oriented settlements. Therefore, as dense growing cities extend their urban tissue upon the immediate forest and/or savanna hinterlands,

eventually encompassing existing towns and hamlets, they rapidly produce new *urbanized* spaces that totally differ from local traditional environmental conditions. Given the intense mobility and impermanent character that mark that agrarian (urban) frontier, the social space there produced tends to increase the fragility and frailness of the local environmental conditions. The incompleteness of the frontier space makes room for more acute environmental disruption given the needs to tame an often hostile nature to fit both exogenous production and reproduction patterns based on traditional urban or rural socio-spatial backgrounds. Although local practices do lead to rapid improvements in dealing with such a new environment, most technical and management institutions are still based on knowledge acquired in other urban-and-rural environmental contexts making it particularly difficult to produce a more locally adequate built environment.

On the other side, as migrant populations penetrate the hinterland in search of mineral and forest resources and/or agricultural and grazing land, those conditions of production are extended along with the urban fabric, more or less densely, virtually onto the countryside as a whole. Public and private settlement projects of various kinds combined with mining areas and camps have shown that urban centers and extended urban conditions are a necessary trait within contemporary Amazonian occupation. As a myriad of different resource-based forms of socio-spatial organization come to life in frontier Amazonia urban and agrarian settlements tend to merge and be defined at a micro-regional scale leading to potentially more dense urban networks and more rational land occupation and exploitation.

New forms to occupy the Amazonian territory in ways to guarantee environmental control and sustainability are yet to be created and/or disseminated in the region, given that successful experiences are still rather few and very rarely consolidated. However, there is no doubt that a growing number of local experiences have been proving that there are many alternative possibilities for local and regional (re) production in ways that guarantee income growth and better livelihood conditions together with minimum damage or eventual improvement within that rich regional environment. It also seems to be now a consensus that the urban character of the Amazonian frontier can be a privileged starting point to achieve those goals given that urbanization not only creates better conditions for both production and reproduction schemes but it also strengthens social organization and community mobilization, understood as a central feature for environmental control and the development of sustainable forms of human occupation. Levels of association among neighbors, urban dwellers, small farmers, rubber tapers and other extractive workers, and even among native Indians themselves do not fail to surprise those who have not had deep and/or long contact with Amazonia. Therefore, in spite of the obvious difficulties in combining urban and environmentally sound forms of occupation in such an exuberant and hostile region (and nature), extended urbanization brings into Amazonia new socio-spatial forms that defy traditional conceptions about urbanization and agricultural frontier and point to new outcomes under the aegis of social and environmental sustainability.

4. Prospects for the next decade

Prospects for the future of urbanization and environment have necessarily to acknowledge diversity and increasing complexity of urbanization in Brazil in its relationship with the environment. Although there seems to be a generalized perception of environmental problems and limits, such concerns seem to belong to a generic realm, not actually realized in everyday lives and practices. The link between environmental and social issues, for instance, is not entirely apprehended, not even by all public policies. And yet, during the two previous decades important steps were taken, particularly as far as regulation is concerned.

The 1988 Constitution provided the legal basis for the implementation of a wide range of urban and environmental policies at the various government levels as the outcome of an unprecedented process of countrywide debates involving a variety of social movements. A series of other regulatory improvements followed with special emphasis to political debates and practice at the local level. Environmental law, for instance, conceived and formulated during the last two decades, is usually considered adequate and rather advanced. It presupposes popular participation and a series of collegiate instances of state/society discussion and decision-making that allows the involvement of different sectors of society, while establishing new political territorialities to negotiate environmental conflicts. Special zoning and protection areas, for instance, have been created, although very few managed to overcome the conflicts related to divergent interest of the social actors involved in the operational management committees. The newly (re) created unit of planning and regional governance, the river basin, challenges **the fictional and real limits** imposed by political-administrative municipal boundaries.

In the field of urban/environmental management and governance, several innovative experiments succeeded and a number of "best practices" gained visibility. Experiences have been exchanged as if they could be replicated. New "agendas" are constantly being constituted and disseminated, discourses become worn out even before being fully apprehended or implemented. There is, nowadays, a rather large amount of literature and various sorts of professional or political organizations and networks struggling to put together the field of urban/environmental praxis. Urban legislation recently passed in Congress, the so-called Estatuto da Cidade[22], to a certain extent concludes the decades-old struggle for modernization in the urban legislation to allow for basic urban reforms, including land and property regulation. In fact, the general conditions are set to diminish the gap between conception and actual implementation of urban policies, with more permanent and visible results (Maricato, 2001).

In general, it could be said that contemporary urban practice and intervention has been recently marked by the convergence of social and environmental issues mediated by urban planning and struggles around social or environmental disputes. Social movements have enlarged their demands over the benefits of urbanisation, thus reaffirming the centrality of *old questions*, now redefined as socio-environmental; urban planning is progressively introducing environmental criteria in its policies and proposals while environmental laws introduced the

notion of crime against the urban order[23]; political involvement based on issues of citizenship and justice necessarily amalgamate social and environmental inequalities expressed in the extended urbanised areas.

The struggle around social and environmental issues is slowly building up to form a Brazilian version of the environmental justice movement[24]. It focus on the fact that environmental costs and risks fall differently over social groups, according to the degree of exclusion or the unequal access to work, services, social policies, housing, political and institutional channels of expression and negotiation. The environmental question defined not only as a matter of preservation, but of distribution and justice, is claiming the need to put together "popular struggles around social and human rights, collective life quality and environmental sustainability"[25]. From that standpoint, it is not difficult to redefine unhealthy and risky industrial relations or urbanization, as an environmental question and as such help to built a convergent approach to public policies.

In spite of all that, the prevailing pattern of urbanization is still (and sometimes increasingly) exclusive, unequal, and unjust in social, spatial and environmental terms. It calls for a radical turn in public policies, which, on the one hand, allow the deepening of political conquests and social gains and, on the other, require large scale public investments in built (and natural) environment and in social policies in general: housing, basic sanitation, transportation, public health, work and leisure and environmental and basic education are obligatory items of any sustainable agenda for the next decade.

Eventually, a cultural turn would require a redefinition of the very concept of urbanization and of the meaning of natural and artificial spaces. The infinite mixture of possibilities of the urban as a place of exchange of experiences and learning is always present and latent. Urban and environmental praxis carries the germs of transformation while the inclusive potential of technology requires widespread basic education.

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Notes

[1] Only in the 1700s did inland Minas Gerais's mining boom generate the strong migration flows and complex urban cultural systems that pointed towards a national, or better, macro-regional integration.

[2] For a discussion on peripheral Fordism's adventures in Latin America and Brazil, see Lipietz (1987).

[3] The idea of *extended urbanization* is linked to Lefèbvre's *Urban Revolution* (1999) and it refers to the manifestation of the virtual urban society, more specifically the socio-temporal materialization of the extension of the processes of production (and reproduction) proper to urban-industrial capitalism.. For a more thorough discussion of this concept, see Monte-Mór (1994, 1997).

[4] Brazil's legal account of urban population encompasses residents in *cities/ towns*—heads of municipalities—and *villages*—heads of municipal districts. A recent attempt to identify other urban and rural situations include Census definitions such as *rural urban nuclei, extended urban areas, isolated urban areas,* among others.

[5] *Spatial fluidity* is used to refer to the ability of capital to migrate and relocate, without being necessarily linked to specific conditions associated to fixed locations.

[6] The emancipation of a municipal district to form a new municipality requires the fulfillment of legally defined socio-spatial conditions and a local plebiscite.

[7] The 1988 Brazilian Constitution gave the States the power to create metropolitan regions, a prerogative until then reserved to the Federal Government. In many cases these *new metropolitan areas* created at state level are organized not around a metropolis but around medium-size cities. Those are referred to as non-metropolitan urban agglomerations, following the classification used by Ipea/Unicamp/ IBGE(1999).

[8] *"The urban tissue proliferates, extends itself and destroys the residues of agrarian life. Those words, 'the urban tissue', do not designate, in a restrictive manner, the built realm of cities, but the whole set of manifestations of the domination of the city over the countryside. In that sense, a second home, a highway, a supermarket in the countryside, are part of the urban tissue."* (Lefèbvre, 1999: 17, our translation)

[9] *Fragmentation* is used to refer to portions (fragments) of urbanized areas with no spatial continuity but sharing strong social, economic, or cultural connections.

[10] Massive urban migration refers not to the classic rural to urban migration from the Northeastern to the Southeastern regions that prevailed until the seventies and was substantially reduced in the last two decades; instead, we refer to the intra-metropolitan residential mobility that continues to be responsible for high levels of urban growth, particularly within the metropolitan fringes.

[11] The term *periphery* is more frequently used in the Brazilian literature to describe a low quality urban environment than a geographical/locational reference.

[12] The production of metropolitan spaces linked to the notion of periphery and its close connection to formal and informal property market mechanisms have been widely discussed and documented since the late seventies. For the three major metropolitan areas, São Paulo, Belo Horizonte and Rio de Janeiro, see Bonduki & Rolnik (1979), Costa (1994) and Chinelli (1980) respectively. For a reassessment of urbanization conditions in the nineties, particularly for São Paulo, see Torres & Oliveira (2001).

[13] The *ideal* city refers both to formally produced areas and to a process of urbanization in which abiding to the existing regulations is the general rule. It expresses also an idealization of planners and technical sectors, as they ignore all other real processes. Conversely, considering the *real* city means working with all processes, their conflicts and ambiguities. Such distinction emerged particularly during the debates that preceded the 1988 Constitution and is still an important political issue.

[14] A basic but necessary distinction has to be made. Usually the development of land by private property agents do not include the construction of the unit, the final product being the plot. Brazilian law requires the parceling of land and drainage from developers, even basic sanitation is provided by a different social agent, usually a state company.

[15] In Europe, the main claim is for the *compact city.* For a discussion of the sustainable cities movement see Costa (2000).

[16] Although the expression *urban sprawl* could be used to express generically the continuous growth of urbanized areas, it is very strongly associated to the American (sub)urban experience and the whole set of values that comes with it, such as private homeownership, high levels of consumption, single family standards, the self-made man as a successful role model, all of which are associated to intense property investments (Walker, 1981). To refer to the Brazilian experience, we use the term periphery, to distinguish a quite different process of metropolitan expansion, characterized by the continuous production of residential land developments directed to the low income sectors of the population with severe environmental and social implications and costs.

[17] Torres & Marques (2001) use hype-periphery to refer to such emerging disparities in their empirical findings for the Metropolitan Region of São Paulo.

[18] Such a process, although quite visible in terms of land use and occupation, is difficult to access in terms of its demographic dynamics without comprehensive field research, because Brazilian Census data is collected by (first) residence.

[19] Since the seventies, basic sanitation services are mostly provided by public companies, organized at the level of each federate state, and financed at the national level.

[20] The conflict of use generated by the systematic occupation of environmental protection areas by low income settlements, jeopardizing the supply of water for the urban population of São Paulo is an emblematic example.

[21] See Paula (1997) for comprehensive results of a research centered on the Piracicaba (MG) river basin.

[22] Law n. 10.257 of 10/07/2001. For an assessment of the possibilities created by the new urban legislation see Rolnik (2002).

[23] See Lei de Crimes Ambientais, recently issued.

[24] Countries such as the United States, Germany or France have a tradition of environmental justice movements (Harvey, 1996, Ibase, 2000)

[25] Those are the terms of a recent Statement issued at an international congress on environmental justice (Colóquio Internacional sobre Justiça Ambiental, Trabalho e Cidadania, Niterói, Brazil, September 2001).