



# Globalization, regional development, and mega-city expansion in Latin America: Analyzing Mexico City's peri-urban hinterland

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**This paper examines the transformation of urban space in the peri-urban areas of Latin American mega-cities, further exacerbating the multi-jurisdictional political divisions that cover a single urban entity. This is against the backdrop of a sharp decline in metropolitan growth rates, absolute population loss in the city center, and an alleged “polarization reversal” of national urban patterns. It argues that previous approaches have failed to recognize that globally and nationally-derived economic development processes are often vested in these meta-urban peripheries. Using Mexico City as an example, the authors propose a new generic methodology that will allow for a broader definition and analysis of mega-city and large metropolitan development. Data are presented within this new framework that help to unpack the demographic, economic and land-use changes that are taking place in Mexico City's broader urban area. Much of the contemporary vibrancy and dynamics of Mexico City's metropolitan development are occurring in “hot-spots” in the extended periphery, which, to date, have rarely been considered an integral part of the mega-city. Yet these areas are also some of the principal loci of contemporary globalization processes.**

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## Introduction

Our aim in this paper is two-fold. First to open up a new line of enquiry about mega-city<sup>1</sup> growth and development, one that focuses upon the periphery and

hinterland of very large cities since it is here that many of the most important leading changes associated with the impact of globalization upon such cities are taking place. Second, we wish to develop a methodology that will assist in opening up research into these so-called “peri-urban” areas of mega-cities, identifying the variables and techniques that might be used to capture information and provide for a comparative analysis between mega-cities and large metropolitan regions. While our focus is primarily upon Latin American metropolitan areas and we will

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<sup>1</sup>Mega-city is most frequently used to describe cities of more than ten million people, although it is often used loosely for large metropolitan areas of four to ten million (Gilbert, 1993). Here we hyphenate the term; often it is un-hyphenated.

be taking Mexico City as a case study in which to pilot our proposed methodology, we argue that both the theoretical and methodological points raised in this paper may be generalized to many other large metropolitan areas in Latin America and elsewhere. The study is important since it is one of the first to systematically analyze the regional “penumbra” of mega-city development—i.e. the peri-urban region—rather than just focusing upon suburban expansion or urban restructuring.

Traditionally, analysts who study large metropolitan areas have done so through one or more of the following optics. First, there are those who have examined the role of the large city within the global economy, usually from the point of view of its importance as production, control, or financing centers. Prime examples of this work are Friedmann’s originating hypothesis on “World Cities”, and then during the 1990s Sassen’s (1991; 1995) work on New York, London and Tokyo. A second approach has been to account for the restructuring of these cities, especially the development of control functions to replace their earlier production role (O’Neill and Moss, 1991; Vogel, 1993). Some authors have also begun to look at the consequences of this restructuring upon “new” poverty and social organization within these cities (Mollenkopf and Castells, 1991; Sernau, 1997; Sassen, 2000 [especially chapters 3 and 6]). A third focus has been to consider the extent to which these cities are becoming more or less similar over time. Particularly relevant here is whether Latin American metropolitan areas show evidence of convergence: becoming physically, culturally and economically similar to cities in the US and Western Europe, driven by global economic processes and information flows (Sassen, 1996; Mittelman, 1995). Associated arguments here are that regional integration, industrial and financial decision-making are increasingly dominated by trans-national corporations, which have come to usurp—in part at least—the sovereignty of the nation state. Fortunately we have begun to observe a counter-reaction to these arguments, namely that national and local governments continue to have considerable room for maneuver, and that one needs to focus analysis upon the “global-local” nexus (see Dicken, 1994; Cox, 1997; Parnwell and Wongsuphasawat, 1997). As stated above, this is also a primary goal of this research, namely to look at the transformations that large cities are undergoing at the beginning of the 21st century in the light of globalization, but particularly focusing upon the dynamics and spatial changes that are taking place in the urban space, and particularly in the peri-urban areas.

Recent evidence shows that metropolitan expansion is taking a different form to that in the past. While urban growth rates in these large cities have generally decelerated in the last two decades, high economic concentration continues to persist, and metropolitan expansion incorporates new adjacent municipalities.

In territorial terms, from a relatively compact metropolitan space, the contemporary mega-city presents a more polycentric expansion creating a pattern more associated with networks and with less pronounced and less clear-cut borders and boundaries. This creates an expansion pattern with urban dispersion trends that incorporate small towns and rural peripheries into an ever wider and more complex metropolitan system. This is not to hark back to megalopolis ideas of yesterday; instead we are arguing that mega-cities are undergoing new dynamics and, as a consequence, are facing new spatial and organizational challenges as they seek to manage local urban development within a globalizing world.

### **Expanded metropolitan regions and their peripheries**

Research in the last decade has postulated the emergence of new urban forms particularly associated with the largest cities in developing countries. These forms have been mainly the result of what can be described as **region-based urbanization** as opposed to city-based urbanization as the city influence is expanded to a wider region facilitated by advances in technology. Lower rates of metropolitan growth have coincided with a more intense circulation of commodities, people and capital between the city center and its hinterland, with ever more diffuse frontiers between the urban and the rural, and a manufacturing deconcentration towards the metropolitan periphery, and in particular beyond into the peri-urban spaces or penumbra that surround mega-cities.

Several terms and concepts have emerged to characterize this process. In Latin America a deconcentration of urban function and population has been reported, with a polycentric urban form suggestive of so-called polarization reversal with the growth of intermediate sized cities leading to a more “balanced” national urban structure (Townroe and Keene, 1984; see also Gilbert, 1993). Others have suggested that while secondary city growth is often underway, there continues to be a heavy concentration of productive activities and urban population in a “core region” that contains the largest city, but which also extends to a much larger area and to subsidiary cities within the aegis of the megacity (Gwynne, 1985; UNCHS, 1996: 51). In Latin America, such emerging urban forms are now being described for the largest cities, Mexico City, Buenos Aires, Santiago and São Paulo, albeit very recently and in ways that have yet to be systematically researched (see Aguilar, 1999a,b; Ciccolella, 1999; De Mattos, 1999; Campolina, 1994; Parnreiter, 2002; Ward, 1998).

For Southeast Asian cities a somewhat different pattern emerges. Here there has been an emphasis on the fusion or merging of urban and rural functions and

places; such that a mix of rural and urban activities in peri-urban areas of major cities appears to be taking place—what one author calls “*desakota*”<sup>2</sup>—which essentially means an extended metropolitan region. In other cases the term mega-urban region has been adopted, and in different parts of Asia research along such lines has been underway since the early 1990s (see Gingsburg *et al.*, 1991; McGee and Robinson, 1995; Firman, 1996; Forbes, 1997).

African cities, on the other hand, do not show a significant slowdown of urban growth, and one does not observe the development of a polycentric and regional urban structures. Instead city growth tends to be firmly urban and large-city based, and is contained within clearly defined boundaries. There is no meta-urban or peri-urban development that is tied to, and driven by, processes in the urban core (see Briggs and Mwamfupe, 2000; Yeboah, 2000).

Our argument here is that it is within the emerging new spatial order of mega-cities that several important areas of analysis are being ignored. Specifically, we identify three main arenas of neglect in the mega-cities’ literature: (i) the dramatic expansion of economic activities and urban population into regional metropolitan peripheries (i.e. beyond the suburbs); ii) the need for new criteria and methods to provide for the meaningful delimitation of metropolitan boundaries and mega-city spheres of influence; and (iii), the multiplicity of local jurisdictions and governments that often make for a “balkanized” administrative structure of the mega-city and its region, along with an absence of a single tier of metropolitan government that embraces the city as a whole.

Thus, at a prescriptive normative level, because mega-cities display such high levels of economic centralization, the policy solution traditionally has been one of decentralization, rather than one of directing and shaping suburban and peri-urban expansion. Decentralization has been described by World Bank authors as the “quiet revolution of the 1990s” (Campbell, 1998), and while decentralization efforts are important and always have been (Gilbert, 1976), there is a danger of misunderstanding what, precisely, is going on in these peripheral areas and their relations with the metropolitan core. The expanding and yet increasingly diffuse metropolitan fringes around these cities are likely to become crucially important if we are to fully understand the changing nature of mega-cities, and if we are to develop urban-regional policies that will ensure greater sustainability of metropolitan areas, particularly in their intersection with the natural resource base of the hinterland. In short, the slowing of mega-city growth, active decentralization, and the growth of intermediate cities—important trends though these are—are potentially

distracting attention away from what we believe to be a vibrant and new aspect of mega-city development.

Part of the problem is that because the borders and boundaries are no longer as precisely drawn and visible, we have not yet developed adequate measures and criteria for identifying the processes, nor for portraying the extent and processes entrained in these active peri-urban spaces. This leads, in turn, to another major problem—namely the disjuncture between these spaces and the opportunities for representative and participative democratic structures to emerge within and between them. Mega-cities usually comprise a raft of partially autonomous jurisdictions and local governments (municipalities), with relatively limited coordination and integration between them (Ward, 1996). The number of such jurisdictions may vary from a handful to several dozen separate governments. All these legal and political entities are simultaneously legitimate local governments, and form part of a single larger social and economic entity (the mega-city). Yet these units often function independently, and there is a lack of coordination between them. Indeed, they may be competitive with each other, and engage in a “drive to the bottom” in lowering standards as they attempt to outmaneuver each other and attract capital investment into their areas. In short, most large metropolitan areas have a multi-jurisdictional administrative structure and rarely, if ever, possesses a single metropolitan tier of government or planning authority as the case of Mexico City demonstrates well (*Figure 1*). Yet it is not an exceptional case; most megacities have a similar multiplicity of government and jurisdictions.

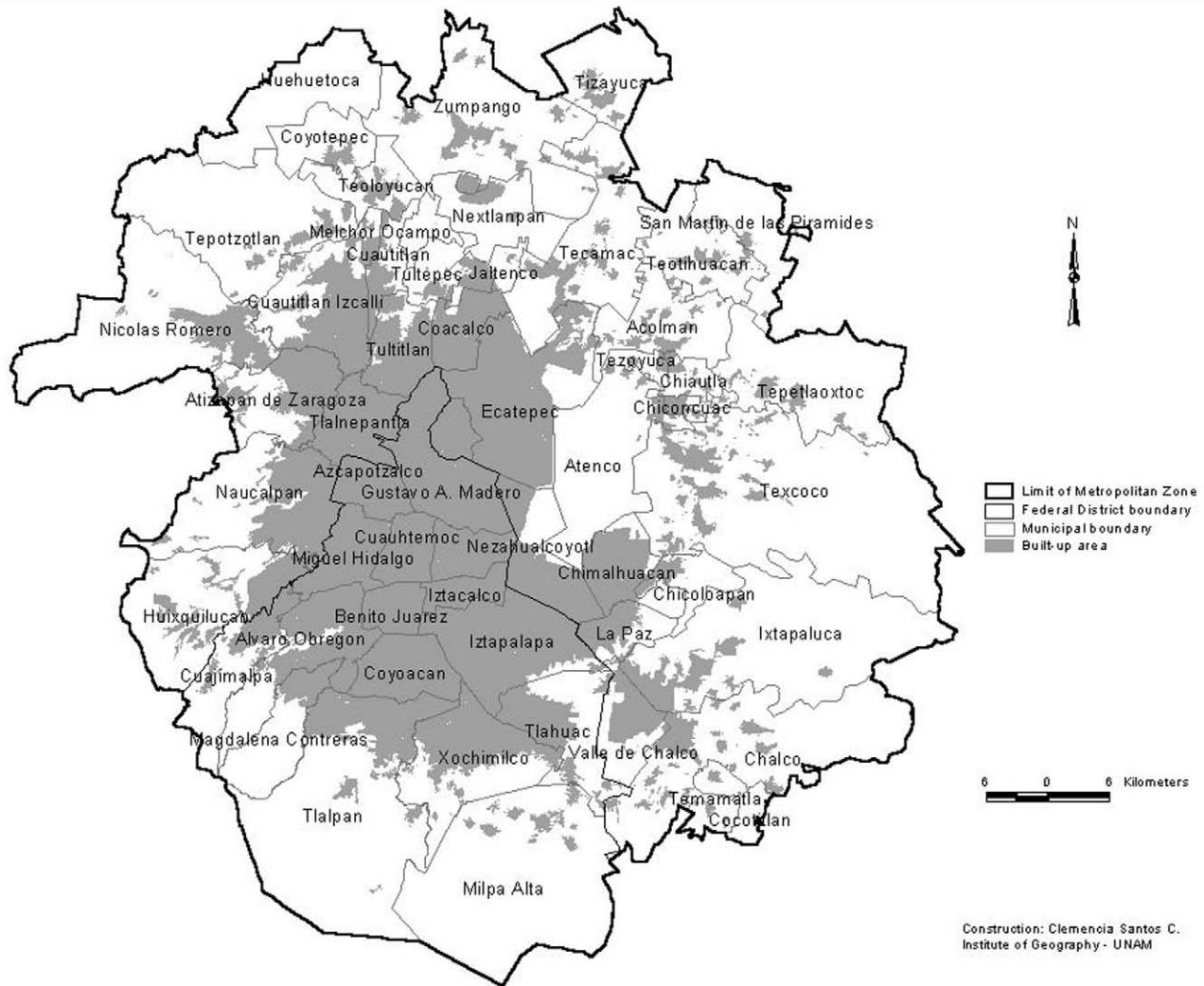
However, creating a single metropolitan government is rarely feasible from a political standpoint. Thus if we can identify the dynamics at play throughout a metropolitan region, then it may be possible to more effectively explore ways in which jurisdictions might cooperate as consortia, or to seek opportunities to create new levels of representation and participation across the metropolitan region.

### **The linkages between economic growth and mega-city development**

The traditional policy link towards regional deconcentration arose as a response to the explosive growth of large cities in Latin America during the *import substitution industrialization (ISI)* period. Until the 1970s capital intensive-industrialization notably concentrated urban and industrial activities, not to mention political decision-making, in these cities that became the main metropolis of each country with high primacy indexes. It also inhibited the growth of nearby cities, since the primary city was able to “ratchet-up” its locational advantage by virtue of high rates of economic growth, greater attraction of migrant labor, and its large captive market. Cities spread outwards

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<sup>2</sup>*Desakota* (an Indonesian term) were defined as “regions of an intense mixture of agricultural and non-agricultural activities that often stretch along corridors between large city cores” (McGee, 1991: 7).



**Figure 1** Political limits of Mexico City, the Federal District, the Metropolitan Zone and the built-up area

in an apparently uncontrolled manner, particularly through the creation of illegal settlements, and aggravated problems of the loss of fertile agricultural land, transport problems, poor infrastructure systems, etc. (Gilbert and Ward, 1985). This led to a production of contiguous urban space, albeit low density occupation in many cases. Growth was fuelled by in-migration and by high rates of internal (natural) increase from this young adult population. Unlike their developed city counterparts, the inner-city hub remained densely populated, often by working class renter populations, while the suburbs grew apace through legal middle income residential development on the one hand, and through illegal “irregular” development of self-build settlements on the other (Ward, 1993, 1998).

Since the 1980s transformations from the global economy have triggered important changes in the metropolitan dynamic of the largest cities in developing countries. While these transformations tend to redefine the economic base of such cities, they

also recast their territorial patterns in relation to the new productive conditions. Although mega-cities show a decline in metropolitan growth as a whole and in levels of industrial concentration, they remain the principal destinations of foreign investment, and continue to emerge as the main service centers, particularly the more advanced services (financial, professional, high-tech) that support the productive process (Garza, 2000).

As population growth slows, and even becomes negative in some inner-city districts, three broad demographic processes may be identified: 1) a flight of (largely) middle-class populations to other parts of the country or to nearby towns; 2) a further decline in inner-city population, compensated in part by a growing densification of the existing built-up area, particularly within self-build settlements developed in earlier decades; and 3), an inflow of new migrants both into the urban periphery, and even more so, into the peri-urban areas. The latter are especially likely

to come from rural areas outside of the metropolitan region. This particular flow is not usually counted as part of the mega-city's growth since it is not adding directly to the population total within the **bounded** mega-city.

In territorial terms, the mega-city now presents a more polycentric spatial expansion of urban centers and sub-centers following a network pattern that tends to sprawl along major highways and/or railroad lines radiating out from the urban core. In this pattern mixed land uses are created in an expanded region, where traditional agriculture is found side by side with new housing projects, industrial sites, large modern factories, recreational sites, and all sorts of suburban developments. A new architecture and a new spatial configuration of metropolitan development has emerged.

In order to begin documenting the deconcentration processes now in play, recent interpretations place greater emphasis on flows between the metropolitan core and other middle-size or small cities; on the formation of transport corridors; on patterns and locations of foreign investment; and upon regional dispersion of population and manufacturing activities. These analyses look less at the mega-city per se, and more at where active flows are being directed and at the new linkages that this entrains with the traditional core. But we often fail to see this as a more generalized mega-city space since it is only partially urban, and because it apparently does not form part of a contiguous built-up area.

Thus one of the fundamental issues in analyzing this new milieu of spatially expanded urbanization is to recognize different urban scales and to define the corresponding boundaries. A number of components may be identified: the *urban core* which generally corresponds to the old city limits that existed prior to the ISI expansion phase; the intermediate ring and the *suburban built up* area that represents the continuous constructed space much of which developed as a result of ISI and concomitant rapid city growth; the *metropolitan area*, that broadly bounds the whole built-up area as well some of the rural hinterland functionally delimited by particular criteria (commuter flows, market gardening for city consumption, weekend recreational areas, conservation zones for air quality improvement etc.); and the *mega-city region*, as defined earlier in the paper.<sup>3</sup> Our concern here is to focus mainly upon the "meta"-region of the metropolitan area by which we mean the corona or halo that extends beyond the so-called **hard** border and its boundaries. It is a sort of "nether" region upon which, and within which, the mega-city impacts and interacts. In reality, of course, metropolitan influence expands by different degrees beyond that border along a gradient (or series of gradients) that will need to be

defined for each particular mega-city. What we are looking for are the social, economic and territorial changes that gradually reach out from the adjacent to the more remote municipalities. Within that space, of course, there are likely to be "hot spots" and "cold spots", or areas that for one reason or another have jumped ahead or fallen far behind in the dynamics arising from the ties and linkages that they enjoy with the core.

What are the specific processes of sub-urbanization and expanded metropolitanization that characterize these recent phases of development? Primarily it has comprised a metropolitan expansion outwards occupying the adjacent rural areas. In this territorial pattern a multitude of distant towns and small localities are integrated into the metropolitan daily sphere of influence. There is an increasing functional influence of the main city on remote municipalities, exercised mainly through important socioeconomic and land-use transformations of its regional periphery. Much of the growth in these municipalities derives from centrifugal flows from the metropolitan core, as well as from modest direct in-migration from other peri-urban areas and, to a decreasing extent, from the more distant provincial hinterlands.

Foreign investment has become one of the most important elements in the restructuring of the urban economy and in the transformation of the urban landscape. Not surprisingly, therefore, it has also had important impacts on the metropolitan periphery. These impacts include private housing developments often with amenities such as golf courses or country clubs; office development and shopping malls in the well located and more accessible areas; and large warehouses and productive units, although these are usually not located in prime high land value areas, but are even more peripheral and oriented to lower land cost sites. Inevitably, the distribution of these different types of developments may lead to sharper divisions in metropolitan space, particularly where associated with richer groups "walling out" lower income groups and other land uses.

### **New types of development in the peri-urban periphery**

Two distinctive features of metropolitan expansion in the periphery may be identified. First, *urban corridors* which are lineal developments that may concentrate a predominance of different activities along the way: corporate developments, industrial parks, residential areas, and the density varies from very compact areas to low-urban density with rural landscape in the middle. Second, *urban sub-centers* in the periphery of the mega-city that may be consolidating traditional towns once dominated by agricultural activities, or the result of new (low-income) residential developments in metropolitan municipalities of rapid growth incor-

<sup>3</sup>McGee (1995: 11) points out that in Asian cities three main units are important: city core, metropolitan area, and extended metropolitan area.

porated into the wider metropolitan complex for the first time. These sub-centers play the role of small cities by providing cheap labor, by concentrating a wide range of services, and, to a varying degree, serve as satellites or dormitory towns to the large city and to its metropolitan economy. These sub-centers can be relatively small localities (often between 10,000 and 100,000 inhabitants) located at the edge of the metropolitan frontier, at a distance between 30–60 km from the urban core.<sup>4</sup> Although apparently located in “rural” settings away from the metropolitan boundary, these sub-centers are highly capital intensive because they respond to the logic of globalization, foreign investment, as well as to new consumption patterns which are typically associated with the mega-city itself. Juxtaposed to this, these same peri-urban sub-centers are also predominantly working class, representing concentrations of cheap labor, with generally poor standards of housing, poor quality service provision, low-income consumption patterns and a low standard of living. In short, the locus of working class social reproduction is shifting outwards, and is now vested within the peri-urban periphery, and not just in the low-income suburbs of yesteryear. Like their former ISI working class counterparts, these populations, localities, and their metropolitan municipalities, are indirectly linked to economic globalization; yet they hardly seem to receive any benefit from it.

### Defining the metropolitan area and region

Peripheral expansion means a process of population redistribution and a restructuring of the metropolitan space. Whereas the urban core declines in demographic terms, it is in the periphery that metropolitan expansion accelerates. The general statement that metropolitan growth of the largest cities (particularly those in Latin America) has declined in the last two decades in fact hides a strong growth contrast between the urban core and the more external periphery. In the latter some metropolitan municipalities are growing as fast as six times the average growth rate of the whole mega-city—further belying earlier arguments about “polarization reversal” to secondary cities much further afield (Townroe and Keen, 1984; Aguilar, 1999a; Gwynne, 1985, 1999).

A key issue here is how to delimit metropolitan borders under these new growth patterns, yet this is rarely if ever discussed when analyzing large cities in developing countries. Instead, researchers continue to adopt definitions and classifications that are drawn from advanced capitalist and highly urbanized countries, and which may have lesser relevance to contemporary mega-cities. In short, what criteria should be used to define metropolitan areas; what geographic

unit(s) should be used as the building block (basic spatial unit) for defining metropolitan areas; and how can we build a framework for analysis and monitoring that is relatively easy to update and revise in an iterative way as circumstances change?

Traditional discussions of criteria used to define metropolitan and non-metropolitan settlements and to delineate the Metropolitan Area Statistical Standard in the USA are a good example of these concerns, and is very similar to the dilemma exposed here. The account of the spatial representation of metropolitan settlements in federal statistics takes no account of areas outside them—i.e. non-metropolitan settlement areas.<sup>5</sup> Indeed, as one author writes in relation to the USA: “...the territory outside metropolitan settlements, with its more than 10,000 smaller cities and towns, huge expanses of open country, and over four-fifths the nation’s land area, has never been delineated with geospatial units comparable to metropolitan areas” (Dahmann, 1999: 687). This means that the territory between adjacent metropolitan areas, or just outside them, lies almost entirely uncategorized and undifferentiated.

The points raised by Dahmann were expected to set some standards for the 2000 census, and four main approaches were proposed for the delineation of metropolitan and non-metropolitan settlements. Two of these utilize census tracts as the basic geospatial unit, with *commuting* from residence to workplace data as a clustering criterion; and two utilize (surrounding) counties as the basic geospatial unit, with one of these also using commuting as a clustering criterion, and the other allowing for *intensity of settlement* alone to serve as the defining criterion (US Office of Management and Budget, 1998; cited in Dahmann, 1999: 685). The whole idea here is not to select between competing criteria, but to **stress that geographical theory has been largely unable to incorporate the nature of evolving settlements as it applies to settlement form and function.**<sup>6</sup> Moreover, as Brenner (2002) points out, the multi-jurisdictional nature of many metropolitan areas poses new challenges for governance, and call for a “new politics of scale” – a point that is equally pertinent in Latin America, as we noted earlier (see also Ward, 1999). Although we have argued above for the need to develop new tools of analysis, the case of the United States is helpful for two reasons: first, there is a long tradition in the US of delineating metropolitan communities, that goes back to the beginning of the 20th century; and second, because the ongoing concerns about suburban growth and (peri-)urban

<sup>4</sup>The emergence of sub centers as a recent urban trend in Buenos Aires can be seen in Ciccolella (1999: 19).

<sup>5</sup>Although the overwhelming majority of Americans today live in metropolitan settlements as currently delineated, these settlements account for less than one-fifth of the nation’s total land area (Dahmann, 1999: 687).

<sup>6</sup>Adams *et al* (1999: 697) make this point for the case of the United States.

“sprawl” in American cities, closely parallel several of the issues that concern us here.

As an example, those who defend the intensity of settlement propose as a criterion the relative residential population density calculated at the county level. They argue that exclusive attention to the journey to work (commuting) is inadequate since it ignores the many households’ journeys that involve non-work destinations and ignores the everyday travel behavior of non-working households. It also ignores people that work at home or out of their homes; indeed, many workers today are anchored to no one particular location (Adams *et al.*, 1999: 708).<sup>7</sup> On the other hand, those defending commuting as the predominant criterion stress the concept of *functional integration* where work is still the dominant organizing activity in our lives. They argue that, whereas the metropolitan form has changed from a single principal core to many, the basic movement of workers traveling from where they live to where they work continues. Moreover, that most household residential location decisions are still made with regard to the place of work (Rain, 1999: 754).

In light of this, several crucial issues may be identified for particular analysis in the case of mega-cities in developing countries. First, the newly emerging metropolitan forms demand new approaches and criteria to delineate individual metropolitan areas. Second, metropolitan peripheries are expanded and complex territories that have to be characterized within an continuum urban-rural. In principle there are likely to be internal and external peripheries to the metropolitan border that vary according to land-uses, urban networks, patterns of economic activity and living conditions, as well as geographical barriers. Third, residential densities, the mobilization of transport networks, and the relative importance of place of work may offer significant variables for metropolitan delineation that will allow for comparisons to be made with other urban areas. Fourth, it is important to analyze key variables that are shaping urban change in peri-urban spaces, particularly the way public policy is implemented in large and multi-jurisdictional metropolitan areas.

In the following section of the paper we seek to create a framework that might serve as a basis for analyzing these changes in comparative perspective. By way of an example we have chosen Mexico City since this is the mega-city that is most familiar to us. Although every city is unique, we believe that many of the measures that we identify, and the processes that we depict for Mexico City are generalizable to other situations also, not least within the Americas.

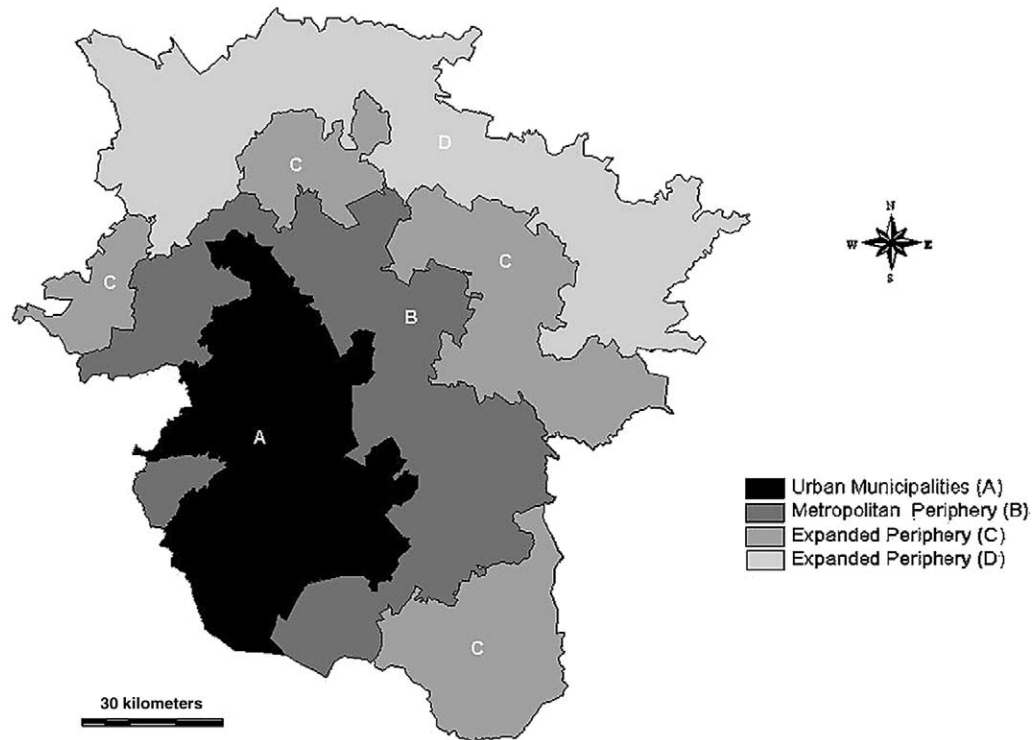
## Case study: the metropolitan growth and expansion of Mexico City

With the aim of analyzing its regional periphery the Metropolitan Area of Mexico City (ZMCM) was divided into three main zones: (i) *the existing built up area* that represents the central along and contiguous urban areas (zone A in *Figure 2*); (ii) *a metropolitan periphery or inner peri-urban space* contiguous to the built up area that includes a mixture of urban and rural land uses and appears to be functionally integrated to the city, albeit in a way that as yet remains imprecise and unanalyzed (zone B in *Figure 2*). We regard this periphery to be an integral part of the metropolitan area; (iii) and *an outer peri-urban space or expanded periphery* that is constituted by the more remote municipalities that are located somewhat outside the metropolitan area but are contiguous to it (zones C and D in *Figure 2*). These are recently integrated, and by virtue of their geographical proximity the dominant metropolitan area is directly affecting them. In reality, in other mega-cities it will often be necessary to construct these outer spaces differently. In our case, for example, we found it helpful in the first instance to create two separate areas in the outer-periphery (C & D), and then later to combine them into a single category (Table 1).

For this division the *delegaciones* of the Federal District and the municipalities of the State of Mexico were adopted as the principal political jurisdictions. Not surprisingly the built-up area is not always contiguous with these political-administrative boundaries, so we defined as “urban” those cases in which the built up area covered the majority of a unit’s territory, even if some open (rural) spaces still existed. The overall limits of the metropolitan zone of 1995 are as delimited by the Consejo Nacional de Población (CONAPO). The outer or expanded periphery was delimited taking into account the fact that to the south and southeast there are natural barriers that make the city’s urban expansion difficult in those directions. Thus, few municipalities were considered to form an active part of the periphery in those cases. To the west, not only are there also similar physical barriers, but given the expansion of the city of Toluca, the two metropolitan areas have begun to join together, and in effect municipalities are under the influence of both cities. Thus, taking account of the recent rapid metropolitan expansion to the north and east, it was in these directions that peripheral municipalities were selected for close scrutiny. A territorial fringe contiguous to the metropolitan area was delimited taking account of the presence of a road network, small towns and proximity.

In order to characterize the growth and expansion of Mexico City in the last 30 years four main processes are analyzed below; the first two are important from the demographic point of view, while the third

<sup>7</sup>Tract-level density analysis permits, for example, the delineation of five levels of an “urban-rural continuum”: metropolitan core; metropolitan outlying; non-metropolitan, adjacent to metropolitan area; non-metropolitan, non-adjacent with city; non-metropolitan, non-adjacent without city (Cromartie and Swanson, 1996; cited in Adams *et al.*, 1999: 709).



**Figure 2** The Metropolitan area of Mexico City and its expanded periphery

stands out in territorial terms, and the fourth refers to the economic changes in the area. These are: (i) the declining trend of urban growth of the city as a whole since 1970; (ii) the population redistribution trends within the innermost parts of the metropolitan area; (iii) a continued metropolitan expansion, consolidating urban sub-centers and corridors, and the incorporation of more and more distant municipalities; and (iv) a dispersion of manufacturing activities, and changing predominance of specific sub-sectors.

#### *Demographic changes*

*Mexico City's urban growth* During the ISI period and until the early 1970s, Mexico City received a large proportion of migrants and concentrated an important share of productive activities. During this period it experienced the highest growth rates of its history with over 5% per annum in the 1950s and 1960s. But after 1970 its growth started to decline, and the period 1970–1990 saw a diminished rate of 2.62% for the whole ZMCM (1970–80), while in the following decade it dropped to 1.64%.

Several factors help explain this decline. Economic crises and instability in the 1970s and early 1980s reduced the generation of manufacturing employment and made the city a more expensive place to live. Also, deconcentration policies started in the 1970s began to take effect and promoted growth in intermediate cities—a situation that was strengthened with the adoption of an export-oriented model from the

mid to late 1980s onwards. Intensive trade relations with the USA favored a deconcentration of manufacturing activities from the capital city, and in the search for better locational advantages (especially low-cost labor), foreign investment went increasingly into middle and small-sized cities. Other factors in this decline were the high levels of air pollution, increasing crime rates and declining quality of life generally.

*Population redistribution* Three broad trends can be identified in the last decades: a depopulation of the historical city center; a greater demographic concentration in the city area of the State of Mexico with respect to that in the Federal District; and a rapid growth of differentiated metropolitan peripheries.

By 1950 when the capital was growing rapidly the central part of the city covered most of the whole metropolis, comprising 66% of the total population, all of which was within the Federal District boundary. In the following decades urban expansion and deterioration of the historical center began to push the population out from this area towards the (then) new peripheral residential developments. However, even until 1970 the city center was still gaining population, although its dominance as a residential area was in decline, such that its proportion of population diminished to 32% of the total city. By this time the overall population was beginning to expand sharply into the surrounding State of Mexico. This process continued, and by 1990 that central city's proportion of the popu-



Table 1 Population growth in the ZMCM and its expanded periphery, 1970-2000

MAIN ZONES	1970	%	1990	%	2000	%	Total change 1970-1990	Total change 1990-2000
Federal District	6,874,165	72.30	8,235,744	51.56	8,591,309	45.53	0.91	0.42
Central city	2,902,969	30.53	1,930,267	12.08	1,688,401	8.95	-2.02	-1.33
Municipalities State of Mexico in the ZMCM	2,208,321	23.23	6,960,763	43.57	9,281,949	49.19	5.91	2.92
Urban municipalities	8,636,309	90.83	13,742,035	86.03	15,858,074	84.05	2.35	1.44
Metropolitan periphery	454,880	4.78	1,484,765	9.29	2,061,534	10.93	6.09	3.34
Total ZMCM <sup>a</sup>	9,091,189	95.61	15,226,800	95.32	17,919,608	94.97	2.61	1.64
Expanded periphery	417,176	4.39	747,516	4.68	948,618	5.03	2.96	2.41
TOTAL	9,508,365	100.00	15,974,316	100.00	18,868,226	100.00	2.63	1.68

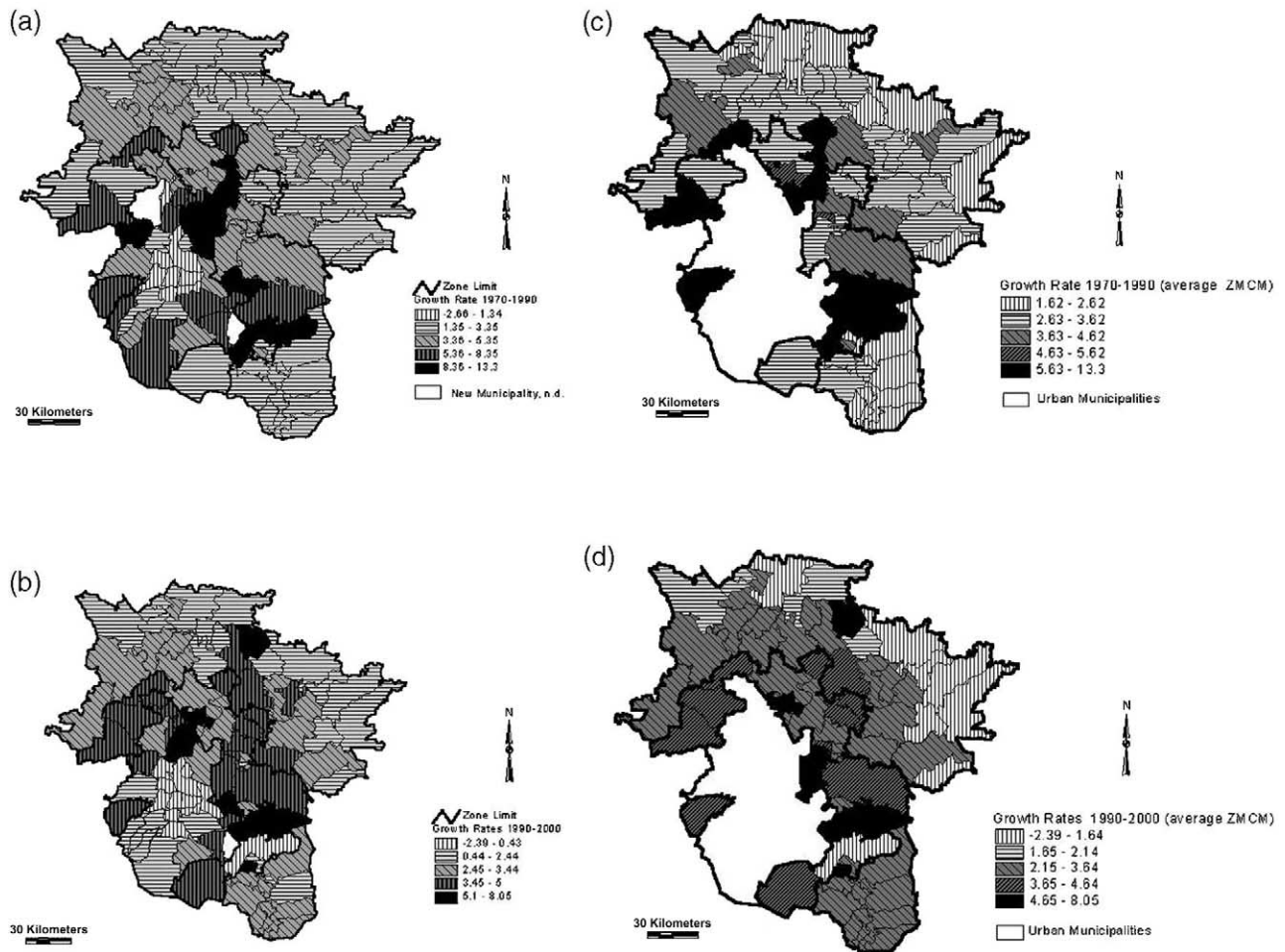
<sup>a</sup>Includes the urban and peripheral municipalities

lation had dropped to 13%, with the central *delegaciones* already showing negative growth rates, and by 2000 this negative growth was further expanding into other adjacent delegaciones (like Azcapotzalco and Iztaacalco) and the central “core” loss of population was even more pronounced (see *Figures 3a* and *b*). The proportion of population in the city center diminished to 9% (see also *Table 1*). Rapid suburbanization, and a shift towards more strict land-use controls on the mountain slopes to the south of the Federal District, led to an ever increasing proportion of growth settling in the metropolitan municipalities of the State of Mexico. The city proportion of population for the Federal District fell to 54% in 1990, and in 2000 this proportion, for the first time, represented less than half of the total population (48%).

In essence these data show great **disparities** in the pace of urban growth at the center of the ZMCM. Whereas the Federal District is growing very slowly (less than 1% in the period 1990–2000), and some of their *delegaciones* show negative growth rates, the metropolitan municipalities of the State of Mexico are

registering average rates of increase that are three times higher (between 3 and 4%) that of the Federal District, and some municipalities are growing at above 5% per annum. It is obvious that faster large-scale urbanization in terms of residential and industrial developments is taking place in these municipalities, and that the metropolitan influence of the city is rapidly expanding to the immediate peripheries in these areas.

The distribution of population growth in the metropolitan periphery showed a differentiated pattern during the last 30 years. In the period 1970–1990, the higher growth rates were registered in the Metropolitan Periphery (zone B, see *Figure 2*) particularly at the edge of the built-up area and in a broad fringe to the northeast. Here it is worth emphasizing that the highest growth rates were located along the main roads to Puebla (east) and to Pachuca (north-east). In the case of the Expanded Periphery (zone C) growth rates were more within the average of the whole ZMCM, with some exceptions or hot spots along the roads to Querétaro and Tulancingo (north-west) but



**Figure 3** Population growth rates by Main Zones, 1970–1990 (Fig. 3a) and 1990–2000 (Fig. 3b). Population growth rates in the expanded periphery, 1970–1990 (Fig. 3c) and 1990–2000 (Fig. 3d)

these were never within the highest range. It is clear that metropolitan growth showed a marked tendency to concentrate in the Metropolitan Periphery and particularly along the main urban corridors to the north and east (see *Figure 3a*).

In the period 1990–2000, there is a **centrifugal trend** of the highest growth rates into the expanded periphery. Although the highest growth rates are still present in most of the territory of the metropolitan periphery, specifically in the north and east, now some of the highest population growths have spread to the expanded periphery, particularly along the road to Pachuca (north-east), in a larger territory contiguous to the metropolitan border of the ZMCM (see *Figure 3b*). These data show the gradual expansion of a stronger city influence into the next corresponding peripheral space.

If we analyze population growth only in the city's periphery (both metropolitan and expanded) in relation to the ZMCM growth rate average (which is slightly higher than that of the urban zone), there is evidence that since 1970–1990 the city's influence was already strong in the expanded periphery and two zones can be delineated (see *Figure 3c*). The first one, contiguous to the metropolitan border but external to it, receiving the more direct impacts of urban expansion and growing at above average rates. The second zone comprises the more distant municipalities and the remote fringe, which apparently experienced only minor impacts at this time, and grew at the average rate or less.

In the period 1990–2000, the delineation of these two external peripheries (within the expanded periphery) remains the same, but with important differences that higher growth rates are now present in a larger number of municipalities in the first zone; and a reduced number of rapidly growing units appeared in the second external periphery, (which was not the case in the previous period, see *Figure 3d*). Again, a centrifugal trend of city influence is visible within these differentiated peripheries.

### *Territorial changes*

*The metropolitan expansion* Since the epoch of rapid urbanization the ZMCM has continued to incorporate more and more distant municipalities into the metropolitan dynamic (see *Figure 1* above). In 1970, its metropolitan area embraced 15 *delegaciones* (out of 16) of the Federal District, and 11 municipalities from the State of Mexico. By the mid 1980s its metropolitan area added a single further *delegación* and ten more municipalities of the State of Mexico; while in 1995 an additional 16 municipalities of the State of Mexico and one from the state of Hidalgo were incorporated into the definition of the ZMCM. In other words, the expansion of its metropolitan influence and the transformation of its immediate rural peripheries

has been consistent throughout these years, with a dramatic quickening in the past two decades.

Other important metropolitan processes in the Central Region of Mexico have accompanied metropolitan expansion of the ZMCM. These are linked to the ZMCM and comprise the consolidation of economic corridors and the emergence of new urban centers at the metropolitan level, thereby shaping the overall trends of expansion of the mega-city in its peripheral region. In 1970 there were only two cities with metropolitan characteristics in the Central Region of Mexico, these being the ZMCM itself and the city of Puebla (names in italics on *Figure 4*). At that time other important cities (for example, Toluca and Cuernavaca) had not expanded sufficiently to integrate other municipalities and thereby take on a metropolitan character of their own; and the number of small cities (from 15,000–100,000 inhabitants) was small—only 14 in total—and the pattern was highly dispersed, with only a few close to the two metropolitan areas defined at that time (see *Figure 4*).

By 1995 the picture had changed substantially (*Figure 4*). There were seven metropolitan areas in total, apart from those already mentioned, Querétaro, Pachuca, Toluca Cuernavaca and Tlaxcala. But what was even more impressive was the increase of small cities in the region: more than 120 small urban centers, most of them located either within the metropolitan areas or in close proximity to them. This process displays a much more dispersed urban pattern throughout the whole region, and the emergence of a multitude of small urban centers in the metropolitan areas tends to indicate a more **multinuclear structure** forming the basis of the metropolitan territories. The networks of roads that connect the main metropolis are the axes that give form to this new structure of the mega-city expanded region (see *Figure 4*).

In the particular case of the ZMCM, in 1995 one can identify around 40 small centers (larger than 15,000 inhabitants), mainly to the north and east where metropolitan expansion has occurred more rapidly. These particular localities (municipalities and towns) have apparently strengthened their productive and labor links with the core city due to the influence of various factors, most importantly, good road infrastructure and the availability of flat land. It is clear that the metropolitan process has expanded its influence in these directions to ever more distant locations and that this has stimulated the growth of small centers that are being rapidly transformed in socio-economic terms, and that are being shaped by the dynamic of the expanded metropolitan region.

It is important to underline that while the metropolitan periphery is in constant transformation, we actually know little about it. We need to know more about the main socio-economic changes that these inner- and outer- peri-metropolitan areas are experiencing as they are incorporated, and as they enter the sphere of influence of the central city. Given that these small cities are now playing an important role

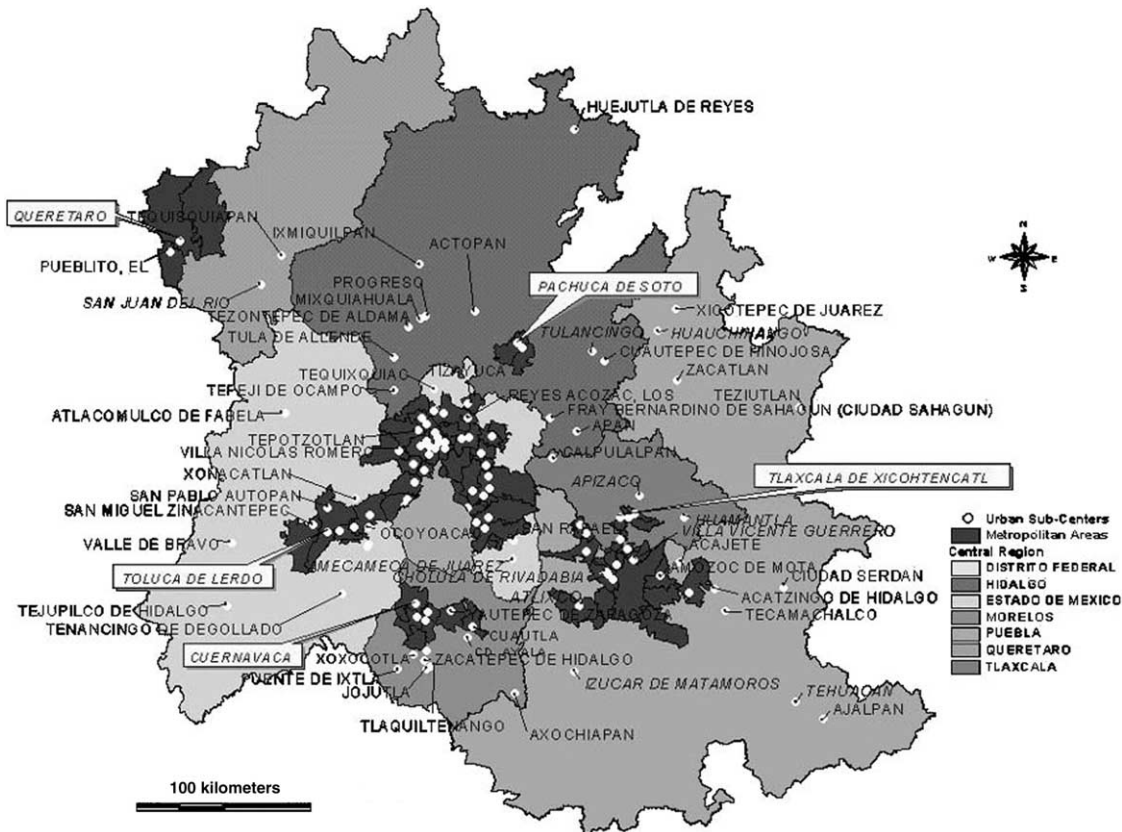


Figure 4 Metropolitan zones and urban sub-centers in the central region, 1995

as the new urban sub-centers in the metropolitan territory, it is important to highlight some of their main characteristics to which we now turn.

*The formation of urban sub-centers and corridors* We were able to begin to unpack the magnitude of these trends by examining socio-economic data for specific small centers that have emerged in the metropolitan periphery of Mexico City. Three types of data for the period 1970–1990 were analyzed for a sample of 16 out of the 40 centers located in the metropolitan periphery. These socio-economic data include economic changes, services, and education level of the population, each of which we discuss briefly below. The main feature of this information is that it does not refer to the municipality per se, but refers to the single locality (center), thereby offering a more precise picture of the real transformations of these sub-centers. It is important to emphasize that these sub-centers have two origins. They either constitute traditional towns that have acquired urban elements and have consolidated their urban function; or they have emerged recently as high-density residential developments with a population coming mostly from urban central areas.

The data for the 16 sample sub-centers for different locations in the metropolitan periphery are displayed in Figure 5 (“pie”-charts). Several important features emerge. First, if we look at the main changes by economic sector the percentage of population occupied in urban activities registered a notable increase, to the detriment of primary activities. In the north, some small centers augmented their share of manufacturing due to the influence of the large and main city’s industrial district (see-pie charts for Coyotepec, Santiago Tequixquiac and San Juan Zitlaltepec). In two centers the percentage increase was of more than 20 points. The sort of industries that predominate here are heavy, large-scale and high technology enterprises such as metallic and chemical industries.

To the eastern periphery, another important group of sub-centers show a substantial increment of industrial activities, however, these types of activities are associated with the emergence of illegal, large, low-income settlement swathes (see Chalco, San Martin Xico and San Miguel Coatlinchan). This type of manufacturing more commonly forms part of the economic survival strategies of the poor, and is small-scale and informal. Thus it is concentrated in households or workshops (especially micro-enterprises). In the same direction (east and southeast) one also finds

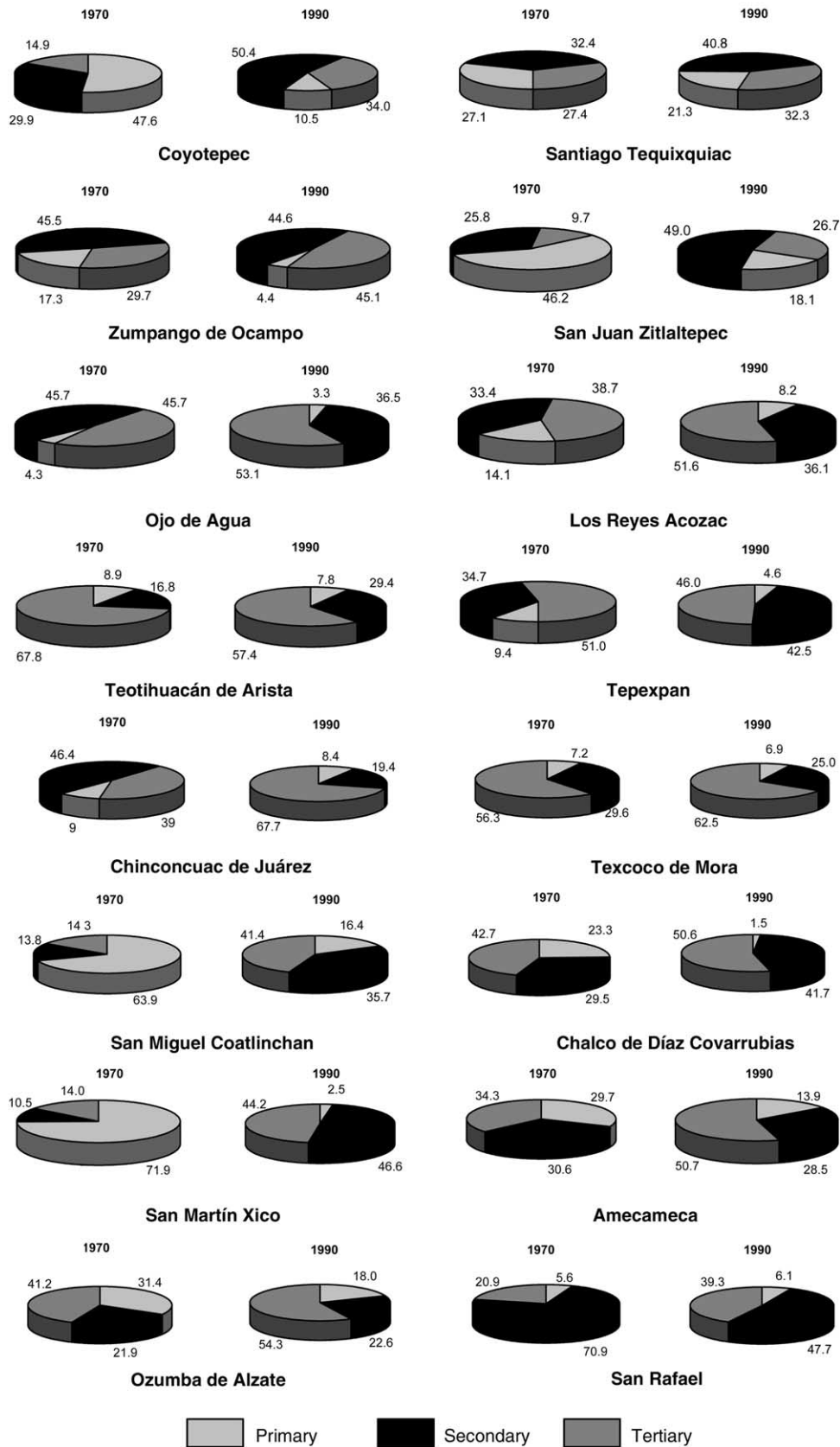


Figure 5 ZMCM and expanded periphery. Changes by economic sector in urban sub-centers, 1970–1990

the only (small) group of sub-centers that registered a decline in their population occupied in manufacturing (see Chiconcuac, Texcoco and San Rafael). These are centers where traditional and/or artisan industries (textiles and paper industry) lost importance, while the proportion employed in commerce and services increased concomitantly.<sup>8</sup>

Therefore, the largest increases in tertiary activities tend to be associated to those sub-centers that have experienced either important expansion of industrial activities or large-scale residential developments. These new commercial and service centers are mainly located along three main urban corridors: first, the road going to the city of Pachuca through localities such as Ojo de Agua, Acozac and Tizayuca. Second, the corridor that links centers like Texcoco, Chiconcuac and Teotihuacan to the north-east; and third, the road that extends from Chalco to Amecameca and Ozumba in the west-southwest.

Data for dwelling characteristics, specifically the presence of drainage and water supply in the households of these small centers shows a general improvement in the period (see *Figures 6a* and *b*). For both of these urban services, the relative coverage in 1990 is usually higher than that of 1970, notwithstanding the high absolute increase in demand. Thus, metropolitan expansion for these centers has meant an improvement in basic services with one significant exception, namely those centers that saw the establishment of large illegal settlements (Chalco and San Martín Xico for example). In this case the situation in 1990 was much worse than in 1970 since the provision of services has lagged far behind the speed of population growth.

One additional variable analyzed was the percentage of population aged 15 years or over with post-primary education. In essence this variable serves as a surrogate for the share of the more educated population in each population center. The results are interesting because in contrast with the improvement of urban services pointed out above, most of the centers show that the proportion of a relatively educated population declined during this period (see *Figure 7*). Metropolitan expansion in this case has meant a worsening in education levels of the population. This trend of deteriorating human resources may be linked to two main hypothesis: first, a large proportion of the most educated people have moved away from these centers to more central urban areas in Mexico City, or to other cities, and are being replaced by a more rural in origin and lower-educated migrants. Second, due to economic constraints some household members have been forced to leave school and to enter work at an early age; in this way they have lost the opportunity to be more qualified. A combination of both processes is also possible. But the outcome is a

deterioration in the human resources of the population living in these centers which increasingly appear to function as dormitory towns or satellite cities for impoverished metropolitan populations in the periphery.

### **Economic changes**

As part and parcel of the principal economic changes in the metropolitan periphery two main features can be underscored: the dispersion of manufacturing activities from central-city areas to the periphery, and changes in the mix of dominant industrial activities within the periphery itself.

#### *Peripheral dispersion of manufacturing activities*

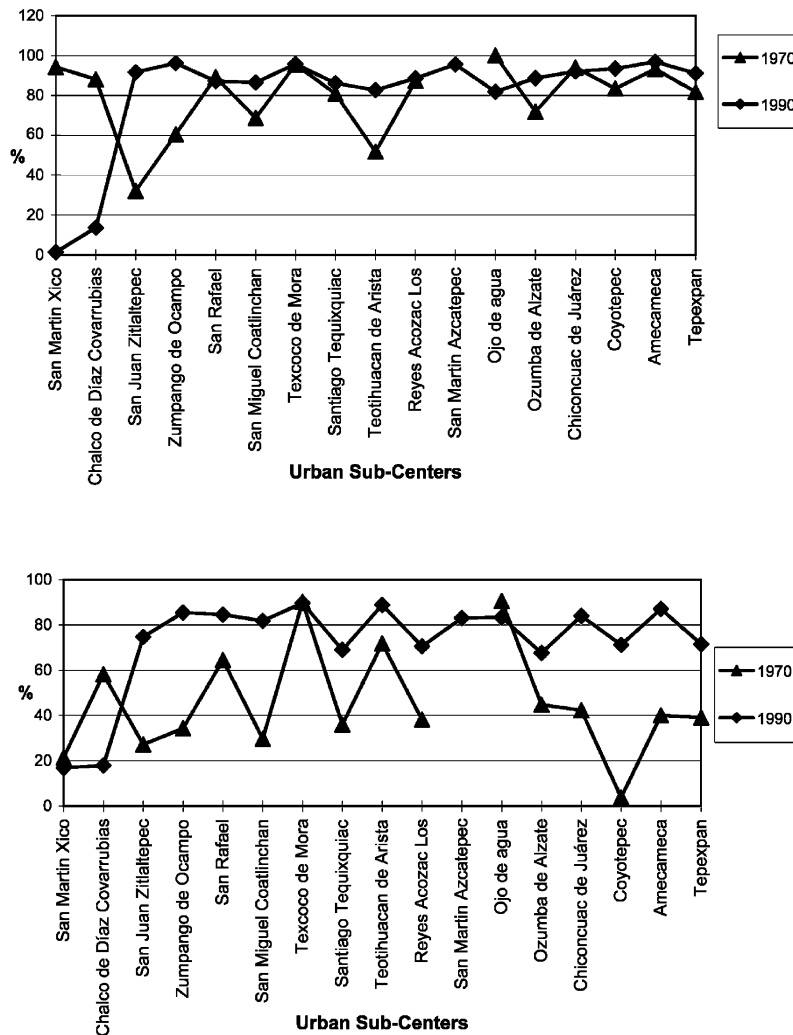
In the mid-1970s the urban area (zone A on *Figure 2* above) concentrated the majority of manufacturing employment with 94.5% of the overall metropolitan total; with the metropolitan (B) and expanded peripheries (C & D) having a rather modest proportion of activity with 2.1 and 3.4% of the total respectively (*Table 2*). Thus, although the numbers are small, the more remote periphery (of C & D) actually had a slightly larger proportion of manufacturing jobs than did the metropolitan municipalities (B) that is already suggestive of its incipient role as a regional location of economic and urban activities. In the following two decades two clear trends can be observed: first, the built-up area started to lose relative importance in terms of the concentration of manufacturing activities, with the effect that its percentage of employed population diminished to 91% in 1994 (*Table 2*). Second, both peripheries continued to increase their proportion of manufacturing reaching 4 and 5% for the expanded (C & D) and the metropolitan (B) peripheries respectively (i.e. reversing their former ranking), an equivalent to almost 80,000 jobs. Thus, in this time period the share in the metropolitan periphery became slightly more important. It is notable that between 1986–1994 the expanded periphery had a very small gain of manufacturing jobs apparently due to a substantial internal losses in the dominant sub-sectors, as is shown below (see *Table 2*).

Clearly, in relative terms manufacturing activities are still highly concentrated in the urban area but appear also to be gradually dispersing to the whole periphery. The economic base of the latter is becoming dominated by urban-service functions and land uses, within which manufacturing represents an important element of metropolitan expansion. This trend is also quite clear from *Figure 5* (pie charts).

#### *Restructuring in the dominant manufacturing sub-sectors*

The growth of the manufacturing sector in the periphery shows important internal changes in its dominant sub-sectors for the period 1976–1994. Given that

<sup>8</sup>For a discussion on the tertiarization of the urban economy and the change from more to less stable jobs, particularly informal and less productive occupations, in Mexico City see Aguilar (1997).



**Figure 6** ZMCM and expanded periphery. Water provision in urban sub-centers, 1970–1990 (Fig. 6a). ZMCM and expanded periphery. Presence of drainage in urban sub-centers, 1970–1990 (Fig. 6b)

there are differences in the trajectories of performance between industrial sub-sectors in both peripheries, we disaggregated them in the following way. In 1976, there were three dominant sub-sectors in the metropolitan periphery: Textiles, Mineral Products, and Metallic Products,<sup>9</sup> which combined comprised 62% of the employed population in the manufacturing sector. In 1986, two of these sub-sectors retained their importance (Metallic Products and Textiles) while another emerged, this being Food Products. In total, these three sub-sectors made up 70% of the sector, increasing marginally to 71% by 1994.

In the so-called expanded periphery (C & D) the situation has been to some extent similar but unstable. In 1976 three main sub-sectors concentrated 74% of the economically active population: Metallic Pro-

ducts, Mineral Products, and Metallic Industries. By 1986, two of the sub-sectors had lost importance, and Metallic Products, Textiles and Chemical Industry, rising to 74% of the employed population by 1994, dominated 66% of the sector. Thus, the dominant sub-sectors are very similar to those that predominate both in the inner periphery as well as in the whole metropolitan area of Mexico City.

The internal changes in the sub-sectors of the expanded periphery, during the period 1986–1994, are also distinctive. On the one hand, there was an impressive increase of the textile industry that became the dominant sub-sector with a gain of more than 7000 jobs; while on the other, the Metallic Products' sub-sector became the second most important but have, instead, suffered a dramatic loss of more than 4000 jobs. (In 1994 the total number of jobs was almost identical as in 1986.) Additionally, there was a loss of a total of 6268 jobs in other less important

<sup>9</sup>Mineral Products exclude oil and coal; Metallic Products include machinery, equipment, and surgical and precision instruments.

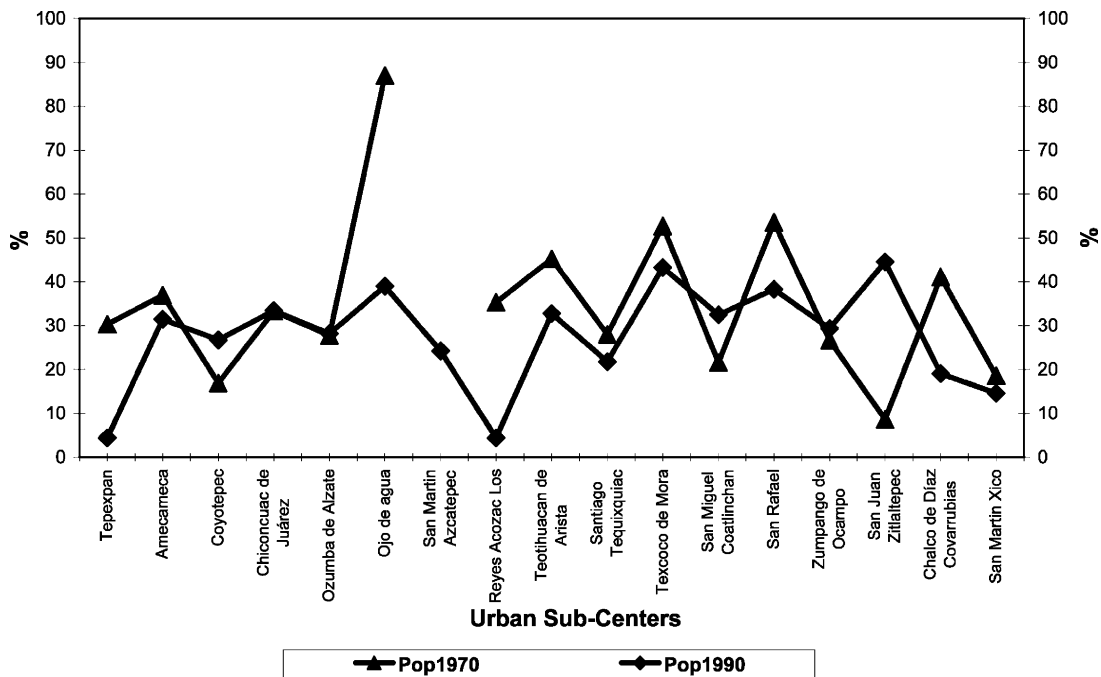


Figure 7 ZMCM and expanded periphery. Population older than 15 years with post-primary education, 1970–1990

sub-sectors<sup>10</sup> (see Table 2). Viewed thus, manufacturing activities in the more remote periphery appear to be unstable and subject to processes indicative of restructuring, job losses and gains, and an emerging dominance of a smaller number of sub-sectors. Thus we appear to be observing important shifts taking place within these expanded metropolitan peripheries in response to the changing dynamics of economic growth and investment. In many ways, these new peripheries are the leading experiential edges of change, and to the extent that such processes are being driven by Mexico’s ever tighter nexus into the global arena these spaces are the indicators of that interaction.

### Conclusions

In this paper we have argued that traditional definitions and criteria for depicting and analyzing metropolitan space and mega-cities inhibit our ability to adequately understand the nuanced processes of demographic and economic transformation that are underway—whether these are driven primarily by global or national pressures. Specifically, we have argued for a new categorization of the peri-urban spaces beyond the classic metropolitan and mega-city urban fringe since it is there that many of the defining processes are being anchored today. While overall metropolitan growth is often perceived to be in decline, adopting a broader definition and frame of

reference for the metropolitan urban space to extend to their “extended peripheries” or hinterlands, may require us to revise our understanding of population trends in mega-cities. We have proposed that in future, mega-city analysis must embrace what is going on beyond the urban fringe, and often at a considerable distance from the “hard” urban boundaries, since it is here that much of the dynamics of (greater) metropolitan growth is taking place.

We have developed our arguments using the case of Mexico City, and have sought to offer guidelines about how, in future, region-based analysis of mega-city development might be gauged. We have shown that an important step is to identify the spatial area that can meaningfully be depicted as the “extended-periphery” for any given mega-city. This will vary from case to case depending upon topography, the presence or absence of other major nearby centers, principal transportation routes, etc. But our point is that it is in this “penumbra” or peri-urban area that important contemporary processes are underway, often in “hot-spot” locations that, once identified, can be the focus of closer scrutiny and fieldwork. Indeed, our own survey of the extended periphery of Mexico City has revealed important new growth points as well as sectoral changes that are underway. But because these are recently entrained, they may also be the most volatile and vulnerable to economic cycles. Moreover, it is in this new peri-urban space that the reproduction of labor is most likely to be concentrated in the world’s largest cities in the 21st century. And, although our data suggest that infrastructure con-

<sup>10</sup>These sub-sectors were Paper and Printing Products, Mineral Non-Metallic Products, and Basic Metallic Industry.



Table 2 ZMCM and Expanded Periphery. Growth and restructuring in the manufacturing sector, 1976-1994

	Employed population				Difference			Percentage	
	1976	1986	1994	1986/1976	1994/1986	1976	1986	1994	
Expanded periphery (C+D)	25,578	37,132	37,203	11,554	71	3.39	4.14	4.22	
Food products	25,578	37,132	37,203			100.00	100.00	100.00	
Textiles and leather	1902	2105	3610	203	1505	7.44	5.67	9.70	
Wood products	524	5997	13,265	5473	7268	2.05	16.15	35.66	
Paper manufacturing and printing	53	126	631	73	505	0.21	0.34	1.70	
Chemical industry	1893	1595	1008	-298	-587	7.40	4.30	2.71	
Mineral and non-metallic products	774	5329	5402	4555	73	3.03	14.35	14.52	
Basic metallic industry	3347	5009	3778	1662	-1231	13.09	13.49	10.16	
Metallic and precision products	3187	3485	448	298	-3037	12.46	9.39	1.20	
Other	12,465	13,189	8739	724	-4450	48.73	35.52	23.49	
	1433	297	322	-1136	25	5.60	0.80	0.87	
Metropolitan Periphery (B)	15,934	28,694	42,360	12,760	13,666	2.11	3.20	4.81	
Urban (A)	712,790	830,142	801,519	117,352	-28,623	94.50	92.65	90.97	
ZMCM	728,724	858,836	843,879	130,112	-14,957	96.61	95.86	95.78	

ditions associated with this urban growth are improving relatively, the deterioration in human resources as measured by education levels is disturbing—not least at a time when countries such as Mexico are urgently seeking to raise the human capacity of their workforce. Although these data and explanations must remain tentative at this stage, future analyses will need to unpack the extent to which new meta-urban investment is undermining rather than enhancing human resource development. To the extent that these areas have remained largely invisible to scrutiny in the past, it would be perverse indeed were any negative consequences of economic change to be ignored because they were not seen to be intrinsically tied to the mega-city core. In short, the constructs of mega-city dynamics have changed. We hope that our depiction of Mexico City's contemporary region-based urbanization, and together with our proposals for "pushing the envelope" of criteria used to measure metropolitan space, will encourage more detailed extensive examination of mega-cities in the Americas and elsewhere.

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