

## **A systemic approach to urban sprawl: distinctive traits, underlying factors, emerging consequences and demanded public policies**

### **The historical scenarios of sprawl**

Sprawl processes are as old and general as those of which the City itself has emerged. However, due to their structural diversity, it becomes necessary to differentiate among them at least three dissimilar patterns, as follows:

I. that of the initial stages in which sprawl began to happen, involving very long periods of time, during which the transition from simple and restricted urban entities -hamlets, townships and villages- in favor of formal cities took place. However, such transition was of a very restricted demographic, economic and functional character. At present times, in those cases in which the emerging cities didn't expand significantly and remain as small or minor entities, involving mostly one single local administrative jurisdiction, their original components have retained the character of exclusive central places, or, at least, of a neat but low dominant hierarchical status.

The regional settings of such kinds of circumstances became polarized in restricted scales around urban networks of a quantitatively profuse character, made out of relatively homogeneous and simple units, all of which -regional and urban settings- became well adjusted to the *thünean* theoretical perspective (von Thünen, J.H, 1826),

II. afterwards, the processes of massive urbanization developed either at the expense of the genuine attraction exerted by certain cities upon their scenarios of regional location, or eventually on the international ones, *par excellence* in relation with the processes of industrialization and their massive direct and indirect labor demands ("*urbanization pull factors*"), as well as upon those of rural disaffiliation and expulsion of exceeding agrarian populations ("*urbanization push factors*"). In urban terms it can generally be stated that the emerging units became enlarged predominantly through processes of *suburbanization*, which most notorious physical traits were those of the continuity of urban tissues, and global land use densities of an at least medium intensity level. In functional terms, public transportation became prevalent, with a neatly centripetal character in the morning commuting hours. Such sets of circumstances became coined as characteristic of the *compact city*, which would eventually reach the sizes and hierarchies of metropolitan agglomerates. Such agglomerations were of a polycentric character, reaching in general appropriate levels of positive correlation between three factors, namely, *on one side*, their levels of urban *accessibility* through public and massive means of transportation; *on the other*, the relatively neat *hierarchical differentiation* of their different central places; and *finally*, their gradients of *building intensities*, generally falling towards the city outskirts. The patterns of their physical and functional global setup were of a full, or partial -in the cases of coastal cities-, radio-concentric character.

From an institutional point of view, in the early stages of development, the multiplicity of local jurisdictions progressively involved in their associated urban development became consolidated with those of the original nuclei of the agglomerations. Later on, such kind of circumstances became rather infrequent, and as a consequence, the number of involved independent jurisdictions escalated progressively.

Furthermore, in regional terms, and as a consequence of relatively neat and largely perpetuated patterns of internal and external economies and diseconomies, urban networks with significant membership numbers arose, well differentiated in their hierarchical order, polarizing in mutually articulated terms their non-urbanized hinterlands. Such set of circumstances can be globally considered, in both macro and micro terms, to have become well adjusted to the *christallerian* concept of Central Place Theory (Christaller, W., 1935).

III. finally, and essentially after the 2<sup>nd</sup> Postwar period, there was a start towards the development of urban configurations of a different character, consisting of spatially segmented and discontinuous urban territories, and with much lower *global* densities than those characteristic of the preceding period. Even though the processes of progressive suburbanization remained active -“*second generation suburbanization*”- the phenomena of *secluded periurbanization* have set in, making apparent, in their extreme condition -“*edge cities*” (Garreau, J. 1991)- urban sectors of an autonomous or quasi-autonomous nature in physical terms, of a definitely “incomplete” character in functional ones, as well as socially selective up to the level of outright exclusion. Polycentric networks of central places are still to be found, even though under conditions far from neat as relates their relative hierarchy and physical delimitation. All the mentioned traits become well aligned with generalized processes of *decentralized deconcentration* of the activities pertaining the tertiary sector of the economy. Meanwhile, and increasingly, the prevalent means of transportation has become the private automobile. In terms of non-proximal communication, the “de-localized” components have become hegemonic.

The pluri-jurisdictional character of the agglomerates grows steadily in both quali and quantitative terms, not only through their persistent level of autonomy, but adding sustained administrative subdivisions and operative in-articulations among them all. Quite definitely, the character of their inter institutional relations is more competitive than collaborative or complementary in nature.

Furthermore, the mentioned sets of physical and functional urban segmentations tend to permeate all the other implicated thematic dimensions -social, economic, institutional, environmental, etc.- and become replicated and expanded at the regional scale, giving rise to the notion of “*urban archipelagos*”. In such a context, the systems of urban economies and diseconomies become related to well different actors, scales and operative patterns than the previous ones, characteristic of the preceding period.

The *christallerian* model of regional and urban configuration and operation gives way to another one characterized by ambiguous dependencies, diverse functional directionalities, and globalized referentiation.

As it has been signaled in the characterization of each one of the three mentioned stages, every single one of them has, besides their obvious urban character, implications upon the regional, or global, scale. The differences between these stages as relates the latter mentioned scale is that it can be considered that their mutual dynamics of interaction, in the case of the two former ones tends to go prevalently *from-the-local-to-the-global* , while in that of the third one, as a function of the increased level of relative participation of the urban sector, the opposite seems to be the case.

### **The underlying factors**

Even though the factors explaining each one of the proposed types of scenarios of urban and regional sprawl are marked by historical, structural and local singularities, particularly as regards their mutual conditions of articulation, leading in each case to specific causal configurations, there also exist, at least in qualitative terms, significant levels of identity among such factors. We mention the following:

- a. demographic growth;
- b. cultural transformations;
- c. scientific and technological change;
- d. economic expansion;
- e. transformations in the locational sensitivity of activities generated by internal and external economies;
- f. deepening of social stratification conditions and segregation of the population;

- g. increased degrees of car ownership, transportation congestion, and in general of spatial accessibility and physical mobility;
- h. growing level of stratification of the real estate markets;
- i. increased relative level of participation of the real estate markets in the urban economies;
- j. deepening of the segmentation of the public institutional sector;
- k. growing governmental retreat from urban and regional planning and management.

*We are going to comment briefly about the incidence of each abovementioned factor in the generation of urban and regional sprawl, stressing the fact that, further to the incidence of their individual participation, the significance of each of them derives from their mutual conditions of articulation within relational chains of a systemic and incremental character.*

a. *Demographic growth*, which during the long last century has been involving particularly through migrations processes the urban sub-sector, implicates preferentially the larger agglomerations. During the initial appearance of sprawl -first of the (three) mentioned stages- urban populations tended to settle both through the increase of residential densities, and incipient urban extensions. Later on -second stage- the processes of more intensive suburbanization became predominant, as well as socially selective: higher-standing social sectors tended to inhabit the *extensions* of radial urban corridors, while lower-standing ones tended to *thicken* them out, or to settle in interstitial areas of doubtful urban potential. Furthermore, non-residential components tended to follow the location of residential expansions: central areas tended to multiply, and the sites of industrial production began to migrate to places further away from the central cities. During the third stage, even though overall demographic dynamics became more moderate, the processes of physical deconcentration, on the contrary, have been taking on new intensity, as well through regional peri-urbanization and intra urban de-consolidation.

b. Along time, cities, and particularly their past historical sectors and most hierarchical central places have become objects of *changing evaluation and value-setting processes*. Although once considered generalized mecas of social interest, nowadays they are being evaluated merely as the scenarios of forced and undesired prevalent settings of employment and administration. The growing difficulties in terms of physical accessibility, circulation congestion, insecurity, and more generally the environmental problems which affect particularly such areas contribute a good deal to explain the huge changes which they have undergone in terms of value-setting.

Besides the growth of social preferences for the scenarios provided by the urban peripheries, which have become mystified as “natural settings” and house by now most of the residential stocks, non-urban goods -*par excellence* the regional quasi-natural residual remaining areas as well as rising massive media resources of intra-residential distribution have become valued alternatively in highly distinctive terms.

c. *The scientific and technological transformations*, particularly those related to regional and urban physical mobility as well as to non-proximal interpersonal communication have become central in the processes of territorial expansion. In relation with the former, massive guided mobility -trains to begin with, and tramcars soon afterwards- has been the instrument which, from a material point of view, has made possible the urban expansions which became characteristic of stage number two. But it was the later development of automotive transportation -collective in the beginning, and individual later on- that has been behind the patterns of more recent physical urban growth, among them, particularly, the massive expansions of the stages II and III, and very particularly of the secluded components characteristic of the latter one.

As regards the incidence of non-proximal inter-personal communication, fixed telephones have historically been a fundamental instrument which allowed for physical expansions, having radically diminished the levels of communication dependence on contiguous terms.

But it was the more recent “de-localized” cellular telephone systems which have come to deeply alter the perceptions of space and time phenomena in general. It can be postulated that both types of references, which historically provided the mentioned two kinds of structural anchoring, have to these days become *abstract*, and conceived generally as dispensable. In a similar pattern, the quasi universal access to global scale mass media, and to both private and public communication through the world wide web, also becomes highly significant in terms homologous to the mentioned ones.

In such a context, the diffuse perceptions of time and space tend to be exercised as well in relation with urban and regional scenarios, sustaining the increased locational *indifferences* and *indeterminacies* characteristic of stage III.

d. On their part, the *processes of economic expansion*, of an increasingly urban character, have set on place at least part of the resources necessary to *finance* the extension of the mentioned type of territories, as well as, and much more important, to *urbanize* them effectively through the production of utilities, services and buildings, and to *keep them all in operation*. The crucial issues relative to global urban economic efficacy and efficiency tied to each of the alternative patterns of urbanization -differentiating essentially between compact and scattered alternatives- have tended to remain undeveloped, being in effect so complex to grasp any integrated kind of comparative assessment on the grounds of the intervening thematic diversity, the multiplicity of types of actors involved in such financing processes, as well as their consequences in terms of differential social implication, understood in wide terms.

Within such a context, the problems related with equity and sustainability, both theoretical and factual, have remained un-addressed as well in relation with alternative patterns of urbanization.

e. It seems quite likely that the *locational sensitivity* of urban activities related with the incidence of internal and external economies and diseconomies has been subject to variations along time, as a function of not only, nor mainly, factors of an economic character. Thus, among other, issues relative to recent technical transformations -centered mainly on information and communication resources, which amplify the autonomy potentials of every kind of production unit- as well as the nature of urban economic actors, which, while becoming more highly globalised, compute their costs and benefits not only, nor prevalently, in local terms, as well as, presumably, upon more extended time spans should be considered. Also that, as a function of the growing average size of *enterprises* -as different from that of *productive units* themselves- their scale economies tend to remain, essentially, internal, and their (local) agglomeration economies, likewise, at least partly, also internal, and more generally, of a lower level of significance, within the framework of global, and not only local, production complementarities.

Another essential factor seems to relate to the changing conditions of articulation between the governmental and entrepreneurial sectors, which can at present be generally characterized as proactive, or at least passive, of the former on the benefit of the latter. As a consequence, there appear ample margins in setting up entrepreneurial strategies, within which the advantages derived from economic locational rationality become merely anecdotic, as they compare to a series of compensatory instruments of public management, as for example fiscal de-taxations, compensations, and the free mobility of production factors.

As a consequence, the locational strategies of the entrepreneurial sector -excluding only, apparently, the headquarters of the financial one- operate increasingly within the framework of relative *ubiquity*, or *indifference*, setting aside their secular traditions of spatial concentration, as well as that of centrality, and opting out as a consequence in favor of urban peripheries, and particularly unstructured, uncongested and relatively cheap ones.

f. The processes of social integration, which along the significant time span foregone after the Industrial Revolution have acquired sustained patterns of generalization and acceleration, *per excellence* through, in wide terms, the associated processes of

urbanization. However, these circumstances became also linked with those of a parallel and increasing *social stratification*.

But, historically, such conditions of stratification have not become tightly correlated with those of *socio-spatial segregation* of the population: that is, the level, or 'grain', of social differentiation was sensibly "finer" than that related to the conditions of their residential settlement. As a consequence, housing districts became relatively heterogeneous in relation with their social make up.

In more recent times, on the contrary, essentially those during which the present wave of globalization became widely generalized, the processes of socio-physical segregation became tightly and positively correlated to those of social stratification, leading to the increased homogeneity of residential districts, as well as of the corresponding services directly related to them.

Such circumstances become a stimulus towards urban sprawl, as the more affluent sectors, consuming higher ratios of built and un-built land resources than their poorer counterparts - which extreme case is that of the peri-urban sectors which the former ones inhabit- make out the neatest manifestations of sprawl processes which characterize the mentioned stage III. But this becomes true also in relation with intra-urban areas subject to processes of gentrification, by evicting the lower standing strata which used to inhabit them, who become forced to migrate, usually to the urban peripheries or even to low level peri-urban sectors.

g. The *increasing levels of automotive ownership* which became characteristic during the last decades show particularly massive increases in the ratios of participation of private automobiles: to this day, in affluent societies, their number tend to exceed that of households themselves.

As could be expected, such levels of participation become correlated with those relating their presence in the modal split of transportation, including even the commuting sector, which accounts by itself for the highest levels of participation in the mobility aggregates. Rates of private car participation of 50% in the total level of demand on working hours are not uncommon in accessing even the most hierarchical central places of large agglomerates, which, additionally, are generally those areas with higher levels of accessibility through public means of transportation.

The first consequence generated by such kinds of transportation patterns has been that of *traffic congestion*, resulting in serious inefficiencies, not only of transportation itself, but of the global urban functioning order. But also of inequities and lack of sustainability: among the former, directly, in relation with age barriers and economic deprivation, at the least, by establishing thresholds in the levels of accessibility to the ownership and utilization of automobiles, and indirectly, because congestion affects not only those who are responsible for it -car drivers-, but the whole social aggregate implicated in its effects. And in terms of un-sustainability, because the most evident externalities of automotive traffic are, at the micro level, and in broad terms, environmental perturbation, and at the macro level, again, environmental disequilibria, and even geopolitical instability, arising from the serious asymmetries existing between the current balances of supply and demand of energy resources.

And the second consequence has to do with the physical deconcentration of activities, which, in archaic intuitive terms, is called upon to counter the mentioned effects, but in real ones, on the contrary, ends up increasing them through the processes of urban and regional sprawl which explain the mentioned stages II and III.

Furthermore, and in subsidiary terms, the increments in the levels of *regional road accessibility* make out an extraordinary incentive towards the deconcentration processes at the mentioned scale. But, furthermore, in that very context, it has to be understood that such circumstances make the situation prone towards urban sprawl itself.

h. In association with the processes of social stratification and socio-spatial segregation as well as those of economic expansion mentioned above, related phenomena dealing with the *stratification of prices* concerning the City's and its surroundings' physical resources -land

and buildings- attains increasing entity. Such processes of differentiation become sustained not only by the diversity of urban activities themselves, but by the varying levels of rent generated by each one of them, leading to the consequence that the more “productive” or richer ones, can select exclusive locations where only they can access, thus reinforcing or generating a whole set of preexistent or wholly new specific sub-markets. Such urban sectors may become subject of objective, or be granted inter-subjective, higher or lower differential qualities, and become normally tied to homogeneous and particular social sectors. Because, increasingly, market mechanisms become instrumental towards the implementation of physical segregation through the exclusion of determined social strata and activities from particular urban places, thus materializing socio-physical and functional differentiation. Even though it may seem paradoxical, the stratification of the market values of physical resources, which “punish” the more affluent groups by increasing the prices of the physical resources which they tend to make use of, such phenomenon ends up assuring them the fulfillment of the social segregation levels which they require. However, such heightened economic prices, as they become sustained during longer periods of time, offer to their holders the protection of exerting, not mere *spendings*, but genuine *investments* in the real estate sector -a safety net as regards their long-term capital formation-. Within such contexts, the lower standing social strata are called to locate or relocate within urban sectors of minor quality, value and price, which are predominantly the outer-lying peri-urban areas, thus increasing the levels of urban sprawl and of their own segregation.

i. Within the context of the circumstances commented in the former paragraph, the *relative level of participation of the real estate component* of the urban economy is ever on the increase. This, as much in relation to the increasing value of the implicated goods in themselves as well as with the amplification of the economic activity tied to the expansion of physical urban resources. Furthermore, it has to be stressed that the mentioned goods are of an essentially non-reproductive economic character. But, besides the important direct effects -not always of a convenient character, as we have seen- of the expansion and qualification of the real-estate stocks, the interested parties implicated in the supply side of the mentioned economic sector become systematic promoters of the kind of “artificial” -unnecessary, to a degree- processes which lie behind them, having led to the second and third stages of urban and regional sprawl.

Furthermore, it has to be stressed that the kind of products which are the outcome of the implicated entrepreneurial processes are being carried out through market mechanisms, which typically stratify the demand sector, excluding significant social fragments within less-developed societies, thus deepening the scenarios of active exclusion of the population.

j. The dynamics of urban territorial expansions, be they of a nature that follows the characteristics either of the second or third mentioned sprawling stages -respectively sub and/or peri-urbanization- implicate the involvement of *growing numbers of local jurisdictions* -municipalities, communes-, and even, in cases, complicating those existing intricate settings, through the intervention of those of an intermediate character -provinces, prefectures-. It becomes easy to understand why each one of the implicated administrations tends to consider desirable to allow, or even promote, the urbanization processes of their own jurisdictions. *On one side*, to heighten their relative hierarchies, as well as those of their public *administrators* -and not necessarily *administrations*-, by equating them with the sheer expanding numbers of their population, economic activity, taxation base, and/or regional roles. *On the other*, which is also always of a fundamental character, to capture locally the incremental values operated by the real estate sector which become associated with urban development -the “*urban multiplier*”- at least during the initial periods of urbanization. Furthermore, within contexts in which the urban sub-sector is turned into predominance in national scenarios, the members of meaningful agglomerations become political subjects which merit enhanced interest in relation with the sectors involved in higher-standing governmental organizations, giving rise to their mutual alliances and strategic alignments. As

a consequence, local political environments tend to become integrated within the networks of regional and national politics, exceeding their respective local administrative duties. In the rather infrequent cases in which organizations of global government or mutual coordination relating the implicated amplified sets of urban associated jurisdictions are to be found, it is rather probable that there may appear planning strategies or schemes of a global character which identify reasonable alternatives -most probably of a limited and restricted character- of urban expansion and its global organization. But when that is not the case, which is most and increasingly frequent, particularly in relation with Large Agglomerates, the processes of urban sprawl operate within exponential scales, associating the lobbies operating in the areas of real estate, utilities and infrastructures, building production and transportation, under the acquiescence, if not active association, of the implicated governmental sectors.

k. Finally, within the framework of the *generalized degradation of the urban governmental sectors' performing qualities*, be they either or both of a technical and political character, particularly in reference with *redistribution* processes -that is, at enhancing equity levels-, and *thematic integration, global scaling and long term aims*, they tend, furthermore, to refrain from genuine active intervention.

These circumstances can probably be explained on the ground of a set of diverse but articulated causes: *on one side*, the increased socio-economic problems, centered upon the restrictions relative to labor markets, wages, social exclusion, and access to formal habitat, all of which tend to pertain more to global than to local circumstances; *on the other* -and these are clearly local- socially segmented and thematically diverse demands of territorial or other sectoral specific groups become pressing. And also the incommensurate growing demands of the real estate promoters and retailers have a very meaningful paralyzing impact.

Within such contexts, most urban public policies become incidental and doubtfully structured, and subject to social, entrepreneurial and political particularities, vindications and short-sightedness.

### Emerging consequences

A set of four *criteria* has become increasingly usual in relation with urban and regional issues, both in terms of the establishment of *objectives*, as well as in terms of *evaluating* the conditions of their respective performance, namely: a) *efficacy*, b) *efficiency*, c) *equity* and d) *sustainability*.

Each one of the mentioned criteria merit being considered from pluri-dimensional perspectives -that is, in thematically *integrated* terms-, as well as in *global* ones from a scalar point of view and in reference with extended time spans. It should also be borne in mind that the set that those criteria make out becomes associated in systemic terms, although not with univocal outcomes. Thus, for example, to allude to some very significant urban relationships, the correlations linking *efficiency* and *equity* are not always of either a positive or negative character, nor eventually of similar quantitative levels.

a) In relation with *efficacy*, a criterion highly related with the patterns in which regional and urban settings operate *in-and-by-themselves* (in well different terms than that of *efficiency*, as we shall see) it may be pointed out that the processes of urban diffusion implicate circumstances of a comparative prevalently disadvantageous character, as they implicate much more *extensive* and less *dense* physical scenarios in, for example, demographic terms than in equivalent ones of a compact character. The mentioned traits should be considered as very meaningful, as the "carrying capacity" (in, again, for example, demographic terms) of a significantly diffuse urban entity, as those currently being developed, could make up the support structure of various others compact urban entities, much more effective than the former one in terms of interpersonal communication, as well as

regarding the physical mobility of the population, generating much lesser levels of congestion -obviously, in particular terms as regards the modal split of transportation which under such circumstances becomes viable, i.e. collective and massive-. Examples of a similar character would also become accomplished as regards other types of infrastructural resources -*per excellence* those related to sanitation-, as well as, more generally the ones related to urban services.

b) Different from that of *efficacy*, the criterion of *efficiency* refers to the behavioral *associated* conditions of a given activity -in the present context, urban activity- in relation with some trait, or factor, which becomes implicated in the former one's behavior, or that arises as a consequence of such behavior. Thus, for example, comparative efficiencies of an economic, environmental or social character are usually considered in relation with the patterns in which a singular activity or particular urban configuration are being displayed. Given the patterns in which diffuse urban developments are currently underway and the particular or global externalities which derive as a consequence of their implementation, it cannot but become recognized that they are specifically associated with such conditions of diffuse makeup and operation. Thus, for example, the environmental crisis, in its local scale, becomes significantly associated with the conditions in which physical mobility is being performed; which, on their part, are tightly, although not exclusively, related with the patterns of urban physical configuration. Both phenomena -physical configuration and patterns of physical mobility- become mutually feed-backed in an apparently unlimited incremental cycle, which expresses the physical, functional and environmental inefficiencies of diffuse urban configurations.

c) On its part, the criterion of *equity* refers to the patterns in which the diverse social groups involved in urban communities participate relatively in the costs and benefits associated with the configuration and operation of such entities. The scenarios made out by diffuse configurations are of such a character that the patterns in which each single social stratum is called to operate become differentiated as much as possible, maximizing the spectrum of disparities as regards the mentioned costs and benefits. Thus, for example, when the affluent sectors gentrify central-lying districts, they capitalize on their exclusive benefit the comparative qualities of such locations -consisting of more fluid access to centralized services, shortening of their commuting in terms of time and expenses, etc.-. In such circumstances, the displaced sectors are called to assume compulsorily the comparative locational disadvantages such as longer commuting times, more expensive transportation expenses, as well as, most probably, the weakening of consolidated preexisting social ties, the disruption of employment connections, and in general the loss of hierarchy of their urban experiences.

In an even neater manner, the opening up of new peri-urban territories by wealthier sectors implies simultaneously the self-calling of lower standing social strata to such areas - obviously, in well different conditions as regards habitat qualities and their overall performance- in order to cater for at least part of the new available urban resources and services, as well as accessing the associated emerging labor demands.

d) Finally, the criterion dealing with *sustainability* becomes related with the conditions within which urban and regional scenarios are called to operate regarding prospective scenarios. From this point of view, diffuse urban configurations are without doubt in a worse comparative condition than their compact counterparts, as a consequence of the progressive accumulation of the abovementioned inefficacies, inefficiencies and inequities mounting up during the extended periods of time along which they are called to remain in operation.

### **Demanded public policies**



The multiplicity of both underlying factors and emerging consequences which become associated with the processes of urban diffusion point out the need to conceive, adopt and implement public policies of a double character, namely those relative to the *prevention* and those related with *reverting* -respectively A. and B.- such processes in complementary fashion, adjusted in each case to the following particular traits:

**A. relative to the prevention of incremental processes of urban sprawl**

A.1. *in relation with the conditions of physical and functional configuration*, it is necessary to establish the notion of “*urban frontier*”, differentiating neatly between areas of urbanization and re-urbanization on the inside, and others on the outside of the mentioned frontier where such processes become absolutely prevented. In the latter ones, land subdivisions, as well as those equivalent instruments (in operative terms) related to the “collective property of (undivided) land”, be they of an explicit or implicit character -as the one under the condominium pattern-, should be forbidden. Likewise, it should be considered unlawful to display within such areas any kind of urban activities, even that of single family housing, as well as setting up new infrastructural resources, and very particularly those related with the increase of sub-regional physical accessibility. These measures should involve initiatives of both the governmental and private sectors.

The initial establishment of the mentioned type of frontier should include un-built land on its inside portions aimed at urbanization processes, proportionate in every particular case with medium-term requirements, of the order of 15 years. This un-built exceeding space should be aimed at re-configuring already urbanized areas under inconvenient social, economical, physical, functional or environmental patterns, or a combination of part or all of them. Also, the mentioned frontier has to be conceived as tentatively mobile, either towards the inside or the outside, within pre-established time spans, determined in relation with the effective dynamics of growth, decay or transformation of each implicated agglomeration, always framed within the objectives of promoting compact configurations, and centered upon collective and massive physical mobility.

In order to make such circumstances viable and institutionally sustainable, they have to be developed within the framework of inter-jurisdictional agreements, not only in relation with those agglomerates which already have such character, but also, more generally, involving in every single case the implicated sub-regional governments, and even those of a higher institutional level. All this aimed at inhibiting the usual *competitive* initiatives of urbanization exerted by the administrations of neighboring jurisdictions of a similar hierarchical status. Ideally, each level of public administration -normally involving the national, regional, sub-regional and local levels- should display and establish consensuses, when possible, or act otherwise in accordance with their relative hierarchies and incumbencies, determining in each case the prospective conditions of urbanization in every single one of the mentioned scales and time settings.

A.2. *in relation with the functional conditions*, the re-conversion of people and goods prevalent patterns of mobility becomes imperative. In the former case, in favor of collective and massive means, and in the second, in favor of different modes than the automotive one in the cases of heavier loads and longer distance scales. Such policies can be instrumented through changes in several traits related with the private automobile, namely: *inhibiting its diffusion* through the adoption of fiscal criteria penalizing all kinds of vehicles, but particularly those representing larger prices, volumes, weight, energy consumption and environmental impacts, as well as those relating their *conditions of utilization*, including limited quotas of access to energy, services, etc. Furthermore, there should be established areas and timetables regulating which type of car accessibility should be allowed, as well as tariffs regulating the expenses of access, permanence and parking in each specific urban sector. Furthermore, every single aspect relating the performance of public transportation should become qualified, including means, routes, area coverage, frequencies, safety, comfort and price. As relates tariffs, the general trend should be to tie them incrementally in relation with

its effective use -that is, to penalize incremental distances-, but also to offer a diverse set of subsidies, generalized or focalized, as may become necessary or socially convenient.

*A.3. in relation with taxation relating the real estate sector* it is convenient to promote two types of instruments: *on one side*, those relative to the mobilization of idle portions of land, or of its insufficient utilization -vacant plots, low-intensity obsolete buildings, speculative reserves, etc.- which should become subject to *increasing* rates of taxation, even to the point of unpaid expropriation after long enough periods of time, and under previous notification to their present owners; *on the other*, the adoption of preferential criteria, *lowering* the real estate taxes in strategically located urban sectors as regards their levels of accessibility through massive means of transportation and their level of centrality, while simultaneously making them tighter in those deconcentrated areas with low levels of land use intensity.

**B. relative to the reversion of preexisting conditions of urban sprawl**

*B.1. in relation with the conditions of transportation of people and goods* the re-configuration of the existing systems and modes should be considered, in favor of those providing higher levels of efficacy, efficiency, equity and sustainability. Furthermore, the criteria mentioned under A.2. above should be generally adopted;

*B.2. in relation with the physical and functional patterns of the agglomerations* the promotion of their reconfiguration should be implemented, aimed at increasing their levels of compactness in the immediate vicinity of the main components of transportation and central areas;

*B.3. in relation with the taxation conditions of the real estate sector* we recommend to implement progressively those criteria mentioned under paragraph A.3. above;

*B.4. finally, as regards the conditions of governance*, we mention, *on one side*, the *simplification* of the sets of existing jurisdictions, particularly the local ones, which become predominantly too small in physical terms and mostly unable to face their planning and management duties; *on the other*, the *articulation* of the operative patterns of the whole sets of local jurisdictions making up the agglomerations in terms of the policies, strategies and plans which each of them displays; *finally*, the *coordination* of the policies, strategies and plans of the local governments with those pertaining the higher standing hierarchical public administrations, aimed at their mutual compatibility and complementarity.

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