Coping with urban sprawl: toward a sustainable peri-urbanisation

Giving way to residential paths

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Urban sprawl is a complex, poorly defined reality. It is the advancement of the town or city into agricultural, forest and more generally rural areas to create built spaces characterised by low density, landscaped monotony and advanced standardisation of different urban elements (roads, houses, warehouses, etc.) But it is also a process of functional and social differentiation from the town/city, leading to significant individual mobility. This requires the construction of transport infrastructures contributing in their turn to urban sprawl through the new residential opportunities they create. The phenomenon is therefore self-sustaining. In these conditions, the progression of the urban front can become extremely rapid (Gottman, Harper, 1967).

Urban growth is not a recent event, but in its traditional form it presupposes the appearance of suburban spaces in the immediate vicinity of the town, having with it such strong organic and structural links that they sometimes end up being incorporated into it. Activities requiring conditions unavailable in the town centre often constituted anchor points for this urban growth (military or religious (monasteries, cemeteries) facilities, markets and fairs, warehouses and economic activities generating nuisance). These activities, at the boundaries of the town/city, attracted from the end of the 18th century in Europe – when the agricultural revolution liberated a population previously occupied in the fields and the industrial revolution gave them employment (Choay, Merlin, 1996) – new residents and closely related activities (furnished accommodation, hotels and residences, shops, bars, restaurants, banks, etc.) which ended up urbanising the whole of the *communes* (municipalities) concerned. Two major phenomena accelerated this type of growth which ended in the first suburb, organised in mini-towns in the image of the adjacent main town, complying in particular with its forms and proportions, whilst being complementary to it:

– Towards the end of the 19th century, the improvement in and spread of public transport enabled people to reside and activities to be located more easily outside the town/city. Los Angeles, for example, was extended considerably after the construction of efficient tram lines (Ghorra-Gobin, 1985). The most well-off populations could then escape the congested concrete metropolis and live in a more peaceful and greener environment. This suburbanisation was in theory based on the Garden Cities of Ebenezer Howard, put into practice by Raymond Unwin in Hampstead and close to London (Parsons, Schuyler, 2002).

– After the Second World War, the improvement in people's living conditions gave rise to an increase in the demand for dwelling space. At the same time, the car became available to everyone significantly increasing individual mobility. From then on, many inhabitants left the centres for ever-more outlying urban rings. This suburbanisation was "characterised by the decentralisation of the population and workplaces within conurbations" (Rossi, 1983) and supported by nascent urban planning policies considered entirely on the basis of private motorised travel. The prominent thinker of that time, Le Corbusier, thought that the car should be the keystone of normative, standardised planning (Le Corbusier, 1946). This perspective was at the origin of Futurama (General Motors pavilion) made by Bel Geddes at the 1939 Universal Exhibition in New York, which twenty years later justified a lot of ideas on the benefit of motorway development.

But this suburbanisation finally led to a dual functional and spatial differentiation, which accompanied an acceleration in the progression in the urban front of major towns and cities, ultimately producing an enormous *suburbia* (Luka, Trottier, 2002). Two reasons for this:

– On the one hand, more and more people live in a different place from where they work; a phenomenon encouraged by zoning policies. This dynamic is widened by competition between functions for location, with a concentration of activities with high added value in central or

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attractive urban spaces and eviction of housing by offices (Crouzet, 2003). As a consequence, areas for work, residence, shopping and leisure become dissociated from one another with the car as the sole means of joining them together.

– On the other hand, the resulting new residential spaces are distinct from one another. Social differentiation in which those who can economically move away to outlying *communes* combining a pleasant environment and fairly low local taxes and quite close to the centre in distance and time (public transport, motorway) to enjoy the amenities, facilities and cultural life of the town/city centre. The others go elsewhere and banishment areas appear combining poor accessibility with multiple nuisances (Jacoud, Schuler, Bassand, 1996].

The widening of this dual differentiation led towards the end of the 1970s in Europe to a qualitative break in the mode of growth of the town/city: from suburban it became peri-urban, which is something quite different. Peri-urbanisation is characterised by high dispersion of housing in areas previously qualified as rural where newcomers import an urban way of life (Roncayolo, 2001). The continuous extension of urban areas with suburbanisation is replaced by a more dispersed progression that consumes more space due to low densities where the norm becomes the one-family house with highly specialised areas (detached houses, blocks of flats and towers, industries, services, etc.). Associated with this peri-urbanisation is then a new phenomenon, urban sprawl, which brings about a major increase in mobility (Gillham, MacLean, 2002).

Pitfalls, dead-ends and opportunities of peri-urban growth

We can identify three causes of peri-urban sprawl: residential choice, choice of location for certain activities, and planning biases. Residential choice – in its economic and hedonistic aspects – is a key factor (Orfeuil, 2001). Life is idealised in these outskirts: safer, calmer, better schools, closer to "nature", "small town" atmosphere. From the very beginning, urban expansion has been associated in the collective imagination with notions of freedom of choice, nature and space. These ideas come together in the desire for a one-family house with a small garden. This is where the economic point of view comes in: the price of land and construction generally reduces the further away it is from the centre. Furthermore, the restrictions on construction inside the town/city are greater than outside. Consequently, the increase is mainly via one-family houses, often grouped in estates. The cost of land and construction are also reasons why companies, warehouses and large shopping centres are built away from the centre, but they are not the only reasons. In the outskirts, activities have more space available for their buildings and car parks. In addition, the motorway network encourages them to site their warehouses near their accesses outside the town/city. In particular, the influence of planning policies is huge. It is manifested in three ways: promoting estates through land and tax policy and by supporting the construction of infrastructures in the outskirts (roads, public buildings, schools) sometimes under pressure from interest groups (hauliers, builders, promoters);

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passing highly restrictive regulations in the town/city centre under the pretext of preserving the urban fabric (impossibility of altering an old building in order to protect the town/city image; small plot size, non-modifiable, preventing construction of large blocks; low land coefficient preventing construction to height, etc.) which gives outlying areas not subject to them additional appeal; zoning policies conducted throughout the conurbation specifying distinct areas allocated to agriculture, housing, industry and services (Slak, 2000). This last point is particularly important, as although the idea of controlling construction to prevent the increase in the number of detached houses built just anywhere is commendable, spatial separation of workplaces leads to a high need for mobility and encourages urban sprawl (Choay, 1994).

Behind the causes of sprawl lies property market failure (Papandreou A., 1994), resulting from three erroneous assessments:

- Not taking into account the existence value and option value of non-built areas in calculating land productivity. Parks, forests and fields are decongestion spaces close to new urban growth which, otherwise, lose a large part of their appeal.

- Underestimating the cost of commuter travel resulting from not taking account of time wasted due to traffic (traffic jams, slow traffic, etc.), of congestion of infrastructures, of nuisances and of the resulting pollution.

- Underestimating construction cost. A house requires serviced land (electricity, water, gas, wastewater disposal, waste management) and local facilities (streets, schools,

green space). All this has a cost, which is not generally taken into account, but is borne by all residents of the conurbation via local taxes.

Some rural *communes* on the borders of the town/city also enjoy positive externalities, adopting a position of free rider and suggesting local taxes that are highly advantageous in respect of neighbouring, already urbanised, *communes* (Slak, 2000). They greatly increase their population whilst keeping infrastructures and services at a particularly low level. The proximity by car of older centres guarantees to their residents services that are almost equal to those enjoyed by already urbanised areas, at a lower charge. These communes generally attract well-off families, through master plans that are particularly advantageous for building one-family housing. The remoteness of public transport networks strengthens this form of economic segregation, as it demands increased individual mobility requiring major financial resources.

Pitfalls and dead-ends

Peri-urban sprawl creates a number of perverse effects. The first is political. The anarchic development of the outskirts over the last thirty years has taken place mostly in strict compliance with general land-use plans and master plans. This says a lot about the delay caused by tools that become obsolete once a certain critical size has been reached. This problem is no less formidable for being hidden, as the

conflicts and blockages caused by it sustain and amplify all the other difficulties. With peri-urban growth, the "historical" borders of towns/cities and suburbs lose their relevance, as the scale of action of a *commune* or group of neighbouring *communes* is not suited to taking responsibility for the new issues raised by peri-urbanisation (Guineberteau, 2004). There remains the solution of public action thought out and implemented at conurbation-level, but it is difficult to get heterogeneous units who do not know each other, or are even in competition with each other, to work collectively. The situation is even more complex when the conurbation covers different *départements* and regions (Beauchard, 2003). Which is, after all, often the case.

It is the result of a paralysis of action caused by these configurations of structural inequalities between *communes*. For example, scattered or low-density housing requires maintenance of a considerable road network. Its maintenance cost is enormous. It increases with time and decrepitude, increasing the local tax burden. Land taxes then soon become a deterrent and interested parties go and build "further out". A vicious circle strengthening urban sprawl. One pseudo-solution consists in laying these costs on the whole conurbation, but that encourages free rider behaviour amongst *communes* willingly adopting dishonourable behaviour in terms of town planning as they know that they will not have to pay for it later on (Rossi, 1985). Fiscally aggressive, isolated *communes* situated in a pleasant environment attract well-off categories of the population. Conversely, many *communes* which in the past have avoided a major tax deficit by simultaneously welcoming industrial areas, one-family housing areas and blocks of flats, have seen their population and businesses drained towards peri-urban or more central areas. They then become real social banishment areas with a concentration of disadvantaged people, industrial wasteland and public accounts in great deficit (Donzelot, 2004).

In addition, the financial cost of exacerbated mobility is shared by all the conurbation's residents, whereas its cause is limited mainly to those whose remoteness requires the organisation of major road networks (Lévy, 1999). Although urban sprawl leads to an exponential waste of land, it is not only because density is low, but also because many cumbersome transport infrastructures need to be built: accessibility for one peri-urban housing unit costs much more ground surface area than one housing unit in a denser area.

Over time, the dynamic resulting from such a situation should destroy the myth on which this urban expansion movement is based (Kahn, 2001). The prospect of an urban life in the countryside appears totally illusory, in so far as successive waves of newcomers end up urbanising everything, cars become as numerous and as annoying on the roads and kerbs as in the town/city centres, travel times lengthen and neighbourhood nuisances accumulate. However, this is not the case. It does not dispel the myth: those who can simply travel a bit further to more peaceful

environments and the same phenomenon happens again. Even if it means leaving to the less fortunate the original space that has become "unbearable".

A hierarchical *hub and spokes* road system is characteristic of these peri-urban spaces (Salingaros, 2005). The term *hub and spokes* is used to designate the configuration of airlines where all connections (*spokes*) must pass through a central *hub*. So, each movement passes through the highest hierarchical level before returning to the initial level. In practice, for peri-urban spaces, that means taking the motorway to go and buy your loaf of bread and newspaper. This type of configuration is marked in the countryside by roads gradually getting further away from each other from nodal starting points (roundabouts, town entrances, exchangers). This encourages traffic congestion at these points of convergence, causing time wastage, atmospheric pollution, noise, etc.

In such configurations, the lack of roads and lanes makes walking almost impossible, thereby weakening local social links and detracting from the supposed positive health effects of peri-urban life in the "fresh air"(Freeman, 2001). In so far as everything is designed for the car, those who are not able or do not know how to drive (children, elderly people, people with disabilities) encounter major difficulties in their everyday lives. Where possible, those in the family who can drive spend a considerable amount of time transporting those who cannot (Wiel, 1999). Public spaces suitable for walking are rare. When they are cobbled together around main squares of estates with ridiculous supposed vernacular names like "forget-me-not" and "green meadows", or around items of street furniture – benches, fountains, trees on a roundabout – they are designed without an interconnecting road network, with no link to their immediate surroundings. Placed there like UFOs, they are quite incapable of acting as a catalyst for an urban life (Salingaros, 2005) and lead to a weakening in the identity of the place for those who live there (Proshansky, Fabian, Kaminoff, 1983). These are "priblic" spaces (Viard, 1994), which take over from public spaces as exchange and meeting places: shopping centres, multiplexes. As these are very far from places of residence, they hardly encourage neighbourhood relations. There is no urbanity in these peri-urban spaces. When, as in the case of American *gated communities*, there exist shared spaces enabling social life amongst neighbours, this, by force of circumstance, is limited to those who are close socially, economically or culturally.

Opportunities put to the test

This creeping urban sprawl is unsustainable on two counts (Bassand, 1997). The development of estates and the phenomena of urban segregation all conspire to degrade the quality of life with ever-longer commuter travel, acces-

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sibility problems, and ever-greater management costs for the authorities concerned. The cost of connection to public service networks is high in respect of the scope covered and surface area to cover. The energy cost is also high with mobility provided almost exclusively by car and a much greater unitary heating requirement for scattered one-family housing than for apartment buildings.

It must be accepted nevertheless that peri-urbanisation does have its advantages. Individually it allows more extended individual space. Collectively, it avoids concentration of nuisances and pollution due to over-proximity particular to town/city centres (Steinberg, 1991). Also, it de-densifies centres that are sometimes on the brink of congestion: it is geographically impossible for everyone to live in the town/city centre. Also, with the increasing uncertainty about job security, location is based less on the proximity of work. Therefore, scattered housing may offer a wide diversity of opportunities at an affordable cost while providing the desired quality of life. In any case, even though the disadvantages outweigh the advantages, the myth persists, with its idealisation of life at the rural gates of the town/city. There is a limit to the possibility of imposing residential choice when this choice contradicts the deep motivations of a population (Mancebo, 2006).

Positions hostile to urban growth did not however expect peri-urbanisation, even though the arguments are curiously the same as today. In the 1930s William-Ellis wrote, "But the building goes on at a prodigious rate and the houses are occupied before the paint is dry on the window sills. Sites are seized for Tudor inns and Hollywood picture-houses and another piece of country disappears for ever.

Think of the approach from Worthing to London. The whole green valley below Cissbury south of Findon, is being filled with red-brick houses. The hillside of Salvington is lost and the ancient earthworks of Cissbury were only saved in the nick of time" (William-Ellis, 1938). More recently, in the mid-1960s, Nairn protests: «If you live on the outskirts of any large town it is a fair bet that your environment is already witless chaos - a dumping down of every kind of man-made object, urban, suburban, and sub-rural with no relationship to each other or to the site. A new ugly word was needed to describe it, so I coined one - "subtopia"(Nairn, 1964).

The issue then is less one of opposing or defending this type of urban growth than of supporting, altering and guiding it (Charles, 2000). With the knowledge that whatever its faults are, the dynamics of transformation at play in peri-urbanisation are surprisingly stable, both in respect of mechanisms and chronology of events. Let us note also that for a long time, in villages, small communities living in low-density urbanisation have had a very dynamic social and cultural life.

It is a question of minimising the undesirable impact of uncoordinated low-density town planning. Our remarks will be based on a few key ideas, borrowing, though only in part, from *Smart Growth*: heterogeneity of the urban form; functional mixity and differential densification; dense local road networks suitable for pedestrians (Neal, 2003). It will involve a concept of urban development that borrows, on the periphery, from complexity theories. Borrowing is limited to the status of intent, taking exception to the far too normative, mannered and inoperational form of *New Urbanism*.

In search of sustainability: coping with the troubles from urban sprawl

If, like Salingaros (2000), we see the town/city as a complex system, then this complexity is guided by internal codes (regulations; set of representations with which the objects of this particular environment are invested) and by regulation mechanisms. As with a living organism – another complex system – where pathologies of cell proliferation, like cancer, develop when regulations break down, urban sprawl is caused by the disappearance of growth benchmarks and regulations.

The stability of a system depends on its resilience, i.e. its ability to absorb every minor turbulence in order to strengthen its cohesion. This assumes myriad connections between the smallest elements of the system in question. Such was the case with historical urban systems forming the central fabric of towns/cities. However, in peri-urban spaces, everything seems made to limit relations as much as possible: separate office and housing areas, accessibly only by car; isolated buildings with few entrances easy to control (house gates, shopping centre entrances, guarded residential complexes). Strolling around is impossible, there are no pedestrians in the streets, nobody sits on the walls, and there are no shops in these residential enclaves. One of the first initiatives to carry out therefore is to cause confusion in this nice geometric layout: lots of pedestrian and mixed (pedestrian, cars) ways; buildings touching each other, "mingling", housing various functions (Salingaros, 2000). Why not let residents create short-cuts then make them official rather than impose a layout that is as inconvenient as it is landscaped. Why chase away street food vendors when you can use this information to set up permanent kiosks and strengthen their appeal? It is important not to hinder these self-organising dynamics so that the street can be reborn in these spaces, as a diffuse centre of exchange and urbanity (Rudofsky, 1969). Such an approach forces one to revisit some of the main principles of town planning, which are often unchallenged.

So, encouraging mixity of land use and differential densification of peri-urban spaces is of course a respectable approach intended to restore sociability and sustainability in peri-urban spaces. But the success of such a policy is not easy:

– On the one hand, it assumes an institutional structure capable of developing coherent planning options particularly in the fields of transport and the environment for the whole of the functional territory. It is important therefore to define a single operational local authority for the whole conurbation. Various methods are conceivable: association of *communes*, joint management agency or even creation of a special institution for the conurbation (Godard, 1997). Failure is often due to the inability of new structures to impose their legitimacy.

– On the other hand, there are many perverse effects. Skilled and commercial trades may cause nuisance that is incompatible with housing. Just because jobs are created in the vicinity of estates, it does not mean that those who live there are going to work in them automatically. Concerning density, the aim is to develop territory that is economic on land, but also one that demonstrates spatial and landscape heterogeneity. This goes hand in hand with quality of life, which differs according to place. There is a risk then of seeing new social banishment areas appear – totally relative banishment of course, but the trend may become clearer over time – by juxtaposing other more affluent areas.

This reminds us that quality of life, real or imagined, is one of the main reasons for choosing peri-urban living. Supporting peri-urbanisation by checking peri-urban sprawl consists also therefore in preventing progressive degradation of the urbanity of these areas, otherwise people will move even further away. This means, *inter alia*, creating or maintaining - if they already exist – public spaces whose purpose is to bring together and not separate. This also assumes that these spaces are on a pedestrian/passer-by scale. For a long time, only the traffic dimension was taken into account when designing streets: we must remember that the concept of residential street only came into road law in 1984. The idea is to identify fixing points corresponding to reference points of the old architectural heritage (old village square, canal side, shop, bar, etc.) or nodalities of the transport system (motorway exits, school bus stops, etc.) to structure the peri-urban space with densified polarities.

From this perspective, supporting peri-urbanisation draws more inspiration from midwifery than Pygmalion. It is important to encourage connectivity, preserve rough edges (street vendors, waste land, mixed roads), guide shape (by differential density), produce multiple drafts of transformable walkways in order to fix morphologically afterwards those adopted by the residents (Mancebo, 2003). There is of course a bias in this approach: the idea that towns/cities evolve towards their own shape, which it is pointless trying to thwart.

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