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## Suburbs, boomburbs and exurbs: a multilevel approach of contextual effects and the production of suburban morphologies.

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## 5th International Conference of the Research Network Private Urban Governance & Gated Communities

### Redefinition of Public Space Within the Privatization of Cities

March 30th to April 2nd 2009, University of Chile, Santiago, Chile

#### Guideline for paper proposals/abstracts

<b>Paper proposed for panel</b>	2 - A trans/inter-disciplinary approaches to understanding and exploring private urban spaces and governance in cities
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<b>Title:</b>	<b>Suburbs, boomburbs and exurbs : a multilevel approach of contextual effects and the production of suburban morphologies.</b> Methodological framework and exploratory results in Paris metropolitan region.
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#### **Abstract:**

This paper aims at providing a methodological framework that comprehends the different levels of intricate interactions in the production of suburban residential patterns. By doing so, I wish to introduce an analysis of the local contexts of production of suburban PUG. This will be eventually achieved by the means of quantitative analysis (multilevel spatial analysis of income patterns and morphological typologies of subdivisions) and qualitative data. In this aim, identifying *recent enclaved subdivisions* will be used as a proxy to study a representative sample of subdivisions in the suburban areas of Paris metropolitan region. A database of 909 enclaved subdivision provided by the *Greater Paris Region Planning Agency* (from now on IAU-IdF<sup>1</sup>) will be used to identify street patterns, local morphologies, nearby land uses.

This requires focusing on three main issues that underlies the theoretical and methodological choices the paper will discuss and justify : first, an analysis of PUD morphological fragmentation ; second, a comparative study of socio-spatial fragmentation (based upon income data) and regulation practices, interactions between actors and suburban sprawl ; and at last, an effort towards a better understanding of the retraction of public space, resulting from planning and development choices.

Indeed, we push the argument that analyzing public and private partnerships in the production of suburban residential spaces, requires to investigate several dimensions : theoretical issues of institutional regulations, interactions between individual strategies at a local scale, these of private operators and developers as well as these of the residents. At last, the paper aims at demonstrating how these numerous and divergent dimensions may be jointly analyzed by the means of quantitative and qualitative multi-level analysis that identify production contexts and territorial outcomes.

<sup>1</sup> IAU-IdF : Institut d'Aménagement et d'Urbanisme de la Région Ile-de-France ; formerly also refer to as IAURIF.

## **Suburbs, boomburbs and exurbs : a multilevel approach of contextual effects and the production of suburban morphologies.**

**Methodological framework and exploratory results in Paris metropolitan region.**

### **Introduction**

Has suburbanization invented new models in producing urban territories ? Though abrupt, the issue focuses on the genesis of urban edge areas, which is often considered under three dominant assumptions. First, private firms are preeminent contributors in the production of suburban areas (land developers, managers of commercial spaces, individual housing developers and planned-unit developments builders) ; second, local public authorities also play key roles, imposing regulations and control on land-use, restricting the land availability, allowing means of social selection of the residents, and regulating urban sprawl or slow-growth policies ; third, publicly-owned and managed areas tend to disappear, yielding to a private urbanism in which planned-unit developments are key features. Meanwhile, the history of morphological changes in cities reminds us how private interests, especially these of developers, are major forces for the (re)development of cities, and are closely connected to public policies and arbitrages. The recent changes in downtown Berlin (Potsdamer Platz), in London (Docklands), as well as the historical reshaping of downtown Paris tell the same story of public planning relying on private developers to fulfill its objectives. The experience of “villes nouvelles” and garden cities, both in the US (Radburn, New Jersey ; Irvine, California), in the U.K. or in France also shows the importance of public-private partnerships, especially when the failures of private developers ultimately threatens the equilibrium of the planning project (especially in Evry or Cergy, near Paris).

This paper aims at providing a methodological framework that comprehends the different levels of intricate interactions in the production of suburban residential patterns. By doing so, I wish to introduce an analysis of the local contexts and neighborhood effects in the production of suburban subdivisions. This will be achieved by the means of quantitative (multilevel spatial analysis of prices, social patterns and typologies of subdivisions) and qualitative surveys. This requires focusing on three main issues that underlies the theoretical and methodological choices the paper will later discuss and justify : first, an analysis of subdivisions morphological fragmentation ; second, a comparative study of socio-spatial fragmentation and regulation practices, interactions between actors and suburban sprawl ; and at last, an effort towards a better understanding of the retraction of public space, resulting from planning and development choices.

This paper focuses on the primary forms in residential subdivisions, with two overlapping line of inquiries.

- First, in order to get a better understanding of the interaction between public and private interests in the production of residential suburbs, the main objects of this study are Planned Unit Developments (PUD) as they were defined by McKenzie (1994) as large subdivisions<sup>2</sup> planned and developed by major actors of the homebuilding industries, and managed by property owners associations (gated communities are just PUD among others). PUD are dominant residential morphologies in the suburban landscape and are found in different kind of suburbs : either within the sprawling suburb contiguous to dense, agglomerated and formerly built up area ; or within the exurbs, sort of commuter-towns which are composed of small communities in bucolic areas, small towns. Close to the outer suburbs of an urbanized area, they are isolated from the continuous suburbia by a few miles-wide buffer zone of agriculture, rural, wooded, land or any other sort of green-belt area (Davis, Nelson, Dueker, 1994). Some are at last located in *boomburbs*, a neologism designing “large, rapidly growing, incorporated communities of more than 100,000 residents that are not the biggest city in their region (...) made up of master-planned communities that have grown into one another” with a lack a specifically design downtown area, although they have shopping centers, business district and public services (Lang, Lefurgy, 2007; Lang, Lefurgy, Nelson, 2006). This

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<sup>2</sup> The synonymous locutions “housing estates” or “residential subdivisions” will be used as well in this paper.

definition indeed fits very well the characteristics of suburban residential patterns of newer secondary central places in fragmented polycentric metropolis, which are called either New Towns (Merlin, 1991) or edge-cities (Garreau, 1991).

- - Second, I argue that pursuing this goal requires to identify PUD properly in the suburban fabric. In this aim, identifying *recent enclaved subdivisions* will be used as a proxy to study a representative sample of PUD in the suburban areas of Paris metropolitan region. A database of 909 enclaved subdivision provided by the *Greater Paris Region Planning Agency* (from now on IAU-IdF<sup>3</sup>) will be used to identify street patterns, local morphologies, nearby land uses.

Based upon a mix of quantitative and qualitative analysis, the focus will be first on identifying and describing the (1) types of morphologies produced in the suburban landscapes ; (2) how these morphologies interact with the contextual effect of socio-economic patterns (wealth) ; (3) which types of public-private partnerships involved in this suburban fabric and how the status of the partners (real-estate corporations, public / private co-operations, property-owners associations, etc.) indeed shape the nature of the proposed goods (standardization of housing offer). The overall goal of the paper is to contribute, both methodologically and theoretically, to better understand the contextual effects in the shaping of blurred boundaries between public and private spaces in suburban residential subdivisions.

## 1. the production of suburban morphologies

### 1.1. Local contexts and the production of PUDs : fragmentation and polycentrism

Scholars interest for suburban areas has essentially focused on residential estates and planned-unit developments, the morphological outcomes, and the fears of an uncontrolled urban sprawl. The literature is too vast to be all cited here, especially on the North-American context where the legal form (home-owners association) and the urban morphology (residential park or estate) first appeared in the early 19<sup>th</sup> century (Mckenzie, 1994), and then generalized in the peripheries of every metropolitan areas. These large subdivisions, or **Planned Unit Developments (PUD)** and **Planned Communities** have their form described, and how they are part of sprawling processes along with a high level of space consumption because of low densities, is quite early discussed (Gottmann, 1962). Many discuss the reasons underlying this suburban dynamic : public spending in freeways, fiscal incentives for individual home ownership, generalization of individual transportation means, pressure of the development industry on vacant land, are the reasons the most frequently advanced (Jackson, 1985), in addition to the cultural and religious factors in favor of a pseudo-utopian and anti-urban vision of city life (Ghorra-Gobin, 1997). The links between the multiplication of suburban residential estates and urban mobility, as well as their correlated lengthening of commuting (Cervero, 1989; Cervero, Kang-Li, 1998) are well known. For regional economists and planners, the impact of PUD upon the urbanization costs and public services provision is salient issue, especially because of low densities (Davis, Nelson, Dueker, 1994 ; Southworth, Owens, 1993). Classical economists indeed demonstrate the efficiency arguments for private governance in PUD, which are based on the assumption that the public provision of services leaves potential welfare gains unrealized, whereas a private provision of collective services within a PUD, relying on a local direct democracy (Home Owners Association, HOA), would be economically more efficient (Foldvary, 1994).

In a French context the focus is often brought to the socio-spatial outcomes of a low-density loose urban landscape, in which suburban single-housing and PUD are archetypes. Indeed, planners often consider that the housing category (one family detached units) and the legal and territorial form (PUD) both belong to the same kin. Some scholars have studied the housing estates as urban forms, and by doing so develop a juridical and financial point of view (rights of way, purpose of PUD for local governments' planners) (Wattine, 1990) ; other might demonstrate how housing estates are dominant forms in the history of cities, especially after the 18<sup>th</sup> century (for instance in Bordeaux ; see Calais, 2003), or throughout the 19<sup>e</sup> century as *culs-de-sac*, "villas" (private streets) in Paris and its suburbs

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<sup>3</sup> IAU-IdF : Institut d'Aménagement et d'Urbanisme de la Région Ile-de-France ; formerly also refer to as IAURIF.

(Montserrat Farguell, Grandval, 1998). The characteristics of residential estates are often instrumental in defining the overall characteristics of the urban edge, thus assimilating them as a no-city or an anti-urban setting : land division, morphological fragmentation of the urban fabric, monotonous built environment, homogeneity of the residents' socio-demographic characteristics ( Burgel, 1989), all this being detrimental to the social diversity of the urban edge. Many analysis also seek to contextualize the relationships between PUDs and other salient suburban places (such as shopping-malls, business districts, recreational areas), all being the bricks of a fragmented urbanity produced by mobility and structured by individual means of transportation. The fabric of suburb is then entirely submitted to the daily and weekly rhythms (daily commuting vs. leisure occasional mobility...) (Bordreuil, 2000). Furthermore, the outcomes of changing urban fabric, in terms of social separation and segregation have been widely described, especially the way "suburbanism" has produced a clear-cut separation between public housing on one hand and enclaved or even gated neighborhoods planned as close-knit communities (Billard, Chevalier, Madore, 2005; Donzelot, Mongin, 1999 ; Jaillot, 1999 ). From a more distant point of view, the offer of new communities and "residential villages", fitting the residential strategies and the desires of a rather diverse middle-class, testify how populations and activities have progressively loosened (Berger, 2004). In a polycentric and economically fragmented metropolitan area, this leads to differentiate patterns of residence, commuting and employment according to socio-economic status or even gender status (Berroir, S., Mathian, H. L. N., Sanders, L., Saint-Julien, T. R. S.).

Incidentally, the analysis has also taken into account the diversity of non-residential spaces, and studies described the polycentric location of activities and jobs (Gordon, Wong, 1993) and the emergence of clusters, technopoles and innovation centers, according to new urban standards, such as *edge-cities*, where private landowners are preeminent in the city planning (Castells, Hall, 1994; Garreau, 1991). In this context, explaining the emergence of this new centralities requires considering the post-fordist restructuring of local economies, more flexible, clustered and specialized (Halbert, 2004; Scott, 1988; Scott, Soja, 1996). Shopping malls and industrial / business parks are then major specialized regional landmarks, in a polycentric city where alternative peripherals specialized districts compete with the historical downtown (Beckouche, Vire, 1998 ; Berroir, S., Mathian, H., Sanders, L., Saint-Julien, T.; Guerois, Le Goix, 2000). Both morphologically and functionally comparable to suburban housing in a fragmented but connected landscape (Garreau, 1991; Gordon, Richardson, Wong, 1986), their emergence appear to be the product of intense talks and partnerships between private developers and local authorities (Didier, 2000).

Indeed, polycentrism and morphological fragmentation produced by urban sprawl was often discussed as being detrimental to social cohesion of larger metropolis in an "emerging city" in which cars and new urban life-style are based on territorial reticular patterns (Ascher, 1995; Dubois-Taine, Chalas, 1997 ).

In the French context, the privatization of cities produced by the diffusion of enclaved, gated, closed, secluded subdivision have also been described, and many occurrences of municipal officials subordinated to the wishes and desires of home owners associations have been described near Paris, where the diffusion of private residential estates has been a classical feature of suburban areas since the late 19<sup>th</sup> century (Callen, 2002; Callen, Le Goix, 2007). At last, residential enclosures are spreading in the Paris region, emphasizing an individual search for security and a collective protection against the "others" (Charmes, 2005; Charmes, 2009). This diffusion of residential enclosures is partially the result of the adoption in Europe, in different forms of housing types, of P. Newman's planning principles, defined in 1972 under the hypothesis of neighborhoods as "*defensible spaces*" (Le Goix, Loudier-Malgouyres, 2004). *New Urbanism* and *defensible spaces* theories have contributed to the diffusion of innovative morphologies in the 1970s, such as the culs-de-sac or the loops (Newman, 1972; 1996) . Other morphological studies on suburbia that have highlighted the prevalence of enclave morphologies (Lang, Lefurgy, 2007; Lang, Lefurgy, Nelson, 2006; Southworth, Owens, 1993). They are, among other, the results of local regulation that demonstrate the changing nature of the suburb, where enclosures are developing at different geographical levels : small municipalities looking for isolation and protection of their "lifestyle", restrictive zoning, permanent search for social pairing by the means of school districts (and "school-maps" in France).

In France, the 1804 *Code civil* sets up a condominium law and regulates property rights, enclosures, rights of ways, contractual agreements and; subsequent laws on planned unit developments (1923, 1976, 1986) derive from this legal framework : every new land subdivision in the country has been required by law to set up restrictive covenants and, in the case of private streets, a homeowners association. Streets can be either public (retrocession) or private. Under France’s strong urban municipal culture, these have remained relatively under-used and minor elements of the overall urban governance infrastructure (much as town and parish councils have in the UK). In parts of the world where the state is not so successful at delivering civic goods and services or not so minded to do so, the borrowed and adapted French 1804 condominium idea has provided the legal basis for entrepreneurs to supply not just homes but entire neighborhoods complete with governance structures and private management (private versions of town halls for groups of anything from 200 to 200,000 residents).

Indeed, analyzing public and private partnerships in the production of suburban residential spaces, requires to investigate several dimensions : theoretical issues of institutional regulations, interactions between individual strategies at a local scale, these of private operators and developers as well as these of the residents.

	Gridiron (c. 1900)	Fragmented Parallel (c. 1950)	Warped Parallel (c. 1960)	Loops and Lollipops (c. 1970)	Lollipops on a Stick (c. 1980)
Street Patterns					
Intersections					
Lineal Feet of Streets	20,800	19,000	16,500	15,300	15,600
# of Blocks	28	19	14	12	8
# of Intersections	26	22	14	12	8
# of Access Points	19	10	7	6	4
# of Loops & Cul-de- Sacs	0	1	2	8	24

Note: This table refers to the 100-acre unit of analysis illustrated in the diagrams. Intersections were defined as junctions of two or more through routes. Junctions with cul-de-sacs were not treated as intersections because cul-de-sacs do not lead anywhere outside the immediate area.

Figure 1. *Comparative analysis of street patterns in the suburbs.*

Source : Soutworth, Owens, 1993, p. 280.

### 1.2. sources and data : a morphological typology of residential planned unit developments

Inquiries on suburban morphologies in this paper is based upon an exploratory set of data on residential enclaves in planned unit developments on suburban areas developed between 1982 and 2003 in Ile-de-France<sup>4</sup>, courtesy of the IAU-IdF (Gosset, 2007; Loudier-Malgouyres, 2007). Based upon aerial photographical interpretation, land use and local road network analysis, the investigators have surveyed a representative sample of 77 municipalities, on the outskirts of the metropolitan region in order to study the severance and morphological patterns in the environment of residential planned unit developments. The surveyed municipalities have been chosen in order to fairly account for the diversity of suburban settlement patterns : suburbs, contemporary urban fringe, new towns, exurbs in rural areas). A total of 2100 residential enclaved planned unit developments have been surveyed (40 % of residential areas in the sample), among which 909 have a surface above 1ha<sup>5</sup>. This paper

<sup>4</sup> Database “Enclavement résidentiel en Ile-de-France”, IAU-IdF, 2007.

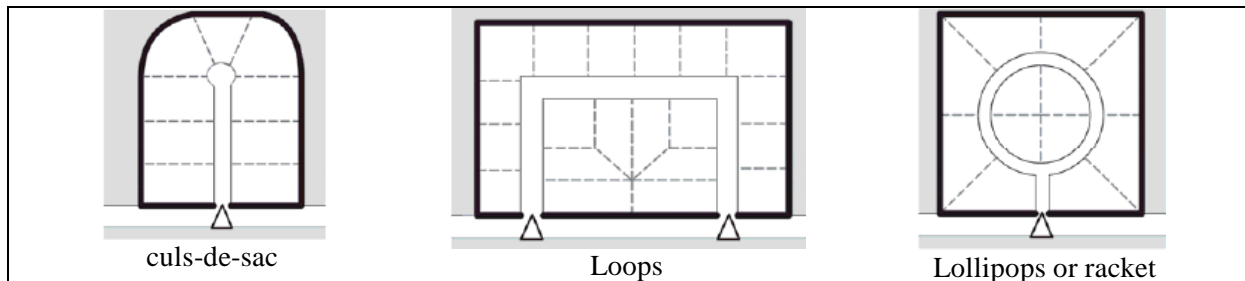
<sup>5</sup> Methodological details in Gosset, 2007 ; Loudier-Malgouyres, 2007.

specifically focuses on this subset of 909 residential schemes, using the criteria and typologies prepared by Gosset and Loudier-Malgouyres in these larger schemes.

Residential enclaves have indeed been described according to the characteristics of the inner local road networks (number of arcs, nodes, dead-ends, access points, node density, segment density, total length of the network) ; the land use in the vicinity of each residential development, in order to account for the contiguous environment ; the development date<sup>6</sup>. From these variable, two typologies of schemes have been set up, describing (1) the *street patterns* (Table 1) and (2) the *contiguous environment* based on land use patterns (Table 2).

- a typology of street patterns.

On the basis of network analysis tools, three major street patterns have been queried and analyzed, describing the most common layout following *new urbanism* and *defensible space* residential planning theories (Figure 2). As many suburban developments combine the three basic elements, the most common during the last 30 years being the “loops and lollipops” layout, an intricate combination of many loops, culs-de-sac and lollipops (Southworth, Owens, 1993), the typology of street patterns has been established by the means of a multivariate analysis, distinguishing 4 mains types, summarized in Table 1.



**Figure 2. Basic street patterns.**

Source : Gosset, 2007 ; Loudier-Malgouyres, 2007

<sup>6</sup> Other variables available but not discussed in this paper: ; population density and euclidian distance to public services (schools, city hall), leisure amenities (golf course ; swimming pools) and transportation network (major road ; railway station).







Street patterns	Nb (Freq.)	Avr surf (sq m)	St. dev. Surf	Coef. of Var.	Example
<b>Type 1.</b> Hierarchized network - tree structure  <i>Ex</i> <i>Bondoufle, near Courcouronnes</i>	341 (37.5 %)	28,030	20,350	0.72	
<b>Type 2.</b> Simple culs-de-sac  <i>Ex</i> : <i>Saint Germain-lès-Corbeil</i> . A series a culs-de-sac connected on a collector road.	159 (17.5 %)	14,757	4,690	0.31	
<b>Type 3.</b> Simple loops <i>Ex</i> : <i>Bussy-Saint-Georges</i>  Loops connected on major roads	69 (7.6 %)	17,721	8,360	0.47	
<b>Type 4.</b> Combination of loops and lollipops  <i>Ex</i> . <i>Golf de Chevry, Gif-sur-Yvette</i>	340 (37.4 %)	61,385	84,442	1.37	
	909 (100 %)	37,402	56,498	1.51	

Table 1. A typology of street patterns in suburban residential enclaves.

*The analysis is based upon a PCA of street arcs in 909 residential schemes. R<sup>2</sup> = 70 % (based on the first 2 factors). Source : adapted and elaborated from Gosset, 2007. Orthophoto IGN 2003.*



- a typology of contiguous land uses.

Derived from the same database, a typology of residential enclaves described by land use patterns in their vicinity has been built, using 15 variables provided by the IAU-IdF land use GIS (2003)<sup>7</sup>. This typology provides information on severance and the degree of isolation of residential schemes in suburban landscapes. From this can also be derived an accurate information on the site rental opportunities and site amenities derived from contiguous land uses. Six different type of land uses patterns can be described that are summarized in Table 2.

Contiguous land use profiles	Nb (Freq)	Av. Surface (sq. m)	Std. Dev. Surface	CV
Type 1. In the contiguity of single family housing built before 1982	295 (32,4 %)	23,751	33,153	1.39
Type 2. Gardens and parks	178 (19,6 %)	32,130	46,659	1.5
Type 3. Forest and leisure amenities	124 (13,6 %)	64,000	92,870	1.45
Type 4. Agricultural land uses	162 (17,8 %)	53,216	65,672	1.23
Type 5. Warehouses, industries, and mix land use	22	30,428	28,324	0.93
Type 6. Dense urban space (transportation, multi-family units, commercial and public services land uses)	128 (14,0 %)	31,611	42,126	1,33
	909 (100 %)	37,402	56,498	1.51

Table 2. A typology of contiguous land use profiles in suburban residential enclaves.

*The analysis is based upon a PCA of contiguous land uses for 909 residential schemes.*

*R<sup>2</sup> = 70 % (based on the first 2 factors).*

Source : adapted and elaborated from Gosset, 2007.

Besides these two typologies provided with the database, two other variable have been derived from from this rich database, that consists in the date of first constructions in the residential PUD and a description of location of planned unit developments.

- the date of first constructions in residential planned unit developments :

In order to get a better understanding of the genesis of suburban morphologies, a qualitative variable has been extracted describing the period of time during which the preliminary constructions have started in each PUD. This information will be crucial to elaborate both on the local diffusion of PUD and on the global diffusion of models and innovation in design, with a special focus on how and where *new urbanism* principles might have been adopted (Table 3).

Class	N	Freq. %
before 82	627	68,977
82-87	126	13,861
87-90	48	5,281
90-94	39	4,290
94-99	38	4,180
99-03	31	3,410

Table 3. Date of first construction in PUDs. Simple statistics.

1.3. *Effects of local contexts on suburban morphologies*

At first sight (Figure 3 and Table 4), the size of a suburban development is strongly related to the categories defined in both typologies : on one hand, the larger the development, the more complex street patterns (type 4) and the closer it will be from forest and leisure amenities (for obvious reasons of vacant land to develop such large schemes). On the other hand, for obvious location reasons such as

<sup>7</sup> MOS 2003 (mode d'occupation du sol / land use) (2003). IAU-IdF.Online : [http://sigr.iau-idf.fr/webapps/v1/?id\\_mapfile=3](http://sigr.iau-idf.fr/webapps/v1/?id_mapfile=3) [access date : Feb. 2009]

in fill developments realizing rent gap opportunities (Smith, 1979), smaller developments will be more likely to be located in denser areas (type 5 and 6 land use patterns) and designed with simpler street patterns such as dead-ends.

This being said, and beyond the obvious location opportunities, I argue that land use patterns and street designs are not strictly determined by the singular effect of land economics (vacant land and rent gap opportunities), but are subject to strategies and rationales that may only be captured in terms of local contexts.

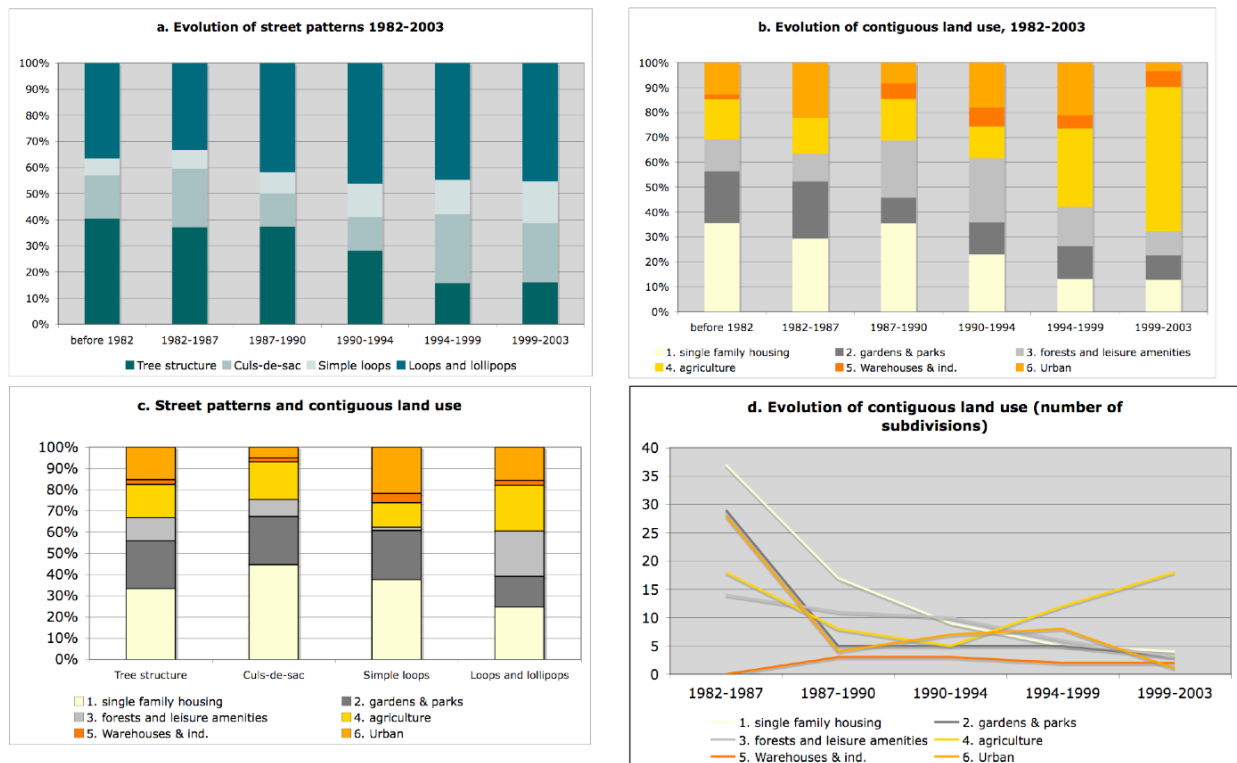


Figure 3. Street patterns, date of construction and contiguous land use profiles, a first entry in the production of the suburban fabric. Sources : IAU-IdF, residential enclaves database, 2007.

	<i>Date</i> <i>X</i>	<i>Land use</i> <i>X</i>	<i>Date</i> <i>X</i>
	<i>Land use</i>	<i>St. patterns</i>	<i>St. patterns</i>
Khi <sup>2</sup> (observed value)	87,963	69,213	25,982
Khi <sup>2</sup> (critical threshold)	37,652	24,996	24,996
DDL	25	15	15
p-value	< 0,0001	< 0,0001	0,038
alpha	0,05	0,05	0,05
	***	***	*

Table 4. Statistical relations between contiguous land use patterns, road network morphologies and construction dates.

As Table 4 and Figure 3.a show, the correlations (Khi<sup>2</sup> test) between the dates of construction and street patterns is a first effect to be discussed. The relative decline of hierarchized street patterns (tree structure) yields a diffusion of more complex loops and lollipops patterns starting at the end of the 1980s, and a later growth of culs-de-sac structure (infill developments of smaller size) after 1994.

Concurrently, as type 1 (single family housing) contiguous land use share decreases (35 % before 1982, less than 13 % in 1999-2003), urbanization on the urban edges (type 4, agriculture contiguous land use) has boomed after 1994, demonstrating that residential subdivisions have isolated from each other during the last two decades, according to widely spread ideologies of New Urbanism and *defensible spaces* that have percolated during the 1990s in the home building industry (Figure X.b). It is nevertheless of interest to point out that forests and leisure amenities environments were favored by developer and have had a strong increase between 1987 and 1994, before a relative decrease of their frequency at the end of the 1990s (Figure 3.b), yielding to a relative and absolute increase of agricultural environments (type 4).

It might be a tautology to state that street patterns and contiguous land use a tightly interrelated : loops and lollipops developments requiring more space, they will more likely be located nearby forest and agricultural land use (type 3 and 4), where as small infill developments with simpler patterns (culs-de-sac and loops) are more likely to be found in denser areas (type 1 single family housing), and near gardens and parks or within the built-up areas of small suburban town centers (types 2 and 6). It is nevertheless of interest to point out that the simplest morphology (culs-de-sac) is almost never used in the design of subdivisions in urban settings (type 6), but are more likely to be found as an infill development pattern within homogeneously residential areas ; yet another way to isolate the subdivisions within the suburban residential ocean.

Three sets of hypothesis underlie these transformations and configurations that might be clarified with Figure 3.d as it shows the absolute stock of subdivision per contiguous land use. On one hand, the number of subdivisions is declining in absolute values between 1982 and 1994, except for subdivisions located nearby industrial activities ; we can suspect in this case an effect of residential strategies by the employees of the industries that have been decentralized in this period of time. On the other hand, the relative preference for leisure amenities and forests might be associated with a generation of high-end lifestyle subdivisions associated for instance with the boom of golf courses in the 1980s and 1990s, more or less associated with a curvilinear street patterns (tree structure, such as in Saint-Germain-lès-Corbeil). At last, the rise of subdivisions located near agricultural land use perfectly fits the isolation and fragmentation hypothesis already discussed as they adopt the loops and lollipops system, but might also be sustained by the rarefaction of available land and the extension of the urban edge on the rural outskirts after 1990. This increase of the number of larger subdivisions of intricate loops and complex street patterns also seem to fit an increase of the demand for a standardized suburban product, along with the production realms for the upper middle-class of the homebuilding industry.

It becomes nevertheless clear in that stage that we can not properly cover these issues and sustain these hypothesis without properly considering the socio-economic contexts where the subdivisions are built.

## **2. Socio-economic patterns and morphologies : space and scale matter !**

### *2.1. The “suburban land nexus”*

Classical studies on segregation (*School of Chicago*) and *Social Areas Analysis* (Shevky, 1949 ; Bell, 1954) have widely demonstrated how urban growth, peripheral sprawl and migrations contributed in selecting residents on a socio-spatial basis. The more the social context plays in favor of socio-economic and ethnic separation, the more selection turns into racial segregation. In *American Apartheid*, Massey and Denton (1993) clearly demonstrate that suburban residential dynamics, exclusive restrictive covenants in Home Owners Associations (both socially and racially), along with State legislative support and bank red-lining of potential home owners, had complex interactions that produced a white homogeneity of suburban residential areas while impoverished downtowns had to deal with higher costs of welfare and fewer fiscal resources. Though well know in the US context, institutional practices have also lead to social selection and spatial segregation of residents, occurring for instance in the application process for public housing in France (Brun, 1994).

The production of socially fragmented suburban residential territories might as well be analyzed under marxist hypothesis, through the close ties between the real-estate industry, the added-value production

capitalist system, and class-based social relations. Lipietz analyses the social division of urban space as the result of unequal access to urban land and unequal distribution of land-rent revenues. This assumption articulates the technical division of work (worker's position, hierarchy, privileges, etc.) and the social division of space : it aims at sorting out the wealth inequalities, social hierarchy and privileges (location rent) that structure the urban territories. Roncayolo indeed demonstrated that social division of urban space results from the local production regime. Geographical space is not to be narrowly understood as a spatial projection of social relations, but as a complex system of interactions between space and society. Roncayolo thus argued that social division of space are indeed caused by their social and institutional characteristics ; and not exclusively by technical or economic externalities (land rent) (Roncayolo, 1990).

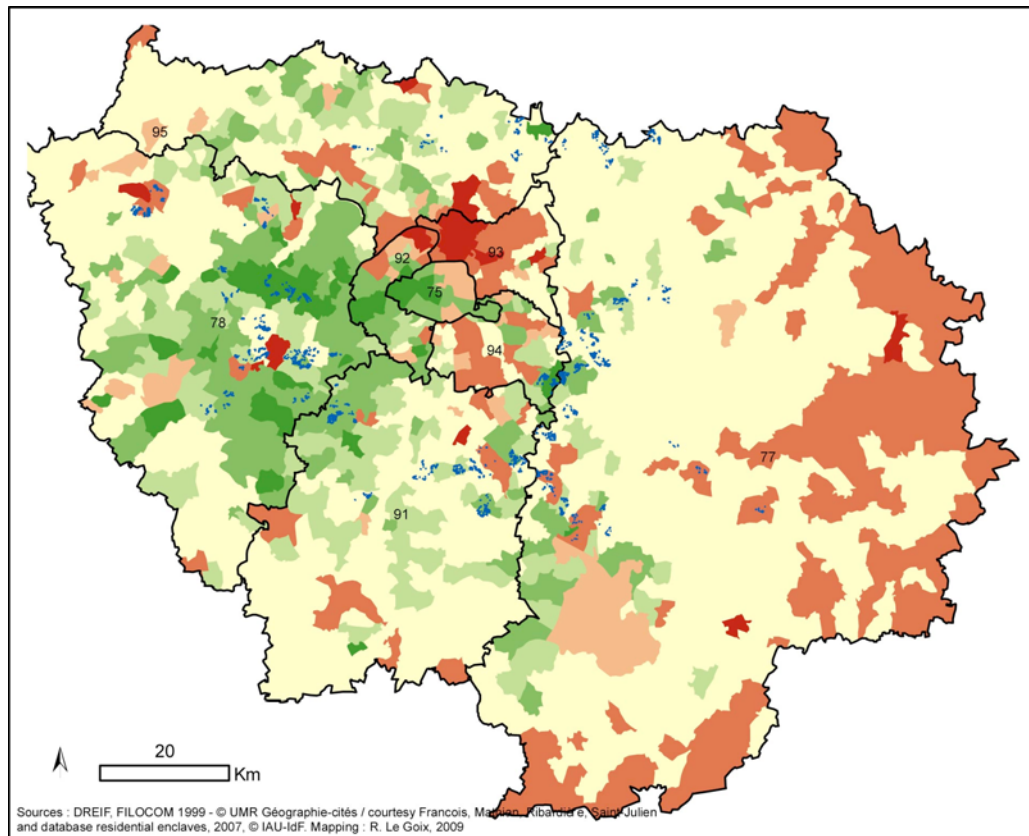
In this context, getting a better understanding of spatial contexts, bot social and institutional, in the production of suburban morphologies may be achieved by the means of theoretical analysis of regulation (Aglietta, 1976 ; Boyer, Saillard, 2002). This line of hypothesis focuses on the changes between a fordist accumulation regime (to which center-periphery structure of cities is connected) and a post-fordist regime, more flexible and polycentric, connected to a fragmented urban fabric, and a functional clustering (PUD, *edge-cities*, etc.). Institutional processes are key issues of the regulatory mechanisms producing urban space, and can be a fecund theoretical framework of analysis in geography (Chanteau, Du Tertre, Nieddu, Pecqueur, 2002). Indeed, the restructuring of productive fabric has strong spatial implications (employment market structure, exclusion mechanisms, new forms of inequalities), and it seems relevant to connect the regulatory systems and the production processes of suburban areas, especially in a study of relations between private and public partnerships (Scott, 1980). Following Allen Scott's critical point of view *Urban Land Nexus and the State* (1980), analyzing the extension, the use and the impact on morphology of urban governance requires considering the broader theoretical context of the production of urban space in a capitalist city, and the genesis of the urbanization process. Land-use system consists in interpenetrating private and public spaces governed by complex patterns of property rights. To be more specific, a residential estate in a new town such as Marne-la-Vallée or Irvine (ville nouvelle) is a privately operated collective space (sharing streets and sidewalks), owned by a homeowners association, but carefully planned by public authorities (by the means of land use general plans, development permits), in association with private developers (i.e. Kaufman & Broad), and other corporations involved in the local development (i.e. Disney Corporation in Marne-la-Vallée).

## 2.2. *Income patterns and suburban morphologies*

In order to get a better understanding of the local arrangements and spatial strategies operating within this "suburban land nexus", I propose to use data on income per household as a proxy to contextualize two overlapping issues :

(1) in post-fordist, polycentric and fragmented suburban areas, income per household is a good proxy for the affluence of households, but also employment market structure, exclusion and inequalities. As a first hypothesis this implies that income patterns should be correlated with morphological typologies (especially street patterns and contiguous land use) : each social category of suburbanites seeking comfort, exclusiveness, social homogeneity and lifestyle within specifically designed communities and subdivisions, according to their desires, financial possibilities, and location strategies.

(2) a subsequent hypothesis elaborates on the intricate strategies of actors : do institutional contexts (New Towns, planning policies, zoning restrictions, etc.) introduce discrepancies between municipalities in the layout of residential schemes and by doing so affect residential strategies and thus social contexts ? To which extent socio-economic patterns (and especially social homogeneity, quite well seized by income patterns) might be subordinated to planning regulation in suburban areas ?

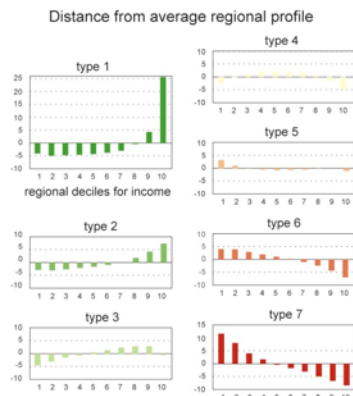


**Legend**

- subdivisions / residential enclaves
- departements

**Typology of income per household categories of household overrepresented**

- 1 very wealthy
- 2 wealthy
- 3 upper middle-class
- 4 lower middle-class
- 5 average profile
- 6 poors
- 7 very poors



Cluster analysis of household stock per regional decile of income (municipal level)  
 For further reference, see François, Mathian, Ribardiére, Saint-Julien, "Riches et pauvres en Ile-de-France", in Saint-Julien, Le Goix (dir.), *La métropole parisienne. Centralités, inégalités, proximités*, Belin (Mappemonde), pp. 113-137

Figure 4. A typology of income structure per decile (municipal level, compare to the average regional profile)

(adapted, with permission François, Mathian, Ribardiére, Saint-Julien)

This line of inquiries is addressed by the means of a typology of income patterns in Ile-de-France<sup>8</sup>. This typology is derived from an earlier study of income patterns (François, Mathian, Ribardiére, Saint-Julien, 2007), using 1999 data describing for each municipality the structure of households by deciles, each municipality being characterized in terms of overrepresentation or underrepresentation of an income decile according to the regional average pattern (Figure 4). The authors of this study demonstrate that richer municipalities have a higher level of concentration of rich populations, than poorer municipalities, which have indeed (an against common wisdom on social fragmentation) a higher level of diversity among their households. For instance types 1 and 2 municipalities are very specialized in wealthier households, with an overwhelming overrepresentation of the highest income

<sup>8</sup> Source : DREIF, FILOCOM 1999, © UMR Géographie-cités 8504, courtesy of François, Mathian, Ribardiére and Saint-Julien for this paper.

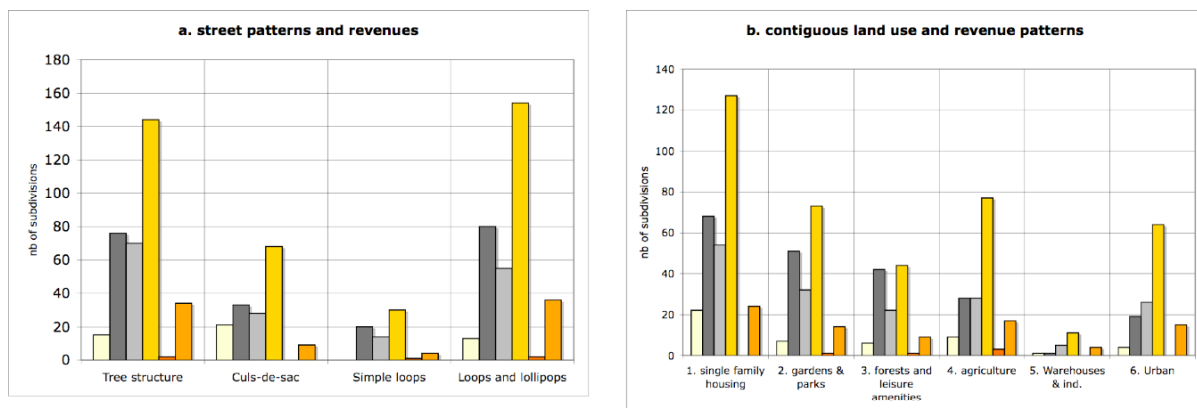
decile (10<sup>th</sup>, more than 26,851 EUR per capita<sup>9</sup>) ; and these municipalities are spatially isolated on the south-western side of the metropolitan area. On the other end, poorer municipalities (types 6 and 7) are more diverse, with an overrepresentation of lower income deciles 1 to 4 (decile 4 : less than 10,191 Eur per capita). These municipalities are found either in the inner suburbs (les *banlieues*), and on the outskirts of the metropolitan region. Clusters 3, 4 and 5 embody the diversity of the middle-class, mostly suburban, though in different spatial contexts. The *upper-middle class* (cluster 3) seems more attracted by the upper-classes residential models, and are found in the vicinity richer municipalities, especially on the south-western sector. Cluster 4 represents more than 50 % of the municipalities in Ile-de-France, but less than one fourth of the households. This type of municipalities is quite ubiquitous in suburbia (Essonne, 91 ; Val-d'Oise, 95 and on the western side of the Yvelines 98), embodying the *lower-middle class* with a slight overrepresentation of deciles 3 to 8 (between 6,200 and 20,000 euros): these suburban environments are as unattractive for richer households than for poors (Francois, Mathian, Ribardière et alii., 2007).

### 2.3. Space, scale and time matter

A first exploration of the associations (Table 5) between revenue patterns and morphological patterns shows that data are strongly and significantly related.

#### - regional level

At a regional level, three trends emerge from Figure 5. First, everything being equal in terms of street patterns, environment, or time of the production, the lower middle-class absolutely dominates the market for residential single houses subdivisions, this trend being symptomatic of the shared values (ideology ?) for the subdivision lifestyle on one hand ; of residential constraints due to the cost of housing in denser areas that excludes the lower middle-class from denser parts of the metropolitan areas. Second, if subdivisions were a real-estate business and investment for wealthier households before 1982, the share (both absolute and relative) of subdivisions in wealthier municipalities have rapidly decreased, followed by a slight but consistent increase of the relative share of lower middle-class and average families (Figure 5.c) : new subdivisions do not target wealthier municipalities anymore, as among other a probable effect of gentrification and “back to downtown” trends. At last, the social preferences for some kinds of street patterns and land use clearly emerge (Figure 5a & b) : on one hand upper classes' *relative* preferences for tree structures or enclaves of loops and lollipops as well as for gardens and parks, forests and leisure amenities land uses (green areas); on the other hand, it seems that the social up-bottom diffusion of the models of enclaved subdivisions has contributed to share the most desirable models (tree structure or loops and lollipops nearby “green areas”) with the lower classes over time. Nevertheless, it remains true that type 4,5 and 6 contiguous land uses are relatively overrepresented among the lower incomes. Moreover, a local level analysis reveals more contrasted patterns and regularities.



<sup>9</sup> weighted by the structure of households (number of persons, age, status of the household).



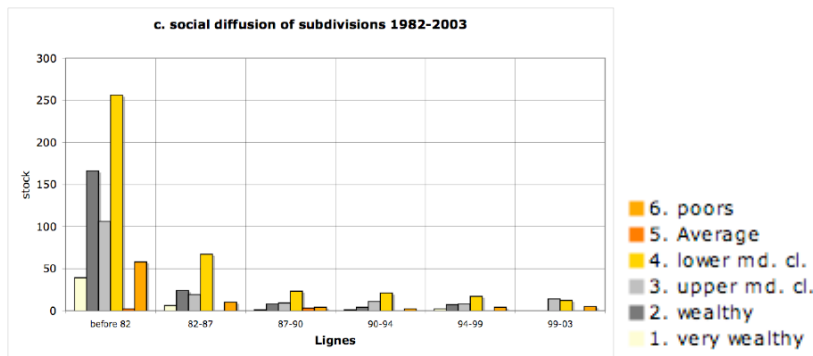


Figure 5. Global profile of subdivisions by income structure

Sources : IAU-IdF, residential enclaves database, 2007 ; DREIF FILOCOM 1999 - © Géographie-cités

	Revenues X St. patterns.	Revenues X Land use	Revenues X Date
Khi <sup>2</sup> (observed value)	33,692	39,206	73,127
Khi <sup>2</sup> (critical threshold)	24,996	37,652	37,652
DDL	15	25	25
p-value	0,004	0,035	< 0,0001
alpha	0,05	0,05	0,05
	**	*	***

Table 5. Statistical relations between revenues and contiguous land use patterns, road network morphologies, construction date and distances from services and amenities

- local scale (2) : effects of planning

First, the functional polycentrism of the metropolitan regions influences the spatial distribution of the different sorts of subdivisions. The New Towns (*Villes Nouvelles*, developed since the 1965 regional masterplan : Evry, Saint-Quentin-en-Yvelines, Melun-Sénart, Marne-la-Vallée, Cergy-Pontoise) have introduced a strong functional polycentrism, based on economical clusters, secondary centralities to balance the role of downtown Paris, and clustered residential housing and high density neighborhoods (collective and individual), to avoid fragmented urban sprawl (## add references). These patterns are on average consistent with the spatial distribution of wealth and income inequalities, income being a good proxy for employment market structure at an aggregated level. Many subdivisions indeed belong to the New Towns areas (Saint-Quentin-en-Yvelines and Marne-la-Vallée areas are respectively featured on maps A & B of Figure 6 and Figure 7), and the higher density, the level of centrality, activities and employment, as well as the better access to transportation infrastructures (freeways and regional trains) differentiates them from other subdivision. First there is a stronger diversity in wealth between the residents of New Towns areas, between Trappes and its surrounding communes in Saint-Quentin area (Figure 6.A) or between Torcy, Lognes et Noisiel, and the more affluent surrounding communes in Marne-la-Vallée New Town. This context of a relative wealth diversity and mixing at the New Town level at least is however balanced by a strong system of zoning based on homogeneous land use so that segregation and fragmentation is in fact much stronger at a more local and infra-municipal level (see Francois et alii, 2007). As a result, the typologies of subdivisions in New Towns is quite mixed and balanced, whatever the social and wealth contexts : in Montigny-le-Bretonneux, Voisins-le-Bretonneux, Elancourt, Plaisir (in Saint Quentin, Figure 6.a and Figure 7.a), subdivisions are included in a dense urbanized area, with mixed land use, and mixing between subdivisions and industrial activities (especially high-tech) or warehousing land uses is quite common. The same patterns of mixed land use emerge in Bussy-Saint-Georges (Marne-la-Vallée). Nevertheless, both areas were built at different moments : most of Saint Quentin has started to develop in the early 1980s, whereas Bussy-Saint-Georges and the eastern part of Marne-la-Vallée has developed after the opening of Disneyland Paris, and has been developed after 1994. Consequently, this time-gap produces a



generational effect on street patterns : most developments in Elancourt, Buc, Maurepas (Saint-Quentin New Town) are based upon a hierarchized tree structure, whereas more recent subdivisions in Marne-la-Vallée New Town (Bussy-Saint-Georges, Serris, Magny-le-Hongre, Bailly-Romainvilliers) are dominantly made of loops and lollipops (Figure 6.b and Figure 7.b)

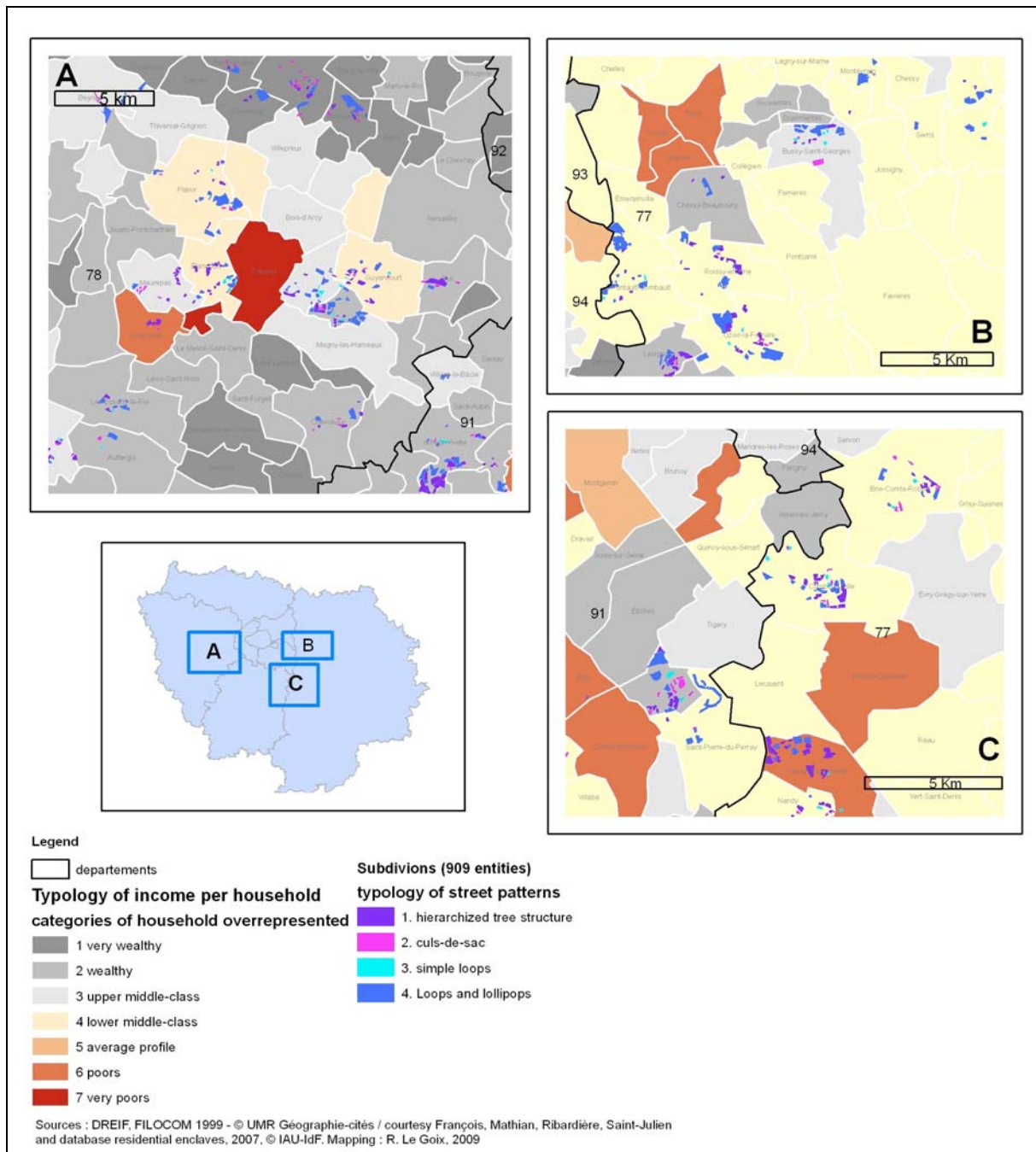


Figure 6. Income and street patterns

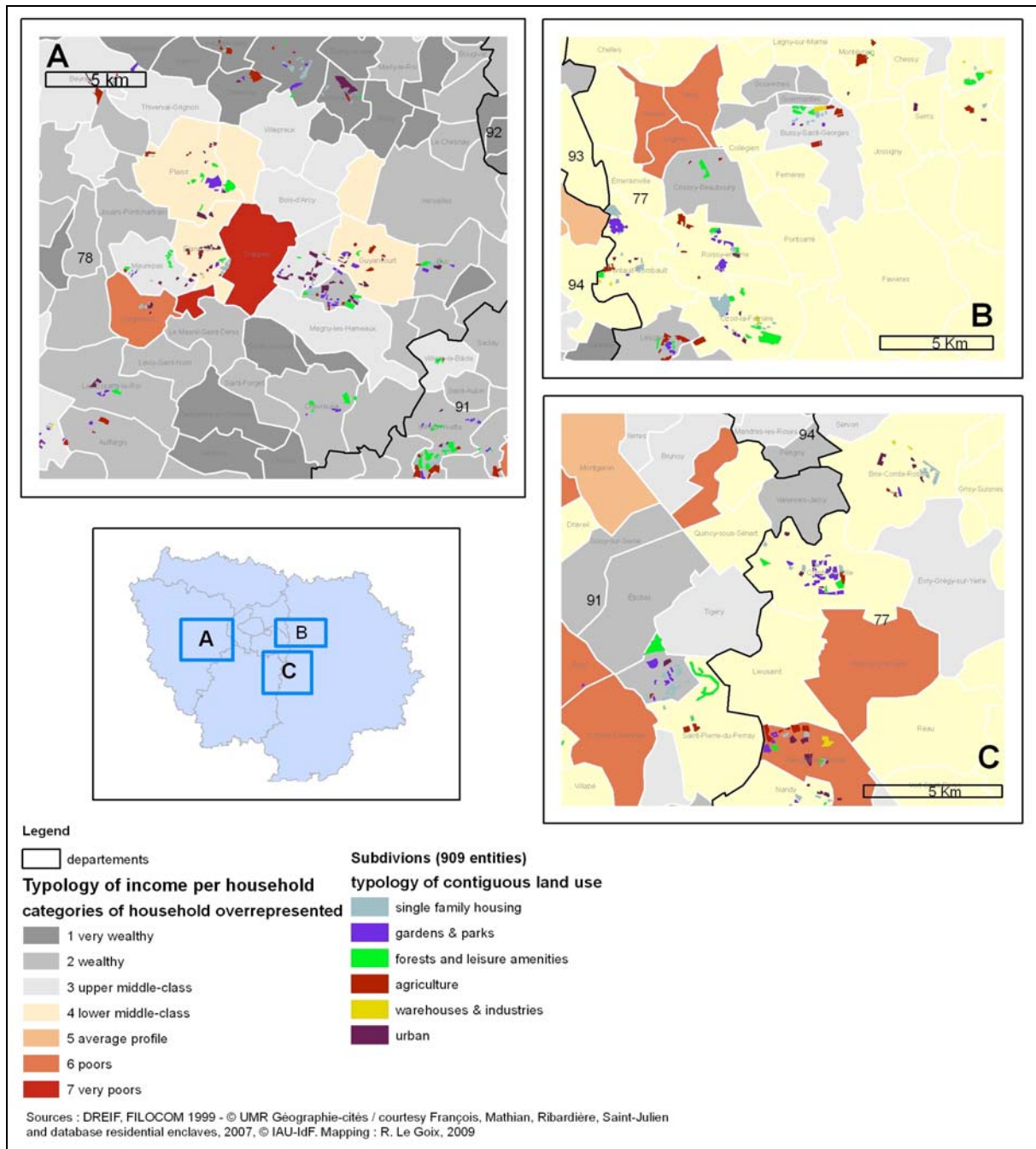


Figure 7. Income and contiguous land use

- local level (2) : effects of location

A second strong contextual effect is inherent in the genetic link between location (site rental and opportunities), morphological constraints and the spatial and thus social morphology of a subdivision. This contextual effect is often stronger than expected, but not deterministic *per se*. It has been earlier assumed case of subdivisions built nearby gardens, urban parks (type 2), forest and leisure amenities (type 3) are mostly designed to attract the wealthier categories of households. This hypothesis is easy to theoretically demonstrate and is verified in facts (Figure 5) : the effects of location rent (prestige of the site) and usage rent (direct access to a golf course for instance) are accentuated because of the intrinsic value of this kind of vicinity : the low probability of the mutability of land use protects on the long run against any unwanted land use and help perennializing property values. This kind of setting is quite common on the urban edges (Ozoir-la-Ferrière, Figure 7.b ; Saint-Pierre-de-Perray, Figure 7.c or

in the scenic Chevreuse valley, south of Paris, Figure 7.a). If urban settings (type 6) or single family housing environments are also very stable on the long run, they produce some externalities (traffic, congestion, lack of isolation, promiscuity, etc) that have a deterrent effect on wealthier classes. On the other hand, agricultural land uses are affected by a higher mutability and some negative externalities : most of them are found in wealth contexts belong to the upper and lower-middle class (Serris, Montévrain, Bussy-Saint-Georges, Figure 7.b). As an exception to the rule, they may also be found in some municipalities classified as being wealthy and very wealthy (Beynes, Chavenay, Figure 7.a). In this case, local planning policies protect agricultural land uses as a buffer zone to isolate the subdivisions in a slow growth policy (discussed *infra*).

This joint analysis of the neighborhood effects of income patterns on subdivisions morphologies confirms most three major findings : First, though not surprising *per se*, the analysis confirm there is a strong relation between the regional patterns of income per households and morphological patterns of households. Second, the stronger trend for differentiating subdivisions remains the age of a neighborhood and its correlation with income : suburbia yields stronger generational effects on socio-economic patterns than inner cities areas. To what extent this relation means a direct causality between morphologies and preferences by some subsets of the single housing prospective buyers will remain an out of scope question for this paper ; nevertheless, it clearly appears that some local planning or location contexts clearly affects morphological choices. New Towns produce more diversity in morphologies and wealth patterns than the other types of suburban neighborhood in the sample ; location and nearby land-uses are very discriminating too in terms of wealth patterns, according to location rent, mutability of usage and perennialization of the investment. At first sight, one could quickly conclude that strong planning regulations (such as New Town policies) meet some of their goals in term of mixity and diversity in the suburban fabrics, whereas uncontrolled development of subdivisions on the urban edge (near forest or agricultural land) will ultimately be linked with more homogeneous morphologies and social patterns.

### **3. Regulation, actors, public and private interests, and “the state”**

On the basis of this first insight, this section will cover the second hypothesis : do institutional contexts and planning policies introduce discrepancies between municipalities in the layout of residential schemes and by doing so affect residential strategies and thus social contexts ; and to what extent morphological and socio-economic patterns might be subordinated to local planning regulations, actors strategies, interactions between public and private interests, in suburban areas.

#### *2.4. How planning policies emerge from statistical relations between income patterns and morphologies.*

According to our line of argument, the intricate relations between morphology of a subdivision (street patterns and nearby land use) and income (as a proxy for socio-economic context at the municipal level) clearly appears as being strong and statistically significant. It is nevertheless not clear yet how different local contexts (i.e. institutional context, actors and governance) interact with these social and morphological regularities in the production of suburbia. It thus appears at this stage necessary to model the relations between morphological patterns (independent variables) and how they interact with income (dependant variables) in a discriminant factor analysis (DFA). Focusing on the results of this analysis only from a descriptive approach to better grab the components of local contexts (Figure 8)<sup>10</sup>.

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<sup>10</sup> DFA also yield results for a modelling for a predictive approach returning the probabilities for an observation to belong to any of the classes (so-called "*posterior probabilities*"). In the present case, *a priori / a posteriori* comparisons shows a dominant trend to assign most of the subdivisions in wealthier communities to a « type 4 » income pattern, meaning their morphological profile fits the average characteristics of the vast majority of suburban subdivisions found in the « lower middle-class ».

From this analysis, three opposite contexts determining the relation between subdivision morphologies and income patterns context may be clearly determined : the DFA confirms that the date of constructions is the variable that better differentiates the subdivisions.

A first trend emerges for schemes developed before 1982, with a preference for nearby land uses such as single family housing, parks and garden and forest and leisure amenities (contiguous land uses types 1, 2 and 3), street patterns in culs-de-sac being strongly associated with land use 1 (single family housing). These patterns are more often found together either in the older parts of New Towns (such as the western part of Marne-la-Vallée, Evry and Sénart) and in the oldest parts of the urban edge (Vallée de l'Orge). As a consequence, this morphological diversity associated with a relative social diversity in terms of income patterns, with a stronger mixing than in other areas.

A second trend emerges at the turn of 1987-1990 with the generalization of street patterns in loops (type 3) or lollipops (type 4), quite correlated with agriculture land use in the vicinity (type 4). Preference for this kind of developments goes to areas located in the green belt areas around Paris with a higher level of space consumption (Dammartin-en-Goëlle, and the North of Roissy-CDG international airport along the A1 freeway), in the eastern sector (Roissy-en-Bire, Lésigny, Savigny-le-Temple), or in the some Villes-Nouvelles (such as on the edges of Saint-Quentin-en-Yvelines or between Saint-Nom-la-Bretèche and Chavenay). These areas are the less diverse in terms of income structure.

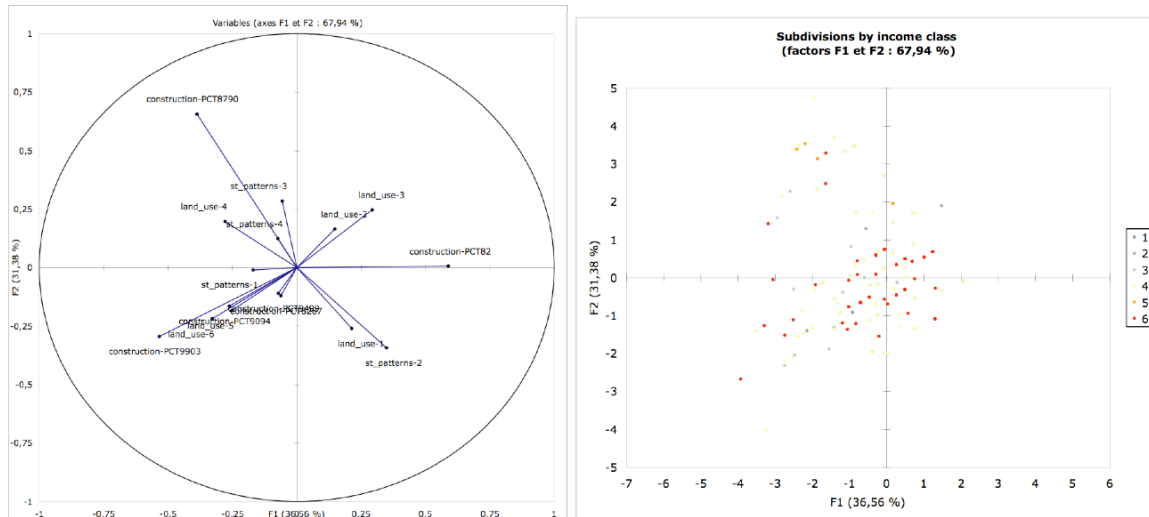
A last, a third trend can be found around the newest developments (1999-2003), favoring land uses 5 and 6 (nearby activities such as warehousing and industries, or denser urban settlements). This trend seems more diverse in terms of street patterns, because land opportunities oblige developers to built within cluster development zones, in which in-fill developments require more flexible designs : such complex patterns, relatively balanced in targeting probable income patterns, are found in the newer parts of the suburban development, highly affected by new state regulations after 2000 that have set new standards and requirements of social mix in large scale residential projects (public housing) and a priority towards higher densities and in-fill developments within suburban areas by the means of legal restriction on zoning to avoid urban sprawl and consumption of agricultural lands (SRU law, December 2000, standing for *solidarities and urban renewal laws*).

A first partial conclusion highlights the determinant influence of state-wide legal regimes as well as regional-wide planning regulations by different governmental bodies : the region, the State, and inter-municipal governments. For instance, New Towns were planned after 1965 as a national wide project under the supervisions of the State and the government (DATAR<sup>11</sup>, an Agency for Regional Policy) ; land policy of New Towns, as well as master-planning, has been in charge of public development corporations (*Etablissements Publics*, such as EPA-Marne & EPA-France in Marne-la-Vallée New Town) ; implementation and local authority being transferred from municipalities to a supra-municipal district composed by a board of locally elected officials from the incorporated municipalities (*Syndicat d'Agglomération Nouvelle*). Green belts policy has also been a State policy to control the growth of Paris that was in the 1960's seen as detrimental to other major cities in France, this policy has progressively become in the 1990's a regional planning principle (SDRIF).

Annex 1. Confusion matrix

<i>a priori</i>	<i>a posteriori</i>						Total	% correct
	1	2	3	4	5	6		
1	0	6	0	42	1	0	49	0,00%
2	0	37	0	164	8	0	209	17,70%
3	0	12	14	133	8	0	167	8,38%
4	0	29	12	332	23	0	396	83,84%
5	0	1	0	1	3	0	5	60,00%
6	0	7	5	67	4	0	83	0,00%
Total	0	92	31	739	47	0	909	42,46%

<sup>11</sup> Délégation à l'Aménagement du Territoire et à l'Action Régionale



**Figure 8. Sorting out contexts in suburban patterns.**

Factors 1 & 2 of a DFA on 909 subdivisions.  $R^2=67,9\%$ .

### 3.2. The subdivision, metropolitan regulations vs. local consumption clubs

Suburban subdivisions are the outcomes of location strategies of actors considering differential location rent. From a general point of view, the production of urban space by private firms, developers, and homeowners, making individually optimal decisions, has a social cost and generates spillovers effects, such as pollution, sprawl, congestion, competition for land uses, land speculation, free-riding... Interpreted as a market failure (Bator, 1958). Such externalities represent a cost for the society as a whole. Following this theoretical thread, *PUD and private urban governance can be conceived in a first instance as a pre-emptive solution of market failures*. It supplies the residents with their own governance effort to avoid the spillovers of urban residential and industrial developments. On another hand such *developments also produce spillover effects on nearby communities* : increased congestion, increased segregation, depletion of scarce resources (natural lands, water). An institutional intervention (municipality, planning institution, metropolitan association...) is thus required to limit the effects of those spillovers, especially in organizing fiscal equalization.

As a forgoing statement, PUD and residential estates, especially when managed by a homeowners association (gated or not), may be viewed as a contractual regulation placed upon a territory, that aims at a private pre-emptive solution of coping with the externalities of urban growth : NIMBYism, control of unwanted land uses, response to fear of crime by the means of a private security service. To a certain extent, home ownership inside a planned unit development shall be seen at first as a real-estate investment ; second as a private attempt to gain local control over the neighborhood in order to maintain the tidiness of the environment by the means of restrictive covenants enforced by the property owners association (Newman, 1972) ; and finally means to secure a composite desire for status exhibition, security of the relatives, a certain kind of exclusive lifestyle, and a warranty of a lifetime investment in socio-economic national contexts where mortgages are running during several decades, especially if the PUD is enclaved, secluded, gated or has some sort of security systems (Blakely, Snyder, 1997; Low, 2003).

As a consequence, property rights are not basically balanced between public and private realms, the latter encompassing a vision of the capitalist production of city space as fragmented into small, local consumption clubs (Webster, Lai, 2003) addressing the specific needs in collective goods of a locality. Government, real-estate developers as well as community action can “*effectively assign property rights over shared neighborhood goods, and in so doing create a set of included 'members' and a set of excluded 'nonmembers'*” (Webster, 2002). In these schemes, property rights and membership are attached to some collective goods (streets, sidewalks, leisure facilities), the association being instrumental in collectively producing public goods for the “members” (the residents), against the



outsiders and ‘nonmembers’. Webster and Le Goix demonstrated how the recent developments of the *Commonhold laws* in the UK, and the US systems of *Common Interest Developments* and homeowners associations might under certain conditions, be a locally sustainable solution that might help stabilize the financing of urban growth; redevelop aging neighborhoods; maintain a certain kind of social diversity; protect, conserve and enhance depletable urban resources; and raise the volume of revenue spent on maintaining the city (Le Goix, Webster, 2006). But these gains are not made without social costs and spillovers. Indeed, private urban governance cannot exist truly independently from state or public subsidy. This is a new urban dynamic that will surely become more and more important as private associations look for ways of raising the public subsidy to their activities and municipal governments look for ways in which their liabilities can be reduced by private sector counterparts.

### 3.3. *Developers vs. municipal governments*

In order to better address the role of developers and how their private interests interact with those of municipal governments (or supra-municipal in the case of New Towns), three case studies are of interest that shows how negotiation, local interactions between the different level of governance and games between actors contribute to discriminate between types of suburban and social morphologies.

#### - “*Plaine de Versailles*” : *exclusive subdivisions vs. no-growth policy*

The upper-class municipalities on the western side of Versailles (Saint-Nom-la-Bretèche, Feucherolles, Noisy-le-Roi, Chavenay, see Figure 6.b) belong to the class with the higher concentration of wealthier households (type 1), and are mostly built up subdivisions of type 4 (loops and lollipop), and secondary of type 2 (culs-de-sacs). Built up in the early 1980s, land use in the environment of subdivisions is mostly mixed : subdivisions have been built close to each other, clustered like in a large master planned community, nearby a small-town center and leisure facilities. These suburban villages (or exurbs) are surrounded by agricultural land use. This schemes were originally developed by major national developers. Nevertheless, Floriane Dutel (2007) demonstrates in her study that property owners association and local groups of residents are proactive in pushing the municipalities to adopt a low growth policy, in order to avoid the location of any newer subdivision in the area and maintain the rural environment. Municipalities pushed towards a legal protection placed over agricultural land uses in the area. An interesting focus as been set on the fate of two small airfields for general aviation in the vicinity (Chavenay and Saint-Cyr-l’Ecole). Where as residents of nearby larger cities (Bois-d’Arcy, Saint-Cyr) battle against the externalities of general aviation aircraft flying low over their subdivisions and seek every means to have the activity limited or the airfield shut down, residents associations of wealthier subdivisions in Saint-Nom-la-Bretèche or Chavenay battle to keep the airfield, as this land use is considered as a green buffer zone against the risk of urban sprawl (Dutel, 2007)

#### - *Ozoir-la-Ferrière* : *chasing growth*

Ozoir is an *exurb*-like municipality of the eastern part of the Ile-de-France, with 20,000 inhabitants and 71 % of the housing stock being single-family homes in large master-planned communities in 2005. This municipality embodies the classical contexts where middle-class and lower-middle-class residents become first-time buyers of a single-family house in a subdivisions ; the archetype of the suburban realm for middle-class young families. In his study, Alexandre Tournès (2008) explores the design and the governance of the larger master-planned community (Domaine Poirier, the large subdivision, south-east of Ozoir, with forest nearby land use and loops and lollipop street patterns, Figure 7.b), originally designed for horse-riding enthusiasts in which several national or international developers (among them Nexity and Kaufman & Broad). The subdivision has classically been placed under the management of a POA (Association Syndicale Libre) in charge of regulation and maintenance of shared amenities. In his report based upon field surveys and interviews, Tournès suggests that the planning process favors this kind of subdivisions for a set of reasons. First, municipal governments are engaged in a race to attract new residents and to compete with neaby Marne-la-Vallée New Town. Second, municipalities really support the concept of residential subdivisions, in order to conserve the general aspect of the landscape and to prevent the arrival of heterogeneous patterns : in other terms, “why should we change?”. Findings suggests that the discourses of actors on the morphological homogeneity often diverges on the issues of social homogeneity. At last,

municipalities make a common use of their regulation tools, such as setting a special planning district (ZAC<sup>12</sup>) in order to keep a decisive role over the developer, especially in defining public services. When developer file a simple development permit for a subdivisions, municipalities are often impaired in imposing their views to the operators; whereas planning regulation tools such as ZAC and districts are instrumental in the negotiation process with developers (Tournes, 2008).

- *Chessy : developing a gated community in a New Town*. Sylvie Lidgi (2008) has studied in an unpublished report for the INHES the process of developing a small gated community in the New Town of Marne-la-Vallée, in Chessy (Figure 6.c ; Figure 7.c), by the means of interviews with planners, developers and municipal officials she demonstrates (Lidgi, 2008). In what used to be a countryside village in open-field landscape has been incorporated in the 4<sup>th</sup> sector New Town in 1987 along with the early stages of the implementation of Disneyland Paris. The municipality belongs to a special district governed by a public private partnership between on one hand the EPA-Marne public development corporation in charge of land regulation, on the other hand the Euro-Disney corporation (a French-based sister company of Disney Corp.) which has by this agreement a right of preemption on undeveloped land in the vicinity of the amusement park<sup>13</sup>, and at last the *Syndicat d'Agglomération Nouvelle (SAN)*, a supra-municipal public body of governance in charge of planning. The author studied a *special planning district* (ZAC Les Fermes), which is indeed beyond the limits of Disneyland development zone. The *Villa B* is a gated scheme of 59 households (both multiple and single family units) located nearby the older core of Chessy, as an in-fill development. The elaboration of the program went through different steps at all governance levels : the global design of the ZAC Les Fermes has been planned in the 1990s by both the EPA-Marne, the SAN and the municipality of Chessy. A national developer (*les Nouveaux Constructeurs*) is chosen and first properties are sold in 2001, 70 % will be owner-occupied. FONCIA, a national corporation specialized in POA management will be in charge of operating the subdivision. Lidgi demonstrates that the design of the scheme (layout, gating, type of housing) has been defined with a large involvement of public authorities, and negotiated with the developer by the means of an informal pre-approval of the building permit (though such a pre-approval doesn't exist in any legal form). Even if the New Town governance weakens the decisive powers of the mayor, Chessy's mayor played a key role in the decision process towards the erection of gates around the enclave. Pro's and con's of gating have been balanced by the developer and the mayor, the latter being advised by city-planners and architects: between the interest of public dedication of streets to lower POA fees for residents, the identification by the developer of a potential market for a gated subdivision, the arrival of new categories of residents who could either bring new business opportunities or throw the local demographical or electoral equilibrium out of balance. In Chessy, the mayor has authorized the gating of the neighborhood because of the small size of the development, and the guaranties of architectural harmony with the small town center (Lidgi, 2008).

What can be learned from the different case studies ?

- First, suburban subdivision are not just a contagious cut-and-paste of "ready to urbanized" schemes scattered on the urban edges by the pure effects of site rental and economical opportunities, although literature often compares a supposedly suburban morphological homogeneity to a keno capitalism in post-fordist metropolises (Dear, Flusty, 1998). Many institutional processes, at different levels, both by private or public actors, contribute to the definition of morphologies and to the regulation of land use and
- Clubbization patterns in suburban small communes seems a dominant trend : as E. Charmes summarizes : many municipal government are instrumental to subdivision groups of residents in order to "carry out policies that are increasingly similar to the management of private residential clubs. (...) the major transformation is less a rise of the private sector to the detriment of the public sector, than a change in the philosophical definition of the relationship to residential space" (Charmes, 2009).

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<sup>12</sup> Zone d'Aménagement Concertée

<sup>13</sup> In this zone, circumscribed by a circular boulevard, planification is under control of the leisure and entertainment corporation.



- Such clubbization trends in municipal governance are more likely to emerge in places where political and economical forces structuring suburban governance are weaker, as a reaction to urban sprawl : the example of the Plain of Versailles is symptomatic of a location that used to be a excellent investment opportunity for developers, which turned into a “no-growth” area after the wealthy residents took over the municipal government and reacted to the suburban sprawl in this area.

## Conclusion

#### Draft ####

(H1) As a first hypothesis this implies that income patterns should be correlated with morphological typologies (especially street patterns and contiguous land use) : each social category of suburbanites seeking comfort, exclusiveness, social homogeneity and lifestyle within specifically designed communities and subdivisions, according to their desires, financial possibilities, and location strategies :

This joint analysis of the neighborhood effects of income patterns on subdivisions morphologies confirms most three major findings : First, though not surprising *per se*, the analysis confirm there is a strong relation between the regional patterns of income per households and morphological patterns of households. Second, the stronger trend for differentiating subdivisions remains the age of a neighborhood and its correlation with income : suburbia yields stronger generational effects on socio-economic patterns than inner cities areas. To what extent this relation means a direct causality between morphologies and preferences by some subsets of the single housing prospective buyers will remain an out of scope question for this paper ; nevertheless, it clearly appears that some local planning or location contexts clearly affects morphological choices. New Towns produce more diversity in morphologies and wealth patterns than the other types of suburban neighborhood in the sample ; location and nearby land-uses are very discriminating too in terms of wealth patterns, according to location rent, mutability of usage and perennialization of the investment. At first sight, one could quickly conclude that strong planning regulations (such as New Town policies) meet some of their goals in term of mixity and diversity in the suburban fabrics, whereas uncontrolled development of subdivisions on the urban edge (near forest or agricultural land) will ultimately be linked with more homogeneous morphologies and social patterns.

(H2) a subsequent hypothesis elaborates on the intricate strategies of actors : do institutional contexts (New Towns, planning policies, zoning restrictions, etc.) introduce discrepancies between municipalities in the layout of residential schemes and by doing so affect residential strategies and thus social contexts ? To which extent morphological and socio-economic patterns might be subordinated to planning regulation, actors interaction and public vs. private interests in suburban areas ?

- Many institutional processes, at different levels, both by private or public actors, contribute to the definition of morphologies and to the regulation of land use
- Public governance seems to have more control over suburbanization processes than assumed by a common wisdom that often considers the planner as “almighty” and responsible for the homogenization of suburban landscapes
- Clubbization patterns in suburban small communes seems a dominant trend..

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