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Cul-de-sacs, superblocks, and environmental areas as supports of residential territorialisation

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1. Introduction¹

In the suburbs, residential territorialisation is most often associated with common interest developments, homeowners associations, gated communities and socio-spatial segregation. These forms of territorialisation have been the subject of many critical analyses by the academic community (McKenzie, 1994; Low, 2003; Glasze, Webster & Frantz, 2006²). In most cases, critics focus on the role of real estate entrepreneurship or on the demands and attitudes of suburbanites. The advent of neoliberal ideologies is also considered a major factor and is often critiqued. These criticisms, however, frequently discount the significance of the road network layout. In this article, we will show that cul-de-sacs, superblocks and “environmental areas” are key factors influencing the current dynamics of residential territorialisation in the suburbs.

Observations on this topic have already been made by some new urbanists (Duany, Plater-Zyberk & Speck, 2000), and by several scholars (Pope, 1996; Southworth & Parthasarathy, 1996; Carmona, Heath, Oc & Tiesdell, 2003; Mangin, 2004). They have highlighted the physical similarity between gated communities and residential communities planned according to an environmental area model. The similarity, they argue, is due to mainly one physical factor: the impossibility of people passing through. This factor is related to the mainstream definition of the public realm: a place where unplanned encounters may occur (Southworth & Parthasarathy, 1996). In fact, with the inward-focused enclave or “pod” becoming the dominant planning and design model for residential suburbs, unplanned encounters have become less likely to occur than in conventional suburbs structured along a

¹ I wish to thank the anonymous referees and Christian Moley for their valuable comments on early drafts of this paper. All mistakes are still mine however.

² Some of the contributions of this latter book give a somewhat positive outlook of the so-called “private cities”, most notably the one by Chris Webster.

gridded street system (see Figure 4). Some observers (Mangin, 2004; Loudier-Malgouyres, 2007) even consider that the residential pods that have been juxtaposed along suburban main roads during the last decades are very similar to gated communities (see Figure 6). To them, the addition of a gate at the only remaining access point represents merely a minor transformation, at least according to the criteria of effective public use.

This article adds some ground to these analyses. Two main points will be highlighted. First, no-through streets, superblocks and environmental areas provide clear boundaries to groups of residents and delineate a physical territory on which they can assert specific rights. As we will see, the assertion of these rights can be linked to the logic behind the spread of gated communities. Indeed, many gates appear in suburban streets to transform a through street into a cul-de-sac, or to turn a housing estate with several accesses into an environmental area (Section 1). The second section of this article will elaborate on the fact that cul-de-sacs and superblocks give groups of residents not only clear boundaries, but also define areas of community use. As we will see, such a physical background is favourable for the emergence of governing bodies specific to these groups and to these spaces. And, for reasons of scale, those governing bodies are most likely to be private (Section 2).

1. Cul-de-sacs as Barriers and Environmental Areas as Enclaves

1.1. *The Cul-de-sac as a Barrier*

At the beginning of the 20th century, both in Europe and in North America, the network of streets giving access to suburban houses was commonly structured along an interconnected grid pattern. Most streets were therefore open to through-traffic. Through out the 20th century however, the cul-de-sac became a major element of the suburban landscape. By the end of the 20th century, “in its pure form, all the houses in a subdivision are situated on cul-de-sacs, and as few as possible are placed on the busier and noisier collector streets” (Southworth & Ben Joseph, 2004: 28-29).

Cul-de-sacs existed in cities well before the 20th century. In fact, as early as the 18th century, this type of road layout was already used to keep traffic away in London (Kostoff, 1992: 192-193). Nevertheless, even at the beginning of the 20th century, cul-de-sacs remained scarce. They only became widespread with the generalisation of car use. In the United-States, a major step toward that change was made in Radburn. At the end of the 1920s, Clarence Stein and Henry Wright made Radburn one of the first suburban developments in the United-States where houses were systematically placed around cul-de-sacs with the expressed objective to keep the annoyances of motorized traffic away (Stein, 1957: 41; 47). With the Radburn project, the cul-de-sac and its counterpart, the loop street³, became considered the best way to provide vehicular access to houses.

The needs of suburbanites are well met with no-through streets. The cul-de-sac turns the residential ideal generally associated with moving into the suburbs, into reality. Moving into a suburban house is most often guided by the desire to benefit from a calm and verdant environment; a desire that is incompatible with vehicles passing incessantly in front of the yard. Households that move into residential suburbs also do so in search of an environment well-adapted to family life. Such being the case, as shown by Donald Appleyard (1981), a road closed to through-traffic is ideal for a family with children. The absence of through-traffic creates a safer space, both with respect to the dangers of automobile traffic and to the dangers associated with the presence of strangers (the cul-de-sac allows residents to better monitor comings and goings and limits the escape options for a delinquent caught in the act).

The success of dead-end streets can also be explained based on the benefits to developers. Cul-de-sacs diminish the cost of land development: “The pattern is popular with developers not only because it sells well, but also because the infrastructure costs are significantly lower than for the traditional interconnected grid pattern, which can require up to fifty percent more

³ In this article, cul-de-sacs and loop streets will not be discussed separately, since the essential variable characterising the roads referred to here is that they limit through traffic (Southworth & Ben Joseph, 2004: 29).

road construction. Cul-de-sacs, being disconnected, adapt better to topography. Since they carry no through traffic, they often have reduced standards for street widths, sidewalks and curbs.” (Southworth & Ben Joseph, 2004: 30).

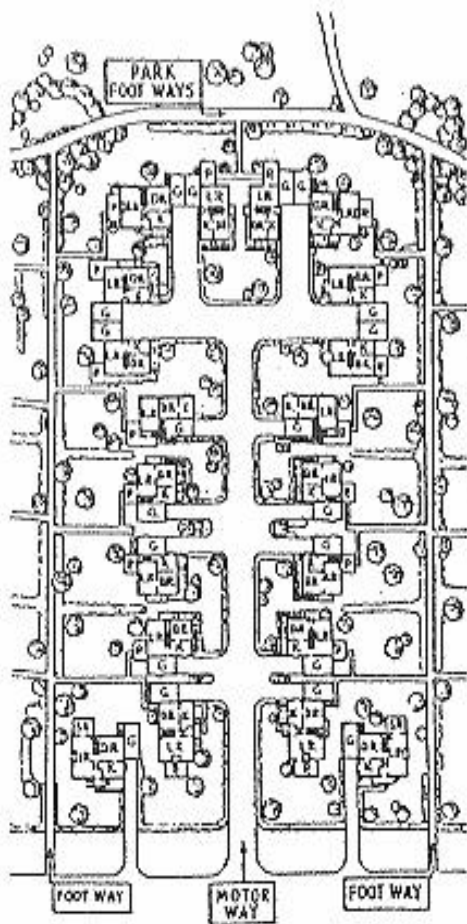


Figure 1 (left): A map of a cul-de-sac in Radburn (Stein, 1957); Frame 1 (top right): the “motorway” (author, 2005); Frame 2 (below right): the “footway” (author, 2005)

This development of roads closed to through traffic has profoundly modified the use and ownership rights that are attached to road networks. With use restricted to local traffic, the street has become the equivalent of the spatial unit that constitutes the staircase, the entrance hall, the parking lot and the courtyard in a condominium. Grouped around a cul-de-sac, the houses form a flattened building of sort. As such, residential streets have become spaces whose function determines them as private property. Indeed, to our knowledge, no one

seriously contests the practice of giving private status to entrance halls and elevators of vertical condominiums⁴. No one wishes for staircases to become public property.

By this standard, rather than question the development of private residential roadways (Grant & Curran, 2007), it is perhaps more astonishing to look at the large number of residential cul-de-sacs that do belong to the public domain, in Europe and in North America alike. This prevalence of the public domain can be chiefly explained by two factors. The first is linked to the dominant representation of the street. The street is considered the quintessential public domain. For many, even if it is closed to through traffic, a lane where cars drive remains a street and must therefore be public property. The debate stemming from the increase in number of private roads is proof of the resonance of this representation. The second fact concerns the cost of maintaining roads.⁵ Once a housing estate ages, the perspective of costly roadwork begins to loom on the horizon, and residents begin to consider the transfer of their local roads to the public domain. They ask themselves one simple question: if others do not need to maintain their own roads, why should we? The questions are all the more pointed as the residents of private roads are subject to the same taxes as other residents, such that the municipality maintains public roads in part with their money. Obviously, a dead-end street does not hold the same interest to the general public as a street open to through-traffic, but it is difficult for residents to understand that difference when they observe some residential streets being maintained by the municipality, while theirs is not. Some municipalities resist this pressure, others give in to it (however, the tendency to refuse is becoming more frequent⁶).

In any case, whether it is public or private, the reserved and exclusive character of a cul-de-sac does not change. The cul-de-sac has strong links to local exclusiveness and territorialisation. The logic behind the development of cul-de-sacs even bears resemblance to the logic behind the development of gated communities. The installation of gates is motivated less often than one would think by the desire to completely control access to the road. Based on their study done in the United-States, Edward Blakely and Mary Gail Snyder observe that

⁴ There are, of course, some instances where the status of these inside spaces is uncertain. In particular, the status of passages through halls and courtyards of apartment buildings linking one street with another are problematic (a well-known example is the "traboules" of Lyon, France).

⁵ For the case of France see (Charmes, 2005: chapter 4). Regarding the United-States, see for example: "Privacy Pricey in Storms. Homeowners Must Clean, Fix Nonpublic Streets", *Daily News (Los Angeles)*, January 17, 2005.

⁶ As stated by Robert Lang and Arthur Nelson, suburban municipalities are increasingly reluctant regarding the inclusion of residential streets in their public domain. Many of them allow no new development outside of Homeowners associations (2007: 630). For the case of France, see (Charmes, 2005: chapter 4).

“[t]raffic is the second major reason [after crime] that neighbourhoods turn to gates and fences. Residents dislike the noise and disruption of through traffic, they worry about their children playing in the streets, they fear that easy automobile access gives criminal free entrance and quick escapes” (1997: 166). The same observation was made following a study on gating of residential roads in France (Charmes, 2005: 85-91).

It has been argued, in fact, that gates and other sorts of barriers may be used solely to close a street to through-traffic. Indeed, many fences and gates appear across roads not to completely block access but to simply transform the roads into cul-de-sacs. The French study, mentioned above, showed that it is not uncommon to place devices that restrict access only on one side of the street, with completely free access remaining on the other side (Charmes, 2005: see also Frame 3).⁷ Admittedly, gated communities are developments that are completely closed, which is an important difference. In developments that remain accessible, security is not the issue as it is for gated communities. However, just like the gates at the entrance of a gated community, those erected to prevent cars from passing through, assert the exclusive rights of the residents to these roads. Residents often associate keeping motorized traffic away with keeping “others” away, and legitimize this separation based on a belief that they have exclusive rights of use. For residents of such streets, the conversion to a cul-de-sac is a way of affirming their right to tranquillity and to oppose any reduction in this tranquillity from automobile traffic.



Frame 3: The above development (east of Lyon, France) still has one road entrance left open. Security is obviously not an issue, vehicular traffic control is (author, 2003).

⁷ Donald Appleyard established a similar link between fences and diversion of traffic in his studies of streets in Berkeley's city centre (1981: 215-239; 303).

1.2. From Superblocks to Environmental Areas

In many suburban residential estates, the main feature is not the cul-de-sac, but the integration of cul-de-sacs within a “superblock”. Some projects, in both the United-Kingdom and the United-States, foreshadowed this association between cul-de-sacs and superblocks, but Radburn gave it new significance (Moley, 2006). In Radburn, Clarence Stein and Henry Wright created superblocks consisting of a dozen residential dead-end streets, all surrounding green spaces accessible only on foot. Through-traffic is discharged on arterial roads that define the boundaries of superblocks (see Figure 2 and Frame 4). The prefix “super” can thus be understood in a literal manner: the “super” block is a “big” block where the traditional building’s courtyard becomes a large community garden. Just as the block is the building block of the traditional urban landscape, the superblock is the building block of the suburban landscape.

Unlike with the traditional block however, the superblock’s “courtyard” is not a secondary space onto which utility rooms and bedrooms open, but a central space onto which the principal rooms, such as the living room, open. Whereas in the traditional urban landscape the principal rooms open onto roads that are open to all, in the superblock these rooms turn their back on the roads that service their habitations. This difference is critical. Moreover, these roads are nothing more than cul-de-sacs from which all traffic is excluded. In such a way, the residence is almost totally removed from street life; the latter is invisible from the windows of the principal rooms. The space visible from these windows is limited to the residential grouping established by the superblock. In the Radburn project, the superblock tends to be a residential territory defined by the communal enjoyment of a green space (Stein, 1957: 41, 49-51).

Figure 2: Map of Radburn's superblocks (Stein, 1957)



But planning ideas during the 20th century evolved beyond Radburn's design. In Clarence Stein and Henry Wright's plan of Radburn, superblocks are not as spatially isolated as are the large majority of contemporary suburban developments. Indeed, the roads that define the boundaries of the superblocks in Radburn still form an interconnected network. It is only with the advent of planning principles specific to traffic engineering that the superblock became a veritable spatial isolate. The report, *Traffic in Towns*, submitted in 1963 to the Ministry of Transport of the United-Kingdom by Colin Buchanan, is an important step in this evolution. This report proposed a new theoretical framework for the planning and design of road networks. One of its key concepts is the "environmental area" (see Figure 3): according to Colin Buchanan, environmental areas should be designed to have no extraneous traffic, that is, they should have no traffic filtering through unless there are businesses in the area (Buchanan, 1963: 65). In Buchanan's design, unlike the roads delineating the Radburn superblocks, the roads providing access to dead-end streets do not make an interconnected and continuous network (Marshall, 2005). They are accessible only from arterial or distributor roads at one intersection. Within such a road network layout, residential areas are better

insulated from vehicular traffic. At the same time, traffic flow from main roads is less frequently interrupted by cars coming in or out of residential roads. From a traffic engineering perspective, the environmental area improved on Radburn's design and planning principles which partly explains the wide-spread success of the environmental area in the planning community. The influence of traffic engineers on the planning and design of suburban landscapes during the second half of the 20th century is indeed well known.



Frame 4: A road delineating a superblock in Radburn (author, 2005)

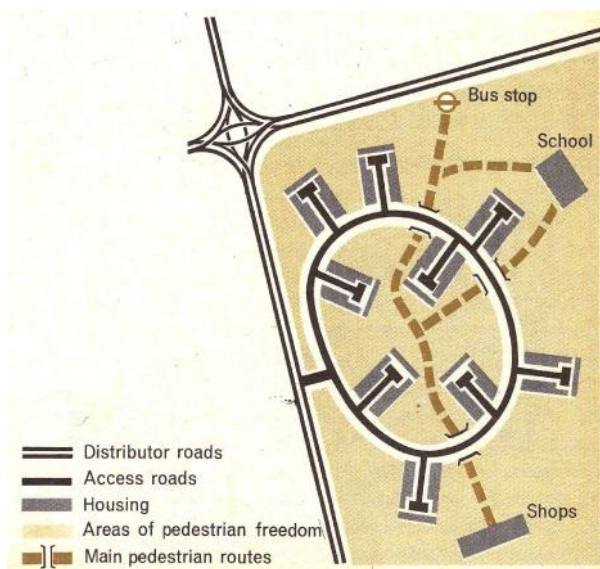


Figure 3: "The principle of Radburn Planning" as interpreted by Colin Buchanan (1963: 69)



Frame 5: View of a suburban housing estate south of Paris (Essonne), whose planning and design fit well with the environmental area model (Yann Arthus Bertrand, Altitude)

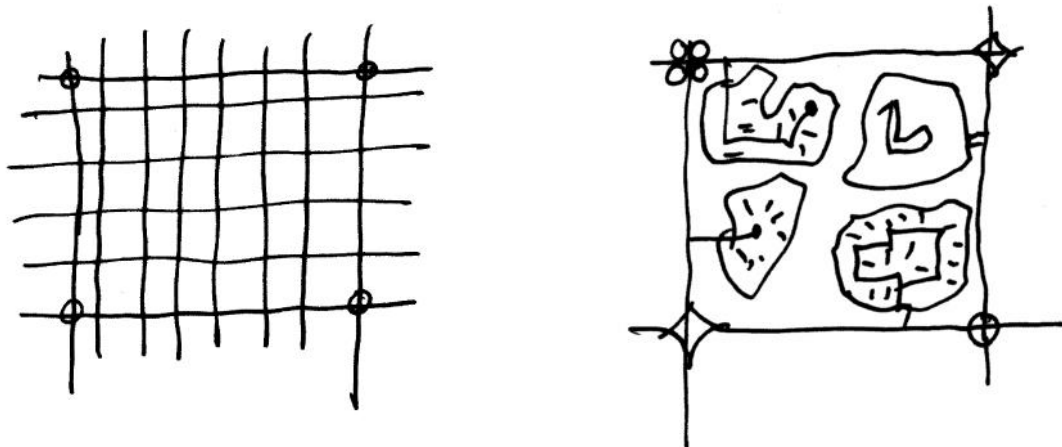


Figure 4: From the grid to a juxtaposition of monofunctional enclaves (Mangin, 2004)⁸

As a planning concept, the environmental area did not only apply solely to the planning of housing estates. As Colin Buchanan indicated: “It cannot be emphasized too strongly that the environmental areas envisaged here may be busy areas in which there is a considerable amount of traffic” (1963: 65). By definition, people should not enter an environmental area unless they have business to do so, although there may be many things to do in such an area and thus reasons to enter. From this perspective, a large retail development with only a few access points from main roads could be considered an environmental area; a university campus or an office park with limited access could also be considered as such. It can thus be argued that the environmental area is a ubiquitous model for the planning of suburbs. As shown in Figure 4, the concept of the environmental area greatly helps make sense of the contemporary suburban landscape and, more specifically, distinguishes it from the landscape structured by a gridded street system.

1.3. The Environmental Area as a Residential Territory

The environmental protection made possible by the environmental area has had some consequences. First, when combined with the single-use zoning that became the norm in the planning of suburbs, environmental areas became a collection of mono-functional enclaves. Many criticisms ensued, including the loss of an urban public realm and car dependency (Southworth & Parthasarathy, 1996). Second, environmental areas led to an increase in the scale of privatism, especially in residential areas (Mangin, 2004). The small bubble insulated from car traffic, created by cul-de-sacs, became enlarged to accommodate the scale of an entire residential development.

⁸ “Transport en commun” means “public transportation”, “domicile” means “home” and “école” means “school” or “high school”.

Just like with cul-de-sacs, environmental areas and gated communities share some similarities regarding the logic behind residential territorialisation. Indeed, much like the gating of residential streets to transform them into cul-de-sacs, many barriers and gates appear at the entrances of suburban developments with the primary objective to discourage through-traffic. In several cases observed in France (Charmes, 2005) and in Britain (see Frame 6), the closures are applied to all but one access point. A similar case is reported by Evan McKenzie in a development, established in 1946, of 168 lots in the City of Las Vegas: “Efforts to close off Bonanza Village from the surrounding areas were in evidence as early as 1981, a group of residents calling themselves the Bonanza Village Homeowners Association successfully petitioned the City of Las Vegas to vacate four of the five intersections from which Bonanza Village could be entered.” (Mc Kenzie, 2005: 193). The association was, at that time, mainly concerned with limiting car traffic, as only one entrance was left open to vehicular traffic but pedestrians could still walk into the development through concrete traffic barriers at all other intersections. These efforts at closing off Bonanza Village prove that the planning of an environmental area provides a way of satisfying expectations that otherwise may be satisfied by installing gates and fences⁹.

Certainly, an environmental area with one entrance left open cannot be considered like a fully gated community. Security concerns, for example, are not the same. Yet, the environmental area and the gated community maintain a strong relationship. Adding a gate at the junction between an arterial road and the access roads inside an environmental area is not a very material change. In both cases, boundaries around a clear spatial isolate are defined within which outsiders are not supposed to drive (Charmes, 2005; Loudier-Malgouyres, 2007).

⁹ At the beginning of the 2000s, Bonanza Village has become a true gated community, and has done so with the marked support of local authorities.



*Frame 6: Closure of one of the entrances of a housing estate in Surrey, south-west of London.
Another entrance is left open to cars (author, 2006)*

The separation of environmental areas from their surroundings is not simply a result of road layout. Indeed, in the configuration proposed by Colin Buchanan, it is no longer just the case of organizing cul-de-sacs around a central green space, but of surrounding a housing development with green spaces. In residential neighbourhoods, these green spaces act as buffers, which separate the homes from arterial roads. This idea is present in many current local planning by-laws with rules stipulating that the land abutting arterial roads is non-buildable (Mangin, 2004). This satisfies both an environmental requirement (a buffer zone improves the insulation between residential areas and roads with heavy traffic) and a traffic engineering requirement (activities occurring along roads induce cabotage traffic and reduced traffic speeds).

This idea is reminiscent of earlier ideas of the garden suburbs movement. In his founding work on garden cities, Ebenezer Howard proposed to surround new towns with greenbelts. These cities were supposed to have 30 000 residents or so (Howard, 1902). This scale has been reduced however with the garden suburb movement and moved closer to the one which became common for housing developments throughout the 20th century. The Chatham Village project, conceived by Clarence Stein and Henry Wright immediately following Radburn, is part of this shift (Stein, 1937: 74-85). For this project, initiated at the beginning of the 1930s, the two architects used the organisational principles of Radburn's arterial system but added a greenbelt even though the development had less than 200 houses.

At such a scale, the greenbelt is like a cocoon and the residential area it encloses looks like a bubble isolated from its surroundings. As Clarence Stein wrote later about the Chatham

Village project: “a greenbelt, even one as small as that of Chatham, insulates a community from neighbourhood depreciation and external annoyance” (1957: 85). It is, therefore, as much a case of environmental protection as a case of preserving the socio-spatial singularity of a residential complex.

The mini-greenbelt advocated by the garden suburb movement was largely unsuccessful in American and European suburbs. The idea of insulating a community from its surroundings, however, did have a large influence. Simply, instead of becoming enclosed within a green field cocoon, communities became protected through roadway setbacks and/or through walls, as is seen with the increasingly popular gated communities. The leftover space between arterial roads and housing estates is treated with varying levels of attention; most commonly however, the views from suburban roadways are reduced to two long and dull rows of walls and occasionally intersecting access roads.



*Frame 7: View of a typical contemporary suburban landscape in the United States
(Alex MacLean, www.landslides.com)*

2. Supports of Private Management: the Case of Radburn

2.1. Residential Territories and Ad Hoc Management

As we have seen, cul-de-sacs and superblocks (especially when transformed into environmental areas) share similarities through the assertion of specific territorial rights by their residents. Nonetheless, this is not sufficient to explain the emergence of *ad hoc* governments. Though sharing rights over a space provides residents with a common interest, it does not bestow upon them exclusive ownership of the space, any more than it incites them to take responsibility over its management. Residents of a shopping street have a common interest (Webster, 2003), but it is unlikely and would not be considered legitimate that, for this reason, they become owners or managers of their street, primarily because they are not the only users of this space (they must share it with passers-by and merchants). Also, the boundaries defined by the inhabitants of a shopping street are ambiguous and they blur further upon contact with other groups (for example, a group formed by the inhabitants of a block, composed of residents from several streets).

In both cases, cul-de-sacs and environmental areas provide two decisive contributions. The first relates to functional specialisation: there is only one type of user of these spaces, the resident. Those who access the space do so either as residents or as visitors of the residents. Of course, functional specialisation is not inherent to cul-de-sacs or to environmental areas: mono-functional zoning is a planning decision that can be made relatively independently from the design of the road system. Yet, a comparison of how residential suburbs structured along a gridded street system evolve, and how suburbs structured along pods evolve, shows that the former are much more open to functional mixing than the latter (Mangin, 2004).

The second decisive contribution made by cul-de-sacs and environmental areas is that they delineate clear territorial boundaries to the groups of users in question. In this manner, they allow clear identification of who holds the rights of use of the communal space. Thus, the communal space can be established as an exclusive territory and under collective ownership.

These potential territorial assertions of cul-de-sac and superblock residents may explain a similar connection found in the literature on Radburn. Not all aspects of Radburn's innovative design were influential (Southworth & Parthasarathy, 1996; Martin, 2002), but as argued in the first section of this article, historians almost invariably cite Radburn to illustrate the early stages of the separation between automobiles and pedestrians and the organisation of local road networks around cul-de-sacs and superblocks (Schaffer, 1982; Southworth & Ben Joseph, 1997; Girling & Helphand, 1994). This is not however, the only major innovation Radburn is credited for. One of the leading American specialists on private governments of residential spaces, Evan McKenzie, considers that the first modern government of common interest developments in the United-States was established in Radburn (1994: chapter 2). According to Evan McKenzie, Charles Stern Ascher, the designer of Radburn's government,

created the framework for the mandatory-membership homeowners associations that today preside over many American residential developments.

This importance of Radburn as the initial site for the development of the modern homeowners' association in the United-States is all the more puzzling. Considering that, much earlier than Radburn, in both the United-States and in Europe, there were already groups of single-family dwellings, endowed with distinct boundaries and accentuated by, for example, gated entrances and fenced perimeters (Le Goix & Webster, 2008). These developments experienced significant success with the well-to-do at the end of the 19th century. Why then, did these particular developments not give rise to the modern homeowners' associations?

Our current understanding of the issue does not permit us to arrive at a conclusive answer to this question, and it would require more specific research. Notwithstanding, two hypotheses can be proposed. The first, which can be extrapolated from the works of Evan McKenzie (1994)¹⁰, is that in the 19th century, knowledge was not advanced enough to put forth a concept as elaborate as that proposed by Charles Ascher. Elements of local collective management existed, but any return on experience was lacking. Thus, in developments like Forest Hills near New York or Roland Park, Maryland, a fixed annual fee was implemented, a choice which became problematic due to the inflationary spiral of the Post-World War I period (Schaffer, 1992: 178). The lesson was necessary though and in Radburn fees were regularly revaluated. Moreover, until late in the 20th century, the juridical context was not favourable for the establishment of local private governments. Indeed, for the United-States, it has been a long process towards the stabilisation of that context (McKenzie, 1994). In France, a country considered to have pioneered in this topic, co-ownership has been regulated since at least 1804. Yet, the first law giving condominiums and homeowners associations a juridical status was enacted only in 1938.

The second hypothesis rests on the fact that in Radburn the superblock is not only considered a device for protecting homes and gardens from traffic annoyances, but also provides a specific group of homes with areas for community use. Green spaces are the most commonly shared spaces in Radburn, but these shared spaces also include sports facilities such as swimming pools or tennis courts. These communal spaces have much more importance in Radburn than in the posh housing developments built up until then. Radburn was, in fact, financed by the City Housing Corporation, which was created in 1924 with the objective to not only promote the ideas behind the garden suburbs movement, but also to create moderate-cost housing. An objective behind the projects developed by the City Housing Corporation, like Sunnyside and Radburn, was to permit a social diffusion of ownership of a single-family dwelling in a verdant environment, a type of dwelling which until then had been reserved for the affluent classes (Stein, 1957; Schaffer, 1992). For the designers of Radburn, this diffusion

¹⁰ Without, of course, making any assumptions on the opinion of the author regarding this question.

could be made possible if spaces which were previously private became shared. Where upper class families each had their own large garden and sport facilities at their disposal, at Radburn, families now only have a small garden and share a vast green space and a common swimming pool with others. Of course, in the case of Radburn, this democratisation project was not successfully completed and the arrangements made did not prevent Radburn from receiving pre-eminently upper middle class households. The concept, however, had been launched, and it would bear great success. Reducing the size of parcels of land, by creating a collective space in place of individual yards, proved to be a good means of increasing the density of housing developments. Offering common spaces and facilities also made for a good marketing tool for selling houses on small lots (McKenzie, 1994). The trade off between individual and communal property was one of the key elements in the transformation of the suburban house market into a mass market open to large sections of society.¹¹ To be sure, the careful design of Radburn's common spaces has been lost in the process: "In most cases [today], open space appears to be leftover, unbuildable land rather than part of an overall design" (Southworth & Parthasarathy, 1996). Yet, the idea of selling collective spaces and facilities with individual houses gained momentum throughout the 20th century.

This collectivisation brought about new management issues. It was no longer a case of merely preserving a residential landscape through covenants (by avoiding, for example, densification or deterioration of the landscape) as was the case in luxury subdivisions created up until then. It also involved regulating the use of communal spaces. Such an issue was difficult to deal with through covenants that established the rights to use the spaces once and for all. The idea of appealing to *ad hoc* local governments therefore became important. This was all the more so in Radburn since it was supposed to be a garden city of approximately 25,000 to 30,000 inhabitants (only the 1929 crisis put a halt to the project).¹²

¹¹ This observation puts into question the idea that common interest developments are an instrument used by the affluent to control their environment to the detriment of the less-affluent. It appears, in fact, that homeowners associations were at first created due to a democratisation of personal property and are based on the pooling of community facilities to share in their cost.

¹² Would Radburn have been built as it was planned, that is like a real garden city of several tens of thousands residents, the government designed by Charles Ascher may well have attracted less attention from historians like Evan McKenzie. But, as the 1929 financial crisis put an end to Radburn's development, Radburn's population culminated at 1,500 inhabitants in the 1930s (Schaffer, 1992) and now stands at slightly more than 3,000 inhabitants.

2.2. *Between Municipality and Homeowners Association*

Why then resort to private forms of management and not to municipalities? At the time Radburn was designed, the latter solution was difficult to implement in France and Britain, but this was not the case in the United-States, since in that country municipalities could fairly easily be created through incorporation. Indeed, at the time Charles Ascher designed a government for Radburn, numerous small suburban municipalities, composed mainly of single-family dwellings, were being created (Teaford, 1997). Charles Ascher himself did not pursue a career in the private administration of residential developments; on the contrary, he came to hold an important position as an expert in public administration (Saunier, 2007). From the perspective of suburbanites moreover, municipal government presented several advantages: it allowed access to public funding and facilities for infrastructure and utilities development; it also provided access to zoning rights which gave suburbanites the opportunity to restrict urban development on large tracts of land without actually buying them (Teaford, 2007).

The question of scale is central to this discussion. There is probably a threshold between the scale of the neighbourhood unit and that of the superblock. In *Housing for the Motor Age* (1939: 52-55), Clarence Perry presents various factors to consider in the determination of the desirable size for neighbourhood units. An optimal size, he argues, is based on the population required to operate the central facility: the primary school. Based on the standards of the time, Perry establishes the minimum population of such an institution at 500 students and indicates that the minimum could be as high as 2,500 students in centres of large cities. These numbers predicated that a neighbourhood unit should have between 3,000 and 10,000 inhabitants. The scale of the superblock in Radburn is a magnitude of size lower: it is designed for only about 500 people. However, Radburn's superblock scale better reflects the current European and North American homeowners associations. In 2006 in the United-States, according to the Community Associations Institute¹³, there were 286,000 association-governed communities covering 23.1 million housing units, for an average size of 80 units per community and an average population of 200 inhabitants. The standard deviation is admittedly large, ranging from 2 units to several tens of thousands, but the average provides nonetheless a good idea of the most common scale.

If Perry's proposed scale for the neighbourhood unit had prevailed in new suburban housing developments around cities in the United-States, the municipality might have shown itself to be the most appropriate form of government. Though difficult to prove, several factors support this hypothesis. For example, Celebration, one of the most famous American private towns is currently in the process of studying its incorporation as a municipality.¹⁴ A feasibility

¹³ <http://www.caionline.org/about/facts.cfm>

¹⁴ <http://celebrationfeasibility.org/>

study¹⁵ proposed a perimeter which, in 2006, contained approximately 7,000 residents and was organized according to a model similar to neighbourhood units. This is not an isolated case: several large privately governed communities have been transformed into municipalities (Le Goix, 2006). To be sure, in the United-States there are also large so-called “new towns” that are governed by homeowners associations (like Reston and Columbia near Washington¹⁶), but those cases are more the exception than the rule. Moreover, in the case of Reston and Columbia, the county administration is influential.

The question of scale must be linked to the relevant perimeters for the management and financing of facilities and urban services. Curtis Sproul (1994) emphasizes that in practice, municipalities have responsibilities and prerogatives that are much more comprehensive than those of privately governed communities. In the great majority of cases, homeowners associations only concern themselves with the upkeep of communal areas of limited size. These areas are usually nothing more than a few cul-de-sacs and small green spaces. Tennis courts are not common and more substantial facilities even less so. Suburban developments with swimming pools large enough to host competitive practice are rare. In any case, sport facilities do not account for the scope of urban local facilities and services, which also include water supply, sanitation, garbage collection, emergency services, etc. Such facilities and services are difficult to manage on the scale of most private communities. The required investments are too large and the potential profits can only be guaranteed over the course of a period too long for the operators of the housing market. It therefore becomes necessary for public authorities or, at the least, for a public-private cooperation to be involved. Likewise, some homeowners associations resort to private security companies, but the scope of services they provide is generally narrow: detention and court appearances remain, for example, the prerogative of public powers (and we should be thankful that it is so).

The municipality (or the special district¹⁷) imposes itself, therefore, above a particular concentration of population. On the other hand, a municipal government becomes less relevant below a certain threshold. Indeed, Curtis Sproul (1994) considers that the prerogatives of joint-ownership communities are so limited that their transformation into public governments would, in most instances, make no sense. The cumbersomeness of procedures required by such a change would render management impossible. It would indeed seem absurd to impose the creation of a municipality to manage a tennis court and a few residential cul-de-sacs. Public administration experts also concur that municipalities should not be incorporated below a certain population threshold. This is the reason why, in the United-States, many measures have been put into place since the 1960s to prevent the creation

¹⁵ <http://www.celebrationfeasibility.org/120806FeasibilityStudy.pdf>

¹⁶ For a recent account of the development of three large “new communities” (Irvine, Columbia and The Woodlands) see (Forsyth, 2005).

¹⁷ On special districts in the United-States, see (Burns, 1994).

of midget municipalities (Teaford, 1997). Today, to return to the example of Florida, incorporation is possible only in settlements of at least 5,000 people (at least in counties with a population of more than 75,000).¹⁸

In this way, the scale of cul-de-sacs, superblocs, and even environmental areas corresponds to the scale of homeowners associations in the United-States, but not to the scale of municipalities. This relationship between design and government is hardly surprising. As discussed above, the cul-de-sac echoes the organisation of the entrance hall, the stairwell and the parking lot. In the case of collective housing, the management of these spaces is undeniably under the control of homeowners associations. The superbloc, for its part, was conceived according to the model of a communal courtyard within a block. The connection is evident in Stein and Wright's Sunnyside development which preceded the development of Radburn (Stein, 1957: 24; Schaffer, 1992; Esperdy, 1999: 29-30). And yet, in urban centres, courtyards within a block are usually privately owned and their access is commonly restricted.

¹⁸ Florida Statute 165.061

Conclusion

This article provides additional support to the hypothesis that exclusionary residential territories exist along a continuum, ranging from no-through streets (exemplified here with cul-de-sacs), superblocks, environmental areas, gated communities and privately managed communities. More research is certainly needed, especially on the establishment of governing bodies, since the case of Radburn is very specific and its practical influence may be overestimated. However, we have clearly demonstrated that the road network layout, prevalent in most contemporary suburbs and exurbs, is based on a logic of residential territorialisation that bears some resemblance to the one behind homeowners associations and gated communities. As discussed in Section 1, the creation of two cul-de-sacs facing each other can be compared to the erection of a barrier in the middle of a street open to through-traffic. Similarly, environmental areas function as residential enclaves (Mangin, 2004; Loudier-Malgouyres, 2007). To be sure, most environmental areas are not gated communities, since anybody may enter them. Yet, when residents create an environmental area, they claim the right over the roads giving access to their homes and deprive those living in the surrounding areas of the right to use these roads as short-cuts. This is obvious when they do so by erecting barriers and creating specific structures to manage the spaces that they consider their own.

Some of the similarities described in this article between gates, private management and types of road layouts are not very surprising. This is especially the case for the cul-de-sac: the cul-de-sac forms a flattened building of sort. This similarity is worth referencing as it reverses the usual perspective on the privatisation of suburban roads. Indeed, one should not be astonished by this privatisation, but rather by the large number of residential cul-de-sacs that do belong to the public domain. In the same way, considering that environmental areas function like residential enclaves, it is somewhat astonishing that gated communities have generated so many criticisms while critics have stayed relatively silent about superblocks and environmental areas (there are some exceptions however: Pope, 1997; Mangin, 2004).

By highlighting the importance of environmental areas, this article also argues that some projects developed according to principles of New Urbanism may not differ from conventional suburban projects as much as previously claimed. New Urbanists, who are particularly vocal against the lack of interconnection between suburban roads (CNU, 2000; Duany, Plater-Zyberk & Speck, Talen, 2005) tend to forget about the environmental area on a larger scale. As Alex Marshall explains (2001), under the label of New Urbanism, the majority of undertakings are more about amending than questioning the morphology of the suburbs. Most New Urbanism activities only modestly modify the currently prevailing way of doing. If the cul-de-sacs and the loops disappear, or if the detached house makes room for row houses, it is often done only inside an environmental area. In fact, replacing cul-de-sacs with interconnected roads along the grid model is more often done on a local scale. The

developments that receive a New Urbanism label are generally inserted within the grid of an environmental area defined by arterial roads. Admittedly, certain developments avoid this drawback, in particular due to their large scale, but the change remains modest.

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