

Four characters in search of an author: Figures of automobility in the Liège-Aachen diffuse city

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The system of automobility has been shown to play an important role in enabling the form of the contemporary urban environment. From a spatial point of view, techniques and social practices linked to the system of automobility lock-in a vast amount of surface – from circulation, parking, buildings for the car, to various storage and buffer zones – which, if activated, could play an important role in a transition project. Yet, in diffusely built areas, such projects are manifestly absent. These spaces, if they are to take part in the real-estate of a transition project, need a description which examines their typo-morphological qualities in detail, deciphering recurring features and make spatial repercussion of socio-technical systems explicit. This contribution presents four territorial figures which structure and characterize the spaces of automobility within the transborder case study of the Liège-Aachen diffuse city. Constructed from typo-morphological elements, they emerge from a variety of analytical operations: on site survey, palimpsest analysis, planning history, as well as confrontation with international references and models. Like characters in a play, these four figures need to be defined in their complex and sometimes contradictory state to take part in the future transformation of the territory.

Automobility and the diffuse city

The socio-technical system of automobility (Urry, 2004) has been shown to play an important role in enabling the form of the contemporary urban environment. It has also manifested a great ability to adapt itself throughout history, reacting to different contexts and socio-technical shifts (Schaupp, 2024).

In Western Europe, urban production linked to automobility exploded during the *Trente Glorieuses*, a period of rising motorization combined with a strong centralised planning culture (Ross, 1998). The commodification of car usage in fact enabled spatial plans and policies whose horizons were unthinkable before the second world war. Some countries were furthermore aided by the blank slate provided by aerial bombing campaigns.

The car being a universally available object, projects for it unmistakably found an international echo. Engineering standards (such as UAFHA, 1968) circulated widely, countries looked at their neighbours abroad to define practices and transpose canonical models, mostly stemming from the Anglo-Saxon world or relayed by the influential CIAM (Ryckewaert, 2011; Grulois, 2015). Alternatively, especially in Germany, it also allowed for design ideas developed in the first half of the twentieth century to be concretised (Zeller, 2011), sometimes road-tested and ideologically sanitised through a detour through the United States (Kegler, 2016).

This influx of new planning ideas within a time of rapid economic growth allowed not only for cities to expand concentrically, but also for diffuse cities (Barcellona Corte & Viganò, 2022) – territories whose built diffusion and complex patterns of infrastructural density and heterogeneous urban fabrics predate the car – to sustain and consolidate themselves.

Finally, within the span of this cultural history of automobility, one can also observe how driving concepts such as *Auflockerung*, or dispersion of urban fabric (Göderitz, 1957) and plans to re-articulate cities around traffic infrastructure (Lejeune, 1964; L'Equerre, 1963; 1966) have failed to materialise, left incomplete, due to a lack of resources, protests (Walks,

2020), political regionalisation (Ryckewaert, 2011), or disdain for the existing context (Headicar, 2015), leaving automobility to define its own spatial imprint through adaptation, without the oversight of urban designers.

Beyond automobility?

Many researchers from different fields of study have pointed to the negative effects of the system (for example, Braun & Randell, 2023) and its incapacity in dealing with the environmental transition goals most states have pledged to adhere to in a sustainable and socially just manner. From a spatial point of view, techniques and social practices linked to the system of automobility require a vast amount of surface – from circulation, parking, buildings for the car, to various storage and buffer zones – which, if activated, can play an important role in a transition project. Indeed, in European cities, one can observe how spaces for the car have been subverted or retrofitted to great effect (Bertolini, 2020) by planners and citizens alike, striving for transition goals through grounded spatial interventions.

In these dense historical urban fabrics, designers planning for less car dependency can follow injunctions from a context mostly built before the car. Aided by these powerful images, structural transformations of the urban realm can successfully take place, rejecting unwanted car usage to the periphery.

Yet, these strategies have not manifested themselves in diffusely built environments in a structural way. In the diffuse city, without centre nor periphery, where the traditional notions of city and countryside lose much of their meaning, one can even observe that the construction of new car-related spaces is still taking place despite a stagnating car usage, absorbing the externalities of historical urban centres they increasingly contrast with (Cornut, 2017). Furthermore, while one can quite easily imagine what transforming urban fabrics built before the automobile might entail by using well-known territorial figures (Secchi, 2006), the exercise becomes less clear when considering spaces specifically designed for the car.

Spatial figures

The following paper aims to address this gap regarding the comparative lack of territorially grounded projects related to the spaces of automobility in the diffuse city. It states the hypothesis that these spaces, if they are to take part in the real-estate of a transition project, are in need of a better understanding of their morphological qualities. Indeed, spaces of automobility today, more than anonymous externalities of an overpowering regime (Hoffmann et al., 2017), can be constructed as the result of a complex interplay of shifting imaginaries, contrasting planning cultures, canonical international references, historical inertia, and sometimes failed ambitions.

Therefore, what follows aims to better define spaces of automobility through a description of four spatial figures living in the contemporary diffuse city. This series of portraits offers insights into the socio-economic mechanisms, the political planning culture, and the rationalities of the pre-existing natural and built landscape underpinning the urban production linked to the car.

This description is situated within the transborder Liège-Aachen diffuse city. It is a territory spanning two countries, whose urban dispersion predates the car, which shares a common landscape features, yet where contrasting planning cultures, German, and Belgian ones (Blotevogel, 2004; Ryckewaert, 2011), are sometimes jarringly juxtaposed, as we will see.

Elements of automobility

From a spatial point of view, techniques and social practices linked to the system of automobility lock in (Seto et al., 2016) a vast amount of surface, far exceeding the road space needed for circulation. In order to describe spaces of automobility with a typo-morphological

lens, spaces observed on site have been divided into elements: circulation, parking, building for the car, space for other mobility, infrastructural space, and finally structures serving as buffer.

As parts of a typological catalogue, one will witness in the following pages how these basic elements of automobility can, depending on their context and function, undergo variations. A same element can thus appear as a precisely formalised object, or as the result of social practices enabled by functional ambiguity. As will be shown, elements will also vary in character if they were especially designed for the car, or if they were adapted from a previous condition.

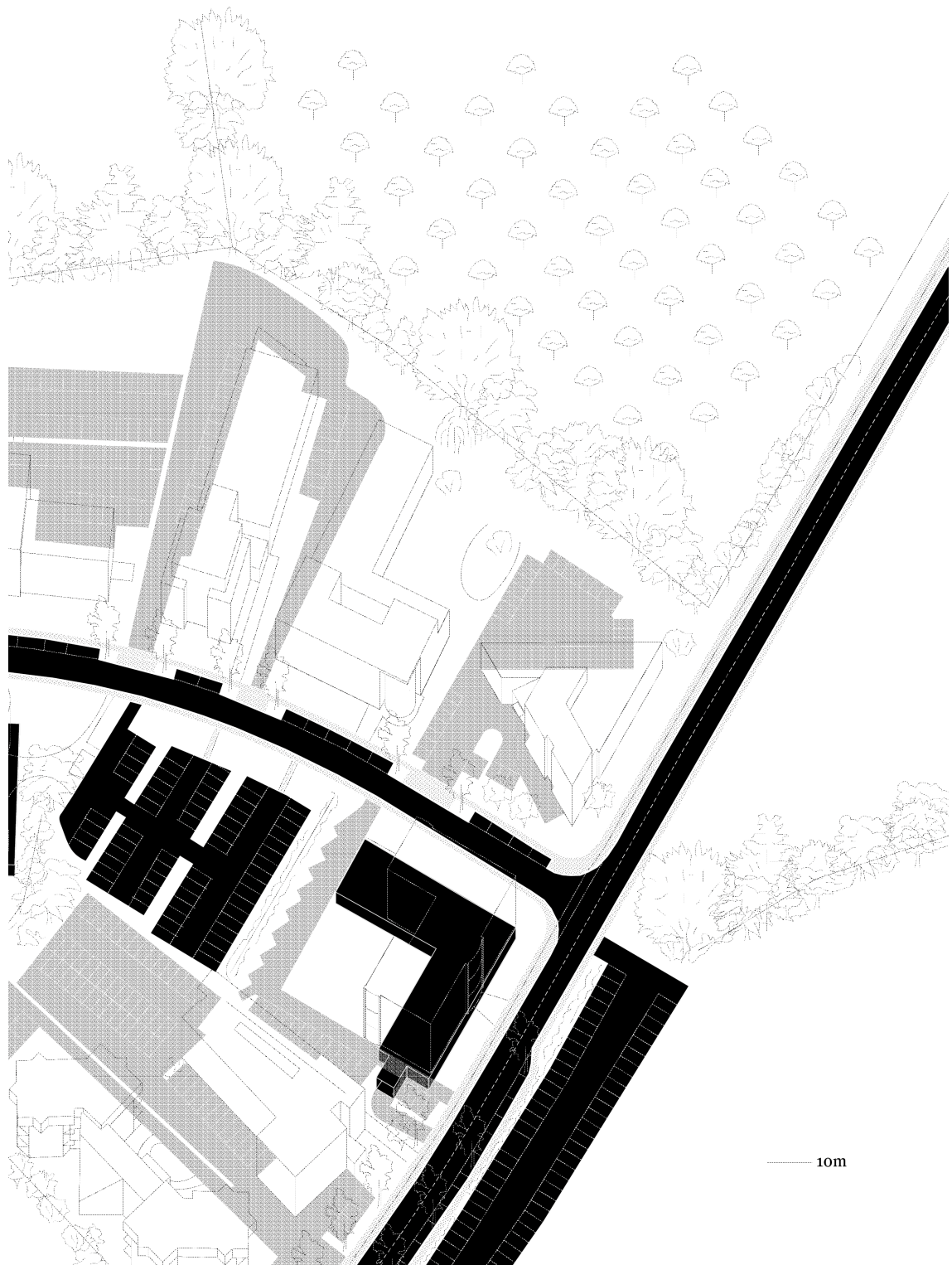
The latter part of this paper will now examine four territorial figures which structure and characterize the spaces of automobility within the case study. Each figure emerges from a specific combination of elements. After a typological description, they will be illuminated through the international references and models influencing them, their planning history and palimpsest analysis. A sample of each figure will be further characterised through local genealogy and a description of the spatial qualities each element provides.

The Pearl

The first figure of automobility is the pearl. A pearl is a clearly defined spatial unit entirely conceived with the functional demands of automobility in mind. The road layout is only minimally linked with pre-existing networks and plot division lines. A strong formal contrast between the pearl and its surroundings is established, the pearls being either demonstratively exposed to or carefully hidden from the adjoining fabric.

The pearl is a product of the shift in industrial policy operated by the state planning apparatus after the second world war. In a context where the transportation of goods by road transport gradually overtakes rail and river, the implementation of a new heavy road infrastructure (motorways) capable of absorbing and distributing industrial surplus (Magalhães, 2024) and agricultural land consolidation allows planners an almost blank slate to draw spaces for a new, light, industrial base. Contrary to nineteenth century offices and industrial buildings, models such as the “green factory” from Le Corbusier (1944), or corporate architecture in the United States by architectural firms such as S.O.M. are used as models. Early instances of pearls in the United Kingdom, such as the Team Valley and Blantyre Trading Estates (resp. 1937 and 1946) have been studied by Belgian planners (Ryckewaert, 2011), and urban planning manuals featuring them, such as (Gibbert, 1959) circulated widely in Europe.

In Belgium, one of the first examples of these *zonings industriels* is located on the Hauts-Sarts plateau, at the intersection of Liège's northern motorway ring and its connection to the port of Antwerp. This exemplary prototype already contains the hallmark of similar pearls within the case study area: its boundary is defined not by historical road layouts, but rather by proximity to the motorway and administrative divisions. The deep parcels allow for a great amount of flexibility, allowing for plot owners to grow their business without altering their street-facing façade. Street space is wide, allowing continuous expansion within its boundaries. Buildings are autonomous and lie within a carefully curated “garden” which allows the industrial park to proudly be seen from the motorway (Sprock, 1963; Ryckewart, 2011). The Liège-Aachen diffuse city has long been defined by transcontinental infrastructure, lying on an east-west axis which, in 1965, saw one of the first motorway of Belgium to be built (Ryckewaert, 2009). In both Belgium and Germany, planners thus provided zoning opportunities for a series of pearls to be strung around the motorway necklace, a process still perdures today. In the province of Liège, this highly spatialised industrial planning contrasts with a more regulatory-based *laissez-faire* approach towards residential planning (Nols & Parent, 1972, also Healey, 2006). In the Aachen region,



[Fig.1] Pearl, Oberforstbach (D), spaces of automobility. elaborated by the author.

the implantation of specialized auto-oriented pearls allows for urban expansion within clearly defined units surrounded by landscape continuities (Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie, 2021).

The pearl illustrated here (fig.1) is located in Oberforstbach, south-east of Aachen, directly linked to the exit number 2 of the A44 *Autobahn*. Founded in 1985 and expanded in 2000 (Pascalstrasse, 2025), it is a more recent example of this type. Housing predominantly offices and light industry, the *Gewerbegebiet Pascalstraße* bears the hallmarks of its models and predecessors, adopting most of its spatial characteristics. Although some ancillary pedestrian and cycling infrastructure can be found, automobility is still the dominant paradigm. However, contrary to the original model of the pearl visible from far away, this example chooses to shelter itself from its surrounding through layers of dense vegetation.

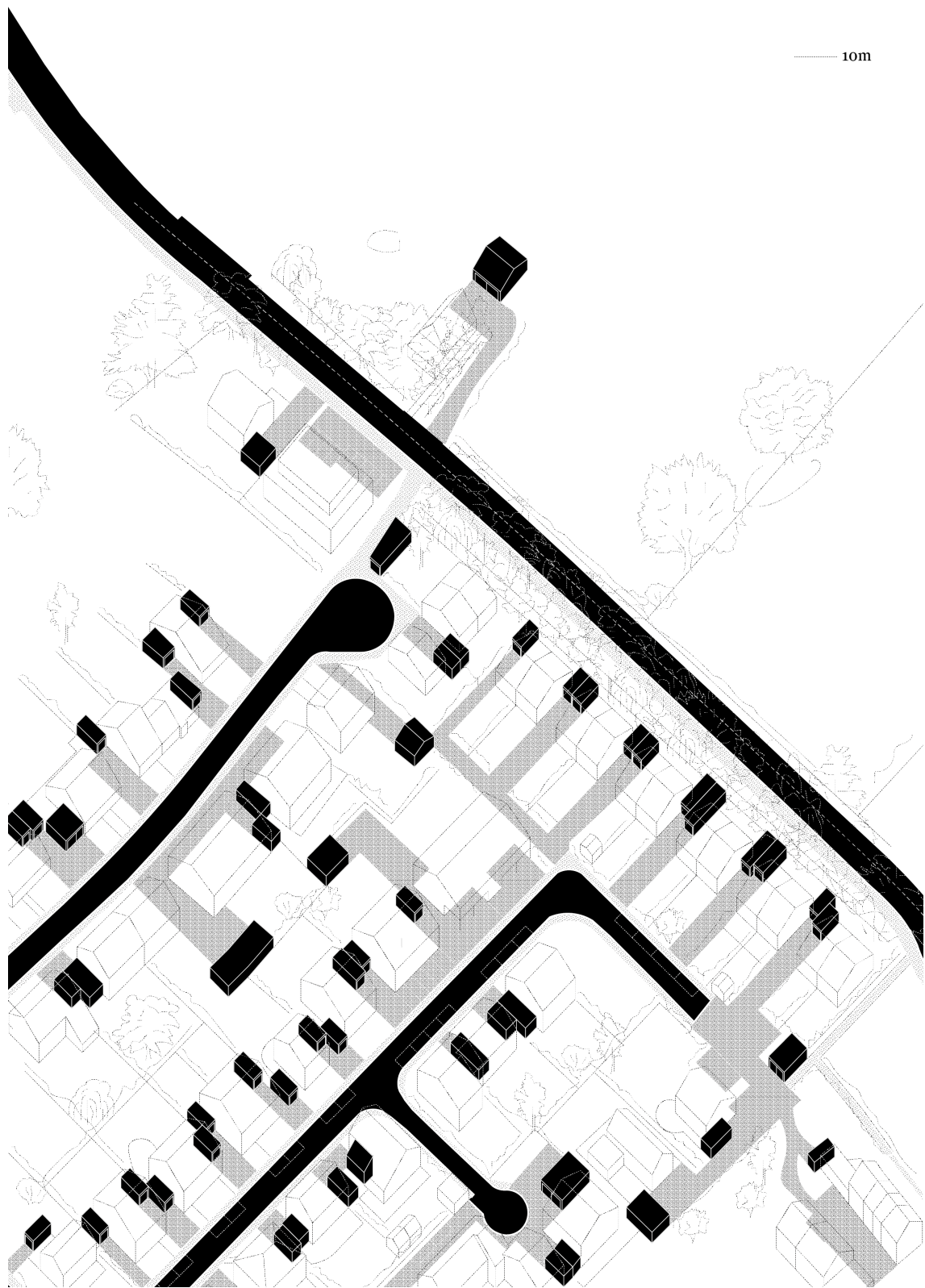
Car space is part of a carefully constructed scenography, a landscape designed to enhance the corporate image of the plot owner as well as create a collective spatial structure which distinguishes itself from its surrounding environment. Indeed, if the plots themselves are privately owned, a common landscape charter must be followed. The circulation space itself is wide (allowing for potential future extension); each function (car circulation, pedestrians, cyclists, parking) is clearly marked and separated by vegetation buffers. Between the road and the front façade of the building, high vegetation is sparse, and a few parking spaces are linked to the entrance. The rest of the space of automobility – mostly more parking and logistics – is rejected behind the building or under it. Empty plots are not kept idling: while waiting for a potential future building, they serve as reserve parking areas. Thus, in terms of quantity, most of the space of automobility is taken up by parking. Not so much to fulfil a particular demand, but to keep a certain future expansion of the industrial park possible. It is space still in becoming, yet inward-looking: buffer and parking as a temporary solution, waiting for some better destiny.

The Room

The second spatial figure resulting in the production of spaces of automobility is the room. Mainly occurring within predominantly residential areas, the room is the product of the specialisation of the road network which accompanied the advent of the car. Indeed, to facilitate as well as to accommodate the nuisances caused by higher speed travel by car, new typologies had to be invented. An environmental room is designed to direct car traffic onto selected roads while discouraging vehicles to use other, primarily residential, streets. A room is thus composed of an outer perimeter, where through traffic is permitted and an inner space with a controlled, mostly nuisance-free environment.

The term “environmental room” stems from the influential report by the engineer Colin Buchanan (1963), in which he suggests ways to adapt the British urban fabric to the arrival of the car. This model is influenced by a genealogy of traffic engineers, urbanists and architects focusing both on the urban scale (such as Sert in Bogotá, or Hilberseimer in the United States) and the local one (such as the influential Radburn neighbourhood in New Jersey). In this last example, the network is separated into main arterial roads, residential *cul-de-sacs*, as well as paths enabling pedestrian permeability. This model has become ubiquitous in neighbourhoods which were purposefully built for the car, using bypassing roads and residential “ladders” (Pope, 2015), as well as a strategic concept to retrofit historic city centres (such as in Ghent, or indeed Aachen).

The figure of the room can also be implemented in the diffuse city, by manipulating the spatial qualities of existing roads. The inherited network, altered to allow for high speeds, will serve as the walls of the room, while the inner space, previously one or several agricultural fields, is allotted using new dead-end streets. In the case study area, one can observe that environmental rooms have served as a privileged method of urban expansion.



[Fig.2] Room, Oberforstbach (D), spaces of automobility. elaborated by the author.

In the German part of the case study, rooms are the most common figure of urbanisation after the second world war. Indeed, they are not only compatible with the demands of the system of automobility, but are also the result of large, concerted real-estate operations, in which a whole room is allotted at once, in lockstep with incremental revisions of the zoning plan (Blotevogel, 2018). In Belgium, however, where real-estate development has historically mostly been rather limited in favour of private operations (Halleux, 2005)¹, large-scale environmental rooms are rare outside major urban centres.

The room illustrated in fig.2 is also located in Oberforstbach, near Aachen. It was allotted in the 1970s, on agricultural land, as a means to expand the agglomeration without producing a continuous urban fabric. The urban typology of the village was profoundly transformed by this operation, going from a linear settlement along a road to a more compact shape surrounded by agricultural landscape. The resulting transformation was thus twofold: on the one hand, producing an *ad hoc* residential environment built for the car, as well as, on the other hand, adapting the existing road network to handle high speeds, by bordering it with dense vegetation, limiting pedestrian accessibility and encouraging the adjacent buildings to rotate their address towards another street.

On top of this highly specialised circulation network (some adapted, some purposefully built for the car), the other elements of the spaces of automobility are mobilised to define the specific spatial articulations of the environmental room. Firstly, buffer space is necessary to enable the higher speed road to function properly: the edges of the inherited road have been outfitted with a dense vegetation screen. Secondly, buildings for the car (here mostly private garages) serve a variety of purposes, functional or representational, depending on the housing typology. Indeed, these elements, at the architectural scale, play a fundamental role in characterising the urban fabric (De Vos & Heynen, 2011): they are alternatively placed at the edge of the room, as further buffering, hidden behind the house, integrated in its volume, or placed in front of collective housing, mediating between the public road and the private interior. Apart from the circulation network and the relationship to the exterior of the room, today, no collective purpose is allocated to the spaces for the car.

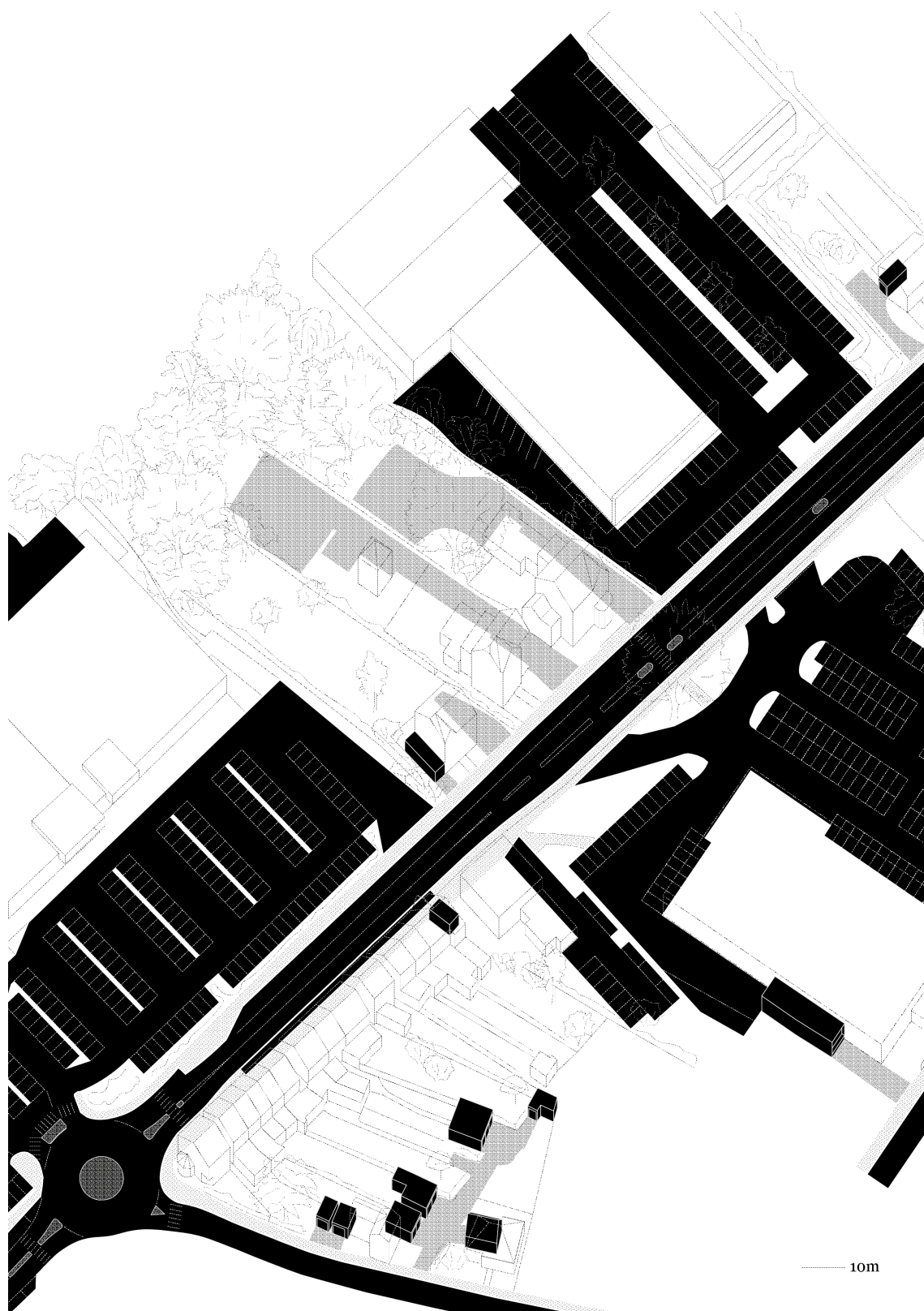
The Strip

A third territorial figure which can be found in this case study is the strip. Contrary to the previous two figures, it is less the result of a single planning operation, transposing international models to a local context, than an incremental process of morphological transformation of pre-existing urban fabric. For the present purpose, a strip can be defined as a major piece of the inherited road network (such as a historical *chaussée*, or the main entrance to a city centre) on which a large variety of automobility-linked uses are located. A strip is also characterised by its great width, which allows for a complex circulation and spatial articulation system to take place. A strip is thus hybrid in nature, with spaces built for the car and ones that were sometimes dramatically adapted ones. In the case study, it is within these hybrid fabrics that most of the reproductive services for the system of automobility are located (such as garages, petrol stations, car dealerships, etc.). These services cohabit closely with residential buildings, some of them transformed into commercial uses.

The origin of the strip might be difficult to detect if, as in the previous two figures, one relies exclusively on urban planning manuals from the *Trente Glorieuses*. Indeed, plans to adapt the territory to the car mostly used new roads as instruments to transform the surrounding urban landscape, not so much transforming existing ones, which would be granted, resources permitting, some level of protection². The effect of the rise of automobility on the inherited

¹ This long tradition was amplified by the De Taye act of 1948, which provided financial incentives for people building their own houses.

² From the “roadscape” (Bernard, 2009) of early American Parkways, urban highways (Appleyard et al., 1965; Leloutre & Pelgrims, 2017), to the first German *Autobahnen* (Zeller, 2007), new roads were designed as to sublimate the scenic qualities of the surrounding landscape, by emphasising and/or transforming it.



[Fig.3] Strip, Soumagne (B), spaces of automobility. elaborated by the author.

roadscape was mostly documented after the fact, some with a decidedly negative point of view (Nairn, 1955, 1957), some later with a more ambivalent sense of curiosity (Venturi et al., 1972). Large signage, ample parking, and distinctive buildings stepped back from the road all aim to provide a maximum degree of comfort to the driver.

The functional hybridity found along the strip is not one defined by purposefully planned zoning documents but is the result of an incremental process relying on historical precedents, such as a location at the edge of a denser urban fabric, or by car-related uses gradually replacing an older industrial base. Therefore, strips can be found within the case study in places along main roads urbanized before the automobile, as well as where urban planning designs are less spatially defined, such as in Belgium.

The portion of strip represented in fig.3 is located in the Belgian municipality of Soumagne, on the National Road 3, also nicknamed *Chaussée Charlemagne*. Indeed, this historical road was established in the late 18th century as the main link between Liège and Aachen (Smitz, 2021). This axis was subsequently partially paralleled with a railroad running 300 metres north, and a motorway 500 meters south. After the railway closed and the mining industry ceased, the economic base along the *chaussée* shifted towards tertiary industry and commercial services, mixed-in with the remaining row-housing stock.

While the spaces of automobility spread out alongside this transformation, the dimension of the road itself stayed the same. It however changed in morphology over time, becoming more specialised in its use (such as through sidewalks, bicycle and bus lane, roundabouts, road markings, on-street parking separating the circulation from the facades).

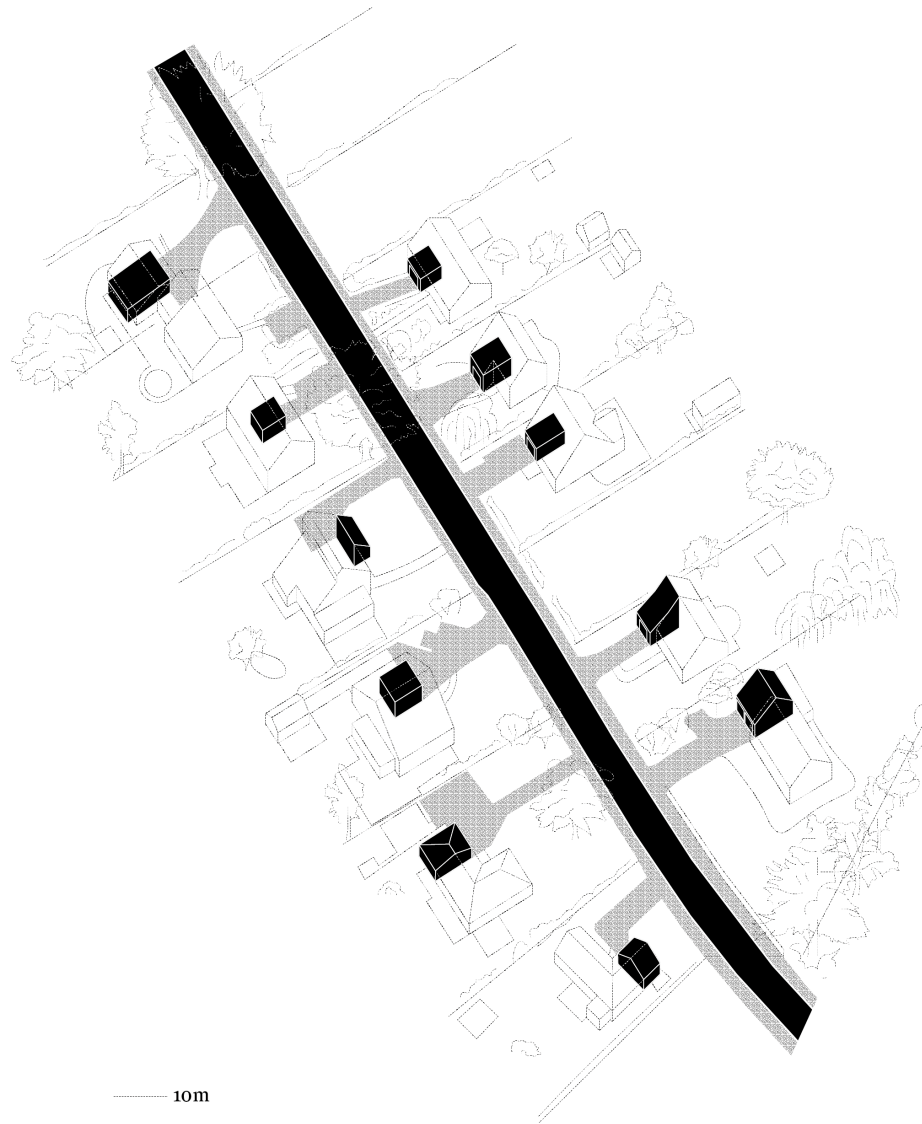
The main axis of the strip is also complemented by a series of back alleys used for parking and logistic supply, giving more articulation to the figure. Parking space is divided between private (in back-alleys, hidden) and accessible to the public (sprawling, visible from the road). Large commercial buildings are set back from the road in order to be better seen from the driver's perspective, while plots built before the car protect themselves with narrow buffer mechanisms (parked cars, trees, sidewalks). Within this figure, contrasts between spaces built for the car and adapted to the car are evident and striking.

The Filament

The last figure discussed here is the filament. A filament is a result of a simple operation – building a house next to an existing road – repeated countless times over. It is a figure built upon the inertia of the inherited network, urbanizing selected roads and forming oversized perimeter blocks. Despite this figure not introducing new roads, it still has a great impact on the typology of the spaces of mobility. Indeed, by consolidating some roads and privatising their immediate surroundings, it erases a historically much finer mesh for local paths (Marghem, 2022), contributing as well to the hierarchisation and specialisation of public spaces.

This figure, which is significantly more prevalent in the Belgian side of the case study than on the German one, forms an integral part of what has been defined as the *Banlieue radiense*, or “radiant periphery” (Smets, 1986). A typically Belgian urban form, this result of a widespread aspiration for homeownership in an idyllic rural setting, yet relatively close to the city, has been described in literature (e.g., in De Meulder et al., 1999) and was made possible through a series of regulations at the national level promoting home-building by individuals and subsidising car use for work-related travels. This process was also helped by the late arrival of zoning plans (Direction de l’Aménagement régional, 1987), which themselves were over dimensioned and consolidated such ribbon-like urban morphologies (De Decker, 2011; Buitelaar & Leinfelder, 2020)³.

³ It might be useful to note that, within the case study, filaments are indeed a product of the car. Contrary to most of Flanders, the historical settlement pattern of the Herve plateau is one of dispersion (Lefèvre, 1926; L’Equerre, 1963), not of ribbon-development. In



[Fig.4] Filament, Clermont (B), spaces of automobility. elaborated by the author.

Germany, a stronger culture of integrated spatial planning and the earlier arrival of zoning plans, in 1956 already (Curdes, 1999), hindered the proliferation of such figures. Near Aachen, ribbon-like developments were absorbed into a compact larger settlement or excluded from buildable areas altogether.

This figure is illustrated by a portion of a filament located north-west of the historical village core of Clermont, Belgium (fig.4). The road on which the single-family detached houses are anchored to follows a ridge, granting each plot a panoramic view of the surrounding landscape. This one-way, individual relationship towards the landscape serves as the dominant spatial theme of the figure. Indeed, spaces for the car (driveways, garages) are systematically located facing the road or integrated within (or sometimes underneath) the building volume, regardless of cardinal directions. Furthermore, vegetation is also planted to visually hide one's neighbours and the road, while keeping the fourth side, the most important one, bare of any high trees. Finally, compared to more ancient row-housing (Grosjean, 2010), buildings are set back by seven metres from the edge of the road, eschewing a fine articulation between the private sphere and a public domain reduced to its barest functional characteristics.

Conclusion: four characters in search of an author

The pearl, room, strip, and filament are ways to give form to products of the system of automobility in the diffuse city. These figures emerge from a description of the contemporary urban fabric and are representative of specific ways to adapt the territory to the automobile. Despite the car being a highly transferrable object (Dubuy, 1995), able to work in many contexts, land usage allocation and the local application of international urban planning models alone are unable to properly describe the spatial conditions described in this paper. Indeed, while sharing a comparable similar macroeconomic context, differences in Belgian and German planning cultures have resulted in diverse ways to consider the existing urban morphology and varying degrees of formal control on its transformation. Each figure can be read as examples on how to adapt a complex pre-existing environment, spanning from the pearl, which imposes its own geometry, to the filament, which heavily alters the landscape through a series of discrete light grafting operations.

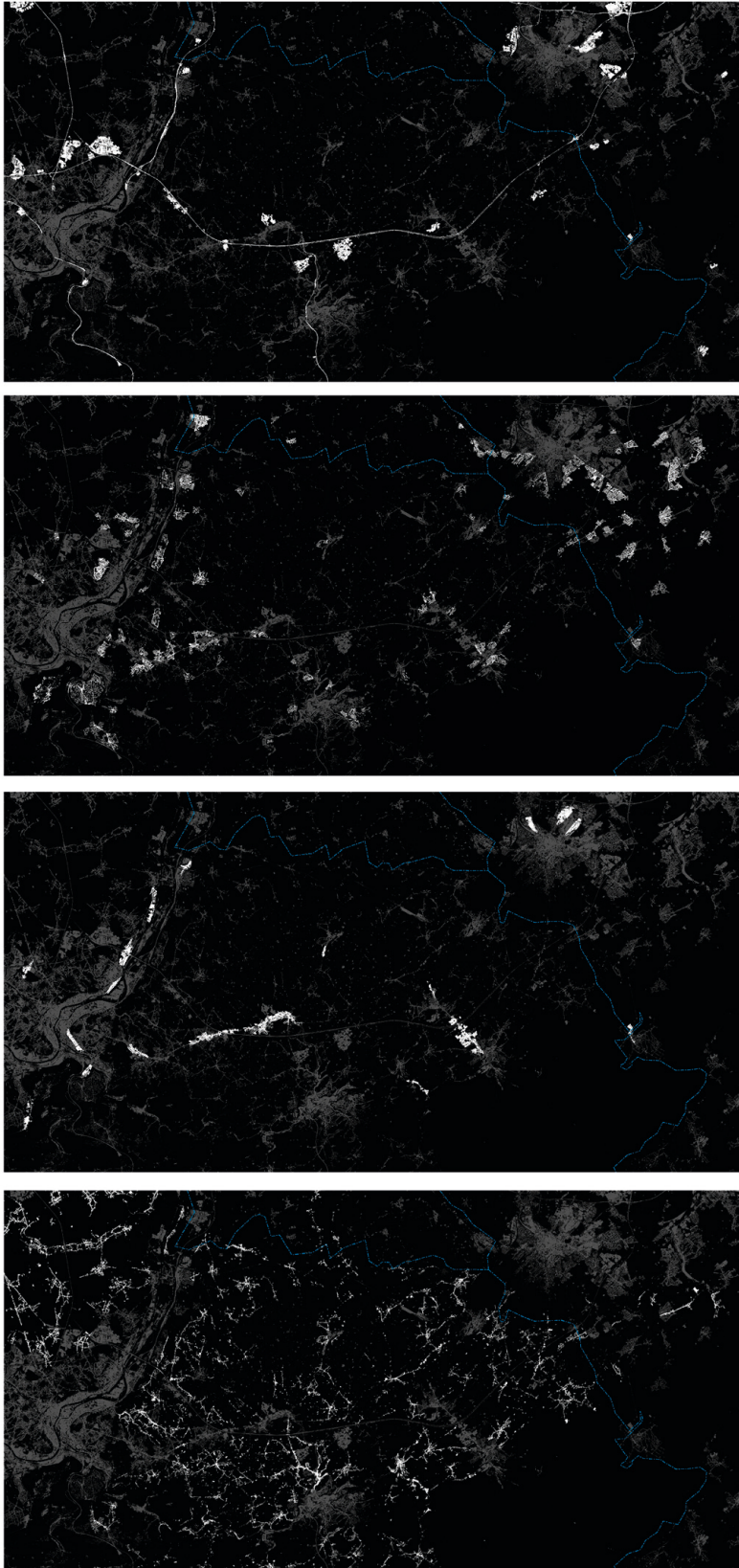
Within the larger frame of the socio-spatial transition, these figures serve as reference environment for a future transformation project in which the car no longer benefits from a hegemonic position. To parallel Luigi Pirandello's *Six characters in search of an author* (1921), these figures, despite their anonymity compared to canons of urban design history, have a compelling story to tell, yet they need to be defined in their complex and sometimes contradictory state to take part in any future transformation of the territory.

These figures demonstrate a capacity to accommodate change: the strip shows it can absorb a wide array of different functions, while the pearl features vast built-in spatial reserves, only in appearance locked-in for exclusive car usage.

These figures contain potentially strong collective landscape structures, qualities which often lie unrecognised and unused due to the focus on a single plot.

These figures contain a multitude of diverse morphologies; activating them redefines urban landscapes, touches on the articulation space between private and public realm, and opens ways to live differently in new housing typologies. As this territory has been capable of welcoming not only one type of space of automobility, activating this real-estate could lead to several post-automobility futures. In particular, the distinction between spaces built for the car and spaces adapted for the car can offer many clues.

For finally, these figures illustrate the sheer amount of space locked into automobility, waiting to play a role: more square meters are devoted to the car than to the buildings served by it.



[Fig.5] Distribution of the figures within the case study. Impermeable surfaces (Copernicus 2016) in grey and white, national borders in blue. From top to bottom: pearls, rooms, strips, and filaments. elaborated by the author.

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