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*Three centuries*

*of maps*

*in the Ile-de-France*

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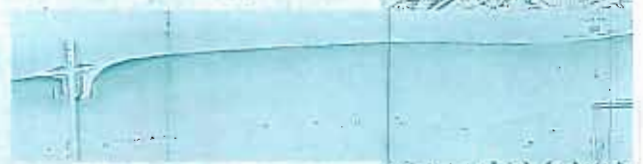
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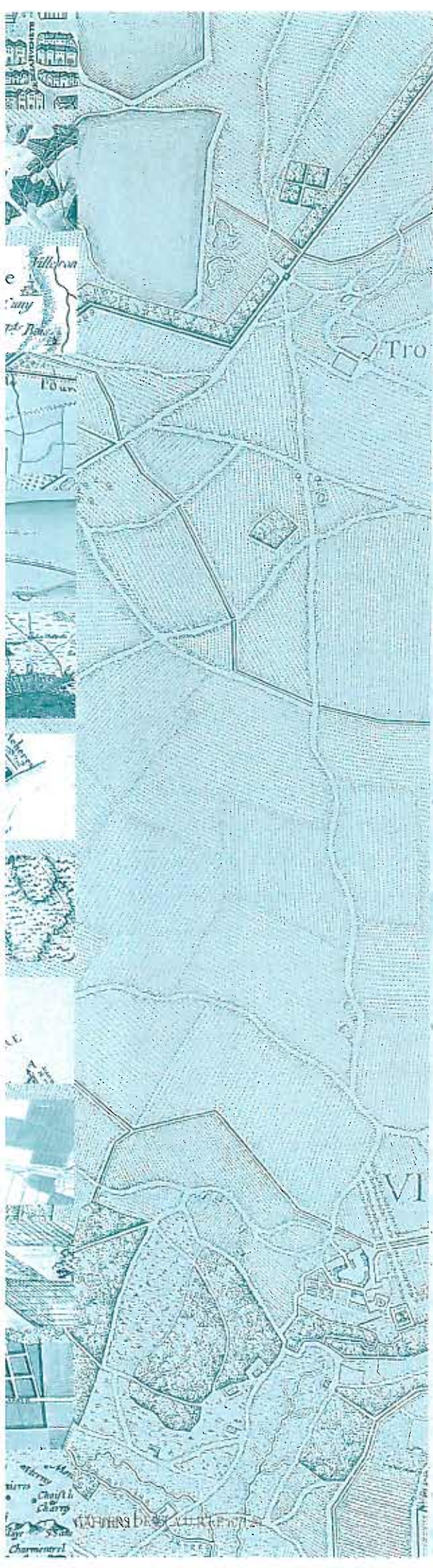
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## *(Map-) reading between the lines*

**T**he Ile-de-France was the land of kings,  
which explains why it was mapped out at such  
an early date and so frequently.

*For three centuries, the maps were superposed,  
and even overlapped where certain parts of the region were concerned,  
reflecting the part man has played in his work on the forests,  
fields, rivers, roads, towns...*

*Apart from the sheer emotion we get from looking at these old maps  
and plans, they help us to piece together the logics of planning,  
understand why particular decisions were made at a particular time,  
and admire the boldness and modernity of our predecessors.*

*They also enable us to shake off our a priori assumptions,  
cast off the nostalgic attitude we have in idealising the past.  
Reading these maps shows us that, even in the 18th century,  
certain things we criticise today already existed: inappropriate building,  
over-straight routes, reforestation at the expense of gardens, and so on.*

*The town has always been built upon the town,  
preserving or destroying the vestiges of the past.*

*Let us not be mistaken: this by no means implies that  
we should wipe out every trace of the past.*

*On the contrary, the aim of this study is to gain a better understanding of  
how things were before, in order to respect that earlier state.*

*But let us observe the past with lucidity  
and maintain the freedom planners have always had,  
whilst carefully assuming and explaining our options.*



**Jean-Pierre Dufay**  
General Manager of LAURIF

*Translation: Mary Pardoe*

# Maps as a reflection of the times

*In its constant concern to gain a better understanding of realities in the Ile-de-France, the IAURIF has carried out an extensive study of maps of the region, covering a period of three centuries. The results are presented in two special issues of the Cahiers.*

*In Cahier no. 119, consideration was given to the question of the region's administrative boundaries, after which the maps were presented and compared and the important changes that have taken place in different parts of the region were pointed out.*

*In this new Cahier our subject is not quite the same. After a general approach to particular places at particular times in their history, we move on to a more thematic approach.*

*In this number, we either take a look at the history of a particular area (forest, park) or an important achievement (e.g. the development of the railway network) and see how it has evolved, or else we single out a particular aspect of that history (a cultural link, a technique relating the conception of ordinary roads to that of the gardens and the mapmaking of the time).*

*We thus compare the three major structuring networks (roads, railways, waterways) to their representations on maps.*

*This enables us to follow their evolution.*

*What do they tell us about the past?*

*What can we learn about the future?*

*How reliable are they?*

*As for the planning of towns or of important natural spaces such as Saint-Germain Forest, this Cahier helps us to understand how the planner's intentions are shown on maps. To a person who is able and willing to read these maps, they have a great deal to tell us, for the lands, the vagaries of history, the changes that have taken place, and so on, often appear more clearly on these maps than in a photograph. The cartographer chooses what is to be shown on his map.*

*That photograph is that of a particular moment in time. The planner of today must take into account the picture these maps provide if he is to understand the area under his control. Indeed, that picture also reflects the permanency of certain sites or landscapes that are part of the everyday environment in the Ile-de-France, hence an element in the identity and roots of its inhabitants. It is also up to those*

*in charge-in full awareness of the facts-to respect the balance that has been maintained over the centuries; it is up to them, at a time when new facilities are becoming increasingly necessary, to preserve the layers of memory that lie buried in the ground and or in earlier developments.*

*The maps thus enable us to reconcile the archaeologist and the town planner, the historian and the visionary of tomorrow's city.*

*Development, may, as a rule, be understood through its important achievements, some of which, two or three centuries after work was begun, are still in their gestation period or in the process of accomplishment. We thus look at the questions of new towns, the hearts of old cities, the building of important infrastructure (roads, railways and waterways). This Cahier provides a different approach, through time and the marks man has left on town and country, and above all-because the material is easier to analyse-on paper, i.e. through the various background papers.*

*Thus, in all these pages, we are busily searching for what we should call the 'auxiliary sciences' of development, as we talk about the auxiliary sciences of history when we are studying heraldry, chronology, paleography, climatology etc.-any science that throws new light on or gives a new slant to social history.*

*Development also has its auxiliary disciplines, disciplines that can stand on their own but which we have chosen to approach through their relationship to development in the Ile-de-France in order to see what they have to give us, what teachings they can provide for us today in gaining a better understanding of our region.*

*Seen from that angle, the old maps, plans and land registers (cadastres) have a great deal to teach us, not only through what they show, but also through the things they do not show and those they merely hint at.*

*Studying three centuries of such documents enriches our understanding of our region: we see, of course, how it was apprehended by our ancestors, but, even more, we gain a better understanding of the logic that lay behind their development projects.*

*Indeed, the very fact of giving priority to hunting grounds, roads or even arable land is interesting.*

*Such preoccupations are reflected in different ways in the development of planning and help to give us a better understanding of its true value and perhaps even help us to avoid making certain mistakes ourselves.*

*The articles in this issue are not only very diverse, they are also complementary.*

*The main thread lies in the great wisdom of the centuries, reminding us that, whatever the grandeur and scale of the project-and from Versailles to the constantly changing metropolis, such grandeur and scale are certainly not lacking in the Ile-de-France-the specialist in national and regional development does not begin with a blank page: he has at his disposal a whole notebook with closely written pages-a true set of specifications-the first lines of which were set down by nature, before the rest was written by the generations that have preceded us.*

Philippe Montillet

IAURIF

Translation: Mary Pardoe

# *The panoramic city:*

## *developments in aerial views of Paris and its suburbs since the 16th century*

*Every age, every society gives rise to an original view of the City and its transformations.*

*Within the European urban tradition, Paris and the Ile-de-France have their own history, which we shall look at briefly, through a singular mode of representation: the bird's-eye view. From the first plans in the 16th century to the virtual images that are now becoming widespread on the threshold of the 21st century, the history of aerial views of the metropolitan area of Paris reflects not only the progress that has been made in techniques of representation, but also, and above all, the way the inhabitants see and imagine it.*

Laurent Perrin



## The bird's-eye view as a 'portrait' of the city

During the Renaissance a new means of representing the city became widespread: the plan, i.e. a drawing based on a systematic survey of the streets, monuments and fortifications of a city, using a more or less common scale and identified by a toponym. Most of the documents that have come down to us are flat projections (as opposed to perspective views), but a few of them - probably the most expressive - are so - called *bird's-eye views*: they adopt axonometric projection, a compromise between geometry and perspective, i.e. between the map and the image.

Some authors see the advent of the town plan as a sign of the beginnings of modernity<sup>(1)</sup>. Indeed, from the 16th century onwards, cartographers showed much greater concern for topographical plausibility and tried to move away from the empiricism and intuition that, for them, had characterised the Middle Ages. However, compared to the maps produced by the first surveyors at the end of the 18th century, the *bird's-eye view* was, above all, essentially a symbolical, expressive picture, whose function was to provide a three-dimensional account of the appearance of a city's districts and monuments at a particular moment in its history.

(1) Jean Jacques Aillagon, 'Introduction (Cahiers du CREPIF, n°50, March 1995)

(2) Serge Briffaud, 'Le monde vu d'en haut. Une histoire de la vision panoramique' (Paysage & Aménagement, n°31, June 1995)

(3) Jean Dérens, general curator of the Bibliothèque Historique de la Ville de Paris has shown that the plans of La Grande Gouache, La Tapisserie, Braun, Munster, Basle and Saint-Victor all came from the same original document produced by a sort of 'workshop' working on plans of Paris. ('Les plans généraux de Paris au XVI<sup>e</sup> siècle' in 'Paris à vol d'oiseau', Paris et son Patrimoine series. DGAAMP).

(4) This cultural convention seems to be shared by certain Asian civilisations: see the analysis made by Augustin Berque, 'Les raisons du paysage, de la Chine antique aux environnements de synthèse', page 42 (Hazan, 1995).



8 *'Fief plans' or land-use plans existed to enable the lord of the manor to locate and evaluate the contents of his properties in order to set taxes. Most of them were in two dimensions, but a few were three dimensional, as may be seen from these two 17th-century land-use plans, showing part of the lands belonging to the abbeys of Saint-Victor and Saint-Sermain-des-Prés with their civilian or religious monuments and a few quite indicative houses (notice how Mount Valérien has been transformed into Golgotha, thus showing the influence of religious imagery).*


Considering the difficulties that are inherent in this genre, the use of the bird's-eye view is justified by a desire to impress and captivate the viewer by the sheer expanse of what is shown to him, but also, as Fontenelle pointed out (quoted in Emile Littré's *Dictionnaire de la langue française*), a landscape has to be observed from a height, otherwise what the viewer sees is merely separate elements and not a landscape. Speaking about another type of bird's-eye representation - the 'panorama' - Serge Briffaud very rightly notes that it bears an original message about the world, whose specificity explains the irresistible attraction it has for us, irrespective of the nature of the view: 'When contemplated from a height, is not a vast area of suburbs as captivating to the eye as the most bucolic of Alpine valleys?'<sup>(2)</sup>

### 16th-century plans of Paris

The 'general plan of Paris in the 16th century' reflects Francis I's desire to make Paris once more the capital of the Kingdom of France after the the Hundred Years War and the ensuing period of political uncertainty. The choice of the bird's-eye view for the six successive versions of this plan<sup>(3)</sup> was a fine means of asserting his sovereignty over the city<sup>(4)</sup>. They

use axonometrical projection, adjusted in places to highlight certain monuments, and the Seine appears in the centre. The river's width is exaggerated and as the vertical axis of the composition it thus symbolically divides the city into its three orders:


- to the left, 'the City', the domain of temporal power-i.e. that of the provosts and merchants, but also and above all that of the King, represented in the foreground by the Château du Louvre;
- in the centre, the oldest part of Paris ('la Cité'), the seat of spiritual power, symbolised by Notre-Dame cathedral;
- to the right, 'the University', the seat of knowledge and learning, with its many colleges and abbeys, including Saint-Germain and Saint-Victor.

 *The 'Plan de Bâle' shows Paris in about 1550, surrounded by its city walls and immediate suburbs. Engraved in wood embellished with watercolour, it expresses a certain popular 'medieval' imagery with its many picturesque details (small figures crossing the Seine by boat or pushing a donkey near Sobelins mill, wells, crosses, etc.), which gives it an artistic rather than a technical dimension. The plan's orientation (east is at the top of the sheet) highlights the tympanum of the religious buildings.*

These plans all use the same codes of representation, although the techniques and scales are different. By comparing them, it is thus possible to retrace the chronology of the various developments in Paris at that time: for example, the sewer in the Rue de Montmartre is no longer visible on the Saint-Victor plan because it has just been vaulted, whereas it is open in the earlier versions. Likewise, new housing developments appear in certain suburbs, where earlier versions indicated the presence of gardens or fields.

## 17th-century plans

Bird's-eye views of Paris dating from the Grand Siècle (17th century) and, even more so, from the Age of Enlightenment, show the sovereigns' tastes for embellishment and ornamentation. Drawn up at the time of the revival of interest in cartography by the 'géographes en cabinet'<sup>(5)</sup>, these engraved plans represent Paris as it was under Louis XIII and its recent development: the Place Royale (which had become the Place des Vosges), the Tuileries palace and gardens, the new ring of walls around the City, and so on. The presentation is very similar to that of 16th-century plans, with west at the bottom and east at the top, which has the advantage of highlighting the new works carried out to the west of the Louvre - early premises of the 'Grand Axe' - by placing them in the foreground.

 *The conventions of design progressed in the early 17th century with the plans by Mérian (1615) and Vischer (1618): the cartographer tended to slope the ground much more, thus making the hills on the skyline and the sky itself more visible. The Seine is no longer represented vertically, but slightly diagonally. Consequently, the viewer now has a three-quarter view (rather than a front view, as in the 16th century) of the great monuments of power - the Louvre, Notre-Dame, the Hôtel de Ville. This brings out the proportions and outline of their façades.*


## The Turgot Plan

Of all the bird's-eye views of Paris, this is the one with the finest detail and to the largest scale. It combines reasonably good topographical precision with a great abundance of detail in the architecture and landscape, thus providing invaluable historical information about the

(5) Michel Le Moel, 'La cartographie parisienne au Grand Siècle' (in 'Paris à vol d'oiseau', Paris et son Patrimoine series. DGAAMP).



capital in about 1740. Skilfully drafted by Louis Bretez, this plan gives an extraordinary impression of relief. The proportions (perpendicular and horizontal scales) have been carefully chosen to avoid flattening volumes or masking the streets, which, moreover, have been systematically widened. Furthermore, the volumetry of the street blocks has been accentuated by contrasts in lighting obtained by the representation of appropriate shadows. This process was already in use in the other plans, but in a more random manner. That is why many people consider the Turgot Plan as the finest, most perfect bird's-eye view of Paris<sup>(6)</sup>.


 Despite its undeniable beauty, this plan seems to have lost in sensitivity what it has gained in precision (line and measurement), compared to its 16th-century predecessors. This is partly due to the fact that the Turgot Plan is a copper-plate engraving, which obviously implies a certain 'harshness' in the lines.

### The raised relief model

We must also mention the raised relief model, although such models have never been made of Paris (the term 'maquette' seems more appropriate here). However, the raised relief model has a special place in the history of urban representation, because of its essentially military function. The raised relief model was probably invented by Italian engineers in the 15th century in order to study means of protecting Levantine cities from the Turkish armies. It disappeared with the 1870 war because the bastioned fortifications proved to be incapable of withstanding the Prussians' new artillery<sup>(7)</sup>.

Its hour of glory in France came with the reign of Louis XIV, who ordered a set of raised relief models to be made of the cities that had recently been incorporated into the Kingdom, so that he could see for himself the bastioned fortifications proposed by Vauban and Louvois. Like the bird's-eye view, the raised relief model shows the City in its entirety and in three dimensions, but the great advantage the latter has over all other forms of representation is that it adds *'la ressemblance et la séduction, grâce auxquelles le Prince a l'illusion de décider...'*<sup>(8)</sup>

Because of its strategic function, the raised relief model takes great care to provide an exact representation of the city in relation to its topographical site. Indeed, it is of the utmost importance to military engineers to know whether or not a city can be bombarded from a particular hill, in order to take the necessary protective measures. This is why, despite its strictly utilitarian function (as opposed to the symbolical function of the bird's-eye view), the raised relief model pays such minute attention to the landscape around the city.

 This magnificent raised relief model, damaged by flooding, was completely restored in 1986.

12 The representation of the city itself (the models of the monuments are particularly meticulous) and that of the surrounding landscape, with its very clear structure, are very fine.

## 2-The bird's-eye view at the service of major town planning projects

In the 19th century, the bird's-eye view became obsolete, preference being given to the flat projection, which was more reliable and precise. However, the bird's-eye view was still used to show clients the general appearance of major development projects that were designed to change the face of the capital. The more complex and large-scale the operation, the more the aerial view was essential as a means of expression and decision.

### The triumph of academicism: the World Exhibition of 1900

A world exhibition was an exceptional means of raising public and private funds in order to realise a number of major works to provide urban facilities. Between the end of the 19th and beginning of the 20th century, Paris resorted to such measures several times. These projects crystallised the attentions and wildest ambitions of the boldest

(6) Bernard Rouleau, 'Le Plan de Turgot' (in 'Les Plans de Paris du XVI<sup>e</sup> au XVIII<sup>e</sup> siècle'. *Les Cahiers du CREPIF*, no.50, March 1995).

(7) Nicolas Faucherre, 'Outil stratégique ou jouet princier?'. *Monuments historiques*, no.148, 1986.

(8) René Siestrunk, 'Plans reliefs et aquarelles' (in 'cattes et figures de la terre', Centre Georges Pompidou, 1980).

designers, as is shown by the history of the building of the Eiffel Tower.



*This aerial view of the project for the World Exhibition of 1900, presented by Louis Bonnier, architect*

**13** *in charge of general facilities, was meant, above all, to be pleasing to the eye.*

*The choice of central perspective and watercolour is altogether in keeping with the academic canons decreed by the Ecole des Beaux-Arts (also known as 'style pompier'): it is intended to appeal to the jury in its form, by presenting a bright, radiant image of the project, in which the absence of the Eiffel Tower is not merely fortuitous.*

### *Town planning and the modern movement: the Voisin Plan*

For a long time the 20th century was haunted by the modern Utopia and its desire to 'reinvent' the city. In about 1920-25, Le Corbusier formulated his vision of the modern city in his theoretical project for 'a modern city of 3 million inhabitants', then his 'Plan Voisin' for a business centre in the heart of Paris. His urbanistic principles were clear: to develop the centre by densification, abolish the corridor-street with its many functions and create expressways for through traffic; to abolish historical division into street blocks, replacing it by a regular system of very high but very well-spaced blocks, allowing light to reach the large green spaces and preserving the principal monuments.



*The expression of this freehand sketch in perspective, without any graphic devices, showing the bare essentials,*

**14** *is perfectly in keeping with the brutal, provocative style of the project.*

*The triumph of modern architecture and town planning over the historical heritage is objectively displayed: the City Hall and the Louvre look quite insignificant with regard to 60-storey skyscrapers.*

*Unlike Bonnier, Le Corbusier is not trying to charm the viewer but enter into a debate, by attacking what he considers as hypocrisy and a lack of foresight on the part of the decision-makers of the time.*

### *The birth of regional town planning: the Prost Plan*

The development plan for the Paris region, studied under the direction of Henri Prost and published in 1934, was the first real town planning project on a metropolitan scale in the Ile-de-France. 'Hygienist' in its inspiration and banking on the hypothesis of low demographic growth, it concentrates mainly on the improvement of living conditions (by organising the dedensification of housing), transport (through the principle of large motorways penetrating and traversing the suburban space in the direction of Paris) and the protection of remarkable sites and wooded areas. It is hardly surprising that Prost should use the bird's-eye view to set out his proposals, for the idea of a 'region' was originally closely related to the association of view and territoriality: it means 'the space covered by the eyes when looking straight ahead'.<sup>(9)</sup>



*This bird's-eye view of the hillsides at Meudon and Sèvres aims to show the new road network that was planned*

**14** *to the south-west of Paris. These roads are not considered negatively as scars on a landscape that is otherwise protected as woodland, but as factors of progress and economic development. It is thus advisable to show clearly how they fit in with the site, even if that means exaggerating the width they cover.*

### *Reannexing the suburbs: Banlieue 89*

The fine pictures of the city that were produced for 'Banlieue 89' show yet another way of looking at the city. In this programme, it was a question of redeveloping derelict industrial sites and creating large public spaces, including many green areas, and thus giving the dislocated spaces of the Paris suburbs an urban quality.



*Here the authors have chosen a form of representation that is worthy of certain cartoonists or illustrators*

**15** *of children's stories, using watercolour and pink monochrome to imply that these projects will change the colourless, grey image that is sometimes associated with such areas.*

(9) Augustin Berque, op. cit.

## Town planning and virtual images

We are now entering the age of virtual images and multimedia applications, made possible by digital technology. This is beginning to have repercussions on the way we represent the world in general and the city in particular. Bernard Tschumi, designer of the Parc de la Villette, considers that the computer-generated image is as revolutionary as the invention of perspective, 'for it can be what is actually built'.<sup>(10)</sup> Bert MacLure, however, thinks it 'suffers from a lack of inspiration', for 'computer scientists and designers are working furiously away at producing yesterday's designs with tomorrow's technologies. In order to take better advantage of present computer tools and master the future graphic expression of their projects, architects and town planners must create standard designs and graphic languages to suit their needs.'<sup>(11)</sup>

Many experiments, of varying interest, have already been made in this field. Here are two with basically very different approaches but both concerning town planning projects in the Ile-de-France.

### *A 3-D digital model for the extension of La Défense business district*

The EPAD (public corporation in charge of the development of La Défense) recently had the general layout of the existing business district and the territory concerned by its extension (734 ha) digitised in three dimensions.<sup>(12)</sup> This virtual model is interesting on two accounts:

- firstly, it provides a tool for study and investigation enabling the town planners of the EPAD to check more easily the appropriateness of projects designed by outside consultants to the specifications for the develop-

ment of the operational sectors concerned (particularly their building envelope, the vistas, skyline, etc.),

- it is also a tool for presentation and communication with political decision-makers, enabling them to choose in full knowledge of the facts, with a representation that quite faithfully prefigures the way the site will look when the projects have been realised.



*Although it is teeming with information of all sorts, an image such as this gives the impression of being a relatively 'neutral' representation, without the artful devices that are often used by illustrators. Indeed, graphically, the computer treats all the objects it comprises in the same manner, whether they are near or not and whether they are part of the project or the setting.*

Realising such a study tool is long and costly at the outset, but economically and technically it has a long-term justification. Indeed, the numbers contained in a computer model are like some plastic material, which may be deformed at will by the computer and the application programme. The many alterations that are made during the gestation of an urban project thus lead to partial modification of the geometry of the virtual model, which is much more economical than altering a real model. Moreover, it is much easier to keep track of earlier stages in the virtual model, which is useful for comparison; the genesis of the project may thus be seen at any time.

(10) Odile Fillion, 'Espace=Ecran? Douze architectes et les images de synthèse' (Architecture & Prospective, 1996).

(11) Bert MacLure, 'Infographie. Infogadget?' (in Plans et dessins. L'expression graphique des projets urbains'. Urbanismes & architecture. MELT-DAU).

(12) Claude Soirrot, 'La modélisation 3D' (in Urbanisme, no. 285, December 1995).

## *Abstract, immaterial computer-generated images*

Today many 'recognised' architects are very wary of computer-generated images: they cannot get them to express the particular impressions of the spaces they think up. That is not the case with Alain Sarfati, who, in collaboration with Sabine Porada, produces abstract computer-generated images, as if to create a distance and an opening that are necessary in creating a dialogue around a project that is so far only a concept. Here the image is intended to be a symbolical representation, which is meant to suggest, conjure up a dream, rather than determine a whole project. It must be a medium through which the project is expressed and not a total expression of the project.



*This image is in the form  
of an abstract collage,*

- 18** *a mixture of pieces of maps,  
oblique aerial views, plans, sections, etc., thus  
providing a view of the project  
that is at the same time general and local.  
It thus illustrates a paradoxical  
and disconcerting way of handling  
the computer-generated image,  
for it is used for its appeal rather than  
for its greater reliability  
where representation is concerned.*

It must be pointed out that Sarfati uses this type of image in very specific circumstances: for architectural competitions, e.g. for Melun-Sénart and for the RN 7. When faced with these - seemingly impalpable, intangible - images, the sponsors react in very different ways: either they allow themselves to be 'hypnotised' by their immaterial aesthetics or else they refuse them outright, because they do not understand what the architect is trying to say.

However, it may not be claimed that this 'misappropriation' of images is truly innovatory under the pretext that it is generated by com-

puter. Other architects and town planners - and highly respected ones at that - also use quite conceptual graphic representations, but with more traditional media: for example, Rem Koolhaas's project for the competition for the development of La Défense, or Bernard Tschumi's proposals for the Parc de la Villette.

## *A completely virtual image: Paris as seen in 'Le Deuxième Monde'*

Whilst architects and town planners are studying the uses of computer-generated images, 'virtual reality' (a generic term given to all multimedia technologies which simulate reality) is in the process of capturing new sectors. The society Canal+ Multimedia, associated with different partners, thus offers us the possibility of 'navigating' in 'cyberspace' by means of a computer connected to Internet. In its new project, christened 'Le Deuxième Monde'<sup>(13)</sup> anyone will be able to move in real time in three-dimensional space, based partly on streets settings in the centre of Paris.



*These images are obviously still very poor  
from the aesthetic point of view,  
particularly where the representation*

- 19** *of the city is concerned.  
Indeed, they unpleasing to the eye  
when seen as static pictures  
printed on paper, but they are intended  
to be seen as a sequence of animated pictures,  
which are constantly recalculated to fit in with  
the observer's movements.*

In this Paris, reconstructed by computer, we can walk in the streets, visit real or fictitious monuments and museums and, of course, encounter other users who have taken on a fic-

(13) On this project see the article by Jean-Pierre Grimanelli entitled 'Bienvenue dans le Deuxième Monde' in the review 'Imag. Le magazine de l'image et du son', and by Annie Kahn in 'Le Monde Télévision-Radio-Multimédia' of 2-3 March 1997.

titious form and identity and develop role-playing. The imperatives of profitability mean that, as in a real city, we find advertising posters and shops for teleshopping, but there is also the possibility of expressing one's opinions by vote on the contents of this world, through newspapers, a parliament and political parties. 'The world represented in 'Le Deuxième Monde' is a compromise between libertarian ideology and commercial requirements. [...] It will be what cyber-citizens want to make of it,' declare its designers.

Even if the constraints imposed by computers have important repercussions on the quality of images that serve as settings, this virtual city in gestation is nevertheless both fascinating and worrying. The future will tell what this Agora of the 21st century will be. Will it develop and acquire the autonomy originally aimed at by its designers and, if so, which direction will it take? A vast shopping arcade in the home? A hyper-medium for play and interaction in a typically urban culture? A new, trendy Utopia?...

In doing away with the distance - i.e. the difference - between reality and its representation, virtual reality prefigures a mental revolution that is as significant as the invention of perspective in Renaissance times, thus bringing up many questions of an ethical nature. Paul Virilio thus prophesies that the personality will lose its fundamental bearings: 'Tangible reality is about to be split into the real and the virtual. The advent of a sort of stereo-reality. The human being will lose his bearings.'<sup>(14)</sup> Jean-Michel Frodon goes even further when he says that 'virtual worlds abolish a basic system: the break between the viewer and the thing viewed [...] and the play of recognition, identification and distancing that went with it. In the end, the virtual image questions the very idea of other people. That is to say [...] the foundations of humanism and democracy.'<sup>(15)</sup>

Whatever our opinion of virtual images, they are gradually asserting themselves as a new means of perceiving, analysing, understanding and acting on the (real!) world. As actors in the field of town planning, we can but wonder about the repercussions they will have on our way of transforming the city, for it is highly likely that they will be used in the not too distant future to make and unmake urban projects. It is up to us, therefore, to make intelligent use of them, as a means of educating and convincing.

Laurent Perrin  
IAURIF

Translation: Mary Pardoe

(14) See *Le Monde diplomatique*, August 1995, and the dossier entitled 'Réseau' published in *La Revue d'Urbanisme* no.292.  
(15) See *Le Monde*, 18 February 1993, pp 28-29.



# *Roads and cartography in the Ile-de-France, 1650-1750*

*The Ile-de-France has always been in a privileged position where the national road network is concerned. In the 17th century, Colbert, aware of the enormity of the works that needed to be carried out on a limited budget, announced the following, very simple policy: 'Above all, trade must be facilitated; the most useful road to Paris must be chosen and it must be repaired over a period of two, three or four years, before choosing another one.' Likewise, the Ile-de-France benefits from good cartographical coverage.*

Marc Desportes

Archives Nationales.  
N.C. 120-214. F/14 bis\* 8445. Planche 48.

But not all the links that existed between roads and cartography during the classical period were indebted to the pre-eminence of Paris. Some of them were formed when the art of formal gardens began to flourish in the second half of the 17th century. Indeed, that art, involving geometrical surveys, plans and careful attention to the site, heralded the close rapport that was to exist between roads and cartography in the course of the 18th century. Two dates may be used - somewhat artificially, granted - to define the limits of the period during which art, science and technique became interlaced: 1656, the year work was begun on the château at Vaux-le-Vicomte, and 1756, the year of the publication of the Cassini map of the Paris généralité<sup>(1)</sup>. A third date marks a caesura: 1716, the year of the creation of the Ponts et Chaussées, whose engineers were given the task of building the roads and making a general map of the kingdom.



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## Residences, gardens and large-scale projects

Apart from the role it played in feeding the urban populations, the rich countryside around Paris was also a site for capital investment in the 17th century. Land was a reliable asset and its purchase was above all a sign of social distinction. Of course, the most important fiefs and domains were only available to the few great noblemen who had distinguished themselves at court or held high office, but everyone put the greatest energy into acquiring plots to extend already existing property, as may be seen from the example of Cardinal de Bouillon's St Martin's priory at Pontoise, which is described

by Saint-Simon<sup>(2)</sup>. A double list of names and lands formed a network of great properties in the Ile-de-France: the Phélypeaux at Pontchartrain, the Arnaulds at Pomponne, the Lamoignon family at Baviille, the Le Telliers at Meudon, to name but a few of them<sup>(3)</sup>.

If the architect immediately expressed the aristocratic values the owners wished to see in their residence, the gardens surrounding it offered the loveliest, most sumptuous expression of their taste for grassroots. Influenced first of all by the Italians, French landscape gardeners gradually developed their own style. Preceded by fine achievements such as those at Courances, Vaux-le-Vicomte (built between 1656 and 1661) provided one of the earliest examples of French formal gardens.

Rather than seeing these gardens as the expression of a particular concept - the absoluteness of royal power, for example - let us look, rather, at the art of the gardeners who designed them<sup>(4)</sup>. The *Traité du jardinage selon les raisons de la nature et de l'art*, published in 1636 by Boyceau de la Baraudière, shows that a gardener was an artist, an agronomist and a scientist all rolled into one. Indeed, the designing of gardens was based on the most recent technical developments, such as surveying using the triangulation method, and hydraulic structures for the collecting of water for watering and for fountains. Thus, for their ground plans, the gardeners used the instruments for measuring angles - sight circle or graphometer - that had been developed by the geometers.

The use of such instruments still fell within the province of science, particularly geodesy, which was in its early years. Indeed, in response to

(1) Treasury subdivision of old France.

(2) Saint-Simon, *Mémoires*, La Pléiade, vol. III, p. 168.

(3) Cf. M. Mollat, *Histoire de l'Ile-de-France et de Paris*, Toulouse, Privat, 1969, pp. 276-281.

(4) On the following subject, we recommend the essential work by Th. Mariage, *L'Univers de Le Nostre*, P. Mardaga, 1990.

Colbert's request in 1668 to draw up an accurate map of the kingdom, the members of the Académie des Sciences launched into several series of measurements based on triangulation and astronomical sighting. After the triangulation experiments carried out in the Ile-de-France by the topographer Du Vivier, Abbé Picard measured the Paris-Amiens meridian between 1669 and 1671, choosing as one of his bases a line joining 'the centre of Villejuif mill to the nearest corner of Juvisy pavilion'<sup>(5)</sup>. The Cassini family then completed the general geodesic network and made the map of the kingdom using it as their basis.



This commonplace provided by geometry sheds light on what seems to be a sort of mixture of genres: garden design, the making of plans and maps, the laying of important avenues and roads, astronomic considerations and field surveys<sup>(6)</sup>. It also sheds light on the propensity to adopt convergent forms based on the star, echoing the geometric simplicity of triangulation. Granted, the designing of the avenues was the result of a slow evolution during which the function of containing game allotted to forestation gradually diminished in importance, while walks around the residences gained in importance, leading to a differentiation between the paths and roads in the forests and a hierarchical organisation of routes. But that progression is not the only explanation for the choice of a radial system: there was also a desire to control space.

Up until the first half of the 17th century, gardeners had paid particular attention to the site. Gardens such as those at Courances, Evry, Chilly or Rosny show how essential it was to

them to take into account the climate and the relief, respect certain orientations and provide interesting views. During the second half of the century, Le Nôtre made gardens that were open onto their surroundings. Apart from the grand effects he created, this enabled him to use methods of layout that had been tried out on a larger scale in the surrounding territories<sup>(7)</sup>.

The relationship between the art of the garden and town and country planning as we see it today are therefore very clear. It is hardly surprising that a man like Le Nôtre should think up plans on a regional scale, e.g. the plan to link the Tuileries to St Germain-en-Laye, or the layout of the Avenue de Picardie at Versailles. It is hardly surprising either that Colbert's successor Chamillart should order the roads to be built as straight as possible, thus reflecting a concern for technical rationality as well as the taste for straight avenues in the gardens of the time.

## Mapping the roads and drawing the surrounding areas

The 18th century saw increasing progress in the two technical fields in question: the building of the road network and the mapping of the surrounding areas.

The roads policy, which had been recognised since the Middle Ages as a State concern, took a new turn<sup>(8)</sup>. Several administrative agreements appeared in quick succession, setting forth measures covering organisation, techniques and financing: in 1716 the Ponts et Chaussées engi-

(5) Cf. J.J. Levallois, *Mesurer la Terre*, Paris, Presses de l'ENPC, 1992.

(6) The king's accounts for the year 1678 show that one person-as it happens, a gardener-was paid to plan the roads around Versailles and make the maps of the same area. Cf. Th. Mariage, *op. cit.*, p. 48.

(7) Cf. Th. Mariage, *op. cit.*, and M. Desportes, A. Picon, *De l'espace au territoire*, Paris, Presses de l'ENPC, 1997.

(8) Cf. G. Reverdy, *Histoire des routes de France*, Paris, PUF, 1995.





neering corps was created; in 1720 the width of the royal highways was set at 60 feet; in 1738 the *corvée* was introduced as a means of providing manpower; in 1743, in Paris, the Bureau des Dessinateurs was created, its task being to clarify the maps of roads that had already been built or were yet to be built in the kingdom. The road map at that time was not intended to provide information for the general public, as is the case today; it was a technical document intended for planning, observing, devising and checking. The Ponts et Chaussées engineer J-R. Perronet, who was appointed by Trudaine to direct the Bureau des Dessinateurs in 1747, was immediately put in charge of 'teaching the draughtsmen the necessary skills and practices to enable them to carry out, to the best of their ability, the different jobs allotted to the Ponts et Chaussées'. And that was the beginning of the Ecole des Ponts et Chaussées<sup>(9)</sup>, an establishment that was both professional and educational, and whose methods were still related to cartography, as in the previous century.



The Bureau's employees were divided into three classes: the best members of the highest class were intended to become engineers. The first class grouped together the 'geographers'. With a few rudiments of geometry and surveying as their only qualifications, they drew up the road maps and checked the estimates. In the second class were 'pupils' with elementary knowledge of mechanics, hydraulics and architecture. Then came the assistant engineers and assistant inspectors, who were capable of devising civil engineering projects. In order to reconcile the

aims in terms of graphic production with those of teaching, Perronet limited the number of maps demanded by the Civil Service so that each employee received an annual salary of 400 to 600 livres whilst having enough time for training.

The road maps produced by the Bureau corresponded to a scale of 1/8640 and covered strips of road 6.5 km long and 2.5 km wide. Bridges, farms, hamlets, forests, relief, lanes and towns were all included. That is to say that not only the road but also the site traversed were represented. These manuscript documents were bound together to form the famous Trudaine-Perronet atlases which are now in the French National Archives. The volume devoted to the Paris généralité covers twenty or so directions. 14 maps are devoted to the route from Paris to Lyons, via Essonnes, Fontainebleau and Nemours, as far as the ford at Tourelles. These documents do not provide unequivocal historical information, however: there is no precise date and no distinction is made between projected roads and ones that were actually realised.

The drawings, which are very skilful, are in ink and wash. The engineer was still close to the artist at that time and his style had not yet been made stiff by rules. The pupils were indeed presented with models - a prelude to a more conventional use of lines, colour and shading. Thus, different road categories were distinguished: cobbles, natural surfacing, stones, roads in need of levelling. But the map was still regarded by the engineers as a 'copy of nature as the crow flies', calling for great attention to detail<sup>(10)</sup>. The importance of the drawing for the engineer of the Enlightenment is clear: drawing meant not only reading and describing a site,

(9) School of Civil Engineering. For the history of the school, see A. Picon, *L'invention de l'ingénieur moderne*, Paris, Pre. ses. de l'ENPC, 1992.

(10) See also the explanation put forward by A. Picon, *ibid.*, p.55.

but also designing and planning a road. Thus, the question of fitting the road into the landscape was implicitly solved.

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What were the works corresponding to this intense cartographical activity? In the Paris généralité, of which Perronet was chief engineer, work was carried out to improve the main roads, most of which were cobbled, and the roads which cut across<sup>(11)</sup>. All the main straight exit roads from Paris date from that time. To the west and to the east, various routes were in competition. To the north and to the south, improvements were made (rectifications, road widening, slope reduction), thus giving the so-called 'natural' roads, which were still subject to variations in relief and in the rural plot pattern, more rational courses.

Rectifying meant, for example, straightening the road to St Denis from a roundabout marking the limit of the agglomeration (1724), or doubling the old Point-du-Jour track with a straight road cutting through the Billancourt plain to Sèvres. Slopes were reduced at points where coaches found themselves in difficulty—e.g. Pontchartrain mound and Neauphle mountain in 1748, Cocatrix mound on the St Germain road in 1752, the Essonne mound in 1754. Some people severely criticised these modifications as sumptuary. 'At Etampes, a mountain has just been cut away in order to reduce the roads into the city by a mere few yards,' wrote d'Argenson in his diary (1749). Small structures, such as the bridge over the Orge at Belles-Fontaines, completed these realisations before the large structures, such as Neuilly bridge, were built from 1750 onwards.

During the second half of the 18th century, roads became more and more standardised. Attention was paid to more technical aspects, such as the surveying of cleared land, longitudinal profiles, etc. As a reaction, cartography became more imaginative, shaking off its operational character. Large-scale compositions were sketched out, showing the dawning of a taste for landscape gardens. Technique and aesthetics seemed to split in two.

## Two different conceptions

While the engineers of the Ponts and Chaussées were carrying out their work, the draughting of the map of France was taken up again in the early 1730s<sup>(12)</sup>. Several former pupils of the school worked on it and Perronet was one of the directors of the society that was created in 1756 to complete its publication. The surveying techniques remained more or less the same, innovations such as telescopic sights and tangent screws did not come into general use until the second half of the century. Drawn up between 1749 and 1755, the map of Paris was the first of the plates to be published. It appeared in 1756, followed by those of Fontainebleau, Etampes and Meaux.

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At a scale of 1/86400 (ten times smaller than the Trudaine-Perronet atlas), the Cassini plates adopt strict representational conventions and use small symbols to indicate villages, towns, natural elements such as streams and rivers or

(11) Cf. Reverdy, *op. cit.*, pp. 47-50.

(12) Cf. M. Pelletier, *La Carte de Cassini, l'extraordinaire aventure de la carte de France*, Paris, Presses de l'ENPC, 1990.

historical sites such as battlefields. Apart from the royal highways, very few roads are shown: many of them were still just tracks, which varied in the course of time. Cassini's plates and those of the engineers of the Ponts et Chaussées thus provide different views.

Those views, which were similar for a while, continued to diverge more and more. That divergence indicates all the difficulties that were encountered by 18th-century artists, engineers and scholars in building up a pertinent reading of the natural surroundings, and it heralds the diversification of their views on such themes as landscape aesthetics, the territory as a support for town and country planning projects, and the dividing of national space into geographical and political units.

**Marc Desportes**  
**Engineer of the Ponts et Chaussées**

Translation: Mary Pardoe

PARIS

# *The early days of the railways in the Ile-de-France*

*How do the maps of the past hundred  
and fifty years help us to follow the history  
and development of the railways  
in the Ile-de-France?*

*When we take a look at them,  
we notice that this new phenomenon  
caused some hesitation*

*on the part of cartographers.*

*The new topographical map  
of France (scale: 1/80,000),  
published by the 'Dépôt de la Guerre'  
from 1832 onwards*

*and therefore almost contemporary*

*with the first railways<sup>(1)</sup>,*

*may be taken as a point of reference.*

(1) In France, as in England, the first railways were not related to the urban phenomenon, nor indeed to passenger transport. The first line was opened in France in 1825; it was intended to carry coal from Saint-Etienne to Andrezieux.

Michel Fleury

in Compagnie des chemins de fer de l'Est. La gare de l'Est. 1931

## The problem of keeping maps up to date

During the following years, the basic maps kept pace with developments and, despite the difficulties involved in keeping the copperplates up to date, the railways were gradually represented.



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Thus, one edition, probably dating from 1847, shows the first lines to Saint-Germain (1837), Versailles Rive Droite (1839) and Rive Gauche (1840), Juvisy and Corbeil (1840), Rouen (1843), Lille (1846, via Saint-Ouen-l'Aumône) and Sceaux (1846).

Cartography had to adapt to this new reality. New symbols had to be created to distinguish railway lines from other lines. The first railways were represented by a single line, slightly thicker than the one used for roads. After the war of 1870, a specific conventional sign was adopted: a broader line bordered with staggered dots. It was not used systematically in the revised versions. Sometimes the railways were still indicated by means of a single 'broad' line and both systems were often to be found in the same edition. It was not until the end of the 19th century, with the development of the secondary network and metrical-gauge lines that it became definitively necessary to use different, precise conventional signs.

Updating a copperplate was no easy task. Furthermore, the railway network was constantly expanding throughout the second half of the 19th century, which made the problem of keeping pace even more difficult. Some new railway lines appeared very quickly on maps, while others only appeared several years after they had come into use. Occasionally, a new railway

project was considered reliable enough to be shown on new editions of the maps, but in the end it did not materialise, so the line then had to be removed from later editions.

Moreover, the date of first publication, which was indicated at the bottom of the map, was not altered when the map was updated; in the absence of regular registration of copyright, this creates great uncertainty in the dating of the various editions. Finally, as the basic map remained the same, the new railways were added but urban development was not shown; as a result, the planning of certain lines appears to be rather illogical. It is therefore difficult to use the 'carte d'état major' (Ordnance Survey map) to obtain a precise chronological description of the evolution of the railway network. However, this must not prevent us from using those maps to gain a better understanding of the way the railways developed in the Ile-de-France.

## Networks and installations

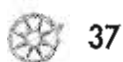
Indeed, those maps help us to understand not only how the network itself has developed but also how the railway installations and their logic have changed.

Unlike the roads, the railways were built as straight as possible and with little incline (it was therefore logical that they should follow the valley floors). Thus, between Batignolles and Pecq, for example, there were only two curves.



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The Sceaux line was an exception as it benefited from new techniques. It was designed and built by the engineer Arnoux, who invented a system using an articulated train which was able to follow a relatively sharp curve. This system was used between the Barrière d'Enfer and Sceaux with a special 1.75m gauge, with terminuses forming a loop and curves between Bourg-la-Reine and Sceaux.



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## Developments according to needs

During the early years, railway lines were built as the need arose, on private initiative, without State support. There was little coherence in the granting of land and the lines were built very quickly: for example, the Paris-Le Pecq (Saint-Germain) line was legally approved on 9 July 1835 and opened on 18 August 1837!

However, during the early years of the July Monarchy (1830-48), the State began to take a more serious interest in the role it had to play in establishing and running a coherent railway network. Problems of compatibility (gauges, for example) and interconnection between the different networks soon arose. The civil engineer Baron Legrand was given the task of defining the layout of the future railway network. In 1832, after studying the matter with local authorities, he proposed seven lines radiating out from Paris (the famous 'Legrand Star')<sup>(2)</sup> plus two cross-country links (Bordeaux-Marseille and Lyons-Strasbourg). The government officially approved the plan in 1833.

Debate on the question of the respective roles of the State and private concessionnaires led to

an Act passed on 19 June 1842, specifying the roles to be played by the different parties: the land was to be purchased by the authorities (State and local governments); earthmoving and structures (bridges, tunnels, etc.) were to be the responsibility of the State; superstructures, buildings and rolling stock were to be financed by the concessionnaires.

These basic principles were later modified (Act of 11 June 1859) to facilitate the establishment of the 'new network' by enabling the State to help the railway companies in the case of deficit in running costs (in particular, repayable advance for interest on loans). Another Act was passed in 1883 to help the companies to pay for the setting up of a 'third network' as part of the Freycinet plan, with guaranteed interests and a contractual dividend.

## Paris stations

As a general rule, the departure platforms were built near the surrounding wall that had been built by the farmers general, which marked the limits of urbanisation (still relatively sparse outside the 'grand boulevard').



*The map shows the various possibilities that were studied for the arrival of the Strasbourg line (and also the one to Lyons), with departure platforms at intervals between the 'Saint-Lazare enclosure' (later chosen as the point of arrival for the trains from the north) and the 'station barrier' (Orleans line) via the 'Saint-Laurent enclosure'.*

There was heated discussion as to whether the lines should all be brought together at two

(2) Linking Paris to Le Havre, Lille and Dunkirk, Strasbourg and Metz, Marseilles and Grenoble, Nantes, Bordeaux and the Spanish border, Toulouse via Limoges and Bourges.

sites, the station in the Rue Saint-Lazare and the Gare d'Orléans. In the end that idea was rejected: it was too damaging to certain important interests and it was feared that the stations would be too congested. Moreover, the war authorities preferred to have several different stations.

In the long run, this decision proved to be a wise one, the stations being important elements in the structuring of urban development.

There were to be other debates on the siting of the stations. Many projects came into being. The sites that were not chosen - Quai de Jemmappes (now Boulevard Richard Lenoir/Rue du Chemin Vert) and Rue Lenoir (now Rue d'Aligre) - were those that were closest to the heart of Paris, which would have meant crossing the edge of the Faubourg Saint-Antoine and having to overcome many difficulties.

The site in the Rue de la Contrescarpe (now Boulevard de la Bastille) was split in two, with the Lyons line arriving at a departure platform not far from the Seine and the Vincennes line (built much later, in 1860) coming in further to the north, at the Bastille.

The plan of the Saint-Laurent district in 1841, with the departure platform for the Strasbourg line shows up the fact that no main line serves the departure platforms and that there is absolutely no disengagement ! This situation was not remedied until Haussmann carried out his extensive transformations of Paris.

## A first assessment from the map readings

By the mid-19th century over 400 km of railway track had been laid in the Ile-de-France. At that time urbanisation was not yet very exten-

sive and most of the lines were built in open countryside. There were few stations (five between Paris and Corbeil, compared to fourteen today) and the trains ran very infrequently (6 a day between Paris and Corbeil in 1840).

Between 1860 and the end of the century, there was a spectacular increase in population. In dissociating distance in terms of time from distance in terms of the number of kilometres the railways played a very important part in the birth of the modern phenomenon of suburbs. They made travelling more democratic, particularly for frequent short journeys back and forth. On the Orléans network, in the suburbs, the number of trains increased tenfold, while fares dropped by about 75%. But they also brought about a rapid increase in land value in the resulting metropolitan area.

These developments had a great influence on the running of the railways. As the lines and stations became saturated, extra lines had to be built and the stations had to be extended. This made it possible to introduce semi-direct services, thus reducing travelling time to the stations that were furthest away.

At the same time, at the end of the 19th and beginning of the 20th century, important technical improvements were introduced, then generalised, in the fields of safety and traffic capacity (alarms, repetition of signals, continuous air brakes, semaphore signals, electrically operated points, etc.) and also of comfort (lighting and heating, carriages with bogies).

At the same time, progress in traction made it possible to increase the load carried by trains and their actual speed (the upper limit had been set at 120 km.p.h.-75 m.p.h.-since 1853 !). Electric traction was first introduced in 1900 on the Invalides-Issy and Orsay-Austerlitz

lines (Juvisy in 1903), but it did not really catch on until after the First World War. The introduction of 50-Mz industrial power, first tried out at the time of the Liberation, gave it fresh impetus from the 1960s to the 1980s, and it is still being developed today at the same time as the high-speed network.

## Expansion

By the beginning of the Third Republic, the framework of the Ile-de-France railway network had, for the most part, been realised: the important radial lines were in place, linked by the inner circle line, work on which had begun in 1852 and 1854 for the northern and eastern sectors respectively. The southern section (left bank) was completed in 1867. In response to its military function, the small circle line built just behind the fortifications, except between La Villette and Charonne (traversing Belleville under ground), where it curved inwards to limit the length of the tunnels.

During the next ten years - between 1877 and 1886 - the main achievement was the great circle line, running around the capital about 20 km from the centre. A number of suburban links were also added.



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During the last thirty years of the 19th century, about a thousand kilometres (625 miles) of track were laid in the Ile-de-France. There were many projects, not all of which came to fruition, and the cartographer sometimes overanticipated and was caught out!

## The age of B lines

At the end of the 19th century and until the eve of the First World War, there were very few changes in the main railway network, apart from the extension from Austerlitz to the Quai d'Orsay. Local networks, however, were greatly developed: Les Invalides-Versailles, with branch lines to Puteaux, and the line from Auteuil, Saint-Ouen and Argenteuil to Mantes via the right bank.

In rural areas the network was set up at the instance of the departments, which often took charge of the building of the platform. Determination on the part of local government members and populations to 'have their own station' played a decisive role in this development. Apart from satisfaction and comfort for the citizens, it also provided an opportunity for building new facilities. Demographic pressure, however, was not the only reason. Some lines helped to carry supplies to Paris - thus, at night trains would travel from the area of Arpajon to the central food market in Paris (Halles), via the tram lines.

The stations had a clear and rapid economic effect on urban development. The swift expansion of the towns and cities in the region was related to the presence of the railway network. The service along the Seine valley, with two lines from Paris to Mantes - via Poissy (left bank, along the valley floor), from 1843 onwards, and via Meulan (right bank, a steep line, calling for railway structures), from 1892 - illustrates that movement. Michèle Caminade<sup>(3)</sup> writes: 'As for Meulan, which was the main town in the canton, its nearness to the station at Les Mureaux (on the opposite bank) enabled

(3) 'L'escarille, tramway de Seine-et-Oise', Ecquevilly, 1996.



its citizens to travel; its population went on steadily increasing until the opening, on 1 June 1892, of the Argenteuil-Mantes line, via Conflans, along the right bank of the Seine, which gave its growth a further boost.' Towns that were too far from a station stagnated or even regressed if the inhabitants did not request the servicing of the area by the railway network.

## The ebb

Between the two World Wars, the railway network changed very little. The additional circle line between Noisy-le-Sec and Sucy-Bonheur was the only new addition.

The B networks, which had already been in a rather precarious situation before the First World War, fell into a slump, unable to pick themselves up after the destruction of the War and unable to hold their own against the increasing popularity of the motor car. Almost all the local tramway services disappeared. Many lines were also closed to passengers: inner circle, outer circle (with the exception of Juvisy-Massy-Versailles), and so on. However, the underground continued to develop within Paris and branches began to be added to get to the inner suburbs.

These changes are hardly visible on maps dating from that time, while the general network, even when it was no longer used, continued to be shown.

Only the B lines, whose lives were often very short and which often followed the same lines as the roads, gradually ceased to be represented on maps. As for urban tramways and the underground, they were usually omitted from general maps and were only shown on documents for specific uses: in densely built-up

areas, adding them would merely have made the maps more difficult to read without being of any use to those using the network.

## The present day

During the Second World War many of the lines were destroyed. Since then, the networks have been rebuilt and modernised. Above all, there has been an urban explosion in the past fifty years. After a long period of latency and thought, and with the creation of the new towns, the network once again began to develop significantly with the building of the RER (high-speed train service between Paris and the suburbs) and of new lines, and the redevelopment and modernisation of infrastructure, which does not always appear on the maps (e.g. regional car parking facilities). From the 1980s onwards, the South-Eastern, Atlantic and Northern TGV (high-speed train) lines appeared; they are now linked by an interconnecting line bypassing Paris to the East. They give the railway network a new look, opening up new possibilities for development. They are partly responsible for the development of certain areas of the Ile-de-France (particularly to the East), and enable us to approach the 21st century with a better relationship between infrastructure and landscape (green stripes). A century after railways that sliced up urban areas and even cut towns in two, the green stripes favour exchanges and help to recompose the metropolis.

Tomorrow those changes will be visible on our maps.

**Michel Fleury**  
Ingénieur général SNCF

Translation: Mary Pardoe



# *The important stages in the development of the waterways in the Ile-de-France*

*France is a country with a history of river transport. Unlike Egypt with the Nile or Canada with the St Lawrence, that history is not associated with just one important river: its network of waterways, all of which are now artificial, was built up slowly and often painfully.*

Bernard Le Sueur

The use of skilful technology to bring rivers under control has led to numerous developments that are in many ways characteristic of each different period in the country's economy. Man's intervention applies to two indissociable parts of the river space: a ribbon of water (described by Pascal as a 'road which moves'<sup>(1)</sup> and regarded by the Ancients as a precious gift from the gods) and a more or less deep fringe of land on either side of that ribbon. In the Ile-de-France, as elsewhere, society's approach to its waterways calls into question the layout of the land, ways of life and modes of action... More than any other, the river Seine - a great servitor of the city and a generator of many different types of landscape - shows how man's skills and actions have given it an identity. It also acts as a reminder of our changing social values over the ages.



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At the time of traditional economy, despite a few limited developments, the river imposed its will on man

*Developments that were made a very long time ago and whose importance we are just beginning to realise*

Very early in his history, man used the 'wild' rivers as a means of transporting both himself and an ever-increasing quantity of diverse goods. In the Ile-de-France, several underwater archaeological excavation sites have enabled us to discover traces of such early uses. The best-known evidence of man's activities on the rivers comes in the form of early boats, the monoxylous dugouts of the Neolithic period. Such dugouts have been found at Bercy. And in

1994, lying in the middle of the river beneath five metres of water near Melun, archaeologists discovered several such craft dating from the Mesolithic period<sup>(2)</sup>. There also seem to have been many early river developments, but as such discoveries are less spectacular, most of them are only known to specialists. Structures consisting of stakes driven into low-water channels or along former river banks indicate the existence of a large number of fisheries, dams, breakwaters, ports provided with the most basic infrastructure... We also know that the Romans established many crossing-points and fords, diverting an oxbow here, draining inhospitable marshland there. From very early times, therefore, rivers were solicited by man: he developed them in an attempt to make them suit his needs of the moment.



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*Traditional navigation entirely at the service of Paris*

Up to the mid-17th century, the Seine river basin was the unit of reference<sup>(3)</sup>. Comprising all the floatable and navigable waterways, it remained shut off, closed in on itself by the drainage divide of the catchment area. Its only opening to the outside was its fluviomaritime port, Rouen, but sailing upstream was difficult and very costly, and traffic was therefore very limited<sup>(4)</sup>. Man was still subjected to the 'tyrannies of nature', both in time and space. He had to accept the constraints of the seasons, the river being navigable for only a few months

(1) Pascal, *Pensées* (1670), 17.

(2) The Brunoy underwater archaeological research group prospected at the old ford known as 'La Guiche', where they brought up dugouts which were later dated using the carbon-14 method to around 7000 B.C.

(3) B. Le Sueur, *Conflans-Sainte-Honorine, Histoire fluviale de la capitale de la batellerie*, Paris, L'Harmattan, 1994. This work provides not only a very well-researched history of the region but it also presents the important stages in the history of inland navigation in general and that of the Seine in particular.

(4) B. Le Sueur, *La navigation en Basse-Seine au début du XIX<sup>e</sup> siècle*, *Les Cahiers du Musée de la Batellerie*, no. 25, November 1989.

each year, and he had to deal with very diverse nautical conditions from upstream downwards. However, taking advantage of the natural driving force of the current, all the navigable waterways upstream from Paris were gradually mobilised to provide supplies for a fast-expanding city. That led to the development of specific techniques and social practices, those of the Yonne being the most representative.

### *Specific planning for 'navigation by flashes'*

The river's torrential rate of flow and its importance as a waterway serving Paris explain the establishment of facilities to enable navigation, which was still intermittent but which had a strong potential. As the course of the river was obstructed by numerous mill-dams, boats had to travel through narrow locks in the weirs (dams)<sup>(5)</sup>. Thus, at the end of the 18th century, the thirty-five such locks that were to be found at intervals between Armes and Sens were given great attention by the Prévôt des Marchands and the Bureau de la Ville de Paris: time and again, they intervened with the owners to ensure better functioning. From 1624 onwards, the authorities decided that all boats and rafts should travel downriver together: to make this possible, they synchronised the opening of the locks in order to create a flash<sup>(6)</sup>, which was further magnified by water released from neighbouring ponds and affluents<sup>(7)</sup>.

## The canal: two centuries of glory, 1640-1840



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### *The increasing needs of the capital*

Paris's ever-growing population implacably led to increased demand, particularly where cereals and wood were concerned<sup>(8)</sup>. If the boats were delayed, there was a serious risk of a corn or fuel shortage. The royal family and the city authorities made increasing efforts to make navigation a priority on rivers that were also used for many other purposes. Stake nets<sup>(9)</sup>, mill-dams, permanently-moored boats and other obstacles to navigation were destroyed.

More and more ports were created all along the river, but particularly upstream from Paris. Each boat would berth at a particular point determined by the nature of its cargo. The latter, following strict local regulations, would then be sold directly to the inhabitants. These specialised ports, with each different sector selling different products, helped to make people familiar with the river.

At the beginning of the 19th century, many city ports were redeveloped to bring infrastructure in line with the expanding market, while the embankments were extended upstream towards Austerlitz and La Rapée and downstream towards Orsay.

### *Inter-basin canals*

The great innovation at that time, however, was the inter-basin canal: canals were built to connect the waterways of the Seine basin to neighbouring basins, thus enlarging the area from which Paris could receive supplies by river.

The Briare canal, opened in 1642, linked the Loing (an affluent of the Seine) to the Loire, which was then France's most prosperous waterway, carrying the 'best part of trade'. It was the first such structure in Europe to cross a water divide; and it was a veritable hydraulic machine, worked by the concentration of water from ponds and feeding channels in its summit pound<sup>(10)</sup>. On either side of that pound including the water divide, the differences in level were redeemed by means of locks, using technology that had been perfected during the previous century.

Such links between one basin and another did not become more generalised until the early 19th century, with its economic changes: at that time, the waterways were used extensively in response to new transport requirements. Between 1810 and 1840, new junction canals to the Escaut, Rhone and Meuse basins were opened, while the Canal du Nivernais provided a direct link with the Upper Loire and its new industrial centres. The first river network thus took shape, marked by heterogeneity in the gauges of its waterways.

(5) Various devices were used to open and close these locks as needed.

(6) A sudden rush of water, let down from a weir, to take a boat over the shallows of a river

(7) Navigation via such locks lasted until the end of the 19th century.

(8) During the period of the French Revolution, riots broke out not only when there was a shortage of corn for bread, but also when there was not enough wood for baking.

(9) Stake nets: fishing nets hung on stakes planted in the river bed in such a way as to direct the fish into the nets.

(10) Pound: a stretch on a canal between two structures, e.g. locks.



### *Intra-basin canals*

At the same time, the improvement of navigating conditions on the Seine and its affluents remained a priority objective. Two different development techniques were used during that period.

The first technique consisted in creating diversion canals. That meant bypassing some local obstacle by building a channel more or less far from the river, with the latter supplying water to the stretch of artificial waterway thus created. Thus, from 1703 onwards, on the upper Seine, water traffic travelled from Nogent to Troyes via eleven diversion canals. At the beginning of the 19th century there were many projects aimed at cutting the meanders downstream from Paris (e.g. Argenteuil), but the important diversions date from the end of the 19th century. Those of the Yonne at Gurgy, Joigny and Courlon then completed the river's canal system<sup>(11)</sup>.

The second technique involved building canals with a pound including the water divide and with an independent water supply within the basin itself. The Paris canal system thus bypassed the constriction in the river in the old part of Paris and the meander situated just downstream from the capital. The Saint-Denis, Saint-Martin and Ourcq canals, which used that technique and were opened between 1821 and 1839, were also evidence of an important change in the process of regional development<sup>(12)</sup>.

Up until the beginning of the 19th century, sectors upstream of the Seine basin were developed. Attempts were made to extend the area supplying Paris by providing facilities on a maximum number of streams, particularly for the floating of logs. Attention was then shifted

to the downstream sections of the basin, and, before long, to a wood substitute: coal. Many projects then sprang up to obtain the construction of a canal running laterally to the Seine between Paris and Rouen and to establish a direct sea link between the capital and Dieppe.

1838 to the present day:  
the triumph of the 'techno-river'



### *Transport requirements in the industrial age and control of the waterways*

The intensification of traffic carrying different products via new routes meant that intermittent navigation with low productivity was no longer acceptable. The formation of a market with a national tendency upset the balance between the capacities of traditional waterways and economic needs. Furthermore, the advent of the railway had imposed an alternative means of transport and many goods were already being carried by rail.

The canalisation of the rivers of the Seine basin by means of mobile dams with sluice gates - a system we owe to C.A. Poirée - provided the solution that was needed for the development of industrial-type water transport. These structures made it possible to maintain a constant water depth all year round. Engineers determined the latter according to the traffic that was

(11) Between 1837 and 1841, five mobile dams were set up between Laroche and Sens. The system was completed between 1847 and 1860 by three dams between Auxerre and Laroche, then three more between Sens and Montereau. Navigation on the Yonne was continuous only from 1881 onwards.

(12) The Villette basin, fed by the river Ourcq, is the pound comprising the water divide.

expected, the hydraulic possibilities of the waterway and the technical and financial possibilities of the moment. In turn, the river became a hydraulic machine largely controlled by man.



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### *Considerable repercussions on man's environment*

Between 1840 and 1865, there was a veritable revolution in the development of the waterways and landscapes of the Ile-de-France. First of all the Lower Seine was canalised between 1838 and 1853, followed by the Upper Seine between 1860 and 1864. By the end of the century, all the important rivers in the basin had been harnessed.

In many places the water level was raised, which led to a general redevelopment of the banks, a decision made in 1845. In Paris, some of the ports were provided with vertical faced quays and paved platforms and the river was enclosed between two stone ramparts to protect neighbouring areas from flooding. New industrial ports for building materials and coal grew up on the city outskirts. Gennevilliers and Bonneuil developed extensively, while many of the ports intra muros gradually disappeared. As a result, Parisians abandoned their river, and the river ports no longer supplied the inhabitants directly but delivered goods instead to the central food market (Halles) in Paris and other inland centres.

The force of the current had been greatly reduced by the succession of dams: the river had become a staircase. The various mills were thus doomed to disappear from the landscape because the current was insufficient to work their wheels. Professional fishermen, of which there were still many on the Seine and its

affluents at that time, began to complain that the migratory fish were disappearing, unable to get past the dams, despite the (occasional) early provision of fish ladders. The islands became set and the ecosystem was completely disturbed. The waterway had been brought under control: leisure activities would be able to develop.



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The boats transporting freight, which were always wooden boats without an engine, had to be towed. Under the Second Empire, chains were sunk to the bottom of the river between Montereau and Paris<sup>(13)</sup> to enable towboats to tow enormous convoys of boats. That obviously meant the end of towing by animal means and such firms went out of business. Inns, stables and posthouses along the canals and rivers, and many of the towpaths, soon fell into disuse and disappeared. In turn, the development of self-propelled diesel barges in the 1930s saw the end of infrastructure for towing and gave rise to various types of fuelling stations.



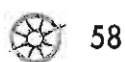
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### *River phobia*

The fact of thus bringing the river under control made people forget that rivers are also capable of showing their anger. The great floods of 1910 called the planners to order and caused a veritable shock. For a society that prided itself on belonging to a brilliant industrial civilisation with the means of keeping natural phenomena under control, such floods were inadmissible.

(13) B. Le Sueur, *Les Cahiers du Musée de la Batellerie*, no.34, July 1995.

River development was thus completely rethought with the principal aim of reducing floods. First of all, the mobile dams were modernised to shorten the time of reaction to rises in the water level. Then the idea of building reservoir dams upstream to regulate flow gained ground. A general plan was adopted in 1925. In 1950, Pannessière-Chaumont dam in the upper valley of the Yonne was already holding back over 80 million cubic metres of water in winter. Several other reservoir dams followed: Forêt d'Orient near Troyes (1966), Der-Chantecop near Saint-Dizier (1974), Bar-sur-Aube (1990),...



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## Rediscovery of the river environment

After living for centuries in harmony with their rivers, the inhabitants of the Ile-de-France had turned away from them, abandoning their banks to foul-smelling, polluting industrial activities. The decline in economic and social practices related to the waterways was accompanied by the formation of a 'banlieue fluviale' ('river suburbs'), where activities that were undesirable in the city centre were set up on the islands and river banks. That movement continued for several decades, accompanied by irreversible operations in the very heart of the city (e.g. roads along the river banks, the covering over of certain affluents of the Seine), thus sealing the divorce between man and water. In the past few years, city dwellers have begun to rediscover the river and its environment. Economists and politicians stress the importance of polyvalency. The important waterways of the Ile-de-France help to supply the region with water for domestic, industrial and agricultural needs. A number of turbines have been set up on some of the dams and are now producing their first kilowatts. The autonomous Port of Paris has maintained the transportation of freight, now exceeding 20 million tonnes per annum. Container transportation and shipping (mainly to the United Kingdom) stand out as the Port's two trump cards. But the best results are recorded in the area of tourism.

New developments are springing up here and there to create areas for recreation and relaxation, encourage the rediscovery of 'nature' and enhance a heritage that is little-known and has been abandoned. Many communes have thus developed pedestrian walkways, highlighting the banks by means of lighting and explanatory notices, converting old industrial buildings, providing landing-stages for pleasure boats, and so on. Our rivers have become rather sleepy and river tourism in its various forms - individual and collective passenger boats, private pleasure boats, etc. - can bring them back to life. But the demands of such tourism are not without danger to our river heritage. Built at the beginning of the 19th century, the small double locks on the Ourcq canal - the only ones of their kind in France - have been replaced by larger structures which users command by microchip; one after another, the mobile dams with needle-beams are being destroyed and replaced by structures that are more reliable and safer for employees.

**Bernard Le Sueur**  
Lecturer in modern history

Translation: Mary Pardoe



# *Saint-Germain- en-Laye the history of a royal forest*

*'Saint-Germain State Forest  
is also a monument.*

*Its unbroken expanse,  
the way it fits into the loop in the river,  
the structure of its straight paths  
and broad intersections,  
its close connection with the royal city,  
make it one the finest examples  
of a State forest in France.'*

A. Mazas-A. Freytet-CAUE 78-  
'Pays et Paysages des Yvelines'

**Etienne Berthon**



**T**he Forest of Saint-Germain-en-Laye, with its 3,500 hectares (8,700 acres) occupying a loop in the Seine about twenty miles downstream from Paris, is one of the most important such forests in the Ile-de-France.

Even though the oldest trees (a number of oaks) were planted under Louis XIV, it is nevertheless a vestige of the one of the largest forests in Gaul, the great Forest of Iveline, which covered almost the whole of the Beauce region and stretched as far as Picardy.

When we study old maps, we realise how relatively little the limits and layouts of forests in the regional landscape have changed, despite the many stresses and strains to which they have been subjected since the Second Empire.

### *From Charlemagne onwards: royal hunting grounds*

The Forest of Saint-Germain-en-Laye was already royal property when Charlemagne hunted there. At that time, it was known as Lida (whence Lea, Laya, Laye). Its vocation remained closely linked to the royal favour it enjoyed for many hundreds of years. Indeed, Saint-Germain was one of the favourite residences of the kings of France until the court was transferred to Versailles in 1682.

From the time of Charlemagne onwards, therefore, the kings of France would come to hunt in the forest adjoining Poissy, where Charles the Bald had set up one of his residences in the year 862. Robert II, the Pious, who was the son of Hugh Capet and reigned from 996 to 1031, adopted the castle at Poissy as his permanent residence and he would sometimes stay at a hunting lodge within the forest, on the site of the present 'Loges'<sup>(1)</sup>. In about the year 1000, he had a small monastery built on the top of Pecq hill, on the eastern edge of the forest. The

monastery was dedicated to St Vincent and St Germain; the latter was bishop of Paris in the 6th century. Gradually other buildings were built around the monastery, and thus began the history of Saint-Germain. Louis VI, the Fat, had a first castle - a fortified stronghold but also a royal residence - built there in about 1125. Philippe Auguste, who came to the throne in 1180, would stay there for long periods.

St Louis, who was born at Poissy in 1214, succeeded his father, Louis VIII, in 1226, when he was just twelve years old. As regent, his mother, Blanche de Castille, had a road built between the two towns to facilitate access to the castle at Saint-Germain-en-Laye.



*A 16th-century map presenting  
a rather fanciful picture of the forest.*

**62** *(From the map entitled  
'Nouvelle description du territoire  
et banlieue de la ville Cité et Universités  
de Paris', by Jean Boisseau illuminator of  
geographical maps to the King.)*

The centuries passed with their succession of kings. It was customary for the kings to present parcels of woodland to the monasteries, hospices and leper-houses or their officers. The forest was gradually broken up by this excessive liberality and, in 1402, Charles VI was thus prompted to publish an order forbidding any further gifts of forest land or property.

Despite that order, Louis XI presented the Seignury of Saint-Germain to his principal physician, Jacques Coitier, in 1482, in the hope - so we are told by Commynes - that the latter would make him live longer. A vain hope, for Louis XI died the following year and Parliament ordered Coitier to return the property he had received.

(1) It developed into a veritable royal castle, which, along with the neighbouring monastery, was burnt down in 1346 by the English, led by the Black Prince (then aged fifteen).

## *Under Francis I: the cutting of the first star-shaped forest paths*

The reign of Francis I (from 1515 onwards) marked the real beginning of the development of Saint-Germain-en-Laye, whose population up till then had been quite small, and opened up a period of prosperity for the forest.

In the northern part of the forest he had La Muette castle built. To facilitate hunting, many paths, intersecting to form a star shape, were cut through the forest. The great avenue leading to La Muette, almost 9 kilometres long, traversing almost the full length of the forest, dates partly from that time. Following the king's orders, the forestry department managed exploitation of the wood wisely and with a spirit of conservation.

Near the castle, 416 arpents<sup>(2)</sup>, i.e. approximately 210 hectares, were enclosed within walls, forming the 'Petit Parc', where royal offspring could walk and play without danger from wolves.

By exchange, Henry II obtained Vignoles, a hamlet situated in the forest. He had it demolished in about 1550 and built a pheasantry in its place.

Henry IV was very fond of hunting in the forest, as was Louis XIII. In 1621, the latter, finding himself to the far south-west of the forest, spotted the site of Versailles, which at that time was deserted. Impressed by its wildness, he had a meeting-place built there for the hunt. But Saint-Germain was to enjoy royal favour for several decades to come. Even after the death of Louis XIII, the queen regent and the young king set their court now at Paris, now at Fontainebleau.

The engraving p. 64, attributed to Matthieu Merian the elder, shows how the town looked under Louis XIII. His coat-of-arms is seen on the left, the coat-of-arms on the right being that of Anne of Austria.

## The Saint-Germain site in 1639



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*This engraving shows Saint-Germain-en-Laye during the reign of Louis XIII. At that time, the town had about 6,000 inhabitants. To the left is Buzot brook with its valley; there are vines on the hillsides overlooking the Seine.*

*The old Roman road, the Via Nova (now the Rue de Paris), joins the Pecq Bridge, which was built some fifteen years earlier.*

*This bridge was slightly further upstream compared to the present one.*

*In the centre of the engraving, we find the castles and royal gardens.*

*The so-called 'old castle' (Château Vieux) was built under Louis VI, the Fat, but (with the exception of the magnificent chapel built by St Louis) it was destroyed by the Black Prince in 1316 and rebuilt by Charles V. It was Francis I who gave it the appearance we know today.*

*The architects were Pierre Chambiges and, under Henry II, who carried on the work begun by Francis I, Philibert Delorme and Francesco Primaticcio (Le Primatice).*

*It was restored under Napoleon III to house the National Museum of Antiquities.*

*Francis I had the idea of building the 'new castle' (Château Neuf) and Henry II commissioned Philibert Delorme to draw up the plans.*

*Construction work began in 1594 and was completed in 1603. Unfortunately, the castle was demolished at the beginning of the 19th century. It was built on the slopes overlooking the Seine valley, and its monumental gardens and terraces, with their extraordinary galleries and grolloes containing fountains and hydraulically-propelled automatons, went right down to the river.*

*To the right of the engraving: the Parterre (later redesigned by Le Nôtre), the Park and the Forest.*

(2) An arpent was roughly an acre.

*Louis XIV:  
careful management of the forest*

The whole of the first part of Louis XIV's reign was set at Saint-Germain, where he was born in 1638.

Louis XIV enlarged the forest by various acquisitions, including 391 arpents from Poissy abbey and Hennemont priory.

He added to his domain a piece of heathland appertaining to the Seigneuries of Maisons and Fresnes and land belonging to a small village by the name of Fromainville, which was often flooded by the Seine. That part was not planted until 1764.

In 1663, Le Nôtre began work on the Parterre, and in 1669 on the Grand Terrace. Le Nôtre never did things by halves, and in 1664 he had 5,585,000 trees planted in the forest itself, which then became known as the Grand Parc.

In 1682, Louis XIV left Saint-Germain (which then had a population of almost 12,000) and moved to Versailles, and he devoted much attention to his domain at Marly, but without losing interest in the Forest of Saint-Germain<sup>(3)</sup>. On 14 October 1687, the king passed a decree depriving the local communes of their grazing rights in the forest and thereby ridding the forest of some 1,000 livestock. As compensation to the communes, he bought meadows to the value of 110,000 livres, which were shared among them. Saint-Germain received 40 arpents and Achères 46<sup>(4)</sup>.

The king then ordered the building of a wall over 2 metres high<sup>(5)</sup> to prevent game from escaping onto neighbouring farmland, but the western part of the wall was not built until the time of Napoleon I. A petition from the villagers of Achères to Louis XIV, dated 1706, mentions the damage done to crops by the many deer that had been introduced into the forest to serve as game for the royal hunt, and which

crossed the Achères Plain to go and drink at the river.

Louis XIV also had many paths and roads cut through the forest to facilitate hunting. The wall of the Petit Park was opened in some places to ensure continuity.

The map made in 1705 gives a good picture of the forest as it was at the beginning of the 18th century.

(3) Although the court had moved, Saint-Germain remained a royal city: Louis XIV received his cousin, the Stuart king James II of England, there in 1688, when the latter had been deposed by his son-in-law William of Nassau. James then moved into the castle with his wife and heir. He was accompanied by a small court, and by the early 18th century the city's population had increased to 18,000. The Stuart court remained at Saint-Germain in the illusive hope of a restoration - a hope that did not die completely until the defeat of James II's grandson, Charles Edward, 'Bonnie Prince Charlie', at the Battle of Culloden in 1746.

(4) Since Philippe-Auguste, most of the kings had granted the inhabitants of riparian parishes the right to gather dead wood and graze their animals; only the hunting rights belonged to the king. Thus, in July 1607, Henry IV passed a decree forbidding the hunting of game in the Forest of Laye 'under penalty of the king's indignation and a fine of 1500 livres for the nobility', while commoners found guilty of such offences would be sent to serve six years in the royal galleys.

(5) The wall was built within the limits of the property in order to leave room on the outside for its maintenance. It contained many gates, some of which have survived to this day.

## The forest in 1705



This map, drawn up by Nicolas de Fer and dated 1705, is the first very precise map we have of the forest.

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The wooded area shown is much smaller than at present, approximately 5,700 arpents (2,900 hectares).

Moreover, it includes about 150 hectares that had been given by the king to private individuals and which did not become public property again until the time of Napoleon.

A wall runs along the edge of the royal domain to the south and east, where it skirts round the Seigneurie of Maisons. The part of the forest abutting on the castle grounds is completely enclosed by walls, forming a small park. These walls were completely demolished in 1737 and the materials used for building the wall between the Grand Terrace and the forest.

The main lines of the forest radiate out from Saint-Germain:

- the road from Saint-Germain to Poissy, built by Blanche de Castille in the 13th century;
- the road leading to the Loges, a clearing in the heart of the forest probably originally occupied by woodmen's huts. King Robert had a lodge for the meet built there in about 1021. A small chapel was built there in 1323 in honour of St Fiacre; a modest hermitage was added in about 1500. A monastery of Augustinian friars, built in 1626, flourished there because of the three-day pilgrimage to St Fiacre in August, origin of the present 'Fête des Loges'.
- the other main line is the terrace laid out by Le Nôtre, which goes as far as the Château du Val, a former rendezvous for the meet built by Henry IV. In order to provide an open view, the latter had had the surrounding tall trees cut down in 1609. It was later rebuilt under Louis XIV.

In the north-western part of the forest, the Château de la Muelte, built in 1515 by order of Francis I, was demolished in 1665.

It was replaced by a lodge under Louis XV.

Around the forest, outside Saint-Germain and Poissy, two villages began to develop.

Achères, which was dependent until the 13th century on the lords of Poissy, then an independent seigneurie

which was united in the 16th century with the neighbouring Seigneurie of Garenne, and Maisons.

The name 'Maisons' comes from the Latin 'mansio', which indicates that it was probably a staging post for the Roman legions. From the 8th century onwards, a priory, a seigniorial domain and a few houses were to be found there. In the 11th century, the local lord, a certain Xivart, was killed at Jerusalem in 1099, during the first Crusade. In the 14th century, the seigneurie was divided into two adjoining fiefs, which were brought together again by Jean de Longueil in 1602. The duties of his son, René de Longueil, who was adviser and minister to the King, included those of captain and governor of the castles, parks and forests of Saint-Germain-en-Laye and Versailles. He commissioned François Mansart to build the castle (completed in 1651), which may be admired to this day. In 1658, the castle and lands at Maisons became a marquise.

Backing onto the Seine, to the north of Maisons, opposite Herblay, is the site of the levees of St Sebastian fort, which was built in 1670 for the military training of the Dauphin. Louis XIV often used the Achères Plain for the training of his troops; Madame de Sévigné tells us that the camps there were permanent and the scene of great pomp. Many of the localities in the Achères Plain bear names recalling that vocation: Le Polygone (which later became Les Communes), La Barricade, Les Pieux, Le Champ de Villars (where Field Marshal de Villars [1653-1734], master of the King's cavalry corps, set up his headquarters for the parading of his troops before the beginning of campaigns).

Opposite Saint-Germain, forming the foreground on the other side of the Seine, is Vésinet Forest, the southern part of which was known as 'Traitors' Wood' ('Bois de la Trahison') - it was there that Sanelon de Hauteville and his accomplices are said to have hatched their plot against Charlemagne's nephew, Roland.

Henry IV was the first to take an interest in its development. At that time, it had an area of 284 arpents.

In 1612, the Lords of Chatou and La Borde sold 335 arpents to Louis XIII and in 1634 the Lord of Croissy sold 363 arpents. Louis XIV enlarged it still further.

### *From Louis XV to Napoleon: the forest at its largest*

Louis XV took an interest in Saint-Germain, but spent little time there. In 1751, he obtained the Seignury of Achères and Garenne in an exchange, with the aim of extending the forest as far as the Seine. 400 arpents were planted with trees between Achères and Maisons. Louis also had the remains of St Sebastian fort destroyed.

After the Revolution, Napoleon, as emperor, took an interest in Saint-Germain-en-Laye and revived the tradition of royal hunts in the forest.

Like his predecessors of the Ancien Régime, he continued to extend the woodland. Thus, in 1805, he purchased about 40 hectares between Poissy and Achères. He had the forest wall (we remember that the building of this wall had been interrupted under Louis XV) continued from the Porte des Dames at Poissy to the ferry at Conflans. The boundaries with Achères were altered and a further 380 arpents were planted with trees and added to the forest.

The map of 1818 shows the forest at its largest<sup>(6)</sup>.

At that time, Parisians began to spend their Sundays taking the air at Saint-Germain<sup>(7)</sup>.



*To the north of the forest, Francis I*

- 68** *commissioned the architect Pierre Chambiges to build a lodge for the meet, an impressive building flanked by turrets and surrounded by ditches. He used the lodge regularly until his death in 1545 but it was abandoned by his successors and gradually fell into ruin. Louis XIV ordered its demolition in about 1665. Louis XV, who had extended the royal estate northwards by purchasing the Seignury of Garenne, had another hunting lodge built there by Gabriel in 1767.*



*Noailles cross was erected by Duke Maurice-Adrien de Noailles<sup>(8)</sup>*

- 68** *in about 1750. It stood before the small hunting lodge he had had built at the crossroads between the Saint-Germain-Conflans and Poissy-Maisons routes.*

### Commentary on the map of 1818



*This map of the forest, drawn up in 1818, shows it at its maximum size*

- 69** *of about 4,100 hectares. When we compare it to the map of 1704, we notice that the Garenne plain to the north, the heathland of Maisons to the north-east and a fringe on the edge of the Achères Plain to the north-west have been planted with trees.*

*At Maisons, the castle grounds have been laid out and the bridge, begun in 1811, is almost ready for use. But the ferry still has to be used to get to Conflans and Pontoise. Within the forest, the network of pathways for exploitation and forest walks has been expanded and the great avenue from La Muette now goes as far as the castle at Saint-Germain.*

*In 1812, the former Couvent des Loges became the 'Maison Royale des Orphelines de la Légion d'Honneur', accommodating some 220 pupils. The towns around the forest have expanded very little.*

(6) The 'Carte des Chasses', drawn up some forty years earlier, nevertheless gives a picture of a forest that is very similar in size.

(7) Renamed 'Montagne du Bon Air' by the Convention in 1793.

(8) Duke Maurice-Adrien de Noailles became governor of Saint-Germain in 1717; in 1734 he received the field marshal's baton at Philippsbourg.

*From Louis-Philippe  
to the V<sup>th</sup> Republic:  
the onslaughts of town planning*

For a thousand years, the Forest of Saint-Germain-en-Laye had been a pleasure ground for successive kings, protected and enlarged by them, not only for the delights of hunting but also as a symbol of their power. From the reign of Louis-Philippe (1840-1848) onwards, however, the forest found itself faced with the problems of urban pressure as a result of the Industrial Revolution<sup>(9)</sup>.

For 150 years, it was broken up by the arrival of new infrastructure and was subjected to encroachments reducing its area by about 860 hectares.

*The development  
of transport networks*

In 1837, the Saint-Germain railway was inaugurated. It arrived first of all at Pecq landing-stage, then, ten years later, it was extended as far as the Parterre, beside the castle, with a section running through a tunnel and a cutting on the edge of the park<sup>(10)</sup>.

The Paris-Rouen line was inaugurated in 1843. It included a station in the middle of the forest, around which Achères marshalling yard developed.

In 1882, a further 100 hectares of forest were cleared for the enlargement of Achères marshalling yard, and the Achères-Versailles section of the outer circle line, which had been planned for the past ten years or so, was opened. On the edge of Saint-Germain, the outer circle line station was built in an indentation cut into the forest; another railway line, since removed, ran through the forest from that station to the one in the Parterre.

The main roads traversing the forest (RN 184, 308 and 190) were gradually widened to take

more and more traffic, thus further breaking up the forest.

The most recent threat to the forest has been the A14 motorway. Strong local mobilisation helped to limit its negative impact, but this motorway, with a section running through an open cutting, nevertheless creates a further cut in the forest and strongly destructures its southern edge.

*The expansion  
of Saint-Germain-en-Laye*

The urban development of Saint-Germain-en-Laye in the 19th century was partly to the detriment of the forest.

At the end of the 17th century, the park of Noailles castle had already been laid out on a parcel of forest land covering about 40 hectares, a gift from Louis XIV to Field Marshal Anne-Jules de Noailles. This sector, along with the 'Pereire' district, its continuation to the west, was parcelled out in the 19th century: the process that was used is worth recounting.

The emperor Napoleon III wished to join the hunting grounds at Marly to those at Saint-Germain-en-Laye by purchasing a strip of land (known as the 'Plaine de la Jonction') belonging to a bankrupt banker by the name of Place. The Duke of Morny put Alphonse Pallu in charge of negotiations. The latter, as liquidator of Place's estate, took advantage of the emperor's interest in the transaction to swap the 'Jonction' for Vésinet state wood and part of the Forest of Saint-Germain known as 'la Réserve', with an area of about 50 hectares. He then parcelled out Vésinet Wood, recently served by the railway, and in 1875 he became the first mayor of the plot, which had become a

(9) Which did not mean that the dignitaries of the Republic gave up the pleasures of the hunt, but the Forest of Saint-Germain was abandoned for the 'Presidential hunting-grounds' at Marly and Rambouillet.

(10) The immense pit cut into the Parterre for the station remained until the underground RER station was built in 1973. (RER: high-speed train service between Paris and the suburbs.)

commune. In 1858, he sold 'la Réserve' to the banker Pereire, who cleared it to build a new residential district extending Saint-Germain-en-Laye to the west.

### *Military camps*

In 1856, Napoleon III ordered the building of a parade-ground-cum-shooting-range near the Loges to replace the existing one at Vésinet.

The army thus got a foothold in the forest and this coverage of about 25 hectares was enlarged in 1871 by a further encroachment of 48 hectares for the establishment of a camp for one of the infantry divisions. Further extensions in 1872 took the Camp des Loges to 85 hectares, with room for about 10,000 men. Between 1882 and 1902, the Forestry Commission (Service des Eaux et Forêts) was able to recover 27 hectares, which were reforested. After various other property fluctuations, the Camp des Loges now occupies 54 hectares.

In 1883, a shooting range<sup>(11)</sup>, creating an easement area of over 500 hectares, and a further camp were created to the west of Maisons-Lafitte.

### *Sports facilities*

A racecourse was built next to the marshalling yard at Achères in about 1880. It remained in use until 1911. Also in relation to Maisons-Lafitte's vocation as a centre for equestrian sports, a long training track was built in 1910 to the north of the commune, along the outer wall of the forest; to this was then added the practice course at Fromainville.

In 1920, a piece of land on either side of the outer circle line was granted for the building of a golf course, taking up approximately 67 hectares.

After the War, a stadium was built to the south of the Camp des Loges.

More recently, the intermunicipal Olympic swimming-pool was built on another plot that had been part of the forest.

### *Paris sewage*

To the north of the forest, the former royal 'tirés'<sup>(12)</sup> of Fromainville, which were sold as national property after the deposition of Louis XVI in 1792, were owned for a time by private individuals, before being bought by the City of Paris for the creation of sewage farms. In as early as 1876, Paris city council planned to send the capital's sewage to the Achères Plain.

Despite strong opposition from the 27 communes concerned<sup>(13)</sup>, it managed to impose this project, and the 'Infection Act' ('Loi d'Infection'), as it was called by local newspapers, was passed by the Chamber of Deputies on 29 January 1887. In 1889, the creation of the 'Parc agricole d'Achères' by the City of Paris involved the clearing of 428 hectares of woodland at Garenne and Fromainville, which had been planted 150 years earlier by Louis XV, and also the former coverts<sup>(14)</sup> in the Achères Plain<sup>(15)</sup>.

The elaboration in 1930 of the 'general sanitation programme' for the Seine and Seine et Oise departments, led to the creation of one sewage treatment plant for the whole of the region, established at the head of the sewage farms at Achères. The first part of the plant was opened in 1940. It now comprises four parts, each with an overall treatment capacity of 2,100,000 cubic metres per day.

(11) It has now been abandoned by the army.

(12) 'Tirés' were parts of the forest where the large trees were removed and the undergrowth cut down to below man's height in order to facilitate the hunting of game birds. The principle was invented by the Earl of Girardin (1824-1830), master of the royal hounds to Charles X. He had such 'tirés' cut in the northern part of the forest, where, indeed, hardwoods do not grow well because of the nature of the soil.

(13) When Monsieur Poubelle, the prefect of Paris, went to visit the site of the future sewage farms in 1886, he was greeted by a large demonstration calling for a canal to be built to carry sewage from Paris to the English Channel, near Dieppe.

(14) A place giving shelter to wild animals or game, esp. thickets.

(15) In 1894, the City of Paris purchased a further 200 hectares at Les Fonceaux in order to extend the dissipating area, which received 16 million cubic metres of wastewater in 1896. In 1903, the sewage farm was extended to Piquenard (300 hectares), between Achères and Poissy.

## *The extraction of sand and gravel*

The Achères Plain has an important deposit of alluvial sand and gravel and two sites have been exploited in the northern part of the forest. Duperrier quarry, along the RN184, has since been redeveloped as a leisure area around Corra pond. Fayolle quarry, to the north of Maisons-Laffitte is now in the process of reforestation by the Forestry Commission (Office National des Forêts).

## *On the edge of the forest, the parcelling out of the park at Maisons*

The estate at Maisons was purchased in 1818 by the banker Laffitte, who tried unsuccessfully to sell it to Charles X. In 1931, after resigning as Louis-Philippe's prime minister, and as a means of overcoming important financial difficulties, he decided to parcel out his estate, retaining just the 33 hectares of the 'Petit Parc' around the castle. He did his very best to preserve the views of the park and part of its wooded mass, thus creating, thirty years before Le Vésinet, the first garden city, whose development he controlled by means of very precise, strict specifications. 170 hectares were sold in plots, but 136 hectares which remained his property and which he committed himself to look after at his own expense in perpetuity (!), were kept as green open spaces and public areas, with tree-lined avenues often following the alignments of the former walks. With this operation he attempted to reconcile the demands of his financial situation, his concern for aesthetics and his desire to maintain the illusion of a park, still belonging to him<sup>(16)</sup>, that was intact.

(16) In 1833, as buyers did not rush forward, he made the unfortunate decision to demolish the superb stables built by François Mansart, in order to be able to offer them a further advantage: low-cost wood and freestone. He also developed horse-races as a means of promotion. In 1938, there were already 120 houses built on the former estate.

## A major trunk road to the west of Paris



*Even before Louis XIV had decided to move to Versailles, extensive landscape*

**73** *developments had been envisaged in Montesson Plain, opposite the terrace of Saint-Germain, and Le Xôtre had planned to build a 'Triumphal Way' extending the line from the Louvre to the Tuileries as far as the forest.*

*This project had a hard time in the course of history,*

*At the beginning of the century, it took the form of an urban trunk road linking Paris to the Forest of Saint-Germain, served by an electric railway line and (already!) cycling tracks.*

*The Seine Regional Council accepted this route for the railway line in about 1928, but without the last crossing of the Seine to the west<sup>(17)</sup>.*

*A few years later, in 1934, the development plan for the Paris region accepted the principle of an urban trunk road, but only in the form of a roadway, which, like Le Xôtre, it called the 'Triumphal Way'. It went as far as the crossroads where we find the Noailles cross, which marks the symbolical and geographical heart of the forest. The Forestry Commission (Service des Eaux et Forêts) even took the first steps towards its realisation in 1942, when it had a vast cutting in the forest cleared of trees by a work camp (thus saving the young people involved from forced labour in Germany).*

*In the 1980s, the prospects of extending La Défense business district reactivated the plans to extend this historical alignment in the west of Paris to the Montesson plain.*

*The only real result was the A14 motorway.*

(17) It was to have connected with Metro line no.1, which had been extended as far as the market square at Neuilly, and to have ended at the Porte des Ternes. Estimated cost: 178 million francs (source: L'illustration no. 4475, 8 December 1928).



*Today: a 'green lung'  
for the pleasure of the inhabitants  
of the Ile-de-France*

All in all, the Forest of Saint-Germain has emerged from the trials and tribulations of history without being too badly scathed.

From the kings of France enlarging their hunting grounds to the strong trends of opinion of the present day, taking action to defend the environment, it has always had many champions.

The diagrams p. 75 show the different phases in the evolution we have analysed in this article.

In 1700, the forest comprised about 2,900 hectares, to which were added about 160 hectares, which were removed by various instances of royal liberality and not retrieved until the time of Napoleon I.

In 1820, when the forest had reached its maximum extension, it covered about 4,400 hectares.

Today, despite the encroachments it has suffered in the past 150 years, the parcelling created by the infrastructure that cross it and the fact that it is practically hemmed in by urbanisation (except on its northern side where it opens onto sewage farms and Achères sewage plant), it comprises 3,540 hectares and still represents a fine area of natural space, visited each year by millions of people.

It is still protected along most of its circumference by an outer wall<sup>(18)</sup>. Twenty or so gates and other entrances give access to its beautiful high forest (predominantly oak), with a vast network of hiking trails (120 km) and riding tracks (65 km). Traffic - a source of environmental pollution - is restricted to a small number of roads.

The permanency of the alignments of the forest, its many remarkable monuments, crosses, oratories and trees, bear witness to the continuity of its long history, but it has also

been developed (particularly in the busiest southern part) to provide for the needs of the modern city-dweller: facilities for jogging and other sports activities, nature trails, recreation areas, adventure playgrounds, woodland parks on the edge of urban areas.

In the course of time, priority in the management of the forest has thus been given to various predominant functions: hunting, then exploitation of the forest, and now the reception of visitors<sup>(19)</sup>. Indeed, there is a very great need for places providing peace and beauty within the Paris conurbation: city-dwellers need to be able to get away from it all and shake off the stress of modern living.

The Forest of Saint-Germain-en-Laye is not only a major element in the ecological and landscape network of the region, but it is also a symbol of the need for solidarity between one generation and the next: it is a heritage we have received from our distant ancestors and our great-great-grandchildren will be able to walk in the shade of the oaks we plant today. Thus, three centuries after St Simon, we can still echo his wonderment:

*'Saint-Germain, a unique place wonderful  
in its views, its vast expanse of forest all  
in one piece, and unique in the beauty of its trees,  
its terrain, its site.'*

**Etienne Berthon  
IAURIF**

Translation: Mary Pardoe

(18) There are still about 35 kilometres of walling, in various states of preservation.

(19) In terms of forest management, that means the gradual abandonment of the coppice-with-standards system (which still covered 1,200 hectares in the developments of 1897 and 1923, lost in the development of 1951) and a milder management of regeneration cutting with greater concern for landscape. The present development plan (1987-2006) divides the forest into two series. The first, general series covers 3,235 hectares of which 447 will be regenerated. In the second, 'touristic' series, covering 292 hectares, in which the maintenance of landscapes is imperative, regeneration (18 hectares) is by small enclosures, usually of less than a hectare.



# *The Breteuil heritage*

*Who has never succumbed  
to the charm of old maps?  
Some of them are true works  
of art. But are they reliable?  
Do they really tell us about  
the history of the site and  
do they have something  
to teach us, living in the  
modern day and age?*

Séverine de Breteuil

The important task of classifying the archives of Breteuil Castle has now been completed, enabling us to study the fine collection of plans and try to answer those questions, taking the castle as our starting-point. The latter has been in our family for almost 400 years.

## The so-called 17th-century plan, including a bird's eye view of the castle<sup>(1)</sup>

This is the oldest plan we have.

The estate is called Bévilliers. It bears the coat of arms of the Renouards<sup>1</sup>, who were nephews of the man who built the castle, Thibaut Desportes. The castle was built between 1604 and 1610 and was the property of the Renouards from 1662 to 1712, when, through lack of direct descendants, it came to Claude-Charles Le Tonnelier de Breteuil. It took the name of Breteuil under the Restoration.

I propose that we take a detailed and critical look at each part of this document.

### *The castle*

The castle is set on square ditches and it has four corner pavilions. The whole is linked together by a central pavilion, an entrance pavilion, curtains and high walls. The drawing seems to be very close to reality, for such architecture is typical of the architecture that was adopted in the Paris region at the time of Henry IV<sup>(2)</sup>. Only the façade on the garden side is covered with blue, i.e. slate tiles. This is both the noblest part and the one with the most sloping rooves: two reasons why we find this material in the Ile-de-France.



*What this bird's eye view tells us after a first reading*

78

*This view made us realise the size of the ditches as foundation masses for the original buildings. It also reminds us that ditches (which were often dry), high walls and corner pavilions - relics of the medieval period - were very common at the very beginning of the 17th century. Even though it is open onto the countryside, the castle is still an enclosed space: this shows that there was a need for protection at a time when the Wars of Religion were still very fresh in people's minds.*

### *The outbuildings or farm*

These form a triangle, with the dovecote marking the corners; in the middle, a blob possibly indicates a source of water. The texts do not confirm this.



*Notes*

79

*There is every reason to believe that these buildings date from the Middle Ages. Only the dovecote now remains. It was restored in 1983. The plan enabled us to set it in its original context.*

### *The site*

The relief expressed in the plan enables us to see that the castle is built on a promontory looking out over the valley. Two steep - sided valleys and their streams - one to the east, the other to the west - cut into the plateau. Their confluence is situated outside the plan, in its lower part facing northwards. The eye naturally

(1) One copy of this plan is in the castle archives; another emblazoned copy is in the Archives Nationales (ref: carton 2 172 dr N).

(2) J.P. Babelon, 'Les demeures parisiennes sous Henri IV et Louis XIII', Edition du Temps, 1965.

falls on the point where the two hillsides meet. The main compositional axis, from north to south, is already marked. We know, moreover, that a new avenue of elm trees was built in line with the entrance pavilion in 1687<sup>(3)</sup>. We can see that this avenue is decorative, access to it being at the side from the lane coming from Rochefort and running along the holly-grove.



#### Notes

79

*All the later properties tried to take advantage of this major asset, the site (which even clearer on the Map of the King's Hunting-Grounds), even though a distance is to be felt in the 19th century, at the time of the landscape garden (jardin anglais). Moreover, because it is facing north, the view from the castle is never into the sun, a detail that is very appreciable.*

### The gardens

Inherited from the gardens of the Renaissance and very much in keeping with the shape of the castle itself, the nine-square plot forming the pleasure garden lies at the foot of the castle to the north. It is surrounded by walls and looks out over the valley.

Down below, to the west, is another enclosed space with plants. Descriptions dating from 1771 tell us that it comprised three green arbours, but this is not clear from the plan. We may suppose that it was planted with fruit trees.

#### Two vegetable gardens

They are shown as blanks. The old one, referred to in writings as 'le potager vieux', the old vegetable garden, is situated between the outbuildings and the park (on the north side). The new vegetable garden, a large two-acre rectangle surrounded by walls, is next to the avenue. There is an ornamental pond near each of the vegetable gardens. The one near the new vegetable garden is later mentioned as a watering place; in the 20th century it was to serve as a foot bath.

#### The vineyard

Beyond the new vegetable garden, a vineyard faces east on very steeply sloping ground.

The texts confirm that this plot was planted with vines.



#### Notes

79

*Right from the first century of its construction, the whole of the area around the castle was provided with the necessary facilities for the daily lives and pleasure of those living on the estate. The castle was an economically autonomous holiday and pleasure resort.*

### The park

The park, sloping down to the Chevreuse Valley, is surrounded by walls. It comprises a quinconce (quincunx), the name given in the texts to the upper part, with paths radiating out in a star-shape from a central rond-point and delimiting eight wooded plots. In this space, a small kiosk, top left, might be a former ice house.



#### Notes

80

*As it contained game, which was likely to damage the gardens or neighbouring properties,*

81

*a park was traditionally surrounded by walls. Having spotted what is probably the former ice house, we must be careful in developing this area (extension to the car park, for example).*

### The holly grove

On the edge of the park, we notice a holly plantation. It was no doubt of economic importance, but we do not know exactly how.



#### Notes

80

*Our awareness of the existence of this holly grove, which has long since disappeared, has led us to protect*

81

*and focus attention on the few venerable holly trees that have survived. Holly trees grow very slowly and the present park still has some specimens of exceptional size (up to eight metres high).*

The bird's eye view and the plan that we have just studied are very reliable documents, as was proved by the cross-checks we made with old written documents. They throw light on the spirit that prevailed when the estate was built and help us to make the most of its assets when we decide to make improvements or carry out restoration work today.

(3) Works on the avenue in 1687. Yvelines Departmental records. Ref.: E 6745 folio 231 - 8 December 1687.

## The topographic map of the environs of Rambouillet and Saint-Hubert, 1764 The map of the King's 'Hunting- Grounds, 1764 - 1773

We are lucky in that our lands were covered by two maps in the eighteenth century: first of all, by the Map of the environs of Rambouillet and Saint-Hubert (1764) and secondly by Map of the King's Hunting-Grounds (1764-73) ('Arpajon' sheet).

We ourselves have dated the state of our domain, as described by this second map, to 1773, with the help of observations we were able to make. Comparing these two maps with one other and with the previous plan enables us to follow the development of the Bévilliers estate.



82

### *The site*

The map gives us an overall view of the site. To the north, the estate's main axis leads the eye between two wooded slopes (Dampierre park and Méridon wood), and, further north, towards one side of the Chevreuse Valley on the horizon. The village of Choisel appears down below Breteuil park; Cernay plateau extends to the south.

### *The buildings*

The courtyard has become cluttered with buildings.

The texts mention a poultry yard on either side of the entrance, and stables, sheds and kitchens in the courtyard to the right.

### *The estate and the forest*

Both maps show two new, diagonal prospects over the valley. On the first plan, the remains of a holly grove run along the park; beyond that, we get an impression of deforestation. In 1773, this same part was apparently planted with lines of chestnut trees. Later on, chestnut-gathering was a carefully managed source of income.



*Notes*

83

*Some of these old grafted chestnut trees, like giant sculptures scattered over the forest, are now curious features of the castle park.*

### *The gardens*

We can see very little of the gardens on the map that was made in 1764. On the other, however, we can make out the flower bed that is described in texts dating from 1771<sup>(4)</sup>.

The map of 1773 is very up-to-date. It even shows work that was in progress at that time.

The 'bosquet chimérique' or maze was completed in March of that year (in the old vegetable garden). There is a statue marked by a dot. The Bosquet de la Garenne (new paths forming a star) is probably not finished but it is already visible.

The account was settled on 3 March 1775<sup>(4)</sup>.

It would be worth enlarging a detail that is visible in the avenue, directly in line with the castle (south side). It is shown as a simple dot level with the third row of trees, in the middle of the walk. This dot fits in perfectly with a description that we found rather mysterious before making this discovery. Indeed, a very large pedestal, intended to take a statue, was built in 1773 and the statue was supposed to be visible from the entrance hall to the castle,

(4) The 'Vol de chapon' estimation of 18 October 1771. Castle archives. 3rd series - paragraph 1.A. This estimation was made with a view to granting the estate to Claude Stanislas de Breteuil in March 1772.

through the front door. Who did this statue represent? The young Louis XVI perhaps? We may suppose so, but there is no material trace of such a statue.

## The plan after reconstruction from contemporary documents

(Work carried out by Isabelle de Sabran-Ponteves)

The plan we are about to study was made in 1994, following lengthy research in the archives. It concerns the period from 1772 to 1783 (date of the death of Claude-Stanislas de Breteuil), during which much work was carried out on the castle and its gardens.

### *The castle*

The building that lay across the courtyard has been cleared. The entrance pavilion is still there, but the adjoining poultry yard has been moved into new outbuildings between the farm and the watering place. The two corner pavilions have been rebuilt. The one on the right contains a laundry; the one on the left houses the caretaker. There were plans at that time to build a residential wing in the courtyard to the left, supported by the high wall that still exists, and lying parallel with the wing containing the sheds, stables and kitchens, but it has not yet been built.



### *Notes*

84

*The arrangement of the buildings in the courtyard enables us to imagine how closely together the inhabitants of the estate lived. This is confirmed by 18th-century writers (cf. Beaumarchais).*

(6) Ha-ha ('Ha-ha' as an exclamation of surprise): An obstacle made by building a retaining wall in a hollow and filling the near side with earth. It was used to keep the animals confined to their own grazing land and out of the gardens surrounding the house, without interrupting the view. (E. Lucie-Smith)

### *The gardens*

There is an ice house, with its adjoining bosquet anglais ('English grove') and a Chinese pavilion nearby, a flower bed and, down below, to the left, three green arbours and an aviary.

We can still see the new Bosquet de la Garenne (with its walks forming a star shape), a large vegetable garden laid out over four terraces and including the former vineyard, and, of course, the bosquet chimérique or maze, which we have been able to show in detail because the plan is in the archives. The latter may well have been the garden's star attraction. All these parts - with the exception of the three green arbours and the flowerbed which was already there in 1771 - were greatly modified during the period concerned.

Other works were also planned in 1777: a ha-ha<sup>(6)</sup> at the edge of the vegetable garden, and a decoration of the quinconce that would have transformed this apparently obsolete part of the garden into an undulating grove lending itself to 'philosophical walks', in the spirit of the one that was built in the Trianon gardens at that time. These plans were never carried out.

### *A comparison of this reconstructed map (showing the supposed state of the castle in 1783) with that of the parish of Choisel in 1785*

In view of the dates, this very attractive coloured map should correspond exactly to the reconstructed plan. This is the case where the buildings are concerned, but there is some doubt about the gardens and the park.

This plan gives us further information about the layout of the grove next to the ice house, just to the left of the castle. (This grove had to

be imagined from very little evidence: the ice house as it is today, and the bills for the works that were carried out). But the end of the flower bed and the location of the maze are obviously not quite right on this plan. These two parts of the garden are more readable and more in keeping with the descriptions on the second map of the King's Hunting Grounds.

Finally, this plan poses an enigma concerning the large walks in a star-shape which cut across the park. These walks, covering the whole of the park (which, furthermore, is noticeably sloping), appear on no other documents, either before or after that date. This type of layout still existed in the Bosquet de Garenne, which we have already identified, but the latter is not shown here; if it was, it would fit into the first large diamond shape on the edge of the gardens.



*What we learn from these two plans:*

85

*In 1771, the castle was granted to Claude-Stanislas de Breteuil for the sum of 8,000 livres, taking into account the works that had to be carried out in order to make it 'liveable': the walls and excavations of the vegetable garden alone were to cost 8,250 livres, the Bosquet de la Garenne 11,094 livres 9 sols, the rebuilding of the two pavilions in the castle courtyard 11,180 livres. Claude-Stanislas soon began to run out of funds, and when he died in 1783, his widow had difficulty in settling the bills.*

*Claude-Stanislas had nevertheless brought Bévilliers into the forefront where facilities were concerned.*

*The aristocracy's very discriminating taste for the arts in the late 18th century, and the fame of his illustrious cousin, Baron de Breteuil, led him to accomplish these achievements. When he died, everything came to a standstill until his son Charles, a young prefect, took things in hand, in about 1804. Meanwhile, everyday business was dealt with and his widow did all she could to avoid sinking into turmoil.*

## Plan from the General Atlas of the lands belonging to Breteuil in 1819

(drafted by Lecoy, surveyor; now at Breteuil castle)

## The 1821 draft of the map of France

(so-called 'Carte d'Etat-Major')



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These two documents are very similar, but the draft map of 1821 indicates contour lines for the first time.

These plans are strikingly different from those of the earlier periods.

### *The site, access, the estate*

The name Breteuil appears alongside that of Bévilliers. The axial prospect over the valley has been shortened. Access is still via the western side, but there is now a choice, since a road has been built on the ice house side. The latter skirts round the castle, enabling visitors to arrive by carriage on the garden side, thus avoiding the courtyard.

The estate was then a source of revenue; the texts confirm that this was so for the farming lands, the chestnut grove and even the vegetable garden.

### *The castle and its gardens*

They are largely unrecognisable: the stables and sheds, originally situated on the right-hand side in the courtyard, have been moved into the poultry yard, beside the farm. The entrance pavilion has been destroyed, as have the high walls that surrounded the courtyard.

Apart from the Bosquet de la Garenne (walks arranged in a star shape), the large vegetable-garden-cum-orchard and the ice house, all the parts of the gardens so far observed have disappeared; in their place is 'a large, well-designed, well-planted landscape garden' ('un grand jardin anglais bien dessiné et bien planté'<sup>(7)</sup>), as Charles de Breteuil described it.

(7) 'Projet concernant le château et les dépendances de Bévilliers'. Manuscript booklet begun in about 1804, conserved at the castle.



## Notes

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*On the gouaches and drawings dating from this period, the change is even more striking. In two centuries, the brick and stone castle, surrounded by high walls and built on square ditches acting as sub-foundations, has become a building that is completely white, very much lower and totally in keeping with its natural environment. The gardens have even moved into the courtyard and there is no obstacle of any sort to obstruct the view from the castle to the gardens.*

That was the age of Romanticism, hence the taste for the so-called 'English' garden (i.e. the landscape garden). Men for whom liberty was henceforth a master word took their inspiration from nature with its apparent freedom.

N.B. - *A detail that is worth observing:*

On the plan that is kept at Breteuil the waters from the courtyard are channelled into the moats and then seem to be directed towards the ice house. This may be seen as the early stages in a sewer system, a subject that constantly crops up from then on, and even now, at the end of the 20th century.

## The structure plans of the Paris Region drawn up by the Geographic Service of the Army, 1900



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On this sheet (drafted in 1898-1901, revised in 1901), covering the western part of the estate, the castle is shown outside the frame that figures on the plan.

This document, using contour lines, enables us to gain a better understanding of an important and very underestimated stage in the life of Breteuil.

### *The site and access*

The efforts that were made at the beginning of the century to reduce the prospect of the park to the north seem to be bearing fruit. But the great changes lie elsewhere:

- the Rochefort-Chevreuse road, which used to cut through the chestnut grove, has been deviated via La Ferté, thus

enabling the chestnut grove to be reintegrated into the park, which thus becomes larger and more pleasant. Furthermore, there is now a pond in the marshy area at the bottom.

- for the first time, the road arriving at the castle is in line with it, on the site of the former avenue. The large elm trees in the avenue used to run along close to the buildings on the south side, but here many of them have been felled and a garden has been made in what we might now call the forecourt. This new road in line with the castle and the new garden radically change the approach.
- there is now a second access road from the village, at the bottom of the park (on the northern side), via an inner road on the western side. This road still exists. We call it Achille Fould Walk, like all the developments dating from this period, it was made when Alexandre Charles-Joseph de Breteuil's wife was Charlotte Fould, the daughter of Achille Fould, a minister under Napoleon III. They were married in 1846, but it is likely that work only began after the death of Alexandre's father, Charles, in 1864.

### *The buildings*

The castle has lost the wing that was on the right. The out-buildings have been moved. We know that the farm buildings (probably dating from the Middle Ages) were considered to be in such a bad state, from the early 19th century onwards, that it was preferable to demolish and rebuild them. This was accomplished in about 1865 and two new U-shaped buildings now house the farm. The dovecote is now alone and, at its feet, the former ornamental lake has become a pond.



## Notes

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*Whilst keeping the landscape gardens that were created under the Restoration, the castle surroundings have been changed completely. All the clearings are along the same lines as those created in Paris at that same time under the authority of Haussmann: they open up the view of the monuments inherited from the Middle Ages. Moreover, society itself was changing, and the moving of the service buildings away from the castle coincides with a period when the social strata tended to have their separate spaces.*



## The structure plans of the Paris Region, 1900

Unlike the previous plan, the map at 1/20,000 scale includes the ornamental lake and the formal gardens (jardins à la française). Photographs of the completed works on the north and south sides date from 1900. A new works campaign for the whole of the park was launched; it lasted from 1897 to 1903.

In 1894, Henri de Breteuil called upon the architects and landscape gardeners, Henri and Achille Duchêne, who took their inspiration from traditional French formal gardens<sup>(8)</sup>. They directed the works to enlarge the northern terrace. They created the large ornamental lake (or miroir d'eau), designed lawns and walks that were in keeping with the stone and brick façades of the castle, planted box trees (which have since been cut to form mosaics or round shapes) and also the thirty-three yew trees, topiared in the shape of truncated pyramids, that grow on either side of the castle. In the course of the 20th century, these trees have flourished. Now, a hundred years after they were planted, they are true works of art!

## The plan of the Paris Region drawn up by the Army Geographic Service in 1934

All the works carried out by Henri and Achille Duchêne are shown on this plan.

There are two ponds in the lower part of the park; an access road to the north, in line with the castle, extended by a line of what we believe to be pear trees in the open field (two of the ones at the end are still there).

There are also two entrance pavilions level with a first iron gate, and an orangery overlooking one of the terraces of the former vegetable garden.

The castle has two symmetrical wings (work on the one on the right has only just been begun on this plan).



### Notes

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*These works, carried out in about 1900, have once again considerably changed the appearance and life of the estate. Yet, in scale and spirit, they seem to be similar to those that were carried out at the end of the 18th century, the landscape garden of the early 19th century thus becoming a sort of parenthesis in the history of the site.*

*Such large-scale works were made possible by a combination of the very sure taste of Henri de Breteuil (1848-1917), my husband's grandfather, and the fortune of Marcellite Garner, the rich American heiress he had married in 1891. She became very attached to Breteuil, and died there in 1943.*

*Her son, François, then became the owner and he tried to take the castle in hand but was soon discouraged at the idea of the time and money that were needed for its upkeep, and he put it up for sale in 1958. Two promises of sale were signed but came to nothing and he finally agreed to give Breteuil to his son, Henri-François, who was 23 in 1967.*

(8) The architects and landscape gardeners Henri Duchêne (1841-1902) and his son Achille (1866-1947), were responsible for the renovation of many parks and gardens. They took their inspiration from the tradition of French formal gardens whilst achieving some veritable creations (at Breteuil, Courances, Vaux-le-Vicomte and Villette, for example). Achille then turned to creating modern gardens.

## The present day - Four partial plans

Between 1943 and 1967, the estate suffered a great deal of wear and tear. Moreover, society had changed a great deal since the last changes were made in 1900, so many things had to be rethought in order to fit in with modern conceptions. Under the authority of the Ministry of Culture, with Bernard Fonquerie (chief architect for Historic Buildings for the Yvelines) as project manager, and with the aid of the Agence des Espaces Verts de l'Île-de-France, works were once more undertaken in the garden and the park, which had been listed as an ancient monument in 1973.

### *The Princes' Garden (Jardin des Princes)*

Rehabilitation work on this terrace, the oldest in the vegetable garden, which had become wasteland, was begun in 1991. A study was carried out by René Péclère, master landscape architect, and Jean-Claude Rochette, who was then chief architect for the Yvelines department. The traditional layout of the vegetable gardens was re-established and the large squares planted with grass and edged with flower beds were restored. The former central watering basin was also restored and supplied with water. Fruit trees (cordons and espaliers) were replanted in the border, and an avenue of Japanese cherries, punctuated by beds of shrub peonies, completed the picture. All these plantations, and those on the edges of the ponds, were carried out on the advice of the landscape architect Jacques Messin<sup>(9)</sup>.

### *The ponds*

The upper pond was threatening to return to marshland and the lower pond was becoming dangerously silted. The ponds were restored in 1992. Plantations suited to this type of very damp soil were made and paths for walkers were created along the water's edge.

### *The north-south axis*

In 1996, the ornamental lake (miroir d'eau) in the French formal gardens was made watertight again, the small basin down below it (La Grenouillère) was restored, and the lawn between them (the 'tapis vert') was levelled out. The lower part of this prospect was reorganised in the spring of 1997. This entailed rehabilitation of the traditional view over the Chevreuse Valley. It has nevertheless changed slightly: rather than being in line, it has shifted slightly to the left. The line of sight on the very first plan seemed to the junction between the two hillsides of Méridon in the east and Dampierre in the west. But since the first pond was excavated under Napoleon III, the eye falls much lower. The tendency is to clear a fine view of the ornamental lake and thus open up the prospect to the west. This was very clear on the plan made by the landscape architect Jacques Sgard, who worked on these final realisations under the direction of Bernard Fonquerie, chief architect for Historic Buildings for the Yvelines.

### *Creating a maze*

The last element will be a maze, as a reminder of the one that existed in the 18th century, but situated this time beneath the orangery terrace (also in need of restoration). It should be completed in about the year 2000.

(9) The Yvelines General Council helped to pay for the restoration of the Jardin des Princes. In exchange, the castle agreed to special entrance fees for schoolchildren from the department for a period of five years.



## Notes

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*Before work was begun on these sites,  
we did our utmost to find out  
about the history of the park.  
We realised that certain choices  
were inevitable-e.g. respect  
for the north-south axis.  
We have always appreciated these old maps  
and plans for their artistic quality;  
our work also led us to admire the rigour  
and skill of our surveyor ancestors.  
Comparing these documents for this article  
enabled us to learn even more.  
However, we did not think it desirable,  
or even possible, to try to make the estate  
as it was during a particular period.  
We have chosen to restore it  
with respect for the past,  
but with a view to a modern society.*

Breteuil is open to visitors all year round. It is also available for receptions. In exchange for its aid for the major restoration works, a contract has been signed with the Agence des Espaces Verts de l'Ile-de-France and the castle will be open to the public for a period of 25 years.

Visitors now share Breteuil with us and a sort of dialogue has grown up. The visitors want open air, nature and history, which we provide, and together we manage to keep the castle and its gardens and park alive in today's society.

The history of houses is very closely related to that of man. It reflects the tastes and way of life of the builders and successive occupants and, through them, of the society of the time in which they lived, as may be seen from this study of the history of Breteuil castle.

Séverine de Breteuil

Translation: Mary Pardoe



# Urban infrastructure and recomposition

## *The Bagnolet, Romainville and Montreuil plateau*

*Without the aid of specific tools, it is difficult to understand the ever-changing peripheries. The combination of formal instability, 'disorder', and unfathomable planning rules makes it necessary to identify the oldest structures and trace their linkages to the managed urban development schemes of recent decades.*

Nicole Eleb-Harlé

Identification of the contradictory communication axes running through the urban peripheries, which are constantly being reshaped, can lead to a clearer understanding of their dynamics and to a better grasp of how their landscapes have evolved.<sup>(1)</sup>

Cartographic and historical research as well as interpretative and thematic approaches reveal the different rates and types of formation and transformation of the urban peripheries<sup>(2)</sup>: rapid mutation along the path of new, superimposed infrastructure, slow modification and movement or permanence of the old routes. Urban atlases thus illustrate P. Lavedan's suggestion that cities grow and move along the lines of the major communication axes built into their plans, with the axes themselves being a reflection of the cities' geography.



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These processes of transformation and recomposition are illustrated here using a cartographic approach. In a territory with no rail transportation because of its topography, and with little industrialisation because of its long farming tradition, we have the opportunity of observing the redeployments and evolution of the road network, where there were no obstacles from industry. In the Romainville-Montreuil and Bagnolet plateau area, the road network can be considered the most enduring and the most significant trace of the forms and shapes of the various 'urban projects' implemented up to around 1975-1985. A study of this network shows how the completion of motorway infrastructure projects - such as the A3 motorway and its B86 feeder roads, the A86 circling the 186 national ring road and the rail road, and the Porte de Bagnolet interchange linked to the Paris ring road - upset the logic of service. While closely following the plateau's spe-

cific topography, the new infrastructure altered the distribution of the territory by running majestically through large, undeveloped enclaves. The cartographic reconstitution presented was prepared through the comparison and interpretation of information gathered from a series of historical maps<sup>(3)</sup>, projected onto three drawings at a scale of 1/10,000 established for the periods from 1859 to 1900-1910, 1900-1910 to 1937 and 1937 to 1975. The gradual additions to the network and the shapes used are revealed by superimposition and examination of the older historical reference maps. It is always vital to carry out additional research. In particular, perusal of the archives is necessary for information on such aspects as managed projects, alignments, the expansion plans of the period between the two World Wars, communal plans and regional master plans.

Three large, superimposable transparencies summarise the elements making up the urban structure of these three periods and colour is then used to add our interpretations. These focus on highlighting the creation, transformation or preservation of roadways, the remodelling of old roads or country lanes, and the broadening or adjustment of the course of old routes, by identifying the elements of the original framework, urban roads and access roads to housing estates, for the second part of the 19th century and the 20th century up to the 1980s.

(1) The permanence of old routes that shaped the peripheral arrondissements of Paris, the canalising role of urbanisation played by the exit routes and the formal persistence of the boundaries of large aristocratic estates divided up into new housing developments have all been illustrated by the work of B. Rouleau in his book *Faubourgs et anciens villages de Paris*, published by Seuil in 1985.

(2) Analysis of the structuring of the urbanised area of the north-eastern periphery of Paris, undertaken as part of the research project on *Périphérie et projets urbains N. Eleb-Harlé, V. Biau, BRA 1985*, was pursued by studies on the reasons underlying the transformations of north-eastern Paris from the 18th century to the present time, in the form of urban atlases and monographs on the communes of the Paris belt.

(3) For the 18th century: the Roussel map of the Paris environs in 1731, *La Carte des Chasses* of 1765-74. For the 19th century: the communal atlas of the Seine department prepared by O. Th. Lefèvre, 1854 and 59 at a scale of 1/5000, arrondissement of Saint-Denis and Sceaux, the master plans of the geographic service of the armed forces at a scale of 1/10000 prepared in 1874 and revised in 1885, 1936 and 1937. For the contemporary period, topographical maps and charts from IGN, 1969-83-87, to a scale of 1/5000 and 1/25000 and aerial photographs.

While noting the way in which the oldest roadways are selectively included in the hierarchy of the original or newly created fabrics, we gave priority to the urban shapes and systems superimposed on the scale of the site of the plateau and of the centres of the communes. These indicate underlying reasons such as the desire to strengthen links with Paris at the end of the 19th century and to reinforce intercommunal, then regional and extra-territorial connections in the 20th century. The remodelling and expansion of the initial centres span longer periods and are illustrated here mainly with reference to the centre of Montreuil, which has been the focal point of a gradual planning and beautification project over the centuries. In sum, we have attempted to illustrate the spatial scales of the infrastructures as well as the temporal scales of the transformations taking into account the diversity of their formal arrangements, their modes of linkage to the pre-existing forms and their role in the structuring and gradual integration of this territory into the metropolitan area.

The Bagnolet plateau is situated to the east of Paris. It forms part of the relief which begins with the hills of Belleville and Ménilmontant and culminates in the north at the 120-metre mark above sea level—where the earliest centre of Romainville was established—before tapering off towards the south and the Seine valley. Its northern and eastern limits describe a large, very sinuous cornice forming a lookout over the Plaine de France. In the south-west and south, it presents two depressions with brooks running through. The first depression to the west, houses the village of Bagnolet, niched in this thalweg facing north-south. The second, more open depression, is turned towards the Seine and is the site of the historical centre of Montreuil.

## Large domains and village arrangements



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The Carte des Chasses (map of hunting grounds), through its precise representation of the large domains and seigneuries and its very suggestive representation of the relief, the roads and tracks, perfectly reconstitutes the positions of the

three communes relative to each other as well as to Paris and the neighbouring communes. Montreuil facing primarily the Château de Vincennes connects with the Charonne commune. Romainville to the north, extending on from the villages of Belleville and Ménilmontant, remains separated from Charonne by the large domains of Saint Fargeau and Parc des Brières. Bagnolet, to the south in a lateral position to Charonne, is isolated from the latter by the relief and the Château de Madame, a large pentagon extending right up to the confines of the Saint-Germain estate.

The structure of the territory in the 18th century, as presented by the main maps of the period, seems to us simple and harmonious. On further examination, the duality and the contrasts in terms of lines and shapes emerge sharply between the major geometrical shapes in the territory (large domains, main rectilinear axes) and the built-up centres, with their organic shapes, linked together by a diffuse, highly branched network of minor and major roads following the main contours of the relief and the hydrography. The Route de Flandres and the Canal de l'Ourcq, to the north, and the tree-lined avenue leading to the Château de Vincennes and its mall, to the south, are the most prominent of the plateau's external boundaries.

With regard to the plateau itself, the original framework of radial roads is modest or virtually non-existent there since, given the relief, it was not feasible to establish large exit roads. However, the Montreuil village has a link road to Paris, built in the time of the Ferme Générale. This rectilinear road, built around 1740 very clearly runs along the old route through the orchards and vineyards and extends into Charonne. To the west, beyond the bulging districts characteristic of medieval centres, the right lane extends towards Rosny on the La Boissière lands punctuated by windmills and small woods.

The complex system of country roads linking the three communes looks like a network with a mesh of deformed squares. Very reticulate in some parts, loose and open in others, in scalloped lines running from east to west, its flows accommodate the topography, the presence of quarries where paths trail away, and the abundant hydrographic system in the north, where the lines curve.

## Knitting together local fabrics into a territory



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The communal atlas of the Seine department, prepared by O. Th. Lefèvre round about 1859, highlights the series of separate forts and the wall that formed part of the Paris defences. This military system comprising the Romainville, Noisy and Rosny forts was established along the line of the 100-metre mark of the plateau and brings out its cornice structure. Supported by the strategic route linking them, the forts form a wall-like shield stretching from Porte des Lilas to the Nogent-sur-Marne fort to the south. Strongly marked by a series of indents that facilitate widening for the crossing of military convoys, the layout of this road follows the path of old roads strung together.

## New shapes from 1860 to 1900

With the exception of military works, new territorial layouts were relatively few during this period. Note should, however, be taken of one major water supply project, the Dhuis Aqueduct, built by the City of Paris in 1862. The aqueduct was supplied locally by deviation of the many springs located in the northern part of the plateau, an area dotted with numerous ponds, traces of which still remain in the toponymy. First built as an open construction, it was later moved further south following a new curved line, hugging the relief of the plateau, from Rosny to the Ménilmontant reservoir. In this territorial arrangement, the establishment of new railway lines from Paris to Strasbourg in the north and the branching of the southbound Mulhouse line from the Noisy-le-Sec station represented further east the emergence of a new growth boundary running parallel, lower down the plateau, to the strategic road.

Linking the forts, this road also intersected the roads that connected the centres of Romainville, Rosny, Fontenay and Montreuil to each other and to Paris. By carving out and widening lanes, large connecting axes were created against the backdrop of the former meshed network of rural roads. Old roadways were straightened out for improved continuity

from commune to commune, such as between Romainville and Montreuil, through the estates of the 'grands champs'.

In the north, new routes appeared. The road from Romainville to Saint-Denis, after taking a steep downhill slope to the west of the Romainville fort, joined the Route d'Allemagne road in a straight line and crossed the Canal de l'Ourcq at the Folie junction, continuing the connection between Montreuil and Saint-Denis beyond Bobigny and the Six Routes crossroads. On the plain, straight lines seemed to run unobstructed: the canal, railroads and large stellite road arrangement beginning the process of differentiating the territories from which increasingly contrasted entities were to emerge.

In the centre of Montreuil, in addition to the Place Girard and its three streets which appear on the Lefèvre map, a new road was opened up towards Vincennes. Linking up with the old route, which had itself been widened and regularised, it ended at the La Pissotte housing development to the north of the Château.



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The main street in the village of Bagnolet, in its turn, was extended by a north-south lane. Running diagonally through the old Château de Madame estate, 'Les Coutures', at Porte de Montreuil it meets the octroi opened up in the wall. Similarly, the new commune named Les Lilas was linked up by a street cut straight to the Porte de Ménilmontant. The objectives pursued combined servicing the forts, providing continuity from centre to centre and to the gates of Paris supplemented, in the case of Montreuil, by a beautification plan.

Further, the September 1887 law on alignment plans, which relaunched road widening and alignment works on old roads, resulted in elevating some of them almost to the rank of ringroads. A good example is the trunk road from Drancy to Choisy, which links Romainville to Montreuil and Fontenay. Laid out as a winding ringroad with broadened sections, it ran parallel and to the west of the strategic fort road. It thus separated the peripheries closest to Paris, with an increasingly dense communication network, from the still agricultural ones with a looser road system. The latter ring-

road continued the knitting together of local fabrics into an increasingly vast territory, stretching from the south-east this time to the limits of Bois de Vincennes and Fontenay.

The original shape, served by the irregular, branched grid of intercommunal roads, running essentially east-west and north-south along the plateau, began to fade. It gave way to a more systematic design of ringroads, resembling successive enclosures and boundaries between modes of growth, a precursor to the parkways that fit so naturally with this site.

Through the use of diagonal roads converging towards the city gates, other shapes borrowed from the vocabulary of 19th century urban practice appear on the maps dating from the turn of the century. Many more of these shapes take a stronger hold in the following period, in keeping with the time lag usually observed between alignment plans and actual accomplishments.

## Local rationalisation and intercommunal projects

Succeeding these restructuring works, which up until 1909 strengthened links between the old centres, the gates of Paris and military constructions, the ensuing period from 1900 to 1937, was to see the development of urban shapes at the level of the communal territories like Montreuil and Romainville, while efforts continued to connect the centres to each other and to the gates of Paris: essentially Porte de Bagnolet to Montreuil and Porte des Lilas to Romainville.

These projects were coupled with new expansion works on the centres, pursuant to the late 19th and early 20th century plans. In Montreuil, two new axes starting from Place Girard appeared, according to a star-shaped design, taking in a pincer movement the extremities of the old shopping street to the west. Place Girard appeared at the centre of a stellate arrangement whose branches ran north-east towards Bagnolet and south towards the Croix de Chavaux square, culmination of the Rue de Paris. To the north, the large districts housing the murs de pêches<sup>(4)</sup> began to change, with a star-shaped road system converging at the Carrefour de Strasbourg junction.

The expansion and beautification plans<sup>(5)</sup> of 1933 and 1940

continued this rationalisation and redeployment work on the town centre, while at the same time paying particular attention to intercommunal links and the service of housing developments. With a view to improving traffic flows and sanitation systems as well as to carrying out new alignments, ambitious plans were laid, including the projects to align the Rue de Paris and link Croix de Chavaux to Porte de Saint Mandé. The latter failed in the face of the intensive mixed occupation of the vineyards and market gardens of Bas-Montreuil, from the end of the 19th century, by wood industries and storage activities. The Rue Marchande realignment project was taken up again by Bastard's 1955 communal plan and completed in the Seventies.

In these sectors close to Paris, as has already been noted in the case of Pantin<sup>(6)</sup>, housing development activity remained very limited and cannot in anyway be compared with the sectors to the north and east of the Nationale 3 around Bobigny and Bondy-est. The most significant activity remained the pursuit of regular housing estates to the east of Bas-Montreuil and around the branch of the departmental trunk road 40 between Montreuil and Vincennes and beyond towards Fontenay. Around the centre of Bagnolet where a small garden-city was built in the outskirts of Paris, in the commune of Les Lilas, construction on the housing streets was most often in the form of townhouses, and small, low-rise, multi-family dwellings, with the first low-cost housing units also appearing. The latter were spread across the land reserves acquired by the Office de la Seine, unlike those reserves mobilised through the declassification of military sites like the Pré-Saint-Gervais garden-city, which included a section of the strategic route in its road network, not forgetting the belt of low-income housing on the Thiers enclosure.



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In 1937, relatively inaccessible enclaves consisting of large portions of as yet unequipped land remained. The shape resulting from these selective remodelling and hierarchical

(4) Translator's note: the murs de pêches are limestone-covered walls built especially to protect peach trees planted along their length from harsh winds and cold weather conditions.

(5) Plans following upon the Cornudet law of 1919, modified in 1924 and again in 1932 to take into account the development plan for the Paris Region established by H. Prost.

(6) See footnote 2.



structuring works through the removal of by-pass roads coupled with the cutting and regularisation of the centres, made Montreuil the centre of a relatively rich network with a star-shaped arrangement of branches. Its extensions stretched far afield to link up with other primary roads, thus delimiting large, unoccupied enclaves such as the hillocks of the abandoned gypsum quarries at Morel.

In the northern part of the plateau, downhill from Romainville, the Marais de Villiers site was served by a new road retracing the curve of the Dhuys aqueduct, forming with the streets of Villiers to the east, a regular figure. Romainville was equipped with a series of new roads which opened up the areas nearest the centre and close to the Rue de Paris. Only the northern part of Bagnolet backing onto the Malassis enclosure and the Capsulerie fort remained untouched by the remodelling works, while the Coutures district in the southern part was redefined and attached to Porte de Montreuil and Croix de Chavaux.

In a lacunary manner, in keeping with the thinking of the moment, linking crossroads and branching junctions, a regular, complex grid took shape, with the resulting shapes, by-passes and loops, forming pockets of large areas. Viewed against the backdrop of the 1937 map, their preponderance in the east is clearly visible. To the west between Bagnolet and Montreuil, Le Plateau des Malassis, consisting of large enclaves, appeared delimited by new roads, particularly the Boulevard de Chanzy opened in 1940.

## Montreuil: Evolution and redeployment of the centre



*At the centre of the territory studied, Montreuil is the most extensive and largest town, in terms of population.*

- 104** *A more in-depth study of its transformations from the 18th century to the present time, shows that the forms and structures that it presents today and its intense links with all the surrounding communes are the fruit of a series of works combining the various shapes of urban practice to achieve the stellate arrangement of which the central districts form the heart.*
- 105** *The ign map of 1972, shows the original centre of Montreuil, before the renovation of its southern districts. These would house the programmes of the directional centre, transport pole and shopping centre incorporated at the end of the*

*Seventies. However, its bipolarisation resulted from one of the major operations of the expansion and beautification plans (p. a. e. e.) of 1933 to 1940, which appears in its final stages of completion. As part of the renovation of the districts of Croix de Chavaux, the Rue Marchande was extended on its south-eastern side. It was also extended to the north towards the Marais de Villiers. The square itself, reconstructed in the form of a rochet, became the convergence centre for the new roads. The roads opened towards Porte de Bagnolet (Boulevard de Chanzy in 1940) and towards Fontenay (Avenue Gabriel Péri provided for in the p. a. e. e.) run into the square. These projects, which were only capitalised afterwards, attest to the influence of the plans prepared in the period between the two World Wars on the process of linking up the communes and consolidating new central locations in the peripheries.*

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## Distribution in a string arrangement



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The decision to build a motorway by cutting into the plateau completely altered its configuration. The mid section, excluded from the large-scale transformations of the period 1850/1945, was to find itself at the centre of intense activity in the late Sixties and early Seventies. This was due mainly to the availability of new technology making it possible to build in cut a radial motorway running diagonally across the territory and reversing the traditional relationship with Paris by facilitating service of the three communes via the plateau.

The layout of the A3 motorway, between Porte de Bagnolet and Rosny-sous-Bois, intersects the Plateau des Malassis and more broadly the territory, in a south-westerly north-easterly direction, sideways to its middle section, intercepting further on the branches of the stellate network to the north of Montreuil. Upstream, the Montreuil link road cuts into the allotments known as 'Les Lotissements des Trois Communes' in the north of Marais de Villiers and crosses the La Boissière estate. Left unfinished, the link road does not join the existing ringroads to the south-east. Further to the east, the A86 link road was built lower down, parallel to the railway line and the strategic fort road in compliance with the rule of

regrouping pre-existing infrastructure previously illustrated for the 19th century.

The radical change of scale brought about by the connection of this radial to the Autoroute du Nord towards Le Bourget and Roissy-en-France 'colonised' the two oldest communes and converted the Bagnolet and Bondy communes to its logic by assigning them the role of gate to north-east Paris. The mutation also added its contribution to the problematic of central locations 'tuned in' to Paris springing up as one more among the multiple forms of urban poles in the periphery. The interchange and A3 projects, combined with the later connections to the Autoroute du Nord, led the plateau's metropolitan shift between 1960 and 1975, through large-scale, low-income housing schemes and the arrival of new businesses, simultaneously with the deindustrialisation of the northern and southern sectors.

The period of recomposition of the periphery was triggered by the necessary adaptation of the city to the automobile and to the development of periurban urbanisation. Construction of the periphery was closely associated with the decision-making process concerning the development of lands freed by the Dausset plan and the organisation of housing units in single complexes, making the periphery an urban component seen as a single project entity. The interchange construction project with its regional parking facility formed part of this thinking. On its suburban side, it ushered in an era of 'modern monumentality' for the small commune of Bagnolet, which became one of the main gates to the east of Paris, at the end of a European motorway-and this although the project had been described as a simple 'motorway by-pass and access road' for the eastern suburbs.

## The sites selected for housing schemes

The motorway link made the last remaining, large undeveloped enclaves more easily accessible for the construction of housing schemes just when technological solutions were being found to the problem of laying foundations in difficult soils. It therefore seemed logical for these low-income housing schemes to be distributed in a string arrangement along the length of the new infrastructure. Although because of their composition, the latter turned inward onto their internal roadways, one also notes that they were more connected to the agglomeration as a whole than to the centres of their host communes.



To the east, on the cornice and its sides, the design of the projects submitted to the 1919 Paris expansion competition to make the strategic route the site of a system of parkways serving residential areas overlooking the Plaine de France already announced this change of scale. In the actual realisation of the project in the post-war period, more emphasis was placed on densification than on taking advantage of the area's panoramic features and natural landscape. The sites initially appeared to be linked by the cornice boulevard conducive to shapes taken from the art of urban landscaping. Their investment obeyed a completely different logic, however, based on the network of the circular A86 motorway. The area was to see the development of large shopping centres, industrial hotels and large infrastructure projects.

## Porte de Bagnolet: the interchange and the Château de Madame



*The second series of maps of the site of the Bagnolet interchange and its location on the domain of the Ancien Château illustrate in a paradigmatic fashion the predilection and the need for major infrastructural works to colonise little used sites left over from aristocratic enclaves. A series of plates illustrate the evolution of the site: superimposition of the Thiers enclosure on the site of the Château, formation of the first low-income housing scheme on the belt with the first amenities of a city gate giving rise to one radial roadway running in an oblique south-easterly direction towards Montreuil and another symmetric route linking up the centre of Bagnolet towards Romainville. The interchange colonised the space between these two roads, with the motorway being built in cut in the gypsum mound of the Capsulerie. The major renovation project was to include, around the metro and regional car park, a business centre with the construction of twin office towers and, on the plateau, a low-income and residential housing complex close to the departmental park created on the slopes. An illustration of a second phase of construction of large residential schemes in the Seventies around the Paris city gates.*

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## Morphological persistence and metropolitan recompositions

Looking at the dynamics of the structuring of this section of the periphery from the perspective of the period 1845 to 1975 shows the gradual integration of urban centres into the metropolitan system, the successive crystallisation of concepts and ideas of the city and the formation of new central locations under the impetus of local urban 'redeployment' projects. The resistance, if not the permanence, of the urban forms of this plateau east of Paris, reflecting its topography and its rich, albeit late, farming vocation had, until the Sixties and the advent of new major road building technologies, preserved it from the superimposition of infrastructures. Similarly, rather than promoting the installation of major industrial plants, investment on the plateau favoured the creation of mixed artisanal activities and housing, encouraged by the first public transport systems and the tramways, with large areas given over to warehousing like in Bas-Montreuil associated with the Faubourg Saint-Antoine district of Paris.

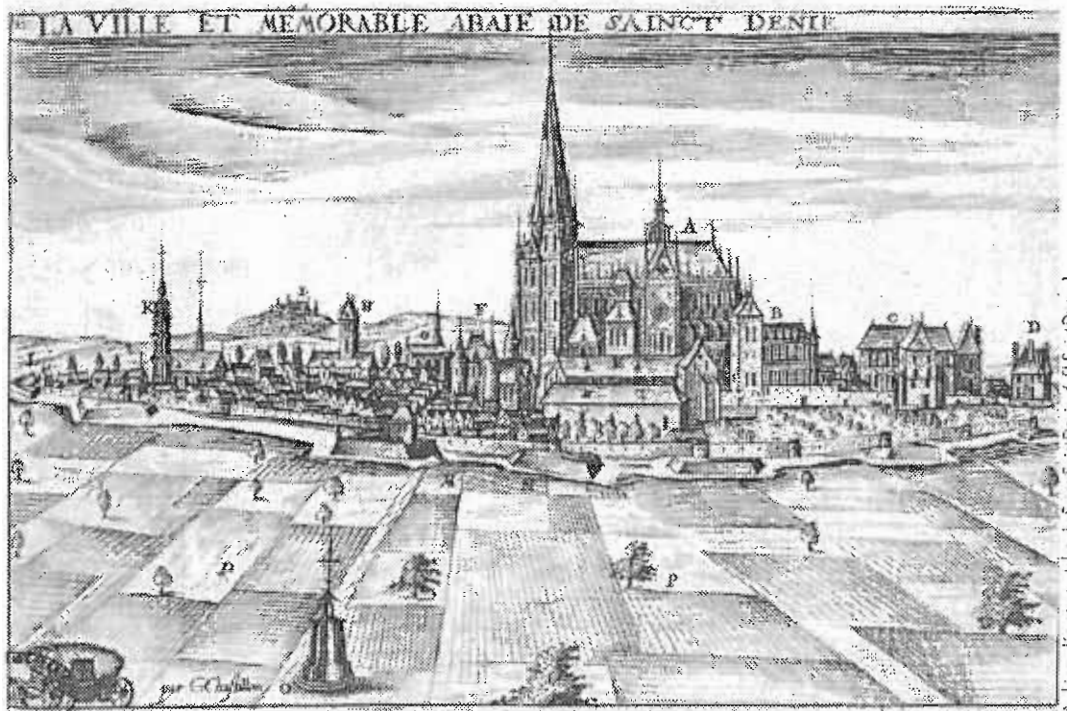
Throughout the second half of the 19th century and in the early 20th century, through gradual regularisations, minor finishing touches and rationalisation, the system of radial roads, new roads cut or realigned, ringroads following the ridge line or halfway down the slope and branching junctions all contributed to changing the urban framework of the territory of Montreuil. They also led to the emergence of an entity joining together the other centres, identifiable as an area in and of itself, while slowly being incorporated into the larger metropolitan system.

The cartographic atlas also gives a sense of the effectiveness of the urban shapes, which in each period attempted to link up this large area through its periphery by going around the pla-

teau, while the minor structures were gradually crystallised and regularised firmly establishing the old roadways and village networks, taken over at times by planning or housing activities. The more significant lesson that can be learned, lies in the slow and tenacious complementarity of the urban processes. Between the overall structure, on a large-scale, and the slow, local rationalisation, links are forged over the long term. The duality between radial systems and ringroads, is an indication of the weight of the capital and the dynamics it creates. Each period seeks to achieve its own balance. Today, when the structure of metropolitan ringroads is once again the subject of debate, it could be interesting to point out the rich potential of suburb-to-suburb and town-to-town links and their contribution to the development of a metropolis-wide urbanisation.

**Nicole Eleb-Harlé**

Translation: Karen Marcelle



## Using old maps as an aid in preventive archaeology: the case of Saint-Denis

Between 1973 and 1992, extensive excavations were carried out in the centre of Saint-Denis, over an area of 13 hectares (about 32 acres), in a district to the north of the basilica that was to be renovated. Directed by Olivier Meyer, the excavations received financial support from the City of Saint-Denis and the French State (Ministry of Culture).

The vestiges unearthed shed new light on the origins of the city, which grew up around the powerful medieval abbey. Thousands of artefacts were found, providing a wealth of information about the various aspects of daily life in the Middle Ages: housing and crafts, music and games, cooking and food, clothes and adornment, and so on.



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*Saint-Denis-Basilique, Paris City Transport Authority (RATP) bus terminal, archaeological diagnosis.*

In December 1996, the Historical Atlas of Saint-Denis was published - the first scientific publication arising from those 20 years of excavation work.

However, the practical work is far from over where archaeology is concerned in Saint-Denis. There are still many vestiges waiting to be unearthed from the city's substratum and studied. At present, the Saint-Denis Archaeological Unit (UASD) is concentrating in particular on the area around the city. We know that, during the 19th and early 20th century, the buildings of the industrial era spilled onto the fertile plains round about.

Today that area is again being disrupted. After a period of crisis, the industrial wasteland is again attracting investors. The excavations made necessary by different housing programmes and building programmes for the service industries offer new opportunities to study the archaeology of Saint-Denis: palaeo-environmental approach to the site, origin of the population, agrarian history of the area around the medieval city.

Thus, the excavation work carried out for line 13 of the underground, between the Saint-Denis-Basilique and Saint-Denis-Université stations, showed up the existence, to the north of the city, of several branches of the River Croult, a tributary of the Seine. The postglacial peat that was used for filling-in included the remains of plant life (pollen, leaves, wood, etc.) and shells, the study of which enables experts to get a good picture of the environment.

Not far from the future bus terminal, excavations showed that the area was inhabited during the late Neolithic period (about 2000 B.C.) and housing structures were found dating from the final La Tène period (1st century B.C.) (fig. 1).

Man's action on his environment became more pronounced with the deforestation resulting from farming and animal rearing. During the late Empire (3rd-4th century A.D.) a small rural farm was set up on the site of the basilica. It was apparently there that Denis, the first bishop of Paris, was buried in about 250 A.D. After the 6th century, a community of monks settled near the saint's tomb, which people came to worship from far and wide. The monastery, which was richly endowed first of all by the Merovingians, then by the Carolingians, grew in size. In about 830, the establishment, which then housed over a hundred monks, was provided with a canal to bring water from the River Croult. Sections of this diversion canal have recently been discovered on the valley slopes. 300 metres from the banks of the Seine, excavations are under way on a former car park. So far, from the Carolingian period, vestiges of housing and agrarian structures (e.g. the ditches separating farming plots) have come to light.



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*Saint-Denis and its surroundings, after 18th-century land plans.*

All the operations mentioned above fall within the province of preventive archaeology, the aim of which is to study, remove or preserve archaeological remains before they are destroyed by building work.

Prevention of damage to the substratum involves, amongst other things, the elaboration of an archaeological map based on comparisons with plot plans from the time of the Ancien Régime.

The latter maps and plans dating from the 17th and 18th centuries were intended for uses related to lands and for marking the boundaries of the lands belonging to the city. They are now in the local, departmental and national archives.

The first stage in the elaboration of the map consisted in establishing a basic plan (scale: 1/5,000) based on the cadastral survey made at the time of Napoleon (1811-1814). Then, with the help of documents from the archives, recent changes were eliminated (e.g. the road networks built by the engineers of the Highways Department). The resulting plan (fig. 2) enabled us to put forward several hypotheses which will then be

validated or invalidated by archaeological research and studies of the archives. Thus, the old plans of the area show up the straight line of the ancient road that came from Paris and ran along the River Seine as far as Rouen. On the outskirts of the city, the road coincides with the Chemin des Fruitières and the Chemin de la Barre (figs. 3 and 4).



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The outskirts of the city to the south-west as seen on an 18th-century plot plan.

*The new Paris-Saint-Denis road and the Route de la Révolte are indicated with dotted lines. The former Chemin des Fruitières follows the same route as the old road but it is 'cultivated at present'.*

As the abbey developed, a dense network of roads and pathways grew up, converging on the basilica, gradually replacing the earlier road. In 1356, the new city walls were built right across the old road, thus breaking its course, and the great cobbled street leading to the square in front of the basilica became the main road from Paris to Saint-Denis.

Old maps provide us with precious information about the way the landscape has changed morphologically. They thus act as a valuable complement to archaeological data, as may be seen from the example mentioned above.

**Michaël Wyss**

of the Saint-Denis Archaeological Unit (UASD)

Translation: Mary Pardoe



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The same area on the plan dating from 1876.

*Between 1821 and 1844, Saint-Denis saw the arrival of the canal, then the railway, and as a result the outskirts of the city became more industrialised. We notice that the industrial buildings respect the rural plot pattern. Between the two localities known as Les Caves and Les Caves Hautes the line of the early road is still visible.*



# *Versailles* *or enforced order*

*Versailles is an inevitable subject in any approach to old maps of the Ile-de-France. After Paris, it is no doubt the French city that is most familiar to us through plans and pictures. So much has already been written about it, particularly about the relation between its palace and park and those of Vaux-le-Vicomte, and about the development of the gardens and the city during the 17th and 18th centuries, that it is quite difficult to know where to begin. A close examination of the sites, as seen on maps and old engravings, nevertheless enables us to put forward a number of new hypotheses about the role played by Vaux-le-Vicomte and the choice of the site at Versailles, which was so disparaged by Louis XIV's contemporaries.*

**François Dugény**

We may assume that when Louis XIV went to Vaux-le-Vicomte, he found himself carried away, beyond space and time, into a world where buildings and nature were entirely designed by man, with a completely different notion of harmony. The different scale and design, compared to Italian and French châteaux of the time, in which country and town were ever-present, must have struck him and made him realise that Vaux was not only a symbol of wealth and refinement but also a symbol of the power one man had over space and hence over the world. It is hardly surprising, therefore, that the author of such an extraordinary achievement, who also happened to be Superintendent of Finances, hence Colbert's rival, spent the end of his life in prison.

We may also assume that the king saw Versailles as an opportunity to achieve a similar feat, but on a scale that was almost inconceivable at that time, by, furthermore, imposing his will on a town that was just springing up and whose development was to wipe out all traces of the rural land that was there before its existence. The challenge was commensurate with the powers of a king: to build Versailles he used the most advanced techniques in the fields of planning, water management and landscape gardening, and the means involved were titanic.

What led him to choose that broad valley near Paris and Saint-Germain, rather than some other site? First of all, there were historical reasons, which have often been mentioned (Louis XII used to go hunting there quite often and in the first quarter of the 17th century he bought part of the land there; then there was the king's love for Madame de La Vallière, and his distrust of Paris since the Fronde...), but there was also, no doubt, an incredible intuition which led to a life-long relationship between Louis XIV and this site which faces the setting sun.

Now we come to the third hypothesis, which we shall present in the form of a question: did Louis XIV have a plan, right from the start, to enable him to give concrete expression to his intuition - a veritable prefiguration of what that valley could potentially become? The plans we know follow the development of Versailles but give no idea of the unprecedented future of a site that already bore a royal castle (built by Louis XII in 1623), which was never demolished but was gradually included in the rest of the building.

Waving aside counsel and criticism, Louis XIV showed extraordinary tenacity in seeing his plans through to their conclusion. In a way, he extended ramifications to the whole of the region, by setting Versailles in the middle of a network of royal highways, restructuring its landscape, its economy, its urban framework.

## Vaux-le-Vicomte a world tamed by Man

Vaux-le-Vicomte was designed and built with an astonishing economy of means, taking advantage to an exceptional degree of the resources in terms of relief and hydrography.

Even more than their Italian models, the gardens carry the visitor away into another world, in which every element has been tamed by Man.

Le Nôtre showed great rigour and exceptional *savoir-faire* in all his realisations: from Meudon to Sceaux, Chantilly to the terraces at Saint-Germain and the fountains at Saint-Cloud. Three of his works, however, are absolute masterpieces: Vaux-le-Vicomte, Versailles and Marly.

Vaux-le-Vicomte is the first complete example of a French formal garden, the concepts for which gradually evolved in the course of the

17th century through the achievements and writings of Olivier de Serres, Jacques Boyceau and Jacques, Claude and André Mollet.

That Le Nôtre designed the gardens at Vaux-le-Vicomte is a fact that cannot be contested, but gardens may have been composed on the site at an earlier date. Was that composition the work (realised *post mortem*) of the great master of landscape gardens Claude Mollet, whose treatise *Théâtre des plans et jardinage*, published in 1652, was dedicated to Fouquet, or was it the brilliant first work of a man who was to become the embodiment of the French formal garden for all time?

Le Nôtre may have inspired the gardens at Vaux-le-Vicomte, but it is unlikely that he inspired those of either Versailles or Marly. Both those projects were the king's alone. After the revelation of Vaux, he knew he had to do even better, for the sake of his own glory, and it was he who had the intuition that Versailles was the site he should choose. Therein lies the true relation not only between Vaux and Versailles but also between Vaux and Marly, where the approach was the same. It was the complicity between Louis XIV and Le Nôtre - between rigour and intuition - that gave rise to a new town, a château and a park, which still fill the world with wonder.

## The choice of Versailles a site fit for a king

From his new château at Saint-Germain-en-Laye, the king had a view over the curve in the river Seine and, in the background, Montmorency Forest, the towers of Saint-Denis and hills of Montmartre and Mont-Valérien. He looked out over the village of Port-au-Pecq and over Renaissance-style gardens, based on the terraces at Preneste (Italy).



The site at Saint-Germain was too open and therefore 'unta-meable'. The one at Versailles was in keeping with the king's ambitions. Following the folds in the relief, this 'plain', with Gally brook cutting through it, provided a site 15km long and 4km wide. The general orientation was that of several

prospects: the Julius Caesar Way at Pontoise, the Tuileries axis in Paris, the Saint-Hubert ponds at Rambouillet. The sun set directly in line with the site.



In actual fact, the line of the future castle and park did not exactly coincide with that of the valley (it was 3° out): it corresponded to the orientation of the château built by Louis XIII, which took account of the lie of the land in a very pragmatic way. The park, château and town gradually grew up around this original nucleus (well described in the 'bus' plan). The engraving, taken from a treatise on geometry, quite obviously made from memory, provides a caricature of the main elements of the site: Montboron mound, the villages of Versailles and Montreuil, the château on its hill, Satory plateau represented by windmills. The discrepancy between the line of the park and that of the valley is quite clear.

## The true dimension of the project emerges



The plan made in 1660 shows the experimentation in the treatment of what was to become the Small Park (Petit Parc): the large diagonals have disappeared, the South Parterre and the Orangery are outlined, replacing the early vegetable garden; the slope down towards the future Fountain of Neptune has already been planned (it was in fact realised further to the west). The influence of Italian gardens and their French transpositions is still quite obvious.

It is the plan dating from 1662 that best conveys the emergence of the real project: all the major lines of the Small Park have been defined, around the Latona Basin and the Tapis Vert (a long stretch of lawn), providing the best solution to the difference in level between the esplanade (later to become the Water Gardens) and the Apollo Basin. What particularly



stands out on this plan is the new dimension that has appeared, which goes beyond the boundaries of the park and the château and is soon to take shape on the site, as is shown in the picture by Patel: to the west, lines structure the landscape; to the south, the Swiss Pond has taken up its position in the site; to the east, the Place d'Armes has been added, with its three avenues and the first six of its pavilions. Thus, the first lines of the new town are beginning to show, following a plan that is very different from that of the medieval walled towns or the new towns of the 17th century: the composition depends closely on the château, on which it is completely centred. It totally negates the existing plot pattern and prefigures the new order that is to be asserted.

It is therefore possible, give or take a year or two, to date the timid realisation in the minds of his contemporaries of what Versailles represented in the king's mind. From that date onwards, that awareness seems to have always followed the project without ever preceding it, the very dimensions of the latter no doubt going beyond what was conceivable at the time.

## Wiping out Old Versailles



*We must consider a town as a forest. The streets of the former determine the roads of the latter; they must be built in a like manner.<sup>(1)</sup>*

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During the following years, the site was gradually and completely restructured - both the town and the garden - and the old village of Versailles was wiped out.<sup>(2)</sup>

The plan from the National Archives, which can be dated to 1675, shows how the new order was superposed on that of the pre-exis-

ting rural and village plot pattern. The engraving by Perelle and Poilly dates from more or less the same period: it shows only a few extra buildings; the old paths are still there; according to the king's wishes, the pavilions have been built along the avenues leading to Sceaux



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and Saint-Cloud.

The plan made in 1685 shows that within the space of ten years the village of Versailles had disappeared. All that is left of it is a portion of what was its main street, to the south of the Place d'Armes (rue Saint-François, now rue de Fontenay). The town is becoming organised



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around its avenues and squares.

When Louis XIV died in 1715, after reigning for over 60 years, the site was occupied by Versailles and its satellites. More than any plan, the engraving by Coquart (1712) shows the theatrical aspect of its planning: on the one side, a town-cum-garden in which architecture and urbanism are subject to strict rules and converge on the Cour de Marbre; on the other side, the Small Park and its extensions (the large park and the canal, the avenues radiating out). Between the two, like a theatre stage, a line stretches from the Orangery in the south to the Neptune Basin in the north, cut through the middle by the noblest part of the palace - the part including the château built by Louis XIII almost a hundred years earlier.

(1) Laugier, *Essai sur l'Architecture*, 1753.

(2) On the subject of the development of the new town and its subsequent complexification, see *Lecture d'une ville: Versailles* by J. Castex, P. Céleste and P. Panerai, Editions du Moniteur, 1980.

## A landscape that stretched as far as the eye could see



The map of the king's Hunting Grounds shows what remained to be done in order to complete the project towards the end of the Ancien Régime. Within a radius of about 500m around the château, everything had been completed during Louis's lifetime: the new town, the Saint-Louis district, the Small Park.

Also during his lifetime, everything, as far as the eye could see, had been structured by means of large, tree-lined avenues providing many views of the site: the avenue from Versailles to Paris (about 2 km), the grand canal and the line of the large park which formed the main view from the castle towards the west (about 3 km), extending as far as Gally brook (8km away from the château).

The manuscript documents from the Map of the King's Hunting Grounds showing Versailles date from 1769-1774, just before the park was replanted. The engraved map does not enable us to appreciate the changes that had taken place in the urban fabric during the period following Louis XIV's death. Indeed, from then onwards, the growth and densification of the town were not so well controlled. The drawings made by Chevalier de l'Espinasse, which were engraved and printed in 1789, show a town including certain aspects that are less civilised and rigid than the town shown by Coquart: there has been a noticeable change. They also show how precise the map is and describe the landscape that as it was.

The structuring of the site was never fully completed, either by Louis XIV or by his two successors. Indeed, towards the end of his reign, feeling a desire to retreat from the formal etiquette of Versailles, he turned his attentions to Marly, which was situated in a valley of modest proportions, but in a difficult site, where the king again took pleasure in 'forcing nature'<sup>(3)</sup>.

## From Versailles to Marly, the pleasure of forcing nature



*At the end, the King, weary of beauty and of the crowd, decided he needed simplicity and solitude from time to time. He tried to find something around Versailles to satisfy his new taste. He visited several places, he travelled over the hills above Saint-Germain and the plain below, with the Seine winding through it and watering so many large towns and such rich land after leaving Paris.*

**130** *He wanted something simple and he wanted it to be situated in a place where he would have nothing to do. He found a deep, narrow, steep-sided valley, which was inaccessible because of its marshes and without a view, closed in on all sides by hills, very narrow, with a sorry-looking village named Marly on the slope of one of the hills. This fence, without a view, and without any means of obtaining one, was its great merit.*

*It was no mean task to dry out this unhealthy place, which took the waters from all the area round about, and to replace the soil. The hermitage was built [...]. Gradually the hermitage grew, and as it grew the hills were cut away to make room for the new buildings, the hill at the end being greatly excavated to provide a view of sorts. Finally, Marly became what can be seen to this day, although it has lost much of its lustre since the King's demise.*

*So that was the fortune of a den of snakes and carrion, frogs and toads, which was chosen simply because there was nothing to be done. Such was the King's bad taste in all things, and such was his proud pleasure in forcing nature, which could be eclipsed neither by the most serious of wars nor by devotion.<sup>(4)</sup>*

These lines by Saint-Simon clearly show the relation between Marly and Versailles and also the link with Vaux-le-Vicomte: controlling the visible landscape, creating a place that was detached from the world and unaffected by time, by building it between heaven and earth, away from all outside references.

This time Louis XIV's glory was symbolised not only in the ordering of nature in the formal gardens: it also made itself felt in the town, the landscape, and in the whole of the area. A dense network of royal highways was built, the rivers were diverted, the waters of the Seine were channelled back upstream.

## The fountains, technique at the service of power

All too often, when we think of Versailles, we think only of the park and the château and the applications of the rules symmetry and perspective.

When we analyse the documents that have come down to us, retracing its genesis and evolution, it becomes quite clear that there was an overall plan, the dimensions of which were much greater and much more ambitious than those living at the time could have imagined.

There were many plans of Versailles in the course of its evolution. Few of them described the projects, except where the water supply was concerned: the latter called for great technical prowess.

During its building, Versailles mobilised considerable energy and means, calling on the most advanced techniques in the fields of building, earthworks, landscape gardening. However, it was most certainly in the area of water supplies that the techniques were the most impressive, both from the point of view of planning and from that of actual achievement.

Following the model of the Italian gardens, water was to play an important role at Versailles, with fountains, basins, grottoes, a theatre, canals, and so on. Anyone who has not seen the fountains playing does not know Versailles: they completely transform the park, which suddenly comes alive with a wealth of murmuring waters.

Supplying water to a park that was constantly changing called for increasingly sophisticated means. Five important stages may be singled out<sup>(3)</sup>.

The first systems, concentrated mainly in the Clagny sector, where the principal water supply came from the pond, date from 1663-1668: a whole complex of reservoirs, pumps worked by horsepower or windmills, aqueducts bringing water from Chesnay, Vaucresson and La Celle Saint-Cloud, was set up to provide water for the fountains in the Small Park, with a windmill at the end to send the water back from the last fountain, the Swan Basin (now the Apollo Basin) to the pond at Clagny.

In 1668, in the second stage, the waters of the Bièvre were collected and driven by four windmills to the top of Satory plateau; from there they ran down by gravitation into one of the reservoirs supplying the park, traversing the depression of the Swiss Pond through pipes. For the first time, cast-iron pipework was used, instead of lead; the same year, the system was completed by a water mill working pumps to send the waters of the Bièvre up to Satory plateau.

In 1674, Riquet (who built the Canal du Midi) studied the possibilities of bringing the waters of the Loire onto the Satory plateau, a project that was called into question by the calcula-



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tions made by Abbé Picard, who invented the first surveyor's level.

The other three stages were carried out simultaneously.

After the surveying carried out by Abbé Picard, a third phase (1675-1685), began with the creation of three networks of ponds, channels and aqueducts. The first, covering the Trappes-

(3) Memoirs of Louis de Rouvray, Duke of Saint-Simon.

(4) Memoirs of Louis de Rouvray, Duke of Saint-Simon.

(5) See article by M. Loriferne in *Techniques et Sciences Municipales*, January 1963.

Bois d'Arcy plateau, had a capacity of almost 4 million cubic metres. The second, the so-called 'lower ponds' network, covered the Saclay plateau and had a capacity of 1.7 million cubic metres, feeding the Gobert reservoirs, at the 141-meter mark.



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These networks are shown on the plan made in 1778 (now in the Yvelines departmental archives). From 1684 onwards, the third network was created: the so-called 'upper ponds' network, feeding Montboton reservoirs, at the 155-metre mark, from the ponds of Mesnil Saint-Denis, and those of Saint-Hubert, Pourras, Corbet, Bourgneuf and Hollande. Water was carried to Trappes pond via a main channel ('le grand lit de rivière').

In all, there were 13 ponds and reservoirs, with a water storage capacity of 8 million cubic metres, and 200 km of channels and aqueducts. All this completely altered the natural hydrographical system between Versailles and Rambouillet.

Lahire's surveys showed that it was possible to carry the waters of the Eure, harnessed at Pontgouin, to La Tour pond via a canal 83 km long. Vauban was given the task of carrying out the work, which was begun in 1685. However, it was interrupted in 1688 and was never resumed, although the canal was already three-quarters built.

Finally, at the same time, a final project was implemented to solve the problems of insufficient rainfall to feed the ponds (whose water, furthermore, was hardly fit for drinking): the Marly Machine. This extraordinary device conveyed the waters of the Seine (30 metres

above sea level) in three successive stages to the Louveciennes aqueduct (180 metres above sea level), by means of 259 pumps worked by a system of rods, iron-shod levers and chains.

For over a century, the Machine, which covered the whole of Bougival hillside with its noisy workings, was regarded as one of the wonders of the world.

## After the grand project



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The plan dedicated to the Prince de Poix, made in 1781 and now in the Yvelines departmental archives, does not provide any more information on the town itself, the use of plots and the land structure of the area than the Map of the King's Hunting Grounds. It shows a whole series of official buildings, most of them also clearly visible on the Map of the King's Hunting Grounds. The caption it bears indicates that it was intended to present not only Versailles and its new developments (particularly the park and the Trianons, all the elements of which are shown), but also Old Versailles and the new town. Although the road system of smaller and greater Montreuil (Petit Montreuil, Grand Montreuil) is well represented, the land structure inherited from the rural past seems to be more decorative than reliable. Unlike the Map of the King's Hunting Grounds, this plan was obviously intended to provide an 'aerial view' before such things existed; it was meant to be as realistic as possible.

This document bears notes in the hand of King Louis XVI: 'Monsieur d'Angiviller's garden, around the Glacières, has been omitted; the gardens between Rue de Maurepas and the Park are not true; a piece of fallow land and

several bushes have been overlooked in this meadow; Saint-Antoine wood is not true...’ These notes show that the king cared about the exactness of the maps he commissioned. They also show his fine sense of observation and his aptitude for map-reading.

We know that Versailles went through several phases of densification up till the end of the Ancien Régime. We notice, however, that its perimeter remained practically unchanged, with Satory plateau to the south and the château to the west. The town in fact spread northwards during the century preceding the Revolution.

One of the last development projects, established three years before the Revolution, aimed ‘to join Petit and Grand Montreuil to this town by means of a new wall with a Boulevard running along it, and new Avenues which could be created for convenience and in order to embellish the surrounding area’. The logics of this plan were different to those of the Versailles plan: the aim was to materialise the town limits, while the previous conception had been one of a radiating-out from the centre, as a symbol of power. Its intention was to embellish by means of a series of roundabouts and avenues, but also, and above all, to create a ring of walls, similar to those the Farmers general had built around Paris two years earlier. The town no longer radiates out: it is closed in on itself.

This project was never realised and after that the town did not increase significantly in size until the second half of the 19th century, with the coming of the railways. Charles Piquet’s plan of 1821 (the first Paris-Versailles line was opened 16 years later) gives a clear picture of the town, the château and the park as they were at the beginning of the 19th century. If we compare it with the plan made in 1781, we

notice that there has been very little change since the Ancien Régime.

Although we may wonder about the reliability of the description of the plot structure and the land use in the rural parts (which are nevertheless very realistic on the plan), we may safely trust the representation of the road network and the description of the buildings belonging to the royal estate and to the town. We notice that a third of the heart of the town (Old Versailles, the new town and the Saint-Louis district) is occupied by infrastructure, (this was already discernible on the 1781 plan dedicated to the Prince de Poix), over a third is occupied by buildings belonging to the king or to the town, while barely a third is occupied by private property. An examination of the road network shows how accurate this plan is, particularly in the area (still rural) of Grand Montreuil. We see, for example, the two roads which led to Old Versailles and to Louis XIII’s château, on either side of Montboron Mound: Rue Champ Lagarde and Rue de Montreuil, which still bear those names to this day. This plan enables us to understand certain differences, which are still visible nowadays, in the form and direction of the urban plot pattern, especially to the south-east of the Hôtel de Ville. It also shows that the oldest axis of Old Versailles (now Rue Fontenay) had already been abandoned, the new axis being situated to the south of the Jeu de Paume, which was more in keeping with the orthodoxy of the plot layout in that part of the town (now Rue du Vieux Versailles). Every trace of Versailles as it was before Louis XIV has now completely disappeared.

**François Dugény**  
**IAURIF**

Translation: Mary Pardoe

