

# LES CAHIERS

DE L'INSTITUT D'AMENAGEMENT  
ET D'URBANISME  
DE LA REGION D'ILE-DE-FRANCE

*Three centuries  
of maps  
in the Ile-de-France*

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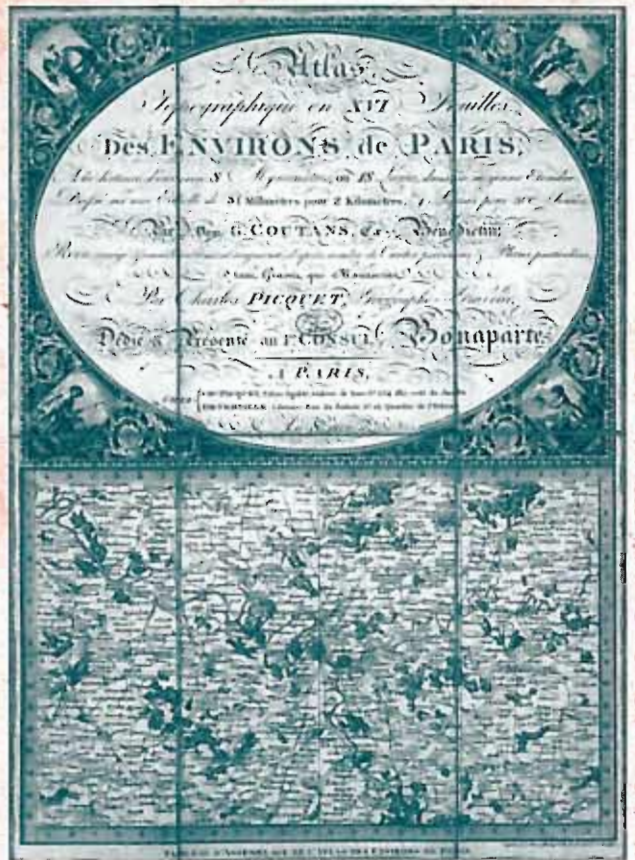
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Atlas des Environs de Paris, Dom Coumans (ed., 1800) - Archives de Paris

*These issues of Cahiers  
were produced in partnership with  
the National Geographic Institute (IGN)  
which put at our disposal  
its entire cartographic fund.*

*The symbol  accompanied  
by a number is used to indicate  
to our English-speaking readers  
that they should refer to the illustration  
on the corresponding page  
of the French version of Cahiers  
in order to follow the discussion better.*



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## *The map as an image and as a tool*

**O**ld maps captivate us because of their beauty. They are illustrations of their time. These maps, made for governing, also tell us about the life of the land, with its pathways, its villages and its names.

*In the last century, the map became an administrative tool, a tool of the State in its role of regional planner. It was used to describe but above all to measure.*

*The 20th century map, essentially through colour, has once again become an image - an image accessible this time to all and not just to the governing classes. The map has also become a practical, almost utilitarian, instrument no longer used only by technicians but by the public at large to accompany them on all their trips, whether on foot, on horseback, by car or sailing.*

*On the map, spaces and movements are revealed, presented and organised. The map illustrates and underpins the whole.*

*The map - image of a landscape, tool for its development, witness of the past and prefigurement of the future - holds a certain fascination for us because it opens up the doors to imagination and fantasy.*



*Jean Poulit*

*General Manager of I.G.N.*

*Translation: Karen Marcelle*

CONSEILS DE L'ÉTAT BELGICQUE



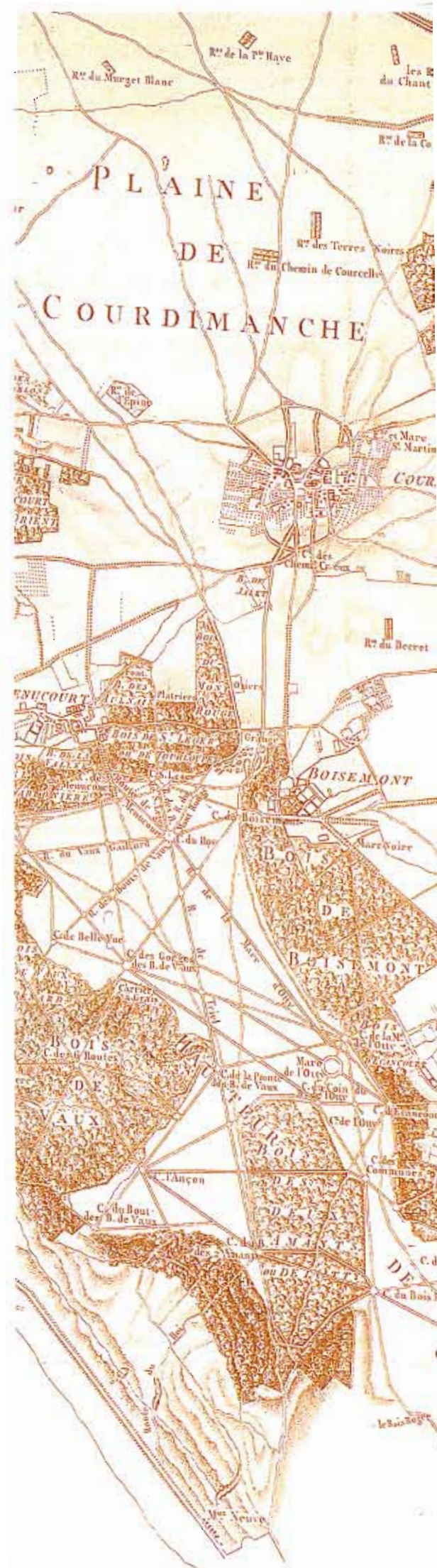
# Traces and Tracks

*There are no new towns, there have never been any new towns, because a town is the result of sedimentation, the product of successive though sometimes contradictory contributions that nevertheless form part of the same history, thus also making towns the repository of memory (...) Towns are, therefore, not created, they create themselves and that takes time. All that one can aspire to is to leave a trace, which perhaps will become a track and fashion the town in a certain way.<sup>(1)</sup>*

*This statement puts into perspective the questions as to the usefulness of old and contemporary maps:*

- *How many tracks of country lanes and trenches, how many pathways of classical parks have become but traces?*
  - *How many hypothetical tracks mapped by archaeologists have made it possible to discover parts of towns or farm drainage networks buried under several metres of earth and have subsequently been used as the starting point for urban restructuring?*
  - *How many embryonic new towns or more standard planning schemes can take into consideration the merits and constraints of traces or tracks of plots or roadways?*
- One of the interesting things about old maps is undoubtedly their ability to provide us with these threads that improve our capacity to knit the past and the future together.*

(1) C. Devillers. CERA, Department of Architecture. Marseilles Symposium. 12/13 March 1979.





In Ile-de-France, when we talk about old maps, more often than not we are referring to those which cover Paris and its immediate environs.

The hunting and military maps - La Carte des Chasses and La Carte d'Etat Major - are, however, well-known and sometimes used by planning professionals. There are, indeed, many maps of Ile-de-France in general and in particular.

IAURIF has for a long time been accustomed to using some of them to improve its understanding and organisation of the Ile-de-France territory.

Thus, at this point in time when knowledge of the history of places has become the focus of renewed interest on the part of town and country planners, conservationists and administrators of urban and rural areas, the Institute thought it a timely moment to present a part of what constitutes the essence of this knowledge, namely, old maps, topographical maps, plot layouts, land registers and private maps.

After a period in which this history and its traces had been somewhat neglected by architects, town planners, civil engineers and agronomists, little by little they regained awareness of the value of being attentive to these traces and of working with them in designing their projects, whether urban or not.

Though of undeniable interest and importance, this paper does not cover certain types of maps such as geological maps, which highlight the structure of the base on which the Ile-de-France Region rests, road maps or maps of

underground quarries. Further, other documents, including all those related to projects and, a fortiori regional planning, have been deliberately left out.

## Map Treasures

From as early as the 17th century, as the seat of royal power, the Ile-de-France area was the site par excellence of the first attempts at a modern style of cartographic production, more precise than the fragments produced by earlier cartographers. As the capital city, Paris had already a long time before that had the privilege of a cartography presenting it as one of the world's most beautiful cities. It was not until the middle of the 18th century and the Age of Enlightenment, however, that the first topographical-type maps of vast areas, providing great overall precision and detail, were produced.

The first idea behind the production of this issue of Cahiers was to try to illustrate the major transformations that Ile-de-France has undergone through the many maps produced in the course of its history. The second was to try to show what its urban or rural landscapes were like during the periods considered by drawing a parallel between the map and pictorial representations, whether in the form of engravings, paintings, or photographs, etc.

Once these two ideas had been endorsed and the work had begun, questions started arising... What boundaries for Ile-de-France (its borders having fluctuated at various points in history)? What periods should be retained? Which maps should be used (period, scale, geographical coverage...)? Where to find them?

(2) Reply by Tomi Ungerer during an interview on the future of his drawings (programme: "Théma" on the TV channel Arte - 19 Nov. 1997).

The partnership formed with the National Geographic Institute (IGN) made it possible to draw up an initial historical inventory.<sup>(3)</sup> Contacts with the main depositories of documents (IGN, the National Archives of Paris, the French National Library, Departmental Archives, various city libraries and museums, etc.) unearthed real treasures in the form of little or totally unused maps like the maps by Dom G. Coutans or Charles Picquet which extend to the eastern limits of the region, administrative maps, atlases, feudal land registers and minute drawings attached to the Carte des Chasses, the Carte d'Etat Major and the map of France type 1900.

After that, our main preoccupation consisted in identifying these strata of maps to determine the places represented at different periods, in assessing their reliability, in mapping their coverage on the current map of the region, in deciding how to structure the presentation of these riches in two volumes of the magazine, *Les Cahiers de L'IAURIF*.

## Through the eyes of a town planner

It seemed to us interesting to look at spatial transformation through the information provided us by old maps and the work of specialists from different disciplines. This meant looking at the documents through the eyes of a town planner, taken here in the broad sense of the term.

This examination, along with the two framework articles, one on the history of maps in Ile-de-France and the other on the constitution of Ile-de-France, makes up the essence of this volume. Plot layouts and land registers, a necessary complement to topographical cartography, but which history had separated until as late as 1966, are also discussed. The plot is after all the basic unit used for all town planning actions.



The idea was not to relate the history of a place or the history of Ile-de-France. It was to show the characteristics of rural or urban landscapes expressed by the maps, illustrated by engravings or photographs and to point out the main transformations that marked them in the period under consideration. Four periods were delimited, each corresponding to a large map of Ile-de-France: the Carte des Chasses, which covers the end of the Ancien Régime and shows the structuring of the landscape by the dense network of royal roads, parks of châteaux and forest paths; the Carte d'Etat Major, which shows the state of the region following the French Revolution and Empire; the map of France type 1900, which introduces the railway network, industry and urban extension; and the map of France type 1922, which shows the spatial explosion and the appearance of the network of modern infrastructure.

Throughout the two volumes, the reader will find certain places whose transformation can be followed: Cormeilles-en-Vexin, Melun, Meudon, Pontoise, and places from the Plaine de France de Saint-Ouen to Aulnay-sous-Bois...

(3) See below: Three centuries of cartography in Ile-de-France.

## Stages of the map



10  
11

*The French National Library holds, under reference number Ge 4727 (réserve), 12 sheets of the Carte des Chasses assembled in one map of 231 x 170 cm, to which is attached a sheet measuring 29 x 43.5 cm dealing with the south-east of the Vexin plateau.*

*Of the whole, only five sheets are complete, six are partially done and one sheet is blank.*

*The six incomplete sheets provide valuable information on how the engraving was done, and more specifically on the order in which the various elements were engraved. The lettering was engraved first (e.g., the sheet below, lettering only), then the lines (e.g., sheet Corbeil no. 12 opposite).*

*The condition of the various sheets concurs with the descriptions provided to the First Consul in 1799, although the work had been suspended since 1792. Only sheet no. 12, which in the reports is said to be "very advanced", seems (in this assembly) to be at an earlier stage. This means that the whole probably predates 1792<sup>(4)</sup>.*

*Sylvie Bourcier<sup>(5)</sup> provides additional information: In Nivôse Year 8 (1799), First Consul Bonaparte (...) enquired about the state of progress on the map at that date and the estimated cost of the work. Six months of work was scheduled for the sheets already started. This was because the engravers estimated that it took eight months to engrave a new plate:*

*two months for the lettering*

*two months for the lines*

*one month for the mountains*

*twenty days for the woods*

*ten days for the vineyards*

*and the remainder for the watercourses and the final corrections.*

*The required engraving time for each plate depended on the length of the days and, thus, on the seasons. This was because the work was tiring on the eyes and was, therefore, done during daylight hours only.*

Before the first impression, deletions and additions were made to certain sheets of the engraved map. After the first publication, additional deletions and additions were made to the copperplates. Further, the map was renamed Carte Impériale (Imperial Map) under Napoleon but reverted to its original name under the Restoration.

## Thematic approach

This first examination could not encompass everything. The second approach, therefore, consisted in reviewing the major urban planning themes across the three centuries under consideration. First of all using individual examples: the case of a royal forest: Saint-Germain-en-Laye; of the park of a château: Breteuil; of communes in the near suburbs: Montreuil, Bagnolet; and of a new town: Versailles. As one would expect, the major themes also included the three main transportation networks in the region. In the case of the railroads and the navigable watercourses, the approach decided on was that of a general overview. For the road network, however, the decision was taken to describe a particularly important aspect of their evolution as the landscapes of Ile-de-France in the 17th and 18th centuries were profoundly modified by the development of this network.

These themes, looked at as a whole or through particularly representative examples of the issues they pose, constitute the essence of the second volume, which reads as a complement to the first. These complementary approaches, indeed, make it possible to look at a particularly significant period in the evolution of Ile-de-France against the background of a theme which traverses the various segments of its rural and urban history. Without at all claiming to be exhaustive, this two-pronged approach gives the reader a broad view of the principal transformations that have marked the regional territory.

(4) The French National Library, extract from the descriptive fact sheet of the document Ge DD 4727 (réserve).

(5) Sylvie Bourcier. La Carte des Chasses Royales. Ministry of Defence. Army Headquarters. Historical Department. Vincennes, 1972.



## Modern means

Although devoted to old maps, these two volumes of *Les Cahiers de L'IAURIF* have looked at modern cartography from two angles. Here the “modern map” does not refer to the kind of maps that appeared after the map of France type 1900, which gave rise to today’s topographical cartography, but rather, to computer-based cartography in the form of geographical information systems (GISs), which came to France in the 1980s. The first angle consisted in describing some of the tools that have added a new dimension to cartography: the regional geographical information system developed by IAURIF, the topology database developed by IGN, the computerised land register developed by the Inland Revenue Office, the *Imago Metropolis* project to make 3-D representations of vast landscapes using GISs, etc. The second angle consisted in using these tools to analyse the assembly of sheets from 26 maps, to “map the maps”, so as to locate them geographically within the present limits of Ile-de-France and facilitate answers to such questions as which communes are covered by which maps and which maps cover which communes. These modern means were also used to digitise the four major maps analysed in the present volume in order to be able to draw from them certain numerical data.

Using these IT tools shed light on the possibilities offered by a geographical approach to the identification of old maps as well as on the potential partnerships that could thus be established. It also provided us with some preliminary ideas on what could be done in future by integrating selected data from old maps into a GIS. More than ever before, opportunities exist for conservationists, researchers and practitioners to work together on common projects, with today’s high performance tools and a broader vision of the objectives to be attained.

## Memory of places and people


Lastly, there is also another aspect that cannot be described or recounted because it refers to personal impressions or feelings.

That emotion you feel when you look at or hold in your hand an original document such as a minute drawing done one or more than three centuries earlier. The grain of the paper, the fineness of the lines, the transparency of a wash drawing which a reproduction cannot capture. And above all, the soul of the person whose work it represents and who was, first and foremost, a man of the field, who observed, noted, measured and drew that field and its terrain, as completely as possible, as accurately as possible and in the most realistic manner possible. The map is therefore reminiscent of an engraving, opening up the possibility of imagining the rural landscape and the lives led by the 17th and 18th century peasants and pedlars who lived there...and whose details the painters, drawers and engravers of the time did not choose to make their subject.

Through these maps, beyond the memory of the places they describe, the traces and trails they illustrate, it is the memory of human beings that they communicate to us, through the voices of those who produced them and who walked the land of Ile-de-France.

Hervé Blumenfeld - François Dugény  
IAURIF

Translation: Karen Marcelle



## *Three centuries of maps in the Ile-de-France*

*The creation of the Académie des Sciences by Colbert in 1666 marked the beginning of the science of map drawing.*

*The Ile-de-France region served as a testing ground for the great series of maps covering the whole of France: the Cassini Map in the 18th century, the Cadastral surveys (Cadastrés) from Napoleon onwards, the Carte d'Etat-Major (Ordnance Survey Map) in the 19th century, and modern maps of France prepared by the National Geographic Institute (IGN). However, because of the predominant role of Paris and its development, our region has benefited like no other from much more detailed maps which enable us to study its evolution more easily.*

**Jean-Claude Dupuis**



## The Académie des Sciences

Until the middle of the 17th century, there was no official organisation in France for the production of maps. In 1661, Colbert, who was invested with great power by Louis XIV, undertook the restoration of the kingdom. He needed to get an accurate idea of the national territory, its communication routes and the imbroglio of administrative boundaries. In 1663 he ordered an inventory of resources to be made and requested that the most detailed maps of the provinces and 'généralités' be sought out—these were sometimes 'merely a mosaic of disparate shreds', quite lacking in precision, for their authors, the 'géographes de cabinet', repeated the same mistakes in compiling the various existing documents. It was within that context that Colbert established the Académie des Sciences in 1666 and made the political decision of orientating it towards finding accurate cartographical methods. At the meeting held on 23 May 1668, his spokesman, Monsieur de Carcavi, requested that the members of the Academy 'work on the production of geographical maps of France that are more accurate than those that have been made up till now, and that the Assembly prescribe the manner to be adopted by those employed to that end'. New cartographical methods based on triangulation had emerged, first of all in Holland, with Snellius, then in England. The first French attempts at finding new methods were concentrated on the Paris region.



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The map of the outskirts of Paris by the members of the Académie Royale des Sciences, 1674, was the first to be made after 1668. For the first time in France, the triangulation sys-

tem was used. Between 1668 and 1674, under the supervision of two Academy members, Roberval and Abbé Jean Picard, the engineer David du Vivier, with three to five assistants, carried out the surveys. The results were then engraved on copperplates by F. de la Pointe (1671 -1678). The copperplates are now in the Louvre. The whole set is quite elegant; it consists of nine sheets, stretching from Mantes to La Ferté-sous-Jouarre and from Pont-Saint-Maxence to Milly. It is decorated with superb cartouches: the title with the coat-of-arms of the Ile-de-France; an 'explanation of the marks', surmounted by the coat-of-arms of Colbert, with market days represented by the characters of the planets; three graphic scales (the 'lieue de 2000 toises', the 'lieue du Châtelet' and the 'pas'). We note that the scale, indicated by two parallel lines with graduations, is 'une ligne pour cent toises'-i.e. 1/86, 400 (the scale did not appear in its decimal form until the early 19th century). As to content, unfortunately the map does not show the road network or the administrative boundaries. Relief is indicated by hachuring in semi-perspective. The toponymy is interesting: the forms are often antiquated. The Observatoire de Paris (which was begun in 1667 after its meridian had been defined, and completed in 1672) is well represented. However, the lack of graduation in the geographic co-ordinates is regrettable on a map that is unquestionably scientific in character. L.Gallois puts this omission down to uncertainty as to the difference in longitude between Paris and the original meridian on the island of Ferro (Spanish Hierro) in the Canary Islands, which was made official by Louis XIII in 1634. Du Vivier went on carrying out his surveys and publishing new versions (with the roads) until 1685, extending the map as far as the Loire in the south and Rouen to the west. (Paris, Bibliothèque Nationale.)

Work arising out of the realisation of this map and carried out by the Académie des Sciences was to bring it fame for a century and more. Right from the beginning of the surveys, Abbé Picard realised that it would be useful to make an exact measurement of the degree of the earthly meridian. From 1668 to 1670, he directed operations to measure the Earth, perfected the instruments by incorporating telescopic sights into theodolites and a 10-foot astronomical sector/circle-dividing engine. On the Fontainebleau road, a basic 5663 toises were measured out using 4-toise long wooden poles, between Villejuif mill and the pavillion at Juvisy; pyramids erected in the 18th century act as reminders of this. Then Picard measured a chain of 13 triangles on a meridian arc between Sourdon, near Amiens, and Malvoisine, near La Ferté-Allais, extreme points where astronomical measurements made it possible to deduce their difference in latitude. The length of the meridian degree thus obtained in 1670 was 57,060 toises. This first accurate measurement of the Earth marked the beginning of French surveying and gave Picard an exceptional place amongst its founders.

In 1669, Colbert had invited a brilliant Italian astronomer from the University of Bologna, Gian Domenico Cassini, to join the Académie Royale des Sciences. He was the first of a famous line of four geographers who worked at the service of French cartography.

## The Cassini or Academy map

After Colbert's death in 1683 and up till the second half of the 18th century, the one and only geographical vocation of the Académie des Sciences was to carry out research into the shape of the Earth and work out the skeleton triangulation of France, for it was an organisation for scientific oversight, excluding the production of detail maps, which was the domain of private geographers. The Cassinis carried on Picard's triangulation, measuring the Meridian of the Observatoire, which had been 'extended', then 'checked'. The northern mire at Montmartre and the Orveau and Manchecourt obelisks near Malesherbes still mark out the Meridian. In 1744, Cassini de Thury, the grandson of Gian Domenico Cassini, completed the triangulation of France. In 1746, he was in Flanders during the War of Austrian Succession, col-

laborating with military engineers on the geometric network and on surveys of the region. On 7 July 1747, Louis XV was at Raucoux, where Cassini showed him a map of the site of the victory. The king was amazed at all the detail that was shown on that map and he made a great decision: 'I want the map of my kingdom to be made in the same way. I give you that responsibility. Inform M. de Machault' (the general inspector of finance). That decision was not a mere whim. Cassini had prepared the king for it. During the Age of Enlightenment, progress in knowledge called for an inventory of the smallest features in geographical space, which meant providing a detailed geometrical map of the whole of France.

The cost to the State had seemed reasonable: Cassini anticipated 40 000 pounds per annum over a period of twenty years for 182 sheets. It was hoped to produce an average of 10 publications per year and that was where the problem arose, for that figure was never attained. The time needed for preparation before actual production had been underestimated: first of all, the existing triangulation had to be densified, staff had to be recruited and made operational, and, finally, engravers of quality, specialising in lettering and plans, had to be found and trained. The first sheets - those of the Paris region - had to be produced with particular care, for the success of the whole undertaking depended on them. Paris and Beauvais, which were awaited with great expectancy by the king and his court, finally appeared in 1756. At Compiègne castle, the king's reaction was lukewarm. 'He seemed very surprised at the accuracy of the detail, particularly in the forest, where all the roads were marked,' wrote Cassini. But because of the time they took, and also because the war had started again, Louis XV stopped financing the maps: 'My poor Cassini, I am very sorry: my inspector does not want me to go on with the map'. That same year, encouraged by the king, Cassini turned to private funding for his undertaking and founded the 'Société de la Carte de France'. The management of this group of 50 shareholders seems to have been satisfactory and, surprisingly, it succeeded in balancing expenditure by selling the maps and obtaining aid from the provinces. In 1757, the other eight maps covering the Ile-de-France region were published. For the rest of France, the surveys were completed in 1789. At that date, only the maps of Brittany remained to be engraved. The copperplates and most of the original draft maps are still at the I.G.N.



The map's presentation - large rectangular sheets covering 40,000 by 25,000 toises (90 by 56 cm) - is very sober, each individual map being part of the general Map of France. No title, key, author or date of publication have been found. Outside the frame we find only two sets of figures: at the angles, the distances to the meridian and its perpendicular, and the graphic scale in lieues, then in metres added after 1799. The map is pleasant to read, the engravers were carefully trained, the writing is stylish, but the lack of homogeneity when the sheets are assembled was inevitable. Cassini's map is on the same scale as Vivier's - 1/86,400 - but its content is by far the better. Yet because so much progress was expected, it received a great deal of criticism. There was little progress in orography, for, in the absence of surveying, relief could only be shown by rough hachuring. The weakness of the road network, limited to the main roads, was much more criticisable. Indeed, only the map of Paris is acceptable on this point: some areas towards Orsay, Montmorency and Colombes are a mass of secondary roads which the authors seem to have had difficulty in organising into a hierarchy. The walks in the forests and parks are particularly well represented. We must note that after the first edition and on the prints made from the present copperplates, numerous corrections have been made to the roads. These additions, most of which date from the Napoleonic period and are sometimes erroneous, are generally the only modifications that were made in the later editions. In the list of topographical features that were to be surveyed, Cassini, fearing that he could not be exhaustive, requested the addition of 'any features that could possibly be of use'. There are a few omissions but the work is nevertheless very interesting in the wealth of its toponymy. Cassini's map was particularly criticised because it did not represent towns and villages in their true dimension, in plan: apart from the main cities, conventional signs are used, simple figurines in elevation. Cassini's justification in this was the small scale: he denied that his intention had been to draw up a topographic map. More geodetic than topographic, his aim was first of all to establish a geometrical map showing only the essentials with accuracy.

Two derivative maps were made from Cassini's map:

- the map of France by Louis Capitaine, a reduction to a quarter of Cassini's map, presented in 1790 and comprising 14 sheets showing the boundaries of the provinces and 'généralités', and revised the same year to show the departments. It was subsequently revised by the Dépôt de la Guerre.
- the National Atlas of France, department by department, by Pierre-Grégoire Chanlaire and Pierre Dumez, published for the three former departments of the Ile-de-France region, after the decrees of January 1790, showing the chief towns and cantons.

## Large-scale cartography in the Paris region during the Age of Enlightenment

The sometimes bitter criticism that was received may be explained by the fact that real large-scale topographic maps had meanwhile been realised locally by State organisations and private publishers:

The road atlases of Trudaine and Perronet, realised by engineers and draughtsmen from the Ponts et Chaussées (Highway Department) were among the first examples, but they were never published. In manuscript form they served as a basis for the technicians who were responsible for improving the layout of the royal roads. These plans, with their superb watercolours, are undated, but they were made between 1747 and 1776. They cover only the 22 'généralités' of the 'pays d'élections'. They are in the form of strips about 1200 toises wide, following twenty or so road routes in the Paris 'généralité'. Their scale - 1/8,640, i.e. ten times larger than that of Cassini's map - is very useful for studying the history of the roads and the layout of building in the towns and villages they traverse. The instigators of these plans, Trudaine and Perronet, were closely involved in the history of Cassini's map: they were both members of the Société de la Carte de France and Perronet was even one of its directors. These atlases are now in the Archives Nationales and at the Ecole Nationale des Ponts et Chaussées.

The **Intendancy Plans** or the 'Bertier de Sauvigny cadastral surveys' were made between 1776 and 1791, usually to the scale of 12 lignes to 100 toises, i.e. 1/7,200. These surveying plans were made in each of the parishes of the Paris 'généralité', at the request of the intendant Bertier de Sauvigny, with the aim of improving the allotting of the *taille* (tax) among the parishes. This was then shared out among the taxable members of each parochial assembly, 'the strong bearing the weak'. The surveyors did not plot tracts of land but what were known as '*masses de cultures*' (woods, meadows, arable land, etc.), calculating their acreage. These 2,100 plans, 80% of which are still preserved in the Departmental Archives, cover a little more than the present Ile-de-France region, for the 'généralité' spilled over into the Oise and the Yonne. They vary greatly in quality, but they are indispensable for selective research: apart from land use, they give the best picture of the parishes as they were before the French Revolution, with most of the localities, paths and detail of the villages. The results of the survey were given in arpents (an arpent was roughly an acre) and in local measurements. Those interested in metrology will appreciate Mireille Touzery's study, which records, for the Paris 'généralité' alone, 52 units of area and 26 units of length! (CFC report no.148.)

**Private publishing.** In the 18th century, in the image of the king who had been living at Versailles for almost a century, the nobility had vast residences built on the outskirts of the capital. This rich clientèle prided itself on its scientific knowledge and private publishers sought to provide maps with greater scope than the traditional plan of Paris. It was in response to this demand that geographers provided the Paris region, like no other, with maps giving more and more information. Unlike the archaisms of Cassini's figurines, they were topographic and they were already modern in that they made systematic use of scale representations for inhabited areas, choosing the largest scales. The grating comments that greeted Turgot's plan, drawn up 'in the old manner', in 1739, illustrate this change: 'an undertaking that is bolder than it is happy, at a time when Delagrive had accustomed

the public to geometrical accuracy'. The plans of Paris made by Abbé Delagrive in 1728 and by Roussel in 1730 were quite rightly described as forerunners of the scientific plans and their extensions into the Paris region met the same requirements of accuracy.

 21

Roussel's map of 'Paris with its suburbs and surrounding areas, with details of villages, houses, highways (cobbed and otherwise), heights, woods, vineyards, fields and meadows, drawn geometrically', to a scale of 1/9,800, was the first successful attempt at moving out into the suburbs. Published in 1731 by Jaillot, its nine sheets, centred on Paris and decorated with a magnificent frame, form a fine, homogeneous whole, measuring 176 by 125 cm and covering just over 17 by 12 km, from Saint-Cloud to Vincennes and from Clichy to Ivry. All the details described in the title (represented with great finesse) are included; relief is shown by hachuring; it shows walks in the formal gardens that have now disappeared; above all, it meticulously represents each house in projection on the plan. Roussel, who was a military engineer, was able to base his work, this time, on the triangulation that had been worked out by the Académie des Sciences (that had not been the case with his map of the Pyrenees, which had been unfairly disparaged by Berthaut for its inaccuracy); the result was an unquestionable success. This map was published again in 1850: the only addition was the fortifications, and the dedication to the king and the *fleur de lys* were removed.

 21

Work on the map of the 'Outskirts of Paris, drawn geometrically by M. l'Abbé de la Grive, of the Royal Society in London and geographer of the City of Paris, dedicated to M. le Marquis de Vatan, *prévôt des marchands*', was begun in 1731. Partly engraved by its author, it was published by Hugnin in 1740. It, too, comprises 9 sheets, but it is on a smaller scale: 1/17,280. The whole map, measuring 255 by



177 cm, covers an area of 1,300 square kilometres (six times more than Roussel's map), from Poissy to Torcy and from Montmorency to Palaiseau. It is more sober in its representation than Roussel's map (there is no decorative frame), but the detail is just as accurate: 'We find all the topographic details imaginable, even the divisions of gardens and lands and the smallest paths'. However, there is no relief and the toponyms are hardly denser than in Cassini's map. Finally, Abbé Delagrive represented the town centres merely as blocks, separated by the main streets. In 1754, he published a reduction to serve as a guide to assembling the different sheets. Jean Delagrive abandoned the priesthood to become a geographer. In 1733 he accompanied Jacques Cassini and Maraldi to measure the *Chaîne Perpendiculaire de Paris* at Saint-Malo. The copperplates are now in the Louvre.



22

The third privately-published map, Dom Coutans's 'Tableau' or 'Topographic Atlas of the Paris Environs', is probably not so well-known as the previous one, but it is nevertheless remarkable in being the first topographic map to cover almost the whole of the Ile-de-France. The 16 sheets cover an area of some 14,000 square kilometres, from Dreux to Provins and from Creil to Etampes. The scale used is 1/64,800. It was begun in 1770 and was published sheet by sheet until 1784; the first edition was unfinished. Dom Guillaume Coutans, a Benedictine monk from Lagny in the congregation of Saint-Maur, was described by Charles Piquet as 'an enlightened amateur' who devoted his fortune to topography. His aim was to establish an atlas covering 'fifteen to twenty leagues around Paris, combining the accuracy and precise detail that are to be found in Delagrive's map, although this work did not present

the eye of the spectator with those fine sites formed by heights and valleys'. Indeed, Dom Coutans chose to express relief by means of hachuring and the result is quite successful. He also obtained all existing documentation and plans of roads and forests from the different ministries. Finally, accompanied by engineers, he made the necessary field checks. The draftsmanship is very fine: although the scale is almost 4 times smaller than that of Delagrive, Dom Coutans's map is comparable to latter in its toponymic density. And it shows its superiority in representing the houses in the villages (this was then quite rare). However, a number of tests have shown that there are many mistakes scattered all over the map and that it must therefore be used with precaution. The Revolution deprived him of his pecuniary means and thus prevented him from publishing the last remaining sheets; he died soon afterwards. The last sheets were completed by the geographer and engraver Charles Piquet in 1800, in a revised edition, accompanied by a 'dictionary' or toponymic index. The great significance of this map led to the publication of a corrected edition in 1840. (Paris, Bibliothèque Nationale.)



23

The 'Topographic Picture of Sénart Forest, dedicated and presented to Monsieur', at a 1/14,400 scale, is a very fine map, also published by Dom Coutans in about 1786. (Copperplate at the I.G.N.)



23

The Map of the King's Hunting Grounds, or, more precisely, the 'Topographic Map of the Environs of Versailles or the Imperial Hunting

Grounds', was the great achievement of 18th-century map making. In the precision of the many planimetric details that are represented, the expression of relief by means of long hachuring strokes and the fineness of the engraving, this is *the* masterpiece, 'leaving all French and foreign works of its time far behind for quality'. The preliminary work was carried out between 1764 and 1774 and it was engraved on 12 sheets at the scale of 1/28,800. It covers an area of 3,400 square kilometres, thus coming between those of Dom Coutans and Delagrive, but unfortunately it does not go beyond Montfermeil in the east.

The history of the Map of the King's Hunting Grounds was eventful and there were many setbacks during the long period of its realisation, from 1764 to 1807. It is the work of the *Dépôt de la Guerre* (1688-1887), an organisation originally created by Louvois for archiving purposes, but later, in the course of the 18th century, it began to produce its own maps. The map in question was the result of Louis XV's request that a copy be made of an old map of the duchy of Rambouillet; it was also a result of his enthusiasm for hunting. It was continued and gradually enlarged, under favourable circumstances, after the Treaty of Paris had put an end to the Seven Year War. Finally, it was completed through the tenacity of Jean-Baptiste Berthier, head of the *ingénieurs-géographes* at the *Dépôt de la Guerre*, who had considered it, first of all, simply as a means of keeping his staff busy at a time when the *Dépôt de la Guerre* was under threat of dissolution because of the return to peace. Berthier, who was supported at the start by Choiseul, subsequently found the context less favourable: war reduced the number of engineers working at the *Dépôt* and finally deprived him of the necessary credits for engraving. The directors of the *Dépôt de la Guerre* and even Alexandre Berthier considered the map a waste of time. The engra-

ving work, for which the go-ahead had been given by Louis XVI in 1774, was halted in 1792 by the Convention, by which time only 5 of the 12 sheets had been completed. The First Consul Bonaparte ordered the engraving work to be continued in 1801 but it was not completed until 1807. Meanwhile, Berthier had died in 1804 without seeing the full result of the work to which he had devoted so much energy. By an irony of fate, he did not obtain the posthumous glory of having the map familiarly named after him.



## 25

The first part, a 'Map of the Environs of Rambouillet and St-Hubert', made in 1764, comprises 36 drafts at the scale of 1/7,200. It was reduced to 1/43,200 and engraved on two sheets in 1766 by Guillaume de la Haye, one of the great map engravers working at the *Dépôt de la Guerre* (he had already engraved those of Haut Dauphiné and the Diocese of Cambrai). To tell the truth, this first part is of little interest to us, as almost all of it is included in the large map. It served as a testing ground: the king was so pleased with it that he expressed his desire to see the hunting grounds around Versailles represented in the same way.

The main part of the map was drawn at the scale of 1/14,400, first of all between 1767 and 1768, from Rambouillet Forest to the meridian of the Observatoire de Paris in the east and to its perpendicular in the north. As the king found this development insufficient, he had it extended, between 1769 and 1773, to the Saint-Germain and Sénart Forests, taking in Paris and Vincennes. It comprises sixty or so drafts (now at the *Service historique de l'armée de terre*) and two magnificently coloured assembled copies: the southern part (1769) measu-



ring 380 by 209 cm and the northern part (1774) 460 by 205 cm. They are now in the concert hall of the Pavillon du Roi at Vincennes castle.

As for the engraved map, (apart from a few modifications) the 5 sheets completed in 1792 correspond to the plans made in 1769, but that is not so of the other 7, which were engraved after 1800 by Bouclet, d'Houdan and Tardieu. The Paris sheet was quite radically revised, the representation of the City of Paris being updated with the help of the Verniquet plan, with its outer development, the wall built by the farmers general and the Ourcq, Saint-Denis and Saint-Martin canals, added from plans in 1803. New surveys were carried out for the sheet showing Saint-Denis because of the presence on the manuscript map of a cartouche representing the Château-Neuf at Saint-Germain-en-Laye. If the Map of the King's Hunting Grounds is one of the finest tools for obtaining a general understanding of land use in the 18th century, the historian must nevertheless be cautious in dating particular features, or else he must consult the original drafts.

The question remains as to whether such a meticulous and costly work, which, for thirty years, remained in the state of monumental and untransportable assemblages, is really useful. Should it be seen as a symbol of the Ancien Régime, to be contemplated by the king and his court when they returned from the hunt? Such limitations would be disappointing. In ordering the completion of the engraving, Napoleon was not only obeying his passion for hunting: he also realised that the map could be of help to him for administrative purposes. That was why it was planned to extend the map to the east and new surveys were made. The latter were begun in 1814 by student *ingénieurs-géographes* but they were never finished.

In 1809, the 'Map of the King's Hunting Grounds at Fontainebleau', resulting from the compilation of documents that had been revised by the *ingénieurs-géographes*, was also engraved by the Dépôt de la Guerre. It is on a slightly smaller scale (1/34,560) and it includes an index of toponyms. At the end of 1814, Maréchal Berthier, who was Master of the Royal Hounds at the court of Louis XVIII, had the names of the various hunting-ground maps changed following the change in the régime. Thus, the 'Map of the King's

Hunting Grounds at Fontainebleau' adopted the erroneous title 'Carte des Chasses du Roi, levée par les Officiers du Corps Royal des Ingénieurs Géographes'. In about 1850, on the maps of Versailles and Fontainebleau, two railway lines were even added: fortunately, they were removed a century later by the I.G.N., which still possesses the copperplates and markets the prints.

Two maps dating from the early 19th century were based on the Map of the King's Hunting Grounds:

- The 'Military Map of the Environs of Paris, showing the defence work carried out or planned in 1815', comprises one sheet, engraved by Collin. It was realised by the *Service du Génie* (Engineering Service) for the Duke of Angoulême's *Cabinet Topographique*. It is a simplified copy, revised and on the same scale, of part of the Map of the King's Hunting Grounds centred on Paris. The fortifications indicated are those that had been recommended during the Hundred Days by Generals d'Haxo and Rogniat, but they were never realised by far. (The copperplate is at the I.G.N.). This military map also served as a support for the various projects that were recommended, including the wall built by Thiers and the forts belonging to the 'outer defence' (at the SHAT).
- The 'Topographic Map of the Environs of Paris, based on the Map of the King's Hunting Grounds' by Brué, was published by Goujon in 1823. It has been reduced by about a third. Artus's very fine engraving has preserved most of the details. However, the revision was quite second-rate and as the map is centred on Paris, it had to be extended to the north as far as L'Isle-Adam and to the east as far as Meaux. In these parts, Brué may have taken his inspiration from Dom Coutans. A survey carried out between Dammartin and Meaux has unfortunately revealed that the road network is very erroneous.

**The French Revolution:** when the Ancien Régime came to an end, the Académie des Sciences had achieved the objectives assigned to it by Colbert a century and a half earlier. It had realised the first national geodetic network; under its supervision, the Cassini map was almost completed; and it had contributed to the promotion of a particularly brilliant series of private publications in the Paris region. The relationships between cartography and the State were

still ill-defined: apart from the Académie, maps were also produced by the Ponts et Chaussées (Highway Department), the Maîtrises des Eaux et Forêts, and the surveyors in the service of the Intendants. The men of the Revolution tried to reform the institutions of map-making and the form it took. Two organisations dominated the following period:

- The *Dépôt de la Guerre*, which obtained the Cassini map, which had been confiscated without indemnity in September 1793 from the Société de la Carte de France. After the Revolution, it held a preponderant position where cartography was concerned, wiping out that of the Académie des Sciences.
- The **Cadastral survey (Cadastre)**, showing the extent, value and ownership of land, especially for taxation-related to the tax reform and the demand for tax equality.

In 1790 the **Weights and Measures Reform** recommended by the *Assemblée Constituante* (Constituent Assembly) had set the unit of length at one forty millionth of the earth's meridian. The 'Mériidienne Vérifiée' of 1739 was not sufficient to determine its measurement. Another meridian arc was thus proposed on either side of the 45th parallel from Dunkirk to Barcelona. Unfortunately, the geodetic operations that were begun in 1792, directed by Delambre and Méchain, met with very great difficulties: the calculations were not finished until 1799, the system being validated on 10 September 1799. The metre appeared the same year on a map included in a cadastral survey of the Seine.

The creation, on the initiative of General Sanson, director of the *Dépôt de la Guerre*, of the **Commission de Topographie of 1802** was a logical follow-up to the Weights and Measures Reform. Members of the main ministries were brought together to specify the rules defining 19th-century cartography. It imposed the metric system and scales using decimal fractions; it recommended use of the grade as well as the degree for measuring angles. It also codified the signs and conventions that were to be used by the various cartographic services: relief was to be indicated by references of altitude above sea level, contour lines were to be used for plans at a scale of over 1/10,000 and short hachuring, following the lines of greatest incline, was to be used for other maps.

## The Cadastral Survey (Cadastre)

One of the demands made in the Register of Grievances to the States General (*Cahier des Doléances aux États Généraux*) of 1789 was the revision of taxes, based on a General Cadastral Survey. The Law passed on 1 December 1790 by the *Assemblée Constituante* had set out the principle and the Cadastral Survey Office (*Bureau du Cadastre*) came into being on 23 September 1791. Its first director, Gaspard François de Prony, had devised new general approach to map-making. The Cadastral Survey was to be a scientific organisation bringing together all useful information on population, commerce, farming and communications. In 1792 it had been attached to the Ministry of the Interior in order to be able to pass on geographical information to the various administrative bodies. Unfortunately, delays in the training of students and in the validation of the metric system (it was not validated until 1799), and the emergencies of war, reduced production to very little. In 1801 - the Cadastral Survey Office and its school having disappeared - the Ministry of Finance took its place and was given the task of producing maps on a more modest basis.



The **Cadastral Surveys of the 'year XI'**, or 'Consular' Cadastral Surveys, covered '*masses de cultures*' (woods, meadows, arable land, etc.) or '*natures de propriétés*' from 1802 to 1807, thus applying the order of 13 November 1802, over about one third of the communes. They are similar to the Cadastral Surveys of Bertier de Sauvigny, from which the surveyors sometimes took their inspiration, but they correspond to the norms set by the Commission de Topographie in 1802: they use the metric system; north is placed at the top; and they use the decimal scale of 1/5,000. The title (surrounded by the attributes of the surveyor and of farming) is surmounted by a medallion with the bust of the First Consul. The general result is pleasantly colourful, with detailed representation of the houses in 'carmine'. Production was halted in 1807 because these Cadastral



Surveys perpetuated the erring ways of the Ancien Régime in not specifying individual property. (They are in the National or Departmental Archives.)



The detailed 'Napoleonic' (or 'Imperial') Cadastral Survey (or 'ancien cadastre') resulted from the Law of 15 September 1807. The Emperor ordered the surveyors to carry out a detailed Cadastral Survey over all the communes, including 'the measurement of over a hundred million tracts of land, which must all be classified according to soil fertility; the taxable product of each one must be assessed and the name of the owners must be given'. The Cadastral Survey code, worked out by the Delambre commission, was approved on 27 January 1808. This vast map-making operation, completed in 1850, is described on the memorial on St Helena as a '*véritable constitution de l'Empire*'. The plans do not include geographical details, for the engineers and controllers were only carrying out a local triangulation, without any tie-up with a general network. The commune is divided into sections and the chosen scale varies between 1/2,500 to 1/500, this disparity sometimes existing in the same commune, depending on how it is parcelled out. The village section is often on a larger scale; the scale reaches 1/500 in the town and even 1/200 in the centre of Paris (Vasserot and Bellanger atlas). The plans of the different tracts of land are preceded by a table showing how to identify the sections and put them together. The latter is usually at the scale of 1/10,000. The 'Napoleonic' Cadastral Survey is a wonderful source of information. It is indispensable in any historical study of the communes, for it shows the state of buildings and roads a century

and a half ago. Where toponymy is concerned, it is still *the* reference work for localities. It may be found in the Departmental Archives (more rarely, at the town hall); reproductions are made by the Documentation Nationale du Cadastre at Saint-Germain-en-Laye.



The present Cadastral Survey. Its realisation took longer than expected and its updating was constantly delayed. We have to wait until the law of 16 April 1930, prescribing a revision of the assessments serving as a basis for the land tax, for the specification of the preconditions for a general renewal, payable by the State, of the old Cadastral Survey plans, and also their annual updating. There are two possible modes of renewal:

- either the old plan is simply brought up to date ('cadastre révisé' - 'revised' Cadastral Survey),
- or the tracts of land are regularly re-surveyed ('cadastre refait').

All the Cadastral Surveys in France have now been renewed. Less than 50%, mainly in rural areas, have been revised and therefore stem from the 'Napoleonic' Cadastral Survey. In the Ile-de-France region, which is for the most part urbanised, most of the Cadastral Surveys have been completely renewed.

## The Carte d'Etat-Major (Ordnance Survey Map) (1818-1880)

In 1808, finding Cassini's map inadequate, Napoleon expressed the desire for a new map of France. Wars and various setbacks prevented the project from being realised.

After 1815, the *Dépôt de la Guerre*, which had been so productive under the Empire, was reduced to inactivity and was on the verge of being dissolved. Following Colonel Brossier's report to the Director of the *Dépôt de la Guerre*, the Royal Commission, chaired by the astronomer Laplace and comprising representatives of the main ministries, met on 11 June 1817 to examine the plan 'for a new topographic map of France to suit all the public services, and to be carried out in combination with the operation to produce the General Cadastral Survey'. The powers of the *Dépôt de la Guerre* and the Register of Property (Cadastré) were fixed: the former was to see to operations in the fundamental geodetic network, or 'triangulation des ingénieurs-géographes' (completed in 1827); the latter was to carry out the reductions at the 1/10,000 scale of the plot patterns or assembly sheets and deliver them to the *Dépôt de la Guerre*. Topographic operations were limited to simple reconnaissance; contour lines were used for mountains. There was no real contouring, but geodetic operations were accompanied by determination of altitude. The scale was first set at 1/10,000, then brought down to 1/20,000 and finally 1/40,000. The engraving, originally planned at the scale of 1/50,000, was reduced to 1/80,000 in 1821.



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Following the recommendations of 1803, the map is in projection (Bonne equivalent), respecting surfaces to the detriment of angles, on the Plessis ellipsoid calculated following the measurement made by Delambre and Méchain; each sheet measures 80 by 50 cm or 64,000 by 40,000 metres. The surveys begun in 1818 were completed in 1866, taking about the same time as the Cassini map. Publication began in 1832

and was completed in 1880. The 'carte d'Etat-Major' is so called because the surveys were carried out by staff officers ('officiers d'Etat-Major'), the last *ingénieurs-géographes* having been incorporated into the army in 1831.

The draft maps (1/10,000) of the environs of Paris, made between 1818 and 1824, are the only ones in the Carte d'Etat-Major on such a large scale. They correspond to the first three sheets - Paris, Beauvais and Melun - published in 1832. These 192 manuscript maps (80 by 50 cm) are in fact drafts, drawn up at home, after assembled land sketches. These were first based on cartographical documentation of the time-cadastral survey when it existed, plans of forests and various plans of Paris and its suburbs, which was then completed by field surveys. They are generally very artistic. Relief is represented by panned hachuring, following the lines of greatest incline, in steps representing a difference in height of 2.5 metres. This hachuring is based on contour lines of 10-metre equidistance, which were pencilled in and can still be seen. The vegetation is coloured with a wash following the usual conventions: yellow-green for woods, blue-green for meadows, dark green for parks, violet for vineyards, red for housing. In the margin on the left we find the title, the rectangular coordinates of the 'trigonometric points' and the key. Railways were later added to some of the draft maps. Others, showing areas close to Paris, were repeatedly borrowed and traced by administrative bodies during that period and have therefore, unfortunately, been badly damaged. (I.G.N. Map Library.)

The quarter-page draft maps (1/40,000) use the scale that was employed for the surveys of most of France. They were established in our region between 1825 and 1835. Those of Paris, Beauvais and Melun are reductions of the previous maps at the scale of 1/10,000, slightly



updated in 1832; railways were also added at a later date. Fewer details are shown than in the larger-scale map. The colours used for lands under cultivation are the same. Relief is expressed by hachuring. The contour lines are no longer visible here; they may be seen on the tracing that is appended to the draft map; 10-metre equidistance is used. In the margin, the triangulation points are indicated with their geographical coordinates in degrees and their altitude.



The *Carte d'Etat-Major* (1/80,000) was published in our region between 1832 and 1839 (first edition). It was engraved from the reductions on oiled paper of the four draft maps at the scale of 1/40,000. These were transferred in reverse onto the copperplate. The engraving work took 3 to 5 years; it involved three specialities: line, lettering and hachuring. Apart from the title, every page is numbered, the 247 sections being numbered from west to east and from north to south. The Paris sheet, n°47, is centred longitudinally on the meridian of the Observatoire, but the capital is off-centre to the south, for the metrical coordinates are taken from the Paris meridian and the 50° parallel. The meridians and parallels are engraved every 0.10 degrees, with scales in the frame in hundredths of degrees and sexagesimal minutes. The planimetry is very dense; the engravers have done their utmost to represent most of the details that figured on the draft maps, leaving out as little as possible. The map is sometimes difficult to read because of the very dense hachuring. The *Carte d'Etat-Major* was admired for its finesse and detail and was considered by those living at the time as a remarkable work, incomparably superior to Cassini's map. We cannot help regretting, however, that the authors of the map did not have the means to produce it on a larger scale. Engraving was an expensive process: this prevented the *Dépôt de la Guerre* from agreeing to the wishes expressed by the civilians. M. de Freyssinet estimated at a milliard gold francs the extra expense incurred to France when the railways were established because of the lack of suitable mapping. Engraving was indeed costly: a maximum of only five copies could be made in an hour and the copperplates lost their edge after a few hundred copies. Yet from

1818 onwards, the invention of printing by lithography (the results were not so good but it was faster) could have enabled them to reproduce the draft maps at a reasonable cost.

Subsequently, until about 1889, the copperplates were revised and railways were added, but the publishing date at the bottom of the map was not altered. Updating on the copperplate became easier from 1856 onwards, through the adoption of galvanoplasty, or electroforming ('Georges' electrolytic process). Prior to that, although additions posed no problem, it was difficult to remove information (this involved cutting out a channel with an erasing knife in the part in need of correction, then levelling out the copper by hammering it at the back (*repoussé*)).

To speed up the updating process, from 1889 onwards, galvanoplasty made it possible to obtain plates reproduced by quarter at the same scale. In order to increase the map's readability, a photographic enlargement was also made at 1/50,000 scale and this was printed by zincography. The '1889 quarter Type' was thus revised until about 1930 in two editions, etching on the scale of 1/80,000 and zincography (1/50,000). For most of the Ile-de-France, apart from the environs of Paris, the 'carte d'Etat-Major' was not replaced by the present map of France at 1/25,000 scale until about 1950.

Where urban areas were concerned, the scale used was too small to be satisfactory. Other maps based on the 'carte d'Etat-Major' were published around Paris:



- The 'Map of the Seine Department, made in 1839 at the *Dépôt Général de la Guerre* under the direction of General Pelet, based on the surveys made by the Officers of the Corps d'Etat-Major' in copperplate engraving; 9 sheets; scale 1/40,000. Centred on Paris; 132 by 94 cm or 53 by 38 km. Numerous editions of this map exist; it was reprinted until the early 20th century. There were also smaller zincographic editions printed by Koepplin, entitled 'Environs of Paris'.
- The *Map of the Environs of Paris*: 36 sheets at 1/20,000 scale, published by the *Dépôt de la Guerre* and printed by

zincography. The first edition of 1879-80 is simply an enlargement of the one previously mentioned, covering the same area. The revised version of 1887 is interesting for two reasons: firstly, it is printed in colour, and, secondly, contour lines, combined with zenithal shading, replace hachuring. It prefigures 20th-century maps.



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The atlases realised by the Seine department (scale 1/5,000) provide a source of documentation for local research that is easier to exploit than the cadastral surveys showing the different tracts of land. On a large scale, on successive dates and over a period of almost a century, they enable one to see how building evolved in the inner suburbs. Two atlases may be distinguished chronologically:

- The *Atlas of the Communes of the Seine Department*, drawn up between 1854 and 1875 by Lefèvre - either Th. O. Lefèvre, who was an engineer and surveyor at Villejuif, or Lefèvre frères. Lithograph by Avril and Wuhrer. It covers 71 communes (excluding Paris) and comprises one or two monochrome sheets, all of the same size, 80 by 50 cm. In the margin we find a great deal of information about the communes and, in particular, about the roads. There are generally two editions per commune, the first dating from about 1854 and the second, revised version from between 1869 and 1875.



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- The '*Atlas of the Seine Department*, drawn up by the *Service des Ponts et Chaussées*, following the recommendations of the General Council of 28 December 1893, M. J. de Selves, prefect of the department'. It comprises 97 contiguous sheets, 60 by 40 cm, numbered from 1 to 104 (the 7 sheets representing Paris are missing). Although it was also printed by lithography by L. Wuhrer, or by P. Montsanglant his successor, this is a new set of maps and not a revised edition of Lefèvre's atlas. The sheets are in

colour this time, with contour lines at 5-metre equidistance. The first edition dates from 1895-1900; the revision stretches over a period from 1922 to 1941. The updating involved a technical innovation: it was carried out largely by means of aerial views taken in 1929-30 by the *Compagnie Aérienne Française*.

**The Third Map of France.** Between 1871 and 1881, the *Dépôt de la Guerre* was reduced to its simplest expression. In 1878, Freyssinet, the minister of Public Works, created the *Commission Centrale du Nivellement* ('nivellement' = levelling, contouring) which worked out a programme of 'General Contouring of France', led by the engineer Lallemand. It was obvious that the *Carte d'Etat-Major* was insufficient and that large-scale maps with contour lines were needed. If we look at the state of European cartography in general, we find that France was lacking in ambition and had fallen behind its neighbours. Almost everywhere, the scale used varied from 1/10,000 to 1/25,000 and maps were published by photolithography. In 1887, the scission in the *Dépôt de la Guerre* led to its disappearance: the 4 historical sections became the present *Service Historique de l'Armée de Terre* (SHAT), while the three sections devoted to geodesy, topography and cartography became the *Service Géographique de l'Armée* (SGA, 1887-1940). The latter resulted from General Perrier's desire to create an autonomous organisation specialising in cartography that was capable of catching up with France's neighbours. The *Commission Centrale des Travaux Géographiques* (1891-1912), created by Freyssinet, expressed the wish for a new map of France at 1/10,000 scale, made with the help of the cadastral plans and published at 1/50,000 scale. As the revision of the cadastral plan had been postponed by the Ministry of Finances, it took a long time to realise the Map of France using only the resources of the SGA. It was not until 1922 that the principle of a new map of France at 1/50,000 scale was accepted. General Bellot added to this the publication of the surveys at 1/20,000 scale - this scale in fact became that of the basic map. Techniques had progressed, the processes of colour lithographic printing gradually replaced those of traditional engraving. Despite the beginnings, from 1932 onwards, of photogrammetry, only just a quarter of the country had been covered by this new map when the war broke out. In 1940, the circumstances of France's defeat precipitated the SGA's transformation into a



civilian organisation dependent upon the Ministry of Public Works: the Institut Géographique National (IGN).

### 32 - 33

The Map of France of the 1900 type (scale 1/50,000) – a block of 9 sheets covering Paris and its environs, i.e. a third of the Ile-de-France region – is the prototype of the present map of France. It was at that time that the present geographical divisions and numbering of sheets were defined: 0.40 x 0.20 grades/Paris. They have not changed since. Readability was greatly improved by the use of 10-12-colour lithographical printing. There is a key - an innovation compared to previous maps and also an indication that they are intended not only for specialists but also for the general public. Once and for all, after a century of hesitation, the contour line has come out on top, thanks to the addition of shading using combined zenithal and oblique lighting; the light is supposed to come from the north-west, as in a drawing in trompe-l'œil. The map is based on a new triangulation system, known as 'la Nouvelle Triangulation de la France' (NTF, 1873-1991). The surveys had been carried out at the scale of 1/10,000 around Paris by the Brigade du Génie, which had become part of the SGA in 1887. These draft maps were then assembled and published in monochrome in 1900, in a division derived from the 1/50,000, 'structure plans' at 1/10,000 scale, comprising 288 sheets, and maps at 1/20,000 comprising 72 sheets.

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The Map of France of the 1922 type corresponds to the decision to cover the whole of the territory with maps produced in colour, not only at 1/50,000, but also at the scale of the surveys (1/20,000) and locally at 1/10,000. In its presentation, the new map is very similar to the 1900 type (1/50,000): firstly, the number of colours has been reduced to 6 and it is then passed 4 times through the offset machine; secondly, following the 1914-18 war, the need to preserve, on a local level, the angles for the firing networks led to the adoption of *projection conforme conique de Lambert*, in 4 zones in order to reduce linear distortion to a minimum. Three types of scale must be considered:

- The plans at the scale of 1/10,000 showing the environs of Paris correspond to the scale of the original surveys. The 288 sheets were revised and published in colour round about 1930. There was no later edition, for with the relinquishment of direct surveys it ceased to be the scale of the basic map.
- The map at the scale of 1/50,000 has changed little, for after the Second World War the military version was standardised using the common symbols, scales and formats developed by NATO. In 1972 the symbols and lettering were improved. In 1976, it was folded and provided with a cover, thus becoming the 'Série Orange'. Since 1990, Mercator projection has been used and the civilian and military versions are printed simultaneously.

### 34

- The evolution of the basic map at 1/25,000 scale was complex and much more interesting. In about 1930, the maps at '1/20 000 by quarter' from the 'block' showing the environs of Paris were first of all published in 36 sheets based on revised surveys at 1/10,000. A few adjoining sheets were produced and published

at 1/20,000 between 1940 and 1950. After the Second World War, the IGN was equipped with planes for aerial photography at Creil and, with the systematic use of photogrammetry, cartography made swift progress. This process permitted greater planimetric and altimetric precision as well as reducing the time taken. In order to adapt to the standards prescribed by NATO, the 1/20,000 scale was gradually abandoned and the 1/25,000 scale was adopted instead: a small change, but it nevertheless led to a reduction in area - and therefore in readability - of over a third, which led to a fine dispute amongst the experts. In the years 1950-1960, the whole of the Ile-de-France region was either published for the first time or revised. From 1970 onwards, revisions were made more frequently; furthermore, map folding became more generalised, following the example of road maps, and the format became increasingly larger. In 1976, the 'Série Bleue' was obtained by putting together two quarter sheets and adding a cover.

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Finally, after 1989, TOP25 was produced, responding to public leisure needs by covering, first and foremost, and in 16 sheets, the touristic areas and in particular the large areas of forest around Paris. The sheets are not contiguous but they overlap; the format (about 100 x 130 cm) had quadrupled in twenty years: it is more than twice that of the 'Série Bleue'. The TOP25 map is topographic but forty or so different touristic symbols have been added, in three colours. The map at 1/25,000 scale, originally designed for military use, then for technicians and planners, was now available to everyone.

## Large-scale cartography

The needs of town and country planning that asserted themselves after the Second World War called for more detailed maps and plans. For twenty years or so, dozens of plans at 1/2,000 and 1/5,000 scales were realised by the Division des Travaux Topographiques, under the aegis of the Ministry of Rebuilding (Ministère de la Reconstruction) and its successors. In 1966, the 'District de la Région Parisienne' decided to finance two important cartographical operations with the aim of providing indispensable backups for regional development:

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- The Map of the Paris Region (1/5,000), produced by the IGN between 1966 and 1981. It covered the whole of the region in 844 rectangular sheets (95 x 65 cm). Obtained from photogrammetric surveys compiled from aerial views at 1/25,000 scale (which were not completed in the field), it shows only the 'apparent' plot pattern. The contour lines, at 5-metre equidistance, are those of the 1/25,000. Local updating was carried out until 1995.

 35

- The Topographic Plan of the whole of the Paris Region, then the Overall Plan of the Ile-de-France Region or 'PERDIF' at 1/2,000 scale, produced under the direction of the Cadastre (Saint-Germain-en-Laye). It shows the whole of the actual plot pattern, but covers only urban and suburban areas, with the

exception of Paris (already covered by the Conservation du Plan), following two divisions corresponding to 2 successive editions:

- 1996-1973: old division of the same type as the 1/5,000 mentioned above, format 95 x 65 cm, comprising 1,312 sheets, published with contour lines at 1-metre equidistance.
- 1973-1990: new division of the 'Plan Cadastre Normalisé', format 70 x 50 cm, published with or without contour lines, over a slightly smaller area than the previous edition.

The realisation of these two maps or their revision came to a halt because of lack of funds and above all because their first, purely graphic conception no longer corresponded to the more recent needs of the GIS.

## Data bases and digital cartographic products



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From the 1970s onwards, progress in data processing led town and country planners and administrators of local communities and networks to pool their data files relating to objects or phenomena to be managed and their geographical location. The resulting GIS led to the creation by mapping organisations (principally the IGN and the Cadastre) of localised Databases. Since 1986, the Conseil National de l'Information Géographique (CNIG) has been in charge of coordinating production programmes and formulating recommendations on the circulation of geographical information. This new dimension of cartography involves considerable cost and calls for great technical know-how on the part of users, but with the development of on-line data processing the general public should not be excluded. The future of the paper map seems to be quite safe: it is still the easiest, most practical medium to handle.

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Translation: Mary Pardoe





# *Changes in the administrative boundaries of the Ile-de-France 16th-20th centuries*

*Was it possible to be a 'France-llien' (inhabitant of the Ile-de-France) under the Ancien Régime?*

*The answer, according to modern historians, would most certainly be yes. But the term 'Ile-de-France' did not have the same meaning then as it has today.*

**Hélène Servant**

Administratively speaking, the Ile-de-France came into being in 1519. Indeed, that year, for the first time, the provisions signed by the new governor<sup>(1)</sup> no longer enumerate a series of small villages or districts which come under his authority; instead, they are brought together under the name of the province: Ile-de-France. That was an important step. The medieval notion of *pagus* (village, district, canton) was closely linked to the idea of feudalism. The old Gallo-Roman *civitates* were not able to survive as such in the face of the assaults of the barbarian invaders from the other side of the Rhine, and even though Charlemagne briefly gave the illusion of restoring imperial power, he in fact delegated his powers to *comites*, who took advantage of the weakness of the last Carolingians to carve out districts to suit themselves, very often won over by force. Thus the term 'Beauvaisis' designated only the territory around the city of Beauvais, the seat of the count, over which he exercised his powers. By definition, it was therefore a changing geographical space, which was subjected to the hazards of war... or of marriage; for such strategies often succeeded where arms had failed!<sup>(2)</sup>

Under such conditions, the government took on the appearance of a group - a federation - to serve the political ends of districts which themselves had a political, administrative and military character. The aim was both to protect the kingdom against the enemy outside and to substitute stronger authority (concentrated in fewer hands) for a multitude of local powers. That was the task undertaken in the reinstatement of absolute monarchy; it was begun under Francis I and perfected under Louis XIV. Let us note, however, that Paris had its own governor, even though, sporadically, both came under the authority of the same person. The whole history of relations between the kings

and their capital was a web of mistrust and attempts to win people over, claims to privileges and measures for strict supervision - but all that would be too long to go into here. Originally, the governor's mission was to keep order in the king's name in the territory to which he was assigned. Gradually, his powers became clearer; he exercised all the prerogatives of the sovereign in his province, with the exception of justice. As the governors were usually princes or high-ranking personalities, the kings were always careful to keep the powers of justice under careful control, so as not to leave the door open to abuse.



The boundaries of the Ile-de-France hardly changed for three centuries: apart from Paris and its immediate environs, it included the areas around Beauvais, Noyon, Laon, Soissons and Mantes, the French Vexin, Hurepoix, French Gâtine and French Brie. Since the capital had its own governor, the seat of government was at Soissons. The Ile-de-France of modern times is therefore a geographical structure that is essentially of a military and kingly order, a distant echo, in fact, of the initial patrimonial nucleus of the Capetian dynasty, whose first representative, Hugh (Hughes) Capet, was first of all the eldest son and heir of Eudes, Duke of France.

Yet those times were hardly ones of simplification and unification: on the contrary. As the monarchic administration developed, the new

(1) Charles of Bourbon, Duke of Vendôme, grandfather of Henry IV (1489-1573).

(2) We thus understand why it is so difficult to fix the boundaries of medieval districts on a map. And we perceive the full importance of the oral custom of fixing rights, thus, as it were, making up for the inadequacies of cartography: where the custom changed, the 'pays' also changed - i.e. the sovereign authority.

institutions were endowed with servants of various statuses who exercised their authority over well-defined portions of territory. In other words, each State service cut the map of the kingdom into administrative districts, rarely taking account of pre-existing partitions.

Thus, as immediate danger moved further away from the capital (the last great threat came from the Spaniards in 1636<sup>(3)</sup>), the need for an effective military authority became less important, while financial needs increased. The reign of Louis XIV marked a decisive turning-point, opening up the age of what the historians call 'administrative monarchy'. Henceforth, the king's administrative power was asserted everywhere. The indefatigable codifier Colbert, took each institution and specified its outline, its running.

Yet we would be mistaken to deduce, from what has just been said, that it was Louis XIV who was responsible for the grid of France under the Ancien Régime. The delineations dated back, in general, to the medieval period, whence the need to check them, if necessary rectify them, and consign to paper what had often been passed on by oral tradition<sup>(4)</sup>. Finally, as the separation of powers was not the rule, executive and judicial power were closely linked. Each institution had its own specific judicial system. That is why it would be useless to try and list the old districts according to their nature (fiscal, judicial, etc.).



## 42 - 43

So let us look at the main divisions of the Ile-de-France in the 16th-18th centuries:

The France-lliens felt the effects of the tax districts ('généralités' and 'élections') more than any others. At that time, the Ile-de-France was

divided into three 'généralités' (treasury subdivisions), those of Paris, Soissons and Orléans. But the Paris 'généralité', comprising a total of twenty-two sub-divisions (the 'élections'), extended well beyond the framework of the Ile-de-France, since it cut into Champagne in the east, reaching the confines of Burgundy in the south-east, with the 'élections' of Joigny, Tonnerre, St Florentin, and Vézelay. Likewise the 'élection' of Guise, which belonged to the 'généralité' of Soissons, came under the government of Picardy, that of Château-Thierry was in Champagne. As for the 'généralité' of Orléans, it concerned only Dourdan and its environs in the Ile-de-France. The king's officials and the court dealing with disagreements on questions of direct tax (the *taille*) were based in the chief town of the 'élection'.



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It is also to be noted that, taxwise, Paris and the Ile-de-France came under the Chambre des Comptes<sup>(5)</sup>, the Cour des Monnaies<sup>(6)</sup> and the Cour des Aides<sup>(7)</sup> in Paris. But, in fact, that dependence was not so important in that, as with the Parliaments, the Chambre des Comptes, Cours des Monnaies and Cours des Aides based in the provinces were considered

(3) What was left of the old medieval defensive walls of Paris was demolished on the orders of Louis XIV and replaced by the 'cours', corresponding to the grand boulevards of the present-day Rive Droite: Boulevard St Denis, Poissonnière, Bonne-Nouvelle, Montmartre, etc.

(4) In the 16th century a great effort was made to write down all the oral 'customs' that were in use, particularly in northern France.

(5) Stemming from the old *Curia regis*, the Chambre des Comptes was set up by order of Philip V in 1320. It dealt with the accounts for the province as well as recording royal weddings, peace treaties, letters of nobility, and so on. The provinces that were annexed from the 14th century onwards generally retained their own 'Chambre des Comptes'; the competence of the Cour des Comptes in Paris remained almost unchanged throughout the Ancien Régime.

(6) The Cour des Monnaies was in charge of recording royal decisions on the subject of currency; it also judged cases to do with currency. It was set up as a sovereign court in 1551, with powers over the whole kingdom, until a second court was set up in Lyons in 1704, to deal with the southern part of France. The latter was abolished by Maupeou in 1771, along with the Parliaments, but was never reestablished.

(7) The role of the Cour des Aides was to deal with disputes to do with direct and indirect taxes.



merely as branches of the mother institution established in the capital. This system was a prelude to the present decentralisation of French institutions.

We have just briefly mentioned the Parliament - the great judicial institution of the Ancien Régime; its history alone sums up the modern age. Stemming from the old *Curia regis*, the Parliament was, as its name indicates, the place where the followers of the king exercised their duty as *auxilium* and *consilium*. Its running and composition were the subject of many royal regulations of all sorts, according to the strength or weakness of the king at a particular time, whence his desire to perpetuate or institutionalise the political role delegated to him in difficult times (Wars of Religion, for example). The Paris Parliament, which once held jurisdiction for the whole of the kingdom, saw its responsibilities diminishing in scope, although, for a long time, the Auvergne remained within its territory, which forced parliament members to go to Clermont-Ferrand once a year for the 'Grands jours' (i.e. to deal with matters in hand at a special sitting). But as soon as the Parliament became a political organ, it lost its judiciary power and was replaced on a local level by the dense network of bailliages, seneschalsies, presidials and so on.



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However, other specific divisions merit particular attention: for example that of the 'Maîtrise des Eaux et Forêts'. The Ile-de-France was richly forested in those days (Fontainebleau, Rambouillet, Rouvray, Compiègne, Chantilly...) and the king had the forests jealously guarded, not so much because of their value as woodland as because of the pleasures of the hunt that they afforded. In 1668, Colbert published a 'Forest Code', regulating tree felling, the sale of wood and replantation; it served as a model to Napoleon a century and a half later. Colbert thus played a decisive role in the protection of French forests. The map engraved by Jaillot in 1713 is interesting for several reasons: for example, the geographer indicates, by means of small dashes, the boundaries of the various governments. We thus immediately notice

that the Maîtrises of Paris and Soissons not only cover much of the Ile-de-France but that they also integrate part of other governments. Moreover, the plot covered by the Maîtrises does not coincide with that of the 'généralités' (dotted) either, since the Maîtrise of Paris includes Etampes and Malesherbes, in Beauce, which came under the responsibility of the government in Orléans; or Courtenay (now in the Loiret department), in the government of the Ile-de-France and the 'généralité' of Paris, belongs to the Maîtrise of Champagne, while the Brie Champenoise usually belongs to the Eaux et Forêts of Paris!



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Finally, this picture would not be complete if we did not mention another institution that was very significant under the Ancien Régime: religious administration<sup>(8)</sup>. The origin of the Paris diocese goes back a long way (before the 14th century) and its first titular was supposedly St Denis, in the 3rd century! Be that as it may, its boundaries further complicate the map showing the administrative districts of the Ile-de-France. We thus notice that the 'élection' of Melun, which is included in the government of the Ile-de-France, is completely outside the Paris diocese - with the exception of one parish: Champeaux!



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It is quite understandable, therefore, that the 'France-Ilien' of the Ancien Régime should feel lost amidst such tortuous paths! We also realise that the idea of the Ile-de-France was more of a feudal archaism than a living reality: the government, of a military nature, was a distant and symbolical echo of the Capetian geographical and patrimonial nucleus. On the other hand, Paris asserted its position as administrative capital of the kingdom - a position that was unaffected

(8) Paris was the seat of a bishopric, which became an archbishopric in the 17th century (1622; suffragans: Chartres, Orléans and Meaux) under Louis XIII; before that it was suffragan to the archbishopric of Sens.

when the court moved to Versailles. The city attracted all the economic strength from the surrounding areas, thus increasing its authority over a vast territory that was as dependent on the capital as the capital was on it.

The Revolution brought about a change in the situation, at least at first. In order to divide France into departments (1790), the members of the National Assembly sliced into the map of governments. The Ile-de-France was thus divided between the new districts of Seine, Seine-et-Oise, but also Aisne (Soissonais, Laonnais), Oise (Beauvaisis, Valois, Noyonnais), Seine-et-Marne (French Brie), Loiret (southern part of the Gâtine française) and Eure-et-Loir (Dreux). To the Seine-et-Oise were added a number of 'communes' - the word 'paroisse' (parish) was out - from the former government of the Orléanais (Rambouillet). This division was the first step in the destruction of royalty, breaking up the symbolical unity of the former hereditary patrimony of the Capetians.



## 48 - 49

Furthermore, the Girondins, whose ascendancy seemed for a while to play a predominant role in the destiny of the new Republic, attempted to reduce the exorbitant role of Paris, which was and was supposed to remain 1/83 of the State<sup>(9)</sup>. An idle dream, which was soon swept away by the centralisation of the Jacobins. At the dawn of the 19th century, the capital asserted itself more than ever as the one and only seat of action and thought in France.



## 50

The main victory of the revolutionaries lies in the fact that they managed to create unity in the extremely complex administrative system of the Ancien Régime by making the department and its chief town the unique centre and relay of the State in the provinces. Moreover, if, with a few exceptions, the successive constitutions of France recognised the need to separate power, they were wise enough to avoid superposing different administrative systems, at least where the most important ones were concerned<sup>(10)</sup>. On the other hand, the new division sanctioned the disappearance of the Ile-de-France from the administrative viewpoint, while, throughout the 19th century, a new entity gradually emerged: the 'Paris region' - a region whose geographical and semantic boundaries were ill - defined. The term referred first of all to the two departments of Seine and Seine-et-Oise, the first of which was completely surrounded by the second, like the kernel in a fruit, or like the heart in a human body. The Act passed on 17 December 1800 instituting prefects and defining departmental administration, sanctioned this state of affairs, granting them a special status. From then on, the movement was apparently irreversible. Daily Paris continued to extend its sphere of influence, which was to be felt in all fields, even affecting the language: travelling from Lille or Strasbourg, one 'went up to Paris'. With its population constantly

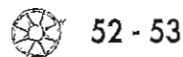
(9) The Girondins proclaimed that the influence of Paris should thus be reduced. We note that the department comprising little more than the city was given the name 'Seine', rather than Paris. And care was taken to create two arrondissements, St-Denis and Bourg-Egalité [Bourg-la-Reine], which was soon transferred to Sceaux. These two arrondissements disappeared in 1880.

(10) Yet, contrasting with this optimistic view is the administrative geography of the modern period (after 1815): academic, military and judiciary areas often differ from the departments. In fact, it seems that, as soon as the chosen division went beyond the framework of the department, diversification took over from unification. In other words, the legislator, wishing to avoid, in the provinces, too large a concentration of power in one place, which was likely in the long run either to produce an imbalance similar to the one that existed between Paris and its suburbs, or even to lead to rivalry with the capital, in the case of the large regional metropolises, such as Lyons or Marseilles, thus preferred to counterbalance the power of such a city by favouring an agglomeration of lesser importance. This was the case in Lille, Douai and Cambrai, the second of which was chosen as the seat of the Court of Appeal and the third as an episcopal city (until the separation of the Church from the State in 1905, it was indeed power that decided on the map of the dioceses).

growing, the capital spilled over its former boundaries. Buildings spread into the surrounding countryside. In 1860, a decisive step was taken with the annexing of the suburban communes situated between the former city walls (the 'enceinte des Fermiers Généraux' of 1784-87) and the lines of fortifications built by Thiers: a total of eleven communes over an area of 7,802 hectares and a population of about 35,000.

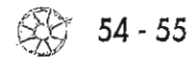


The number of Paris arrondissements increased from twelve to twenty and the capital took on the shape we know today. Paris had eaten up its first belt of suburbs; a second one - even larger and stretching still further - was to be created. The Revolutionaries had destroyed the feudal and military Ile-de-France. The centralisations of the Jacobins resulted - no doubt unintentionally and unexpectedly - in its gradual restoration, admittedly not as a well-defined, recognised administrative area, but in a form that was perhaps even more pernicious, precisely because it was more vague and undefinable. It matters not that it was referred to as the 'Paris region'. Paris as a pole of attraction was an undeniable reality.



Nevertheless, there was another side to the coin. The inordinate spatial expansion of the Paris agglomeration, its soaring demographic growth, engulfed the former geographical and administrative boundaries, which gradually lost their significance, their reality, and hence their authority. After the Second World War, what

had hitherto remained a latent phenomenon, became obvious even to uninformed eyes. On the administrative level, especially, territorial authorities turned out to be totally incapable of carrying out the missions entrusted to them by the State and meeting the needs of the populations of which they were in charge. To remedy this situation, it was decided in 1964 to divide the two former departments of Seine and Seine-et-Oise into seven departments, including Paris intra muros which was given a special status. The former districts of Saint-Denis and Sceaux were more or less restored: they formed the 'inner ring' (Hauts-de-Seine, Seine-Saint-Denis and Val-de-Marne); the rest was divided up among the new departments of Essonne, Yvelines (which took up most of the former Seine-et-Oise) and Val-de-Marne.



Finally, the Act of 1977, which established the regions as recognised and efficient territorial authorities, consecrated the 'phenomenon' of the Paris region by giving it back its original name: Ile-de-France.

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# Maps and planning

*The reader will no doubt find that the maps presented here are somewhat removed from planning. There are several reasons for that.*

*A child who is learning to read and write may be guided by his teacher, but he lives at home in the country or in a town, where he learns to recognise what he sees and associate it with the spoken or written name by which it is known.*

*(Unfortunately, the same is not true of maps. There are no books (have there ever been?) to teach us how to read them; the reflex of associating elements indicated on the map - land, hedges, relief - with the real thing is not acquired from childhood. Teachers rarely show their pupils how to read maps.*

*The difficulty is even greater with old maps. The book by François de Dainville, *Le langage du géographe*, published in 1964, is now rare (it may still be obtained from a specialised library) but it helps us to understand the links that exist between the language that was used several centuries ago and the language in use in 1964.*

*Moreover, it takes an expert eye, with maps in hand, to find, on a modern site, the land that is described on either a modern map or an old one. Map reading takes not only time and knowledge but also a little patience. We have tried to make the task slightly easier by seeking out the 'alphabet' of those old maps, that is to say, their key or 'table of signs, terms and abbreviations'.*

*For reasons of space, we have had to keep to the 'signs', but the 'terms and abbreviations' are nevertheless indispensable. ... As at school, we have to begin with the 'ATC', finding it or attempting to piece it together when it has disappeared or was never written down but was simply passed on from generation to generation.*

*We hope the reader - both the initiated reader and the novice - will excuse any misinterpretations of the letters of the alphabet and also the mistakes we may have made in our reading or pronunciation. Let us hope that these exercises will provide teachers and publishers with an incentive to try and provide a good map-reading tool to help in the reading of maps, both ancient and modern. Such a tool would be precious in enabling us to understand the past and the present in the *Île-de-France*, and thus helping us to carry out our work.*

Hervé Blumenfeld

## Old maps and physical planning

Anybody interested in old maps is immediately struck by the wealth of cartography that exists in the Ile-de-France<sup>(1)</sup>. Looking at some of these documents, showing a particular place at different stages in its development, we cannot help noticing not only the permanency of certain features but also the scale of the changes that have taken place, particularly during the 20th century (outer development, mutations between town and country).

Anyone interested in physical planning knows how useful these maps are, but perhaps it would be a good idea to point out a number of reasons.

If we are to be sparing and show 'basic courtesy where space is concerned'<sup>(2)</sup>, changes in the Ile-de-France can only be carried out in full awareness of the fact that they represent only a short time in the evolution of an area with an ancient rural and urban tradition, that they cover only a very limited part of that territory. Those who work in planning therefore have to take history and the living memory into account.

As we have seen, a negation of that relationship means that the project is reduced to a programme and the programme is reduced to technical, legal and administrative considerations, which together lead to an unsatisfactory result. 'It is not novation that is in question, but its application without consideration for the environment to which it is to be applied,' wrote Gérald Hanning<sup>(3)</sup>, which reminds us of the meaning J. Rostang gives to the term 'civilisation': 'everything man has added to Mankind'. This results in a greater need to bring out the original character of the context and the living environment, to achieve a homogeneity and a variety in the landscape without which it is

unlikely that it is possible to find legibility and landmarks, which are all the more necessary in that town and country in the Ile-de-France are now metropolitan. In the fields of urbanism and landscape, those needs are expressed in the related terms of planning, rehabilitation and protection. They should no doubt also be expressed in terms of the restoration of remarkable sites which have suffered from more or less untimely changes.

In order to shed light on those related terms, the points of view of other specialists are required and, in particular, those of historians.

We note, however, that although much work has been devoted to getting to know the history of the capital region, the field of its concrete physical reality still remains to be systematically explored. Yet that reality is one of the important elements to be taken into consideration before taking planning action. It is also important in urban policies and is the subject of a debate, which, if it is to be fruitful, calls for the provision of common cultural references.

Of course, natural space has been - and continues to be - the subject of important studies, creating a close link between an understanding of physical reality based on the plot, the 'anatomy'<sup>(4)</sup>, and the historical, social, economic, technical and cultural conditions of the changes it has undergone.

The same goes for well-known urban spaces, particularly those of the capital, as may be seen from works such as *Système de l'architecture*

(1) Cf. article by J.C. Dupuis, *Three centuries of maps in the Ile-de-France*.

(2) Gérald Hanning, *Matériaux pour un cahier de l'IAURIF sur la composition urbaine*, 1973 (unpublished).

(3) See previous note.

(4) Marc Bloch, *Les plans parcellaires* in *Annales d'histoire économique et sociale*, vol. 1, p. 62, 1929.



urbaine, le quartier des Halles à Paris<sup>(5)</sup> or, more recently, Anciens villages et faubourgs de Paris, histoire d'un espace urbain<sup>(6)</sup> or Paris XIX<sup>e</sup> siècle, l'immeuble et la rue<sup>(7)</sup>.

Parts of the regional space, the space of the communes and districts have been and still are the subject of research which helps to build up a common basis of understanding of the region and provides food for development and planning projects.

Furthermore, our understanding of the changes brought about by time does not depend on maps alone: present-day society can also provide a wealth of information (a farmer who knows of an old drainage ditch running along a former road he has spotted in one of his fields; the city dweller who has noticed the limits of a former road in the wall of a building).

Of course, understanding the anatomy, the structure of space and its forms is not sufficient if we are to understand the living physical and social body, but such understanding is nevertheless vital if we are not to reduce a portion of the region's territory, however banal it may be, to a sheet of paper waiting for a drawing and disposable at will.

With that in mind, this article aims to contribute to a better understanding of the extraordinary wealth of the cartographic representation of the Ile-de-France. That contribution is limited, of course, by the subject and by the selection that has to be made for a publication such as the Cahiers de l'IAURIF. But it may help the potential user to understand the relevance of old maps and how they may be used in planning today. It will also help to show how much ground remains to be covered and to open the way to the many partners who can play an active role in using and exploiting these cartographic resources.

## Inevitable choices

Such contributions call for inevitable choices.

### *Delimiting the area*

The area under study is that of the present Ile-de-France region, even when the documents examined are maps of France. Maps of Paris alone have been left aside, considering their exceptional wealth and the many works that have already been devoted to them. However, as the city boundaries have been enlarged and many maps showing Paris and its near environs go beyond its present limits, Paris is 'read' from those documents. Thus, the map chosen, centring on the capital and covering the smallest area, is the map of 'Paris, its suburbs and its environs', made in 1730 by Roussel - the first document to provide us with precise information about the environs of Paris<sup>(8)</sup>.

### *Topographical maps and plans showing plot patterns*

These two categories of documents have, for the most part, followed different courses<sup>(9)</sup>, i.e. the cadastres and, more generally, plans of the plot patterns; they are therefore studied in a separate article.

The features of concrete physical space can be grasped only partially here from the plot, despite the fact that it is the lowest common denominator in every legal and economic element of town and country, of their forms, their daily management and their changes, and it is a necessary element to be taken into considera-

(5) Françoise Boudon, André Chastel, Hélène Couzy, François Hamon, published by the CNRS, Paris, 1977.

(6) Bernard Rouleau, Le Seuil, Paris, 1985.

(7) François Loyer, Hazan, Paris, 1987.

(8) Bernard Rouleau, Villages et faubourgs de l'ancien Paris, Histoire d'un espace urbain, Le Seuil, Paris, 1985.

(9) Cf. Three centuries of maps in the Ile-de-France, J.C. Dupuis, in this same issue.



tion in acts of planning. However, the large maps do show the plot pattern, at least to some extent: that is the case, for example, with the so-called 'Carte d'Etat-Major' or, more exactly, its draft maps at scale 1/10,000.

'Some information was received too late, particularly where the cadastre was concerned,' wrote Berthaut<sup>(10)</sup>, thus explaining one of the 'many reasons why the collection of draft maps from the first surveys' is not homogeneous (the first surveys were carried out mainly over the area at present covered by the Ile-de-France).

It is regrettable that the two should be separated, but the problem was not overcome until 1966 and 1990 respectively, with the Plan topographique d'ensemble de la région parisienne and the Plan d'ensemble de la région Ile-de-France, scale 1/2,000, showing the actual plot pattern on a detailed topographical map.

The consequence of this choice is that, in this publication, changes that have taken place in the various spaces are not read using the 'land pattern' approach.

The study entitled *La trame foncière comme structure organisatrice de la mise en forme du paysage*<sup>(11)</sup> has shown up the geometry of the pattern in spaces inhabited by man, divided into plots and unplanned. It has since been used at the IAURIF as a tool in the reading of maps for planning uses.

## The choice of topographical maps

Thematic maps (road maps, geological maps, etc.) are not dealt with in this chapter. The maps used are topographical maps using different scales and with different levels of precision.

### *The topographical maps and their scales*

The study of the important events that have left their mark on the Ile-de-France in the course of three centuries of maps led to the listing and examination of many maps. 26 of them were analysed. They were chosen in the light of the following criteria: precision in the details, the size of the area covered and accuracy. Those criteria led to a choice maps at a scale of between 1/50,000 and 1/5,000.

### *Selective lists*

Essentially, this includes:

- the article *Three centuries of maps in the Ile-de-France*;
- the work carried out by Bernard Rouleau<sup>(12)</sup> which provides precious information on the precision of the maps and plans and of different editions of sets of maps such as the *Atlas communal du département de la Seine* (from 1854 to 1875);
- the list drawn up by Jean Bastié<sup>(13)</sup> which indicates further documents;
- documentary studies made by the IAURIF, realised within the context of research contracts<sup>(14)</sup>, for example;
- lists or catalogues of the main places where such documents are to be found and also the files of the National Geographical Institute (IGN).

### *Examination of series of maps*

Different editions of maps were compared in order to set aside those that were 'overloaded' (or, particularly in the case of the 'Cartes d'Etat-Major', to select those that were the least so), and to identify sheets resulting from 'complete revisions' of the earliest maps in a series.

### *The precision and accuracy of the maps used*

This is a question concerning space and/or time and it is mainly a matter for the experts, whose studies enabled us to define the parameters of our subject. A few examples will clarify the choices that were made.

### *The Carte géométrique de la France or 'Cassini map'*

The first publications of sheets covering the Ile-de-France were completed in 1757. The map is remarkable in the position it holds in the history of map making: 'Cassini (III) had

(10) Colonel Berthaut, *La carte de France 1750-1898*, Historical study, vol. 2, Service Géographique de l'Armée, 1899.

(11) Gérald Hanning, Paul Checaglini, Annick Jaouen, *La trame foncière comme structure organisatrice de la mise en forme du paysage*, CORDA, realised within the framework of the IAURIF, 1976.

(12) Bernard Rouleau, *Villages et faubourgs de l'ancien Paris*, Histoire d'un espace urbain, Le Seuil, Paris, 1985.

(13) Jean Bastié, *Croissance de la banlieue parisienne*, PUF, Paris, 1964.

(14) Documentary research for *La trame foncière comme structure organisatrice de la mise en forme du paysage*, Gérald Hanning, Paul Checaglini, Annick Jaouen, CORDA, realised within the framework of the IAURIF, 1976.

- Recherche sur une typologie de l'habitat ancien (1850-1948). Documentary research A. Jaouen, M. Herculon, MECV, Direction de la Construction, IAURIF-SONACOTRA, 1997.

- *La cartographie en région Ile-de-France*. Temporary work document. André Ballut, Annick Jaouen, IAURIF, 1985.

a basic map of the realm drawn up, a development of the geometric network which may be used for the elaboration of other maps. 'To make it more pleasant a topographical sketch was added,' wrote Monique Pelletier<sup>(15)</sup>. The characteristics of a topographical sketch led us to leave it aside as a reading tool.

### The Carte des Environs de Paris by De la Grive

Although this map does not show relief, it is unquestionably of interest from a topographical point of view. 'The author has laid stress on the representation of the large estates in the environs of Paris. Almost exclusive care was given to the parks and forests. The vines, mills, woods and coverts are satisfactorily indicated, but inhabited areas are shown only as a shapeless mass.'<sup>(16)</sup> These precious landmarks do not permit shortcuts, however (e.g. De la Grive shows a straight tree-lined road between Aubervilliers and Saint-Ouen which was planned but was never built<sup>(17)</sup>).

### The topographical map

#### of the environs of Versailles or 'Carte des Chasses'

The 'Carte des Chasses' covers almost 30 % of the Ile-de-France and is a fine topographical map.

It was made between 1764 and 1773. The Paris sheet was not published until 1807 and includes some important additions such as the walls built by the Farmers General, while other elements have been omitted (e.g. the Chartreux de Vauvert and projects such as the St Martin canal).<sup>(18)</sup> 'It is therefore difficult to put a precise date to the elements that have been added to such plans. In any case, the date of publication of these plans makes it impossible. We may note, furthermore, that this regrettable habit of re-using original documents was to continue until at least the middle of the 19th century.'



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### The Tableau topographique des Environs de Paris

Drawn up by Dom G. Coutans, this map dates from the late 18th century. It covers most of the Ile-de-France. Its scale (1/64,800) excludes the study of detail, but it extends

as far as the easternmost limits of the Ile-de-France<sup>(19)</sup>. The lack of specialist studies of this large map meant that we were unable to use it in the preparatory work for this publication, which is a pity: it would be very useful to our understanding of the region if experts could analyse it.

### The map of France or 'Carte d'Etat-Major'

The topographical details shown on the draft maps at 1/10,000 and particularly those of the plot pattern represented by those drafts have already been mentioned. But the questions of the precision sought for these documents (or homogeneously attained over the whole of the area concerned) may also be defined as follows (an excerpt from the 'Instruction of 1818'<sup>(20)</sup>):

'Care will be taken to show with precision the river-banks and the unevenness of the ground along the rivers, in order to show on the map the crossing points that may most easily be established. The fords, ferries and bridges of every kind that are to be found along its length will also be carefully indicated. [...] In the towns and villages, the detailing of the housing, courtyards and gardens must be checked, to make sure that no details have been omitted; investigations must also be carried out within all enclosed properties, such as parks, gardens, etc., for it is possible that only the perimeter has been measured, without paying sufficient attention to what is inside. On the draft maps, beside the names of the towns and villages, the number of inhabitants and the number of homesteads will be carefully noted.'



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(15) Monique Pelletier, *La carte de Cassini. L'extraordinaire aventure de la carte de France*, Presses de l'Ecole Nationale des Ponts et Chaussées, Paris, 1990.

(16) Bernard Rouleau, *op. cit.*

(17) *Atlas historique de Saint-Denis des origines au XVIII<sup>e</sup> siècle*, directed by Michael Wyss, Maison des Sciences de l'Homme, Paris, 1996.

(18) See Bernard Rouleau, *op. cit.*

(19) Dom G. Coutans's map was revised by Charles Picquet in the form of an *Atlas topographique des Environs de Paris*. It may be useful to point out that:

- 11 sheets of the *Tableau topographique des Environs de Paris* are to be found in the Archives Nationales, Paris (N.N. 192),

- 16 sheets are to be found in the Bibliothèque Nationale in Paris; they are accompanied by a table for assembling the sheets, giving the name and date of each one (Ge C.C. 1218 dated from 1773 to 1786),

- the *Atlas topographique des Environs de Paris* by Charles Picquet, 1800, is in the Bibliothèque Nationale in Paris (16-page topographical atlas, revised, corrected and augmented by Charles Picquet in 1800 - Ge FF 18678 (1-2) in the Paris Archives 7Eb.22.)

(20) Colonel Berthaut, *op. cit.* vol. I.

The precision of the details shown on the draft maps, scale 1/40,000, may be seen with the help of the 'Instruction of 1823, preliminary to the order of 25 February 1824, setting the scale for the draft maps at 1/40,000'. Almost half of the Ile-de-France is covered by the draft maps at scale 1/10,000 (5,100 square km. out of a total of about 12,000 square km.), but the rest of the area is covered only by draft maps at scale 1/40,000.

The 'Instruction of 1823' explains that the latter must show only what can be reasonably included on maps at such a scale. The size of objects represented - including rivers and streams, the various types of communications and dwellings - must be increased when there is a risk of their being too small.

For example:

'Communications. Generally, the widths of main and other roads will be doubled. All roads will be indicated by two lines, one of them heavy; as for important communications which are not considered as roads, they will be shown as two narrow lines a good third of a millimetre apart. All other communications will be represented by a single line; they will be marked, except for those that peter out and are used only temporarily for working in the woods and meadows. When there are several by-roads between two communes, the one that is the most frequently used will be marked with a heavier line. As the widths of 1st-, 2nd- and 3rd-class roads are set according to their importance, it will be easy to give them reduced widths on the draft maps which will still be related to their true widths and also to their ranking; it will therefore be possible to see where they have been narrowed, for the lines at that point will be closer.'

*The precision of the engraved  
and published maps at scale 1/80,000*

Two essential points we notice on the map of France (the sheets concerning the Ile-de-France were first published between 1832 and 1839) are, firstly, that a large amount of information has been lost between the draft maps and the engraved maps at scale 1/80,000, and secondly, the printed maps are difficult to read because the engraving is so fine.

The excerpts from the 'Signes conventionnels' taken from one of the plates included in the volume entitled 'Mémorial du Dépôt Général de la Guerre' (1853) show the difference in the legibility of plates engraved at the indicated scales.

The engraved maps showing the Ile-de-France use the scales 1/80,000 (sheets from the map of France), 1/40,000 ('Carte des Environs de Paris', 1839) and 1/20,000 for plans of towns (Melun and Meaux).

However, those instructions were not followed to the letter. To what degree were they followed? Colonel Berthaut mentions many 'instructions' which later recall or specify the provisions of 1824.

The reader may admire the finesse of one of those draft maps at scale 1/40,000 in this 'Cahier'.

Many additions were engraved on the copper-plates. Bernard Rouleau's remark about the impossibility of dating elements shown on a map from its date of publication takes on an unusual dimension when we examine, for example, a sheet such as the one showing 'Paris, published in 1832 and transferred to stone in 1875 (Imprimerie Lemercier et Cie. Paris)', on

which the fortifications of 1841 and many railway lines are shown, without any modifications being made to the topographical information of 1832.

During preparation for the article *The early days of the railway in the Ile-de-France*<sup>(21)</sup>, the author noticed, on certain sheets, sections of railways which had disappeared from later editions. Was it a case of anticipation of a project that was later abandoned? How many sheets of the 'Carte d'Etat-Major' include such inaccuracies?

Unfortunately, the history of the map of France was not written with such precision after Berthaut's work. Much work has yet to be done, particularly where 'modern' cartography (from 1901 onwards) is concerned, but it would also be useful to continue and complete the studies and research work that have been carried out on the older maps:

### *Additional maps and plans*

Other important maps have been identified. For example, the 'Plans cantonaux', which were commissioned by the Seine-et-Marne General Council during the second half of the 19th century, and which, along with the 'Atlas du département de la Seine' could provide an answer to the needs of the regional authorities in terms of spatial management.

Thus, topographical maps were made meet the needs of particular sectors (army, management of space, etc.). The reasons why other maps were drawn up is still uncertain (particularly where the 'carte des Chasses' is concerned). These maps form veritable families with generations of complete revisions; new families often borrow elements from older maps or plans.

### *Certain documents mentioned by specialists were not accepted*

Three examples illustrate this:

- The 'Carte de Maire 1825', which covers part of the territory belonging to communes bordering on Paris: it seemed more useful to spend time on the draft maps, scale 1/10,000, of the 'Carte d'Etat-Major', which were made at about the same time and cover a much larger area.

- The 'Carte militaire des Environs de Paris, relative aux travaux de défense exécutés ou projetés': as its title indicates, this document focuses, at least partly, on important projects which are not distinguished from actual realisations; it was therefore considered preferable to leave it aside.

- The plates from the 'Trudaine' Atlas, the aim of which was to show all the king's highways<sup>(22)</sup> and which are therefore detailed topographical maps<sup>(23)</sup>: they are presented in long strips, the assembly of which would have called for extensive studies going beyond the framework of the preparatory studies for this publication.

### *Topographical location of the 26 maps*

Almost all of the 26 maps selected were located in two forms by means of computer cartography:

- firstly, the area covered by each of these documents was represented by transferring them onto an up-to-date map of the region, showing its limits, those of its eight departments and its 1,281 communes ;

- secondly, each of the maps called for identification by means of a description of its essential elements (area covered, represented by the

(21) See Cahiers de l'IAURIF no. 120, January 1998.

(22) Hélène Servant, Fichier de la collection des Atlas dits 'Trudaine', A.N. Paris, May 1996.

(23) Cf. Roads and cartography in the Ile-de-France 1650-1750, Cahiers de l'IAURIF no. 120, January 1998.



administrative boundaries, the table indicating how the sheets are to be assembled and, when it exists, the number of each sheet)<sup>(24)</sup>.

Their prime characteristics complete that description:

- the date of surveying or making of the map;
- the date of the first edition;
- the scale;
- the date of the complete revision;
- the size of each sheet;
- the number of sheets.

### The main places

#### where these maps are to be found

Considering the number of places where these maps are kept (departmental archives, Musée d'Ile-de-France, libraries, museums etc.) and the sheer number of maps that were worth identifying, only the main places of conservation were indicated (Paris National Archives, Bibliothèque Nationale, Institut Géographique National).

The above information was integrated with the *Système d'information géographique régional* (SIGR), managed and developed by the IAURIF. This will enable the potential user to find out:

- which maps cover a particular part of the region (a commune, for example);
- which part of the region is covered by a particular map.

### *Useful additions*

This first stage could be completed rapidly, particularly within the context of partnerships with the main institutions possessing the sources. A second stage would make it possible to identify the other places where the 26 maps are kept, thus making them more easily accessible.

(24) Although this locating is approximate where old maps are concerned, the rules for their making being different from those we use today, it is in keeping with the objectives that were set forth.

A third stage could involve identification of additional material (in particular, plot patterns, cadastres, registers of landed property, plans of fiefs, 'Trudaine' atlases, maps to do with the administration of royal estates, series of draft maps from the *Dépôt de la Guerre*, plans of the canton). Thus, the material that is useful to our understanding of the region could become better-known and be made more readily available. This would help planners in making their decisions where urban and rural spaces are concerned.

## Reading the maps

### *Four main maps*

In order to illustrate the great physical changes that have contributed to shaping the principal features of the region, the proposed reading is centred on four main documents:

- the topographical map of the environs of Versailles, or 'Carte des Chasses';
- the map of France, or 'Carte d'Etat-Major';
- the map of France of the 1900 type;
- the map of France of the 1922 type.

The reasons for that choice were as follows:

- the 'Carte des Chasses' covers almost 30 % of the Ile-de-France and is a fine topographical map;
- the 'Carte d'Etat-Major' covers the whole of the region and its draft maps (1/10,000) provide an exceptional wealth of information;
- the map of France of the 1900 type (scale 1/50,000) covers barely 40 % of the region but it is completed by the detailed maps at scale 1/10,000 that were used to make it;
- the map of France of the 1922 type, the revisions of which bring us up to 1970, covers a long and sufficiently distant period to provide the effect of distance we were seeking.

### *The key to the maps*

The reading of each of these maps begins with a presentation of their key or an explanation of the signs and terms used. Indeed, although an 18th- or early 19th century reader would have been familiar with these, the same is not necessarily true for us today.

It is difficult to establish the key for the 'Carte d'Etat-Major'. The difficulty arises from the fact that the rules determining the representation of the draft maps at scale 1/10,000 and 1/40,000 had not yet been set at the time of the surveys for the Ile-de-France. Likewise, the signs used for the engraved map at scale 1/80,000 were still a matter of debate at the 'Dépôt de la Guerre' after 1839, when the last sheet for the Ile-de-France was published.



*Although the maps are evocative, the meaning of each of the signs used is not necessarily immediately clear.*

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After the first approaches in preparing for this 'Cahier de l'IAURIF' - comparison of draft maps with one another and with information provided by Berthaut<sup>(25)</sup> and by volume IX of the 'Mémorial du Dépôt Général de la Guerre' - a number of points are still obscure. It would be very useful for a better understanding of the resources provided by these precious maps if the experts could in turn study and explain these maps.

### *The choice of sites examined in the 'reading of the maps'*

These sites were selected according to the contents of the maps which had to :

- show up important changes in the landscape which have noticeably contributed to shaping the original features of the region;
- cover areas that were as varied as possible whilst enabling us to follow the changes over long periods;
- enable us to make sure that the maps used were, if not accurate, at least reliable where the facts observed were concerned;
- enable us to underline the particularities of the maps used;
- enable us to obtain information from specialists in order to shed light on the subject.

### *The limits of the procedures*

These exercises in reading are by no means aimed to show the history of a particular place or, a fortiori, the history of the region. They are limited to a statement of fact, of significant changes. Nor do they aim to show up the social, technical and financial conditions of the developments observed.

In order to glimpse the important changes that have made space as we see it on each of these maps, these are compared with earlier maps or with more detailed ones dating from about the same time. To make comparison easier, the map sections are usually presented at the same scale.

The method for transferring old documents onto modern maps was used only very partially. We limited ourselves to transferring the corresponding elements to the maps that were compared and seeking similarities or differences striking enough to enable us to deduce facts.

In order to make reading easier, we overlaid the map sections.

(25) Colonel Berthaut, op. cit.

Maps and plans showing smaller areas than the four main maps were therefore also used. Indeed, it seemed useful to thus show a landmark that had changed a site or to resort to a map showing it in greater detail.

We have also used illustrations - reproductions of engravings, paintings, postcards - to provide a more three-dimensional approach.

### *The map and the space represented*

For those working in the field of planning, a map, whether ancient or modern, cannot replace actual readings in the field. We need to see things as they really are: the slope between two reference points, the presence of a wall or a tree, their colour and smell, their texture, the distance between two lines of trees or buildings, and so on. The map is necessary for understanding, acting and keeping track. The approach of those working in the area of planning may then cross that of the historian, helping society to perceive the importance of a new operation in the chain of evolution of a particular area.

Hervé Blumenfeld  
IAURIF

Translation: Mary Pardoe

# *The topographical map of the environs of Versailles, or 'Carte des Chasses'*

*Made between 1764 and 1774, this map is in twelve sheets, the engraving of which, at a scale of 1/28,800, was not completed until 1807. It covers an area of 3,400 square kilometres (about 28 % of the present area of the Ile-de-France).*

*Is the 'Carte des Chasses' a map of the king's hunting grounds or a topographical map? In archive material, this map is always referred to by its subtitle: 'Carte des Chasses'<sup>(1)</sup>. Above all, it provides a wealth of information on land use in the 18th century; it is a topographical map.*

*It is a veritable masterpiece, not only in its accuracy and its planimetric detail but also in the fineness of its engraving.*

*In particular, it enables us to see in their general geographical context the changes that were brought about by the large-scale developments of the 17th and 18th centuries.*

(1) Sylvie Bourcier, La Carte des Chasses Royales, Ministère d'État chargée de la Défense nationale. État Major de l'Armée de terre. Service historique, Vincennes, 1972.

**Hervé Blumenfeld - Michel Hermelin - Christian Thibault**





## Signs, terms and abbreviations

The 'Carte des Chasses' has no key. However, the terms often refer to objects that are also represented by very evocative signs. Furthermore, it seems to be quite homogeneous.



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A non-exhaustive list of signs and terms<sup>(2)</sup> may therefore be presented in order to make the reading of the map easier. These signs fall into five categories.

### Relief



Relief is shown by means of fine hatching following the direction of the incline.



Certain elements of the relief are named, e.g. the 'Plaine de Couard', as here; on 17th- and 18th-century maps, the word 'plaine' referred to what we now know as a plateau<sup>(3)</sup>; where agriculture was concerned, the term was used to refer to a vast expanse of gently rolling farmland.

### Rivers, ponds etc.



The rivers are drawn and named (e.g. 'REMARDE Riv.'), as are brooks ('G.rd Rue', 'Petit Rue')



Pools and ponds are also shown.

### Roads



A road lined with trees and named (here the 'Chemin d'Orléans à Paris').



A road without trees, named (here the 'Chemin de Dourdan à Paris'). The fact of mentioning the towns these roads connect helps, in particular, to distinguish them from the hunting paths.

Sylvie Bourcier points out that paved highways may be distinguished by the parallel lanes following their route<sup>(4)</sup>.



Other roads.

(2) See the work by Sylvie Bourcier already mentioned, in which she studies the terms used for hunting or otherwise and presents a table of the terms employed.

## Vegetation and cultivated land



The woods and forests are named, as are certain types of trees (e.g. 'Houssay', holly-grove).



Heath, i.e. uncultivated land covered with heather, gorse and similar shrubs<sup>(5)</sup>.



A widely-used conventional sign is used to indicate vines.



The meadows appear to be natural meadows. François de Dainville points out that the term 'prairie' sometimes has the geographical meaning of a damp, low-lying, grassy area of land and that a distinction was made in the 18th century between natural and artificial meadowland<sup>(6)</sup>.



The word 'Remises' (or 'R.se') indicates coverts, i.e. thickets planted at intervals in the fields to shelter game<sup>(7)</sup>.



This sign, covering part of the background, does not indicate either crop type or land division.

## Habitation



Densely populated parts of towns are not shown in detail but as here.



Small towns, faubourgs and villages are shown in detail.



Châteaux and their parks are shown in quite remarkable detail.

Written indications, sometimes accompanied by a drawing (for example, + for a cross) or the horizontal projection of an object, provide direct information about buildings, structures (bridges etc.) and places: 'moulin' (mill), 'cabaret', 'pont' (bridge), 'tuilerie' (tilery), 'ancien Couvent des Célestins' etc.

A systematic comparison of the signs used would enable us to draw up a complete table and obtain a better evaluation of the map's degree of homogeneity.

(3) François de Dainville, S.J., *Le Langage des Géographes*, A. et J. Picard et Cie., Paris, 1967.

(4) Sylvie Bourcier, *op. cit.*

(5) See note 3.

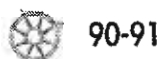
(6) See note 3.

(7) See note 3.

## The basic map

### *Accuracy:*

### *the example of Bazainville*



90-91

Bazainville: the village, its roads, its dead end leading to a farm, its country lanes, the hill to the north, the Brittany road to the south (now the N12), as represented on the 'Carte des Chasses' and on the IGN Map of 1972 (scale 1/20,000).

### *Organisation of rural space that is closely related to ground and water: the example of Mantes-la-Ville*



90-91

Mantes-la-Ville lies on a plateau cut through by the Seine and two tributaries, one of which is the Vaucouleurs (to the west). The main heights, the hillsides and the waterways are clearly visible on the section of the 'Carte des Chasses' showing Mantes.

There are meadows along the rivers. On a section of the 'Plan d'Intendance' for the parish of Mantes-la-Ville (1780), the meadows are shown in green. These plans, as Mireille Touzery tells us<sup>(8)</sup>, were intended to make the sharing-out of taxation between the parishes as fair as possible and were measured in masses de culture (i.e. orchards, woods, vines, meadows, arable land, etc.) rather than in plots.

Comparison between the two shows great similarity in the situation of the meadows. The sign used on the 'Carte des Chasses' is different from the one already identified.

Vines are shown on the slopes. Are the plots true to life or were they merely used to suggest relief? Their limits usually follow the lines of steepest incline when relief is marked.

Jean Jacquart wrote: 'We often forget that, before the Revolution, the Ile-de-France was one of the largest wine-growing areas in the kingdom.'<sup>(9)</sup>

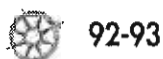
Tracks: on the map it is not possible to distinguish farming tracks from the tracks leading from one village to another (the roads lined with trees lead to a château).

Many tracks (or parts of tracks) follow the important elements of the relief: drainage divides (ridges), knickpoints at the top or at the foot of slopes, valley floors or lines of greatest slope. Other tracks (or parts of tracks) cut across the relief, perhaps seeking a gentler slope.

Habitations are clustered together. There are many mills (e.g. 'Moulin de la grande roue', 'Moulin de Joba') along the banks of the Vaucouleurs.

The many coverts ('remises') show the pressure that was exerted on peasants and lands in the Ile-de-France. 'Hunting was a royal privilege which could only be enjoyed with the King's permission.'<sup>(10)</sup>

## The important 'classical' patterns shown on the 'Carte des Chasses'



92-93

The 'Carte des Chasses' shows the density of the 'classical' patterns and the tight links in their network.

(8) Mireille Touzery, *Atlas de la Généralité de Paris au XVIII<sup>e</sup> siècle, un paysage retrouvé*, Imprimerie Nationale, February 1995.

(9) Jean Jacquart, *Les pays d'Ile-de-France, Informations d'Ile-de-France*, n°47, February 1981.

(10) Sylvie Bourcier, *op. cit.*

Centrality, Paris's functions as a capital and economic centre, plus the creation of the royal establishment at Versailles and the exceptional concentration of large estates belonging to the nobility and the bourgeoisie led to a new spatial layout that was the only one of its kind in the world. To the already existing space were added:

- the straight main roads linking the capital to the limits of the kingdom and/or leaving from Versailles,
- the patterns of formal gardens and parks,
- straight roads through the forests for the royal hunt.

Most of these patterns are easy to identify. Nevertheless, it would be interesting to look more closely at certain links in that vast network in the light of history.

If these developments impose their order on the rural plot structure and on the already existing road network, the avenues and paths in the parks often blend in with the rural landscape, the straight line of the roads is interrupted, carrying on into a winding track.

Reading the map on other scales permits the integration of other elements that go to make up this network.

The close network of straight lines gives the landscape of the region a new scale, underlining its major features by means of strict geometry.

This pattern as a whole is still one of the original features of the Ile-de-France.

## Development of the path network in the parks: Meudon and Chaville



94

Lemoine's 'General map of the parks and gardens of Meudon and Chaville and their environs' (1723) and the De la Grive map of the environs of Paris (1740) enable us to see the successive developments that have shaped the areas as they appear on the 'Carte des Chasses'. The site is the end of the Beauce plateau overlooking the Seine, with the valley of Artelong brook running through it, and extended by two small

valleys clearing the south and east slopes of Meudon and Clamart. To the west, the 'fonds de Chaville' lie at the foot of the Meudon heights. Lemoine's map (with north at the bottom of the sheet) and the engraving help us to imagine the view from the position of the first château. The main compositional axis directs the view. Stretched between the two slopes, it emphasises their slope. The low point is marked by Chalais pond; two basins lying along the main axis underline the terraces and mark the other lines of the composition.



95

Indeed, the Meudon landscape follows three main lines (sketch n° 1):

- The first one (A), which we have just mentioned, follows the hilltop (eastern slope of Meudon). Starting from the Paris-Versailles road (now the Route des Gardes), it rises to the 'grand terrace' (about 150m above sea level), a panoramic viewpoint overlooking the Seine and Paris, runs down the opposite slope as far as Chalais pond (about 105m above sea level), then climbs the southern slope to the 'chemin de Châtillon' (about 165m above sea level).
- The second one (B) starts from the basin half way up the slope on the main axis, descends to Artelong brook, climbs the opposite slope and finally branches into three in Clamart wood. Its line hinges on the main axis at the 'Bassin Ovale' (C). The lines of the 'Jardins Bas' follow the relief and gradually blend in with those of the rural landscape.
- The third axis (D) on sketches 1 and 2 links 'Château Neuf' to 'Porte Dauphine' on the Paris-Versailles road. 'L'allée du Gladiateur', which lies perpendicular to it, ends at the belvedere (E) looking out over Chalais pond, where the eastern and southern slopes of Meudon meet.

The complex composition of these axes rests in particular on the basin of the 'Parterre de la Grotte' on the main axis.

There is some discontinuity in the path network (visible on the Lemoine map) near the Meudon-Chaville slope. Is this a sign that there were once two distinct estates?<sup>(11)</sup>

(11) The reader might like to consult the following works: Marie-Josée and Francis Villardier, *Le Domaine de Meudon*, Imprimerie municipale de Meudon, May 1987; Philippe Rivoirard and Alain Thiébaud, *Billancourt et ses îles, histoire d'un site*, Mission d'étude pour le site de Billancourt, METT, Imprimerie DAFAG, Nanterre, 1993.

## The composition in relation to the Seine



96

Compared to De la Grive's map of the environs of Paris (1740) the 'Carte des Chasses' indicates new developments:

- Bellevue château and its gardens have taken up their position in relation to the Seine and the slope. The axis perpendicular to the river is continued in depth onto the hillside, organising the composition of the park.
- The road entering the Meudon estate has been extended to the north of the Paris-Versailles road in a straight line linking Meudon to Bellevue.
- The monumental ensemble shown on the maps of 1723 and 1740 was oriented to the south, west and east; now it has been opened up to the north.

These changes in the composition mark the progression of the development of the façade onto the Seine, as a continuation of Saint-Cloud park.



97

### *New links between Meudon, Chaville, Versailles and Vélizy plateau*

Compared to the De la Grive map (and the one by A. Lemoine), the 'Carte des Chasses' shows new lines. Roads through Meudon and Chaville parks have been joined to form a continuous network.

One road has been continued southwards as far as the new 'chemin de Châtillon' which, on the 'Carte des Chasses', has been completed.

### *Extension of afforestation*

The area coloured green, which is not wooded on the De la Grive map, is shown as wooded on the 'Carte des Chasses'. The basins and many reservoirs at Chaville which are shown on the first two maps, have disappeared on the 'Carte des Chasses', having been 'destroyed or filled in'<sup>(12)</sup> for the pleasures of the king's hunt. These elements (and also Chalais pond) show how carefully water was managed. For example, 'the waters from Chalais pond were driven to Bel-Air pond, the highest point in the park, by windmills'.<sup>(13)</sup>

## The straight roads radiating out from the capital



98

Some of the city's narrow streets<sup>(14)</sup> continue beyond the capital:

- the Rue du Faubourg Saint-Denis is continued to the north of 'La Chapelle' by the new, broad, straight, tree-lined Paris-Saint Denis road;
- the Rue des Gobelins (now Avenue des Gobelins) is continued (also beyond the built-up area) by the Fontainebleau road, which 'was built in the 16th century when Fontainebleau palace was created'<sup>(15)</sup>;
- the Rue du Faubourg Saint-Antoine is continued by the Place du Trône (now Place de la Nation), then by the 'prestige road' ('voie de prestige')<sup>(16)</sup>: the Avenue de Vincennes.

The so-called 'prestige roads', such as those radiating out from the Invalides (present Avenue de Breteuil and Avenue de Lowendal) are built like the roads through the parks.

### **The map of the Environs of Paris, De la Grive (1740):**

Paris is an open city; in place of its former fortifications, which were destroyed, continuous tree-lined 'boulevards' have been built on the right bank of the Seine.

In comparison to the previous map, the 'Carte des Chasses' shows two main types of new development:

- where roads are concerned, the Chemin de Châtillon (now the N 306) has been built and the main road from Paris to Meaux (now the N 3) has been completed;
- the walls of the Farmers General (the Paris sheet was not published until 1807); the latter were built on the king's decision 'in order to obtain extra resources from the city toll rights by making them more rigorous by the building of a wall'<sup>(17)</sup>;

(12) Marie-Josée and Francis Villardier, *op. cit.*

(13) Philippe Rivoirard and Alain Thiébaud, *op. cit.*

(14) See Bernard Rouleau, *Le tracé des rues de Paris*, CNRS publications, Paris, 1975. The reader might also like to consult R. Dion *Le site de Paris dans ses rapports avec le développement de la ville*, Cahiers de civilisation, 1961.

(15) See Bernard Rouleau, *op. cit.*

(16) See Bernard Rouleau, *op. cit.*

(17) Bernard Rouleau, *Villages et Faubourgs de l'Ancien Paris, histoire d'un espace urbain*, Le Seuil, Paris, 1985.



- on the inside of the wall there is a covered way and on the outside broad, tree-lined boulevards. 'This ringroad was to be the official boundary of Paris for the next seventy years, forming a very important corridor and traffic system'.<sup>(18)</sup>

Between the compact old part of the city and the wall, much of the land was devoted to market gardening, but there were also prestigious developments such as the Place du Trône or the monumental complex at the Invalides, which had been completed by the Ecole Militaire, fitting in with the Seine.

The building of the walls of the Farmers General had to overcome many constraints. After mentioning the legal and fiscal difficulties, Bernard Rouleau points out: 'it seems obvious that the relief, the extension of the built-up areas and the road network were the main elements of constraint, if not the deciding factors in the siting of the walls.'<sup>(19)</sup> He thus enumerates, for example, the faubourgs, convents and private properties, such as Grenelle château and farm, which had to be bypassed.

## 100

The extract from the 'Carte des Chasses', shows the wall, the tree-lined outer boulevard and the gates. It runs along the side of Montmartre. At La Villette it opens onto the north-eastern sector of the Plaine de France, then skirts along the side of the Buttes Chaumont, following the natural site of the capital. As the map shows, the logics of the layout of the walls means that certain plots are split up.

To the south-west, the walls cross the Bièvre valley and rise to the intersection of the Fontainebleau and Choisy roads, controlling entry to those roads.

The intersection between those two roads lies on the crest line of the plateau. The circular area at their junction, lying on the slope, is turned completely towards the centre of Paris (the square was later redeveloped under Napoleon III).

## Notes

*The present context offers many opportunities*  
**101** *to make a clear stand, for example, where roundabouts and interchanges are concerned.*

## Major roads, paths and lanes

The 'Carte des Chasses' shows a very well-developed road network. Many of the 'roads' and 'paths' are in keeping with the clauses of the decree of 1705 which ordered the roads to be built as straight as possible, even if that meant crossing private lands (in which case the owners would receive compensation), either by keeping to earlier routes or by following the instructions of the surveyors.<sup>(20)</sup>

## 102

### *Going in a straight line or following the valley*

Two roads split at the southern exit of Rambouillet:

- the Chartres road (now the D 906), to the west, runs along the park of Rambouillet castle, turns aside as if to avoid the park of Voisins castle, then descends into Guéville valley which

(18) Bernard Rouleau, *Villages et Faubourgs de l'Ancien Paris*, op.cit.

(19) Bernard Rouleau, *Villages et Faubourgs de l'Ancien Paris*, op.cit.

(20) See G. Reverdy, *Atlas historique des routes de France*, Presses de l'École Nationale des Ponts et Chaussées, Paris, 1986.

it then follows (was there an earlier road at that point?); the double line along it may indicate that it was cobbled<sup>(21)</sup>;

- the Orléans road ('Grand Chemin d'Orléans', now the N 10), to the south.

### *A road and a pathway through a park<sup>(22)</sup>*



The Provins road (now the N 19) follows a straight line from Alfort to Créteil. From Créteil to Boissy-Saint-Léger it is not possible to keep that straight line: the steep hillside at Bonneuil has to be avoided. The road thus climbs in the direction of Boissy. We can imagine it crossing the plain, the trees planted along its length making it quite majestic and legible<sup>(23)</sup>. Narrowing as it traverses the town, it emerges opposite a path leading through Grosbois park, skirts round between the park and the nearby woods (Bois de la Grange), emphasising the main elements of the relief; its crossroads are designed like elements of a formal French park.

#### *Notes*

*Would it not be a good idea to redevelop such roads when recent transformations have disfigured a particular site, e.g. the present N 19 near Grosbois castle? Society has a right to set such objectives.*

(21) Claude Vacant, the author of *Routes et ponts en Yvelines du XVIII<sup>e</sup> au XIX<sup>e</sup> siècle*, Presses de l'École Nationale des Ponts et Chaussées, Paris, 1988, points out that in 'L'Indicateur fidèle' published by Michel and Desnos in 1772, the route from Paris to Chartres went via Rambouillet and Maintenon (like the road shown on the 'Carte des Chasses') and that a road atlas of the 1820s recommends the use of that road which was cobbled and in a good state of repair.

(22) The reader might like to refer to the article *Road and cartography in the Ile-de-France*, Cahier de l'IAURIF n°. 120.

(23) On this subject the reader might like to consult Anne Kriegel and Pierre Pinon, *Le paysage des ouvrages d'art*, Bulletin d'informations architecturales, supplément n°. 77, May 1983, Paris.

## The Versailles road

This road, labelled 'Route de Versailles' on the 'Carte des Chasses', runs from Versailles to Choisy and Fontainebleau, which had been one of the king's favourite hunting grounds for many years. The map p.106, 107 shows its route before the new road was built. This road (now the N 186) is unusual in that it keeps away from towns and villages.



Setting out from the new town of Versailles, the road climbs a slope, crosses Colbert bridge and then follows a straight line through Vélizy Plain.

In a series of straight segments, the road skirts round the park of Sceaux castle. It then crosses the Paris-Orléans road (now the N 20). Another road, in line with the park, provides access to the monuments and directs the view towards the bottom of the valley, then climbs the opposite slope where Sceaux castle is set.



After joining the main road from Paris to Fontainebleau (now the N 7) at 'la Belle Epine', the road becomes quite exceptional in its width and development as it crosses the countryside (the reader might like to compare it to the main urban roads in Versailles). This road contrasts with the narrow road leading to the Seine, which is a continuation of the former 'chemin de Versailles' indicated on the map.

The ferryman's house ('maison du passeur') is indicated on the other side of the river and from that point a new road (now the N 186) continues the route skirting around Paris to the east.



**104** *On the subject of the Versailles road, Claude Vacant tells us<sup>(24)</sup> that the Bibliothèque Nationale in Paris possesses another map: 11 sheets showing the road leading from Versailles to Fontainebleau and Bourron, via Choisy (where Mademoiselle de Monpensier had a castle built, which she bequeathed to the Grand Dauphin, son of Louis XIV). This manuscript was drawn up for a ceremonial outing by Louis XV and his court to meet the Princess of Savoy, who later became the Countess of Provence. [...] This document is a reduction copied from the official plans by the Bureau des Dessinateurs, which was created in 1744 by Trudaine.*

The map of the Versailles-Fontainebleau road, drawn up for the King Louis XV's official outing to Fontainebleau in August 1724<sup>(25)</sup>



**106-107**

The inscription beneath the title of the map reads as follows: 'Cette carte n'a pas besoin d'échelle, parce qu'ayant été levée à vue à cause de la brièveté du temps, l'auteur a marqué les distances vulgaires, d'un endroit à l'autre, par des points et caractères rouges, et y a mis les remarques et les endroits qu'il a pu découvrir à une lieue au plus, tant sur la ligne droite que sur la gauche dudit chemin' - i.e. there is no scale and the author of the map has marked the usual distances in red; places within a league on either side of the road are indicated. The map is in the form of a scroll 244 cm long and 42.5 cm wide.

The road is shown from Colbert bridge to the Paris-Fontainebleau road. It is the 'ancienne route de Versailles' which is mentioned on the part of the 'Carte des Chasses' shown on the previous pages. The new road has not yet been built.

The 'remarques et les endroits' that are indicated along the Paris-Fontainebleau road include:

- the 'new road marked in yellow' leading from the entrance to the town of Juvisy in the north to the river Orge (its second branch, to the south, is no longer visible on maps of today);

- the 'point where the slope down to Juvisy is being reduced and the Quercy Regiment is working on the new road marked in yellow'.

Jean Bastié<sup>(26)</sup> points out that the slope into Juvisy was so steep that 'in winter vehicles had to be taken down by sledge'. Therefore, this is not a by-pass to avoid congestion in the town.

## The city of Saint-Denis and its arterial road



**108**

On the sheet from the 'Carte des Chasses' showing Saint-Denis the Saint-Denis canal has not yet been added.

The city is contained within its walls, the south-eastern part of which has been levelled down and planted with two lines of trees (a shaded walk?). The city seems to be dense, although part of its space is occupied by gardens, particularly those adjoining the abbey.

The straight line of the city's north-south axis, continued to the north and south by main roads, contrasts with the plan inherited from the Middle Ages. The northern part of the road is not shown on the Plan of Saint-Denis by L'Ecuyer (nor on the one by Dumesnil, dated 1704). This straight thoroughfare was part of the overall developments carried out between 1725 and 1740<sup>(27)</sup>. The plan shown below on the following page, dating from about 1780, shows what the city looked like about forty years after 'Rue Danghien' (on the far left) had been built. Some new buildings have been added to the nearest street block, which was partly built in 1704; they follow the line of the new road; some of the plots shown have obviously been sliced up by the road.

(24) See note 22, for example.

(25) the reader might like to consult *Connaître les Yvelines, Trésors d'archives, deux siècles d'histoire et mille ans de mémoire dans les Yvelines*, published by the General Council, special issue, 4th quarter, Versailles, 1990.

(26) J. Bastié, *op. cit.*

(27) *Atlas historique de Saint-Denis, des origines au XVIII<sup>e</sup> siècle*, directed by Michel Weiss, published by La Maison des Sciences de l'Homme, Paris, 1996.

In the 18th century, the arterial roads were intended to be wide enough to reduce the congestion that existed in large cities (e.g. Nantes, Tours), whilst also meeting 'aesthetic criteria'.<sup>(28)</sup>



#### Notes

108

*The 'Carte des Chasses' also shows the arterial road that traverses Nantes-la-Jolie, the 'Rue Royale' which was built as a continuation of the bridge built between 1758 and 1765<sup>(29)</sup> and linked Paris to Nantes-la-Jolie and Rouen.*



109

*This document (undated) is not as accurate as Dumesnil's plan of 1704. Its orientation, with north at the top, makes it easily comparable with the other plans reproduced on these pages. The Rue Dangliien and various manuscript notes have been added to one of the editions of this plan (from the B.H.U.P.).*

## The Plaine de France



110

In this section of the 'Carte des Chasses' the plain lies along the Seine to the south-west; its almost imperceptible relief is described by:

- the Rouillon and the Crou (now Croult), coming from the east, winding through marshy land and with branches flowing through the city of Saint-Denis then joining the Seine;
- Montfort brook flowing from the south;

To the south-east of Saint-Denis we notice the small plots forming the 'Plaine des Vertus', which, 'until 1876, was the largest vegetable-growing plain in France'<sup>(30)</sup> (the sign used by the engraver of the map is the same as the one used for gardens in the parks). The interdependence between the capital and rural towns such as Aubervilliers (which lies off the main roads) was therefore very strong.

Wine-growing villages are to be found on the slopes of the Seine valley at Epinay and Saint-Ouen and, further to the east, at Pierrefitte, Stains and Villetaneuse.

Quarries are visible in the hillsides at Villetaneuse.

The network of main roads converges on Saint-Denis: the trees lining the roads makes them stand out in the open plain. The exceptionally wide Paris-Saint-Denis road, the Versailles road at Saint-Denis (known as 'Route de la Révolte', enabling the king to avoid crossing the capital) show up the key geographical position of the city which was also the burial place of the kings of France.

To the north, straight roads travel to Rouen via Pontoise in the west, to Calais in the north and to Laon via Dammartin in the east.

The Saint-Denis canal (which came into service in 1821) is shown on the definitive plate of the 'Carte des Chasses' (it was to be one of the bases for industrial development in the plain). Building on the Ourq canal was begun in 1802 and it was opened in 1808.

*Saint-Denis clearly stands out in the plain, surrounded by its landscape of open fields and villages. The trees along the Paris-Saint-Denis road are visible on the skyline.*



#### Notes

111

*In the centre of the Plaine de France, the 'pays des Fermes' occupies the whole of the plain between Bondy Forest and Croult brook, taking in Aulnay, Bondy, Drancy, Dugny, Blanc-Mesnil, Sevran, Villepinte and Tremblay. Two thirds of the lands belong to the large farm, thus creating a landscape of large fields right up to the foot of the villages.*

## The forest and heaths



113

This part of the 'Carte des Chasses' shows a series of cultivated clearings and open environments around Saint-Léger.

(28) M. Dazin, *Alignement des rues*, École d'Architecture de Nantes, CERMA Reports 67 and 74, Nantes, 1986.

(29) *Atlas historique de Saint-Denis, des origines au XVIII<sup>e</sup> siècle*, op. cit.

(30) Jean-Jacques Péru, *Le Patrimoine des communes de la Seine-Saint-Denis*, published by Flohic, Charenton-le-Pont, 1994.



Saint-Léger plain, to the south of the village, is a very old cultivated clearing (still cultivated to this day). Likewise the edge of Vignerie Wood has changed very little since that time.

The 'Bruyères' to the west of Saint-Léger are a mixture of dry heaths and marshes, 'bad land' on which nothing will grow.

The 'Plan de Bailly' to the north of Saint-Léger is a clearing belonging to the 'Clos Renard' (part of the royal stud farm) and used for cultivation.<sup>(31)</sup> That area is now wooded.

Those lands were nevertheless used for the gathering of firewood and briar, burn-beating<sup>(32)</sup>, etc., which limited afforestation. The map is so clear that meadows may be distinguished from damp heath (along the brook flowing to the north of the 'Parc d'en bas') and dry heath (heather and birch trees).

The routes followed by the roads tells us much about the nature of the soil. The old roads running through 'healthy' land are generally curved. Thus, the old Pierre Ardou road from Saint-Léger to Bourdonné skirts round to the north of the impracticable marshy lands. A more direct road (now the D 936) which runs near Larchet farm was built later. A network of straight and forked roads supplanted the old ones from the reign of Louis XIII onwards. After the whole of the area had been reclaimed, the roads were built straight; this is particularly noticeable in the 'bruyères' sector, where there are only straight roads (in the wooded areas, straight roads have been added to the earlier winding roads). It took centuries to make these lands fit to live in and the development of the

new road network made an important contribution. Despite its geometrical appearance, it fits in with local topography. For example, the star-shaped crossroads marked 'la Harasserie' lies on a dry hillock; the routes chosen were the result of technical constraints, a desire to organise space and provide a set of markers.



#### Notes

113

*In the 18th century it was possible to glimpse the church belfry at Condé from Saint-Léger, but now the heaths are almost entirely wooded. This example shows how extensively afforestation of Rambouillet has spread in less than two centuries, covering the heathland, both dry and marshy. In these areas we find some of the most interesting (and rare) natural environments in the Ile-de-France. The Office National des Forêts is now deforesting some of these areas of heathland in order to return them to their original state and make them into nature reserves.*

Hervé Blumenfeld

Michel Hermelin - Christian Thibault

IAURIF

Translation: Mary Pardoe

(31) The royal stud farm finally left Rambouillet forest in 1715 and moved to Le Pin (Orne).

(32) Burn-beating: paring off and burning of the rough turf or sod of heathland etc. in order to improve it.

tement De Seine et Marne

De Melun

De Mormant

Champagne

2279

M. Berthaut



## The map of France or 'Carte d'État-Major'

Two sheets of the Map of France, or 'Carte d'État-Major', cover the Ile-de-France region. They were first published between 1832 and 1839. These sheets, at a scale of 1:180,000, provide the first homogeneous view of the region as a whole.

It is difficult to hold with the view that details that cannot be included at a scale of 1:180,000 should be excluded, because we would thence be depriving ourselves of a great deal of useful information, which we would regrettably find missing on the draft sheets when we came to consult them, or in frontier and coastal zones or military defence and operation lines, or in the environs of fortified towns or on the sites of entrenched camps.

Colonel Berthaut thus saw the following advantages the Map of France would have a twofold use: for the army and for the public. The draft sheets would be very accurate:

- at a scale of 1:10,000, covering about 5,000 square km between Melun in the west and Sablins in the east, and from the northern boundaries of the region to Etampes in the south;
- at a scale of 1:40,000 over the region as a whole.

The engraved map was to provide a general view.

These maps, which provide a great wealth of information, may be read along with the Napoleonic cadastre, dating from the same period, which shows the plot pattern in town and country. All these maps enable us to see what the region was like before the population explosion affected towns and cities in the 19th century and before the arrival of the railways. The latter were gradually added until the Map of France (1889 type) was completely revised. The latter version remained in use until the middle of the 20th century.

(1) Colonel Berthaut, The Map of France 1750-1898. Historical study, vol. I. Imprimerie du Service Géographique de l'Armée, 1899.

Hervé Blumenfeld - Michel Hermelin - Christian Thibault

## Signs and abbreviations

### *The draft sheets, scale 1/10,000*



These draft sheets were used to make the Beauvais, Paris and Melun sheets of the Map of France (scale 1/80,000).

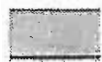
Each sheet uses the following 'conventional signs'. Some of the colours or meanings are not explained here, but other sheets enable us to supplement the information.



parks



vines, original colour: violet



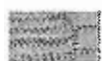
woods, original colour: greenish yellow



fences



arable land, part of the plot pattern is sometimes indicated



plantations of trees (particularly orchards)



Relief is shown by hatching following the lines of greatest incline, in steps of 2.5 metres; the altitude of certain points is marked.



Rivers, ponds, lakes etc. are shown and usually named (e.g. 'Juine Rre', 'Juineteau Rre').



The roads are shown, with the trees lining them. The main roads are named (e.g. 'route de Bordeaux à Paris', 'route de Mantes à Corbeil par Etampes').

Comparing different sheets, we find that, in many cases, a particular colour is associated with a particular letter: P for prairie (meadow), B for bois (wood), V for vigne (vine), C for arable land, and so on<sup>(2)</sup>.

Words or abbreviations are used to indicate the uses of buildings: 'Moulin' (mill), 'Guinguette' (café), 'Magasin au blé' (granary); F. stands for ferme (farm).

Indications of railways are the result of partial updating at a more or less later date.

For the reasons indicated in the introduction, the homogeneity of the signs used for the draft sheets is uncertain.

### *The first 'Carte d'État-Major', scale 1/80,000*

We identified the extract from the 'Table of signs and abbreviations' for the Map of France, scale 1/80,000, as having been engraved in 1868.



The sheets showing the Ile-de-France are earlier than that (1832 for the Paris, Melun, Beauvais sheets and 1839 for Fontainebleau). The signs for railways were not used for the early lines. As for the roads, 'the first general map of the king's highways and departmental and local roads was made in 1835'.<sup>(3)</sup> That classification was not used on the 'Cartes d'État-Major', therefore. On the latter the main roads are labelled with the names of the towns they join.

(2) This was noted by Marc Bloch for the cadastres. Marc Bloch, *Le plan parcellaire, document historique* in *Annales d'histoire économique sociale*, vol. I, p.65, 1929.

(3) Claude Vacant, *Routes et ponts des Yvelines du XV<sup>e</sup> au XVIII<sup>e</sup> siècles*, published by Presses de l'École Nationale des Ponts.

The classification of the towns and the precision with which types of fencing are indicated are signs that the map was also intended for military purposes.

- The administrative boundaries - the 'Prefectures', 'Sub-Prefectures' and 'Cantons' - are indicated.

- Where the indication of roads and tracks is concerned, the reader may like to consult the introduction to the reading of large-scale maps.

Comparing the signs indicating, for example, 'woods, vines, meadows, orchards', we notice that the two documents are not at the same scale.



This extract shows up the difficulties that are encountered in a detailed reading.

The rectangle shown in red on the map corresponds to the area shown on the draft sheet reproduced on the previous page. The reader may see for himself how information is lost through change of scale to 1/80,000. Nevertheless, the map is strikingly accurate in certain details, e.g. the arb.<sup>es</sup> (trees) in the lower part of the red rectangle, which are marked 'Noyer' (walnut) in the draft copy, 1/10,000 scale. Was such information intended for military purposes?

## Vexin français near Pontoise: unity, variety, transition



The maps give us an accurate idea of the landscape of the Ile-de-France in the first half of the 19th century. The excerpt from the Paris sheet n°48 of 1832 shows the landscape of part of the area known as Vexin.

### *A general scale*

A steep hillside marks the limit of the plateau overlooking the river Oise.

The landscape of open fields stretches at altitudes varying from about 80 to 180 metres. The Viosne (main tributary of the Oise) has cut a deep valley, which can be seen on this map. Its steep sides are cultivated and descend to the valley floor, where the river winds through meadows and land under cultivation. Woods and copses are dotted over the undulating plateau which is dominated by hillocks, alone or in groups. The villages, sometimes with hamlets, settled either on the top of these hillocks or at the bottom of the valley (e.g. Osny). There are few isolated farms.

Tree-lined roads are to be seen on the plateau. They are very different from the tracks and paths. The Rouen, Dieppe and Beauvais roads are straight and wide and they begin at Pontoise 'Sub-Prefecture'.

A straight, narrow road runs parallel to the Viosne: this is the old Roman road, the Julius Caesar Way. It follows the region's main WNW-ESE line of relief. The line of the Roman road appears to have been changed slightly in order to fit in with the relief of the valleys perpendicular to the river.





The draft map, scale 1/10,000, and the extract from the cadastre, dating from about the same time (reduced to about 1/10,000) enables us to look in detail at the village of Cormeilles and its close surroundings. The village is at the top of a hillock culminating at 144 metres. It would be interesting to know why the Dieppe road changes direction three times as it traverses the village, while it is so 'straight' before and after the village.

Vegetable gardens, meadows planted with trees (to provide shade for the horses used for working the fields) and vines form a transition between the village buildings and the vast expanses of open fields. The structure of the landscape that is shown would be incomplete without the contribution provided by the cadastre.

An extract from the cadastre shows that 'arable land' is in narrow strips: this is typical of the traditional open-field system<sup>(4)</sup>. Van Gogh, in his picture painted 50 years later (see chapter entitled, 'Map of France of the 1900 type') depicts this banal, 'flat' Vexin landscape with great sensitivity. The orthogonal plot pattern covers the ground with a continuous mosaic and bears a close, geomorphic<sup>(5)</sup> relationship to the relief which is obvious on the draft copy shown below.<sup>(6)</sup>

(4) See, for example, Roger Dion, *Essai sur la formation du paysage rural français*, published by Guy Durier, Neuilly-sur-Seine, 1981.

(5) See Sibyl Moholy-Nagy, *Matrix of man*, Pall Mall Press, London, 1968.

(6) The reader might like to consult the work by Gérard Hanning and Paul Checcaglini already mentioned. See chapter entitled 'Cadastre, plot, boundary'.

(7) We note that the altitudes are often several metres higher than modern measurements.

(8) In this part of the Gâtinais, a 'rocher' is a long hill whose sides are covered with scree or sandstone chaos.



### *General scale*

La Chapelle-la-Reine plateau is framed to the west by the dry Ecole valley and to the north, east and south by the Fontainebleau Massif (including Trois Pignons Forest, the Forest of Fontainebleau and Commanderie wood).

The northern limit is simply marked by the edge of the forest without a break in the relief: the south-western part of the Forest of Fontainebleau is on the same plateau. The site of the wall running along the former royal estate is clearly visible.

However, the plateau overlooks (average altitude 130 m<sup>(7)</sup>) Commanderie wood to the south and east (average altitude 90 m), and Ecole valley to the west (average altitude 80 m). The map strongly emphasises the corresponding escarpments.

Erosion of the plateau means that banks of Fontainebleau sandstone are visible around the edges. These banks are mentioned on the map as 'Rocher'<sup>(8)</sup>. Running east-west, they command a network of small secondary dry valleys. The digitations of the Ecole dry valley are remarkable: the Boissy-aux-Cailles and Meun valleys correspond to the two dried-up arms upstream of that river.

La Chapelle-la-Reine plateau belongs to the small farming area known as 'Gâtinais riche'. The paradoxical nature of this name appears when we see how the plateau is used for farming:

- the centre, where the loam veneer is at its thickest, is the domain of the open-field system, devoted to large-scale culture;
- on the periphery are the gâtines (poor lands), occupied by vines and orchards and with a characteristic strip pattern.

## Detailed scale

### 123

The former king's highway from Malesherbes to Fontainebleau is lined with trees. It crosses the plateau from south-west to north-east. Redesigned in about 1750, its straight line contrasts with the winding old roads it cuts across. It favoured the development of the town of Chapelle-la-Reine, where agricultural fairs were held. On the same road, Ury was another important stop.

To the east of La Chapelle-la-Reine, Marlanval (now Besonville) hillocks lie on the plateau, rising 10-20 metres above it. Their sides (molasse) were used for growing vines and saffron, the latter being typical of the Gâtinais area.

There are very few isolated farms on La Chapelle-la-Reine plateau. This may be explained by the fact that surface waters are scarce on the plateau. La Chapelle-la-Reine was famous for the monumental framework of its system for raising water from wells 70 metres deep.

### 124

A few examples show the effect the great developments of the classical period had in structuring the region.

### Notes

**124** *This composition on a territorial scale cuts across the recently created 'green stripe' formed by the Gallardon platform, apparently without paying any heed to it. The 'Etude d'une coulée verte sur la plateforme de Gallardon - Proposition d'aménagement' (D. Navarre, C. Jacobo, J. B. Pagès, Jaurif, 1984) nevertheless provides indicators enabling this exceptional new development and the old monumental perspective to highlight one other. The possibilities for achieving this are still open.*

## The relative permanency of large-scale development

### 125

- **Meudon and Chaville.** A comparison between the 'Carte des Chasses' (map of the king's hunting grounds) and the Map of the 'Environs of Paris' (1839).

The large-scale developments of the classical period have by and large been preserved.

At the bottom of the valley, however, the 'Jardins Bas' have disappeared (a detailed study would enable us to find traces of them in the plot pattern).

The former beauty of the site is shown in Israël Silvestre's engraving. During the 1780s, the 'Jardins Bas' were neglected, leading locals to attempt to extend their pasturelands by obtaining the allocation of parcels of the domain.<sup>(9)</sup>

- **The park of Bellevue castle** was parcelled out. A real estate operation based on the layout of its avenues was launched in 1825<sup>(10)</sup>. Between the 'Grotte' (grotto, cave) and the 'Etang de Chalais' (Chalais pond), part of the main Meudon road, visible on the map, seems to have been neglected.

- **Sceaux castle, which had survived the Revolution intact, was neglected and finally razed to the ground.**<sup>(11)</sup>

The Map of the 'Environs of Paris' (1839) shows the site. The trees have been cut down, the 'Grand Bassin' is clearly visible (as on the draft sheet of the 'Carte d'Etat-Major', but it was not transferred to 1/80,000 scale), as are the western and southern limits of the park.

The former avenue leading from the castle to the Versailles road (now N186) has become a track; it later became the present Avenue Jean-Jaurès (at Châtenay-Malabry), still in line with the castle after rebuilding. This composition on a territorial scale cuts across the recently created 'green stripe' formed by the Gallardon platform, apparently without paying any heed to it.

(9) Marie-Josée and Francis Villardier, op. cit.

(10) Philippe Rivoirad and Alain Thiebaut, op. cit.

(11) Guide du patrimoine Ile-de-France, directed by Jean-Marie Perouse de Montclos, Hachette, Paris, 1992.

- Development of the north-west of the Brie plateau

De la Grive's Map of the 'Environs of Paris', 1740 (which extends further west than the 'Carte des Chasses') is compared with the 'Carte d'Etat-Major' of 1832.

The roads through the forest and those through the monumental parks go well beyond the map sections presented here. They go from the Bois de la Grange in the west to the eastern limits of the Forêt de Crécy<sup>(12)</sup> in the east (a distance of over 30 km).

These two maps show part of that vast spatial structure at two successive stages.

On the first map, the roads organise the Brie plateau from the park of Grosbois castle (whose NW-SE axis is determined by the thalweg of a small valley) as far as Montety in the east. From north to south they join the Morbras and Réveillon valleys (and the parks along the river Réveillon), crossing woods, fields and heathland.

On the second map we also find new roads. The details given in the draft sheet of the 'Carte d'Etat-Major' show the changes that have taken place in the parks along the Réveillon. Here the knick points are marked by rural roads on the heights along both sides of the valley.

**127** *Changes in farmland and the large housing estates built in the early 1970s wiped out some of links in this very clear, legible spatial structure.*

The Paris sheet of the 'Carte d'Etat-Major' of 1832.

This sheet was compared with the corresponding parts of the 'Carte des Chasses' (the Paris sheet is not datable).

- The main radial road network has been strengthened. The main developments are as follows: the creation of the Le Havre road (now the N192), the road from Asnières-Argenteuil to Saint-Gratien (now the D909) and the section of the Troyes road (now the N19) on the left bank of the Seine.

- Many new bridges have been built:

a) on the Seine:

- Paris, which had 9 bridges between Iena and Austerlitz, now has 13;
- downstream, between Paris and Mantes, there are now 16 bridges instead of 8;
- between Austerlitz bridge and Corbeil (site of the first bridge upstream from Paris) there are now 6.

b) on the Marne, there are bridges at Saint-Maur and Brie.

The canals shown on the 'Carte des Chasses' have been built and the Marne canal at Saint-Maur has been added. The 'water station' ('gare d'eau') is shown at Saint-Ouen. It was brought into service in 1830<sup>(13)</sup> (and is not shown on the draft copy at 1/10,000 scale).

Urbanisation has developed markedly in the SW quadrant, from the limits of Paris at Grenelle to the village of Issy and, further north, as far as Batignolles, including Billancourt and the extension of the town of Boulogne.

(12) The reader might like to refer to the sheet from 'Tableau Topographique des Environs de Paris' by Dom Coutans. Cf. 'Introduction'.

(13) Anne Lombart-Jourdan, La Plaine Saint-Denis, 2000 ans d'histoire, CNRS, PSD Saint-Denis, Paris, 1994.

In the other geographical sectors, outer development is visible along the boulevards built by the Farmers General and also along the radial roads, such as the one from Paris to Saint-Denis<sup>(14)</sup>.

The first railways in the west (additions shown on the map of 1832) emphasise the dissymmetry that we notice between the centre-west and centre-east of the region.

## The western part of the capital



130-131

De la Grive's Map of the 'Environs of Paris', the 'Carte des Chasses' and the 'Carte d'Etat-Major' show about 80 years of change.

The site is that of the Seine valley. To the east, the gently sloping alluvial plain stretches from the foot of Chaillot to the foot of Montmartre. To the west, the hillside slopes from Suresnes to Courbevoie.

De la Grive's Map

Three straight tree-lined roads - Avenue de Neuilly, Route de Roule and Chemin de Clichy - leave the capital and its natural site and head for the river.

The Chemin de Versailles at Saint-Denis, running parallel to the river, completes the road network.

The right-hand side of the plain is so suitable that many rural roads have appeared running perpendicular to the river and linking Paris, its suburbs, villages, châteaux and their formal gardens.

Only the Route du Roule (an old road cutting through the heart of the capital) crosses the Seine.

The 'Carte des Chasses'

Old Neuilly bridge has been replaced by Perrotet's bridge. The new road from Paris to Saint-Germain-en-Laye has been built. It passes through the roundabouts that have been built on the crests of the sides of the Seine valley: Place de l'Etoile to the east, Place de la Butte Chante-Coq (now La Défense) to the west.

These roads prepare the site for urbanisation in quite an extraordinary manner.

The 'Carte d'Etat-Major'

Urbanisation developed at Chaillot, between the Avenue de Neuilly and the Route du Roule, at Les Ternes, Les Batignolles and Clichy.

Royal privilege having been abolished, the coverts (thickets acting as shelters for game) have disappeared from the map and the Duc d'Orléans's château now offers the pleasures of a vast park stretching beyond the arm of the Seine to the island of La Grande Jatte.



Notes

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*If this map section were enlarged it would show the area of the Invalides and the Military School, which had been urbanised. This was not in keeping with Laugier's idea of the future when he wrote, in 1753: 'The city must be regarded as a forest, the streets of the former being the roads of the latter and they should be built in the same way'<sup>(15)</sup>. As yet there are no roads cutting through the old part of Paris.*

(14) For further information see Bernard Rouleau, *Villages et faubourgs de l'ancien Paris, histoire d'un espace urbain*, op. cit.

(15) Marc Antoine Laugier, *Essai sur l'architecture*, published by P. Mandaga, Brussels, 1979.



## West of the capital: the example of Neuilly



The draft sheets, scale 1/10,000, for the 'Carte d'État-Major' show the commune of Neuilly in detail. Urbanisation has begun to the west of the Plaine de Villiers, from the Butte de l'Etoile to the lotissement Saint-James near the Seine.

We find two categories of land being built upon:

- farming plots whose side boundaries are oblique to the lines of the main roads. This is particularly visible on either side of the Route de Neuilly.
- Large land units:
  - at Sablonville, two diagonal roads and also roads running parallel to the edges of the site;
  - at Les Ternes, the site is that of a former park (shown in green on the previous pages) bordered by two rural roads; the composition of the lotissement is based on that of the former park, but it extends well beyond the park, forming an orthogonal whole.

The two rural roads (one of which later became the Avenue and Rue de Villiers) carry on in the north-west into the Plaine de Villiers, where the same process is being repeated on the large farming plots.

Such operations were to spread to the whole of the territory of the future commune of Levallois-Perret. Pierre Hénon and Alain Thiebaut<sup>(16)</sup> underline the apparent regularity of the checkerboard pattern and the spacing of the roads resulting from 'adaptations'<sup>(17)</sup> to the pre-existing farming plots.

Thus, plot-by-plot construction led to a certain general coherency and variety, largely related to those of the previous mosaic of farmland.



### Notes

*In Neuilly the site of the Duc d'Orléans's park provided*  
**132** *the advantage of a hierarchical network of new roads which*  
**133** *contrast with those of the earliest operations.*

## The capital and its environs, the 'revised' map of 1852



The Paris sheet of the 'Carte d'État-Major' was 'revised' in 1852. A first series of updates concerned the so-called 'Thiers' fortifications, which were first planned in 1841. The map shows the city walls and the forts, e.g. those of Mont Valérien, Bicêtre, Rosny, Saint-Denis. Around the walls was a non aedificandi area 250 m wide from the escarp. The latter is not legible on the map but both it and the city walls had noticeable consequences.

The second series of changes concerned the main road network. The 'revised' map of 1852 shows that the network of ringroads has been reinforced since the map of 1832. The present N186 has been built. It is continuous from Saint-Germain-en-Laye to Nogent-sur-Marne via Saint-Denis. The ringroad joining the forts has been begun in the north and east. Furthermore, the loop in the Marne has been crossed for the first time at Saint-Maur, between Créteil and Champigny. This road network changed very little over the next hundred years of urbanisation. The railway, which was then in full expansion, added new dynamics.

The basic map of 1832 was not changed apart from a few occasional updates, such as those around the Bassin de la Villette, where the Saint-Denis and Ourcq canals meet.

In the mid-1840s, La Villette was the most important industrial and warehouse zone in the inner suburbs<sup>(18)</sup>.

(16) Pierre Hénon and Alain Thiebaut, *Levallois, Histoire d'une banlieue*, Pierre Mardaga, Liège, 1981.

(17) See chapter entitled *Cadastre, plot, boundary*.

(18) Bernard Rouleau, *Villages et faubourgs de l'ancien Paris, Histoire d'un espace urbain*, op. cit.

## The Map of France of the 1889 type



This map is a revised version of the 'Carte d'État-Major' (1/80,000). It was published to the same scale and also at 1/50,000, which made reading easier<sup>(19)</sup>.

The signs and abbreviations are the same as those of the earlier 'Carte d'État-Major', plus a few additions (e.g. 'Broussailles' [scrub] and 'Tramways à vapeur' [steam tramways]) and also a number of changes (the categories in the road classifications are more familiar to us and the signs used for the railways are at last homogeneous).

Military concerns still determined the choice of the same signs for towns and for details of fencing.

The revision was effective, as is shown by a comparison of the two extracts presented: the Provins S.E. sheet, 1889 type, 1/80,000, revised in 1888, and the Provins S.E. sheet, 1889 type, 1/50,000, revised in 1911.

As the reader may see from the section of the Melun S.E. sheet, scale 1/50,000, some of the sheets republished from 1914 onwards retained the 'Nord de Guerre' for strategic areas (the squaring of the map is not in line with the sheet).

## The maps of a medium-sized town in the region



The plan of the town of Melun, scale 1/20,000, engraved during the 1820s. This document was made by the Dépôt de Guerre at the same time as the 'Carte d'État-Major' (the railway was added later).

The site very clearly shows a meander in the Seine. The river receives its tributary, the Almont, on its right bank to the right of the Ile Notre Dame (former name of the Ile Saint-Etienne?).

On the same bank the town stretches along and at the foot of the sloping sides of the two valleys. In the denser parts, the fortifications of the medieval city can be made out. The straight, tree-lined roads narrow as they enter the faubourgs.

The road network converging on the town from the north comprises the Paris road (now N6), the Brie road (now A5b), the Meaux road (now N36) which was built in 1758 to link the Burgundy roads to those of Picardy, the Provins road (now D408) and the Montereau road (now N105). On the left bank, after crossing two bridges, the Fontainebleau road heads south and soon enters the forest.



(19) See also article Three centuries of maps in the Ile-de-France.

The map of the canton of Melun Sud, scale 1/20,000, made in 1877 by order of the General Council.

The arrival of the railway greatly changed the town's appearance. On the left bank, between the station and the old part of town, the housing areas, which are not yet very built-up, offer vast spaces for urbanisation. The Fontainebleau road, renamed 'Avenue Thiers', served as the backbone for such operations.

To the east, the operation is centred on two old roads. To the west of the Avenue Thiers, a third road plays the same role.

Reading the detailed map of the town of Melun<sup>(20)</sup> (and the Carte IGN, 1/5,000) we notice that the development operation consisted mainly in creating roads through the former farming plots. To the west of the bridge are the abattoirs and a 'storehouse for fodder'; the 'Quartier de Cavalerie' is to the east.

A gas works and an electricity works were built shortly afterwards near the Seine<sup>(21)</sup>, marking the beginnings of the first industrial zone.

Henceforth the town has its cemetery to the south. Another cemetery, a tram station to the south of the Place Saint-Jean on the right bank of the river, and a prefecture and barracks appear on the map of the canton of Melun Nord, which was completed and corrected in 1913.



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The 'Carte d'Etat-Major' of the 1889 type, revised in 1903, scale 1/50,000, seems rather basic compared to the previous map.

It nevertheless enables us to see the important changes that have taken place to the south.

Many buildings have been added to the housing plots.

New railway sidings were to lead to the development of a large industrial zone along the river.

The beginnings of urbanisation are clearly visible between the two roads leading from Melun to Dammarie-les-Lys.

A comparison of the plan of the town of Melun in about 1820 and the Map of France of the 1899 type shows that urbanisation had not yet encroached upon the forest.



141 *Avenue Thiers. The avenue is already very urban in character, with its lines of trees, pavements and buildings of a certain height.*

*Place de la Gare: the street lighting and electricity show a certain standing in the town's facilities.*

*Avenue de Fontainebleau. In the distance, the railway bridge crosses the Avenue de Thiers.*

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Translation: Mary Pardoe

(20) Jean Mesqui, *Les routes dans la Brie et la Champagne occidentale: histoire et technique*, Revue général des routes et des aérodromes, Paris, 1980.

(21) Gabriel Leroy, *Histoire de Melun depuis les temps reculés jusqu'à nos jours*, Melun, Drosne, 1887; Melun Municipal Library.

ENVIRONS DE PARIS

La-Garenne

5

SEINE FL.

PARIS

## Map of France type 1900

*Surveyed from 1872 to 1900, despite its title of type, this 1/50,000 scale map covers only a part of the territory of Ile-de-France. Comprising nine sheets, the surface covered is 4,590 km<sup>2</sup> in Ile-de-France (i.e., barely 40 % of the surface area of the region). The article 'Three centuries of cartography in Ile-de-France' discusses the reasons for these limits. Its 1/10,000 scale minute drawings published at that scale as well as their assembly at the 1/20,000 scale provide very valuable additional information.*

*The map represents the central part of the region at a time when urbanisation had already developed quite significantly at varying rates and in different forms around Paris. Other maps make it possible to take stock of changes that occurred in the interim period between the Carte d'Etat Major of 1832 and 1900. These are, in particular, revisions of the map of the 'Environs of Paris'. Other documents provide more detailed insights into certain sectors such as those covered by the maps of the 1/5,000 scale 'Atlas of the communes of the Seine department' of 1900 prepared at the request of the County Council by the Highway Department's Seine Departmental Office. The relationship between the map and the management of the territory by the territorial authorities thus become clearer.*

Hervé Blumenfeld - Christian Thibault

## The conventional signs



144-145

Each of the nine sheets of the 1/50,000 scale map of France specifies the meanings of the conventional signs reproduced.

In spite of the fineness of the drawing and the polychrome printing, some signs still remain difficult to make out. This is particularly true in the case of the ones indicating the three categories of 'industrial concerns' and those distinguishing between the two categories of 'Post and Telegraph or Telephone Offices'.

The relief is indicated on the map using contour lines instead of hachures. As shown on the extract of the map, the indication is heightened by a colour the variable shades of which make the figures represented less abstract.

The writing also specifies that:

'the levelling of the sheet was brought in line with the values of the Bourdaloue levelling; the equidistance of the contour lines is 10 metres; the values listed separately have been rounded off to the nearest metre. The regional constant of correction to bring the levelling of the sheet to the normal zero of the overall levelling for France is - 0.65'.



*The smallest detail of the 'flat' relief of this plateau takes on an extraordinary dimension, described and amplified by the drawing of the fields, a valuable lesson about the Vexin peasants for any developer, urban planner, landscaper or architect of the end of the 20th century.*

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(1) Gaston Roupnel. *L'histoire de la campagne française*, éd. Plon, Paris 1981.

## The Vexin Français region

near Auvers-sur-Oise

*The 'Master Plan' provides a wealth of interesting details*

- The site: the relief is represented by 5 m and 2.5 m equidistant contour lines on the relatively flat lands.

- The villages, their streets, buildings and gardens are detailed on a plot basis (even if the map only illustrates the apparent plot layout) as are the drawings of small parks and copses. The railway (of which one can count the number of tracks) its station, the Mery-sur-Oise water pump, its 'hat factory' and its quarries are all drawn and named.

The absence of any representation of the agrarian land division is all the more striking when compared to the description of the 'Auvers Plain', in the same period, by Vincent Van Gogh.

This narrow, strip-like plot layout is similar to the extract of the Napoleonic land register of Cormeilles-en-Vexin. Although there were some changes in cultivation boundaries or ownership during the 19th century, the countryside remained stable through its 'dynamic fixity'<sup>(1)</sup>.

## To the north-west of the capital urbanisation expands

In the communes cut off from Paris by the so-called 'Thiers fortifications', the density of urbanisation varied from sector to sector. The fineness of the drawing makes it possible to distinguish the expanses of red indicating large industrial facilities or dense urban areas such as Neuilly, Levallois-Perret, Clichy or the centre of Saint-Denis and what was at the time not yet called 'discontinuous housing development'.



This sector is served by the river transportation networks linked to Le Havre and the overland and rail networks connected to the mining regions. The proximity of Paris provides a skilled labour force, a consumption and redistribution centre and also the impetus for corporate expansion or relocation. Unlike the Cr eteil plain, this area is not liable to flooding. Beyond this inner ring, the impact of the railway and its stations on the location of urban development is perceptible.



*Clichy, the railway bridge, factory chimneys and the gasometers seen from Asni eres.*

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## An inner ring to the north-west of the capital



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Compared to the Carte d' tat Major of 1832, the area is unrecognisable at first sight. Benefiting from the proximity of the capital, the Seine, the powerful road network inherited in particular from the 18th century and subsequently complemented by a series of bridges, and the rail network (with its sprawling branches covering an impressive area), industry developed in Clichy and Saint-Ouen.

For the latter commune, 'L' tat des communes   la fin du si cle'<sup>(2)</sup> points out the extraordinary variety of industries. The range includes a large steam-engine manufacturing plant, a power plant owned by La Soci t  d' clairage et de Force  lectrique, piano makers and two print works. Medium-sized built-up spaces intertwine with the field of dots, which represent mainly residential buildings.

The work cited above indicates that more than half the surface area of this commune was at the time occupied by 'farmlands', 'parks' and 'leisure grounds' (including the racetrack shown on the map). Thus, mixed development is the rule not only for housing and industry but also for '95 ha of ploughed land, 40 ha of fodder crops, 10 ha of vineyards and 6 ha of horticulture'.

Urban development, which was already almost continuous at Levallois-Perret or Asni eres, still remained loose in Clichy and Saint-Ouen.



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On the left bank of the Seine, Gennevilliers retained a rural configuration. However, as shown in the painting by Signac, the factory chimneys were not far away and new roads would open up additional lands for urbanisation.

## Saint-Ouen around 1870



*Rural land division patterns were transposed to the urban area. But in the absence of an*

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*adequate sewerage and drinking water supply system, soil and water tables became polluted, public standpipes were in short supply and disease was rampant. The equipment of many communes called for considerable investment on the part of the public authorities over a very long period<sup>(3)</sup>.*

(2) Saint-Ouen. Historical notice and administrative information. Seine Department, published under the auspices of the County Council, Montevrain, 1902.

(3) H. Blumenfeld, C. Fery, C. Gaillard, M. Mangin d'Herminet: Recherche sur une typologie op rationnelle de l'habitat ancien. Report of the first phase - M.E.C.V. Construction Directorate. IAURIF, SONACOTRA, IAURIF 1977.

Urbanisation expanded independently of the rural village. A large number of small partially built-up housing developments (some with roads no more than 4 m wide) sprung up in a haphazard fashion. Numerous constructions were put up along major roads, on rural plots.

Agrarian land division patterns were transposed onto the urban space. This observation can be applied as a general rule within the perimeter drawn in red on the map, and can be compared with the description of the area in the extract of the Napoleonic land register. Three blocks and a few plots located along Avenue de la Gare leading to the station, which opened in 1830, escape this rule. Their parcels were replotted and redivided to make their lateral boundaries perpendicular to the roadway.

Two major axes complete the network inherited mainly from the ancien régime:

- 'Avenue de la Gare' forming a monumental composition with the water terminal and its two basins (the whole already appears on the Carte d'Etat Major of 1832),
- the departmental road no. 2 (currently the D14), which does not appear on the Carte d'Etat Major Review of 1852.

The railways impose a new logic on physical planning. The town hall and the school are the visible signs of the effort to provide public amenities.

## Saint Ouen in 1900



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After the maps by O. Th. Lefèvre, Saint-Ouen got a new 1/5,000 scale map at around 1900 (which was itself revised in the 1930s).

In thirty years, urbanisation expanded. Step by step, the agrarian land framework provided a certain coherence as the urban landscape took shape. Along the median axis of the commune, Avenue des Batignolles (at present Avenue Gabriel Péri) the continuous urban landscape is largely

constituted. The map shows, in particular, the adaptation of industrial activities to the constraints of deep, narrow plots, often at an angle to the streets.

The large industrial holdings developed first of all between the Seine and the old royal road from Paris to Saint-Denis, and also further in, on areas served or not by the strands of the growing rail network.

On the map, one can see the tramlines (5 lines serve Saint-Ouen) and the pavements built along the public highways lit by gas lamps.

The non aedificandi zone around the fortifications still remained very undeveloped. Twenty years previously, the residents of Saint-Ouen could still remember the succulent fruits they used to go there on holidays to enjoy in their small, well-kept gardens. Several decades later, the dotted line, which represents the boundary of this zone encumbered with a prohibition to build, was scrupulously followed when the 'Zone' was razed.



Notes

**155** *The plan of the 'Green Belt' project around the capital incorporated the branching crossroads and forks that had formed near the fortified buildings. These junctions were subsequently eliminated, however, as new thinking emerged on route layout and development planning.*

## The landscaped housing development at Le Vésinet



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Le Vésinet is one of the most exemplary 'landscaped housing developments' and no doubt one of the best preserved in Ile-de-France. One could also mention in the same Yvelines department, Maisons-Laffitte and Parc Montebello at Jouy-en-Josas or Le Raincy in the department of Seine-Saint-Denis. Created in the second half of the 19th century, it put into practice an ideal, which was entirely new at the

time: landscaped housing development. Here, the landscaper Pallu performed like an urban planner linking public promenades and private gardens, something that is quite a rarity in housing development. The whole area is designed in keeping with the taste of the period (wide lawns dotted with copses of large spreading trees, wide openings, creation of artificial undulations, rivers and lakes).

### *Working with the classical layouts*

The old forest domain and its characteristic routes with branching junctions was redrawn as a park with curving lanes. However, most of the old rectilinear pathways were maintained except for the large star-shaped junction to the west. The network of curving pathways was interwoven into the network of straight ones.

As a large number of old trees were preserved, the houses were surrounded by a vegetation cover of exceptional quality. The 'vistas on pretty hillsides' promised in the overall plan ended up being hidden by the combination of the curves in the layout and the abundant vegetation. Unlike the radiating roadways of the classical park turned towards the horizons, the new Vésinet seemed above all to be looking in on itself.



### *Return to the Map of the King's Hunting Grounds.*

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*The long views, opened by the forest paths stretching away towards the Seine, shown on the Map of the King's Hunting Grounds have disappeared from the Carte d'Etat Major.*

## To the north-east of the capital



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In the communes bordering on Paris, to the east of Canal Saint-Denis, no signs indicating 'steam-powered industrial concerns or electric power plants' are present in the territory of Aubervilliers. They do not appear either in Pantin, served especially by the railway and by the Canal de l'Ourcq.

Canal Saint-Denis, lined with trees, opens up from Paris a perspective turned toward the Saint-Denis Basilica. Is this a chance result (very unlikely) of the heavy technical constraints its construction entailed, or rather a deliberate attempt to give it the majesty of the routes laid out across the plains like park lanes?

The Canal de l'Ourcq was a widely used navigation route (transporting in the second half of the 19th century wood from the Villers-Cotterets forest, dressed stone from the Ourcq valley and gypsum from Vaujours or Villeparisis)<sup>(4)</sup>. Quarries had developed to the extent that they are visible on the 1/50,000 scale map. They had already eaten into a sizeable portion of the Bondy forest, which was receding even more in the face of advancing housing development.

From that point of view, the forest was at the opposite spectrum from the Plaine de France. To the east of Aubervilliers and Pantin, 'the farm country' was virtually untouched by urban pressure. Bobigny stood out because of the large expanse of its land under market gardening.

(4) Jean-Jacques Péru, Ecomusée de la Courneuve, 'Le patrimoine des communes de la Seine-Saint-Denis', éd. Flohic, Charenton-le-Pont, 1994.

Destruction of the large classical  
developments - partial restoration  
and housing development:  
the example of Le Raincy  
*On the Map of the King's  
Hunting Grounds*

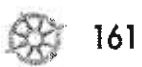


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The Livry Château and its major axes form the core of the composition of this part of the Bondy forest.

- The north-north-easterly - south-south-easterly axis describes one of the major directions of the relief of the Aulnay massif, of which it runs along the foot of the slope near the château (the present D116, Avenue de la Résistance, Avenue de Livry in Le Raincy and Boulevard Marx Dormoy in Livry-Gargan).

- The west-north-westerly - east-south-easterly axis, which is perpendicular to it, organised the dominant position of the whole in relation to the second major direction of the relief. It climbs the slope head-on, follows the crest line and then fans out its pathways along the slopes. Avenue du Raincy which is parallel to it reinforces this wide description of the site (the current Avenues Thiers at Le Raincy and Jean Jaurès at Pavillons-sous-Bois).



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*Destruction of the classical structure*

The minute drawing of the Carte d'Etat Major, around 1820.

The core of the classical composition is eliminated thus undermining the strength of the whole.

The signs used distinguish the forest and the 'Parc du Raincy'. The composition of the latter is closed in on itself. 'Avenue du Raincy' and the road running from 'Porte de Livry' in a north-north-easterly direction, a former axis of

the composition, stop at the entrance to the park. Is this the result of the destruction of the château? Or does it reflect the intention not to restore or rehabilitate the old paths and incorporate them into the new planning schemes? The fan of pathways has, nevertheless, been preserved.



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*Housing developments*

The map of the 'Environs of Paris', revised in 1887, describes the site in the process of being urbanised.

The Le Raincy housing development is creating a complex network of curving roads. Two of the major axes of the classical composition have been restored for either functional and/or aesthetic reasons. The north-north-easterly - south-south-westerly axis (the current Avenue de la Résistance) and the west-north-westerly - east-south-easterly axis (the current Avenue Thiers) are very much wider than the other roads in the sector. Crossroads have been designed in the form of roundabouts beautified with ponds. The fan arrangement and its axis laid out on the plain have disappeared. Other planning operations are developing around the old rural market towns and their country roads, as well as around old forest pathways or new rectilinear streets.

The present D116 and Avenue Thiers are, along with the Route de Meaux (N3), the only elements that stand out in the hierarchy of the road network.



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The 1/50,000 scale map of France type 1900 highlights the fact that beyond the issues that have just been raised, this suburb is equipped with a fairly well-developed 'exclusive right of way' mass transit network (railway lines such as the 'Les Coquetiers' line and tramlines).

*From forest pathways to housing access roads.  
The example of Aulnay-sous-Bois*



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The northern reach of the Bondy forest has disappeared under the Aulnay-sous-Bois housing estate (the old village is called Aulnay-les-Bondy).

Two of the three major 18th century roadways were preserved and determine the direction of the streets in the housing estate, which run either parallel or perpendicular to them (underlined in red on the map opposite).

The country road establishing the eastern boundary of the housing development used to border on the forest on the Map of the King's Hunting Grounds. To the north of the railway line, right of the station, a new housing development is beginning to encroach on the expanse of cultivated lands in La Plaine de France.



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The first postcard illustrates the dominant features of Aulnay-sous-Bois and of this urbanisation which was to continue right up until 1914. 'Petit-bourgeois country housing with a Sundaylike, holiday or retirement feel...' (5) according to Jean Bastié in his analysis of the formation and development of the Paris suburbs.

The second post card illustrates the still rural landscape of the environs of Aulnay-les-Bondy in the early 20th century.

*Development of a medium-sized town in the region: the example of Pontoise*

The Plan of Pontoise recalls the broad outlines of the town at the end of the 17th century.

The minute drawing of the Carte d'Etat Major describes what the area was like at around 1820.

The site is that of the confluence of the Oise and Viosne rivers which carved out the Vexin plateau. Mont Bélien forms an advanced spur clearly visible on the two documents.

The slopes of the Viosne valley and a part of the heights are occupied by long, narrow plots under vine cultivation. At the bottom of the valley, wet meadows and market gardens stretch right up to the immediate banks of the Oise.

The minute drawing shows (in red) the remains of the old fortifications. The ramparts have been destroyed and sold, with the adjacent, dismantled lands, the château sold and destroyed during the 18th century writes Charles Gantois (6). The trenches are still very visible (often lined with walkways or tree-lined paths). The road network is led by the old bridge over the Oise, it follows the town streets inherited from the Middle Ages, then radiates out towards Cergy, Rouen, Gisors, etc.

The surface area under vine cultivation is noticeably smaller than on the intendency map of Pontoise dated 1780. Does this reflect a shift in agrarian land occupancy or inaccuracy in the intendency map?



The town already has extensive suburbs. To the south, the Saint-Martin suburb reaches the limits of the old abbey overlooking the Oise.

*The course of the Viosne has been redirected so that its waters form a pond that helps with the defence of the fortified town; at the top left of the map stands the Notre-Dame church outside the walls, reduced to a 1/16,000 scale approx.*

(5) Jean Bastié, op. cit.

(6) Charles Gantois, Les anciennes fortifications de Pontoise, Société Historique et Archéologique de Pontoise, du Val d'Oise et du Vexin, T. 50, AD. Val d'Oise.





*This view is taken from the left bank of the Oise to the south of the Viosne. The town has lost a significant part of its building heritage, of which the Saint-Maclou church (left background) remains one of the rare examples along with the old bridge, its small castle and its two windmills. A study of the plot layout of the town, its streets and its squares (Place du Petit and Place du Grand Marché in the 'village' Place du Martroy) will no doubt show that these elements of the old urban heritage are still in place.*

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## Pontoise in 1900



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The 'Master Plans' represent the state of the places just described after 80 years of evolution. Unfortunately the map shows the 'town centre' in a uniform shade of grey (high urban density?).

The railroad crossed the Oise in 1863. The station, its square, the creation of the Avenue Impériale (currently Rue Thiers) and its extension laid out in the old town right up to the foot of the stairs leading to Saint-Maclou were based on this edifice, a major urban composition of the period.

The part of the town illustrated in grey extends over two large districts situated close to the station. To the north, the old streets of 'La Petite' and 'La Grande Tannerie', as well as the one called 'Les Boucheries'<sup>(7)</sup> border these two districts, to the south the street seems to match the layout of the old country lane then used to run alongside the Viosne (the lands were filled in to build the railroad). One district of the Saint-Martin suburb has already been claimed by this 'dense' urbanisation.

Redevelopment of the old trenches.

A new roadway bypasses the town starting from the new bridge built in the place and stead of the old one. In this response to increased circulation needs, aesthetic considerations went entirely by the board. The tree-lined paths and lanes along the crest of the trenches on the minute drawing of the Carte d'Etat Major have disappeared. They could,

however, have led from the banks of the Oise to the Pontoise Garden, also laid out in the eastern part of the old trenches. Strolling is, after all, a major leisure activity and a great opportunity for the residents of Pontoise like most other towns to engage in social intercourse.

The suburbs are expanding, ordered by the agrarian plot layout illustrated on the map and which describes the relief almost as vividly as the hachures on older maps would have done. Pontoise and its suburbs remain in their geographical site.

The 'distillery' illustrated and named by the map (with the word 'gaz' written at the junction between the two railway lines), is the only transcription of modern, industrial activity. This activity painted by Pissaro in 'Factory at Pontoise' (1873), includes three high chimneys. There seem to be just as many windmills as on the Carte d'Etat Major. Urbanisation was not to spread to the plateau until very much later posing new problems including its impact on vast expanses.

### Notes



*In 1781, the walls of Pontoise were demolished and subdivided, but an invisible trench continues to separate town from suburb. At L'Hermitage, one is already in the countryside, writes Jacques Dupâquier<sup>(8)</sup> in conclusion to his work. Would these statements still apply to the residents of Pontoise in the closing years of the 19th century?*

**Hervé Blumenfeld - Christian Thibault**  
**IAURIF**

Translation: Karen Marcelle

(7) Jacques Dupâquier, Pontoise et les pontoisiens en 1781. Ville de Pontoise et Société Historique et Archéologique de Pontoise, du Val-d'Oise et du Vexin. Imprimerie Corlet 14110, Condé-sur-Noizeau 1992. Plan of Pontoise in the 18th century by M. Quézel.

(8) Jacques Dupâquier, op. cit.



# Map of France type 1922

*This series of maps comes from the revision of the block of nine sheets of the map of France type 1900, and from new surveys on the territories situated outside the perimeter of the block. The first type 1922 sheets were published in 1931 and although photogrammetric surveys were introduced in 1933, it was not until 1957 that the entire region was fully covered.*

*This map on a scale of 1/50,000, therefore, continued to coexist for a long time with the old Carte d'État Major type 1889. Some useful additional information is provided by the map of France on a 1/20,000 scale, the scale of which was to be later adjusted to 1/25,000 for reasons of standardisation among NATO member countries.*

*The maps of France type 1922 and their successive revisions help us to follow the transformation of Ile-de-France over time: the extraordinary explosion of single-family housing, the concentration of industry, the application of the concepts of the Athens Charte and of heavy 'prefab' techniques (large housing estates), and the emergence of the modern road infrastructure network.*

Hervé Blumenfeld - François Dugény  
Christian Thibault - Jean-François Vivien

## The table of conventional signs



Each of the sheets of the map to the 1/50,000 scale provide an explicit key of the meanings of the conventional signs, which evolved with time.

Thus, compared to those of the Coulommiers sheet shown here, dated 1943-1944, the signs of the first sheets, published from 1931 on, are closer to those of the map of France type 1900, in terms of the choice of colours (vineyards in violet for example) and new signs appear (such as an assessment of the state of maintenance of the roadways for example).

Other signs were subsequently amalgamated, such as orchard-plantation, while still others like motorway and dual carriageway appeared later.

The quantity of information provided by the map is complemented by a high quality of readability. The relief is represented by 10m equidistant contour lines and is expressively shaded (by 'photographic blurring'). The map remains silent, however, with regard to the agrarian division of cultivable lands.

The use of photogrammetry leads to some imprecision in the dating of the area covered. The date of the shot (reference document) specified at the outset, gradually disappears. Deletion of the wording 'Service Géographique de l'Armée' from the sheets surveyed or prepared before 1940 (the date of creation of IGN) could be misleading for the uninitiated user.

## Villages and fields of Vexin Français



### *Geomorphology and human settlement*

Between Grisy-les-Plâtres and La Viosne, the geomorphology is characteristic of Vexin Français. Outliers stretch over 4 to 6 km and cover a width of around 1 to 2 km. Their top is flat, culminating here at an elevation of 186 m at the Epiais wood, dominating the plateau where the sides vary from 86 to 116 m. The springs running from their flanks feed the streams whose waters converge on the valleys. Woods are concentrated around the hillocks and valleys, with the plateau being devoted to large-scale farming. Villages are found where water is available, at the edge of the plateau, on the slopes of the valleys and on the clayey hillocks. The Butte de Cormeilles comprises two summits, culminating at 148 and 167 m. The villages of Cormeilles-en-Vexin and Frémécourt are situated at the same altitude of 140 m, which seemingly corresponds to the level of resurgence of the springs between sand and clay. The names of numerous localities shown on the map below serve as indicators of the abundance of water on the slopes of the hillock: Les Glaises, La Marnière, La Mare des Joncs, Les Barbaries, La Grande Mare, La Source de Trécon, La Mare Épicière...

Cormeilles occupies one of the summits of the hillock, while Frémécourt is located on the northern face below the highest point. Comparison of the maps shows that the mode of development of the two villages is also different. Cormeilles-en-Vexin, having benefited from the passage through it of the RN 15 major road

(the present RD 915) is larger. Cormeilles extends in a star-shaped pattern along the routes going down the slope, starting from its centre marked by a quadrilateral road arrangement wedged on the summit. Frémécourt, away from the major road, remained confined to the flank of the hillock developing in the form of a village-street following the contour lines.



*Stages of the evolution of Cormeilles-en-Vexin from the Napoleonic land register up to the aerial photograph of 1994*

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### *Successive replottings*

The traditional landscape is open field. The agrarian plot layout has undergone significant change since the early 19th century. The present layout is the result of replottings effected in the 1950s. The small wooded areas remained largely stable, even increasing slightly since the beginning of the century. Changes are, nevertheless, perceptible. Small plots have been joined together and some country lanes have disappeared. The plateau is today more monotonous as a result of the disappearance of these elements which highlighted its relief and because of the reduced complexity in the mosaic of crops grown. This change was triggered by the movement away from animal traction (horses, oxen) to mechanical traction and continued as tractors became increasingly more powerful. Animal traction required a dense network of access roads to the fields as well as plots of a size adapted to the slopes to reduce the animals' fatigue. Another important factor behind the change in plot layout was the diversion, established between 1992 and 1994, which did not take account of certain characteristics of the site.



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### *A sensitive and fragile area*

Regarding the hillock, the most notable modification was the introduction of major crop farming on lands located at the foot of the hillock immediately outside the villages essentially on the south/south-easterly face. Cormeilles, like most villages in Vexin Français, was surrounded by a ring of gardens, orchards and meadows particularly on the slopes of the hillocks where the soil was less fertile. Having lost its economic function as subsistence farmland and grazing area for draught or farm animals, this ring was either converted to cash crops or set aside as fallow woodland. However, as the gentle slopes of the Butte de Cormeilles readily lent themselves to cultivation, they remained less wooded than those of other hillocks in the Vexin area. This trend was widespread, with many villages having lost the vegetation that formed a buffer between the houses and the fields. It was attenuated at Cormeilles-en-Vexin on the north/north-westerly slope by the presence of the grounds of the château. A business park has, however, recently been created at the foot of the hillock, abutting on the grounds of the château (locality: 'Les Pierrots'). The hillock bears testimony not only to the geology of the area but also of past human occupation.



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### *Explosion of single-family housing*

The map of France type 1900 showed how the processes of industrialisation and housing estate development began leaving their mark on the land from the end of the 19th century. Driven in particular by the advances in rail transport, which fostered migration to short

distances and extension of the supply zone of the Paris metropolitan area, the period leading up to the Second World War saw an unprecedented explosion in the development of new business facilities and, even more so, housing. If one were to draw up a very summary description of the evolution of what was later to be called 'suburban housing' it could read as follows. Before 1914, many new developments in the outer and distant suburbs were designed to offer the Parisian bourgeoisie a certain quality of housing with a 'recreational' flavour, situated at fairly long travel distances from the centre. Estates in the inner suburbs, on the other hand, were intended to meet the housing needs of the most disadvantaged groups who were either being pushed out of Paris by the housing crisis or attracted by the new lifestyles touted by suburban developers.

At the end of World War I, suburban growth changed pace. This was due mainly to a housing crisis that had become very acute, to an accelerated rural exodus caused by the breakdown of patriarchal rural structures and by the population mixing that had occurred during the war. Another determining factor was the manpower needs of industry that had grown up in the Paris metropolitan area and whose development had been strongly spurred by the war effort.

With liberalism elevated to the rank of a dogma, the ideology of 'private ownership for all', easy credit terms and the low cost of land (often without any improvement whatsoever), as well as reduced working hours and the advent of travel passes, a veritable tidal wave of single-family housing development swept through between 1919 and 1930.



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The map of France type 1900 shows the Seine valley and the Orly plateau before the great surge. Some housing estates were already laid out on the ground, essentially in parks or forests (La Faisanderie at Villeneuve-le-Roi, Le Château Fraye at Vigneux, Juvisy, and so forth), but the construction density was very limited.



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The Army Geographical Unit map of 1938<sup>(1)</sup> presents a totally different physiognomy. The 1900 housing estates had by then been built, as had dozens of others that had sprung up on the fringes of towns (Choisy-le-Roi, Orly, Draveil, Vigneux, etc.), on the plateau (Paray-Vieille-Poste, Athis-Mons, Morangis, Savigny-sur-Orge, Morsang-sur-Orge, etc.) and in the valley (Rouvres, Viry-Chatillon, Ris-Orangis, etc.), where an increasing number of water stretches had appeared as a result of the extraction of aggregates. This map shows, although this is self-evident, the strong impact of the railway on urbanisation: the Juvisy hub, equally accessible from Draveil and from towns such as Orly or isolated housing developments like 'La Fraternelle', accessible from the stations on the outer circle line.

The 1/20,000 scale map gives a detailed idea of the organisation of these large housing developments, the way in which the edges of the Route Nationale 7 trunk road became densified, in which country roads and farm buildings were integrated (Le Contin at Paray-Vieille-Poste), how the hillsides, which are more difficult to service and more fragmented, are temporarily spared in the north of Juvisy, while they are urbanised to the south, above the Orge river.



*Between the two World Wars, encroachment by single-family housing on farm plateaux.*

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### *The Athis Orly plateau along the RN 7*

The postcard of Athis-Mons<sup>(2)</sup> shows the type of construction in the area: millstone detached houses with industrial tile roofs, as well as small cabins hidden at the bottoms of mainly vegetable gardens, interspersed with fruit trees.

(1) Map of France to a scale of 1/50,000 type 1922 prepared, drawn and published in accordance with the field work carried out in 1901. Revised in 1933-34 by the Service Géographique de l'Armée (Army Geographical Unit), extract. IGN.

(2) Shot taken from the Pyramide water tower (shown on the 1/20,000 scale map) looking towards the Villeneuve-Orly aerodrome, recognisable by the airship hangars built around 1920 by Eugène Freyssinet (also visible on the 1/50,000 scale map).



## Low-income housing and garden cities



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Simultaneously with this spectacular development of single-family housing (more than half the surface area of this type of urbanisation in Ile-de-France was completed in the period between the two World Wars), two other types of housing units, both built by public authorities, also marked the period. These were low-income housing units (Habitations à Bon Marché (HBMs), created by the provisions of the Laws of 1912 and 1922) and garden cities. The declassification of fortifications, in April 1919, preceded by the Cornudet Law on the expansion of towns and cities (March 1919) and by the competition for the Paris expansion plan (March 1919), and followed by the Louis Bonnier planning project of 1924, led to the gradual development of the Paris belt, with a sizeable area being devoted to HBMs and to green spaces and facilities<sup>(3)</sup>. The maps in the Atlas of the communes of the Seine department attest to this evolution between their original version and their revision in the early 1930s. They also provide evidence of the large-scale industrial development in the near suburbs. The maps also show, with precision, the extraordinary urbanisation boom of the inner ring, and in particular the garden-cities which constituted, between 1921 and 1935, the typical social housing scheme built in a planned manner on the outskirts of towns<sup>(4)</sup>. The most recent ones (like Drancy-la-Muette, built by Lods and Beaudoin in 1933-1935) foreshadowed the large multi-storey housing estates of the post-war period.

## The appearance of large housing estates



184 - 185

After World War II, the decline in family subsidies to the benefit of building subsidies, and above all the quantitative concerns posed by the reconstruction, led to the preference for collective housing which was to take the form of large housing estates mainly, along with some more modest schemes located on lands not occupied by single-family housing.

Comparison of the Army Geographical Unit map of 1933 with the IGN map of 1964, clearly demonstrates how the large housing estates took possession of the lands spared by the single-family housing wave and by infrastructure development. This explains why, still today, many of them remain boxed in, isolated from the old centres and the train stations that structure the suburbs. The comparison also shows how, despite an intransigent position, the ideology of the Athens Charter had to be adapted to the reality in the field, with regard to facing the direction of the sun and the constraints of plot divisions in particular.

During this period, and before the emergence of 'catalogue homes' which represented 80 % of private construction in the 1970s, owning their own detached house remained the often inaccessible dream of most city dwellers. The post-war period was to see the gradual densification of single-family housing development accompanied by a growing body of regulatory

(3) Readers could usefully refer to *Des Fortifs au Perif* by J.L. Cohen and A. Lortie, especially from page 149 on. Ed. du Pavillon de l'Arsenal. Picard éditeur. Paris 1991.

(4) For more details, see *Les cités-jardins de la région Ile-de-France*. Cahier de L'IAURIF no. 58. May 1978.

constraints but also better equipment. The increase in public transportation, and most of all in private car ownership, continued to extend the reach of areas for subdivision further and further and to intensify construction from the slopes to the parcelled out areas.

Far from being limited to the Paris metropolitan area, the creation of large housing estates and the sprawl of single-family housing also affected the small and medium-sized towns of the Ile-de-France region, and this well before the ZUP policy was introduced<sup>(5)</sup>.

### 186 - 187

A comparison between the IGN 1/50,000 scale map of Melun (updated in 1953) and its 1961 revision (partially updated in 1963) reveals several characteristic features of this period: the creation of a high-rise residential housing estate (facing rigorously north-south) to the north of the built-up area, beyond the barracks and the single-family housing neighbourhoods; the densification and expansion of housing schemes, particularly into wooded areas touching the metropolitan area; the creation of a diversion ringing the north of the urban area; the increasing erosion of the hillsides; the appearance of corridors of high-tension lines. One gets a sense of the vacillation between an autocratic style of urban planning, inherited from the Athens Charter and unmindful of the past, and a laissez-faire approach consisting of small housing developments, haphazard construction and a predominantly technocratic view of infrastructure.

(5) ZUP: zone à urbaniser en priorité (zone scheduled for priority housing development), a procedure established by Decree no. 58-1464 of 31 December 1958, replaced at present by the ZAC: zone d'aménagement concerté (joint development zone).

## Woods, the example of Meudon and Clamart

### 188 - 189

By comparing the map of France scale 1/20,000 type 1922 of 1940 and the Map of the King's Hunting Grounds we get a good idea of what remained the same and what changed.

The former Meudon Park has become the Meudon wood. The woods and their wide forest pathways have, for the most part, remained in place, despite the 'former quarries', indicated on the map of 1940, a cemetery, a cartridge factory and a few housing developments.

'Le Gladiateur' is still there. A photograph from 1940 would show if the lookout that had been built there still offered a view of the small valley.

On the opposite slope, at the foot of the Clamart wood, the Chalais Park is perhaps reminiscent of the 'Jardins Bas' designed in the 17th century. The walkways of one section of these gardens can be found in the layout of a housing development.

Between the two slopes, the Chalais pond (still hexagonal) no longer occupies the same place in the overall composition. The former view, of which it marked the low point, remains clearly visible to the south, up to Porte de Clamart on the heights of the Beauce plateau. It has all but disappeared between the pond and the large Meudon terrace, having been gradually eroded by sporting facilities, a roadway, a few buildings and tree plantations.



*This majestic alignment, stretching from Bellevue up to the plateau overlooking the Seine (at an altitude of 167.2 m indicated on the map) and over a length of 3.5 km (i.e., approximately the same distance between the Carrousel Triumphant Arch near the Louvre and the Arc de Triomphe at the apex of the Champs Elysées) could undoubtedly be easily restored, thus regaining its place in Ile-de-France. Bellevue could again be equipped with a lookout offering multiple vistas of the winding river Seine and of Billancourt at its feet.*



#### *Renault at Boulogne-Billancourt*

*The Renault site at Boulogne-Billancourt is worthy of mention as a representative example of colonisation of a corridor of the Seine by industry: roads and plot layout are obliterated, while the river, the railway lines and even the tram lines are made use of.*

*Comparison of the maps of 1900 in the Atlas of the communes of the Seine department and their revision of 1933 clearly shows this trend.*

*Part of the plot layout and the road network of Boulogne-Billancourt is eaten up by huge industrial sites (this phenomenon is somewhat less marked in the eastern section of the territory where the Salmson carmakers set up their plants, as the road network remained intact).*

*The Seguin has been completely taken over, along with the left bank: completion of a rail connection at the level of the old glassworks that has disappeared, increasing utilisation of the freight station and its lands on the former Ile Monsieur, facing Saint Cloud Park and the Sèvres factory.*

*These installations on the left bank were to be reinforced between the railway line and the Seine. This was the period in which industry was developing in almost all the suburbs, either massively, as was the case along the Seine upstream from Paris and to the north-west of the capital, or more sporadically, as indicated by the Meudon Ironworks (which was to become the Chausson plant, a subsidiary of Renault) in Bas Meudon. It should also be noted that single-family housing, in its turn, was gradually expanding in conformity with the main lines of the Bellevue landscape on the left bank.*

## Industrial concentration



At the turn of the century, industrial development in the Paris metropolitan area picked up pace, reaching levels never before recorded in the capital. Born in Paris, industry expanded outwards to the suburbs, with the smaller towns further afield experiencing slower rates of industrialisation.

During the First World War, the Ile-de-France region was profoundly and definitively industrialised<sup>(6)</sup>. What was already discernible on the map of France type 1900 in Paris and its near suburbs was becoming more widespread.

'After the armistice in 1918, industrial redeployment was facilitated by the needs of reconstruction, the maintenance of a large army, the booming automobile and aviation industries, the need to meet demand in sectors hampered by the war, such as the construction industry (...). But in the period between the two World Wars industrial growth in Ile-de-France did not reach the heights that it had soared to between 1880 and 1914. Even before the crisis of 1931, only a few new industrial concerns were established. On the other hand, there were quite a number of substitutions, with car manufacturers and related industries often replacing businesses that were unable to adapt. These included woodworking, textiles, leather, shoemaking and earthenware factories. Aviation continued to grow (...). But it was the car industry that experienced the biggest boom. Already in 1936, Renault employed 35,000 workers at Billancourt; Citroën had expanded considerably at its Quay de Javel site and had 20,000 workers. On the whole, there was relatively little actual large industrial creation, but the Paris metropolitan area and even its imme-

diat environs continued to have a quasi-monopoly on industry location in Ile-de-France. This would change significantly after the Second World War<sup>(7)</sup>



### *Simca at Poissy*

*The Seine valley downstream from Paris, saw the installation of numerous enterprises that did not locate in the large industrial zones. The latter, in fact, only appeared later on. Poissy provides a good illustration of this. The first Ford plants of 1940 as well as the Ghaezer-Spicer facility transferred from Courbevoie in 1938, (lorries, and later high-speed trains) appear on the map of 1952. The successive updates shows the expansions without, however, updating the changes in ownership. (The site was taken over by Simca in 1954, then Talbot in 1980 after a short stint by Chrysler and then Peugeot after 1986).*

After the Second World War, the recovery of Parisian industry was relatively rapid. In the Paris region, between 1954 and 1962, the number of industrial jobs increased strongly, by at least 50 %, or around 500,000 jobs. During the same period, the number of firms in the suburbs with over 50 employees rose by 40 %, i.e. three times faster than the French national average. The fastest growing sectors were the car industry, household appliances, electronic goods and plastics.

The major new poles of activity, in terms of numbers of jobs created, were sites dedicated to single businesses like Orly, Saclay, Poissy, Flins, Orsay (...). The industrial zone that experienced the strongest growth is the Gennevilliers zone, largely associated with the port of Paris (...). Industrial migration from Paris to the suburbs, which has a very long history, continued, mainly along the radial axes and often in phases.<sup>(8)</sup>

(6) J. Bastié Histoire de L'Ile-de-France et de Paris pg. 515. Ed. Privat. 1971.

(7) idem. pg. 525

(8) idem. pg. 550



### *Renault at Hins-Aubergenville*

*Construction of the Renault site at Hins-*

**192** *Aubergenville is clearly in line with a deliberate policy to locate in the Seine valley (Sandouville, Grand Couronne, Cléon, Billancourt, Hins) to capitalise on the presence of major communication axes (river, motorway and rail).*

## Motorways and diversions

The first motorway built in Ile-de-France was the western motorway. It was the result of a proposal put forward in 1927 to build a scenic road of fairly modest dimensions and characteristics<sup>(9)</sup>. The new road was to meet several objectives: facilitate the exit of cars from Paris to its western suburbs, which had been experiencing traffic problems for several years; provide easy and pleasant access to the environs of Versailles and of Saint-Germain<sup>(10)</sup>, pass through sites and lookout points offering panoramic views. This initial project included an incut section through the Saint-Cloud Park, which was subsequently abandoned thanks mainly to the mobilisation of the Fine Arts lobby. In 1932, the idea was taken up again but this time in the form of a radial road designed to handle heavy traffic and, in 1935, the project incorporating the tunnel was declared to be in the public interest.



**193**

Although the building of the Saint-Cloud tunnel preserved the park, the avenue linking the château to the Place d'Armes (at the bridge-head) changed face (as shown by the Atlas of the communes of the Seine department when the original version of sheet n°. 53, prepared in 1895, is compared with the completely revised

version of 1941). At first a wide tree-lined avenue, it became as of 1976 a motorway viaduct. To a large extent, this first development respected the site (despite the opening of the tunnel and the widening of Avenue du Palais, the Bas du Parc lane still ended up at the Place d'Armes renamed Place Clémenceau). The situation changed in 1976, when access to the park was reorganised via a feeder road of a semi-underground interchange. From then on the demands of the car culture were given precedence over a planning approach that had nevertheless succeeded in making the most of the site.



*Up until 1960, the western motorway remained the only motorway in the Paris metropolitan area. The A6 was opened in 1960, the A1 in 1964 up to Le Bourget, and the orbital was completed in 1973. The Ecquevilly diversion was opened in 1951 in response to an increase in traffic on the RN13. It appears on the map which was partially updated in 1952. Another diversion, that of the RD 43, completed the arrangement and appeared on the map partially updated in 1959 (based on photos of 1957).*

The southbound section of the motorway was opened to traffic in 1950, completing the arrangement for Paris outbound traffic linking Saint-Cloud to the RN13, at the level of the exit from the Marly forest, and to the RN10 at Quatre Pavés du Roy. At the heart of the arrangement lies the Rocquencourt triangle. Construction of the motorway seemingly played a role in the increased traffic on the 'Route de Quarante Sous', which links Mantes to Saint-Germain-en-Laye and which became a

(9) M. de Buffévent 'L'autoroute de l'ouest, nouvelle sortie de Paris', quoted by C. Vacant in *Routes et ponts en Yvelines du XIX<sup>e</sup> siècle* pg. 141. Presses de l'ENPC. Paris 1996.

(10) *idem.*



segment of the RN13 in 1951<sup>(11)</sup>. The road (a steeply cambered roadway, 6 to 7 m wide) passed through Epône, Flins, Ecquevilly and Mézières. Section after section of the original roadway was reinforced: widening of the area occupied to 21 m, broadening of the roadway to 9 m, straightening out of curves, improvement of the longitudinal profile, opening of diversions at Ecquevilly in 1951, at Flins in 1952, and at Epône and Mézières in 1953<sup>(12)</sup>. This scenario was repeated on numerous other roads<sup>(13)</sup>, to the great advantage of motorists and haulage companies but without necessarily seeking, in some places, to fit with the ambient land use planning approach and the resulting landscape. By adhering to the principle of 'as straight as possible', the royal roads of the 17th and 18th centuries structured the landscape because they did not disturb the relief and also because they were laid out to connect towns to each other. The new roadways and road infrastructure of this second half of the 20th century do not follow the same underlying reasoning. Rather, a car-centred outlook is imposed on the countryside, creating an embanked/lowered road network, with softened curves, that today carefully avoids towns by using diversions dotted with roundabouts intended to reduce traffic speeds which the layouts themselves tend to encourage.

**Hervé Blumenfeld - François Dugéy -  
Christian Thibault - Jean-François Vivien  
IAURIF**

Translation: Karen Marcelle

(11) C. Vacant indicates that in 1928 average daily traffic was 1,884 vehicles, of which 268 lorries; it was 2,902, of which 628 lorries in 1934 and 5,243 of which 1,088 lorries in 1950. *Routes et ponts en Yvelines du XIX<sup>e</sup> au XX<sup>e</sup> siècle* op. cit.

(12) The A13 motorway was opened to traffic between Orgeval and Mantes in 1966.

(13) Like the RN5 and 5bis at Melun. See above.



## *From the 'Paris region' to 'Ile-de-France' in the post-war period*

*The youthful years of France's «baby boomers» were marked by the social, political and economic upheavals that punctuated local and national life during the so-called «Trente Glorieuses», i.e., the thirty years immediately following World War II. The harsh 1954 winter with its heavy toll on the homeless and the consequent appeals by the priest Abbé Pierre, the end of the Fourth Republic, the return of the war «repatriated», the break-up of the Seine and the Seine-et-Oise departments and May 1968. All of this against the backdrop of war in Indochina, the Cold War, the Algerian war, the Six-Day War, the Vietnam War and the first oil crisis in 1973.*

*The impact of a number of these events was more keenly felt in Ile-de-France than in France as a whole, because of French centralism.*

*Over this period, in stages, the face of what was the Paris region gradually changed to become what is now the Ile-de-France region.*

**François Dugeny**

After the urban explosion of the Roaring Twenties, expansion of the Paris metropolitan area slowed, due to the effects of the Great Depression and the Second World War, before picking up again at a more regular and sustainable pace. The thirty years that were to follow would see a succession of cycles of strong growth, fuelling inflation, and slowdowns. The successive regional development plans of the period between 1934 and 1960 attempted to limit the physical growth of the metropolitan area as well as to organise and equip it, at the same time laying the foundation for today's urban planning tools.

It was in 1961 that the real turnaround occurred, preparing, one hundred years after Haussmann, the Paris metropolitan area's great encounter with regional planning and development.

Against the historical backdrop of France becoming a founding member of the Common Market, Paul Delouvrier was entrusted with the mission of reorganising the capital city. Contrary to the objectives of preceding plans, he would deliberately seek to promote strong economic and population growth, setting the forecast in terms of population at the very high level of 14 to 15 million inhabitants by the end of the century in a city that had 8 million residents at the time.<sup>(1)</sup>

Paul Delouvrier's drawing board was to be a congested Paris surrounded by under-equipped suburbs, as the considerable efforts of the Seine communes and department had not been sufficient to make up the ground lost between the two World Wars. The various development plans that followed the Prost Plan of 1934, approved in 1941, aimed at containing the

urban sprawl of housing developments, had not resulted in the actual realisation of either the planned large infrastructure or the proposed «new towns». In 1956, the watchwords of the revision of the Regional Development Plan for the Paris Region were: decentralise the metropolitan area (and particularly industry) towards the provinces, decongest Paris towards the suburbs, regenerate the suburbs through large housing estates! Only a few large land reserves, delimited since the Prost Plan for the location of major national public services, were retained and were later to see the building of new Créteil, the Orly airport and Rungis wholesale market, the Vélizy priority urban development zone and sector 2 of Marne-la-Vallée.



## 200-201

The spirit of the preparation of what was to be the region's first master plan was entirely different. All those who participated in it, from 1961 to 1965, will remember the intense activity in the form of studies, meetings, debates and publications as well as the depth and scope of the thinking, in time and space terms, and the diversity of decisions taken both from the institutional standpoint and in respect of planning, programming and immediate development actions. To tell this story, one would have to recount how Paul Delouvrier took on the role of co-ordinator of the State's action in the capital, and show how the new master plan and the newly-formed institutions gradually developed a mutually enhancing relationship. It was indeed in 1964 that the Seine and Seine-et-Oise departments were split up into seven new departments.

In his time, Baron Haussmann cut right into the heart of the fabric of the capital, opening streets and boulevards lined with modern build-

(1) This forecast was made in the context of an overall population estimate for France of 85 million in the year 2000.

dings, expropriating and cleaning up, gutting popular districts, creating new perspectives and facilities. He contributed to structuring the future expansion of the metropolitan area through new roadways organising housing and other construction schemes, encouraging industrial and financial capitalism, but also speculation by real estate dealers. In terms of urban planning, he nevertheless stuck to the traditional form of the city, that of closed districts, even though the height, architecture and contours of the latter were largely remodelled.

In 1961, the age of metropolises had long since dawned. Paul Delouvrier was very keenly aware of this radical change that was to mark the 20th century.

His approach was different from Haussmann's. He relied on a solid research team<sup>(2)</sup> and launched an unprecedented land policy aimed at nipping in the bud any speculative campaigns<sup>(3)</sup>. The 1965 master plan, prepared under his guidance, opened up a new dimension in the organisation of the regional space and urban extensions. Unlike the previous plans (and later master plans), Paul Delouvrier adopted what is today called a «strategic planning» approach in which the link between long-term future perspectives and the programme for immediate action is fundamental.

'As soon as his hunger for food is sated, man hungers for space, and this hunger for space of the city-dweller, too long confined, is just beginning<sup>(4)</sup>'. This link between socio-economic development and space is at the heart of the document that is based on forecasts of strong population and economic growth, which was thought everlasting at the time, and on the resolve to take into consideration very long-term needs (40 years, whereas at present 15 years is considered long-term).

The idea was no longer to make frugal calculations but to think big and look far ahead. The issue was not about managing land use rights, but about laying down the guidelines for the metropolis of tomorrow. The new plan had three main thrusts: to channel physical expansion along preferential axes tangential to the metropolitan area in the north and south; create new urban centres; organise the unity of the urban region.



## 202-203

The preferential urbanisation and transportation axes underpinned the decision to create six or seven new towns, capable of housing around three million residents, supported by powerful transportation infrastructure, regional express rail transit (RER) and motorways.

The new urban centres were to serve a dual purpose as the hearts of the new towns and the focal points for restructuring the suburbs.

Organising the unity of the urban region was seen as the key to offering city-dwellers what they required of the city, i.e., freedom to choose where they lived, worked and played. Unity was also to be the key to the economic effectiveness of the metropolis. Achieving that regional unity meant creating a rail and road transportation network tailored to the change in scale from the city to the metropolitan area and the urban region.

These objectives were reflected in the ambitious networks proposed as well as in the sheer magnitude of the resources mobilised. They called for considerable effort on the part of the

(2) Of which l'IAURP was to serve as the pivot.

(3) Through the action of the AFTRP, created in 1962, and the creation of 40,000 ha of deferred development zones as early as 1965. This measure proved insufficient, however, as numerous developers launched speculative operations outside the new towns, capitalising on the infrastructure built by the public authorities.

(4) Presentation Report of the 1965 Master Plan.

State and the district, with commitments often being tripled compared to previous years, in a range of fields including roads, public transportation, sanitation, health, education and social services. Conducted simultaneously with an original land policy sustained over the next thirty years, this equipment policy, applied to the existing metropolitan area and to the new transportation axes, would deeply transform Ile-de-France enabling it to maintain its ranking among world-class metropolises.

Supported by an administration more powerful than ever before, and driven by a buoyant economy, the action of the public authorities, which was often coldly functional in style and disdainful of historical values, led to a certain loss of identity of the metropolis. This was compounded by the industrialisation of processes and materials which resulted in increased uniformisation of the forms created.

## 204-205

Even the rural areas became uniformised, through mechanisation, replotting and draining. One should bear in mind that in this period the word estate or allotment was banished from the vocabulary of urban planners, although the process had been a standard city planning tool for centuries. The sacrosanct principle of ownership was itself shaken. Developers were no longer offered land for sale but

rather planning permission. Although today we are now aware of the consequences of this system in terms of the inextricable superposition of management and ownership in large schemes, it persists, denying over 2,000 years of practice and know-how<sup>(5)</sup>.

At the same time, a counter movement began to emerge, of which a few milestones are recalled below:

- In 1963, J. Coignet, G. Hanning and B. Warnier adhere to the agrarian plot layout of the Cergy loop to mark out the future positioning of the future new town.

- In 1975, the studies carried out for the Paris land-use plan mark a turning point in the taking into account of the urban landscape in regulations, which would save the centre of the capital from the worst effects of massive renovation and destructuring operations<sup>(6)</sup>.

- In 1976, the Regional Planning Master Plan for the Ile-de-France Region takes into consideration the environment and urban composition.

- In 1977, the study conducted on the transformation of the plot layout of the Les Halles district in Paris<sup>(7)</sup> over the centuries offers an edifying lesson on the relations between plot layout, architecture and the city.

Human beings, whether from the town or country, today more than ever, feel the need to look back from time to time, to discover the origins of things, to measure the distance travelled, to go back to their roots, to forge anew their identity.

**François Dugeny**  
**IAURIF**

Translation: Karen Marcelle

(5) I return from Stockholm full of admiration and having learnt at least two lessons: public land ownership and long-term concession together form the only system that simultaneously meets the needs of urban planning and the demands of public morality, while allowing for the development of a dynamic economic system. But also, and above all, the land issue is easy to solve when one looks at it from a rigorously economic and financial point of view. Here at home, are grafted on a host of legal, political, sentimental and sociological data that obscure the reasoning and encourage both speculative thinking and demagogic mobilisations. E. Pisani. *Utopie foncière*, pages 5 and 6. Gallimard. 1977.

(6) See "Paris-Projet" no. 13-14

(7) See *Système de l'architecture urbaine, le quartier des Halles à Paris*. F. Boudon, A. Chastel, H. Couzy and F. Harmon. Editions du CNRS. Paris 1997.



# 250 years of evolution of land use in Ile-de-France

*Analysis of the major milestones in the evolution of Ile-de-France through old maps would not be complete without an initial comparison of the surfaces occupied by urbanised areas and woodlands in the different periods examined. We therefore thought it interesting to analyse the main reference documents (Map of the King's Hunting Grounds, Carte d'Etat Major, Map of France type 1900, Map of France type 1922 representing the situation at around 1960), and compare them to modern land use (modes of land use - MOS IAURIF- updated in 1994).*

**Carlos Gotlieb - Architecte, urbaniste - Hervé Blumenfeld - François Dugény**

Simple on the face of it, this undertaking is in reality quite complex. The areas covered and configurations correspond remarkably from one map to the next. However, in attempting a comparison, a number of difficulties quickly become apparent, such as:

- differences in the original scale and, thus, in the accuracy of the documents ;
- the definition of the representations of land use compared, though illustrated by the same sign, is not necessarily the same from one map to another ;
- comparison of roads and pathways would require the work of experts to establish a relevant hierarchical typology.

## Analysis

An initial analysis could, therefore, only deal with land use on a simplified basis. The decision was thus taken to focus on a few prominent themes in the evolution of land use since the second half of the 18th century: coverage of built-up areas, wooded parks and massifs, main watercourses and bodies of water. To these themes are gradually added, from the 19th century onwards, large infrastructure: railroad

tracks and their appurtenant lands, canals, motorways and expressways, aerodromes and airports. The main road network, which would require a complementary approach, is indicated by way of information before 1900.

So as to find denominators common to the keys, the criteria for interpretation of these themes were altered slightly depending on the maps: the principle was to retain for each period those elements which illustrate the themes in the most eloquent fashion.

This review presupposes a sedimentary vision of the evolution of land use, with each theme including (except in the case of disappearance) elements that also characterised it in the map drawn up for the preceding period.

The cartography was "matched" with the MOS 94 so that the various interpretations could be compared to each other and, ultimately, incorporated as new data in the regional geographical information system (RGIS) managed and developed by IAURIF.



The surface area retained corresponds to the block of nine sheets of the 1/50,000 scale map of France type 1900, centred on Paris. As the Map of the King's Hunting Grounds covers only 50 % of this area, a double calculation was made.

The analysis was carried out on the original scale for the Map of the King's Hunting Grounds (1/28,000), and for the maps of France of 1900 and 1960 (1/50,000), and on a 1/50,000 scale enlargement of the Carte d'Etat Major engraved at the 1/80,000 scale to facilitate reading.

## Themes

The principles that informed the analysis of each of the key headings was as follows:



208-209

### *Built-up area*

This key heading encompasses all built sectors including small ones on condition that they represent an urbanised whole.

For the first three maps, the built-up areas correspond to different types of urbanisation symbolised in two distinct ways. First, the dense sectors of Paris and main towns, expressed graphically by hachured districts. Second, the suburbs, sectors occupied by discontinuous built-up areas, market towns and villages, indicated by grouped constructions, accompanied by drawings of the main roads and part of their plot layout or even in some cases garden spaces. The evolution of these two categories, which differs from period to period, reflects the various stages of physical development of the built-up area.

On the Map of the King's Hunting Grounds and the Carte d'Etat Major, the consolidated sectors of Paris occupy a preponderant position in relation to the suburbs and urban centres in rural areas. This distribution reflects the expanding capital. On these two maps, the built-up areas of the Paris metropolitan area and its immediate periphery are quite similar, given the date of completion of the Paris and

Saint-Denis sheets of the Map of the King's Hunting Grounds (early 19th century).

On the other hand, the areas under formation increase considerably on the map of France type 1900. Spread in a discontinuous fashion around Paris, they are situated for the most part close to watercourses and some woods and forests, with extensions located, in part, near the new railway stations.

Regarding the 1950/1960 IGN map, the rapidly growing built-up areas, correspond to three types of sectors classified according to the density of their urban fabric: high-density built-up areas, built-up areas of medium density and those with loosely set construction. The first category includes Paris and its immediate suburbs, the second covers mainly the inner belt and the third covers all the rest of the built-up areas, including the old centres and their initial extensions as well as the recently-created sectors.

### *The main road network*

The meaning of this key heading varies depending on the map and it was, therefore, only possible to include it for identification purposes.

The map of France type 1900 presents a road network that can be compared more easily to the more recent networks. On this map, all the roads and pathways suitable for vehicles, located outside Paris, regularly maintained and of 6m wide or more, have been listed. As the network of roads became much more complex during the last two periods, the IGN map classifies them by adding to the criteria of width and state of repair indications on driving comfort (very good, good, etc.).

Inside Paris, having changed little since the beginning of the century, the main network is expressed in the same manner as on the previous map.

Outside Paris, however, the network, having grown considerably within the framework of new urban development schemes or to meet new vehicular traffic needs, is represented according to two criteria: in the urban area outside Paris, all the roads classified as offering average, good or very good driving comfort have been added to the road network of the previous map; for the other sectors, the network from the turn of the century has been completed by adding all the

roads and all the pathways (with the exception of those indicated as irregularly maintained) linking built-up areas as well as the major roads which also link built-up areas (a more precise definition of the latter still remains to be established).

### *Wooded areas*

This key heading encompasses both woods and forests, as well as the wooded areas inside parks. These elements are dealt with using either the same or different graphics depending on the map. The Map of the King's Hunting Grounds uses the same indication for forests and for the wooded sections of parks, with the latter corresponding to what today are called Bois de Meudon or Bois de Vincennes for example.

The Carte d'Etat Major and the IGN map illustrate all wooded areas under the same key heading. Bringing together the wooded areas in this way makes it possible to observe that their shapes remained quite remarkably stable throughout the period studied. Changes are often related to the voluntary increase of cultivated land area (as in the case of the Rambouillet forest) or the decrease of wooded massifs as a result of new urbanisation or quarrying activities (Bondy forest and Bois de Vésinet, for example).

### *The hydrographic network*

On the Map of the King's Hunting Grounds, the Carte d'Etat Major and the map of France type 1900, this category corresponds to the Seine and its tributaries as well as to the navigable canals and main bodies of water (lakes and ponds of châteaux). Over the period covered by these three maps, this network remained virtually unchanged. The large-scale works carried out in the middle of the 19th century to improve river navigation are, in fact, not visible at the 1:50,000 scale. Further, because of the publication date of the last sheets of the Map of the King's Hunting Grounds (Paris, Saint-Denis under the reign of Napoleon I) they already include the Ourcq and Saint-Denis canals.

The network does, however, show a certain degree of development on the sheets of the IGN map of 1950, 1960. To illustrate this, the port installations and various bodies of water resulting mostly from sand and gravel quarrying activities have been added to the hydrographic network.

### *Major infrastructure*

The major communication infrastructure corresponds to the railroads, aerodromes, motorways and expressways. The railroad developed considerably after the sheets of the Carte d'Etat Major were first published. This network, which did not exist in 1932 does not appear on this map and, thus, only appears for the first time on the map of France type 1900: all the rail axes including at least one track were grouped together under a single key heading, along with their associated buildings and domains.

The motorways and expressways built over time from the middle of the 19th century on correspond to all the roadways indicated on the IGN map as having two separate carriageways. They include the motorway network and expressways.

Lastly, the aerodrome and airport zones are also noted.

### *Surface areas*

In addition to the cartography, the results of the analysis are presented in the form of two numerical tables which make it possible to compare the successive situations by key heading. For convenience, the area not built-up or urbanised, or occupied by woodlands, or by infrastructural works has been labelled agricultural or uncultivated. It being clearly understood that having been obtained by ignoring surfaces calculated separately elsewhere, this area could cover a broader reality, including gardens, pathways, quarries, etc.

A first reading of the second table reveals the significant changes that occurred in the region in the first half of the 20th century: the surface of the built-up area almost tripled (after having doubled during the 19th century), primarily at the expense of agricultural and uncultivated lands, but also of woods (the interplay of creation and disappearance meant that the total wooded surface area had changed very little since the beginning of the century; the difference is much more marked for the period 1900 - 1960, over a smaller area, as shown on the first table. The surface area occupied by water increased appreciably, due in large measure to the opening up of sand and gravel quarries in the main valleys. The railroad network, which reached its peak between the two World Wars, continued to expand through the creation

of regional express rail transit (RER) lines and of exclusive right-of-way high-speed trains, particularly in the last two decades.

The first table allows us to look back as far as the 18th century, but over a smaller surface area, centred on Versailles, and with greater disparity in the survey dates of the sheets. A sheet by sheet analysis would paint a more accurate picture of the changes from the 18th century to the present time. For Paris and its environs, the greatest caution must be exercised as the Map of the King's Hunting Grounds presents situations that cannot be accurately dated.

These overall surfaces represent a first numerical approach to the physical evolution of the heart of the region over the last two centuries. By comparing and contrasting them with other types of data from the regional geographical information system, more in-depth analyses could be made by theme (changes in urbanisation or forests by type of present-day land use for instance), or by perimeter (commune, urban area, valley, etc.).

In any event, these figures corroborate the major trends identified through the analysis of old and recent maps of the region. Their availability and the ability of modern computer tools to relate them to numerous geographically localised documents (surface covered by old maps, administrative or

statistical perimeters - number of fires for instance - land occupancy and modern communication networks, possibility of 3-D representation, etc.) give us an insight into the innumerable applications possible and open up new research directions as well as partnership opportunities with the relevant structures.

They also invite further research as a follow-up to what is today only an initial approach to a territory covering nearly 5,000 km<sup>2</sup>. More sophisticated analyses of thematic information, such as data on the evolution of urbanisation, water stretches and the road network (particularly country roads), could be interesting to carry out and would facilitate a better understanding of the different environments. Work on the minute drawings of the Carte d'Etat Major and the map of the Environs of Paris revised in 1887 would also make it possible to produce more reliable and complete comparisons.

**Carlos Gotlieb - Architect, town planner**  
**Hervé Blumenfeld - François Dugény**  
**IAURIF**

Translation: Karen Marcelle

**Evolution of the main types  
of land use from  
the 18th century to the present  
on the area covered  
by the Map of the King's Hunting Grounds**

**Evolution of the main types of land use  
from the beginning of the 19th century  
to the present on the area covered  
by the map of France type 1900  
(nine 1/50,000 scale sheets centred on Paris)  
and of the Ile-de-France region**

	18th century	19th century	1900	1960	1994	19th century	1900	1960	1994
water	3 676 ha	3 721 ha	3 803 ha	4 649 ha	4 729 ha	4 802 ha	4 917 ha	6 129 ha	6 583 ha
wooded area	50 970 ha	51 496 ha	51 269 ha	47 224 ha	47 330 ha	84 981 ha	88 409 ha	87 496 ha	87 485 ha
built-up area	7 238 ha	11 174 ha	28 089 ha	80 712 ha	104 218 ha	15 138 ha	33 726 ha	94 999 ha	131 192 ha
agricultural and uncultivated area	196 356 ha	191 849 ha	175 079 ha	118 797 ha	94 062 ha	354 120 ha	327 625 ha	261 605 ha	221 289 ha
aerodrome				2 721 ha	5 373 ha			3 644 ha	6 562 ha
railroads			3 427 ha	4 137 ha	4 328 ha		4 364 ha	5 168 ha	5 930 ha
total	258 240 ha	258 240 ha	258 240 ha	258 240 ha	258 240 ha	459 041 ha	459 041 ha	459 041 ha	459 041 ha
road network			3 933 km	4 312 km	4 956 km		6 295 ha	6 597 ha	7 608 ha

# A la carte cartography with the Ile-de-France Regional GIS



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*The Atlas des Franciliens, published jointly in 1991 by the Regional Directorate of Insee (the French national statistical and economic research institute) and Jaurif, presents the results of the 1990 census in several hundreds of maps. The above document shows the role played by new towns in housing new Ile-de-France residents in the outer belt between 1975 and 1990.*

*Source: Insee (RSP 1990)*

*Processing and cartography: Jaurif*

## The day of the digital map has come...

Most maps, in all fields, are today made by computer. These 'digital' maps differ in many ways from their glorious ancestors of the previous centuries and even from their big sisters of just twenty years ago.

### New content

Old maps were originally instruments of power, used for military or taxation purposes. Later, the first planning maps appeared: forest inventory maps (for the war fleet), maps of post houses and roads. Simultaneously, itinerary maps were developed for pilgrims and merchants.

Of course, all of these needs are still met by the maps of today. But contemporary society has many other needs and modern technologies make it possible to produce and circulate a prodigious number and variety of maps, some destined for the general public and others tailored to suit the needs of narrow specialist circles.

Old maps provided detailed descriptions of a very physical reality, composed essentially of topographical elements (roads, rivers, bridges and buildings). Modern maps broaden the scope and display all the information about a territory. They present statistical data, describe various phenomena and highlight developments and change.



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*Cartography of the hourly concentration fields of  $\text{NO}_2$  background pollution in Paris at the end of the morning of 30 September 1997 (level 3 having been attained, the decision was announced to allow only vehicles with odd numbers on the road the following day).*

*Data source: Airparif*

*Processing and cartography: Letieff Jaurif*

## Changing maps for a changing world

Old maps were rarely updated. They often represented the work of a lifetime or even of several generations. Partially reworked and overloaded, they were used for decades, spanning centuries, immutable, like the rivers, roads and bridges that they inventoried.

In comparison to these venerable ancestors, modern maps are like shooting stars. The most institutional ones last a few years, on condition that they are regularly updated. The most ephemeral put in five-second appearances during televised news broadcasts.

Modern maps have taken on the mission of describing the world in all its facets and of faithfully reflecting all its mutations. But they are not satisfied with that incredibly ambitious undertaking. They also want to explain, educate, and even - why ever not - anticipate and plan. The most serious of them find a home in research documents and specialised magazines. And there, they can expect to take centre stage for a few months, perhaps a few years, before being eclipsed by either more up-to-date models or ones that better reflect the trends of the moment.

### Beauty rediscovered

Old maps were veritable works of art. Finely engraved, carefully calligraphed and delicately painted in watercolour, they were very often adorned with purely decorative motifs illuminating the cartouches or scalloping the borders.

Our modern digitised maps aim to be more functional and less showy. They are not averse, however, to being thought attractive, and many are indeed. Nevertheless, their main objective is to be clear and easy to read - all do not succeed.

Digital maps often draw on the graphic styles of the contemporary period, directly taken from modern art and audiovisual communication techniques. They also conserve within their genes the faded heritage of primary school history and geography maps of the turn of the century. The intermingling of these two influences produces a hybrid style that is fairly characteristic of today's digital map.



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*Cartographic representation of road traffic flows (situation at evening peak hour) around the Ermont and Eaubonne communes in the Val d'Oise department. These flows are obtained by calculation using the general traffic forecast model devised by Jaurif.*

*Processing and cartography: Jaurif*





*Presentation of structuring commercial equipment around the urban free zones of Champagne/Chennevières in the*

**213** *Val de Marne department.  
Cartography: Taurif*

## Making maps using the Regional Geographical Information System (RGIS)

### The RGIS at the service of regional development

IAURIF's primary mission is to know Ile-de-France, to understand the processes of change at work in the region and to propose ideas, projects or actions to the elected representatives and regional authorities in charge of managing its development.

To fulfil its mission, over the years IAURIF has collected a wealth of information on Ile-de-France in all fields relevant to its area of competence: economics, demography, town and country planning and development, the environment, equipment and transport.

The Institute has also acquired powerful IT tools to improve the efficiency of its data management and processing. The Regional Geographical Information System (RGIS) was designed to collect and analyse all data related to the regional territory. The system can also be used to make maps of all kinds: some are used for building knowledge, others for analysis and understanding, while still others make proposals and offer planning solutions.



*Extract from the map 'Future state - horizon 2015' of the local master plan for Marne-Nord. The spaces open to urbanisation are identified using orange (housing areas) or violet (industrial areas) hachures*

**214** *Source: The Marne-Nord local master plan  
Cartography: Taurif*



*Service area of various public transportation infrastructure in the south-east of Paris. Calculations of the population groups served, also performed by the software, complement this cartography.*

**214** *Source: Taurif  
Processing and cartography: Taurif*

### Maps for building knowledge

The data contained in the RGIS are organised around about forty themes covering a wide variety of fields, including administrative boundaries, land use, networks, relief, environment and living conditions, equipment and socio-economic data. These data are updated as regularly as possible.

A very large number of maps are prepared using just these data: inventory maps, development maps or statistical maps. Some are designed and made with the greatest care for wide distribution. Others are simple working documents put together more summarily.

### Maps for understanding

The RGIS makes it possible to analyse in detail each of the sets of regional data it contains: extraction, sorting, statistical analyses. Data of different kinds can be correlated so as to ascertain or highlight their interdependence.

The results of these operations are often much easier to present in map form: these maps for understanding illustrate the salient points of an analysis or line of reasoning or depict graphically the components of mechanisms which mould Ile-de-France.

### Maps for building the future

Local master plans, land-use plans, green plans and traffic plans are all documents that organise the development of Ile-de-France, from the regional to the communal level, over the next ten to twenty years. Cartographic documents play a major role here, by complementing, supporting and illustrating the texts that fix the objectives and detail the principles and constraints of the planning process. These maps for making proposals or offering solutions provide a comprehensive and space-defined overview of the prescriptions contained in the documents. Used as supporting materials for reflection and consultation during the preparation phase, they continue to play a vital role throughout the implementation stage.



*Comprehensive representation of the land-use plans of a group of communes in the Bièvre valley. The colours attributed to the zones and sectors of the land-use plan are derived from the occupancy defined in the regulations.*

**215** *Source: DDE 78, 91 and 92  
Processing and cartography: Taurif*



*Evolution of land use between 1982 and 1994 in the Saint-Quentin en Yvelines sector. The zones in which land use remained unchanged over the period are mapped in softened colours, while those whose land use has changed are illustrated in bright colours with a black contour.*

**215** *Source: Taurif  
(MOS 1982 and 1994)  
Cartography: Taurif*

Michel Hénin / IAURIF

Translation: Karen Marcelle

# IGN Databases

Faithful to its mission as the main cartographic facility for the national territory (Decree 81.505 of 12 May 1981), over more than fifteen years, the National Geographic Institute (IGN) has undertaken the building and maintenance of localised databases with a national scope: BD ALTI®, BD TOPO®, BD CARTO®, etc.

Closely associated, in its field of competence, with European road database projects, IGN also capitalises on its resources to support specific projects. It has, thus, built up unique expertise at the national level in responsiveness and analysis of the expectations and needs of the geographical information market. Along the way, IGN has accumulated a true heritage. It now stores in its databases, in an easily accessible and retrievable form, geographical information on the national territory that can be used for a multiplicity of applications. This is true at various scales and for different types of information.

Although it is an established fact that GISs are used mainly for territorial management purposes, the increased power and, above all, availability and ease of use of these computer systems in recent years has diversified the applications of geographical data. Responsiveness, a reliable collection of data and benchmark technical performance are three of IGN's main advantages.



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## Cartographic databases

BD CARTO® constitutes a comprehensive resource for application scales on the order of 1/100,000 thanks to its decametric precision. It is already used as a standard in the environmental and equipment fields and will soon be in agriculture.

Built up through the digitisation of IGN funds at the 1/50,000 scale and by interpretation of the SPOT images, BD CARTO® today covers the whole national territory and provides indispensable reference material for all departmental applications in several layers of information all compatible with each other: communication axes, hydrography, administrative units, land use, public facilities, etc.

The main applications of BD CARTO® are impact studies, environmental management, management of all communication axes, planning and regional development.

BD CARTO® is available throughout metropolitan France. Its updating by IGN's regional production services has been industrialised since 1995. Version 2 of BD CARTO® is also under construction. Improvements include the rethinking of the data structure for greater convenience and densification of the road network from 750,000 km to 1,200,000 km of roads.

To facilitate the creation of geographical information user panels, IGN offers special group rates. For example, each member of a group of five users pays only 35 % of the normal rate.

For multistation users and for a medium-sized department of 5,600 km<sup>2</sup>, the price of BD CARTO® goes from FF326,000 (exclusive of VAT) for the object version to FF1 53,000 (exclusive of VAT) for the DXF drawing version.



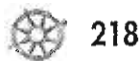
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### Altimetrical databases

BD ALTI® is composed of all the contour lines and spot heights on IGN maps, specifically digitised and organised. BD ALTI® is available in the form of a digital field model (MNT), which is a representation of the relief in the form of a regular grid.

IGN's MNTs are designed for sunlight and exposure maps, impact studies, simulations, the laying of networks and flood management. They serve, among other things, as the 'relief' layer of the BD CARTO® database.

MNTs are made available on grids with line spacing that can be specified at between 50 m and 1,000 m. By way of example, the price of an IGN MNT covering a 5,000 km<sup>2</sup> area goes from FF5,100 (exclusive of VAT) for a 1,000 m spacing to FF106,700 for a 50 m spacing.



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### Topographical databases

BD TOPO® is the most detailed database of the IGN range. It is compiled through the photogrammetric input of IGN's 1/20,000 or 1/30,000 scale aerial photographs, and complemented systematically with field surveys by IGN operators.

BD TOPO® is the reference geographical system for all applications at the level of communes or groups of communes.

Characterised by its metric precision, BD TOPO® provides the third dimension: relief and altitude of all the objects. It contains an exhaustive description of the environment, based on the 1/25,000 scale IGN map: road network, railroads, power network, hydrography, buildings and facilities, vegetation, administrative boundaries, toponymy, altimetry and orography.

BD TOPO® will cover the whole of the national territory in 2015. At present, it covers 11.3 % of the territory and 50 % of the population spread across France.

BD TOPO® is currently being updated and the first sheets are already available. Almost the entire Ile-de-France region is available.

The 'drawing' format of BD TOPO® is a DXF version of BD TOPO® designed to be immediately compatible with all personal computers and software. IGN has also prepared a reference cartographic key for the standard 1/5,000 scale and makes available paper documents in colour: the BD TOPO® plan.

To facilitate the creation of geographical information user panels, IGN offers special group rates. For example, each member of a group of four users pays only 35 % of the normal rate.

For multistation users and for a medium-sized commune of 15.3 km<sup>2</sup>, the price of BD TOPO® goes from FF31,000 (exclusive of VAT) for the object version to FF13,500 (exclusive of VAT) for the drawing version.



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### The road range

The IGN road range is specifically dedicated to the whole spectrum of road applications: on-board navigation, fleet management, planning and simulation. It comprises three products: ROUTE 120®, ROUTE 500®, and GEOROUTE®.

ROUTE 120® and ROUTE 500® are two road databases derived from BD CARTO® by using exclusive road network generalisation processes designed to preserve the basic precision of BD CARTO®. They are updated every year.

ROUTE 120® includes around 120,000 km of roads. It is used for applications at the national scale and is available for FF20,000 (exclusive of VAT) for the whole of France.

ROUTE 500® includes around 500,000 km of roads and is used for regional applications. ROUTE 500® is delivered as a standard product in files covering the whole of France or one of the six major regions. ROUTE 500® without the related administrative boundaries is available at FF75,000 (exclusive of VAT) for the whole of France.



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GEOROUTE® describes the French classified road network and all the roads of urban entities of 100,000 inhabitants or more. It is compiled using IGN 1/25,000 scale maps, the most recent aerial photographs and the BD TOPO® database. GEOROUTE® operators systematically complement these data sources by field trips. In rural areas, GEOROUTE® incorporates the data from the BD CARTO® database, while in urban areas it integrates the street network, administrative data, as well as street names, postal addresses, traffic restrictions and public facilities (hospitals, train stations, etc.). GEOROUTE® already covers the major French cities and the whole of Ile-de-France. The system is regularly updated by IGN.

GEOROUTE® is available in three versions A (navigable), B, and C (drawing), which contain a large amount of information adapted to various applications. Two types of licenses are on offer: multistation licenses for up to ten user stations or single-station licences. For example, for the City of Paris, depending on the configuration and the version, the GEOROUTE® operating licence costs between FF8,000 and FF41,000 (exclusive of VAT).

## Standard formats

All IGN data are supplied in the standard geometric forms used in France (the Lambert system) and in standard computer formats: EDIGéo for 'object' data, and DXF for 'drawing' data. IGN data are designed to serve as a reference for in-house thematic or applications information and can easily be integrated into commonly-used systems.

## Delivery

GIS providers have carved out a niche of choice in the geographical information market alongside data providers. Given the advances made in ensuring the user-friendliness of computer systems and the fall in hardware prices (it has been estimated that hardware and software acquisition now represents only 20% of the maintenance costs of an installed computer base), users are no longer prepared to spend months integrating endogenous and exogenous data, hardware and software. They want 'turnkey' solutions. GIS providers have become suppliers of localised data: numerous IGN cartographic products are now available directly from our network of correspondants, suppliers and systems integrators.

## Images

The 'threadlike' images produced by databases do not always meet the required standards in terms of ease-of-use and readability. IGN, therefore, offers image files, which serve both as clothing for the screen displayed vector bases or on printed output and as a support for the building and updating of the bases themselves. In modern computing practice, systems routinely use these files on a daily basis.

## Scanned maps

The complete range of IGN maps is available in the form of scanned image files.

IGN has scanned its maps flat (which avoids the effect caused by 'folds' in the image) at a resolution of 100 microns, with colours coded at 1 byte (216 colours). From the 1/25,000 to the 1/250,000 scale, the files of contiguous maps can be joined end to end (mosaics), which makes it possible to harmonise the images on screen.

The files are supplied on CD-ROM in the TIFF format. Depending on the map, each image represents between 20 and 100 megabytes.



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## Orthophotos

The national photo library has a very rich fund of aerial photographs. What is more, IGN covers the whole of the national territory every five years. IGN is, therefore, ideally placed to offer orthophotographs. These are geometrically conform aerial photographs. Orthophoto files can thus be perfectly integrated into information systems and are compatible with all the data already in place. IGN produces and supplies files but also offers, on demand, useful additional services such as graphic printing, clothing using contour lines or toponymy, or MNTs.

## Space products

IGN offers a complete range of satellite products: digital images, paper maps, etc.

IGN also makes available the CORINE LAND COVER thematic files, produced within a European framework by the French Environmental Institute. These files serve as a complement to the BD CARTO® database and are perfectly compatible with it.

## Consultancy


The IGN CONSEIL engineering team consists of a team of engineers specialised in geographical sciences who offer their services for all kinds of missions: business expertise and consulting in the preparation of specifications, needs analysis (specifications for the digitisation of the land register), examination of tenders, and the preparation of customised training programmes.

Patrick Malléjacq

IGN

Translation : Karen Marcelle





# *Cadastre, plot and boundary*

*As the town and country planner is well aware, the plot (or parcel of land) is inevitably the site of all concrete action that is taken on the rural or urban landscape; it is the site of practices to develop the land and manage the changes; it is indissociable from its owner. In order to recognise the plot, the planner has to turn, therefore, to cartography, which defines boundary, use and ownership. Paradoxically, such maps did not originate in land development, nor in a desire to understand an area geographically, but out of concern for equality for each citizen where taxation was concerned; what it shows is both concrete (the position of a house or a wall) and abstract (the line, on paper, joining two marks that actually exist on the land... or which have long since disappeared!).*

François Dugény

Taking action on the rural or urban landscape means coming to terms with it by first of all gaining a good understanding. Whether the operation aims to blend in with or, on the contrary, stand out against the landscape, a perfect understanding of the latter enables enlightened action, whatever the scale of the intervention. The position of the plot system in such understanding is undoubtedly important: it has been described by numerous studies in the past twenty years, which have shown up the important part it plays in the organisation, management and transformation of the landscape.<sup>(1)</sup>

## The two scales

Reading these landscapes calls for a good understanding of their structure. In the Ile-de-France, as elsewhere, the landscapes have been forged by generations of human beings.<sup>(2)</sup> The observer apprehends these spaces through their topography and the buildings or plants that are to be found on them. More subtly, he may comprehend the internal coherency they have gained in the course of history, which structures them with its lines, punctuates them with exceptional sites and weaves the underlying fabric, to which urbanisation and open spaces are added.

Therefore, in any intervention or study for development, it is important to try to bring out that underlying fabric which enables the planner to understand the area (particularly through the plot pattern, which is part of the structure of the landscape and is vital for action). This fabric explains the location and orientation of buildings, the location of the network of roads and tracks, the siting of cultural activities, the presence of architectural markers. Analysis of old maps is fundamental in seeking out this fabric - the land pattern.<sup>(3)</sup>

On another scale, working on a city centre, a district or a section of the suburbs, calls for knowledge of the ownership of plots and blocks. The plot (parcel) is 'an indication of the land's appropriation and reclamation. It forms a legal and fiscal unit (established by the land registry). Its limits, always visible on the site, are often made up of constructed, terraced or planted elements. It is more than simple lines on a plan: it has a relationship to the contours and superstructure affected by regulations covering the layout of buildings and vegetation. Moreover, it is indissociable from the appointment of rights and responsibilities concerning the use and maintenance of spaces and their landscapes.'<sup>(4)</sup>

## Evolution and breaks with evolution



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The traditional rules for the location of constructions - and also of walls, hedges etc. and buildings and vegetation in general - follow the usage that has been in existence since the dawn of time and which was set down in the civil code at the beginning of the 19th century. The structure of rural towns and villages forms a perfect hierarchy: houses, gardens, orchards or vegetable gardens, fields; it is organised into a system of squares, streets and courtyards, alleys, paths, tracks... generally in concentric form, sometimes quadrangular.<sup>(5)</sup>

(1) cf. *Les paysages d'Ile-de-France*, Cahiers de l'IAURIF n° 117-118, pp. 53-56 and 104-105, October 1997.

(2) cf. *Les paysages d'Ile-de-France*, op. cit., page 47 et seq..

(3) See *La trame foncière, grille d'analyse, armature de projet*, Cahiers de l'IAURIF n° 106, December 1993.

(4) cf. *Les paysages d'Ile-de-France*, op. cit., page 121.

(5) An orthogonal road structure is sometimes to be found when medieval towns were created ex nihilo, e.g. Villeneuve-le-Comte and Flagy in the Seine-et-Marne department.

Examination of old maps shows that this structure evolved slowly and with respect for that hierarchy and with an intrinsic understanding of the rules. As it developed, the building of single family housing also adopted those principles, which is what, even in the form of town houses, gives it its very particular attractiveness.

The same cannot be said of the operations that are suddenly imposed on that heritage. The town was never written on a fresh sheet, except when there was a determination to wipe out all traces of the past for ideological reasons: for example, the large housing estates and renovations of the 1960s-70s completely ignored not only the plot system but also the elementary rules for fitting in with the districts already there and with social practices to do with space. Together, the availability of important financial means, aimed at building up post-War France and providing it with facilities, and the certainty of architects, engineers and town planners that functionalism was the best solution, led to the disappearance in many places of the landscape pattern or, at least, made it difficult to read, without providing another structure in its place to provide coherence.

The large housing estates and infrastructural elements are not the only ones to blame. Small-scale operations following the Athens Charter (or, more prosaically, using prefabricated concrete panels), urban motorways, diversions, and also ill-adapted regulatory dispositions, rural land consolidation or the exploiting of by-roads, the quarrying of various materials, high-tension power lines, etc. are all forms of 'progress' that are today often felt as being negative. The recent realisation of the impact of such operations has led to a change in mentality and has brought about progress in legislation and practices in this field. There is once again a desire to take the existing landscape into

account, hence a need to take the plot pattern into consideration as one of the main links between the project and the land itself: such consideration is vital if a project is to be integrated into the landscape, with respect for its character and also for its users and administrators.

## The paradox of the PERDIF



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One might have thought that maps showing the plot pattern were useless at a time when the crane ruled supreme and our old centres were doomed to disappear, when infrastructure and new districts were, so to speak, parachuted into the landscape. Paradoxically, it was from 1966 onwards that work was carried out to provide one of the most useful documents the site manager had ever had at his disposal, be he engineer or town planner: the general topographical map of the Paris region, which was replaced by the general topographical map of the Ile-de-France, known as PERDIF for short (standing for 'plan topographique d'ensemble de la région Ile-de-France'). Made under the direction of the cadastral services (land registry)<sup>(6)</sup>, these plans showed relief<sup>(7)</sup>, buildings, walls and major plantations, and indicated institutional buildings and street names and, more importantly, the plot system.

The PERDIF (scale: 1 / 2,000) provided all the necessary information for the elaboration of the early outlines of development projects, for the study of variants, and for the establishment, from the 1970s onwards, of the land-use plans

(6) (7) Commissioned by the Ministère de l'Équipement et de l'Urbanisme and the Établissement public régional d'Ile-de-France. Cf., above, *Trois siècles de cartes en Ile-de-France*.

that had been made obligatory in 1967. Indeed, the scale and the type of data synthesised enabled precise preliminary work to be carried out, either before a study on the cadastral scale (1 / 1,250, 1 / 1,000 and even 1 / 500 in the areas covered by the PERDIF) or from specific surveys carried out by land surveyors.

If the urban projects carried out in the 18th and 19th centuries were based on traditions and know-how taking account of the plot pattern, the same has not been true of more recent projects: some of them have wiped out all traces of the plot pattern, others have even covered the area with paving stones, others still have cut through the ancient fabrics, leaving behind open wounds, all of which have not yet healed by a long way<sup>(8)</sup>. Yet those in charge of works had at their disposal all the necessary cartographical elements to enable them to take account of what was already there.

In the Ile-de-France, the PERDIF were no longer produced or updated from the late 1980s onwards - for financial reasons, but also because its computer design was not suitable for making it the cartographic support for the geographical data systems that were then beginning to emerge.



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Nowadays, 'town projects' are no longer designed without a plot pattern (or even infra plot pattern) approach. The use of the cadastre (land register) is indispensable in this: it forms the basis for analyses enabling dissection of what already exists, understanding of its formation, but it is also one of the bases of regulation or operational studies (land-use plan, building rights, receptivity, etc., for the former, and facilities, definition of perimeter and the processes of implementation, for the latter). Many communes, as well as certain departments, are thus endeavouring to form geographical data systems (GDS) which take the cadastre as their basis. These GDS enable them to manage their territory better: application of the regulations, building follow-through, progression of green spaces and planted areas, etc. The cartographical basis is generally provided by the cadastral services, within the framework of an agreement with the community.<sup>(9)</sup>

In practice, this basis has to be constantly revised where the commune is concerned: it is often necessary to 'tidy up' the map and update areas that are subject to a great deal of change.

Indeed, it must be remembered that the cadastral plan, which is available from French town halls, is only one of the elements of what is generally known as the cadastre.<sup>(10)</sup> Theoretically, this plan is updated each year where the copy available at the town hall is concerned: the so-called 'plan minute de conservation', at the cadastral office, is the only one that is updated as information is received.

## Updating, revising, replacing the cadastre



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The Law of 15 September 1807 lies at the origin of the French cadastral system.<sup>(11)</sup> That first cadastre, covering the whole territory, now known as the 'old cadastre' suffered from a major problem: no provision was made for updating. It was not until 1930 that the law prescribing evaluations to serve as a basis for the taxation of undeveloped property<sup>(12)</sup> raised the question of a general revision of the old cadastre followed by regular updating. A complete revision of the cadastre was only really necessary, however, in communes where it was needed as a new basis for the land tax; in the other communes, where the structure of the old cadastre was sufficient, the cadastre was simply revised, either by simply updating the old plot sheets, or, in the cases where that operation was impracticable, by renewing the sheets.

(8) Relief was shown by means of equidistant contour lines - 1 metre, or in some cases, in sectors presenting very little slope, 0.5 metres apart.

(9) Cf. chapter entitled Réhabiliter les quartiers, Cahiers de l'IAURIF n° 117-118, op. cit., in particular pp. 180-181.

Note that the Cadastral services also produce normalised cadastral plans on request; these take exactly the same form as the former PERDIF.

(10) The data available in the departmental bases is organised into structured sets of information forming 17 inter-related entities: parcel, person, tax subdivision (unit permitting the evaluation of unbuilt property), road, property divided into lots, lot, commune, building site (portion to be altered or replotted), section, building, property tax office concerned, three identifiers of land role and tariff, surveys showing boundary changes, registration of complaints and requests for information.

(11) Cf. infra.

(12) 16 April 1930

Providing he knows how to read it, the user of the cadastre therefore has a very accurate document at his disposal - the only covering the area at such a scale, and locating, identifying and describing real estate, and also those liable to the payment of property tax. The cadastre that has been revised and the sheets that have been renewed provide precious graphic indications that are not to be found on the old cadastre or on the sheets that have simply been updated: in particular, the nature of fencing, the existence of common ownership, the existence of boundary stones, the layout of electricity lines.

## 'A hundred million plots on 7,901 square myriametres'



The cadastre, which was carried out at the decision of the emperor Napoleon I on his return from Tilsit, thus came into being with the Law of 15 September 1807. In his *Mémoire de Sainte Hélène*, Las Cases reports that the cadastre, as he conceived it, could, alone, have been considered as the constitution of the Empire, i.e. the true guarantee of property and the certainty of every man's independence; for once it had been established and taxation had been set by legislation, everyone was treated fairly and no one had to fear the arbitrariness of authority, or that of the assessors, which is the most sensitive point and the surest means of forcing people into submission<sup>(13)</sup>.

Measuring more than a hundred million plots, over an area of over seven thousand nine hundred and one square myrimetres<sup>(14)</sup> [...], drawing up a plan for each commune showing those hundred million plots, classifying them

all according to the degree of soil fertility, evaluating the taxable yield of each plot; bringing together under the owner's name all the scattered plots belonging to him; calculating their total yield, hence the owner's income, and making the said income into a share which will then serve as the basis for the taxes he pays [...]; that is the aim of this operation. (Law of 15 September 1807). Unfortunately, the French cadastre, known as the 'Napoleon cadastre' or 'old cadastre', which was carried out between 1808 and 1850 in successive waves (particularly 1808-14 and 1826-40), never attained the perfection the emperor had hoped for and it suffered from the 'immutability of the plan': until the changes prescribed by the Law of 16 April 1930, only the cadastral matrices accompanying the plan were updated each year to take account of changes.

It thus took over forty years to establish a document to be used not only for taxation but also for legal purposes, as Gaudin Duke of Gaète, Minister of Finances under the Empire, explained in a letter addressed to the prefects on 10 December 1807<sup>(15)</sup>: 'Despite its imperfection, a simply survey of the lands occupied by farming<sup>(16)</sup> might almost have been enough for the determination of property tax, if it had been truly desirable to take advantage of the drawing up of the cadastre in order to recognise and set the respective limits of the various properties, in such a way as to prevent any form of contention between property owners, such as that which often arises in the country. It is certain that the plot system has that advantage, as well as being the highest degree of perfect that the cadastre can hope to attain.'

(13) Mentioned in 'Le cadastre français', op. cit.

(14) A myriametre = 10,000 metres

(15) See 'Le cadastre français', op. cit.

(16) See the 'Plans Brumaire an XI' and the intendants plans.



The Law of 1807 was also important in that it made the cadastre as a plan of the plot system obligatory, generalised, and in the interest of the population as a whole. Later, however, the communes showed little interest when it came to revising or renewing the cadastre, particularly in response to the Law of 17 March 1898, whose effects remained very limited<sup>(17)</sup>.

## Situating space in time

Space is not neutral. It is used for various purposes, it is permanent, even if it changes in the course of time. Rural and urban space is built up on itself, whilst retaining traces of earlier times; the wealth of its signs is sedimented, while some of those signs are wiped out. Even when architects and engineers have wished to abandon the heritage of the past, they have always come up against boundaries, based on roads, plot limits or on some pre-existing event in the urban or rural landscape. Unfortunately, in many such instances, the projects did not exploit the relationships they could have enjoyed with their geographical environment, near or far: continuity, articulation, visual relationships, etc. The pendulum has now swung the other way, and planners are now aware that their projects are situated in a particular moment in time. They thus make a much greater effort to understand and find out the history of the area, how the land was formed, in order to comprehend its dynamics and respect the various traces of the past. Historical and typomorphological studies therefore precede the implementation of the projects.



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(17) Except in the Seine department, where the General Council assumed all the expenses that were not covered by State grants.

If the great maps of the 18th century - that of Abbé de la Grive, the map of the King's Hunting Grounds, that of Dom Coutans - contain precious information on topography (relief, hydrography), the positioning of the roads, urban areas, parks, forests, even down to mere sheds, they give very little indication of land structure. Only the areas where land use conveys that structure through the positioning of buildings, walls (particularly in the suburbs), vineyards, orchards and market gardens (Plaine des Vernis, near Saint-Denis, for example) give a relatively clear indication of the directions and rhythm of land division.

From the 19th century onwards, the important maps - the Carte d'Etat Major (particularly at the scale of 1/10,000) were better informed, particularly where the outskirts of cities were concerned, having used the information provided by the cadastres of the Empire and Restoration periods.



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The examples of Meaux and Levallois-Perret are instructive on this account, showing the accuracy of the cadastres, the survival of the plot system that they convey, the role they played in the elaboration of the great maps<sup>(18)</sup> and their importance in understanding existing urban and architectural types and the processes that gave rise to them.

(18) See, above, Carte d'Etat-Major and Map of France of 1900.

## The Brumaire<sup>(19)</sup> plans



The cadastral surveys under Napoleon were not the only attempts to make the tax system more equitable. The Revolution obviously aimed to get rid of the inequalities arising from the fact that, for centuries, taxation had been based on descriptive registers that were only very rarely accompanied by geometric plans.

On 12 Brumaire in the year XI of the republican calendar, the consuls decided that a general cadastre would be drawn up, covering almost 2,000 communes, chosen by lot, at a rate of 2 to 8 communes per arrondissement. In order to limit the undertaking, it was decided to follow the model of the Intendancy plans, i.e. to measure only the mass of cultivated land (arable land, vineyards, woods, meadows, etc.) and to show them on a map to the scale of 1/5,000.

After five years' work, following protestation on all sides demanding a survey of the plot system, Napoleon I declared that half measures are always a waste of time and money and decided to have the land of the whole area thus surveyed immediately in all the communes of the Empire, thus bringing to an end in the Ile-de-France a quarter of a century of cadastres representing only the mass of cultivated land; indeed, almost the whole of the region had been concerned by the Intendancy plans, which followed the same principle.

## The Intendancy plans



Drawn up between 1776 and 1779, the aim of the Intendancy plans (also known as 'cadastre de Bertier de Sauvigny'<sup>(20)</sup>) was to provide administrators with the means of sharing out taxes more fairly among the parishes that fell within their competence. To avoid the risk of subjectivity in the assessment of the various situations, the administrator de Bertier the younger decided, in the absence of information on exact annual agricultural income, to have the approximate potentialities of the land of each parish systematically assessed following the same criteria. This resulted in a general survey of the parishes in the Paris généralité<sup>(21)</sup>.

Like the Brumaire plans, the Intendancy plans were not like the cadastre as we know it today: they were not interested in the plot and the individual, but in the definition of the average value of the land belonging to each parish and the general taxation rate that was to be applied. Their aim was to evaluate each parish as a whole; thus surveys were carried out on arable land in general rather than plot by plot. The surveyor had to give the total area of vineyards or pastures in the parish, but not the area of the plots belonging to Smith or Jones. This was nothing surprising in a tax system in which the king recognised as responsible representative the parish, rather than the individual<sup>(22)</sup>. A plot system would have been useless in such circumstances. The cadastral survey of the mass of agricultural land was then sufficient for tax purposes.

(19) Brumaire: second month of the French Republican calendar.

(20) Louis Bénigne de Bertier de Sauvigny, administrator of the Paris Généralité from 1776 to 1789; he had been associated with the business of the généralité through his father since 1754. (A généralité was a treasury subdivision of France.)

(21) Mireille Touzery Atlas de la Généralité de Paris au XVIII<sup>e</sup> siècle. Un paysage retrouvé, p. 14. (Comité pour l'histoire économique et financière de la France. Ministère de l'Économie et du Budget, 1995.)

(22) idem, p.16

Once the limits of each parish had been established, the surveyor then measured the area of each type of cultivation, each type of land (woodland, meadows, ploughable land, etc.) and made a report. He also made a plan of the parish. Although the latter was considered as the final accomplishment of his work, it was not indispensable for tax assessment, which was the whole aim of the undertaking. In the case of the Intendancy plans, the cadastral plan was all the less indispensable in that, as it did not show the land structures, it could not be used, either, as a land register and a means of legally recognising property, as was then the case in the Germanic countries. If the surveyor's report was sufficient for the administrator of Paris, the plan, thus redundant, was probably intended as a means of checking the said report. Its visual aspect also made it easier to understand the situation. Finally, it corresponded to the curiosity that was prevalent at that time where the landscape was concerned. [...].

Unlike the cadastral survey ordered by Napoleon and the other surveys of the plot pattern, the Bertier cadastral survey presents, in the surveyors' reports, a synthetic view of the rural landscape of the Paris region in the last quarter of the 18th century. That synthesis is visually even more perfect in the plans accompanying those reports. The various cultivated lands are shown in colour, which makes them immediately meaningful to the geographical eye, unlike the pale imperial plans or, before that, the few cadastral plans realised by Turgot when he was administrator in Limousin<sup>(23)</sup>.

(23) *idem*; p. 32, 33 and 58.

(24) *idem*, p. 33.



*These two plans of the parish of Orgerus, made within a space of under a year (on the left by L. Le Bel, October 1788; on the right by J. B. Dupré, July 1789) are very different in their outline, in the delimitation of cultivated areas and in the positioning of the roads. This affected calculations (the plan made in 1789 gives an area of 430 arpents less, which would explain the presence of two plans and two different reports).*

On the Intendancy plans, the surveyor was to indicate the names of neighbouring parishes, the scale, the direction of rivers and streams and the points of the compass. North is not necessarily at the top of the plan, its orientation being determined not by the geography of the area but by the harmonious presentation of the parish on the sheet, which was usually rectangular. Above all, the surveyor was to show all the lands belonging to the parish. This inventory, which was the very object of the undertaking, marked out the Intendancy plan, which thus became one of the first systematically thematic maps to be produced in the kingdom of France. The colours used for each type of land were determined by the administrator [...]. But his choice respected the general rules that were then applied to cartography, as is borne out by the article entitled 'Figurés' in the *Encyclopédie méthodique*, for example. Woodland was represented in dark green mixed with gamboge to imitate dead leaves; the meadows were light green; fallow land was coloured a dull green mixed with pale brown; vines were in yellow mixed with dark gamboge; ploughable land was in a light earth colour; buildings and walls were red; rivers and ponds were the colour of water; the common was in a colour appropriate to its nature, surrounded by a red line<sup>(24)</sup>.

How reliable were those plans? Mireille Touzery tells us that they appear to be almost certainly accurate where the area and perimeters of the parishes were concerned<sup>(25)</sup>, at least when the reports or plans were countersigned by representatives of the parishes<sup>(26)</sup>. The plan is certainly less reliable than the calculations included in the report, and the representation of everything that was not subject to taxation is even more unreliable: this is particularly true of the parks surrounding the châteaux, which must be treated with great caution (an obvious example is Villennes-sur-Seine).



**242** *When compared to a modern map or to the 'Carte agricole, géologique, parcellaire et statistique' drawn up in 1849 by the Comice agricole de Seine-et-Oise, the Intendancy plan of Dampierre (Senty, 1786) shows great accuracy in its lines and contours.*



**243** *The park belonging to the castle of Villennes-sur-Seine is represented in three different ways on three different maps: on the map of the Hunting Grounds (made in about 1770), the Intendancy plan of the parish ('D. Duchesne, 1786) and the plan from the atlas of the Seigniories of Villennes, Médan, Migneaux and Orgeval, commissioned by the owner Pierre Gilbert des Voisins in 1780. The first two show classical-style gardens with a number of differences. The third one, which was made before the Intendancy plan, shows a composite garden\* with several curious changes in the lines. Was the Intendancy plan completed using a copy showing the park at an earlier stage, the latter not being subject to taxation? Or does the atlas show a project that was dear to the owner but which had not yet been realised?*



**245** *This very fine plan of city, suburbs and environs of Chevreuse only shows 'the houses of the town and suburbs, without including the lands and other inheritances in the environs, because they will be included by the surveyor in the other plans of the Territory'. The trees in the woods and orchards and the Château de la Madeleine are shown in bird's-eye view, which makes the drawing quite realistic.*

## Rents and registers of landed property

Land has always been one of the essential bases of individual wealth. Gaul, like the other Roman colonies, was subject by Julius Caesar, then by Octavius Augustus, to the payment of cens (rents paid by a tenant of a piece of land to a feudal superior)<sup>(27)</sup>. This practice was continued during the Merovingian and Carolingian periods, without the appearance of any maps for fairer distribution: the registers of landed property and account books took the Roman system, based on purely empirical notions (quantity of seed used, area of forests, number of pigs that could be fattened on a given piece of land, etc.). In the Middle Ages, when plans appeared, they gave only a rough idea of the plot pattern. Sometimes the registers of landed property were accompanied by plans drawn up on parchment, canvas, or even on sheepskin. Those that have come down to us certainly have real artistic value, but most of them are nothing more than simple sketches<sup>(28)</sup>.

(25) *idem*, p. 126.

(26) To get a general idea of the Intendancy plans, the reader may also like to consult a work on Bertier de Sauvigny's cadastral surveys entitled *Paysages d'Yvelines à la fin du XVIIIe siècle* by Jean-Joseph Milhiet; foreword by A. Ramière de Fortanier. This work was published in 1996 by the Yvelines Departmental Archives. It is complementary to the work by Mireille Touzery.

(27) See 'Le cadastre français', *op. cit.*

(28) *idem*.



**246** *The plan of Crécy-en-Brie, published in 1778 by Le Rouge, one of the great publishers of 'patterns' for gardens (the first copy appeared in 1776), is very similar to the plan made by Didier fifteen years earlier. Careful examination shows changes in the design of certain gardens, the main difference being the creation of the tree-lined mall on the outside of the third line of medieval walls. Le Rouge explicitly refers to the plan by Didier, but without indicating the date (1763). The latter is apparently in the form of a register of landed property 'made upon the order of our lords of the Audit Chamber' by Didier who was at that time 'royal surveyor at Sermigny-l'Évêque'.*

In the 17th and, more especially, the 18th century many plans of towns or seigniorial or religious property appeared. They are usually plans of landed property, plans of seigniories and surveys of the lands belonging to churches or abbeys, sometimes presented in the form of an atlas.

All these large-scale manuscript plans are plans of landed property, particular and therefore fragmentary, carried out at a time when there was not, as yet, any national body for the production of maps. The plots, whether containing buildings or farmland, are almost always numbered and their area is often mentioned (in arpents or perches), as is even the name of the owner or tenant. Sometimes, but more rarely, the nature of their use (garden, coppice, vineyard, clover field...) is indicated by a colour or a stencilled sign, e.g. for vines, fruit trees etc. But there is rarely a key in the margin giving a definition. Buildings are always indicated in red.

In principle, these plans therefore enable us to piece together the old plot pattern. But however precise they may be, there still remains the problem of accuracy. When we have several successive plans for the same area, it is easy to compare them, but that is rarely the case and, when it is, it often becomes clear that one of them served as a model for the others. Furthermore, if we are to make use of these plans, they must be brought to the same scale, i.e. that of modern plans showing the plot pattern.

Apart from their beauty, these documents therefore possess qualities that make them precious elements which must be taken into account in studies of the areas they concern. It is important, however, to take all the necessary precautions where accuracy and dating are concerned.

François Dugeny  
IAURIF

Translation: Mary Pardoe



An aerial photograph of a rural landscape. In the foreground, there is a large, rectangular field with distinct, parallel furrows, suggesting it has been recently plowed or is a prepared agricultural field. Above the field, a cluster of buildings forms a village or town, with various rooflines and structures visible. The background shows rolling hills and more distant fields under a clear sky.

# *The town planner in his time*

In the continuum that is the evolution of human societies, the vibrations, from molecule to molecule, reverberate over such long distances that it is impossible to grasp the full significance of any single moment of development without looking further back than the immediate past.

Marc Bloch <sup>(1)</sup>

*In this short text taken from the work *Caractères originaux de l'histoire rurale française* (Original characteristics of French rural history), Marc Bloch invites us to look first at the long succession of moments that contribute to the evolution of human societies in order to understand the present. He also tells us that this evolution is the result of very small-scale events interacting with each other and producing effects that reach far in time. These two considerations, the long time scale and the attention that needs to be paid to the micro level, could be a good starting point from which to attempt to reconstitute the process by which the space in which we live today was organised.*

(1) Taken from *Caractères originaux de l'histoire rurale française*, published by A. Colin - Paris 1976, pg. 251.

Paul Checcaglini

Length of time, the succession of moments in time without focusing exclusively on 'the immediate past', which for a town planner is in fact the present, that moment which will precede the following one in which the territory will have been reshaped by his work. This succession is shown by the series of maps presented. These maps do not cover a very long period, however, hardly more than two and a half centuries, which is very short when compared to what history teaches us about other aspects of human societies<sup>(2)</sup>.

Understanding the process of conversion of a territory clearly depends on the availability and accessibility of documents showing its previous, successive states, in other words, maps. Map-making is, however, a recent profession. But in the Ile-de-France Region, we have the good fortune of being in one of the places where modern cartography developed and, thus, of having one of the longest possible series of maps available.

Having said that, the question might still be asked as to why a town planning institute would be interested in establishing a compilation of old maps as this is the sort of work usually undertaken by historians or cartographers.

The first reason lies in the fact that the concept of showing an interest in the history of a place, taking it into account, using fragments of the past as a foundation for present-day planning and maintaining 'the memory of places' has for some time now regained currency in the planning community. Its actual incorporation in project design is far less widespread, though.

(2) And, indeed, very short in comparison to the history of the societies themselves.

A second reason is that only a succession of documents could help in understanding the way in which a region's layout came into being, or in other words, in understanding the present. This knowledge is not only of historical interest, but for the town planner it is above all one of the conditions for the successful integration of his project as the latter is not just a design for but also has designs on the space it is intended to reshape.



*Maps for levying taxes  
on the produce of the land:*

**253** *Administrative map of Chambourcy.*

It must, however, be borne in mind that the succession of maps is just that and that all the maps are not prepared with the same objectives. They are drawn up at the request of contractors who have different interests in the space. As mapmaking has always been expensive and as a map gives its owner a certain power and advantage, for a long time essentially three types of maps were produced: travel maps for merchants travelling by land or sea, military maps for use by armies in conducting military operations and maps used by feudal lords and state authorities for collecting taxes levied on the produce of the land, which was for a long time the main source of wealth creation. The nature of the information put on maps was determined by trade, war, and taxes. Other types of maps, such as the map of the king's hunting grounds (La Carte des Chasses du Roi) remained an exception. In the latter case, however, such maps are also a very valuable source of information on the role of hunting under the Ancien Regime. Maps do not only succeed each other but they also complement each other. One only need consult a military map to see that the reader is given information from a specific perspective. The way in which towns are classified is particularly significant in that respect.

Today, the situation is totally different. Maps, for a long time the preserve of the military, have become extremely diversified. There are geological maps, pedological maps and hydrographical maps to name but a few. What is more, computerised geographical information systems (GISs) make it possible to produce an almost infinite variety of maps by combining geographical data in diverse ways.

In this context of cartographic profusion, what is the role of “ancient” maps for the town planner? They quite literally play a fundamental role. Indeed, they are not only tools used to identify ancient vestiges that persist today with a view to their preservation or use as starting points in ongoing development projects. Ancient maps are essential for understanding how human beings have transformed their habitat. This is because space is not divided up into functional layers, broken down as GISs would have it into housing lots, roadways, buildings, cultivated areas, utilities, etc. It is also composed of historical ‘layers’, that is, of planning programmes that succeed each other over time, each with its own underlying reasoning and each conditioned by the preceding situation.

It must also be understood that these historical ‘layers’ are the fruit of conceptual modes that last for varying lengths of time. Physical planning is not the result of a succession of separate conversion schemes, producing a linear evolution of spatial organisation. Both in terms of the nature of the transformations and their number, one can identify eras or periods that are characterised by relatively homogenous and stable human intervention over a certain time. There are also periods of hiatus, which give rise to the invention of new models.

The division by historians into prehistoric, ancient, medieval, classical, modern and, perhaps post-modern, periods does correspond to different styles of planning and development. Very little is known of the prehistoric period except from the findings of a few archaeological digs. Research can also be carried out in other parts of our planet where so-called primitive civilisations still exist so as to help us understand how our habitat has been moulded by the far distant past. Nevertheless, more traces and influences of this period than we think still persist as pointed out by Gaston Roupnel in his work *Histoire de la campagne française*. He notes that, of course, there are recent country lanes. But, make no mistake, in this countryside that seems to be criss-crossed by perishable lines and shaped by precarious characteristics, most of our country roads bear irrefutable testimony to the foundations of rural organisation. Although it is true that since G. Roupnel published those words in 1932, there have been many upheavals, particularly in the Ile-de-France Region, even today there are still many more influences of these prehistoric structures than we suspect.

Antiquity also left few traces of its physical planning and it is mainly through colonisation movements that the most striking features of its spatial organisation have come down through the ages in the form of grid patterns still perceptible in some town centres.



*During medieval times, the entire rural area was organised and, 254 in particular, the village structure.*

During medieval times, the entire rural area was organised and the village structure in particular took shape. This is still largely perceptible on ancient maps, although for lack of appropriate representation techniques, this era left no

cartographic traces. The markedly geomorphic organisation of the medieval space remains very present even today.

The classical period brings us to the time during which the first maps listed in this work were produced. Although this period has already been dealt with at some length in preceding articles it is so important that it is worth mentioning again. These maps, in particular, the *Carte des Chasses*, highlight the contribution of the classical period to spatial organisation, characterised by large rectilinear lines structuring the area at the territorial scale: forests, large aristocratic domains or royal communication routes. The maps clearly show the juxtaposition of a rural space and an aristocratic space, but they also clearly demonstrate the close connection between these two spaces. Old cross-roads of paths are taken into account in the laying out of new routes or new roads are laid along the same lines as 'old' ones. For instance, in the western section of the Paris loop where the layout of the Champs Élysées runs parallel to the old road that was the Rue Faubourg-Saint-Honoré. There are numerous examples of this kind of paralleling and one could draw up a rather long list. Note too that the classical lines remained geomorphic but on a different scale from the medieval organisation. While the medieval period closely followed the relief, in classical organisation large geographical entities were taken into account. The parks and domains of the Château de Grosbois and Château de la Grange organised the western projection of the Brie plateau. The unit formed by Les Invalides and the Ecole Militaire organised the area created as the Seine river turns southward. One could go on and on finding examples of such classical routes which structured geographic entities like terraces, small valleys and escarpments.

Lastly, it was during the second half of the 19th century when the first effects of the modern period were being felt that maps began to show what might be called the destructuring of this rural and seigneurial space, or what might be also be considered the emergence of increasing complexity in land use. Large modern communication networks were being created, first, the railroads, then, modern roads and finally, the motorways in the second half of the 20th century. At the same time, urbanisation accelerated. Plot after plot of housing encroached on former fields and the period also saw considerable diversification in the type and size of housing estates. Former parks of classical châteaux like Le Perreux, parks like Le Vesinet transformed in the 'English style', or after the second world war, under the growing influence of the automobile and American models, the development of immense, marguerite-shaped housing complexes in the outer suburbs. This was also the time of large high-rise residential estates, new towns; airports, industrial zones, ports, large commercial and sporting infrastructure, etc. In other words, all of the things that characterise the contemporary urban environment. Note, however, that the development of major urban infrastructure began in the classical period with the construction of general hospitals, in particular.



*Le Bourget air terminal  
and the Santos Dumont complex  
in Blanc Mesnil.*

Thus, what typifies today's urban territory is the result of a series of transformations, with each new intervention obeying its own logic: large housing estates facing the sun, slope, poise, backfill and clearing for motorways, zoning of housing settlements, the change of scale of new industrial facilities and all of this in different urban situations encroaching on

farm lands or extensive urban renovations as in the 15th arrondissement of Paris, the Plaine Saint-Denis or Levallois-Perret.

In order to be able 'to work' today, on an urban area that has undergone such violent transformation, one must first understand not only how the resulting space came about in socio-economic terms but also in physical terms. From that point of view, there is a certain autonomy which cannot be grasped unless one takes into account the historical succession of its structures. Today, to a certain extent, land use development no doubt involves 'reconstruction' of the territory, giving it back meaning and organising its physical structure with a long-term view. It also involves urban rehabilitation schemes. It means substituting 'deterritorialised' references like those circulated through professional magazines or the media (with the resulting inconsistencies caused by a succession of formal modes), substituting them with approaches that strongly reflect the place itself, its history and its original character and that use these criteria as a common thread guiding the individual schemes that reshape the territory over time. Perhaps what remains of our ancestral rural character in our sense of space is the idea that space has to be 'cultivated', it must be maintained and nurtured in the agricultural sense. To continue this metaphor, knowledge of the succession of previous structures is certainly an effective fertiliser.



*To work today on an area, one must first understand how it came about, both in socio-economic and physical terms.*

One of the problems facing us is the possibility of having access to this knowledge of the succession of previous states of the territory under conditions economically viable for land use development studies. It is obviously impossible for consultancy firms to undertake research of

this type for every contract that they are asked to perform. That is why, it is indispensable, vital even, for public authorities to take the initiative of establishing and making available to private consultancies a database of old maps, first of all, and, secondly, of constituting a veritable historical GIS of the territories giving easy access to anyone, anywhere, wanting information on territorial history. This GIS should also gradually be complemented by iconographic and historical data associated with the place in question. It is our hope that the work already undertaken by IAURIF on old maps of the Ile-de-France Region would serve as a starting point for a new generation of land use development tools that facilitate management of the physical heritage, or in other words, that at last facilitate sustainable management.

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