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Seeing and (Not) Being Seen : how visibility has influenced the development of Paris in the late *XVIIIth* century

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Résumé Urban architecture shows the way of life and the organization of society. Historical data and immaterial heritage go hand in hand; they could be gathered in digital humanities for transversal and multidisciplinary researches to study landscape and architecture, especially with the Geographic Information System. This collaborative tool could build a 3D dimensional representation of views where anyone could add and share documents on data base. Points of view and scenography are the principal reasons to understand architectures, especially for Claude-Nicolas Ledoux (1706-1806) who is the major architect of the Enlightenment.

1 Introduction

The GIS is one of the most interesting tools for historians to focus on disappeared buildings or roads, and the development of towns [15]. It also allows a collaborative approach to pin-point and analyze human activities. Computers and data base are able to sketch the past, stock records, and collect lots of different types of documents (archives, remains photographs, maps, paintings, engravings, etc.). The materials we have to chart Claude-Nicolas Ledoux's production for Paris are plentiful in some respects, but meagre in others. In this line of research GIS could draw the walker's gaze away to a vanished world like a video game. The study fits into a global perspective (with social meanings) about the town's history and could also provide an introductory access to knowledge enabling choices for future.

2 News tools and old data

Paris continues to be the most visited city in the world; its history is the perfect stimulus for imagination and fantasy. The revolutionary events are the most famous, and there is an enormous amount of research into this period. The city is renowned for its prestigious past and its landscape. Nevertheless, it is principally Haussmann's urban cityscapes from the nineteenth century which give us this feeling of the space. It is a mistake to imagine that famous historical events took place against the backdrop of the cityscape that we know today.

2.1 Discovering Paris with on-the-spot information

How can the city exhibit its past and memories? Today, Paris displays decorative plaques, known as *historic information furniture* (or *Pelles Starck*)³, made by the famous designer Philippe Starck and J.-C. Decaux's company, which present the principal characters, events, places, etc. The 638 bronze plates ordered in 1992 are set in the pavement of the town and a few of them have since disappeared. At the beginning, Parisians and tourists could buy a map (except for the 8th district which is the one without any plates) and walk through the roads to discover their history. The information was selected and written by historians and the texts are constrained by the shape of the plaques. This was one of the first examples, of spatial and historical data presented in the form of commemorative plates. Today lots of towns used those kind of scenography in order to convey their *genius loci*'s history. Moreover, the development of digital applications for smartphones to discover the history of places are more and more numerous.

2.2 Bequeathing knowledge : using the GIS from an environmental perspective to take care of our heritage

How did landscapes influence human beings and how did culture shape landscapes? What was Paris' landscape like in the past? What kind of buildings and cities did people live in? What role did the architect Claude-Nicolas Ledoux play in the construction of the city at the end of the *XVIIIth* century? Those questions enable a sensitive approach (aesthetic and social) to the perception of cityscapes, during a short and fruitful period for urban architecture in France. They also provide a way to consider landscapes and manners in the long and the short term. In fact, townscapes are part of our visual inheritance and shape the traditions of our collective memory. Very soon it will be possible to illustrate immaterial aspects of our heritage using computers and technology and give them a material form.

3 Paris without the Eiffel tower, before Haussmann

During the Enlightenment period the city of Paris looked very different. The town was smaller with a lot of decrepit medieval constructions in the center, and many town houses were built following the end of the Seven Years' War (1756-1763). The most eccentric buildings and the city limits, were constructed by Claude-Nicolas Ledoux, one of the most popular architects during the end of the Ancien Régime in France, known for private and public architectures. He worked for rich personalities and for the administration, built a wall "*Barrière*

3. This furniture deals with different kind of histories. It could talk about a celebrity who lived there or could be a short history of a monument, sometimes with a simple drawing by Starck which represent a view of it. It also belongs to our heritage, because these plaques were a part of Paris' identity.

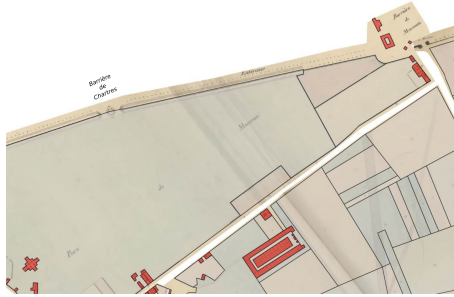


FIGURE 1. Antic doors of Monceau and Chartres, in Alpage Project Website [2]

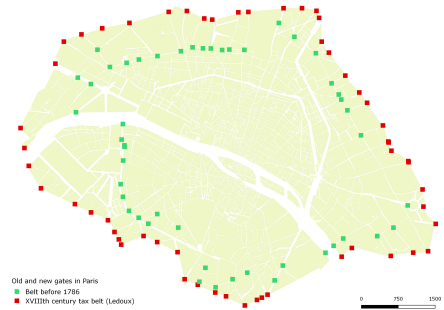


FIGURE 2. Old and new gates for belts before 1786 and since 1786

des Fermiers Généraux or *Bureaux d'octroi* known as *Propylées*, meaning antique doors which served as a customs office for goods entering the city and *follies*, in the mood of a type of architecture known as *Petite maison*, somewhere to welcome paramours, prostitutes, some constructions with gardens which were not in the center of the town, but among trees, near the countryside to spend time far away from the uproarious city in the spirit of licentiousness and property speculation. All of his buildings are known by engravings and drawings, and most of them were destroyed during the period from the French Revolution period through Haussmann's urban projects.

Claude-Nicolas Ledoux came to popularity with the decoration of the *Café militaire* (panellings), in 1762. He was an eclectic character (town planner, decorator, landscaper, theorist); he designed castles in the French countryside, church furniture, numerous town houses (construction, decoration and re-establishment), tax buildings (*Propylées* or *Mur des Fermiers Généraux*), a worker's village for the Royal Salina (Arc-et-Senans). Of course, this has all been interpreted in many scholarly studies but no one emphasized its environmental approach, except for the Royal Salina which is surrounded by the forest. On studying his work, it becomes clear that all his architectures and all the elements he planned are linked with outlying districts. Ledoux's architectures were displayed and designed in accordance with the different monuments and their surroundings. The location of buildings in the city is a determining factor and influences the architectural style and form.

The *Propylées* (Fig. 2. Tax belt), the word refers to the entrance of the Acropolis in Athens. These buildings are known for their aesthetic and their presence ([5], [6], [7]). They were destroyed between the French Revolution and the period of Haussmann. There are only four remains of it in Paris today.

How did the work of the most famous French architect of the *XVIIIth* century come to be despised and his work destroyed during the next century?

3.1 Domestic architecture and environmental design

For example, the *Thelusson's town house* (Fig. 3) was depicted in many guidebooks, drawings and engravings, as one of the most spectacular features of the city. It was an amazing construction like a temple, with a monumental triumphal arch for the main entrance with housings for the staff inside the arch. There was a monumental stable for twenty horses in a semi circular yard, a grotto, and the most famous craftsman were employed for the decoration of the rooms. All these elements were connected with two gardens, with numerous pathways—the main one was at the ground level, and a second, smaller one was below. Curious members of the public could buy a ticket to visit. Nearby this house, Mr Hosten commissioned from Ledoux a huge and ambitious project with different types of architecture called *Maisons Hosten* (shops, apartments, stables, and houses), spread around a shared garden to form an allotment. Everything is carefully thought out, especially the divisions and proportions of spaces. It was one of the first monumental examples of communal dwelling and landscaping in Paris. In this plot, the architect planned fifteen houses : the biggest one for the owner and the others for rent. The leaseholders could rent and share spaces of different sizes.



FIGURE 3. View of the Thelusson town house, model, Saline Royale, Arc-et-Senans

Those two examples fully exemplify Ledoux's thinking about architecture and landscaping. The architect cares about property and seamliness ; his buildings are innovative as well as making reference to tradition : the front of the constructions recall palace traditions in architecture and inside the building the organization of the rooms responds to the needs of contemporary living.

Comparing engravings projects and cadastral parcels, we notice that engravings are idealized to encourage the success of the publication. All such drawings

are made first for architects, builders and property promoters. Engraving projects are not a translation of a real statement, but an idealization of meanings for real estate speculation according to Claude-Nicolas Ledoux.

*Vous voulez devenir architecte, commencez par être peintre.*⁴

3.2 Critical success

Ledoux was by no means well received by Parisians at the end of the *XVIIIth* century because his patrons were major actors and symbols of the Ancien Régime. Moreover, the *Propylées*, was visual testimony of the control and design of landscapes. Ledoux's architecture was displayed and designed to accord with the different monuments and surroundings. The location is the determinant factor : it influences the architectural style and shape. Each construction is marked by monumentality. 'See and being seen' was paramount at this period : houses seem like small palaces, or public architecture. It is clear that landscape and views were very important to him. The most striking references and quotations are Italian and British, from Andrea Palladio (1508-1580) to Inigo Jones (1573-1652). Ledoux's borrowings from Antiquity are manifold and come from the excavations of Pompeii and Herculaneum, and collections like the 5th edition of the *Romae Antiquae* (1713), by Basil Kenett for example. Most of his domestic architectures were built in the north of the *Seine*, especially in the *Chaussée d'Antin* district and his keen interest in surroundings and plants is unmistakable. These neighbourhoods were not crowded at the beginning of the century, and at the middle of the *XVIIIth* century, nobility and aristocracy could buy large estates cheaply to build their private homes.

4 An historical GIS for Paris in the *XVIIIth* century

In this section, we explain how data was collected and constructed. Through 3D modeling, we studied visibilities and intervisibilities to understand how a place, which can be prestigious, or undesirable, influences its neighborhood, through an effect of attraction and repulsion.

How can this effect influence architecture, the development of points of view, the development of leisure, places of walking, town planning, speculation, tourism, etc. ?

4.1 Existing projects on Paris and gathering data

In order to compute our analysis on intervisibility networks from buildings to others buildings, with possibility to consider vegetation, the first step to our work was to collect and to build GIS data. We have to consider raster and vector data :

4. 'To be an architect, firstly be a painter', C.-N. Ledoux, 1804.

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- Rasters are images of old maps primary sources like "Plan de Paris avec les nouvelles et les anciennes barrières des fermiers généraux"⁵ or "Atlas Vasserot"⁶. This atlas, created by Philibert Vasserot between 1807 and 1821, consists in 240 sheets, gives a precise picture of Paris before the transformations of the industrial era [14] [2]. Information about built structures (inhabited and uninhabited buildings) but also vegetation (casual planted, some public and private gardens) are present in these Atlas.
 - Vector data are a geometrical interpretation of these old maps with a structured and relational database. For example, the Alpage project aims to vectorise from Vasserot cadastral plans sections of built structures as polygonal geometries and shows the network of roads as lines and polygons.



FIGURE 4. Vasserot Atlas : cadastral parcels, width of streets, buildings with rooms details, private gardens with paths, trees along streets, etc.

Since a lot of historical projects exist on Paris (Alpage project (2006-2017) [2], GeoHistoricalData (2013-2017) [10]), and are often collaborative, it was easy to start. But all these data are incomplete, so we had to draw missing data : espe-

5. available on the French National Archives website : <http://www.archives-nationales.culture.gouv.fr/>

6. available on Paris Archive website : <http://archives.paris.fr/>

cially the north part of Paris for the built structures⁷. These newly constituted data have been put on Alpage Website to enrich the project. Other data concern a digital elevation model (DEM) of Paris in 1810 [1] which buildings can be placed in 3D.

4.2 Seeing and (Not) Being Seen

Once entered, all the data were combined together and we built a 3D model of Paris before 1861. In figure 4.2, three kinds of data are superimposed (Vasserot plans, 3D buildings and DEM) from which we can compute lines of sight, visibility network and intervisibility views.

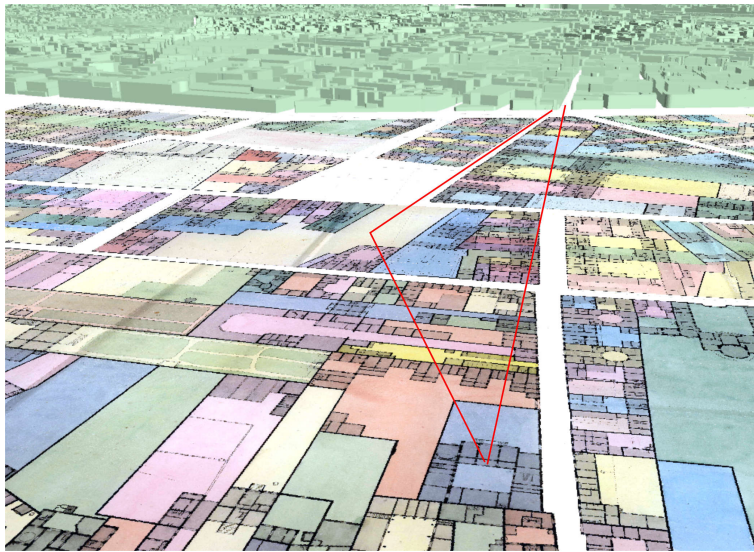


FIGURE 5. Visibility network between Thelusson, Hosten and a main street

These views highlight several types of effects :

- architectural : the architect Ledoux knew how to take advantage, in his works, of both the topography and the morphology of the neighborhood and the streets to offer the inhabitants perspectives on Paris.
- socio-economic : a building with high visibility strengthens its visual and economic appeal, while also increasing the price of plots of land and buildings nearby that have a view on it.
- urban planning : lines of sight can inform us about the main roads that were practiced, the most frequented and for what reasons. Nearby roads

7. The neighborhoods of Chaussée d’Antin, Faubourg Montmartre, Palais Royal, Faubourg Poissonnière, Tuileries have been totally drawn from a cadastral precision to a building precision.

will then become more attractive and attract more inhabitants and therefore possibly more businesses, which further strengthens the economic aspect.

These effects are relative to a phenomenon of attraction and repulsion assorted with a snowball effect : the more a place is attractive, the more the neighborhood become attractive, which reinforces the attractiveness of the first place, etc.

These intelligently placed lines of sight, of which Ledoux is certainly the precursor in urban architecture, foreshadows the Paris of Haussmann. Indeed, the construction of major axes and thus very long lines of sight, influence the neighboring activities that made Paris a city radiating through its buildings and its streets.

5 Discussion

This work is based on an up date of historical data for a new way to write History ; individual and common trajectories through the city's scenography, a better transmission of a limited fund of architectural knowledge. 3D reconstructions which illustrate the work of historians and allows them to gather and share documents and data. Mapping is the meeting point between networks and creation, the *Spatial turn* brings together Geographers and art historians' methodologies despite their opposite starting points.

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