21 Planning for inter- and intra-site data management and interpretation

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21.1 INTRODUCTION

Man, with the study of his cultural heritage, be it through his work in archives or in the field, consults and produces great quantities of documents: books, reports, photographs, drawings, etc., as well as material traces of the past. If an important effort has been made for the conservation of the material remains and the publications, this is not the case for what should be considered to be the researcher's "intellectual patrimony", or the data that are gathered and produced by him in his endeavour to record and analyse the past. Not only can this data be important to a better comprehension of the researcher's published conclusions, it can also be essential as the basis for further studies in the future, not possible, or imaginable, at present. Excavation data, well recorded today, in a formalised and exploitable form, can be one of the most important sources of future archaeological research. It is the premise of the ArchéoDATA System, not only to help promote better recording of present research, but also to conserve it in a usable form for future generations.

Advanced archaeological interpretation needs to establish inter- and intra-spatial relationships between data. If excavation and architectural data are recorded in such a way as to make them exploitable in two and three dimensional space, then it is possible to use the data recorded, wether graphical or textual, on a referential basis, with each representation or model used in reference to others. The constant use of one, unique and highly complex program, should be avoided. Not only does this eliminate the necessity of having to continually manipulate large and unwieldy data sets, it also offers, through flexibility, inherently much greater possibilities on the analytical level.

The not necessarily negative side to this is the need for very good planning beforehand and of thorough follow-up work afterwards. It is not possible to improvise lightly or change arbitrarily.

21.2 THE CHÂTEAU DE VINCENNES PROJECT

The undertaking presented here is a ten year programmed intervention, by the French Ministries of Culture and of Defence, for the refurbishing and restoration of the Château de Vincennes. This undertaking is accompanied by a historical study of the monument and an extensive architectural and archaeological research program that will include at least five years of field excavation.

The research team responsible for this study is a collective effort and is made up of researchers from the Centre National de la Recherche Scientifique, from several universities and other institutions. The armed forces, who are in charge of the Château de Vincennes, are contributing in a very original way. France still has a mandatory period of military training for every male, and the army is permitting those with the appropriate diplomas, Bachelors and Masters degrees in archaeology, architecture and some other fields, to apply to form part of the Vincennes team during a period of their stay in the army, thus making it possible for the research team to dispose of the highly trained recruits for field, restoration, and research work.

Research is also being undertaken in collaboration with several foreign institutions and during the summer months some groups will be coming to excavate in the future.

21.3 HISTORY OF THE CHÂTEAU DE VINCENNES

Even though the Château de Vincennes is now situated in what is called the "greater Paris area",

at one end of the main transversal metro line, it was far outside (Figure 21.1) of the city agglomeration in medieval times.
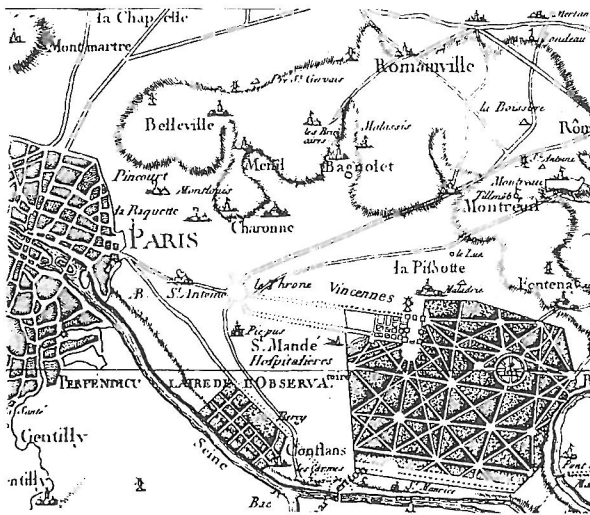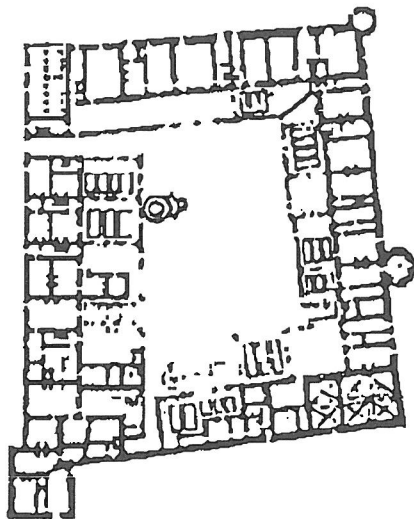

Figure 21.1

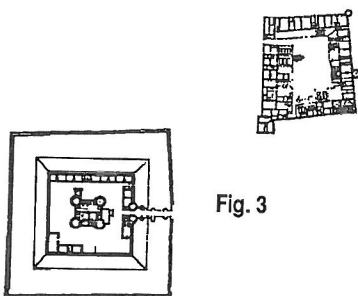Figure 21.2: The first royal construction was a manor in the twelfth century.

Fig. 3

Figure 21.3: The 1370 dungeon with the manor to the east.

The first attested mention of the site is as the Forest of Vincennes in 847, which was to become in 1037, a royal domain. The first royal presence here was probably a hunting pavilion in 1162, and it was under Philippe–Auguste that a manor was built around 1180–1190 and Vincennes became one of the court's residences, and centre of government (Figure 21.2). The Vincennes manor was fortified, some sixty meters' square, and was surrounded by some other buildings. It was quite similar to the original Château du Louvre, built slightly later by the same king.

Louis the IX, or "Saint Louis", enlarged the manor by adding a square dungeon and a chapel dedicated to Saint Martin. This chapel was to receive part of the "Relics of the Passion" bought by Louis the IX from the Emperor of Constantinople, beginning in 1237. From the death of Louis the IX and until the middle of the fourteenth century, its function as a royal residence was maintained. Of the seven kings that reigned from 1270 to 1350, two married, and four died there.

The Hundred Years war had a profound influence on the site and on the nature of the constructions. Charles the V, who was born at Vincennes in 1337, profoundly modified the original royal residence. He embarked upon the construction, about a hundred meters away from the manor, (Figure 21.3) of a huge 52 meter high (66 meters overall) dungeon[1], finished about 1370. Then, from 1370 to 1380, he reinforced the new military vocation of Vincennes by building a vast rectangular wall (Figure 21.4). This construction was
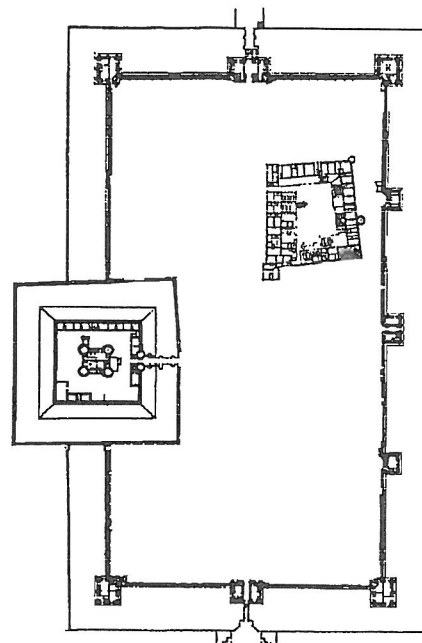

Figure 21.4: The main walls finished some ten years later.

175 by 378 meters (or some 6.6 hectares *intra–muros*), and protected all the previous buildings from attack. A moat, 22 to 26 meters wide and filled with water until the end of the seventeenth century, surrounded the new castle[2]. In 1379, at the end of Charles the V's reign, a chapel (Figure 21.5), very reminiscent of the Sainte–Chapelle on the Ile–de–la–Cité in Paris, was founded and continued by his successors François I'er (1515–1547) and Henri II (1547–1559). Dedicated in 1552, it was finished under the direction of the architect Philippe de l'Orme.

At the end of Louis the XI's reign and with François I, the royal suites were no longer in the dungeon, but in a pavilion built in the south–eastern side of the castle. After the assassination of Henri IV in 1610, Marie de Medicis rebuilt the old pavilion so as to protect the young Louis XIII, who spent much of his youth inside the castle. A covered handball court was built behind the dungeon for his amusement.

A change of architectural style at the end of the middle ages, and the naming of Mazarin as Governor of Vincennes, had a profound impact on the architecture of the Château de Vincennes. The young architect Louis Le Vau (1612–1670), who had already been responsible for redoing the first Versailles for king Louis the XIV, restructured the castle, but respected it's pre–existing monumental architecture. Le Vau delimited the southern half of the castle by building a grand *portique* and a royal courtyard (Figure 21.5) with, first the King's Pavilion built along the castle's south–western wall, and later the Queen's Pavilion along the south–eastern wall. The castle's southern wall was subsequently pierced by a series of arcades and the old Tour du Bois was partially levelled and its interior side remodelled into a triumphal gate. Even though this extensive remodelling greatly enhanced the Château de Vincennes as a royal demur, Louis the XIV's final move to Versailles in 1682, condemned its appeal as a centre of power and it was little by little abandoned by the court. It was only after his death in 1715, and at his behest, that Louis XV and the court took up residence for the last time at Vincennes, from the 9th of September, to the end of the year. Having lost any precise function, the buildings at Vincennes were afterwards destined for diverse uses.

After the French Revolution, the army was given charge of the castle by the Directoire in

1796, as the Arsenal of Paris. The main architectural changes were the partial levelling of practically all the towers between 1808 and 1820, except that of La Tour du Village, and the construction
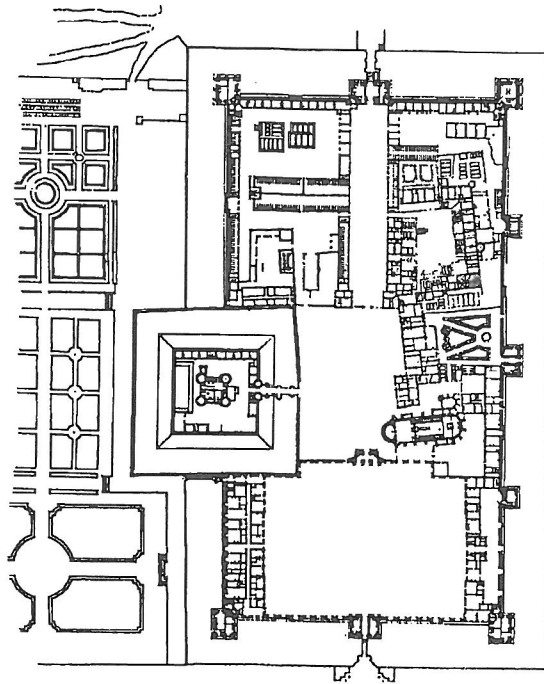
Figure 21.5: The sixteenth century chapel and the King's and Queen's Pavilions built in the middle of the seventeenth century by LeVau for Louis the XIV.
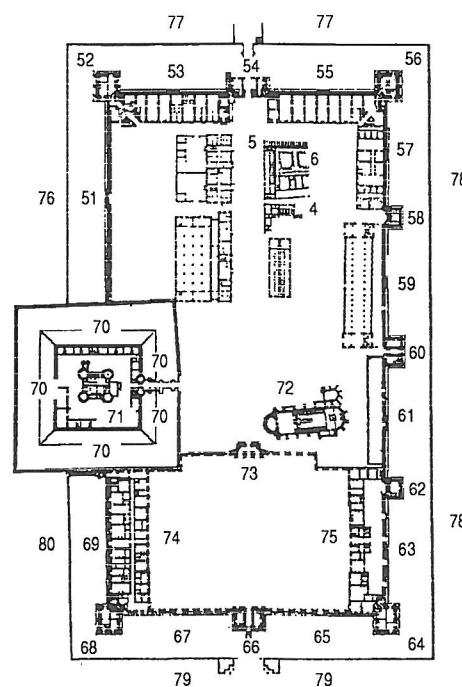
Figure 21.6: The present day castle and the different Zones used to record the castles architecture and for excavation work.

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1   As it appears today, the dungeon is the largest structure of its kind in Europe.

2   It is estimated that about a thousand people worked on the site during this period to build the castle.
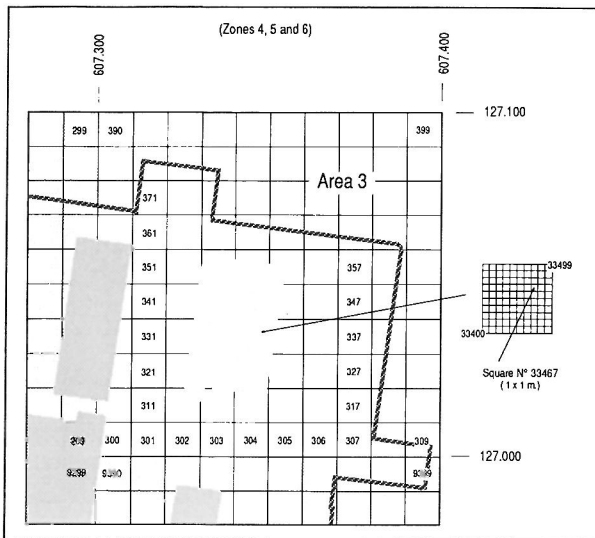
Figure 21.7: The geographically based ArchéoDATA grid for the first stage of the excavations at the Château Vincennes.

of several barracks in the northern half of the castle. Many of the military buildings have disappeared in its present configuration (Figure 21.6) and even these will be further reduced by the end of the inter–ministerial project.

21.4 GENERAL RECORDING AT THE SITE

The recording system utilised for the castle site, and for all the other research work done for the project in the region, is based directly on the terrestrial geographical co–ordinates (kilometric) and without any intermediary system. In this manner all data is recorded in a spatially compatible manner and available at whatever scale is required for the analysis or study at hand.

The underlying geographical grid is used by the excavation as its own (Figure 21.7), and in this way, it is no longer necessary, either to chose a particular configuration or orientation, a process that is rarely adequate after a certain period of excavation. The analytical grid system for excavation work is, at each stage, basically divided into three stages:

- The square meter for simple concentrations and to indicate the occasional occurrence.
- The half–square meter, which slightly refines the definition by multiplying, the previous observations by four.
- The 10 by 10 centimetre grid, multiplies the precision and raises to one hundred the level of analysis available.

Any smaller scale of analysis can only be considered viable for very specific areas, and is not considered generally necessary at present for an extensive medieval site. Without any doubt the use of a smaller scale would be of great interest on complex prehistoric excavations.

For architectural uses, the scales are upwardly revised, so as to take into account the inherent factor of size:

- The upper scale will become the 10 by 10 square meter grid for approximate positioning.
- The two other scales at present considered viable are the meter and half meter scales, as anything smaller is smaller than the subject of the analysis.

General geographical spatial analysis for inter–site analysis will again upwardly revise the scale to:

- The upper scale is the square kilometre for location purposes. This is important as the project takes directly into account sites in the Eastern part of the greater Parisian region as well as monuments in central Paris.
- The two other scales are the 100 by 100 meter, and 10 by 10 meter grids for pinpointing data.

By structuring our archaeological interventions in this manner it is possible to generate data sets that are immediately exploitable through raster and vector oriented Geographical Information Systems[3], one of the goals of the ArchéoDATA System.

Excavation work is carried out in Zones (numbers 1 to 49) using the Stratigraphic Unit method, later being grouped by features and structures. Recording by Artificial Unit, three dimensionally in the metric system, is directly interfaced by the system when needed. The use of Archaeological Units (AU) will be extensively used as the basis for analysing and structuring related data, such as WALls (MURs), FLOors (SOLs), PITs (SILos), etc. (Figure 21.8).

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3   In the last few years we have seen great interest in the archaeological community for the use of GIS programs, which analyse spatial relations. Unfortunately, most of the experiments carried out have either grossly under–used their potential, or worse, "reinvented" numerical cartography (digital mapping). In many ways this is reminiscent of the use of computer statistical packages; very little preparation, very little idea of the problems to resolve, and a lot of «let's see what happens».
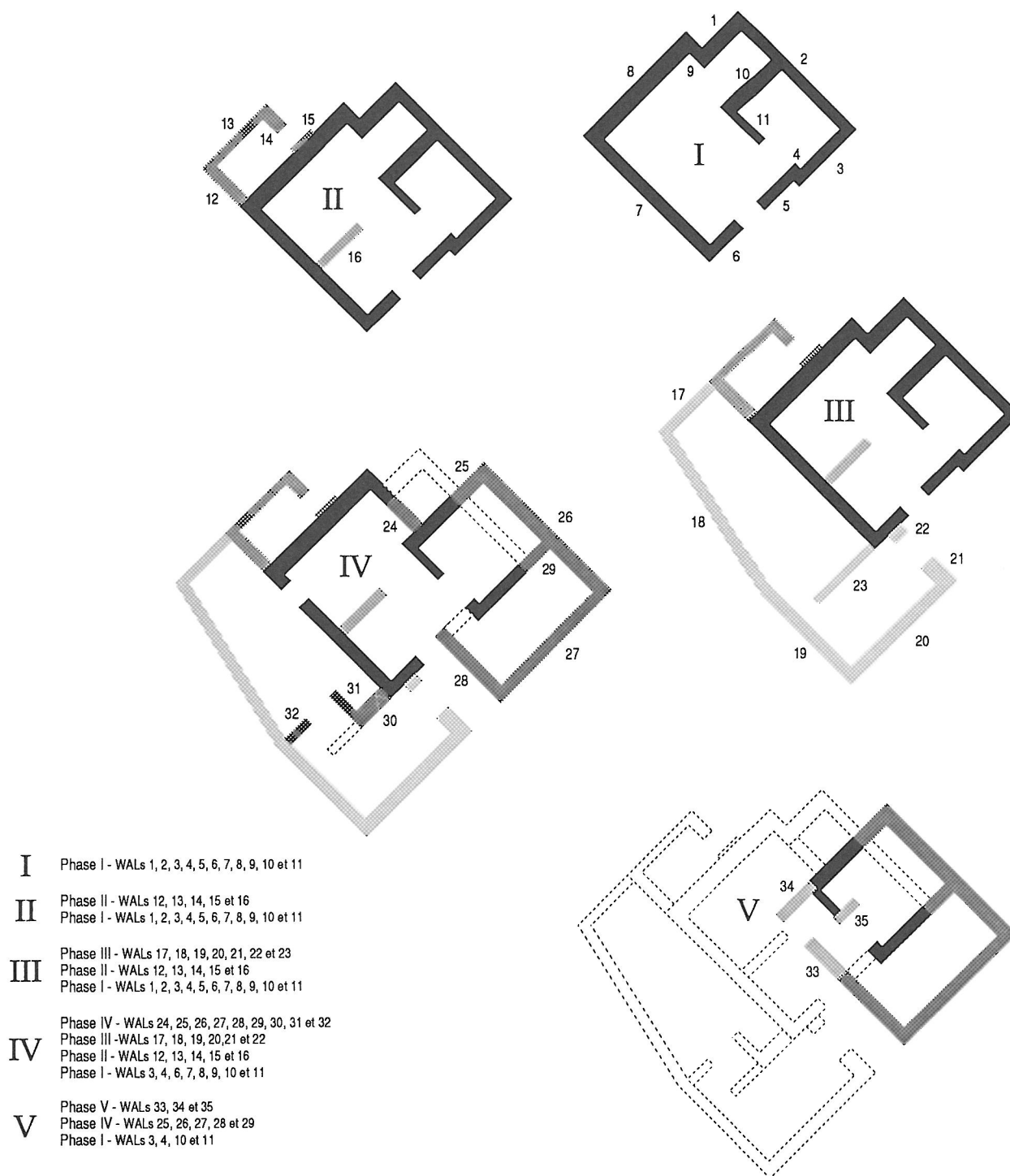
I Phase I - WALs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 et 11

II Phase II - WALs 12, 13, 14, 15 et 16
    Phase I - WALs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 et 11

III Phase III - WALs 17, 18, 19, 20, 21, 22 et 23
     Phase II - WALs 12, 13, 14, 15 et 16
     Phase I - WALs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 et 11

IV Phase IV - WALs 24, 25, 26, 27, 28, 29, 30, 31 et 32
    Phase III - WALs 17, 18, 19, 20, 21 et 22
    Phase II - WALs 12, 13, 14, 15 et 16
    Phase I - WALs 3, 4, 6, 7, 8, 9, 10 et 11

V Phase V - WALs 33, 34 et 35
   Phase IV - WALs 25, 26, 27, 28 et 29
   Phase I - WALs 3, 4, 10 et 11

Figure 21.8: Archaeological Units "WAL" by Phases in a Structure. For greater clarity, this example shows only WALls as archaeological units. A real excavation would also show, other than the expected FLOors, probably PITs, SILos, etc., and a numbering sequence that would reflect more closely common practice in the field.

21.5 ARCHITECTURAL RECORDING

One of the most challenging problems of the project has been how to record the castle's stone-wom 1370 to 1380, he reinforced the new military vocation of Vincennes by building a vast rectangular wall (Figure 21.4). This formation, and as spatially indexed entities. Development of the ArchéoDATA System had not until now focused its attention on this aspect of the archaeological
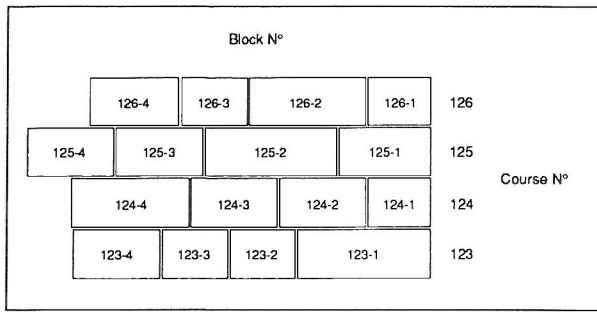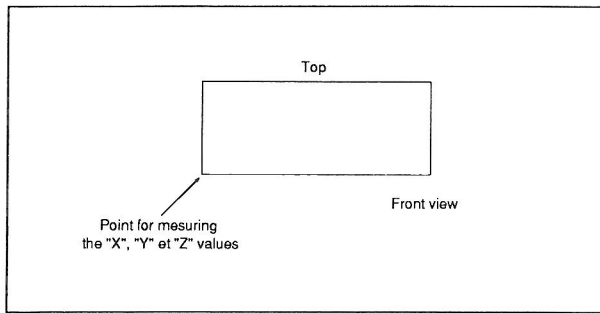
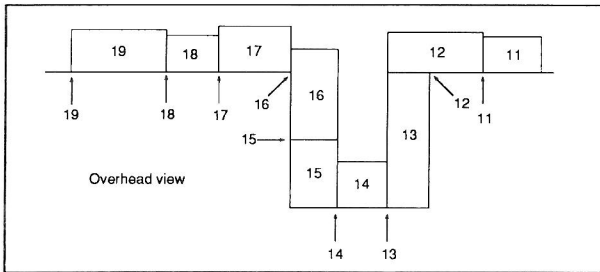*Figure 21.9*

Figure 21.10

Figure 21.11

Figure 21.12

document, although some work had been done in excavations where partially unburied ruins had been present.

The recording system used is structured directly on that used for excavation work, with the notion of Zone (Figure 21.6) as the area where the recording is being carried out, has been retained, with a total of fifty zones (51 to 99), allowed for architectural recording.

The stonework is then recorded by courses and each block receives an inventory number (Figure 21.9).
An example:

Zone N°	Course N°	Block N°
53	122	62

or
531220062

All stonework is also recorded as one point in the X, Y and Z geographical co-ordinates so that it
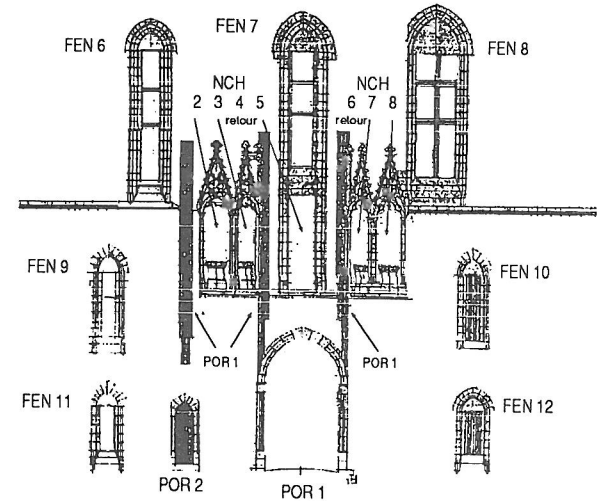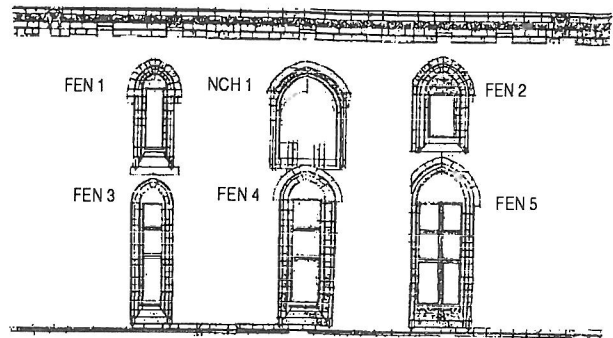
may be referenced spatially (Figures 21.10 and 21.11).

The use of Architectural Units (AU) will be extensively used as the basis for analysing related data, such as PORtes (DooRS), FENêtres (WINdows), etc. (Figures 21.12 and 21.13).

As the development stage of recording has been successfully tested manually, two small hand held computers, one using the Lotus 1 2 3 in the Hewett–Packard HP–95 LXs, are used so as to render non graphical data entry and transfer more efficient.

21.6 THE GLYPTOLOGICAL STUDY

An extensive glyptological study is expected to shed new light on what exact significance is to be attached to the marks found on the stone blocks that make up the buildings. Traditionally these have been thought to be the quarry worker's signature, to be counted for payment for the work rendered (Figure 21.14), but others have related them to medieval guilds or freemasonry. Factors such as the relationship of these marks to the types and quality of the stone and to their even-
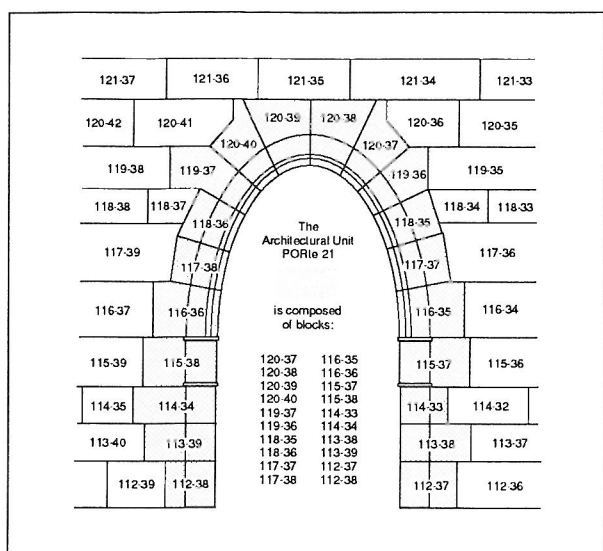
Figure 21.13: *Château de Vincennes, Tour du Village (north face). Architectural units FENêtre, PORte and NiCHe*

Figure 21.14

tual usage in one part of a building or another, have not as yet been explored. All these theses cannot be addressed and tested scientifically without being able to record and exploit spatially great quantities of data.

The work of recording the marks is being done in the period just after the cleaning, under a two and a half year contract, of the castle's stone-work[4]. At present over 20,000 stones have been recorded, comprising over 300 different marks. The total number to be recorded, including the interiors, the dungeon and the chapel, will take this figure to over a hundred thousand. The number of marks will of course not increase proportionately, but this part of the database will increase considerably as marks from other sites are included. This study will eventually permit researchers to relate the marks found here to others found on other buildings in Parisian and in the Ile–de–France region, for which there is much less documentation than for the Château de Vincennes, and for which data from here could be of great chronological value.

The use of expert systems to analyse and group different forms is well known, and although these possibilities are appreciated, it is at present too early to say whether they will eventually be used, as good deal of experience is needed for them to be properly implemented and for valid results to be obtained.

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4   About 61,000 square meters of stonework will be cleaned and recorded.
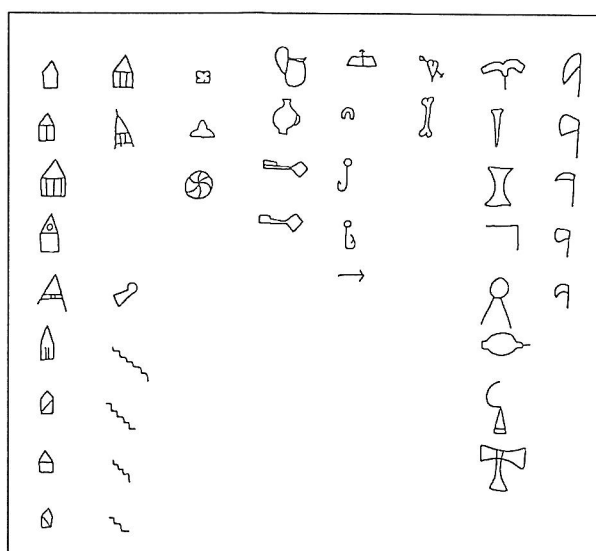
21.7 THE ARCHIVES

One of the major phases of the project is to locate and record all the documents concerning the castle and the region around it. France has had a very long tradition with regard to its archives and their conservation, so there have already been numerous textual and graphical documents found and recorded. The iconography has been one of the main areas being documented and particular attention is being given to their storage and access.

Using a normal CAD program, we are proceeding to constitute a digitised mapping system on which all the future work will be based and related. All the old plans are being digitised. This will permit that they be, collectively or individually, compared and interfaced between themselves and with what is being found as the excavation proceeds on the site.

Old engravings are an example of what is also being used to further our knowledge of the site and to complement the lack of accurate architectural plans (Figure 21.15). An example of this is the existence of a small house built against the south side of the chapel and another chapel like construction in a Gaspard Merian engraving (in Topographia Gailliæ, Amsterdam 1660) and the absence of these buildings in the Le Vau 1654 and 1658 plans. Two other engravings show how we can gain further knowledge of the site or cross reference data for more accuracy. A view done from the entrance to the dungeon of the buildings in the Saint–Chapelle area (Figure 21.16), is accu-
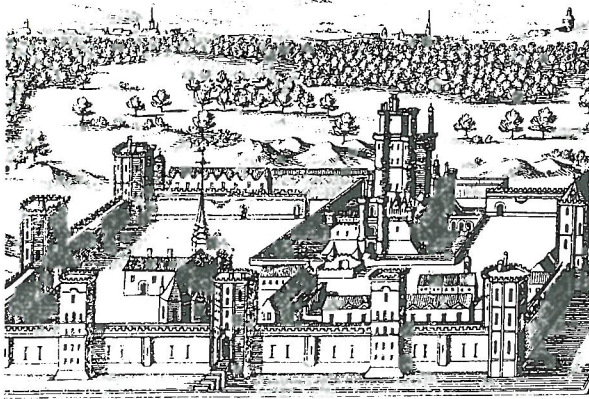
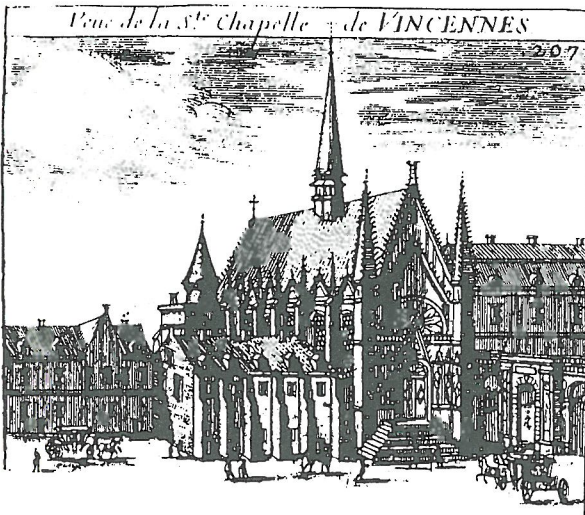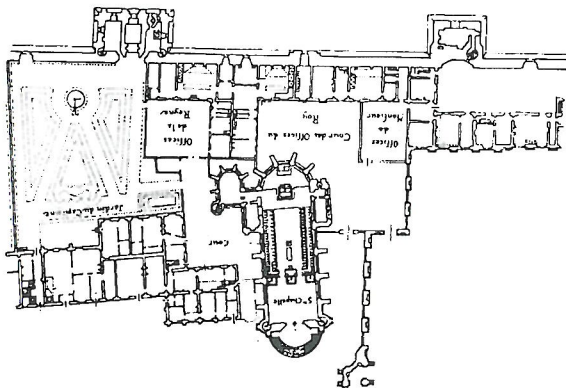Lalteel 'Royal du Bois de Vincene

Figure 21.15

rately compared to an 1670 plan by the royal draftsman Hernold. It is easy to relate a detail in the engraving of the five windows and the buttresses in the house to the left of the chapel with the plan. Another engraving, a general view of the castle (Figure 21.17) drawn from the top of the Tour du Village, gives a realistic rendition of daily life, here again contrasted with the Le Vau 1654 plan, but giving further information as to what areas are constructions, courtyards, or gardens.

Through these and many other indications, it will be possible to model the castle's, and the area's evolution, and present the results scientifically to scholars and dynamically to the public. Several multimedia projects are being considered including one for the museum to present the history of the castle through the ages and another to present the ongoing excavations and research work of the Inter–ministerial team.
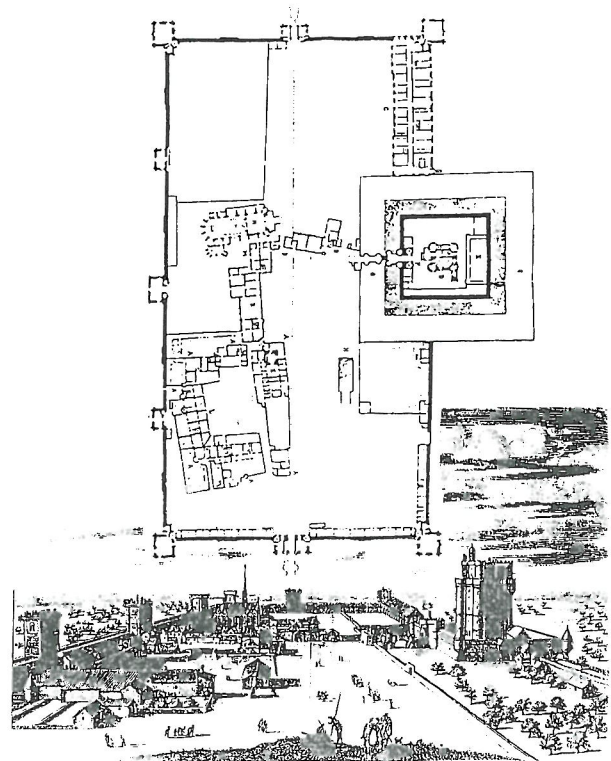

Veue de la Ste Chapelle de VINCENNES

Figure 21.16

Figure 21.17

202

21.8 CONCLUSION

With the system being used, it will not only be possible to further the studies at hand, but that in the future, the data collected during the Château de Vincennes project, will be readily available for new research work.

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