

THE CULTURAL HERITAGE PROTECTION AND MUSEALIZATION WITHOUT EXCAVATION: ACQUISITION OF NEW RESOURCES FOR ARCHAEOLOGICAL SITES

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ABSTRACT

Most of the archaeological sites, like the Roman villas and those under modern cities, can be only partially known. It is impossible to carry out the whole excavation, because of obvious economic and time reasons, what makes it advisable nowadays to use non-destructive tools for investigation to get information about the rest of the site. Such tools are mainly aerial Archaeology and Geophysical Prospectings (magnetic and electric), non-destructive techniques used not only to detect new sites but also to interpret the inner structure of those already known.

The goal of this communication is to expound the methodology that has been created to improve our knowledge about the Roman villa of Almenara de Adaja / Puras, by means of the aerial Archaeology, remote sensing and Digital Cartography. Therefore, the aerial Archaeology has permitted us to identify attached rooms, surely rural, external to the *pars urbana*. Apart from all these findings, we have to add the detection of both a likely shrine and another site, probably the preceding villa of the one already musealized. This helps us to know better what it must have been the *fundus* of the villa, its structure and attached rooms. All this new information will be unify on the basis of the Digital Cartography, in order to elaborate a thematic cartography of the *fundus* avoiding the excavation.

Therefore, the idea is to musealize what has been discovered by means of the aerial Archaeology, not being necessary to excavate the whole villa. The suitable techniques to make the non-excavated part of the villa known will be panels with information, aerial photographs, its interpretation and planimetric restitution.

1. PREFACE

The archaeologist has always aspired to dispose of some previous information about the excavation, as complete as possible, in order to make clear both the size and the quality of what has not been brought to light yet. The continuous progress of the new technologies and the undoubted price reduction in the necessary hardware and software, have made it possible to fulfil that reasonable aspiration by the application of a methodology that we knew at the beginning of our professional career, named by our Thesis tutor, prof. Giorgio Gullini, as “*approcio sistematico al territorio*”. By means of this synthetic expression Gullini wanted to make public the need to create an investigation methodology applied to the territory, which could eliminate, as much as possible, the element of chance in the finding of archaeological documents, by emphasizing the systematisation.

In general, the systematic approach pretends the recovery of the archaeological documents following a process, which can be summarised in three stages. The first one consists on the aerial surveying over the territory in question in order to identify the shape and size of the site, what has to guide the second stage of the works, that is, the intensive prospecting of the territory. This second stage will provide us with the basic elements to clarify the general chronology, the quality and the function of what has been detected; it has also to guide the third stage of the works, namely to indicate the points where the checking soundings are to be made, and at the end these will confirm the elements detected and offer more precise chronological and functional data about the identified structures.

The Roman villa of Almenara de Adaja – Puras is an ideal model for the application and development of the aforementioned methodology, since its conditions offer a wide range of possibilities thanks to the existence of a supporting topographic work in the villa and surroundings, and to the aerial

surveying over the BIC (Cultural Heritage Good) area carried out during almost a decade. It is a more simple model compared to those we have begun to approach to before, as in the case of the cities of *Uxama Argaela* or *Clunia*; the villa of Almenara, as we call it to shorten, shows less difficulties and a lower complexity level compared to the ancient city, where the layout is much more complex and the interpretation set of problems is bigger.

The results after the application of the first stage methodology have led to and baptised, in part, the title of this investigation. It is desirable that this first stage can be completed by the two following planned stages, but the qualified institutions for the investigation and the cultural heritage preservation do not always show the proper sensibility about the matter.

2. THE MODEL: THE ROMAN VILLA OF ALMENARA

The site of the Roman villa of Almenara is known mainly for the excavation of the structures belonging to the *pars urbana* and for the richness of its mosaics, restored for the musealization of the site between the years 1996 and 2003. This big project of recovery and musealization, carried out by the Exc. Diputación Provincial de Valladolid in co-operation with the University of Valladolid, culminated with the public opening of the monothematic Museum of the Roman Villas. Nonetheless, the site is much more complex than may be noticed by the visitor visiting the musealized area and through the didactic information available in the Museum, since the villa is formed by other parts, not yet excavated. During the erection of the museum building, their function began to be identified, when, due to the construction of the foundations, a sector south

of the *pars urbana* was uncovered, the function of which must probably have been rural.*

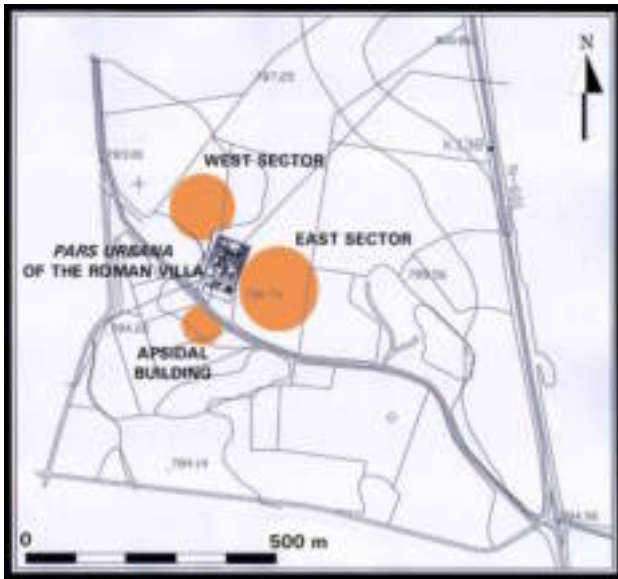


Figure 1. – Situation map of the Roman villa and evidence detection area

Along with the aforementioned evidence about its rural function brought to light by the excavation, there were proofs of constructive remains in other sectors around the *pars urbana*, thanks to superficial prospecting. These remains are situated whether east of the excavated part, where a great deal of remains can be found on the surface, as common pottery, pebbles, tile fragments, etc., or beyond the road, where similar remains can also be found.

Now then, on the one hand the surface limits of the remains belonging more than likely to another part of the villa was known, on the other hand only from the findings of the aerial archaeologist J. del Olmo was possible to understand the shape and layout of the rest of the site by means of annual surveying flights.

The aerial archaeologist J. del Olmo explained the results in different talks, one of them taking place in the Museum of the Roman Villas itself in 2004. He has also published a brief description of his findings, with aerial photographs and restitutions of the evidence, in a web page.**

From the identification and the interpretation achieved by the aerial archaeologist J. del Olmo, we can point out the following sectors, which make up the *pars urbana* (Fig. 1):

- east sector, formed by two parallel wings;
- west sector, made up of a wing at the same distance as the north one of the east side;
- south sector, where an apsidal construction has been detected beyond the road;

* The conservation state of the rooms dug out was very bad; on the one hand, because of the strong damage caused by the plough (the excavation identified neat mould-board tracks in some sectors that were specially damaged), on the other hand because the constructive technique quality in those buildings was worse, it consisted on river pebbles bound with compact soil. Its rural function was confirmed by the discovery of a great number of *dolia* fragments above all, some of them still buried, as well as storage pits.

** <http://www.geocities.com/archoea/aerea.html>.

- south complex, further from the previous remains, where a set of evidences has been noticed, what makes think about the existence of a big complex linked to the villa of La Calzadilla or to one more villa, maybe earlier.

The data furnished by the topography enabled the accurate research of the remains excavated whether in the *pars urbana* or in the *pars rustica* under the Museum during the campaigns of 1999 to 2002. These data have been taken into consideration in order to make use of them as support to obtain very precise planimetries of the evidence highlighted by means of the surveying flights.***

What we are to explain next is the work that, once begun, we have decided to tackle on our own, because we believe that it is feasible, realistic and useful. Apart from these scientific reasons, in the strict sense of the word, there is also a practical one, since we consider it would have been a waste from a scientific point of view not to take advantage of the work already begun and not to finish it. Another reason to complete the work is our special affection for this site, where we have spent long time whether in the excavation or carrying out the topographic labour. We hope the information we are going to publish can be useful for the researchers team in charge of the investigation and restoration of the site.

3. THE METHODOLOGY

We are not going to talk at length about this matter, since the applied methodology has been already explained in some other congresses, in which we have had the honour and pleasure to take part (García Merino and Gillani, 2001; Gillani and García Merino, 2002; Gillani and Roggero, 2003). We shall just outline the basic points of this method in order to justify the results that we shall explain in the planimetric interpretation processing.

The goal of our methodology is to obtain rectified images from the air oblique photographs by rectification processes based on rototranslation calculus and, as second option, on polynomial functions, depending clearly on the available topographic supporting points and on the terrain characteristics. The bigger the number of supporting points taken by total station and of corresponding points evident in the photogram and in the terrain is, the more precise the result will be. We have always predetermined an accuracy with an error not bigger than 4/5 m., so that it is smaller than the extension of an excavation trench (4 x 4 or 5 x 5 m.); it is a negligible error if we consider the big distortion of the air photograph and the scale normally used (1 : 500 and 1 : 1000).

Although the methodology used was the same, when preparing the photogrammetric mosaics to reconstitute the *opus tesellatum* pavements of Almenara *pars urbana* it was demanded an accuracy of centimetres, because it was necessary to achieve a maximum precision to overlap perfectly the different photographs making up the photogrammetric mosaic (Gillani, Manso Martín and De Pedro Pérez, 2002; Gillani, 2002).

Taking into consideration these rules, the selection of the photogram to be corrected was very important. After having revised many of them together with the flights author, it was decided to use the less oblique photograms for the rectification, and the more detailed and distorted ones as help to photointerpret the restituted ones. In this stage, we have

*** At the beginning there was a certain interest in this matter on behalf of the Museum management and the flights author himself. This interest vanished gradually, although part of the work had been already begun.

proceeded to the digital processing of the images by means of the tools included in the programmes of image processing and by the creation of specific filters, as we had the opportunity to show in the paper published in Antalya (Gillani and Roggero, 2003).

Once the photograms have been processed and rectified, the following step consisted on the rectified photograms restitution. Hence, the evidences have been turned into vectors, which have been superimposed on the existing villa plan. The outcome is a general plan of the villa situation, where the excavation planimetric information is integrated with that coming from the aerial surveying. From now on, it is possible to carry out the metrical analysis of the new noticed evidence.

4. THE EAST SECTOR

We have decided to begin to analyse and reconstitute the east sector firstly, because it is where the best-known remains are. In fact, as explains the aerial archaeologist J. del Olmo, there are two almost parallel wings, which seem to start in the villa *pars urbana*. To begin with, we shall describe the northern wing, its features and metrical module, and finally, the southern wing, closer to the Museum (Figure 7).

4.1 East Sector: North Wing

It is the best preserved of both wings. The first conclusion drawn from its restitution is that this wing is the prolongation of some structures in the north-east of the *pars urbana*, considered as the service area. Comparing photographs from different flight campaigns, three parallel traces, which start from the aforementioned service area, could be identified. To begin with the north, the first wall has been noticed only in some of the more recent photographs and is shorter than the others. The other two traces, parallel to the previous one, are those that J. del Olmo shows in his restitution published in Internet, and they go on a long way towards the east. Therefore, three parallel traces start from the excavated centre clearly, part of a buried building.



Figure 2. – East sector: north wing

Now then, if we compare these traces with what has been excavated until now in the north-east sector, that is, the service area, it can be noticed that there are four walls entering the lot beside the Museum, what means one more than the three detected traces. If we superimpose the topographic map with the dug structures on the map with the restituted traces from air photographs, can be proved that in all probability the first one (A) and the fourth one (D), that is, the one more to the north and the one more to the south, they do not seem to meet with the traces evident in the air photography.

Returning to the detected traces, the first wall (1) seems to start from a point slightly out of the covered and musealized area. As we said before, this trace has been recently identified, so that, due to the shadows projected by the building covering the villa, it is not possible to see clearly how the traces meet with the excavated area. Hence, we do not dare to assure for a certainty if the trace meets with the first wall dug out, A (unlikely) or with another situated more to the north or interrupted before reaching the service area. In any case, this trace means the wing northern limit; and after 46 m. more or less it finishes and meets the next parallel trace (2), which is the continuation of the second wall of the service area, as we said before. Whether this late trace or the third one (C), which start from the service area and have a width of ca. 0.50 / 0.55 m., continue towards the east reaching a length of 90 m. approximately. The traces can be seen near the light post very neatly, but as we approach to the *pars urbana* they vanish gradually (Figure 2).

Thus, the wing width fluctuates between 16 m. at the most (between the first (1) and the third (3) traces) and 9 m. as a minimum (between the second (2) and third (3) traces), what coincides with the springing walls beside the *pars urbana*, but for small variations of 0.50 m. Therefore, this evidence would appear as a wing wider than that restituted by J. del Olmo, thinner in its middle part approximately. We have to say also that some divisions can be seen, some of them so clearly that we could reconstitute them. We have set some others aside because they were very confusing, although interesting.

Concerning the divisions, it must be said that they can be noticed more neatly near the light post (the final part of the wing) and in the centre of the wing, where the first trace finishes. At the end, the wing narrows in a room, smaller than the others. The outcome is the existence of three possible rooms with a similar size; the eastern one seems to have half the size of the other two, the shape of which is almost square, measuring 9 m. (the wing width) x 9 / 10 m. The size of the next room is similar, and one more division can be noticed there. Other quadrangular rooms with similar dimensions may be identified in the centre of the wing. We cannot add anymore about this sector, since the northern projection is very confusing and the traces connecting with the unburied part are difficult to distinguish.

4.2 East Sector: South Wing

From the restitution of the identified tracks the southern wing of the east sector seems to be slightly shorter than the northern one. Actually, it is about 72 m. long and means the continuation of the excavated *pars rustica*, where the Museum lays nowadays. In the unburied sector two groups of joined rooms can be noticed. The southern one with the same orientation as the *pars urbana* of the villa, whereas the group more to the north, joined to the previous one, has a different orientation, as if it were more diverted. We have tried to make the wing rooms meet with the walls of those excavated in the *pars rustica*, but it was not possible, because the excavated part finishes where the Museum has been built; the tracks detected from the air photographs are beyond the expropriated lot. Hence, there is a gap in the middle, with no information, which could make us understand the connections between the part with the evidence and that already excavated, as it happens in the north wing on the contrary. The only thing to point out for a certainty is that the south wing has the same orientation as the *pars urbana* and, therefore, as the southern rural rooms. Another interesting point would be comparing the modules of the rooms detected from the air photographs and of the unburied rooms. These are about 4.5 m. long, whereas the modules detected from the aerial

surveying are between 7 and 7.5 m. long, a measure more similar to that of the north wing in the east sector.



Figure 3. – East sector: south wing

In principle, the south wing seems to be as wide as the north one, apparently with a division in two rooms. The south external wall behind the second room seems to vanish, that is, the trace is very faint. The conservation state of this wing compared to the north one is much worse, because we get the impression it has been more altered by the farming labours. It is possible that the wing constructive technique is not especially good, as proven in the excavation of the *pars rustica*, what would explain why it is in so bad condition (Figure 3).

Behind the three rooms the north limit of the wing can be traced neatly, whereas the south one disappears, hence we show it with a discontinuous line. The final part of the wing is too narrow, less than half its width when starting from the Museum area.

5. THE WEST SECTOR

The traces were identified in the last surveying campaigns. They are situated in the north-west part of the villa and in an adjacent lot to that belonging to the Diputación. The traces reach exactly the Diputación lot limit, where they disappear because it is a fallow land and the different crop growth cannot be noticed. The aspect of the detected traces is similar to that of the two east wings: two parallel walls continuing towards the west, with some divisions. Moreover, their orientation is the same as in the *pars urbana* walls and the east wings traces. Some traces that seem to go on towards the southern pond can be identified in some photographs, but since they are very confusing tracks we do not dare to reconstitute them. In any case, the pond is a limit for the construction.

The detected wing portion is about 50 m. long, and the width is 8 m. approximately. Only a division is to be seen in the middle, delimiting a room measuring 8 x 6 m. In some photographs some inner circular hollows can be identified; we do not know what they are exactly. Maybe they are tracks of storage pits or something similar.



Figure 4. – West sector wing

It is possible that this wing continues along the Diputación terrain, but unluckily we have not clues to say where they finish and above all how they meet the rest of the villa (Figure 4). It is

likely to be a separated building from the villa central body, contrary to the other two wings.

6. THE APSIDAL BUILDING

The air surveying labours are completed by the discovering of another very interesting evidence not far away from the villa. This seems an isolated building with a rectangular layout that end in an apse. In relation to the villa, it is at the other side of the site access road, at a distance of about 65 m. The building was identified in the 1997 surveying campaign; the photographs used were taken in two different year seasons: The spring ones show a different apse shape compared to the summer ones. We shall come back to this discordance later (Figure 5).

J. del Olmo points out in his work that it is “a rectangular building measuring about 12 by 20 m.”; and he also writes that one of the short sides ends in an apse and no inner divisions can be noticed. Referring to what the author states about the flights and the initial research, we have to make some remarks. Considering a certain margin of error, likely when photointerpreting oblique photographs, we have carried out some comparisons with the rest of the evidence and buildings, taking some references that could be useful to determine its size; the outcome is that the building in question seems to be smaller than stated by J. del Olmo. It would be 5 m. large approximately, according to our reckoning, and 14 m. long. J. del Olmo thinks its size would be 12 by 20 m.



Figure 5. – The apsidal building

Some divisions can be noticed, especially opposite to the apse: behind the limit wall there are two traces, with a gap between, followed by another complete one; the distance between them is minimum: a pair of meters. On the whole, this part of the building looks like a *nartex*, which marks the building entrance at its narrower side.

The apse interpretation has been a bit difficult. In the summer photographs, the apse seems to start directly from the two longitudinal walls; in the spring one, from the projectings parallel to the short side, as happens in the villa *oecus*. During the correction stage, we have worked with the spring one above all, so that we have corrected the second evidence. We do not discard any possibility, because we know how problematic to work with this material is. In any case, only the excavation, through a checking sondage, could make this area clear.

Since this paper is just an advance, to be completed by intensive prospecting works and soundings, as well as by comparative analysis with other villas provided with similar buildings, we shall just compare the modules of the apsidal building and of two more important rooms of the villa *pars urbana*: we refer to the *triclinium* and the *oecus*. In both cases, they are apsidal rooms, the first one reinforced by wide mighty strong concrete

walls, the second one by buttresses. The *triclinium* is about 12 m. long by 9 m. large, the *oecus* is ca. 15 m. long by 8.5 m. large; in both cases the apse is included.

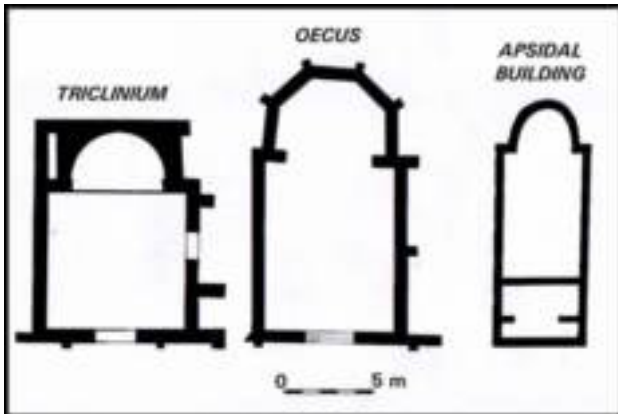


Figure 6. – Module and typology comparison among the apsidal rooms of the Roman villa of Almenara

In comparison to the two biggest rooms in the villa, we can assure that the discovered building has a similar size. The only difference can be noticed in the width, smaller than in both the rooms. Maybe, since it is an isolated building, if its short side is narrower, the building roof could be easily supported.

7. CONCLUSIONS

At the beginning of this paper we had set forth as a goal the recovering of information about the size and the quality of the rest of the Roman villa site of Almenara. Hence, the basic tool, coinciding with the first stage of the methodology of systematic approaching to the territory, was the air photography together with the processing and correction of the surveying photograms. Thanks to this strategy, the rest of the site that completes the villa residential area (or *pars urbana*) could be identified. The outcome has a double utility. The first one is above all scientific, because it will be possible to carry out a research on the aerial findings typology and function; completed by a second stage of the approach to the territory methodology, i.e., the intensive prospecting of the areas in question and the analysis of the pieces found in order to understand both the chronology and function of the detected buildings. The second utility is the documents created by us, useful to complete the information about the villa in the Museum. This strategy will permit the musealization without excavating the rest of the site. The information panels inside the musealized area and near the findings would help to transmit the site real extension, including the attached service buildings for agriculture and cattle farm (*pars rustica*), to the public. This is displayed in the Museum using an ideal model (*pars urbana*, *pars rustica* and *fundus*), but it could be exemplified by the villa of Almenara itself in its entirety instead.

At the excavation and research on the Roman countryside houses the *pars urbana* has usually had priority, because its construction is normally better and the materials more luxurious, like mosaic pavements; this is the reason why the villa residential architecture typologies are so well known, but not the farming area. Nonetheless, from the typology point of view, some villas with attached rooms are known, some of them divided in two wings, others with buildings separated from the *pars urbana*, but close to it.

Referring to Almenara villa, we can assert that the function of the identified traces is rural, except the basilica, which seems to be a shrine. All the tracks have an orientation coincident with the central body and some of them meet it, like the two east wings, for instance. This confirms that they are contemporaneous buildings, with a relationship among them, and they seem to show the same planning as the whole complex. If so, every building surrounding the central body would have a concrete function and give us information about the villa economy. The intensive prospecting of these buildings could yield some significative information about the matter.

All that we have explained here shows that the first stage of the systematic approach to the territory has just opened the doors to the labours second stage. In it the datable surface objects pickup, maybe could scrape up from the earth any other piece of information about a villa organization in the Late Roman Empire and its economy in the North Submeseta, that is, about the history of the land where it lies.

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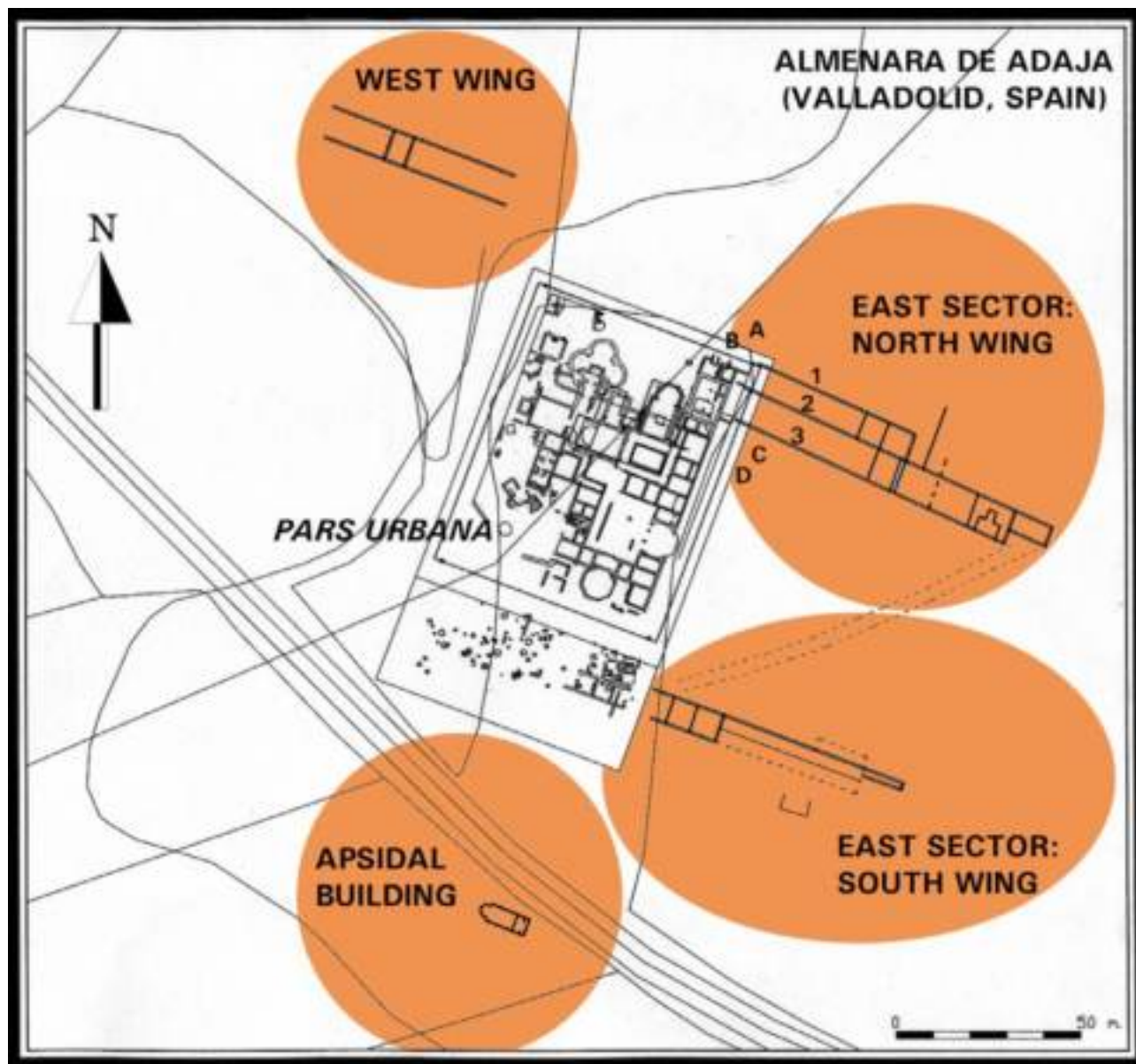


Figure 7. – General map of the Roman villa of Almenara: integration in digital cartography of the topographic information with the aerial photography evidences