Koroneia’s ‘Bishop’s Palace’

Investigating Late Antique architectural remains on the acropolis of ancient Koroneia in Central Greece

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13 June, 2012

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Acknowledgements

I would like to thank Prof. Dr. J.L. Bintliff for this research opportunity and all the help throughout the year. I would also like to thank my mentor and colleague Dr. Hanna Stöger for her input, the time she took to review separate chapters and the entire piece, and her kind and sometimes strict words of encouragement to finish this project on time. Also many thanks to Eric Dullaart who, together with Dr. Hanna Stöger, made the recording of the Bishop’s Palace possible through the field school that is part of the ArcLand project. Another person I would like to mention here is Dr. Inge Uytterhoeven, who kindly agreed to help us out with her extensive knowledge of Roman architecture, it would not have been possible to finish this thesis without your help.

Also many thanks to my fellow students and friends: Jordi Aal, Suzanne Bakker, Yannick Boswinkel, Jan-Paul Brasser, Esther Mulder, and Thomas Meurkens for helping to carefully record all of the pieces.

Thank you all for your encouragement, inspiration, and help with the material that has made it possible for me to write this thesis.

1. Introduction

This thesis will deal with a fairly impressive piece of architecture that has been found on the acropolis of the ancient town of Koroneia in the province of Boeotia located in central Greece. This feature consists of the collapsed vaulted ceiling remains of a presumably large rectangular structure. It has been dubbed the 'Bishop's Palace' by the team surveying Koroneia, but there has been no inquiry yet into what kind of building it actually was. During earlier research at Koroneia these remains were thought to have been a bath complex (Bintliff *et al.* in press, 2). This corresponded with response to a 'local' guess at the ruins' function, as the acropolis is locally called 'Loutro' which means bath. However, that thought was discarded in favour of calling it a 'Bishop's Palace' as this was a preliminary interpretation of the structure based on size and shape, and on 'local' interpretation, as no remains of implements indicating a bath complex were found.

During the August 2011 field season, a group of students was tasked with recording all the separate architectural features of the so-called 'Bishop's Palace' using mostly Total Station recordings and some differential GPS measurements. The work was part of a field school organised by Leiden University within the EU-funded project ArcLand. The recording exercise was carried out under the supervision of Dr. Hanna Stöger, whose experience with Roman architectural structures is based on studies in Roman Ostia from earlier periods. At the 'Bishop's Palace' the students took over 200 Total Station readings, as well as carefully photographing and recording of all the separate features of the ruins.

The remains have been roughly dated to the 5th or 6th century AD by architectural specialist Dr. Inge Uytterhoeven from Leuven University based on the typology of the bricks found (Bintliff *et al.* in press, 18-19). More will be explained about the dating in a later chapter. The proposed date places the building in the Late Antique or Early Byzantine period on the Greek mainland. The question remains as to what kind of building this actually was, as no earlier research has been conducted on this subject. Questions concerning the role of this building within the city of Koroneia in that time period still need to be asked and answered.

Therefore, the aim of this thesis is to shed new light on the so-called 'Bishop's Palace' based on the preliminary study carried out in August 2011. In addition, this study will examine the recording methods used during the field school and will aim at suggesting improvements to reach a best practice for the use of similar techniques in future field work campaigns.

This thesis will start with an introduction to the Ancient Cities of Boetia project of which this field work was part of. Next, the area of Koroneia will be presented to explain the wider geographical setting within which the architectural remains are located. This is followed by a brief introduction to Greece in the Late Roman period to place the so-called 'Bishop's Palace' of Koroneia within its historical context.

1.1 The Ancient Cities of Boeotia project

The Ancient Cities of Boeotia project aims to reconstruct the history of the province of Boeotia. This is a central province of the Greek mainland that is roughly diamond-shaped and is located north of Athens and south of Thessaly. The project started in 1978 and is still ongoing, focusing on field survey of selected areas within Boeotia. In 2000 the project refocused onto the large ancient cities of the province and the goal was to reconstruct the extensive history of these cities by compiling and synthesising data from earlier years. The first five years of the project consisting of the field seasons of 2000 through 2005, focused on the ancient city of Tanagra. The team tried to reconstruct the expansion, size and shrinking of the city throughout its history, and to divide the city into functional and economic zones. The team used field survey and sampling of ceramics to reach these objectives, and the archaeological results were compared to written historical sources when these were available.

In 2006 the focus of the project shifted to two large cities located between the provincial capital Levadeia and the city of Thebes, the ancient cities of Koroneia and Thespiae (Bintliff *et al*. 2009, 18). Until quite recently this research was jointly conducted by J.L. Bintliff of Leiden University and B. Slapšak of the University of Ljubljana. Now J.L. Bintliff is solely in charge of the project. The main focus of the project is still field survey; however there is also extensive use of digital recording to create a Digital Elevation Model and to take accurate recordings to be used for 3D reconstruction and better visualisation of the site.

The city (Fig. 1.1) is located on the southern shore of Lake Copaïs, a roughly 200 square kilometer sized lake, and was surrounded by ridges of mount Helicon on three sides (Bintliff *et al*. 2009, 18). This location provided the city with an extensive view over the surrounding area. Koroneia has been continuously inhabited since the archaic period; the latter is indicated by a polygonal wall found by the research team (Van

Zwienen 2008, 9). It is likely, however, that the rich land on the hill was exploited by local peoples before this period. In fact, Prehistoric sherds and lithics found indicate that the site had a prehistoric farming settlement on it.

Figure 1.1: Koroneia hill and its surrounding area. The black circle shows the location of the 'Bishop's Palace'. View from 1.44 km high. (Google Earth 2010 satellite image).

In 2006 the team started using digital recording techniques to research the density of the ceramics found; in 2007 the project started collecting samples of these ceramics (Bintliff *et al*. 2009, 18). The aim of the sampling was to compile a representative assemblage of the ceramics present in the area in order to reconstruct the industrial and economic zoning of the city. This also helps to identify the edges of the city in places where no remains of the city walls have been found. These city limits can also be determined by the location of cemeteries, which were only found outside the city walls (Bintliff *et al*. in press, 2). The sampling of ceramics has become part of the field surveying in this project, as no destructive research, like excavation, can be conducted, and only surface finds can be used to determine areas and time periods.

In 2006 the visibility and accessibility of the total area was also assessed, so an estimate could be made of the area that could be researched, and 50% of the Koroneia hill seemed to be at least reasonably accessible for field survey work (Bintliff *et al*. 2009, 18-19). The area that has been surveyed since 2007 is around 60 hectares and involves the entire hill area, the city, however, takes up only 35 hectares. The area was sub-divided into grids of 20 x 20 meters for surveying purposes to provide the best possible image of the city (Bintliff *et al*. 2009, 19).

Other foci of the project are recording and analysing architectural remains, mapping the geomorphological traits of the bedrock, and reconstructing habitation of Koroneia over several periods of time. For all of these aims the team incorporates the rural surrounding area as well as the city itself.

1.2 The Koroneia Area

Koroneia is located on the slopes of a hill at the edge of the 200 square kilometer Lake Copaïs (Fig. 1.2). The lake was drained in the 19th century by the British but before then it formed a formidable barrier for any outsiders to pass and protected the city quite well. Koroneia is located in the area Koroneiake, which is a subdivision of the province of Boeotia involving several villages. The city is located on the south shore of Lake Copaïs and is bordered on the other three sides by ridges of mount Helicon.

The city of Koroneia itself is located on a hill at an altitude of about 277 meters; the hill divides the valley of Agios Georgios into two unequal parts (Van Zwienen 2008, 11). The hill is part of the same massif as mount Helicon. Most of the natural bedrock of the hill consists of metamorphic rock and some outcrops of limestone which proved to be a valuable building material in ancient times. The rural area now constituting the ancient city has been altered by human use. Apart from the acropolis one other flat area can be identified on the hill, often indicated as being the ancient agora. A little further down the sloping side of the hill is a half round recess, which most likely was the city's ancient theater (Van Zwienen 2008, 11). The rest of the hill consists mostly of terraces, but these were usually disturbed by modern agricultural activities and most are still cultivated today.

Figure 1.2: Ancient Koroneia city hill seen from the south (Bintliff and Slapšak 2009, 18).

1.3 Central Greece in the Late Roman Period

The Late Roman period, sometimes referred to as the Early Byzantine period, runs from the fifth through the seventh century AD (Bintliff and Snodgrass 1985). The beginning of the period was marked by the fall of Rome and the moving of the capital of the Roman Empire to Constantinople. Overall this was a period of demise, where towns and cities declined and were replaced by 'shrunken towns' with an economy based on villas whose labour forces of hired or tenant workers resided in the cities (Bintliff forthcoming (a), 2). The period was followed by the Dark Ages and the Byzantine period proper, which stretched from the late seventh century AD through to 1435 AD.

Greece in the Late Roman period was unlike other areas. It seems to have enjoyed reasonable growth in the period, showing a definite flourishing of urbanism (Bintliff 2008, 1283). Between 500 and 600 AD the Greek mainland consisted mostly of a small network of Late Roman large villa estates and regional cities and villages, which were forming the basis for the subsequent Byzantine village pattern (Bintliff 2007, 654; Bintliff forthcoming (a), 2). The architectural forms and shapes in various sorts of large public buildings seem to have derived mostly from designs found in Roman architecture (Bintliff 2008, 1281).

This spread of villages, cities and large estates is confirmed by the evidence from offsite archaeology. This is the analysis of the spread of ceramics in between occupation sites, found through surface survey (Bintliff forthcoming (a), 2). Economic production in Late Antiquity seems to have centered on the wealthy landowners, with the labour force residing in the cities, instead of consisting of a dispersed rural population.

Koroneia seems to have reached its maximum size in Classical Early-Hellenistic times, and shrunk afterward (Bintliff forthcoming (a), 5). In Late Roman times the town seems to have been mostly confined to the acropolis, which was refortified with a new wall. The acropolis contains a large architectural structure among some smaller Late Antique building remains, possibly houses, and a large olive press. The press indicates that industrial activities, like in other towns, moved into the former public spaces of a community (Bintliff forthcoming (a), 5).

The so-called 'Bishop's Palace', the large architectural structure found on the Koroneian acropolis, provides us with a unique opportunity to examine whether the building fits within the temporal and cultural context of the Late Roman period of the Greek mainland. If we can determine how the building fits into the Koroneian city in this period we can gain possible insights into the power structure and the social structure present in the city. In order to be able to place the building into a timeframe and social structure we need to first reconstruct the kind of building and assess the importance of its location. Only then can further research shed light on reconstructions of social structure and power structures the building and its inhabitant were involved in.

2. Methodology

One of the most important components of any research project is the methodology. In archaeology, it is important to carefully describe the methods used in the field and during analysis of the gathered data to provide other researchers with an insight into how a certain interpretation was derived from the source data.

In the Ancient Cities of Boeotia project that Koroneia is a part of, a large team of specialists and students work together on a single project making transparency of methods and analyses even more important. The following paragraphs will explain both fieldwork methods used in the Koroneia project and the ArcLand field school, as well as describing the methods of computer analysis and interpretation of the data.

2.1 Fieldwork Methods

The Koroneia fieldwork projects consisted of a surface survey project led by Prof. Dr. John Bintliff and an architecture recording field school that was part of the ArcLand project supervised by Eric Dullaart and Dr. Hanna Stöger. Several methods were used to record the architecture found both on the Koroneia acropolis and the Frankish tower found lower down the hill. For the ‘Bishop’s Palace’ all of the recording work was done using a Sokkia Total Station set and a TopCon differential GPS.

Using multiple recording methods makes the data more precise and can help with errors found during post-processing, and the surface survey data can be combined with measurements to improve the interpretation and analysis. The differential GPS was also used to create a Digital Elevation Model (Fig. 2.1) of the Koroneia hill, under supervision of Bart Noordervliet and Janneke van Zwienen.

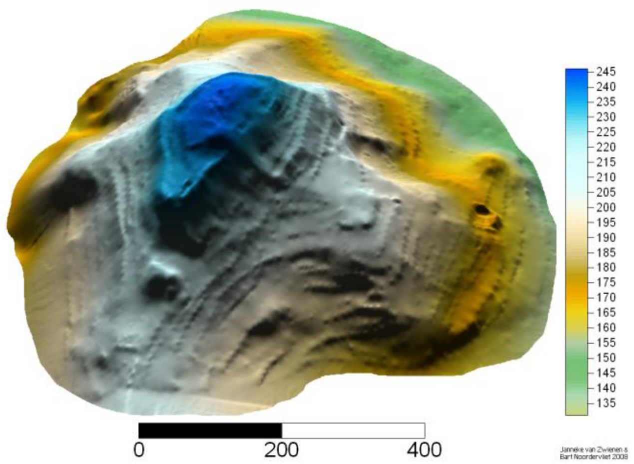

Figure 2.1: Digital Elevation Model of Koroneia hill based on DGPS recordings. (Janneke van Zwienen and Bart Noordervliet, 2008)

2.1.1 Surface Survey

Surface survey has become a staple in archaeological research, and its importance continues to grow. Many sites are only visible as scatters of remains on the surface instead of being preserved as complete architectural settings (Renfrew and Bahn 2008, 77). Through surface survey, these scatters can be recorded and analyzed by archaeologists interested in a wider reconstruction of human use of the landscape. Survey can produce results quite different from the information achieved by excavations and thus answer different, more regionally directed, research questions (Renfrew and Bahn 2008, 77). Much of the surveying is aimed at reconstructing the intensity of land use over periods of time and the distribution of human activity (Renfrew and Bahn 2008, 78). As well, surface survey is relatively cheap, fast and non-destructive, making it a tool widely used by archaeologists everywhere.

There are two methods of surveying: extensive survey and intensive survey. Extensive surveying is aimed at a larger, regional perspective and combines results of several projects over a large landscape area to show changes in the landscape, land use, and settlement (Renfrew and Bahn 2008, 79). Intensive survey focuses on a large site or a cluster of sites and covers as much terrain of this smaller area as possible (Renfrew and Bahn 2008, 79). Both intensive and extensive surveys usually involve several steps: the region is defined, then divided into a suitable grid or transects, visibility and density of the remains is determined and a representative sample of the remains is collected (Renfrew and Bahn 2008, 78; Bintliff 2000, 203). Survey also needs to take into account the offsite remains, (Renfrew and Bahn 2008, 77; Bintliff 2000, 200). Offsite remains are those remains found in scatters in between settlement sites. Usually they are debris potsherds and remains that have been carted out of a settlement as fertilizer with the rest of the waste.

The Koroneia survey started in the summer of 2007, after investigation of the possibilities of the hill for survey in 2006. The hill was gridded into roughly 20 by 20 meter squares for surveying and the exact size and positioning of the squares as well as visibility information and density counts were registered using ArcPad software and GPS (Noordervliet in Bintliff and Slapšak 2009, 31). The squares are walked by two students each, first one in a north-south direction and one in an east-west direction, while they take a count of the pottery finds in a line width of 1 meter beside them using a clicker device. After this is recorded the students walk the entire square to collect a pottery sample

(Bintliff forthcoming (b), 1).The project also uses a Differential GPS set to accurately map the slopes and elevations of the terrain, and to create a Digital Elevation Model (Van Zwienen and Noordervliet in Bintliff and Slapšak 2009, 33).

The survey of the city and the collection of a representative sample were completed in the summer of 2011 (Bintliff forthcoming, 5). A total of just over 900 grid-units were surveyed over the course of five summer seasons, as can be seen from figure 2.2; this figure shows the grids divided into the various field seasons. The acropolis, where the 'Bishop's Palace' is located, was among one of the first parts of the hill to be gridded and surveyed in 2007. Finds collected during the survey projects have not yet all been analyzed, however a preliminary division into zones has been created, for this see figure 2.3.

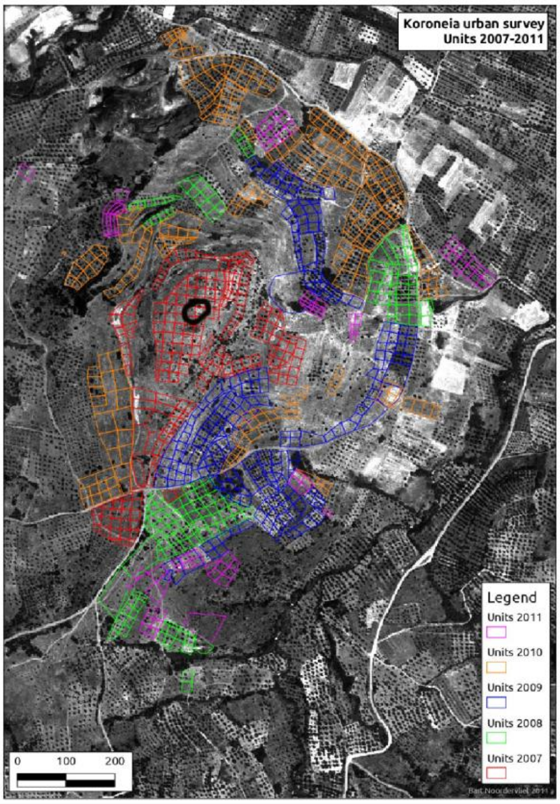

Figure 2.2: Surveyed squares on Koroneia hill. Different colours show different field seasons: 2007 in red, 2008 in green, 2009 in blue, 2010 in orange, and 2011 in pink. The black circle on the acropolis is the location of the 'Bishop's Palace'. (Bart Noordervliet and Janneke van Zwienen 2011)

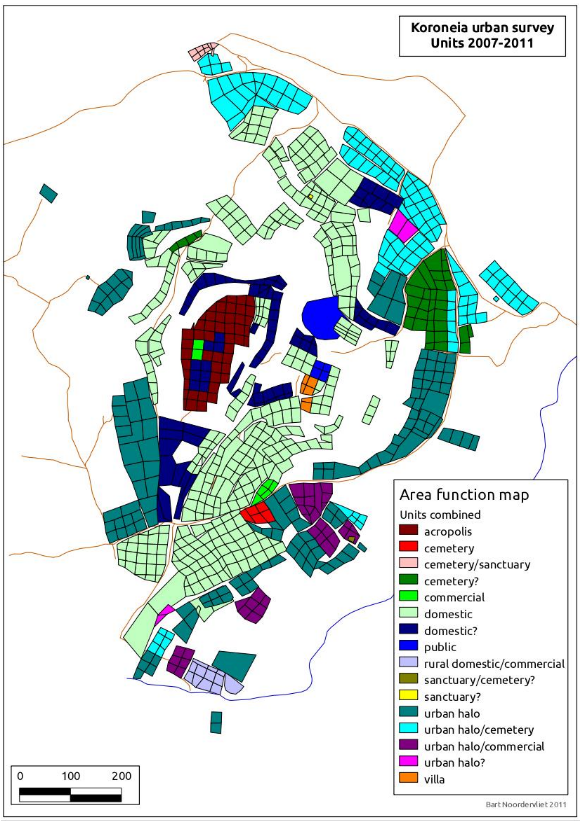

Figure 2.3: Koroneia hill surveyed squares divided into functional zones (preliminary results). The acropolis is shown in dark red, with some commercial and domestic indications in green and dark blue. (Bart Noordervliet and Janneke van Zwienen 2011)

2.1.2 The ArcLand Project

ArcLand is short for ArchaeoLandscapes, and refers to a project funded by the European Union culture programme2007-2013, to promote intercultural dialogue and global heritage. The aims of ArcLand are to increase public understanding, appreciation and conservation of the archaeological heritage and landscape. This is done through the sharing of knowledge about and the use of remote sensing techniques. Much of the work within the ArcLand project takes place in focus-groups and work-packs, sharing knowledge within the pan-European network of researchers associated with the project. Also, field schools and workshops are provided for students.

Leiden University's Faculty of Archaeology is one of the 42 institutions participating in the project, and mainly focuses on offering a programme of field schools and workshops. The 2011 field school took place partly in Leiden and partly in Greece, where the University of Leiden carries out fieldwork. In Leiden students learnt to operate the Total Station and the different methods of setting it up and minimizing error margins. The data were also immediately processed in TopoCAD software to familiarize students with digital data processing. In Greece one week of supervised digital recording was done by these same students, of which two days were dedicated to the recording of architectural remains at the hill of Koroneia, concentrating on the 'Bishop's Palace' which is discussed here, and the Late Antique architectural remains possibly belonging to houses, which are discussed in the 2012 Bachelor thesis of Yannick Boswinkel. Two other days were spent recording a Frankish tower and learning about the use of Differential GPS and a Robotic Total Station, and one day was spent recording the ruins of the Medieval village of Dusia using handheld GPS and the Total Stations.

2.1.3 Using the Total Station

A Total Station, a theodolite, is a laser based measuring device consisting of a base set and a reflective prism. The base set is a laser projecting apparatus set up on a tripod stand. The base has to be completely level and needs to be at a known location. This location can be either a fixed point which it is set up at, or a calculation of its position using two, or preferably three, reference points set out with a GPS device. The laser is sent out by the base device and reflects off the prism back into the lens. The device can measure the angle and distance of the reflected laser and uses this information to calculate a coordinate. For accurate measurements using the Total Station, the laser needs an unobstructed line of sight and the distance can be no more than approximately 3500 meters (Sokkia Series 20 Technical Specs folder). However, due to undulation of the air because of high temperatures in Greece, the effective measuring range is reduced to approximately 100 meters (Van Zwienen 2008, 53). A Total Station set up is shown in figure 2.4.

Figure 2.4: Working with the Total Station. The device is set up exactly level on a tripod, and aimed at the reflective prism. (Photo: Jordy Aal 2011)

The Total Station (TS) device needs to be set up at a known position and orientation in a coordinate system before it can correctly measure coordinates in that system. This coordinate system can be either the regional or national system or a local, user-created system. In Koroneia, measurements were taken in the Greek coordinate system. Three accurate reference points from this system were set up using a differential GPS, these points could be used to resection the device, which means that the device calculates its own position and orientation within the given coordinate system using an azimuth calculation from the separate reference points (Kamermans and Dullaart 2010, 19, Sokkia Series 20 Technical Specs folder). When resectioning, the device measures its angles relative to the reference points to create circles around these points. It then looks for the intersections of these circles. The TS knows that it is located at one of these intersections, and because the orientation is also known, the device can precisely say at which intersecting point it is located.

Students and researchers using the TS need to be careful not to place the device on the 'circle of doom', which is a location where the TS is located on a circle that runs through both reference points used, and which means the device will not be able to resection. The calculation tells the device it could be anywhere on the circle, confusing it as to its precise location and orientation. This problem can be solved by placing the device at different angles to both points, and by using a third reference point for determination of the location.

The coordinates of the reference points used and the coordinates of the locations of the TS are shown in table 2.1. Points 100, 101 and 102 are the reference coordinates, STP1 STP2 and STP3 are the three TS locations over the course of the two days. In the sketched plan in appendix B the station points and reference points are shown in relation to the recorded features.

Table 2.1: Reference points and Station Points

Point Number	X coordinate	Y coordinate	Z coordinate
100	408749,266	4249556,214	274,739
101	408730,682	4249529,175	272,165
102	408747,737	4249512,635	268,062
STP1	408740,901	4249566,392	274,770
STP2	408735,526	4249549,546	273,662
STP3	408739,084	4249534,510	273,139

Once the TS is resectioned it can start measuring points in the coordinate system using the reflection of its laser on a prism. The prism is mounted on a pole with a leveling indicator, as the prism has to be held as level as possible during measurements to minimize measuring discrepancies. The separate features visible from the base location are recorded one by one before moving the TS to a location from which the other features are visible.

It is preferable to have all measurements recorded by the same team of two people, one TS operator and one who walks around with the prism. This was not possible in Greece as the exercise was part of a field school and everyone needed to have a chance to use the device. Because of this it was even more important than usual to carefully write down and document everything that was done so mistakes could be recognized in the processing of the data. Some of the coordinates noted on the sketches varied from the recordings made by the TS, and these were corrected in the computer processing of the data. This difference stemmed from some numbers being written wrong on the sketches, with several numbers in a coordinate being scrambled because the recording had to be done as fast as possible.

2.1.4 Architectural Recording at Koroneia

As mentioned before, architectural recording can be done in a variety of ways, and in Koroneia a Total Station was used. There were only two mornings available for the recording of all visible parts of the 'Bishop's Palace' on the acropolis of the city hill, and work had to be done swiftly and accurately. The morning of day one consisted mostly of the removal of all sorts of plants to uncover the architecture as much as possible. Meanwhile the first TS was set up on the path to the west of the site, just beside the stretch of modern wall. The set up was resectioned using the three visible reference points and had a direct line of sight to over half of the pieces of vaulting that needed to be recorded.

From the first station point, STP1 in the coordinate list of table 2.1 as well as the coordinate lists in appendix A, recording started with feature A. Readings were taken at regular intervals around and on top of the piece, as far as possible, to create a clear view of the outline and measure the heights along the entire piece with X, Y and Z coordinates, so that later even reconstructions could be possible for all separate pieces. After the recordings, photographs were taken from various angles, using a ranging pole as a scale. The piece was then described in detail, including the size and colour of bricks, and the thickness of the mortar. This process was repeated for features B through K over the next day and a half using two more station points in the recording. A total of two TS sets were used in the recording, both handled by two students. The second station point was located a little ways down the path, toward the southwest corner of the building, from here features downhill were more visible, and those hidden behind feature A from station point one were also visible. Station point three was located a little more downhill, just past feature I, and was used to record features F and I that were not visible well enough from the uphill points.

Dr. Hanna Stöger was present to help with the descriptions and photographs, and for any other questions regarding the recording. All descriptions were made by the same person, who described carefully all the characteristics of the features and interpretations of what they could have been and where in the building they belonged. The description of the architectural remains included dimensions, building materials and construction techniques. All the recordings were also sketched by the TS operator in real-time to get a better feel for the shape and location of the pieces. For these sketches, see appendix B. Prof. Dr. John Bintliff was also present to help find the overgrown pieces of architecture and to aid with the interpretation. All students got a chance to operate the TS set for recording at least once, as the goal for the field school was not just to record accurately but to teach all students how to do this.

The data were sorted into separate numbers for separate days and station points, as well as into codes starting with a J or K for features not belonging directly to the main vaulting. The data were only looked at again once the team had returned to Leiden, and analyzed in the Leiden Faculty of Archaeology.

2.2 Methods of Computer Analysis

After the fieldwork in August of 2011, the data were transferred onto the computer system for the Leiden University Faculty of Archaeology using TopCon software. This software can download the data from the TS sets and save it to the computer as comma separated files, CSV. A CSV file is a file where all information for a point is saved in a single row, separated only by commas. For an example of a CSV file see Table 2.

Apart from the recorded data from the TS sets, a database was created for the features, based on the database used by Dr. Hanna Stöger for her research in Ostia. This database records the details for each feature, like brick sizes, colours and texture, mortar details, and feature sizes. The database also contains links to pictures of the features so these can easily be reviewed by the current and future researchers.

Table 2.2: CSV file for the measurements taken on feature A. The first row shows the names of the variables and the following rows show point number, X coordinate, Y coordinate and Z coordinate per measurement separated by commas.

Pt,x,y,z
1001,408745.429,4249559.285,274.96
1002,408745.822,4249558.847,274.769
1003,408745.365,4249559.001,276.298
1004,408744.744,4249557.66,276.134
1005,408744.019,4249558.701,275.025
1006,408743.762,4249558.152,274.785
1007,408744.469,4249557.512,275.208
1008,408745.34,4249557.484,275.127
1009,408745.045,4249557.682,275.632

These CSV files can be imported into various programs to be used for the analysis of the data, most noteworthy QuantumGIS and MapInfo. Both these programs are modeling programs that can handle large datasets and turn them into maps.

MapInfo is software by the company Pitney Bowes, and is part of a set containing MapInfo Basic and MapInfo Professional, two Geographic Information Systems. A Geographic Information System is created to provide insights into relationships between geography and data and to provide a basis for further analysis of the data. The program can create maps by combining different layers of data, like coordinate points and geographical information on top of each other, and can produce graph distributions and calculations related to location. The data can be adjusted during analysis, which is not usually done in scientific research, and the display can be adjusted to the researcher's preferences.

QuantumGIS (QGIS) is an open source software GIS system, available for free to everyone who wishes to use it. QGIS is an organically growing project and many people work on the development, which is both an advantage and a disadvantage of open source software. This is also a GIS program that can transform data layers into coherent maps and can link data to coordinates on the map. The project is operated and grown through volunteer work alone.

The Koroneia data was first analyzed using MapInfo Professional. The data were split into CSV files according to which feature the measurements belong to and then added to the program as separate tables. The tables were then converted and mapped, giving every feature a separate colour. The first attempt ran into some difficulty importing all the coordinate points, but this was fixed through adding extra points from the DGPS measurements. The result of the first mapping in MapInfo can be seen in figure 2.5. The next step was to connect all the coordinate measurements taken around the outside of the features, creating a line contour map, which is shown in figure 2.6.

For a different view of the data they were also imported into a QGIS system, separated by feature and in various layers. The QGIS map can be seen in figure 2.7. In this system, database information and pictures can be linked to certain coordinate points and be set to pop up when the point is selected. Among the data in our database are brick size, brick colour, mortar details and details on size of the feature. The database can be seen in appendix D.

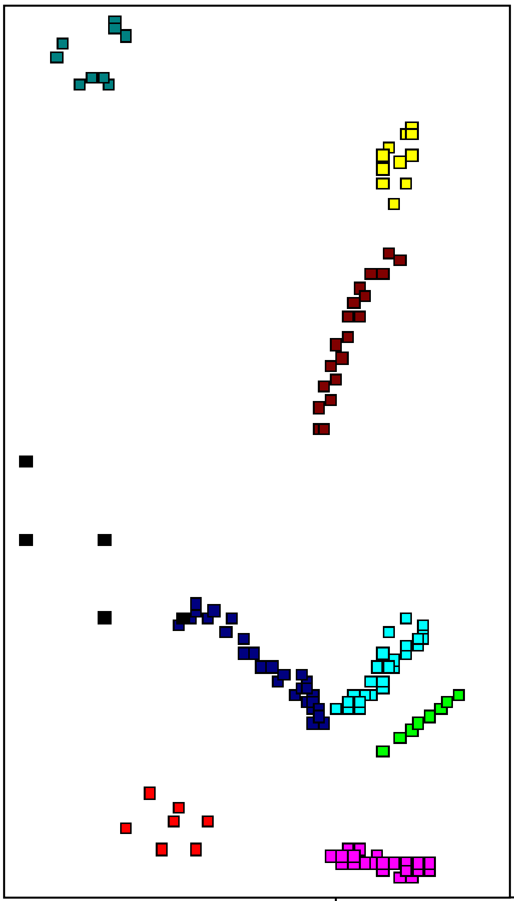

Figure 2.5: First plot of the 'Bishop's Palace' data, note that J and K are missing and that feature C is only showing 5 coordinate points

Feature A: teal

Feature B: brown

Feature C: black

Feature D: dark blue

Feature E: yellow

Feature F: pink

Feature G: light blue

Feature H: light green

Feautre I: red

(Plan: Denise Terpstra, 2011)

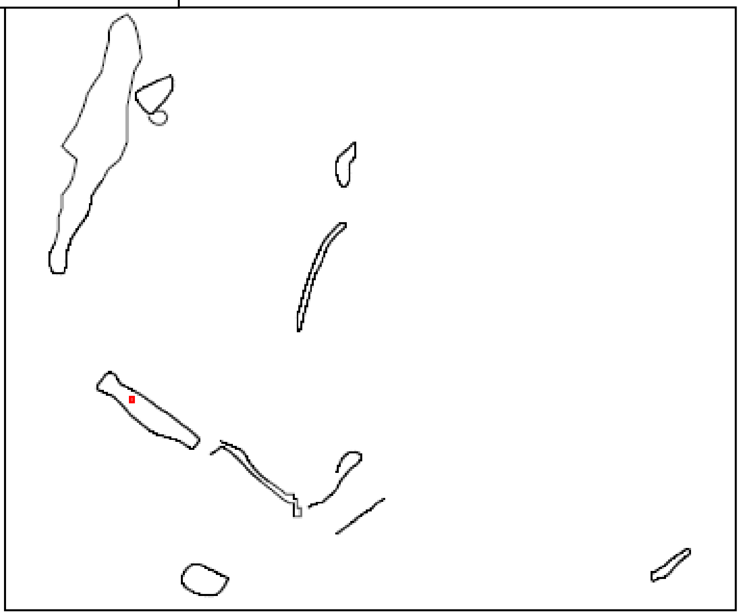

Figure 2.6: Line drawing of the 'Bishop's Palace' features created in MapInfo Professional, feature F is missing in this preliminary version. (Plan: Denise Terpstra, 2011)

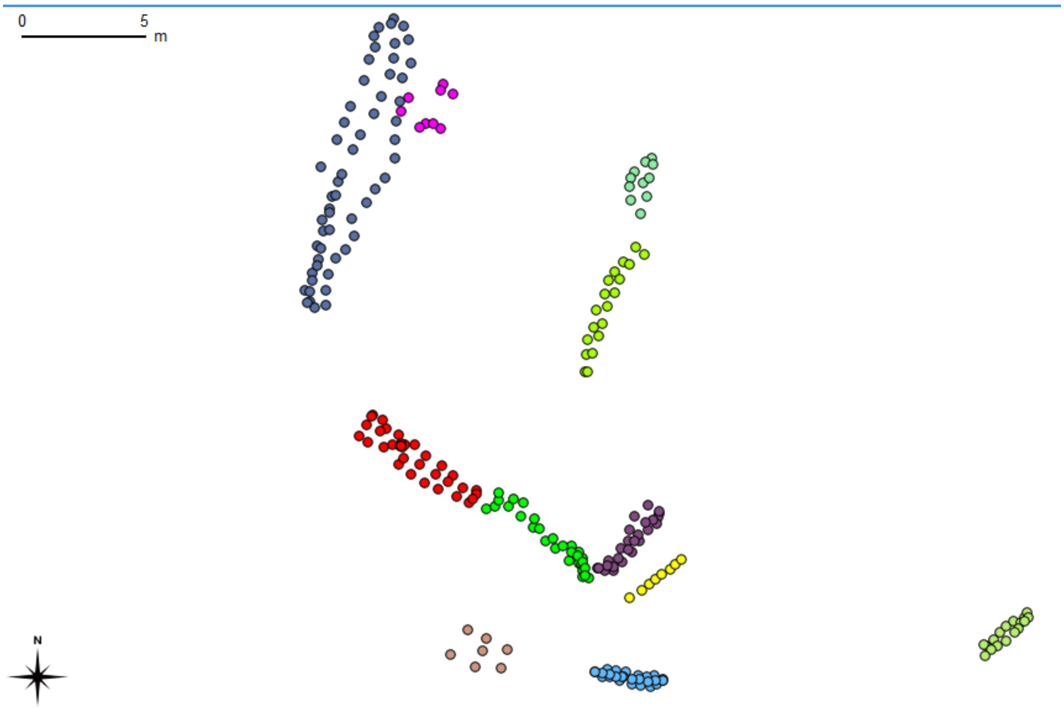

Figure 2.7: QGIS map of the 'Bishop's Palace' features (Plan: Denise Terpstra, 2012).

2.3 Suggestions for Improvement of Research Methods

As this was the first year this field school was provided, it is only natural that not everything went perfectly. There was some doubt about where to best set up the TS sets, and about the recording. These problems were quickly solved, though, by appointing one student who was in charge of the operations. A suggestion for the future field schools would be to sooner appoint a student to direct the recordings. This was already done better in a later assignment, the recording of the Medieval village of Dusia, where two team leaders were appointed who were tasked with setting out reference points, getting people organized for recording and helping out all around.

Also, as mentioned earlier, it is best to have a single person describing all the pieces as this creates the most continuity between descriptions. On Koroneia's acropolis the describing was done mostly by the author of this study, making for consistent descriptions. It is, however, advisable to inform students beforehand of the details that need to be noted in descriptions and to have a supervisor checking on the descriptions regularly to make sure they are all up to par.

Regarding the computer analysis and post-processing of data it can be advised to have the data checked regularly by an expert, and to have regular meetings with experts in the different fields involved in the study. Training in the use of the different computer programs used in the analysis is also recommended. The author thought that the analysis would not be a big problem without in depth knowledge of MapInfo and QuantumGIS, and even ArcGIS which was also tried out but did not show desired results, but this idea was proven horribly wrong. It is advisable for any student wishing to pursue a thesis like this to take at least some courses in the computer specialization provided through Leiden University's Faculty of Archaeology or similar courses offered through other institutions.

3. Data and Analysis

During the fieldwork in Greece all elements found that were thought to belong to the 'Bishop's Palace' were recorded as separate features. This was done to have a clearer overview per feature and make the data easily accessible for analysis later. Eleven features were recorded, mostly vaulted ceilings, a modern wall that may have been built on ancient foundations, and what is probably a fragment of the Late Roman city wall. All features were recorded using Total Stations set up on three different points, calibrated using three reference points that were located using the differential GPS, as can be seen from the digitized sketch in appendix B. All coordinate tables per feature can be found in appendix A. Use of the differential GPS to create reference points made it possible to plot all measurements quite accurately into the Greek coordinate system. All separate features will be discussed and analyzed in the next paragraphs.

3.1 Feature A

Figure 3.1: Feature A (Photo: Dr. Inge Uytterhoeven 2009)

Feature A consists of two parts, visible in figure 3.1. One large block and one smaller structural piece underneath it. The large piece measures near to 2 meters in height and a meter in width. The smaller piece measures approximately 0.5x0.5 meters.

The large block consists of limestone rubble in mortar. The smaller structural element consists of a horizontal layer of bricks, with bricks set vertically on top of it. There is also a curve formed by bricks, forming an angle with the vertically placed bricks. The bricks measure 36x36x3.5 centimeters and are a bright red colour. The large piece seems to be a rubble layer from the top of a vaulted ceiling. The layer is very thick and Roman vaulted ceiling consisted of layers of rubble in mortar and layers of brick, the layers of mortar become thicker in the higher parts of the vaulting. The smaller piece seems to be a structural corner element curving out to two sides. On one side this piece has a horizontal layer of bricks on the bottom, perhaps indicating that this was the location of a doorway. This side is also filled with a rubble layer between the vaulting and vertical layer, indicating that this was perhaps ribbing instead of actual vaulting. The angle between the bottom layer of bricks and the start of the brick vaulting can be calculated to get to an approximation of the span of the vaulting, this angle is shown in figure 3.2 and 3.3.

Figure 3.2: Picture of structural corner piece A. (Photo: Yannick Boswinkel 2011)

Figure 3.3 (right): The angle of the structural corner piece of feature A.

3.2 Feature B

Feature B, a slightly curved piece visible in figure 3.4, is one of the largest features found on the site. The piece measures 1.80 meters width, 1.15 meters height.

The feature consists of 5 separate layers of materials, interspersing layers of bricks with layers of limestone rubble set in mortar. The limestone is similar to that used throughout the rest of the features. The bricks measure 27x27x3 centimeters and are the standard red colour found throughout all the features. The bottom layer is a plastered layer. Of the five layers, the bottom layer of three centimeters is plastered and curves slightly, indicating that this might be a piece that was visible from the inside of the building. The layer above this is a single layer of bricks four centimeters thick. Above this is a 40 centimeter thick layer of limestone rubble set in mortar. Then another 4 centimeter layer of bricks and another 30 centimeter layer of limestone rubble. At the very bottom the feature is partly covered by the ground, making it impossible to say what the exact height of the feature is.

Figure 3.4: Feature B. Note the curve inward at the bottom, which is also plastered. (Photo: Hanna Stöger 2011)

3.3 Feature C

Figure 3.5: Feature C, large piece with hole. (Photo: Denise Terpstra 2011)

Figure 3.6 (right): Feature C, two separate parts. (Photo: Denise Terpstra 2011)

Feature C, as can be seen from figures 3.5 and 3.6, consists of two separate pieces, one large and one smaller piece, which are aligned with one another. The larger piece of the two measures 5.25 meters in width and 1.02 meters in height, the smaller piece measures 60 centimeters in width and 80 centimeters in height.

The small piece consists solely of rubble laid in mortar. The larger piece of this feature consists of three layers, of which the outer two consist of bricks sized 30x30x3 centimeters and bright red in colour. The mortar between the bricks measures approximately two to five centimeters. The middle layer consists of rubble laid in mortar, very similar to the rubble layers in the other features. In total this feature consists of 3 visible layers in the larger part, with the smaller piece probably being a continuance of the middle layer of the larger piece, as the buildup of limestone rubble in mortar is the same and the pieces line up very nicely. The bricks in the outer two layers are laid in straight lines and the bricks in the separate lines overlap each other halfway. A sketch of the layering of bricks and rubble can be seen in appendix B. There is a little bit of rubble visible interspersed with the brickwork in layer three. Close to the east edge of the large piece is a rectangular hole measuring 10x15x30 centimeters, this could possibly be a beam hole or a construction hole. No such hole is visible in any of the other features, so it is also possible that this is a snake hole made after the collapse of the building. The hole is visible in figure 3.7.

Figure 3.7: Possible beam hole in feature C. (Photo: Denise Terpstra 2011)

3.4 Feature D

Feature D is aligned with feature C in a northwest-southeast direction and can be seen in figure 3.8. This feature measures 3.43 meters in length and 55 centimeters in height.

The bricks are clearly visible in this feature and they measure approximately 30x30x3 centimeters. The bricks are very similar to those in feature C in colour and size. The mortar between the bricks measures three to five centimeters. The feature is curved similarly to feature C and the rows of bricks from feature C seem to line up with those in Feature D, likely because of the two features belonging to the same piece of vaulting. The southwest corner of the piece is badly eroded, broken above every new line of bricks giving it a step-like appearance, the bricks are clearly visible here.

Figure 3.8: Feature D scaled with a ranging pole. The feature is not very visible and likely buried deep into the ground. (Photo: Denise Terpstra 2011)

3.5 Feature E

Feature E, visible from figures 3.9 and 3.10, lines up with Feature B, is located in the northeast corner of the site and has collapsed to the east. The piece is 2.0 meters in length and 70 centimeters in height.

The feature consists of layers of bricks interspersed with layers of limestone rubble in mortar. The bricks measure 35x35x3.5 centimeters approximately and are thus slightly larger than the bricks found in most other features except in feature A. The mortar is two to four centimeters thick between bricks. The limestone rubble is similarly sized to that in other features. This piece has a very similar layering to feature B, consisting of thin layers of bricks interspersed with thick layers of limestone rubble in mortar. It is therefore likely that the two features belonged to the same piece of vaulting. This part seems to have rolled after the collapse and is at a different angle to the surface than feature B, but the similarities cannot be overlooked. The only difference between the features is the size of the bricks, which is slightly larger in this piece.

Figure 3.9 (left): Feature E is a very rough piece, lying at an angle of approximately 30 degrees to the ground. (Photo: Yannick Boswinkel 2011)

Figure 3.10 (right): Close-up of feature E, the large bricks are clearly visible, as well as the *caementa*. (Photo: Yannick Boswinkel 2011)

3.6 Feature F

Feature F, visible in figure 3.11, is located slightly further southeast than the rest of the pieces, and slightly downhill. This piece measures 2.71 meters in length, and 40 centimeters in visible depth. However, the rich undergrowth makes it impossible to measure the total depth.

The bricks measure approximately 27x27x3 centimeters, like in most other features. The mortar between the bricks varies from three to five centimeters thick. The brickwork is interspersed with similar limestone rubble layers as can be seen in most of the other features. The piece is built up in layers of brick interspersed with layers of limestone rubble in mortar, suggesting it is another piece of vaulted ceiling. The piece seems to have fallen outside the site marked by the other features, and seems to have rolled slightly downhill. Most likely, when looking at the layering, it belonged to the same vaulting as features G and H, as it displays very similar characteristics.

Figure 3.11: View from feature F toward the north into the building. (Photo: Denise Terpstra 2011)

3.7 Feature G

Feature G (fig 3.12) is located in the southeast corner of the area marked by the features. It is lined parallel to feature H. The piece is 3.43 meters long, and the visible depth is 1.09 meter. The feature is tilted at approximately 100 degrees outward.

Layers one and three consist of limestone rubble set in mortar. Both these layers cover opposite halves of the length of the feature. Layer one covers the south half of the length, while layer three covers approximately the west half of the length. Layer two consists of bricks set in mortar. The bricks are sized 30x30x3 centimeters, like in most other pieces. The bricks are mostly bright red, with some dark red ones standing out from the rest, though these are few and far between. The mortar between brick measures two to four centimeters in most places, but in some places measures seven centimeters. The feature is built up of three layers, of which only the middle layer spans the entire length. The layers can be seen in the sketch in appendix B. Layer one covers the south half, layer three covers roughly the west half of the piece. From the layering it is likely that the feature is another piece of vaulted ceiling, and judging from the similarities between features G and H, and their proximity, it is likely that they belonged to the same piece of vaulting.

3.8 Feature H

Feature H is also visible in figure 3.12. It is located parallel and very close to feature G. The length of this piece is 1.5 meters, but only 30 centimeters of the height is visible as the rest of the feature is covered.

The feature shows a layer of limestone rubble in mortar and a layer of bricks. The bricks measure 30x30x3 centimeters and a bright red colour. It is hard to say more about the materials as only little is visible. The piece is very similar in materials and buildup to feature G, and is likely to belong to the same piece of vaulting as mentioned earlier. As so little is visible it is hard to say any more about this feature.

Figure 3.12: Feature G in the back and feature H near the front, note the parallel lines of the two features. The ranging pole shows the scale. (Photo: Denise Terpstra 2011)

3.9 Feature I

Feature I (fig. 3.13), is a flat piece located on the south edge of the site.This piece measures 0.7 meters in length and approximately 10 centimeters in height. This does not say much, however, as the piece is covered by vegetation on all sides and might be larger.

The piece consists of layered brickwork and roughly squared limestone pieces set in mortar. The bricks measure 26x26x3 centimeters approximately, and are a dark red colour. The limestone pieces are approximately 15x15x15 centimeters and are roughly squared as mentioned before. The layering of flat bricks and square pieces of limestone makes this a very tough structure. It is possible that this indicates a piece of foundation or wall, as the piece seems level as well. It is impossible to be sure of this, though, because so little is visible of the feature. The stones are very similar to the roughly squared stones in feature J.

Figure 3.13: Feature I as seen from above with a ranging pole for scale. Note the broken bricks and the roughly squared limestone blocks. (Photo: Denise Terpstra 2011)

3.10 Feature J

Feature J is a small feature slightly further down the steep sloping side of the hill from the other pieces. The feature is made up of roughly squared limestone blocks, around 15x15x15 centimeters in size. The stones are set in two visible lines on top of each other. The entire feature curves slightly following the natural surface shape of the hill, and as more pieces like this have been found elsewhere it is likely that this piece belongs to the Late Roman acropolis wall (Bintliff *et al*. 2009, 25). After consulting with Prof. J.L. Bintliff, it was determined that this feature is part of the wall securing the Late Antique settlement on the acropolis of the hill.

3.11 Feature K

Feature K is a long stretch of walling that runs along three quarters of the northwest side of the building. This piece is a low wall, approximately 15 centimeters in height above ground level, which stretches from just past feature A in the northwest to 4.5 meters from feature C.

The wall is made up of irregularly shaped stone blocks, all similar in size. The blocks are stacked together firmly without mortar and form a wall that blocks off the terrace that the 'Bishop's Palace' sits on. The modern terrace wall might have been built on ancient wall foundations, as is often the case in Greece as this provides a lot of toughness to the wall.

3.12 Feature X

Feature X is a piece brought into the research after a meeting with Dr. Inge Uytterhoeven, who pointed out this piece which she had found during her field campaign in 2009. The piece is located between features B and E and can be seen from figure 3.14. The feature was not visible during the August 2011 campaign and has thus not been recorded at that moment, although research data from Dr. Uytterhoeven's 2009 campaign provides us with the location and a description. The piece measures 1.2 meters in length and 50 centimeters in height.

Similar to features B and E it consists of layers of bricks and layers of rubble set in mortar. The bricks are a similar bright red to those in features B and E, and measure 27x27x3 centimeters. The mortar between the bricks is approximately three centimeters thick in all places. When judging by the very similar buildup of layers, this piece is likely another collapsed vaulted ceiling belonging to the same piece of vaulting as features B and E. This piece has also collapsed to the east and its orientation and collapse show great similarity to those of features B and E.

Figure 3.14: The feature in the foreground is feature X, in the back feature C and the olive tree it is under are visible. (Photo: Dr. Inge Uytterhoeven 2009)

3.13 Analysis of Complete Structure

When looking at the combination of all features recorded for this exercise, the building can be roughly dated by looking at the brick sizes, the vault morphology, and the context provided by the Late Roman city wall. A presumable date of Late Roman, probably between the third and mid sixth centuries AD can be given to the combination of fragments.

Taking into account all the features that have been found to belong to this structure up to this point, it is interesting to see that almost all, or maybe even all of them, are vaulted ceiling pieces. By far the most important pieces are features A and B, which allow for an approximate reconstruction of angles of the vaulting. For feature A this could be determined from the pictures, as the feature shows a very clear angle, but for feature B the analysis of the angle will need to take place in the field, as it is not clearly visible in the pictures since the curving part is very low down into the ground, with the view obstructed by plant material.

The space covered by the vault fragments measures some eight by ten meters, seems roughly rectangular, and the size and thickness of the vaulting suggests that it might have measured as high as five or six meters tall. The vaulting has collapsed into two clearly discernible directions, approximately half the pieces have fallen to the east and the other half to the southwest. Many of the features are still lined up in these directions, indicating that they might have belonged to the same piece of the vaulting, for example features B, E and X, or features C and D. Figure 3.15 shows a digital plan of the features and their spread across the site.

As mentioned before, all the features seem to have roughly the same composition of layers of bricks interspersed with layers of rubble, be it in varying thickness, except for the structural piece that is part of feature A. The top of feature A, however, is a large block of limestone rubble set in mortar, very similar to the layers in other pieces only thicker. The layering of rubble is very common in Roman *caementa* (Lancaster 2005, 59).

Figure 3.15: GIS plan of the features, created from the coordinates recorded. Every dot is a measurement. For a larger, A4-sized plan see appendix C (Plan: Denise Terpstra, 2012)

Roman mortaring consisted of lime mortar with *pozzolana*, a volcanic ash, and varied from place to place with the availability of the ingredients (Lancaster 2005, 51). It is, however, not possible to say anything valid about the mortar components and strength compared to the regular Roman mortar without specific analysis.The layers of mortar between the brickwork are very regular, between three and five centimeters thick both vertically and horizontally, but are usually nearer to three centimeters than to five. The mortar between the rubble is more roughly distributed and varies greatly within the several features. This is only logical since the rubble is of various sizes and shapes, and these needed to be stacked in a solid vaulting. The rubble used is mostly limestone, presumably from the limestone outcrops of the hill.

The bricks visible in the building remains are all close to 26x26x3 centimeters, except for those in features A and E. The bricks in these features are slightly larger at approximately 36x36x3.5 centimeters. When there is more than a single line of bricks present in a layer in the vaulting, they are laid in lines with a consistent half brick offset between lines and with three to five centimeters of mortar in between. In size these bricks are closest to what the Romans called the *pedalis*, a brick measuring approximately 1 Roman foot or 29,6 centimeters (Lancaster 2005, 17; Malacrino 2010, 59). Feature A shows bricks set in several different directions, creating a corner of what seems to be a vaulted shape. One row is set upright and forms a curve, while a second row is set upright and forms a straight bottom line, this creates a wedge-shape. For a clear picture of this, see figure 3.2 earlier in this chapter.

As only vaulted pieces are present it is possible that the pieces have collapsed inside the original building space, the collapse suggests that the pieces spanned an area of approximately 8 by 10 meters, although some pieces may have collapsed outward, like feature F. As only vaulting seems to be present, it is likely that the building collapsed on top of itself. This would mean that only the vaulted ceilings can be seen at this moment because they are on top, but the walls and foundation are buried down into the current ground level. This is not an unlikely scenario, since a pit that has presumably been dug by robbers extends downward at least one and a half meters near the center of the east wall. Down the sides of this pit bricks and mortar can be clearly made out, implying that they did not dig into the bedrock but into the further ruins of the building. This would provide a suitable explanation for the absence of standing walls in the current view of the building.

The collapse of the structure is somewhat harder to explain. If the building has collapsed on top of itself and in these two directions of the fallen vaulted ceilings, this would indicate that it was perhaps hit by a natural disaster like an earthquake. The Koroneia area was hit by a great earthquake in 551 AD, which provides us a possible explanation for the collapse of the building as it dates from a similar time period. It is also possible that the collapse is due to an earthquake at a later time. Natural collapse is a possibility, but makes it tough to explain that the direction of collapse is mostly straight down.

The function of the building also proves quite problematic in the analysis, as only the vaulted ceilings have been preserved visibly and no excavation is possible at this moment. The idea that the building could have been a church was discarded early on by the research team, as no clear internal structure or easterly orientation is visible (Bintliff *et al*. 2009, 25). The possibility that the building was an elite mansion was offered by Dr. Inge Uytterhoeven during the 2009 field season. This is a possibility because many elite mansions in Late Antiquity had many locals visiting, as influential people, like the local Bishop, usually held audiences (Özgenel 2007, 239). These elite townhouses usually had a prominent position on in a town, to provide as much social control as possible (Özgenel 2007, 240).

The span of the vaults can be estimated at roughly eight meters across, spanning the width of the building. The vaults consist of thick layering on the top, indicating that this building possibly had one massive room spanned by these vaults, a barrel vault, but this cannot be said with certainty. For a sketch of a barrel vault see figure 3.16. The building was a one story building and the structural corner element seen in feature A is a possible entrance on the north side of the building, as advised by Dr. Uytterhoeven, the architectural specialist who works in the ancient cities of Boeotia project.

The building is located at the eastern edge of the acropolis with a clear view into the valley and to Lake Copaïs. This would have been a very powerful location for a governor’s mansion as it gives not only a beautiful, but also a very commanding view of the terrain lower down the hill. The ancient agora and terraces are visible from here, but the building is safely ensconced within the confines of the Late Roman city wall around the acropolis. There are some smaller, less imposing houses and an olive press located very close to the building, creating a sense of encroachment on the acropolis of the city.

The main hall, perhaps even the only hall of the building, seems to have been a barrel vault structure. During the building process these vaults were supported by a framework of wood, either from the ground up or from a higher level as the vault was tall, and the suspension framework was mounted into the walls itself through beam holes (Lancaster 2008, 34). Creating beam holes in the actual vaulted piece was not common, but could be done to provide extra strengthening of the framework. A barrel vault also involves ribbing, a stone or brick arch built into the wall (Lancaster 2008, 86). This can be seen in the 'Bishop's Palace' as well, and is very clear from pictures of feature A, like figure 3.17. Vaulting ribs are filled with walling material for support and they, as well as relieve arches, often occurred right over a doorway or opening to direct the load of the walling away from the opening (Lancaster 2008, 86). As mentioned before, our structural corner element from feature A is considered to be such a piece, and this information strengthens the case for it being located above an entrance at the north side of the building.

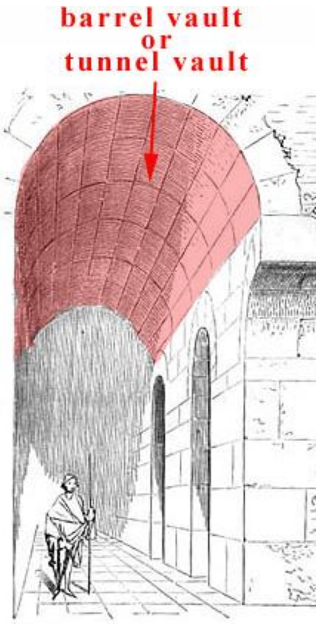

Figure 3.16: Example of a barrel vault. (Accessed through http://www.pitt.edu/~medart/menuglossary/barrel.htm, 13-06-2012)

Figure 3.17: Ribbing in feature A. (Photo: Yannick Boswinkel 2011)

4. Power Structures in Late Antique Greece

Late Antiquity was a time of change in the entire remains of the Roman Empire. Christianity was on the rise in Europe and the emperors were confronted with the new religion that was steadily growing in power. Regarding settlement patterns it can be said that after a peak in population in Hellenistic times and a decline in Early Roman times, an new, smaller spike in population can be seen in Late Antiquity (Bintliff 2007, 652). Late Roman Boeotia consisted mostly of villae and villages, with the villae employing local villagers.

The Late Roman elite were a varied group of wealthy people with much power. This group included, among others, wealthy landowners, aristocrats, and a fairly recent addition: religious leaders. Bishops are part of the Late Roman elite, and Bishops were usually located in larger settlements from which they could have much influence over the surrounding area. From the last half of the fourth century onward, Bishops and monks started to show that they could sway the opinions and exercise power (Brown 1992, 4). Even the emperors started to be willing to listen to the religious leaders, giving them much power (Brown 1992, 5). This made many of the local people who were not yet converted to Christianity feel like the power the church had was what Brown (1992) calls 'usurped authorization', since the Bishops took power away from the local wealthy elite.

Monks and Bishops deliberately made people feel like they were philosophers, announcing things like (Brown 1992, 112): Anger is an illness of the soul and can be healed by Christian penance. These beliefs had a large impact on the way people thought, and over time Christianity grew slowly and steadily more powerful. Bishops demanded religious architecture, and not having enough basilicas was the cause of an argument between Bishops and the Emperor Valens in the east of the empire (Brown 1992, 112). Slowly but surely the multitude of Roman Gods was replaced with the Christian God.

Directly noticeable from the aforementioned changes in religion is the change of power from the local elite to the Bishop. Instead of philosophers and wealthy landowners or merchants from the elite ruling the local area, power shifted to the clergy, meaning the clergy also got the best locations in a town for churches and residences. People were influenced by Christianity in a way not known before, Christianity influenced the emperor and through the emperor the people.

5. Koroneia in Comparison

To create a better view of what the building's function could have possibly been in ancient times a comparison can be made with large architectural structures from other sites in the Mediterranean area. These comparisons can provide a framework to place the Koroneia building in, and indicate a direction for further research on this structure. Late Antique residential complexes of the elite usually had a very public character (Özgenel 2007, 239), which is why the focus in this chapter will be on Episcopal mansions and other elite residences.

5.1 Sagalassos

Sagalassos is a large ancient city located in Turkey, about 110 km inland from Antalya (Martens et al 2008, 128). The site was inhabited from Early Hellenistic times into Early Byzantine times, although recent evidence suggests occupancy into mid-Byzantine times. The final period in which the town was inhabited on a large-scale is 300 to 600 AD approximately, the Late Roman period, and a lot of material evidence is available from this period. Both the city and its suburbium have been the subject of extensive research since 1999 (Martens et al 2008, 127).

Sagalassos has a large number of wealthy and grand peristyle villas (Martens et al. 2008, 137). The role of the elite in Sagalassos is described as wealthy landowners, most likely owning olive groves and intensively cultivated gardens and orchards (Martens et al. 2008, 137). The growth of Sagalassos in the Late Roman period brought with it a need for more resources, which is likely the cause for the intensification of land use by wealthy owners (Martens et al. 2008, 138).

Although Koroneia does not show this similar expansion in the Late Roman era, the city does show intensification in land use by wealthy owners who hired staff from the cities (Bintliff 2007, 654; Bintliff forthcoming (a), 2). This gives a possible parallel for our structure on the Koroneian acropolis, an elite villa or mansion. This is also supported by the olive press found close to the structure on the acropolis, indicating activities connected to the production of olive oil.

5.2 Aquileia

Episcopal residences, the seats of the local Bishop, are part of the domestic architecture of Late Antiquity. The Bishop's influence started growing in the Late Antique period, and more churches and episcopal residences started to emerge in empire. Evidence for episcopal residences can be seen in the town of Aquileia.

Aquileia's episcopal complex was located in the southern area of the town, near the harbor. The complex consisted of three large rectangular halls, set in the shape of a U, and various smaller rooms making up the rest of the complex. Figure 5.1 shows the plan of the complex. The complex is hard to analyze as the Bishop's power was still very tentative and had not yet fully developed in the 4th century AD when the complex was likely built. Distinctions between the residential and religious quarters would not have been very clear defined (Marano 2007, 100). In the fifth and sixth centuries AD, Aquileia and other towns around the Mediterranean started showing evidence for wealthy episcopal residences.

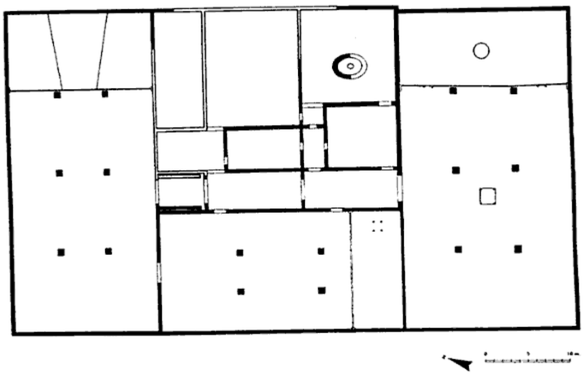

Figure 5.1: Plan of the Aquileia episcopal complex. (Marano 2007, 99) Scale 0-10m.

The architecture found on the Koroneia acropolis does not seem to resemble this complex at first sight. The building shown in the picture is much more complex than what Koroneia shows evidence for, but as mentioned by Marano (2007), this is an entire complex including residential and religious quarters. In Koroneia there is most likely only a residence present, as no clear evidence for any religious structure has been found as of yet. The rooms in Aquileia are barrel vaulted, like the room in Koroneia, however this is not enough evidence to allow a direct comparison between the two.

The character of the Aquileia episcopal complex is very public, like many large villae and complexes from the Late Antique period. This public character is something we need to keep in mind also when we analyze our remains from the 'Bishop's Palace'.

6. Conclusion

Comparison of housing complexes, and especially a quite poorly preserved architectural structure like the 'Bishop's Palace' at Koroneia, should always be accompanied, as Simon Ellis (in Lavan *et al*. 2007, 1) puts it strikingly, by the thought of why they are compared. Can we safely assume that these houses in the comparison are built by like-minded people or belong to a similar or the same society? A house, much more than a public building, represents the vision of the owner (Ellis 2007, 1). These are questions that also need to be asked when analyzing Koroneia's 'Bishop's Palace'. Because of this, further comparison will have to take place in future research, as this can provide striking insights into the community surrounding the 'Bishop's Palace'. For this thesis, however, more in depth research and comparison of the building was not plausible.

Regarding the 'Bishop's Palace' the research has been as objective as possible apart from the basic label of 'Bishop's Palace', given to the structure. All features were recorded and described carefully during the two mornings of fieldwork spent in the area, and coordinates, sketches and descriptions were all combined afterward using computer analysis. Before diving into reconstructing what the building could have been, all the separate features recorded were carefully looked at with the help of an architectural specialist. Only after a tentative 5th or 6th century AD Late Antique date had been put to the remains was there a time and place for starting comparison with other buildings and settlements around the Mediterranean.

Further research will need to be undertaken to create a more concise picture of what this building used to be and of the influence it exerted on the surrounding area. Ideally an excavation would take place, however, it is also possible to say more without excavating. The best course of further action is to have an expert look at the data recorded now and in earlier years, and at the remains as they are in the field, and to add new data as they are detected. An architectural specialist will be able to place this building into a more concise timeframe and functional setting using the combined data from the Koroneia project and making further comparisons to other sites. For now, and in regard to the limited research possible for this thesis, however, it is not possible to say more than that these remains likely belonged to a grand barrel vaulted room, approximately six by eight by five meters, which was probably a residence of a wealthy person, a member of the elite, from Koroneia. The building would most likely have had a very public as well as private function, and a large impressive barrel-vaulted hall would fit in this picture very well.

When the function is more clearly determined, the building can provide a unique insight into the Late Roman community of Koroneia. Combined with data of the other architectural remains on the acropolis and the remains of the olive press, a picture can start to be painted of the local inhabitants and their lives, and ultimately, this is what the Ancient Cities of Boeotia project is about: bringing these ancient peoples back to life through research.

Abstract

The Late Antique architectural remains on the acropolis of Koroneia's city hill have not yet received the research attention they need in the current Ancient Cities of Boeotia project. This thesis will delve deeper into the collapsed vaulted ceiling remains that have been found on the acropolis and provides a thorough description, coordinate measurements and plans, and begins the difficult task op interpreting these remains. It is attempted to reconstruct what the building was and draw parallels to other similar buildings.

Research into the remains was conducted in the 2009 field season by architectural specialist Dr Inge Uytterhoeven, and the August 2012 field season saw the continuance of this research by students. For a field school on ground-based digital recording techniques, students were tasked with recording the remains of the large structure on the acropolis which had earlier been dubbed the 'Bishop's Palace' by researchers. Over 200 Total Station measurements were taken, detailed descriptions and sketches were made, and over the course of two mornings the entire remains were carefully documented. Also, suggestions for the improvement of fieldwork and analysis methods and suggestions for further research are made in this thesis.

In this thesis, special attention is paid to the recording and analyzing techniques used, and these are described in detail. Also, an attempt has been made to interpret the remains and compare them to other, perhaps similar, complexes. In close consultation with Dr Inge Uytterhoeven, the remains have been roughly dated to the 5th or 6th century AD, the Late Antique period on the Greek mainland. A look at both the remains and the period suggests that the most likely interpretation is an elite villa or house with a public character.

Samenvatting

De Laat Romeinse architecturele resten op de acropolis van de heuvel van Koroneia hebben nog niet de aandacht gekregen die ze verdienen binnen het Ancient Cities of Boeotia project. Deze scriptie zal dan ook dieper ingaan op de stukken ingestorte tongewelven die zijn gevonden op de acropolis en biedt een uitgebreide beschrijving van alle stukken, alsmede metingen van coordinaten en overzichtskaarten gecreëerd uit deze metingen. Ook wordt een begin gemaakt met de analyse and interpretatie van de resten. Er is een poging gedaan het soort gebouw te reconstrueren waar deze resten deel van uitmaakten, en om te bepalen wat de functie van dit gebouw was. Ook zijn paralellen getrokken met gelijksoortige gebouwen.

Eerder onderzoek naar de resten is uitgevoerd in 2009 door achitectuurspecialiste Dr. Inge Uytterhoeven, en tijdens het veldwerk in Augustus 2011 werd onderzoek naar het gebouw voortgezet door studenten in het kader van een field school over digitale meetmethoden. Voor deze field school moesten de studenten in twee ochtenden de resten van het ‘Bishop’s Palace’ op de acropolis van Koroneia inmeten. Meer dan 200 coordinaten zijn gemeten, er zijn schetsen gemaakt en alle resten zijn zorgvuldig beschreven. In deze scriptie wordt ook ingegaan op de methodiek en worden suggestioes aangedragen voor de verbetering van de efficiëntie van het veldwerk. Ook worden suggesties voor verder onderzoek geopperd.

In deze scriptie wordt vooral specifiek ingegaan op de methoden en technieken die gebruikt zijn bij de analyse, zowel in het veld als met de computer. Ook is gepoogd de resten te interpreteren aan de hand van advies van Dr Inge Uytterhoeven, en is gepoogd een vergelijking te trekken met andere complexen. Dr Uytterhoeven heeft de resten kunnen dateren tot de 5^e of 6^e eeuw na Christus, de Laat Romeinse periode op het Griekse vasteland. Een blik op zowel resten als tijdsperiode suggereert dat dit ooit een villa of groot huis met een zeer open en publiek karakter van een persoon uit de lokale elite was.

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Appendix A: Coordinate Tables per Feature

Table 1 Reference points and Station Points

Point	X	Y	Z
100	408749,266	4249556,214	274,739
101	408730,682	4249529,175	272,165
102	408747,737	4249512,635	268,062
STP1	408740,901	4249566,392	274,770
STP2	408735,526	4249549,546	273,662
STP3	408739,084	4249534,510	273,139

Table 2 Feature A

Point	X	Y	Z
1001	408745.429	4249559.285	274.960
1002	408745.822	4249558.847	274.769
1003	408745.365	4249559.001	276.298
1004	408744.744	4249557.660	276.134
1005	408744.019	4249558.701	275.025
1006	409743.762	4249558.152	274.785
1007	408744.469	4249557.512	275.208
1008	408745.340	4249558.484	275.127
1009	408745.045	4249557.682	275.632

Table 3 Feature B

Point	X	Y	Z
1010	408751,174	4249547,596	275,084
1011	408751,23	4249548,297	274,911
1012	408751,304	4249548,913	275,054
1013	408751,52	4249549,399	275,083
1014	408751,634	4249550,088	275,158
1015	408751,988	4249550,784	275,181
1016	408752,129	4249551,297	275,767
1017	408752,405	4249551,646	275,823
1018	408752,745	4249552,085	275,959
1019	408753,245	4249552,668	275,989
1020	408753,573	4249552,386	276,111
1021	408752,986	4249551,946	276,228
1022	408752,569	4249551,36	276,458
1023	408752,405	4249550,833	276,315
1024	408752,07	4249550,265	276,616
1025	408751,916	4249549,585	276,484
1026	408751,761	4249549,067	276,433
1027	408751,474	4249548,358	276,449
1028	408751,313	4249547,632	275,857

<u>Table 4</u> Feature C

Point	X	Y	Z
1029	408742,404	4249544,754	275,514
1030	408742,057	4249545,013	275,514
1031	408742,363	4249545,443	275,549
1032	408742,586	4249545,853	275,537
1033	408743,011	4249545,667	275,692
1034	408743,147	4249545,314	275,735
1035	408743,665	4249545,041	275,632
1036	408744,29	4249544,675	275,686
1037	408744,739	4249544,203	275,709
1038	408745,389	4249543,809	275,52
1039	408745,865	4249543,429	275,474
1040	408746,769	4249542,825	275,437
1041	408746,783	4249542,671	275,425
1042	408746,514	4249542,303	275,304
1043	408745,984	4249542,566	275,307
1044	408745,252	4249542,864	275,276
1045	408744,698	4249543,1	275,358
1046	408744,162	4249543,436	275,377
1047	408743,663	4249543,885	275,414
1048	408743,037	4249544,538	275,522
1049	408746,659	4249542,484	274,398
1050	408746,221	4249542,925	274,724
1051	408745,663	4249543,163	274,651
1052	408745,164	4249543,456	274,866
1053	408744,502	4249543,836	275,177
1054	408743,852	4249544,126	275,193
1055	408743,377	4249544,667	275,006
1056	408742,878	4249545,214	274,946
1057	408742,522	4249545,819	274,685
1058	408743,813	4249544,54	274,756
1059	408743,866	4249544,638	274,741
1060	408743,761	4249544,707	274,723
1061	408743,706	4249544,626	274,736
1062	408743,748	4249544,603	274,381

Table 5 Feature D

Point	X	Y	Z
1063	408747,209	4249542,071	274,175
1064	408747,546	4249542,183	274,246
1065	408747,695	4249542,412	274,336
1066	408748,07	4249542,164	274,306
1067	408748,575	4249541,77	274,328
1068	408749,117	4249541,288	274,278
1069	408749,582	4249540,764	274,231
1070	408749,986	4249540,456	274,181
1071	408750,521	4249539,946	274,136
1072	408750,928	4249539,851	274,158
1073	408751,056	4249539,785	274,153
1074	408751,098	4249539,555	274,156
1075	408751,115	4249539,302	274,119
1076	408751,346	4249539,248	273,963
1077	408751,091	4249540,04	274,163
1078	408750,931	4249540,333	274,19
1079	408750,648	4249540,549	274,266
1080	408747,689	4249542,69	274,438
1081	408748,279	4249542,467	274,657
1082	408748,674	4249542,285	274,577
1083	408749,149	4249541,673	274,49
1084	408749,363	4249541,257	274,491
1085	408749,879	4249540,836	274,467
1086	408750,282	4249540,557	274,46
1087	408750,644	4249540,317	274,427
1088	408750,895	4249540,148	274,279
1089	408751,077	4249539,908	274,274
1090	408751,168	4249539,641	274,213
1091	408751,209	4249539,381	274,176

Table 6 Feature E

Point	X	Y	Z
1092	408753,888	4249556,268	275,587
1093	408753,653	4249556,093	275,578
1094	408753,203	4249555,714	275,618
1095	408753,048	4249555,467	275,641
1096	408752,988	4249555,099	275,695
1097	408753,034	4249554,543	275,814
1098	408753,437	4249554,006	276,05
1099	408753,713	4249554,696	276,101
1100	408753,547	4249555,261	276,004
1101	408753,793	4249555,44	276,012
1102	408753,926	4249555,993	275,815

Table 7 Feature F

Point	X	Y	Z
2000	408754,352	4249535,147	273,225
2001	408753,991	4249535,297	273,315
2002	408753,672	4249535,239	273,237
2003	408753,326	4249535,304	273,158
2004	408752,847	4249535,436	273,149
2005	408752,449	4249535,524	273,129
2006	408752,094	4249535,546	273,125
2007	408751,591	4249535,438	272,909
2008	408751,915	4249535,275	272,755
2009	408752,186	4249535,234	272,68
2010	408752,591	4249535,127	272,53
2011	408753,088	4249534,976	272,631
2012	408753,442	4249534,886	272,722
2013	408753,853	4249534,836	272,933
2014	408754,086	4249534,958	273,069
2015	408754,337	4249535,115	273,214
2016	408754,345	4249535,128	273,212
2017	408754,03	4249535,126	273,43
2018	408753,749	4249535,055	273,426
2019	408753,386	4249535,139	273,37
2020	408753,071	4249535,18	273,347
2021	408752,735	4249535,254	273,288
2022	408752,677	4249535,247	273,377
2023	408752,459	4249535,276	273,393
2024	408752,182	4249535,343	273,322
2025	408751,889	4249535,404	273,191
2026	408751,592	4249535,447	272,931

Table 8 Feature G

Point	X	Y	Z
2027	408754,195	4249541,871	274,445
2028	408754,164	4249541,685	274,427
2029	408754,088	4249541,48	274,417
2030	408753,727	4249541,216	274,359
2031	408753,386	4249540,767	274,249
2032	408753,079	4249540,311	274,12
2033	408752,686	4249539,924	274,014
2034	408752,351	4249539,549	274,199
2035	408751,984	4249539,542	273,794
2036	408751,686	4249539,652	274,107
2037	408752,165	4249539,96	274,331
2038	408752,648	4249540,439	274,314
2039	408752,943	4249540,75	274,397
2040	408752,995	4249541,186	274,439
2041	408753,195	4249541,766	274,492
2042	408753,756	4249542,201	274,493
2043	408754,213	4249541,94	274,51
2044	408753,954	4249541,624	274,682
2045	408753,659	4249541,513	274,782
2046	408753,355	4249541,026	274,663
2047	408753,168	4249540,773	274,593
2048	408752,953	4249540,417	274,675
2049	408752,563	4249540,063	274,747
2050	408752,33	4249539,731	274,67
2051	408752,072	4249539,739	274,41
2052	408751,764	4249539,644	274,227

Table 9 Feature H

Point	X	Y	Z
2053	408752,984	4249538,436	273,803
2054	408753,498	4249538,769	273,725
2055	408753,8	4249539,011	273,822
2056	408754,027	4249539,201	273,863
2057	408754,286	4249539,415	273,874
2058	408754,632	4249539,625	273,922
2059	408754,827	4249539,811	273,986
2060	408755,106	4249540	274,046

Table 10 Feature I

Point	X	Y	Z
2061	408747,808	4249535,598	273,543
2062	408748,064	4249536,334	273,743
2063	408747,061	4249536,327	273,877
2064	408746,438	4249537,166	274,048
2065	408745,723	4249536,16	273,666
2066	408746,722	4249535,68	273,482
2067	408747,186	4249536,788	273,955

Table 11 Feature J

Point	X	Y	Z
J-100	408767,424	4249536,528	242,064
J100	408767,371	4249536,556	242,06
J101	408767,722	4249536,78	242,112
J102	408768,016	4249537,067	242,079
J103	408768,259	4249537,284	242,101
J104	408768,571	4249537,485	242,15
J105	408768,852	4249537,472	241,923
J106	408769,009	4249537,646	241,913
J107	408769,097	4249537,859	241,939
J108	408769,139	4249537,671	241,605
J109	408768,996	4249537,493	241,58
J110	408768,761	4249537,206	241,479
J111	408768,58	4249537,042	241,573
J112	408768,224	4249536,703	240,884
J113	408767,917	4249536,503	240,714
J114	408767,67	4249536,376	240,722
J115	408767,401	4249536,124	240,856

Table 12 Feature K

Point	X	Y	Z
K100	408742,817	4249561,557	244,525
K101	408742,648	4249561,202	244,791
K102	408742,669	4249560,752	244,868
K103	408742,438	4249560,241	244,863
K104	408742,23	4249559,398	244,872
K105	408741,682	4249558,366	244,95
K106	408741,439	4249557,723	245,06
K107	408741,165	4249557,023	245,069
K108	408740,505	4249555,933	244,978

K109	408741,215	4249555,337	245,112
K110	408740,96	4249554,71	245,041
K111	408740,831	4249554,226	245,038
K112	408740,538	4249553,755	244,963
K113	408740,569	4249553,295	244,991
K114	408740,357	4249552,735	244,992
K115	408740,374	4249552,142	245,084
K116	408740,163	4249551,61	245,005
K117	408739,862	4249550,925	245,048
K118	408740,023	4249550,486	245,056
K119	408740,222	4249550,19	245,043
K120	408740,695	4249550,288	245,051
K121	408740,707	4249550,888	245,044
K122	408740,782	4249551,54	245,05
K123	408741,078	4249552,23	245,212
K124	408741,511	4249552,565	245,182
K125	408741,825	4249553,137	245,333
K126	408741,736	4249553,8	245,572
K127	408742,316	4249554,467	245,664
K128	408742,682	4249555,017	245,893
K129	408743,091	4249555,461	245,821
K130	408743,477	4249556,278	245,781
K131	408743,486	4249556,989	246,002
K132	408743,544	4249557,756	246,139
K133	408743,673	4249558,574	246,5
K134	408743,785	4249559,499	246,767
K135	408744,142	4249560,091	246,751
K136	408744,041	4249561,083	246,824
K137	408743,861	4249561,614	247,005
K138	408743,459	4249561,919	246,856
K139	408743,362	4249561,734	246,884
K140	408743,472	4249560,924	246,932
K141	408743,443	4249560,331	247,003
K142	408743,281	4249559,688	247,25
K143	408742,965	4249558,784	246,99
K144	408742,635	4249558,063	246,94
K145	408742,113	4249557,236	246,904
K146	408741,785	4249556,63	246,827
K147	408741,336	4249555,611	246,73
K148	408741,073	4249554,782	246,742
K149	408740,857	4249554,048	246,697
K150	408740,818	4249553,376	246,721
K151	408740,502	4249552,623	246,434
K152	408740,321	4249551,92	246,552
K153	408740,164	4249551,328	246,304
K154	408740,057	4249550,862	246,437
K155	408739,922	4249550,403	246,503

Appendix B: Sketches

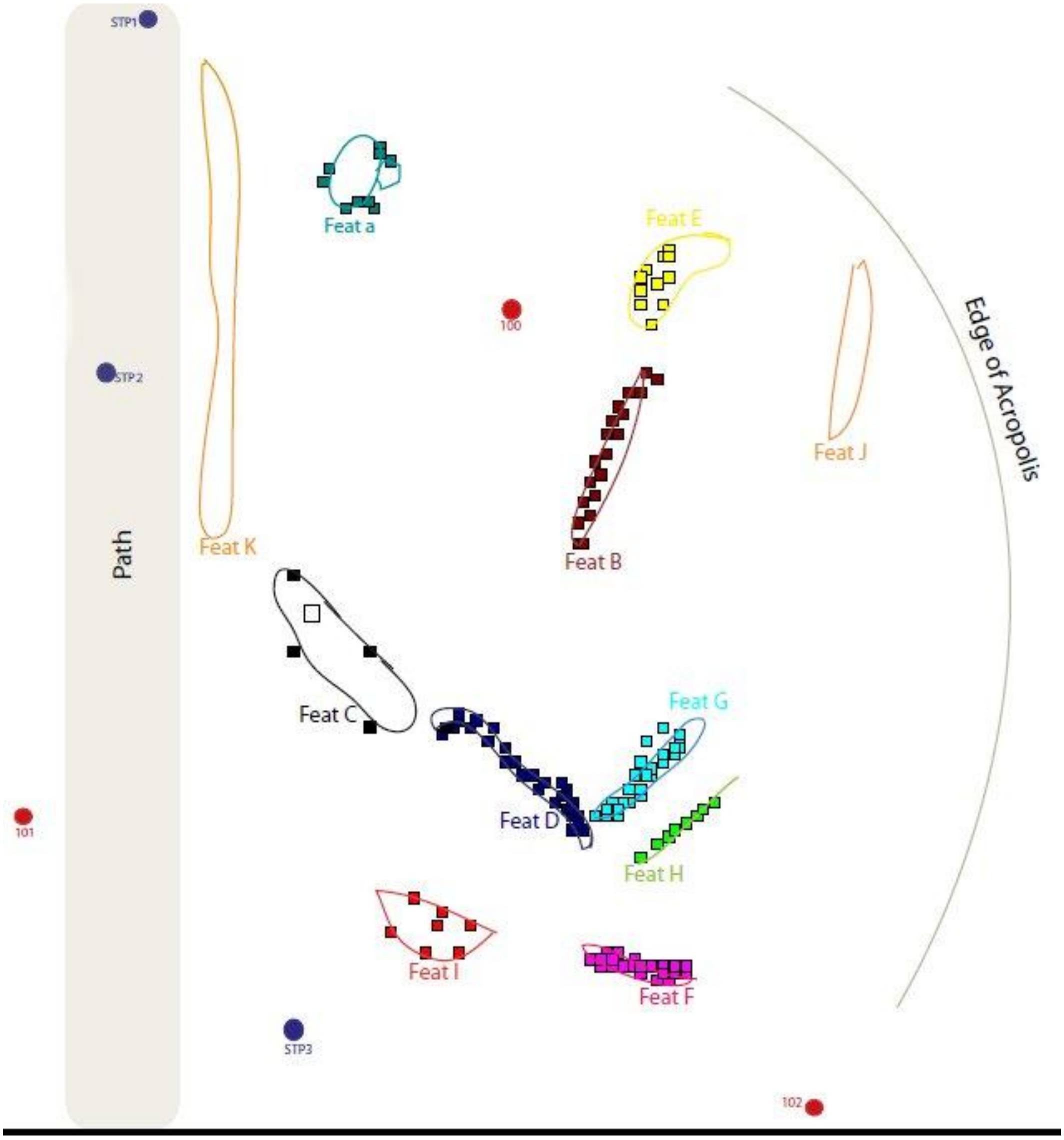


Figure 1: Combination of the sketch made during recording and the first plan modeled from the coordinates. North is straight up.

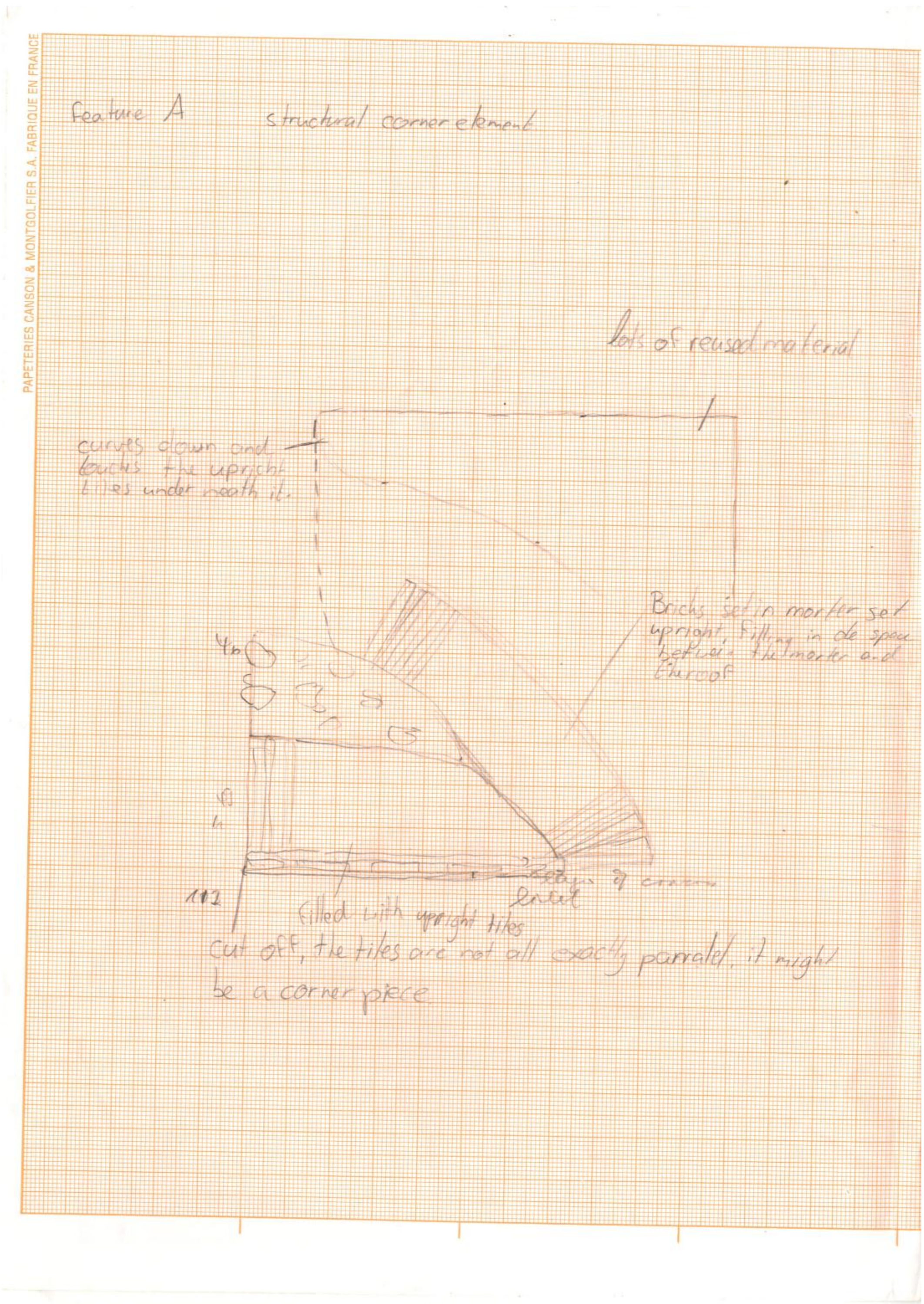


Figure 2: Sketch of the structural corner element of feature A, made during recording.

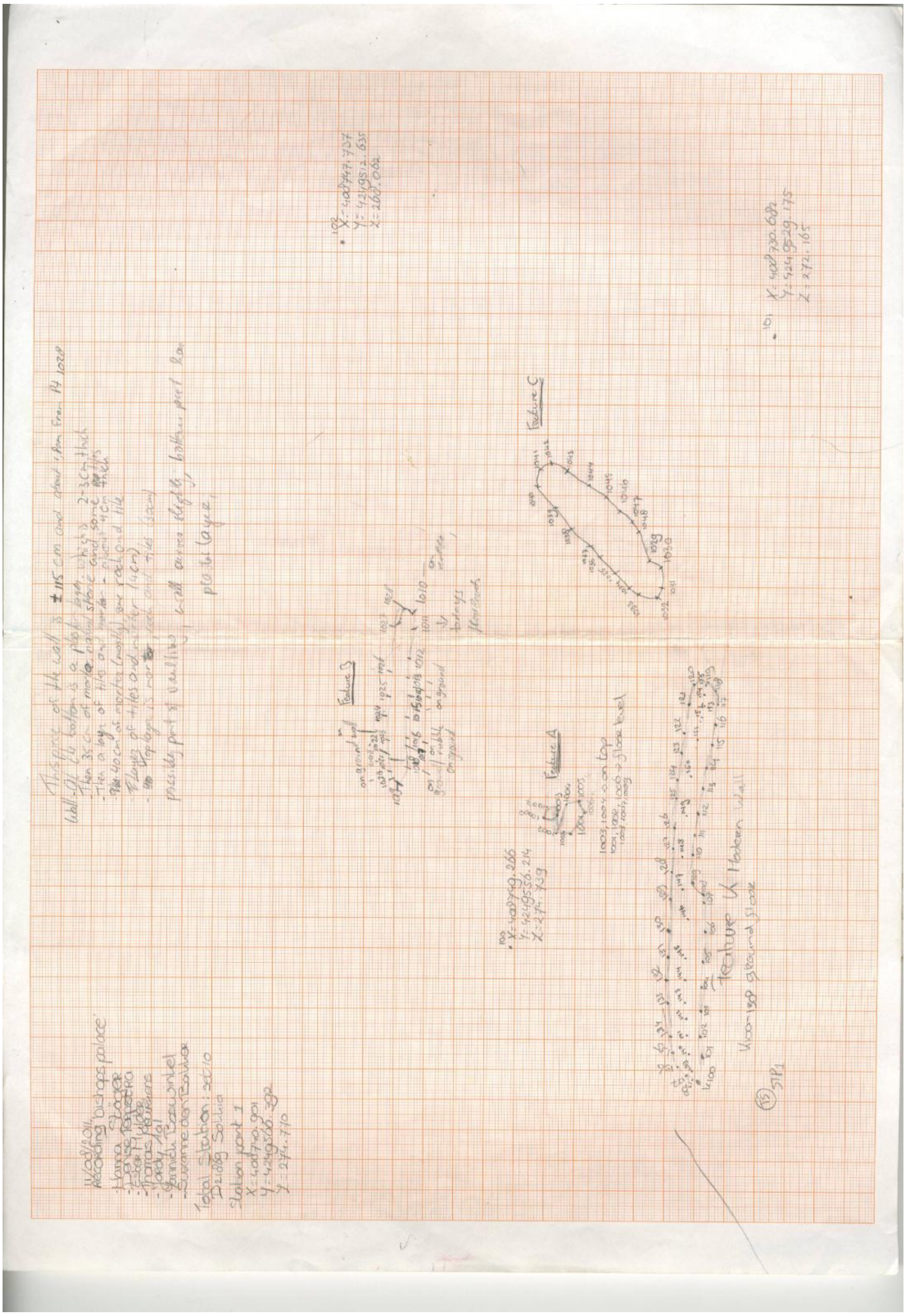


Figure 3: Sketch made on recording day 1. Many descriptions and notes are written on the sketches to make sure some important details are not forgotten in the analysis.

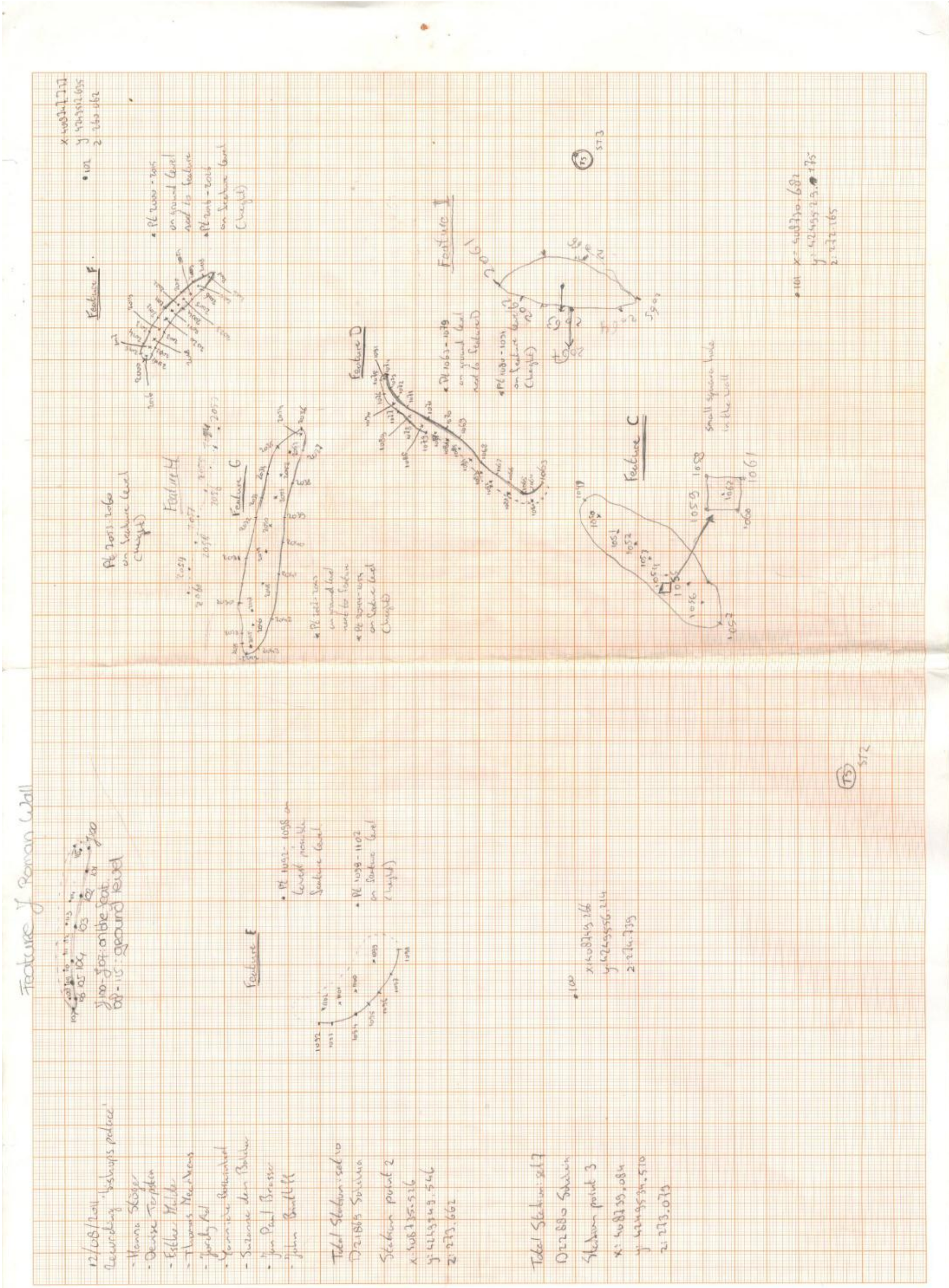


Figure 4: sketch made on recording day 2.

Appendix C: Plans

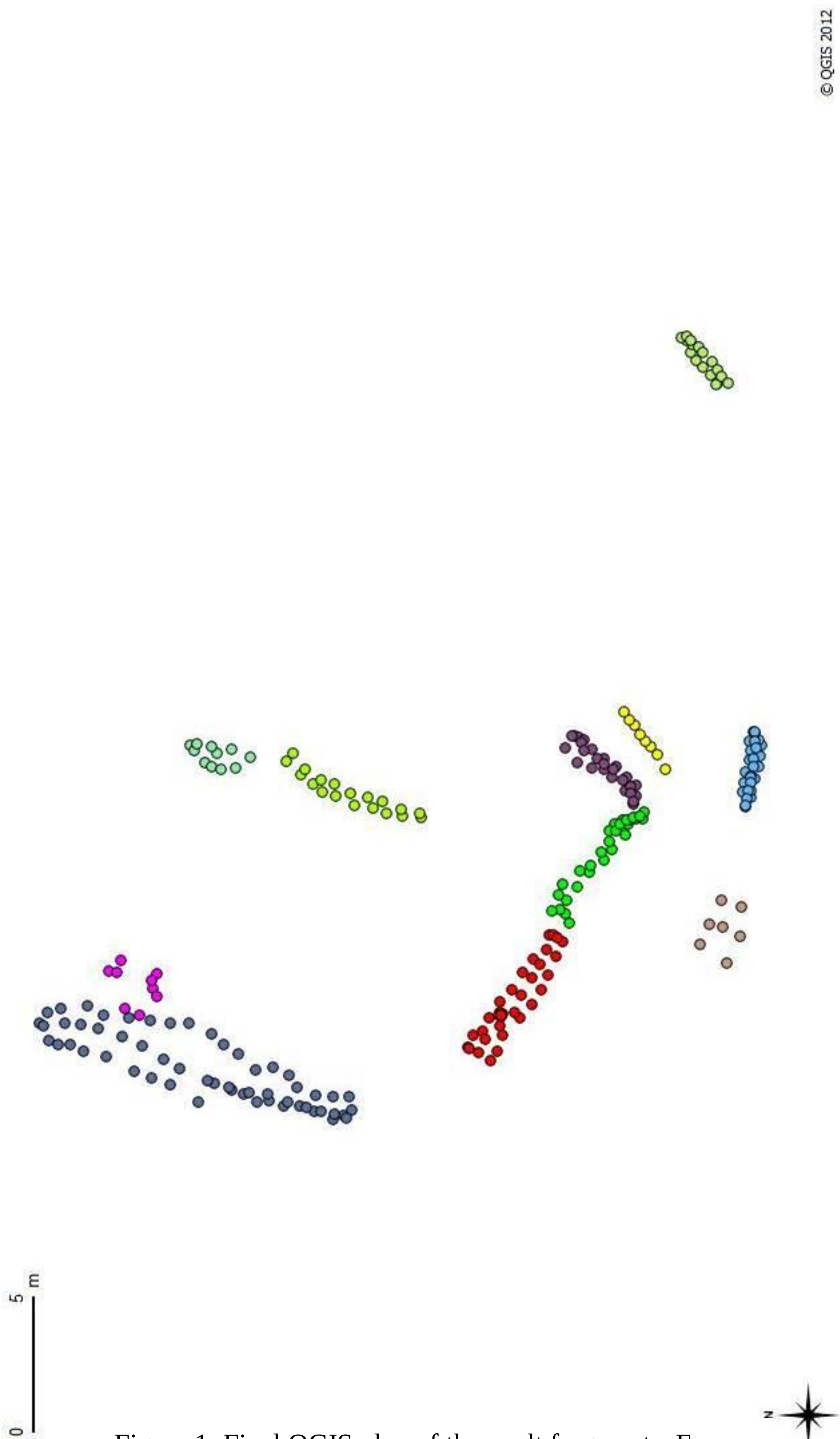
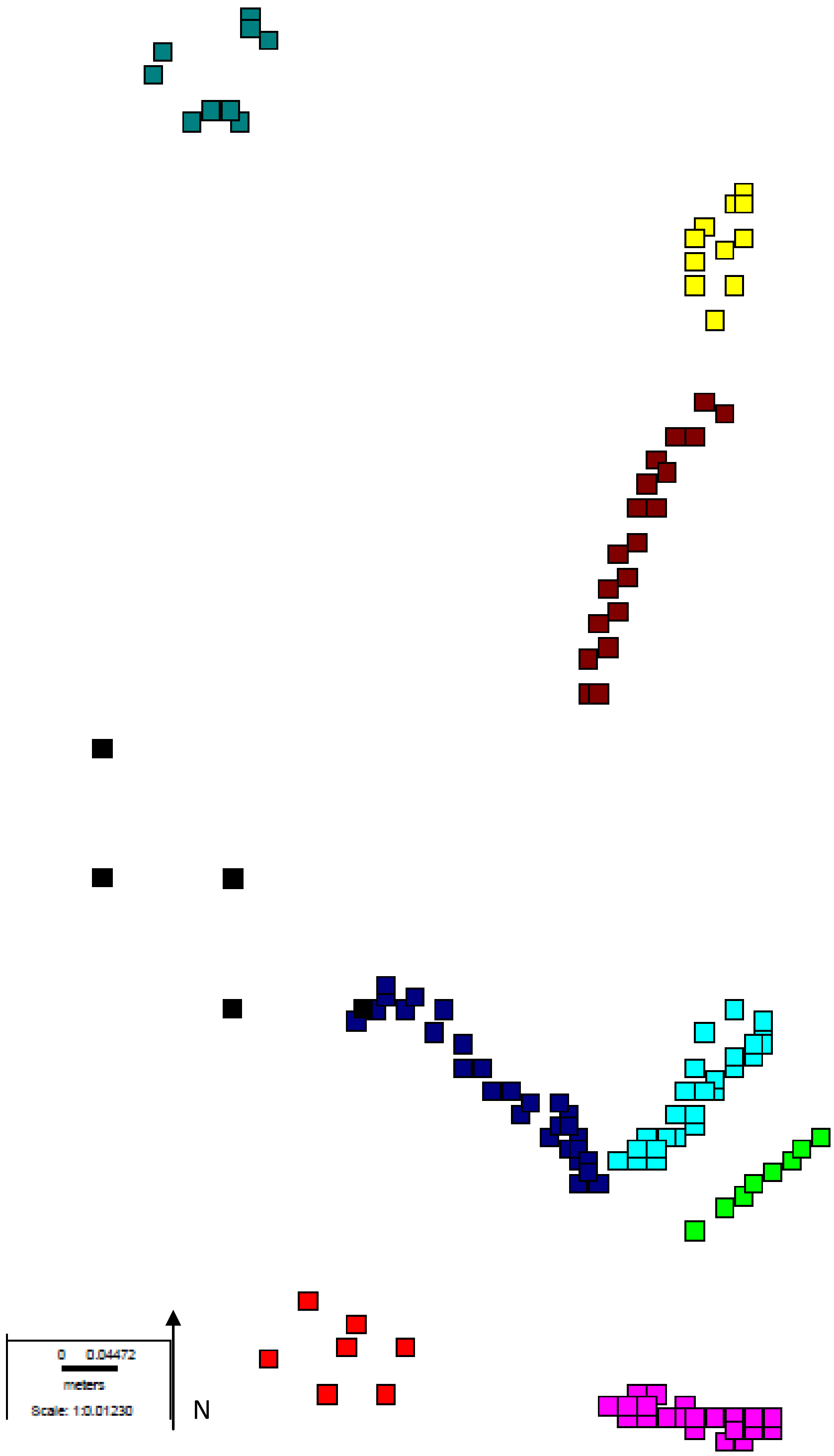
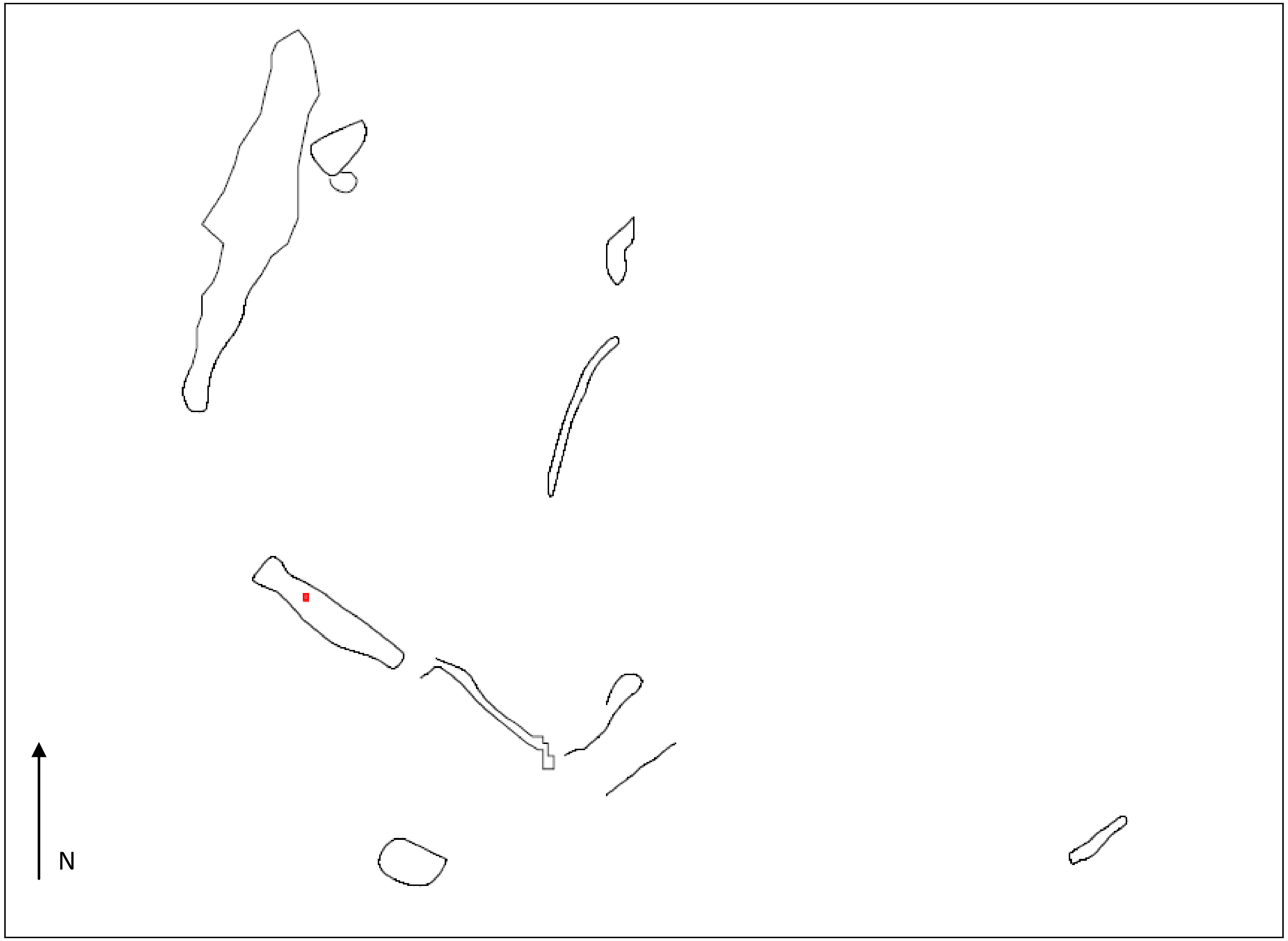


Figure 1: Final QGIS plan of the vault fragments. Every dot is a measurement, all features have different colours.



<u>Figure 2:</u> Preliminary MapInfo plot of the coordinates. Features: A – teal, B – brown, C- black, D – dark blue, E – yellow, F - pink, G – light blue, H – green. I – red. J and K are missing. Also note that something went wrong with the scale in this version.

Figure 3: Line plan of the features created in MapInfo Professional. F is missing. The red dot in C is the presumed beam hole.



Appendix D: Database of descriptions

Ceilings	Building materials	Building technique	Length	Height	In relation with
A	Limestone rubble; mortar; bricks - 36x36x3.5cm	Brick arches, one with fill. Large block limestone rubble in mortar.	~1.0 m	~2.0 m	
B	Bricks - 27x27x3 cm; mortar 3 cm; limestone rubble	Layering of limestone rubble in mortar and bricks in mortar. Bottom layer is plastered (5cm) and curves)	1.15 m	1.80 m	E, X
C	Limestone rubble; mortar; bricks - 30x30x3 cm	Layering of limestone rubble in mortar and bricks in mortar. One loose smaller piece only limestone in mortar.	5.25 m	1.02 m	D
D	Bricks - 30x30x3 cm; mortar 3-5 cm	Layers of bricks, overlapping halfway with the previous layer.	3.43 m	0.55 m	C
E	Bricks - 35x35x3.5 cm; mortar 2-4 cm; limestone rubble	Layering of limestone rubble in mortar and bricks in mortar. Similar to B	2.0 m	0.7 m	B, X
F	Bricks - 27x27x3 cm; mortar 3-5 cm; limestone rubble	Layering of bricks in mortar and limestone rubble in mortar.	2.71 m	0.4 m	G, H
G	Bricks - 30x30x3 cm; mortar 2-4 sometimes 7 cm; limestone rubble	Three layers of limestone rubble in mortar and bricks in mortar.	3.43 m	1.09 m	F, H
H	Bricks - 30x30x3 cm; mortar 2-4 cm; limestone rubble	Layers of bricks in mortar and limestone rubble in mortar	1.5 m	0.3 m	F, G
I	Bricks - 26x26x3; mortar; limestone blocks 15x15x15 cm	Layers of bricks in mortar and limestone blocks in mortar, blocks are roughly squared and similar sized.	0.7 m	0.1 m	
J	Limestone blocks, 15x15x15 cm.	Stacked limestone blocks, roughly squared, in mortar			**Roman wall
K	Natural stone blocks	Stacked various shapes of stone blocks, no mortar	~6.0 m	0.15 m	**Modern wall
X	Bricks - 27x27x3 cm; mortar 3 cm; limestone rubble.	Layering of limestone rubble in mortar and bricks in mortar. Similar to B and E	1.2 m	0.5 m	B, E