Nubia VI

Mariusz Drzewiecki

Mighty Kingdoms and their Forts

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Institute of Mediterranean and Oriental Cultures of the Polish Academy of Sciences

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Front and back cover: early medieval fortified site Kassi-Markol in the Third Cataract area.
View from the east. The person shown in the photograph is Beata Drzewiecka (photo. M. Drzewiecki).

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Introduction

This book discusses the significance of fortified sites in the formation and functioning of late antique kingdoms in Upper Nubia. In order to introduce the concept of the research to the reader, I will begin with the basic term which appears both in the title of the publication and in its first sentence, namely, fortified sites. Frequently, the literature applies the term "fortifications" mainly to modern period structures and refers to their military aspect (*e.g.* Bogdanowski 2002: 520). The objective of my analysis is to show that the sites in Upper Nubia, apart from defensive features and properties, additionally fulfilled other functions. For this reason, I am inclined to adopt an alternative concept of the term, namely that presented by Matthew Johnson (Johnson 2002) in his studies of medieval and Renaissance castles in England. He regarded these buildings as multi-purpose structures. Apart from military functions, which especially for Renaissance castles were more symbolic, they also fulfilled broadly understood economic and social roles. I associate fortified sites with the concept of power and people who were in possession of it. These buildings were a medium exploited to manifest power, perceived in different ways by representatives of various social groups. According to Johnson, castles constituted an inseparable part of the landscape. They were interpreted in this context by the people who lived in the area and they should be interpreted in this manner in our times.

The reader might inquire why I solely undertake the interpretation of fortified sites. If I studied them together with open settlements, I would have a more complete image of the settlement network and settlement patterns in the researched area. Moreover, other occupation sites were also parts of the landscape and definitely played their roles in its interpretations. It must be understood, however, that Upper Nubian fortified sites of that period displayed certain characteristic traits. They tended to be the largest man-made structures in the vicinity. Even the smallest of the sites are exceptional structures (massive and/or compact) and were conspicuous in their locations. In the case of the largest fortifications, the walls sometimes reached a thickness of 5 m, and the enclosed area exceeded 30,000 m^2. The internal part was protected, enclosed by the walls and thanks to them could be treated in a different manner from the external space. It is a fundamental symptom of bias in the understanding of space, which is also related to the people who lived inside as opposed to those who lived outside (definition of social inequality in Price, Feinman 2010: 2). On that basis, I distinguish fortified sites from monastic complexes. The latter were different due to the fact that they separated the zones of *sacrum* and *profanum*, and marked the area accessible to monks and high-ranking people in the religious hierarchy. Open settlements, on the other hand, could express divisions on the micro scale, depending on the family relations, where a house as a form which separated a certain space could limit access to the people from outside the closest circle.

To sum up, I regard fortified sites as buildings which are conspicuous in the area and possess defensive features, but are also full of meanings. They indicate the existence or intention of representing and controlling of social inequalities. This means that the selection of settlements analysed in this book might seem inappropriate to some scholars, particularly in the case of sites at Umm

Ruweim 1 and Umm Kuweib. The opinion that they are not fortified sites since their location and architectural features do not correspond with optimal defensive solutions has been put forward (Eiger, Karberg 2011: 77). According to my definition, these structures perfectly fit the concept of fortified sites because they incorporate elements implying their defensive potential (gates and ramps leading to enclosure parapet walls), yet they do not have to be constructed solely for such purposes and thus they might display certain simplifications or solutions which are irrelevant in military/defensive terms (relatively small thickness of the walls, location next to a hill in the case of Umm Ruweim 1).

The remains of the analysed fortified sites are situated in Upper Nubia. The name of the region comes from Nubians who inhabited the area from at least the 4th century AD (Rilly 2008: 223). Upper Nubia is now a part of present-day northern Sudan. The land consists mainly of desert, and its southern part is now gradually becoming a semi-desert. The valley of the Nile, which crosses the sands and rocks, is a characteristic feature of the region. This fertile stretch of land has concentrated the majority of permanent settlements since the Middle Ages. Following David Edwards (Edwards 1989: 3–8), I assume that the northern border of Upper Nubia is located in the area of the Third Cataract. I mark the southern border at the level of the southernmost fortified settlement. It is Umm Marrahi[1], situated approx. 30 km to the north of modern Omdurman. Today Nubian settlement covers only part of the region, however, in the Middle Ages it stretched to the larger part of the Middle Nile valley. Three kingdoms emerged in Nubia at that time. According to written sources, the lands of Upper Nubia belonged to two of them, the kingdoms of Makuria and Alodia (repeatedly in Vantini 1975).

Written sources which refer to that period mention fortified sites extremely rarely. Nevertheless, the results of archaeological investigations indicate that intensive construction activity associated with defensive enclosures began somewhere in the Late Meroitic (2nd–4th century AD)/Post-Meroitic (4th–6th century AD) times (see Appendix). Fortified site construction flourished in the Post-Meroitic and Early Christian (which began in the 6th century) Periods in Upper Nubia (Żurawski 2001b: 355–385; 2013: 127–128). Another period of intensified building of fortified sites can be assigned to the Late Christian Period (12th–16th century). In the centuries which followed, in the times of the Fung Sultanate (16th–19th century) and Turkish rule (19th century), defensive buildings constituted an inseparable element of the landscape in the valley of the Middle Nile. The main form of fortified site which was built in the Late Christian Period was the so-called castle-house (Adams 1994: 11–46), and its presence can be noted in southern Nobadia as far as the Third Cataract region (Edwards, El-Zein 2012: 194–197; Edwards 2014: 180–181). In other parts of the valley of the Middle Nile (Makuria and Alodia) selected earlier fortified sites were reoccupied, and their walls restored or strengthened. New settlements also emerged in the area of the Third Cataract and up the river (however, they do not represent the form of castle-house), yet they have been researched to a much lower degree than the early medieval structures.

Associations of fortified sites with historical events are relatively poor. Defensive sites are not mentioned at all in sources concerning political changes in Nubia in the Late Antiquity. For this reason, I attempt to show such archaeological and historical connections in this work. Thus my research hypothesis is that fortified sites played active social, economic, and ideological roles in the history of emerging and declining kingdoms and empires. This will be illustrated using examples of the best studied Late Meroitic/Post-Meroitic and Early Christian settlements in Upper Nubia.

Thus the most fundamental research question should be the following: *why were fortified sites built in Upper Nubia in that period*? The question is general and comprehensive at the same time. It draws the scholar to the manner of thinking and strategies of the people who decided to erect such structures. This means that by empirical studies of the remains of the past I will endeavour to understand the non-material culture of those societies. Many aspects of the question can be answered thanks to general theories known today. In light of the definition of fortified sites provided above, I will try to elaborate on the subject

[1] There are no medieval fortified settlements detected in the south of Umm Marrahi, which does not mean they did not exist. The area of Gezira (between the White Nile and the Blue Nile) has been used for big-scale farming since the beginning of the 20th century. For this reason, if there were such settlements in the area, they might not be visible on the land surface.

in the context of power, its changes, and strategies adopted by subsequent rulers.

A natural consequence of this approach is following research question: *who built fortified sites in Upper Nubia in the Late Antiquity period*? In order to solve this issue I will refer to the methods used for studies on the emergence of centres of power as well as those which discuss the concept of power, and I will make a series of the following analyses:

- the rank-size analysis, which will help to distinguish independent systems of defensive architecture in Upper Nubia as well as form preliminary hypotheses concerning the reasons for their emergence and associate them with centres of power responsible for their construction on the basis of their location;
- subsequently, I will verify the rank-size analysis results, focusing on the reasons behind the construction of fortified sites and using hypothesis based on models of *early states* formation (Carneiro 1970: 733–8; Cleassen, Skalnik 1978; Cleassen 2008: 5–8). This will lead to an answer to yet another question: *what were the strategies associated with reigns of different rulers and what role fortified sites played in them?*
- in the closing part of this book I will interpret the independent fortification systems identified using rank-size analysis and verified using the *early state* formation models, in the context of information in written sources and general history of the Middle Nile.

In the above mentioned analysis I'm assuming a connection between ruling authorities or individuals/groups striving for power and construction of fortified sites. It could be perceived as a subjective or biased approach. However, in my considerations of fortified sites construction phenomenon I did not find any other impulse or reason which could have led to such an extensive construction activity covering hundreds of kilometres of the Nile Valley.

The considerations listed above could be summarised with a statement that I will perform settlement analyses. The concept of *settlement* is interpreted in archaeology in various ways. By summing up the studies of Polish archaeologists on this subject (*e.g.* Dymaczewski 1966; Kruk 1981; Kurnatowski 1965; 1968; 1977; 1978; Rączkowski 1997; 1998; 1999; 2001) it could be concluded that it involves the relationship between human activity and the natural environment. The relationship has been represented in different ways depending on the adopted theoretical approach. In the 1980s Jan Żak (Żak 1985: 77–89) distinguished three basic research methodologies applied by Polish scholars as a consequence of varying theoretical assumptions:

- positivism, neopositivism and its instrumental extensions;
- an approach based on Marxist philosophy;
- eclectic combination of all of the above.

The first approach emphasised the significance of the natural environment. It was supposed to be the main force leading to transformations in human societies. Groups adapted to new/changed environmental conditions by transforming their culture, changing their typical behaviour and adjusting settlement patterns. This approach gave rise to many monographic works which analysed settlement in selected geographical regions (*e.g.* Dymaczewski 1966; Jankuhn 1983).

The second approach regarded the natural environment as an indispensable condition for the material life of a society (Żak 1985: 83). Nevertheless, development was seen as a consequence of social practices, which depended on social activity (humanistic determinism postulated by Henryk Łowmiański 1967: 15–17). This can be presented in following way:

social activity
↓
social practice
↓
development of human society

According to Jerzy Topolski (Topolski 1982; 1983; 1984), the existence of needs was a fundamental drive for human activity (**Fig. 1**).

This diagram could serve as an aid in creating a dynamic representation of settlement (Żak 1977: 423). It helps to depict the transformation process and, what is even more important, its mechanisms. It is a historical approach since instead of a description of consecutive, chronologically listed phases of settlement it shows mechanisms of social changes, which could develop at different paces.

The list of research practices suggested by Żak could also contain the processual approach to settlement, which, due to the middle range theory, concentrated mainly on studies of relationships between the settlement and its nearest surroundings or between neighbouring settlements.

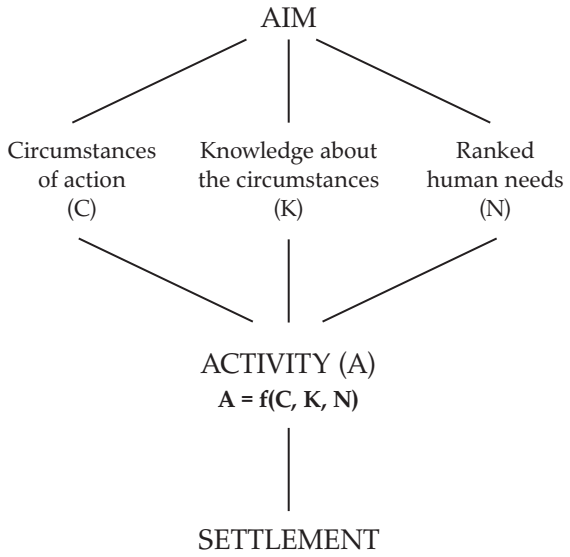

Fig. 1. Diagram of settlement pattern according to Jerzy Topolski (Topolski 1982).

In the former, the most widespread approach was formed as a result of the site catchment analysis (Vita-Finzi, Higgs 1970). It involved identification of the potential in terms of resources and manufacture which existed around the human settlements in order to define the manner and reasons for their functioning. The analysed area was selected on the basis of various preliminary assumptions, *e.g.* half of the distance between neighbouring settlements or on the basis of the calculation of the effort necessary to cover the distance from the exploited areas to the settlement. In the latter case, the neighbouring settlements relationship, the middle range theory could correspond with the central place theory formed by Walter Christaller (Christaller 1972). It also addressed the issues of connecting effort calculation, however, in this case, with transportation and trade. Summing up, the processual approach focussed on economic issues, representing them as the factor of human activity which is the most capable of generating change.

The selection of the approach to settlement analysis should depend on the research questions which are asked. Thus *irrespective of the level of analysis which we choose, our research should lead to understanding, interpreting or explaining human activity in the past* (Rączkowski 1997: 54).

Due to the nature of my research question (why were fortified sites built?) I tend to focus on social aspects of communities which lived at that time, therefore the second approach, particularly according to the definition by Topolski, seems to be the most relevant one for this study. However, my intention is to combine it with an analysis of the context of fortified settlements, which, in my opinion, will help to find additional arguments in discussion of the defences construction phenomenon.

The book will guide the reader through the reasoning and data analysis which allowed me to draw bold conclusions described in the final part of this work. As an introduction, I will present an outline of the history of the kingdoms of Makuria and Alodia with an emphasis on their beginnings (Chapter 1). Next, I will describe the research done so far and available information about fortified sites of that time in Upper Nubia (Chapter 2). I will concentrate on the approaches which were applied and general conclusions relevant for my study. I will pay attention to questions and analysis conducted to explain the significance of fortified sites. The objective of that chapter is not to list every publication which mentions defensive structures in Upper Nubia, but rather illustrate the state of knowledge related to fortifications and ideas on explaining presence of the sites in the Middle Nile.

I will then move on from the analysis of approaches taken by other researchers to the level of theory. Deriving from system theory, I will devise a research procedure which has never been used in the region but can be applied for the analysis of the sites in Upper Nubia. With this objective in mind, I present the basic assumptions of systems theory, its criticism, and an attempt at its modification (Chapter 3). I will finally connect it with a generalised two-step research procedure formed by Arkadiusz Marciniak (Marciniak 1996). It is inspired by processual archaeology and also exploits elements of contextual analysis developed by Ian Hodder. In the first phase, it involves building a model based on actualist data and translating it to empirical material by means of hypotheses. The aim of the second phase is to verify, confirm or disprove the earlier conclusions.

The research procedure formed in this manner will then serve for the analysis of defensive sites (Chapter 4). I base the first phase of Marciniak's procedure on studies of human behaviour conducted by George Kingsley Zipf (Zipf 1949). I explain their relevance to the research into past and manner of application. Next, I pass on to the analysis. I try to distinguish fortification systems in Upper Nubia. In accordance with the assumptions of the rank-size rule (another

name for the method created by Zipf) I manage to distinguish independent fortification systems which functioned in Upper Nubia: two in the Late Meroitic/Post-Meroitic Periods and one in the early Christian times. The analysis according to Zipf's method also helps to make preliminary descriptions of the integration and nature of these systems, *i.e.* whether these systems are homogeneous or dominated by one central object/site.

The next phase in Marciniak's procedure is the verification of the results. I refer to Late Meroitic/Post-Meroitic settlements in Chapter 5 and analyse early Christian settlements in Chapter 6. For testing purposes I use a model based on Henry J.M. Claessen and Peter Skalnik's ideas (Claessen, Skalnik 1978). They analysed processes associated with the emergence of complex territorial organisations which they called the *early state*. They distinguished a group of features which could play key roles in the formation of centralised power. On the basis of these features, I form four hypotheses which should help me verify whether the systems distinguished earlier (in rank-size rule analysis) are characteristic for centralised entities.

These analyses confirm the correctness of the conclusions drawn from the rank-size rule investigation at a general level. However, testing hypotheses represent a more detailed level which illustrates local variations and isolated diversions from the general model.

Finally, I present conclusions based on the results of the analyses and combine them with historical narration from Chapter 1. As a consequence, I am able to introduce new observations concerning changes in the structure of the Meroitic Empire in the Late Meroitic Period which affected the Post-Meroitic Period. The changes could have resulted from an increased Nubian activity. Based on my results I suggest that in the period, the Meroitic Empire built a number of fortified sites on the left bank of the Nile or on islands. That system stretched unevenly along 550 km of the river valley. In the Post-Meroitic Period independent Kingdom of Makuria formed in the southern Dongola Reach started to build their own fortified sites. At the beginning Makuria functioned as a centralised system with the biggest site being the fortified site, however, after adopting Christianity, along with territorial development, Makurian system of power became more homogeneous and large fortified sites were built in other places as well. The rulers of the Kingdom of Alodia, on the other hand, exploited Meroitic achievements in the field of fortifications. In the first centuries of the existence of the kingdom, they maintained and probably developed their defence system (a different perception of this phenomenon was presented by Derek Welsby 2014: 188–190). Nevertheless, their capital (Soba) was not fortified and the system ceased to be used in an unknown period.

The Appendix at the end of this book contains a catalogue of all analysed fortified sites. It includes sources of information used in the analyses, together with plans of the sites and data concerning their contexts.

In these final lines of the Introduction I would like to explain that my focus on the early periods of the Kingdom of Makuria is partly forced by the state of research. I assume that fortified sites were built to serve a particular purpose. The main functions of the settlements might have changed in time, together with the transformations of the socio-political situation. The sites were rebuilt, abandoned, repopulated, *etc*. The sequences of these events are difficult to establish without more detailed studies. Therefore, as opposed to what may seem, the original objective of construction of a fortified site is easier to analyse than the rationale behind its subsequent repopulation since the context of the settlement is of key significance in this case. When one starts to search for an answer to the question why a site was built in a certain place, she/he is actually looking at the issue concerning the purpose of the fortification construction.

Moreover, I concentrate on the Late Antiquity Period as there is the most abundant information available for this period. In order to analyse late medieval settlements, it would be necessary to refer to the fortifications built and exploited in the times of the Fung sultanate (16th–19th century). However, detailed studies of settlements dated to that period have not been performed in Upper Nubia. Works by W.Y. Adams (Adams 1994), O.G.S. Crawford (Crawford 1951) and Intisar Soghyroun el-Zein (Soghyroun el-Zein 2004) are among few outstanding exceptions to that rule.

The group of fortified sites dated to the Late Meroitic/Post-Meroitic and Early Christian Periods which I distinguish could soon change as a result of the definition of fortified sites which I have adopted in this study as well as the state of research. Although the state-of-art is better in comparison to the information concerning more recent settlements (Late Middle Ages/Fung), there

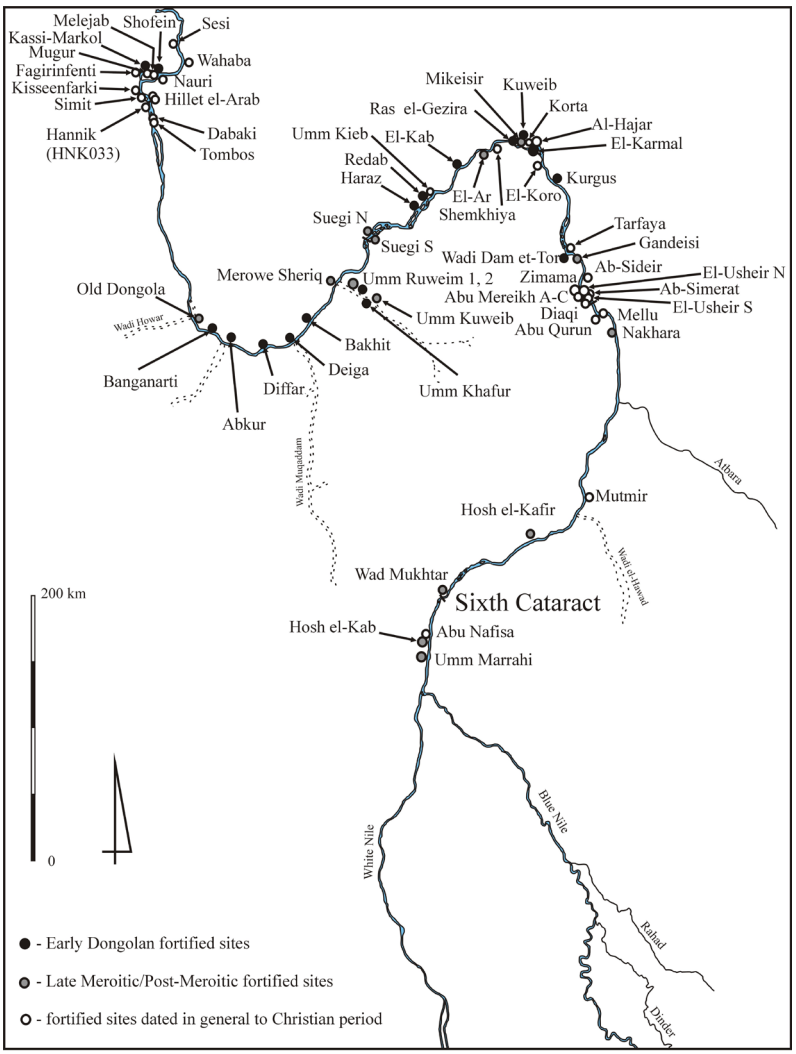

Fig. 2. Map of Upper Nubia with selected fortified sites.

are still many gaps and unanswered questions. New sites unknown from literature, are still discovered in Upper Nubia. This is true for the Nile Valley as well as the desert areas, which still remain a *terra incognita* to a certain extent.

A lot of fortified sites are dated in a very general manner to the Middle Ages or Christian Period (**Fig. 2**). It is a time span of approx. a thousand years. When I was not able to associate these settlements with more detailed, shorter periods on the basis of typical features, I excluded them from my analysis. Most sites of this type are situated in the area of the Third and Fifth Cataracts. These are places which will soon be submerged as a consequence of construction of hydroelectric power plants in Shereik and Kajbar. Thus in the following seasons these fortified sites might become subjects of detailed research and in a few years it will be possible to verify my conclusions on the basis of new materials.

Many fortified sites still have not been described in detail, however, their contexts remain even less understood. *Archaeological Map of the Sudan* (Hinkel 1977) is very general, and is available in a more detailed version only for small areas of Sudan. In such circumstances, I used, apart from published data, the satellite imagery analysis and my own field research conducted as part of the *Fortresses of Sudan* project (Drzewiecki, Rączkowski 2008; Drzewiecki 2011, 2013, 2016; Ahmed, Drzewiecki, Maliński 2012; Drzewiecki, Stępnik 2012, 2014; Drzewiecki, Polkowski 2016).

Thus the subject is very challenging and could raise controversies due to its range and the level of generality which I adopt. Nevertheless, I hope that my perception of the process of the fall of the Meroitic Empire and emergence of kingdoms of Makuria and Alodia analysed through the filter of fortified sites will add new elements to this debate.

CHAPTER 1

Last centuries of Meroe and outline of the history of kingdoms of Makuria and Alodia

The basic terms which will appear in this section are as follows:

- Meroitic Empire – the name refers to the final centuries of Kush[1], which incorporated a variety of regions. It extended from the confluence of the White Nile and the Blue Nile to Syria at the time of its greatest prosperity (Napatan Period), which fell between 760 and 654 BC (Welsby 1996: 63–65). From the 3rd century BC, Meroe was the most important location in the Empire, which then covered territories situated in present-day Sudan and southern Egypt. The fall of Kush is generally dated to the 4th century AD (Edwards 2004: 181–185).
- Post-Meroitic Period – this begins after the generally accepted time of fall of the Meroitic Empire. It was the time when the activity of local Nubian rulers intensified. The 6th century was recognised as the end of this period. This is when Christianity officially reaches Nubia (Welsby 2002: 31–38). There were three Nubian kingdoms at that time: Nobadia, Makuria, and Alodia.

Nubians before the Post-Meroitic Period

The history of Nubians and the rulers of their medieval kingdoms of Nobadia, Makuria, and Alodia is not well understood. I present here merely one of the possible narrations on the subject, which will pave the way for an attempt at an explanation of the varied results of the analyses which will be made towards the end of the book.

Fig. 3. Map of Nubia with selected names mentioned in the text.

Linguistic analyses indicate that Nubians settled in the valley of the Nile around the 4th century

[1] All Arabic and Nubian geographical and historical names in this book are spelled according to the English spelling found in relevant references. The references on the subject of fortified sites nomenclature can be found in the catalogue of the sites.

AD (Rilly 2008: 223). However, the first reports of the people who could be interpreted as Nubians appear in the work by Strabo. He wrote it in the 1st century BC, nevertheless in the text he quotes Eratosthenes, who lived in the 3rd century BC. According to this author, the valley of the Middle Nile was then divided. The right bank was supposed to be the lands of Aethiopians (the Meroitic Empire) and the left bank, as far as the great meander of the Nile, was occupied by Nubae (Nubians). While power was relatively centralised in the Meroitic Empire, Nubians, according to Strabo, were divided into several kingdoms, and the people were described as nomads and bandits. Conflicts between neighbours were often caused by issues related to control of the Nile area or the islands located on the river (Strabo XVII. C. 1 §2). In the mid-2nd century AD Ptolemy partly confirmed such a state of affairs by writing that the main Meroitic settlements were situated to the east of the Nile on the island of Meroe (Stevenson 1932: book 4, 108).

Nubians are next mentioned in the context of Aezana, the king of Axum, who invaded Meroe (Eide *et al*. 1998: 1094–1103). Stone thrones built by Aezana in different parts of his kingdom bear inscriptions which describe victorious military campaigns, now dated to the mid-4th century. This date is also an accepted beginning of the Post-Meroitic Period. The description indicates that the area between the White Nile and the Blue Nile (Gezira) was then occupied by Nubians (*Noba*). They lived in stone cities, two of which they had captured from the Meroitic Empire (*Kasu*). They also had temples and representations of gods, as well as gold and silver vessels. They were farmers. The remnants of the Meroitic Empire were located to the north of these lands. Further down the river, in an unspecified region, Red Nubians (*Red Noba*) were supposed to have settled.

These are the only inscriptions which represent the fall of the Meroitic Empire in Upper Nubia (Welsby 1996: 197–199). On this basis, many scholars assumed that the state ceased to function after the mid-4th century (Arkell 1961: 171–172). Many factors were taken into consideration as the causes of the fall of Meroe, such as: the arrival of the Noba people (Shinnie 1986: 58–59), increased activity of nomadic tribes, or trade competition with Axum (Török 1988: 41–42), *etc*. Archaeological material has shown a gradual disappearance of Meroitic art, architecture, religion, texts in Meroitic language and changes in pottery production and decoration.

Distribution of archaeological artefacts may suggest certain divisions. Remains of Meroitic cities have not been detected on the left bank of the Nile, starting from Sanam (area of the Fourth Cataract) towards the upper course of the river. The biggest concentration of such cities can be found in Butana (region to the east of the Nile, between the Fifth and Sixth Cataracts). On the other hand, tumuli cemeteries tentatively dated to the Late Meroitic/Post-Meroitic Periods are situated on the left bank. They are mostly concentrated along the stretch of the Nile between Khartoum and Abu Hamed (Welsby 1996: 59).

The next written sources come from the 6th century. They report the existence of three Nubian kingdoms which accepted Christianity as a result of the activity of Byzantine missionaries (Adams 1977: 433–458). Makuria was baptised according to the dyophysite doctrine before AD 573 while Alodia was baptised by the monophysite bishop Longinus around AD 580. It is the generally recognised event which finished the Post-Meroitic Period.

Lower Nubia

The Post-Meroitic Period in Lower Nubia is slightly better represented in written sources. It is also referred to as Group X (Reisner 1910: 345) or the Ballana Culture (Emery 1938) in the literature. At the beginning of the Current Era the northern part of Lower Nubia was a Roman province called *Dodekaschoinos*. It covered the area between Philae and Maharaqa. The province occupied a part of the Nile Valley which was approx. 120 km long, *i.e.* 12 *schoinos*. The region upstream from Maharaqa was under Meroitic rule.

According to Procopius, who wrote his works in the 6th century, Diocletian, the Roman emperor, decided to withdraw from the region of *Dodekaschoinos* in AD 298. This was mainly due to problems with defending the province from increasing hostile activities of nomads (Török 1988: 29–30). The emperor invited Nubians (*Nobades*) to become *foederati* when he was in the process of withdrawing his troops. They agreed to protect the border of the Roman Empire in return for various privileges. Romans also negotiated with a second power in the region, Blemmyes tribes. They were also offered an opportunity to become *foederati*. Later sources mention recurring battles between Nubians, Blemmyes, and the Roman

Empire. The three forces entered and broke alliances with a surprising frequency. For instance, Blemmyes and Nubians raided Aswan which was the border of the Roman Empire. Next, conflicts broke out between Nubians and Blemmyes (Edwards 2004: 195–198).

Silko was most probably the ruler who defeated and eventually expelled Blemmyes, as well as united the whole region of *Dodekaschoinos*. He strengthened the power of Nubians in Lower Nubia. The kingdom of Nobadia derives from his times. He reported his successes by means of inscription on the wall of the temple of Mandulis in Kalabsha. The chronology of these events is now estimated as the beginning of the 5th century (Welsby 2002: 17). The area from *Dodekaschoinos* towards the upper course of the river, which previously belonged to the Meroitic Empire, was then under Silko's government. According to László Török (Török 1988: 221–226), Silko, as well as his predecessors and successors, were buried under burial mounds at the cemeteries at Qustul and Ballana (Török 2011: 529). They were located fairly close to Pachoras, the future capital of Nobadia.

Power in the Post-Meroitic Period

Tumuli cemeteries are the main category of sites associated with the Post-Meroitic Period. They include the so-called elite or royal necropoleis, such as Ballana, where, according to scholars, the rulers and other people important in the Nubian social structure were buried. Such cemeteries can be found both in Lower and Upper Nubia (Welsby 1996: 201). What was the area ruled by the people who were buried in these graves? At the moment there are at least two possible answers to the question. On the basis of artefact analysis and attempts at reconstruction of funerary rituals at El-Hobagi, Patrice Lenoble (Lenoble 1999: 157–198) tried to confirm the continuation of the Meroitic rule in the Post-Meroitic Period, at least between the Fifth and Sixth Cataracts. The rulers are supposed to have left Meroe after Aezana's invasion, which would result in moving the royal necropolis from Meroe up the river to El-Hobagi. However, László Török (Török 1999: 133–156) interprets the same artefacts in a different way. He states that most of the objects which would confirm the "Meroitic nature" of El-Hobagi were made several centuries earlier. After being made they were used, then ceased to be used (as a consequence of deposition in tombs or other events), and next, due to tomb looting or earthwork, were used again and were finally deposited in the tombs of El-Hobagi. On the other hand, the Meroitic government was supposed to have gradually changed and become divided under the influence of Nubians who infiltrated it. That transpired in the Post-Meroitic Period. Both scholars assumed the continuity of Meroitic rule in that part of Nubia in the Post-Meroitic Period, though each of them understood it differently.

Christianisation of the kingdoms

The kingdoms were already developed political entities at the time of baptism. The Kingdom of Nobadia occupied the Nile Valley between the First and Third Cataracts, Makuria extended from the Third Cataract up the river. Its southern border in the Nile Valley is not clearly defined, it could have been located in the area of the Fifth Cataract (Drzewiecki 2011: 93–107), Alodia was supposed to have been situated to the south of Makuria (Welsby 2002: 24–28). Old Dongola was then the capital of Makuria, and the seat of the ruler was most probably located somewhere at kom A, which formed the largest the fortified site in Upper Nubia. The first churches in Old Dongola were erected outside the walls of fortified site – kom A (Jakobielski 2001: 9–14). It is concluded that the area enclosed with fortifications was mostly occupied and the free space, if there was any available, was too small for such enormous buildings. This conclusion is supposed to indicate a high level of development of the Kingdom of Makuria at the time of baptism.

Soba, the capital of Alodia, was most probably devoid of fortifications (Welsby 2002: 120). The whole area of the kingdom has scarcely been researched archaeologically. Nevertheless, the information available at the moment implies that defensive structures were built in this kingdom from the beginning of the Middle Ages (Welsby 2014: 188–190) as well as in the Late Christian and Islamic Periods (Chittick 1963: 264–272). The chronology of many of these structures has not been precisely established (Drzewiecki 2013a: 146). Some scholars suggested earlier, Late-Meroitic/Post-Meroitic dates for certain fortified sites (Crawford 1953a: 18; Hakem 1979: 155; Lenoble 2004c: 124f).

Tumuli cemeteries began to disappear after the baptism. They were replaced with Christian tombs. The two forms can often be found within

one necropolis. A tumulus situated in such a context next to Christian *box-graves* at site Shemkhiya 10 has been explored (Żurawski 2008: 441). Although the barrow has not been looted, there were no grave goods in it (only fragments of textiles, probably remains of a shroud). It is an unusual situation in the case of Post-Meroitic tombs and it might suggest a gradual penetration by the Christian faith in this part of the Nile Valley. The change in religion resulted in standardised burial forms, therefore, the so-called prestigious tombs, *i.e.* burials under the largest barrows, characteristic for the Post-Meroitic Period, disappear from the archaeological material. Certain varieties in burials emerged with the passage of time. Apart from the simplest tombs of *box-grave* type, mastabas made of mud brick or fired bricks with white lime plaster were built. There were burials in churches and monasteries. Two burial chambers hewn in rock were discovered at a close distance from Old Dongola. A sign of the cross was carved over the entrance to one of them. However, no human remains were found inside. Recently a hypothesis was formed that the upper church in Banganarti might have been a royal mausoleum, *i.a.* due to a high number of representations of rulers on the walls of the building (Edwards 2004: 219) and the burials in the eastern part of the church, one of which is interpreted as the grave of king Zacharias (Żurawski 2014a: 254).

Administration of the kingdoms

Written sources state that Makuria consisted of many small, locally governed regions. According to John the Deacon (Vantini 1975: 44–45, 333, 339), Kyriakos was a great king whose seat was in Old Dongola and who ruled over 13 minor kings within his kingdom. Moreover, there is a number of titles known from written sources and inscriptions, which have their equivalents in the Byzantine administration. However, they might have had a completely different significance in Nubia and are regarded by many scholars as honorary titles or titles of different meaning (Hägg 1990: 147–177).

Arabic sources describing Late Christian Nubia, as well as graffiti and texts discovered mainly at Qasr Ibrim list names of various minor kingdoms which were supposedly located in the Nile Valley. The names include El-Abwab and Dotawo (Plumley 1978: 231–242; Welsby 2002: 250–255). The definition of the territories and the statuses of these political entities is difficult to establish on the basis of available information. How many autonomic or partly autonomic entities were there? It has not been verified. However, they emerged when the central power was weakened. Had they existed prior to that, as bodies which formed the kingdoms of Makuria and Alodia? The name of El-Abwab first appears in written sources in the first half of the 9th century (Vantini 1975: 78). The first mention of Dotawo comes from the 12th century (Plumley 1978: 231–242). Did separatist tendencies or a wish to detach from the major kingdoms exist? Sources do not provide such information, however, it should be noted that the rulers of Makuria and Alodia might have realised the danger of division of their kingdoms.

Outline of later period

The Kingdom of Makuria faced a serious danger in the mid-7th century. One of the Muslim armies, after the conquest of Egypt in AD 641, advanced up the course of the Nile. It appears that it crossed the territory of Nobadia without serious issues. Written sources do not deliver any data on this subject. Perhaps even then the area between the First and Third Cataracts constituted a part of Makuria. The army faced resistance only as far as Old Dongola. After the unresolved battle the parties reached an agreement. The situation repeated in the 50s of the 7th century, however, this time the agreement (*Baqt*) endured much longer. It became the basic document which settled the relationship between Muslims and the Christian Kingdom of Makuria. The treaty defined an annual exchange of certain goods, established limits for merchants and other travellers, regulated the ownership of land and possibility of extradition (Spaulding 1995: 577–594). This agreement survived until the 12th century. Between the 7th and 12th centuries, according to various authors, there were certain conflicts, nevertheless, they had little influence on the structure of the Kingdom of Makuria, and even less on Alodia (Welsby 2002: 70–71).

The 12th century was a time of dramatic changes in Egypt. The rule of the Fatimids came to an end with the death of the last caliph, al-Adid. The Ayyubids gained power and Salah ed-Din was the official ruler of Egypt from 1175 (Raymond 2005: 84). In these circumstances, Nubians attacked Upper Egypt, however, when Salah ed-Din and

his army reached Aswan, the enemy had withdrawn south. The commander's brother, Shams ed-Dawla Turanshah, led the army to the south. The Muslims conquered Qasr Ibrim in 1173. They converted the main church into a mosque and robbed the city of all supplies. Ibrahim el-Kurdi was granted the landholding of Qasr Ibrim. It served as a base camp for the troops which raided Nubian settlements located in the vicinity for the following two years. Shams ed-Dawla abandoned the plan of conquering Makuria in 1175 and withdrew the army from Qasr Ibrim (Vantini 1975: 307, 321, 327–328, 357–358, 367–370, 397, 422–423, 436, 466, 477, 504, 530, 571–572, 673–674, 744).

The decline of Makuria became more evident when Egypt was taken by Mamluks (1250 AD). Mamluk warriors constituted military units of superior rank, which often ensured the victory in battles. Armies consisting of such warriors were formed as early as in the mid-8th century by Abbasid rulers. When Mamluks captured Egypt their numbers increased and they soon became a military superpower. They also implemented a very efficient policy, *i.a.* towards the Nubian kingdoms. They took advantage of the competition for power in the royal family in Old Dongola, supported competitors, usurpers, or exiled claimants to the throne. In return, they made the rulers increasingly dependent on their support. Most frequently it proceeded as follows: a claimant to the throne arrived in Cairo requesting assistance, the sultan then sent him back with Mamluk troops in return for accepting certain obligations. The warriors helped the claimant achieve his goal and returned to Egypt. What did the overthrown rulers do? The most frequent strategy was to take flight. The kings left Old Dongola and moved up the river, usually to El-Abwab. When the Mamluk troops left Nubia, the deposed ruler made an attempt to regain power. Such situations were common between 1250 and 1366. King Semamun was dethroned three times and went to El-Abwab, just to return to Old Dongola later (Vantini 1975: 544–545).

Old Dongola finally fell in 1366. Cairo sent an army (cavalry of 3.000 warriors), this time to aid Nubians. According to the information delivered by a messenger, the king of Nubia was killed in fight for power with his nephew. The nephew became the regent of Dongola, and the brother of the dead ruler as well as his courtiers escaped to Daw (Adda?). The regent organised a feast for allied chiefs of the Arab tribe Bani Ja'd, during which he had them treacherously killed. He then attacked the allied forces, but managed to eliminate them only partially since some warriors escaped. That meant they would soon return with reinforcements and intention to take revenge on the traitor. For this reason, the next step of the regent was to plunder and abandon Old Dongola. He went to Daw to accept the sovereignty of a ruler whose brother was killed in Old Dongola. The Egyptian army helped Nubians to keep the region located to the north of the island of Mika'il (Meinarti). From that moment, the seat of the king was supposed to be located in Daw (Old Dongola was destroyed) and the nephew was based in Qasr Ibrim. The Egyptian army returned to Cairo with loot and emirs of the Kanz family and the 'Akarima tribe (Vantini 1975: 698–703). This kingdom, called Dotawo, is rarely mentioned in written sources. The last information about it comes from 1518 (Vantini 1975: 783).

There is not much information available about the fall of the Kingdom of Alodia. Both Fung chronicles and 'Abdullab tradition report that Nuba were eventually defeated in 1504–1505 (Welsby 2002: 254–255). David Reubeni, who went to Soba in 1523, confirmed that the capital lay in ruins (Vantini 1975: 751).

CHAPTER 2

Sources for the study of fortified sites in Upper Nubia

Fortified sites built in the Middle Ages have never been the main subject of interest among scholars who have investigated Upper Nubia, although there have been some exceptions. Medieval churches of the Middle Nile valley represent the most numerous categories of documented features. When the number of descriptions and analyses of defensive structures is compared to that, the conclusion might be that there is a great disproportion.

The architecture of churches has been much better explored, although there are still many questions which require further study. How can the state of knowledge on fortifications be evaluated then? Information concerning defensive architecture available now can be described as fragmentary. The conclusions drawn on the basis of this information should be treated as hypotheses which could be contradicted in the near future as a result of new discoveries and interpretations.

2.1. ANCIENT AND MEDIEVAL WRITTEN SOURCES

Texts concerning Nubia between the 5th and the 16th centuries have been discussed by Giovanni Vantini (Vantini 1975) in a monumental work entitled *Oriental Sources Concerning Nubia*. That information has been supplemented and transferred to an open database called the Database of Medieval Nubian Texts, abbreviated to DBMNT, compiled by Grzegorz Ochała (http://www.medievalnubia.info/dev/index.php/Database_of_Medieval_Nubian_Texts, accessed on 22nd Aug 2016). However, work on the collection of texts referring to the medieval kingdoms of Nubia is still in progress (Ruffini, Seignobos, Simmons 2015).

Written sources describe many aspects of the life of the people who inhabited the kingdoms of Nobadia, Makuria, and Alodia. Nonetheless, it should be remembered that they provide representations of a particular nature. The most serious challenge in the case of Nubia arises from opinions of authors who mainly come from Arabic cultural circles. Their image of Nubia is homogeneous, paying attention to the same aspects of life and history of the inhabitants. They are interested in very particular details, frequently connected with the history of Arabs. This renders a very deformed portrayal of those times, which shows the close relationships between Nubia and Egypt, and at the same time, very loose connections with other neighbours. It is merely one of the issues which force the scholar to approach written sources with caution.

The image of fortified sites created after the analysis of these sources is very chaotic. Their names are usually mentioned in connection with wars or visits of various kinds. It is possible to find a few short remarks which describe defensive structures. The walls of Dongola are represented as impossible to breach (Vantini 1975: 343). According to Ibn al-Faqih, who wrote his works at the beginning of the 10th century, Dongola was surrounded with seven walls, which were constructed from stone in their lower sections. A site called *Asfun*, mentioned in a text written in 1525, however, referring to its history, was supposed as having been located down the river from Dongola, in a place which was difficult to navigate, where the Nile divides into two or, during the flooding season, three branches (the area of the Third Cataract?). This was the border between Maris province (the former Kingdom of Nobadia) and

the central part of Makuria. Ibn 'Abd as-Salam al-Manufi claimed that the fortified site indicated the place (Vantini 1975: 762).

Al-Mufaddal and later Ibn al-Furat described details of events in 1275 and 1276. They mention the king of Makuria, David, who fled the sultan's army to one of the fortresses in the area of Dongola on the western bank of the river (Vantini 1975: 498, 537). Maqrizi's account of the raid led by Al-Afram in 1272 refers to a fortress *among waters*, possibly somewhere to the south of the Third Cataract (Vantini 1975: 649).

Muslim writers focussed rather on the significance of the fortified sites, probably illustrating their own methods of perception. Nubian fortifications were regarded as landmarks (*Asfun*) or safe places, impossible to conquer (Dongola, fortress *among waters*). The text written by friar Alvarez, a Franciscan who stayed in Abyssinia around 1525, provides an interesting insight into the role of fortified sites in a social context. He heard from a Syrian who had travelled to Nubia that churches were built inside all ancient castles and each of these castles had a captain and were not ruled over by any king (Arkell 1961: 197).

That fragmentary information could lead to a conclusion that fortified sites were associated with a variety of connotations and they might have played an active role in the administrative and social systems of those times. They generally functioned as centres of power. They were seats of rulers, administrative centres, or checkpoints/border posts.

2.2. TRAVELLERS' REPORTS AND JOURNALS

Nubia has often been described in the diaries of travellers. It tended to be just another stage of a journey or the main destination. Upper Nubia had been visited by hundreds of travellers by the time when Mahdi Uprising broke out in 1881. Only some of them left any data in the form of written notes from their peregrinations and even a smaller group published their works. Thus the material related to that time in the history of Nubia still remains unpublished in major part. In some cases, these memoirs have been catalogued and are available in many archives all over the world. The wealth of these materials is illustrated in the work written by Bogdan Żurawski (Żurawski 2001a), where texts concerning Old Dongola have been compiled.

Information delivered by travellers is different from that found in medieval sources. Fortified sites functioned in completely different cultural contexts at that time. Some of them, like the already mentioned Old Dongola, were seats of local rulers, others, such as El-Karmal, were inhabited by fairly small groups of people, and other sites gradually turned into ruins. Hence the information provided by travellers frequently represents the state of preservation or manner of exploitation contemporaneous with the given author, without any mention of previous social functions from the times of the Kingdom of Makuria. The work written by Frédéric Calliaud (Calliaud 1826: III, 187) may be an exception – it interprets the site of El-Karmal as the refuge of Candace, a Meroitic queen. However, the author does not provide arguments which could confirm this interpretation. He tries to associate directly the information of a conflict with Rome, known solely from written sources, with archaeological material.

The basic category of data which can be collected as a result of analysis of such sources is the location and old names of the sites. The maps drawn during the expedition headed by Karl Richard Lepsius (Lepsius 1850) or George Alexander Hoskins (Hoskins 1835: Map of the Nile) are examples of such data.

Descriptions of the state of preservation or drawings which depict fortified sites are very rare. Nonetheless, information of that type is extremely valuable as the sites have changed dramatically since these times. Some sites have been irreparably destroyed and in some cases their locations are difficult to establish. The 20th century was the most destructive period for archaeological remains, 19th-century drawings show the state of preservation of certain sites before the time of the most critical damage. The illustrations made by Louis Maurice Adolphe Linant de Bellefonds are a good example of this (Shinnie 1958: plates IX, XIV).

When travellers' diaries are analysed and compared to medieval sources it is evident that the former provide much more detailed information on fortified sites. The number of sites which are mentioned or described is much higher than in the case of the latter. However, these works lack discussion of the significance of these structures for medieval societies.

2.3. ARCHAEOLOGICAL RESEARCH

The first half of the 19th century was a time of increasing interest in archaeological heritage from Nubia. This was a consequence of accounts of journeys published or presented in European cities

as well as the fashion for ancient artefacts which began after Napoleon's expedition to Egypt (Thompson 2015: 97–108). In addition to the travellers and seekers of adventures, a group of scholars whose intention was to detect and describe archaeological sites appeared in the mid-19th century.

I divided the span from the mid-19th century to the present times into three periods, when different approaches to remains of fortified sites as well as different interpretations can be noted.

Mid-19th century – mid-20th century

This is the time when the trend was to detect and describe the architecture of fortified sites. The work of the Prussian Expedition headed by Karl Richard Lepsius, started in 1842, illustrates this trend. The team made the first plan of the site of Bakhit (Żurawski 2003: 47). Nevertheless, the efforts of the expedition concentrated on the remains which implied Egyptian origin of Nubian cultures. Thus remains of temples devoted to gods from the Napatan and Meroitic pantheons as well as reliefs and hieroglyphic texts constituted a major part of the documented material.

Mahdi Uprising (1881–1898) interrupted the exploration of Nubia. The research was resumed with great zeal at the beginning of the 20th century. However, scholars showed interest mainly in Lower Nubia. The documentation was created by means of the latest technical solutions. The expedition led by James Henry Breasted in 1905–1907 (Breasted 1906: 1–64; 1908: 1–110) took a great number of photographs which reflected the state of preservation of many sites[2]. The photographs depict rather few fortified sites, such as Bakhit.

Count Albert Edward Wilfred Gleichen (Gleichen 1905: I, 311) divided the history of Sudan into four epochs: prehistoric, Egyptian, Meroitic and Christian. He compiled a report that describes the ancient history of the region, in which he attempted to explain the political organisation of the area starting from the prehistoric period. He wrote that by analogy to the 18th-century circumstances in the provinces of Dongola and Berber, there must have existed small principalities/kingdoms, and that the ruins of old forts which could be seen in the area must have been their remains. This means he did not associate fortified sites with the Middle Ages, although he assumed their significance in systems of power in the past.

The beginning of the 20th century was a time of systematic organisation of information concerning particular periods and distinguishing chronological phases on the basis of seriation. George Andrew Reisner authored the best known chronological division (Reisner 1910). He distinguished *i.a.* Group X, which was supposed to have emerged after the fall of the Meroitic Empire and preceded the Christianisation of Nubia.

Fortified sites were also subjected to the classification process. Its main objective was to introduce chronological order. The criteria exploited to make the division were mainly based on the presence of characteristic types of pottery vessels. Additionally, information provided by the local people was used. They were aware of very general facts from the history of certain more recent sites (early Arabic/modern). They called the older sites *kenisa* (Arabic for church) or *anag*. The term *anag* referred to a mythical nation which was supposed to have lived in the Nile Valley in the distant past, before the times of Mahdi Uprising (Jackson 1926: 21; Maliński 2012: 213). Medieval Christian times (around the 10th century) and early Islamic times, *i.e.* around the 14th century, were established as the period of most intensive building activity in regard to fortified sites. Interpretation of some sites was undertaken on the basis of written sources and in some cases on the basis of their spatial contexts (Titherington 1938).

The colonial administrators of the *Condominium* were often interested in their surroundings. They collected local traditions and stories, and showed curiosity in the flora and fauna of Sudan, its landscape, geology, *etc*. Some of them were interested in history and archaeology. Henry Cecil Jackson was one of them. One of his publications, an article entitled *A Trek in Abu Hamed District* (Jackson 1926), contains a list of many fortified sites located in that part of the Nile Valley. He made an attempt at establishing the chronology of these sites. As a result, he showed the abundance of remains of fortified sites in Abu Hamed Reach, but not only that. He also mentions different types of cemeteries and rather sparse and poorly-preserved open settlements. Geoffrey Wrench Titherington (Titherington 1938), a major who worked for *The Sudan Political Service*,

[2] All photographs taken in the course of that expedition can be accessed on the webpage of the Oriental Institute of the University of Chicago (https://oi.uchicago.edu).

presented the so-called *Roman Fort* in the context of the Roman-Meroitic conflict in the '20s of the 1st century BC. The description of the sites at Suegi (*Kubinat forts*) was expanded to include topographic analysis of the context (Titherington 1939). It involved the description of the possibility to navigate in the region of the Fourth Cataract on the basis of the proportion of losses in the course of crossings related to the activity of Mohammed Ali's army in 1820 and British activities in the times of the Mahdi Uprising. The difficult conditions for navigation might have facilitated attacks against travellers. The conclusion was that the two fortified sites, due to their locations, could have fulfilled the role of regulators and administrators of transport by river in this region. Terence Gray only made a reconnaissance of the same area (the Fourth Cataract) and wrote a short note which reported that there were remains of many fortified sites from the Christian Period in the region (Gray 1949: 121).

The most important book of that time was a four-volume work by Ugo Monneret de Villard (Monneret de Villard 1935). He compiled all available information concerning sites dated to the Christian Period. It covered both Lower and Upper Nubia. He also published an article about fortified sites in Lower Nubia (Monneret de Villard 1941). Despite enormous amount of material, the subject is represented in a descriptive manner.

There was a variety of trends in regard to research into fortified sites between the mid-19th and mid-20th century. On one hand, they focused on detection of architectural remains, on the other, the first interpretations which attempted to associate particular sites with information from written sources emerged. This is the time when the concept of chronological division of Upper Nubia is formed and accepted. These achievements will be exploited in further studies. However, works which would undertake a broader interpretation of the significance of fortifications were not written in that period.

From 1950s to 1980s

The 1950s saw a great change in the studies of fortified sites as a result of the work of Osbert Guy Stanhope Crawford. He began from research into sites from the Fung Period (Crawford 1951). Apart from a profound analysis of sources he represents fortified sites in the social context of particular regions of the Black Sultanate. He stresses their importance for the government of local rulers. He also endeavours to collect information referring earlier sites. He continued his research in the following years (Crawford 1953a; 1953b), emphasising that his field research was an attempt to apply *field archaeology*, a method which he formed in Britain. It involved collecting all available information concerning a particular site without conducting excavations. He used the method of *fieldwalking* for his studies in Sudan, *i.e.* he observed remains which could be seen at the site and in the vicinity. He made very accurate maps of sites in the field, which were intended as a basis for further studies. He also used information and assistance from the local people. The standard set by his works was very high and many scholars who examined fortified sites later could not deliver such accuracy in their documentation. Nevertheless, Crawford did not make the next step – he did not perform analysis and interpretation of the sites which he had documented.

Peter Lewis Shinnie and Neville H. Chittick travelled across the Bayuda Desert riding camels in 1954, in search of remains of settlements on the way from Napata to Meroe. They set off from Ghazali and finished their journey in Metemma. They detected and described fortified sites at Umm Ruweim 1 and 2, Umm Kuweib as well as Umm Khafur, and also published plans made on the basis of aerial photographs for the first three sites (Chittick 1955: 86–92). They interpreted the sites as points where caravans gathered on their way across the desert. This reasoning is based on the observation of the context of the sites. They are located approx. 10 km from the Nile Valley on the bank of Wadi Abu Dom.

Neville H. Chittick later researched another subject related to the fortifications of medieval Nubia. He examined oral traditions of the Abdullab tribe (Penn 1934), which described the final battles of the Kingdom of Alodia, and attempted to identify fortified sites where the remaining troops of the Kingdom might have taken refuge after the defeat at Soba (Chittick 1963). He concluded on the basis of existing written sources that it could have been the site at Jebel Irau in the area of the Sixth Cataract.

Sudan regained independence in 1956 and educated the first generation of archaeologists who commenced independent studies of the past. Many of these works have not been published and for this reason, analysis of the literature

results in only partial understanding of these activities. Missions of the University of Khartoum, headed by Brian Haycock (Haycock 1972), were among the most significant ones. The scholar died soon after the end of the fieldwork. However, the project delivered a number of works, mostly on the BA level, based on the material collected at that time. The common trait exhibited by all these works is an attempt at organising, describing and drawing comprehensive conclusions in regards to the artefacts and structures detected in the defined parts of the Nile Valley. Typologies of fortified sites were created mainly on the basis of architectural features and the building material.

Khider Adam Eisa wrote *The History and Antiquities of Karaba-Sheriek in the Middle Nile Region* in 1971. It is an unpublished BA work defended at the University of Khartoum. Its shortened version was presented in an article under the same title in 1995. He presented a brief report on fortified sites in the area of Karaba-Shereik and schematic plans of eight sites: Ab-Simerat, Zimama, Ab-Sideir, Gandeisi (two different sites), Sabnas, Kagrat and north Tarfaya. The author divided the sites into stone and mud brick ones. The stone fortified sites included forts (without traces of permanent occupation inside) and castles (with noticeable remains of buildings inside). He also mentioned the presence of observation towers. He dated all these sites to the Christian Period, without any further details, and claimed that forts, castles, and towers were interconnected due to their locations. They occupied "strategic" points for defence as well as observation points (however, he did not define these terms). He connected fortified sites built of mud brick or by *jalus* technique with periods later than the Middle Ages apart from one case – the site of Sabnas "A", where he found fragments of pottery vessels, which, according to him, implied the influence of the Christian tradition.

Another article which is an abridged version of a BA thesis, written by Abbas Sid Ahmed in 1971, lists a number of fortified sites on the island of Mograt and in the closest proximity. The sites were divided into castles, stone forts, and mud brick forts. According to the author, a castle is a fortified, permanently occupied edifice, a seat of a governor or his representative. He distinguished three sites of that type in the region of Mograt: El-Karmal, Ras al-Gezira, as well as Korta, and dated them to the Christian Period, suggesting a chronology after 1200. Construction of castles was supposed to be a response to the aggressive policy of Mamluks. The castles were described in more detail, yet the enclosed plans are very general. Stone forts are situated at Mikeisir and al-Hajar, he also mentions Kuweib in the final part. They are smaller than castles and display no signs of permanent settlement inside. However, due to certain similarities they are also dated to the Christian Period. Mud brick forts are represented by Kudurma, Abu Sideir, and Al-Hilla, which the author connects with the Fung Period on the basis of architectural analysis (the presence of loopholes which were formed in the course of the construction of the walls) and local oral traditions. In conclusions, the author indicated high importance of fortified sites on the island of Mograt, particularly in the final centuries of the Kingdom of Makuria.

Yusif Mukhtar El-Amin wrote a BA thesis concerning sites from the Nile valley between Karaba and Abidiya (region of the Fifth Cataract) in 1971. Some information from this work was published in an article in 2000 (co-authored by David Edwards). The text presents materials, but it does not provide interpretations in a broader context. Enclosed plans are sketches and are available only for selected sites (north and south El-Usheir, Abu Mereikh B and C, on the island of Karni, Diaqa, Abu Qurun and on the island of Mellu).

Similar works were written for the region of Mahas (Third Cataract), *e.g. A Survey of the Third Cataract Region (Western Bank of the Nile).* It is an unpublished BA thesis by Abdel-Hadi Mohamed Fadol (Fadol 1977–1978).

The objective of the aforementioned works was to establish the chronology and connect the sites with the situations described in written sources. With this objective in mind, classifications of fortifications were created. The features which were deemed significant included: the size of the sites, building material, presence of architectural remains inside and presence of loopholes. They were assumed to have fulfilled military and administrative functions or only military ones and were termed *castles* or *forts* respectively.

A different approach was taken by Ali Osman M. Salih, who defended a thesis entitled *The Third Cataract in Early Sudanese History* in 1969, and in 1978 a doctoral dissertation entitled *The Economy and Trade of Medieval Nubia*. In order to understand the history, politics, and culture of the medieval kingdom of Dongola, he tried to find continuity in the structures of the kingdom of Kokka, which functioned until fairly recently, and analysed

Fig. 4. Jebel Sesi, view from the east. Photograph taken by RAF pilots in 1935/6 (UCL archive/SARS_RAF archive).

medieval texts from Qasr Ibrim (Osman 1982). The kingdom of Kokka was located in the region of Mahas and its last king, Abdel Aziz el-Zubeir wad Melik El-Lukir Diab, reigned in 1878–1912. The list of rulers of Kokka, in possession of the surviving members of the royal family, consisted of 14 names. The first king was Melk El-Nasir, who earned esteem among other clans after he had graduated from Al-Azhar in Cairo. Information about the administration of the kingdom survived thanks to the people who still remembered its functioning. Next, Ali Osman tried to show, making references to medieval texts from Qasr Ibrim, that the administration of the kingdom of Dongola in the Middle Ages might have been based on the same mechanisms.

The most important conclusion for my research is that the king of Dongola ruled over smaller kingdoms in the Middle Ages. According to Ali Osman, Kokka coronation rituals might have retained traces of such dependence. The coronation of the king of Kokka was detailed by witnesses of the last ritual of this kind in 1878. Its key element was the procession from the palace in Kokka to the foot of the hill called Sesi. Its top is covered by remains of a fortified site (**Fig. 4**). Before the dawn, the king climbed the hill, sat down at the highest point and looked east. He was crowned at the moment of the sunrise. The significance of this place is associated with one of the traditions, according to which the first king of Kokka was crowned by the king of Dongola. Thus the legitimisation of power in such coronation ceremonies was marked by the place where they were performed. The ruins of the fort might have represented the past power of the kings of Dongola. It is the first work which undertakes the task of interpreting the social and administrative importance of fortified sites.

The University of Khartoum commenced archaeological research in the region of Umm Marrahi in the 1970s (Hakem 1979). One of the places explored by means of excavations was a fortified site on a hilltop. Two articles which presented different conclusions with reference to its chronology were published (El–Hassan 1986; 2006). The first one is based on typological analysis of pottery artefacts and dates the site to the Late Meroitic Period. The same author uses results of radio-carbon analysis in the other article to date it to 325–650 AD and regard it as Post-Meroitic.

Many salvage projects were carried out at the same time in Lower Nubia in connection with the construction of the Aswan High Dam. This was possible thanks to the commitment of missions from different countries and energetic activity of UNESCO. On the basis of this work, William Y. Adams (Adams 1977) compiled a publication concerning the prehistory and history of Nubia. Fortified sites occupy a prominent place in this work, however, Upper Nubia is briefly mentioned since it was researched to a low degree.

The period from the 1950s to the 1980s contributed new solutions and information to the studies of fortified sites. On one hand, O.G.S. Crawford created an excellent method for site documentation, while the works written by Ali Osman M. Salih and similar ones indicate the importance of such sites and their significance for administrative structures of past political systems. Moreover, data on more fortified sites was added.

1990s to date

This period, the shortest one, is the time when the most studies of Upper Nubian fortified sites were undertaken. This is a consequence of the projects which covered a significant part of the Nile Valley as well as salvage work in the region of the Fourth Cataract (*Merowe Dam Archaeological Salvage Project*). The increase in information is remarkable, however, new data often provides only a description and chronology of the sites, established by means of the latest technologies and expert analyses. The plans are often made with the help of electronic tacheometers and chronology is established by radio-carbon dating, apart from the traditional criteria associated with architectural traits or pottery material. However, the interpretations of these sites were fragmentary and very superficial. The conclusions were drawn on the basis of selected parameters and the research procedures were often unclear. For this reason, the brief descriptions of projects listed below show that the results of research in particular regions are often not complementary.

Ali Osman M. Salih in cooperation with David Edwards conducted a project called the *Mahas Survey* (Edwards, Osman 1994: 1) from 1990. Its objective was to detect and record the archaeological potential of the region. Published reports indicate the existence of a high number of fortified sites in that area. Most should be dated to the Early Islamic Period (the so-called *diffi*), yet there are also sites defined as medieval ones (Edwards, Osman 1992; 1994; 2000; Osman, Edwards 2000; 2002; 2012). The information collected during fieldwork was used as a base for many unpublished BA and MA theses written by students of Sudanese universities. For instance, MA work written by Mohamed Ahmed Abdelmageed covered medieval sites in the region of Mahas (shortened version of the thesis was published in Arabic, Mohamed Ahmed Abdelmageed 2012). The complete catalogue of sites detected in all research seasons was published in May 2012 (Osman, Edwards 2012). It contains full descriptions of the state of preservation of all known fortified sites. Nevertheless, the questions of the chronology are referred to in very general terms (this results from the nature of that research, whose aim was preliminary identification). The main chronological division falls to the border between the Middle Ages and Late Middle Ages. The authors frequently emphasise a high degree of complexity displayed by the architecture observed on the site surfaces. They indicated numerous cases of rebuilding and the inconsistency of the dating of the pottery material from the surface of the sites with the preliminary dating based on architectural analyses. For instance, the fortified site on the top of hill Sesi could be dated to the Post-Meroitic Period on the basis of pottery vessels, however, the noticeable parts of the fortifications were built in post-medieval times according to the authors (Osman, Edwards 2012: 141). Scholars assume that the site functioned throughout the Middle Ages, yet at this stage of research it is impossible to establish whether it was surrounded with a defensive wall all that time. The only more precise chronology has been established for two sites, at Kasi Markol and Shofein (Osman, Edwards 2012: 142). Their construction was dated to the Early Christian Period. Thus I only take these two sites into consideration in my analyses. Further research of the *Mahas Survey* project might indicate that there are more sites dated to the Post-Meroitic and Early Christian Periods in this region (Osman, Edwards 2012: 125–133, 141–157).

The research on Late Christian fortified sites, *i.e. castle-houses*, conducted by William Yawdale Adams began much earlier but it was eventually published only in the 1990s (Adams 1994). The scholar focussed on the analysis of sites in the Nile Valley between Qasr Ibrim and Ferka (Lower Nubia). Examination of materials led him to the conclusion that there was a tendency

to build relatively small, multi-level edifices for defensive and residential purposes in the Late Christian Period (**Fig. 5**). They are supposed to have replaced earlier larger fortified sites, which were interpreted by Adams as a result of the influence exerted by the centralised power of the kings of Dongola. He suggests that social changes transpired in the Late Middle Ages due to the weakening of Nubian kingdoms and the increased activity of nomadic tribes (Adams 1994: 35–37). The inhabitants of the Nile Valley between Qasr Ibrim and Ferka formed their own local systems of administration and defence. The latest research in the region of Mahas (Osman, Edwards 2000: 8; 2012: 157–159) implies the existence of such structures up the river from Ferka. David Edwards stated on that basis that *castle-houses* were a typically Nobadian architectural form (Edwards 2014: 180).

Fig. 5. Castle-house on Jawgul island (Third Cataract region), red arrows point to the remains of the original entrance at the first floor level; A – view from the top, B – view from the east (photo M. Drzewiecki).

The survey of the area of Dongola commenced by Nicholas Byram Millet in 1976 (Grzymski 1987: 5) did not have a direct continuation in the following years. In the end, this project was handed over to Krzysztof Grzymski, who conducted a survey in the region of the southern Dongola Reach and in the Letti Basin in 1984–1985. Derek Anthony Welsby conducted another survey in the northern part of Dongola Reach in the 1990s – only one fortified site was recorded and dated to the Classic Christian Period (Welsby 2001: 597).

On the other hand, long research within the framework of a project headed by Bogdan Tadeusz Żurawski (Żurawski 2003) was launched in the southern Dongola Reach (*Southern Dongola Reach Survey*). Fortified sites constituted a notable element of the study. The project resulted in publication of a number of works on the subject of this type of sites (*e.g.* Żurawski 2001b; 2002; 2003; Wiewióra 2003a; 2005a; 2005b; 2006; 2007; 2010).

Bogdan Żurawski's reasoning with regard to defensive structures in the Kingdom of Makuria has been shown in the example of southern Dongola Reach (Żurawski 2001b). He analysed distances between particular sites and their architectural features (*e.g.* width and location of gates) and arrived at the conclusion that these fortifications formed a defensive system which covered regions of the Nile Valley and provided protection from raids by nomads. The main components of the defensive systems were horsemen, archers, and control over communication along the Nile (Żurawski 2001b: 384–385). Short distances were supposed to en-

sure quick reaction in case of a more serious danger. Żurawski divided the fortified sites into major and auxiliary ones on the basis of their sizes. The major structures housed the stronger troops which were ready to support the smaller ones in the vicinity. The scholar also considered sites merely mentioned in the texts written by travellers and early explorers, the existence of which has not been confirmed by present research. Moreover, he distinguished two "autonomous" regions on the basis of differences in architecture – one which covered the vicinity of Old Dongola, and the other included Zuma and Tanqasi, which, according to the author, had different traditions of power.

Włodzimierz Godlewski began to study fortifications of Old Dongola (kom A) at the beginning of the 1990s. Solely fragments of the northern part of the site were examined[3], but the established chronology of the construction of the structure was the mid-5th century and the architecture of subsequent construction phases was recorded. The edifice covered a considerable area and the structure of the walls was exceptionally firm (Godlewski 1991; 1994; 1997; 2003). In order to understand the political circumstances of the emergence of the Kingdom of Makuria, Włodzimierz Godlewski, together with Mahmoud El-Tayeb, started a project called *Meroe to Makuria* in 2004 (Godlewski 2005: 385). According to the scholars, excavations at cemeteries of the elites from the Post-Meroitic Period as well as identification of fortified sites at Dongola Reach should deliver some answers in this field. Godlewski's preliminary interpretations locate the first centre of the Kingdom of Makuria in the vicinity of the site at Merowe Sheriq, then suggest the transfer of power to Old Dongola and construction of the structure at kom A (Godlewski 2005: 387). Mahmoud El-Tayeb focused on analysis of cemeteries from that period and distinguished tombs at Post-Meroitic cemeteries, which he identified as Early Makurian ones (El-Tayeb 2012: 57–75). The final conclusions of the project findings have not been published yet.

Archaeological salvage works in the area of the Fourth Cataract drew the attention of scientific circles to the fortified sites located in this part of the Nile Valley. They delivered a considerable amount of materials recovered in the course of surface surveys and excavations, but their interpretations have not been published so far. However, reports from the particular seasons of work are available, normally descriptive and devoid of interpretations in a broader context (*e.g.*: Paner, Jakobielski 2005; 2010; Näser, Lange 2005; Welsby 2003 and many others). Nevertheless, the remarkable significance of these structures was indicated by Bogdan Żurawski at the 12th Congress of the *International Society for Nubian Studies* in London, where he defined fortified sites as *regnum* (Lat. kingdom) and represented them as centres of power, which played the key role in the initial phase of the Kingdom of Makuria as well as allowed the kings of Dongola to gain control over this area of the Nile Valley, which was difficult to access (Żurawski 2014b: 135–143).

Due to the difficulties in conducting research in the area occupied by the Manasir tribe (as salvage project in the vicinity of the Fourth Cataract), some missions were granted additional concessions to work in other regions. For this reason, *Humboldt University Nubian Expedition* (HUNE) commenced studies on the island of Mograt in 2006 and conducted research *i.a.* at fortified sites at Ras el-Gezira (MOG048), Mikeisir (MOG047) and El-Karmal (MOG004). This project turned into *The Mograt Island Archaeological Mission* (MIAMi), which began work in 2014 and at the time of writing of this book consisted of several sub-projects, one of which was devoted to defensive structures on the island – *The Fortresses of Mograt Island Project* (Rees, Lahitte, Näser 2015: 177). The work of this subproject involved an understanding of the phenomenon of defensive construction activity on the island, starting from the oldest edifice, throughout the period of exploitation and construction of subsequent defensive structures, abandoning and re-occupation of these sites, as well as their function and significance in modern times. Excavation and radio-carbon analysis of samples showed that this construction phenomenon was spread over a long period on Mograt. At the moment, the oldest structure of that type is Mikeisir (MOG047), dated to the Post-Meroitic Period (Rees, Lahitte, Näser 2015: 192–193), and the most recent – el-Hilla, dated to the Late Fung Period (Rees, Lahitte, Näser 2015: 197–198). Apart from the questions of chronology, the identification of the architecture inside the fortresses constituted an important element of the project. Even

[3] The work was intensified again, starting from season 2012/2013 the activities involved unearthing the outer face of fortifications at kom A (Godlewski 2015b, see also http://www.polacynadnilem.uw.edu.pl/sezony/2012–2013/misje-polskie-sudan/179-dongola-dongola-polska-misja-archeologiczna-w-starej-dongoli/ accessed on 25th Aug 2016).

at the present state of research, it implies the need to reconsider or define more precisely the classification suggested by Abbas Sid Ahmed (Ahmed 1971: 18), which distinguished castles (edifices with buildings inside) and forts (without buildings inside). It resulted from excavation works at Mikeisir, which unearthed a number of rooms erected along the inner faces of the enclosure wall (Rees, Lahitte, Näser 2015: 185–187). The progress of all field work conducted by the German mission is published regularly[4].

The book entitled *Architektura obronna Nubii od V do XVI wieku* (*Nubian defensive architecture from the 5th to the 16th century*) is the only recently published work which attempts to compile all available data on the subject of fortifications in both Upper and Lower Nubia (Wiewióra 2007). For this reason, its description will be more detailed.

The main objective of the work was to make a compilation which would illustrate the development of Nubian defensive architecture in the Middle Ages. It is the first attempt of this kind, resulting in the collection and organisation of considerable amount of information, which is the main advantage of the publication. In his descriptions, the author pays attention to the location, form, building materials as well as more detailed elements such as gates, towers, bastions, moats and others, called *additional elements* (Wiewióra 2007: 10). He also considers the buildings inside the fortified sites and their distribution. He introduces a regional division into Nobadia and Makuria/Alodia at this stage.

The author draws the attention of the reader to the details which he refers to when he moves on to the presentation of the development of Nubian defensive architecture from the 5th to the 16th century. He begins from their origin. Outlining the political changes which fuelled the intensive construction activity in the field of fortified sites, he remarked that reasons for building might have differed in particular Nubian regions. He presents interpretations suggested by earlier scholars who worked at sites in Lower Nubia. They assumed the *arrival* of building solutions from other regions (especially in the case of gates). Analyses based on such assumptions take the reader towards the lands of the Roman Empire, although there are also analogies from more distant locations, such as Turkmenistan or western frontiers of China (Wiewióra 2007: 127–129). The author himself does not provide an unambiguous statement connected with the directions of diffusion. Next he distinguishes three phases which illustrate the changes in defensive architecture – phase I (5th/6th–7thcentury), phase II (10th–12th century), phase III (14th–16th century). Analysing the changes in these phases, he also introduces a division into royal, local, and religious foundations, moreover, he discusses Nobadia separately from Makuria and Alodia. The catalogue constitutes an integral part of the work – in this case it is a collection of data on all Nubian fortified sites which the author is aware of. It is the only such compilation since the times of Ugo Monneret de Villard (Villard 1935).

More projects were implemented in the following years and fortified sites, particularly the ones from the Early Middle Ages, played a certain role in them. Research conducted by Patrice Lenoble at Kosh el-Kafir, commenced at the end of the 1980s, finished with the publication of results in 2004 (Lenoble 2004b: 193–194; 2004c). On the basis of artefact analysis and results of radio-carbon sample analysis, he suggested the 4th century AD as the time of the construction and occupation of the edifice (Lenoble 2004c: 124–127). He did not establish its function conclusively, however, he considered its purpose: religious, military, residential and economic (Lenoble 2004c: 128–131) and indicated analogical structures at Hosh el-Kab (El-Gerara), Umm Ruweim 1, and Umm Kuweib (Lenoble 2004c: 132–135).

Another project, *Wadi Abu Dom Itinerary*, headed by Angelika Lohwasser, began in 2009 and it could be said that it partly derives from the work conducted by Patrice Lenoble by its detailed study of structures analogical to Hosh el-Kafir, namely Umm Ruweim 1 and Umm Kuweib. The aim of the project was to examine the desert route between Napata and Meroe, which might have crossed Wadi Abu Dom in certain periods. Archaeological investigations were conducted at fortified sites of Umm Ruweim 1, 2, Umm Kuweib and Umm Khafur. Reports (Lohwasser 2009; 2010, 2011) and preliminary interpretations are published regularly[5]. The research conducted so far has shown that the structures were

[4] Annual reports available in subsequent issues of *MittSAG* published by Humboldt University in Berlin.

[5] The reports appearing in *MittSAG*, published by Humboldt University, starting from issue 20.

erected at the end of the Late Meroitic Period or the beginning of the Post-Meroitic Period. As a consequence, the association of communication between Napata and Meroe with these sites could be problematic since the most intense activity of the two centres is dated to earlier times. Thus the function of these sites requires further research, nevertheless, scholars point to their interpretation, especially in the case of Umm Ruweim 1, as religious centre.

Another project with a prominent role in the studies of the early medieval defensive structures was a salvage survey in the region of the Third Cataract of the Nile, conducted by the Polish mission led by Bogdan Żurawski. The researchers explored defensive architecture at Marakul and Shofein in 2013. The chronology of Shofein was established at the Early Christian Period, 6th–7th century AD (Łopaciuk *et al.* 2014: 237), Marakul at "Transitional - Post Meroitic and Early Christian period". In both cases, the chronology was based on analysis of pottery from the surface and from within the mortar which bound the walls of the fortresses (Łopaciuk *et al.* 2014: 240). As in the case of the *Mahas Survey*, the researchers indicated the time of construction, which overlaps with broadly understood beginnings of the Kingdom of Makuria, as an important factor in the explanation for the existence of the sites in that location. Just like the fortified sites in the region of the Fourth Cataract of the Nile, Shofein and Marakul (Osman, Edwards 2012: 145–147) were recognised as Makurian structures and associated with territorial and administrative development of that kingdom (Żurawski *et al.* in press).

The project called *Archaeological, Ethnographical and Ecological Project of El-Ga'ab Basin in Western Dongola* was headed by Yahia Fadl Tahir (Khartoum University). Its objective was to survey the area of El-Ga'ab Depression, which is located to the east of the Nile Valley (the part between Kerma and New Dongola). Most of the sites were typologically dated to the Stone Age, however, there are also more recent features, *i.a.* three fortified sites. Two of them, situated at Ga'ab Um Hilal UH-34–2, are defined as enclosures and one, located at El-Kewieb KE-36–2, is a fort (Yahia Fadl Tahir 2013: 125, Table 1). KE-36–2, due to its quadrilateral layout with towers/bastions in the corners and at least one gate (Yahia Fadl Tahir 2013: 129), might be a structure of older chronology than post-medieval. More details concerning the time of its construction and functioning can be established after further fieldwork. Reports from seasons 1 and 2 have been published (Yahia Fadl Tahir 2012; 2013), as well as results of detailed analysis of organic samples from the complex at El-Hamra (Ikram Madani, Yahia Fadl Tahir and Hamad Mohamed Hamdeen 2015).

The project called *Fortresses of Sudan* focused solely on documentation and interpretation of fortified sites (Drzewiecki, Rączkowski 2008). Recording of data commenced in February 2008. The fundamental assumption which organised the research was the statement that defensive structures did not function in isolation from their environment. The people who built and used the fortifications were not detached from the surroundings, which means they exploited, modified, and interpreted them. Thus both the topography and the archaeological sites located in the vicinity could deliver valuable information concerning the fortifications and their users (Drzewiecki 2011). Following Crawford's footsteps (Drzewiecki 2015), field archaeology was adopted as the basic method of fieldwork, however, it was supplemented with analysis and use of satellite images. The research covered the fortified sites and their surroundings at a 1–2 km radius. The work was conducted in the area of eight fortified sites (Korta Island, Fillikol, El Koro, Wadi Dam et-Tor, Tarfaya, Gandeisi, El Usheir), one site recorded by Crawford was not possible to locate (Baqeir). Moreover, sites at El-Karmal, Mikeisir and Ras el-Gezira were visited, however, they are within the concession granted to HUNE.

The project also involved ethnographic research. Its objective was to identify the contemporary context of fortified sites (Maliński 2012). Among the local people, who had had no contact with archaeological interpretations, the sites were described as relics of past occupation of these lands by other tribes. These past inhabitants of the area were called *anag*. When Piotr Maliński asked questions related to the nature of these ancient people, he received various answers. Most frequently, they were defined as giants who lived in the area before Islamic times. Some respondents associated them with Christian religion. Their tombs were supposed to be burial mounds found in great numbers in the Nile Valley. The size of the mounds, considerably larger than modern Muslim tombs was evoked as one of the arguments to support the hypothesis of the superior height of the *anag*. The research confirmed that the attitude to fortified sites displayed by

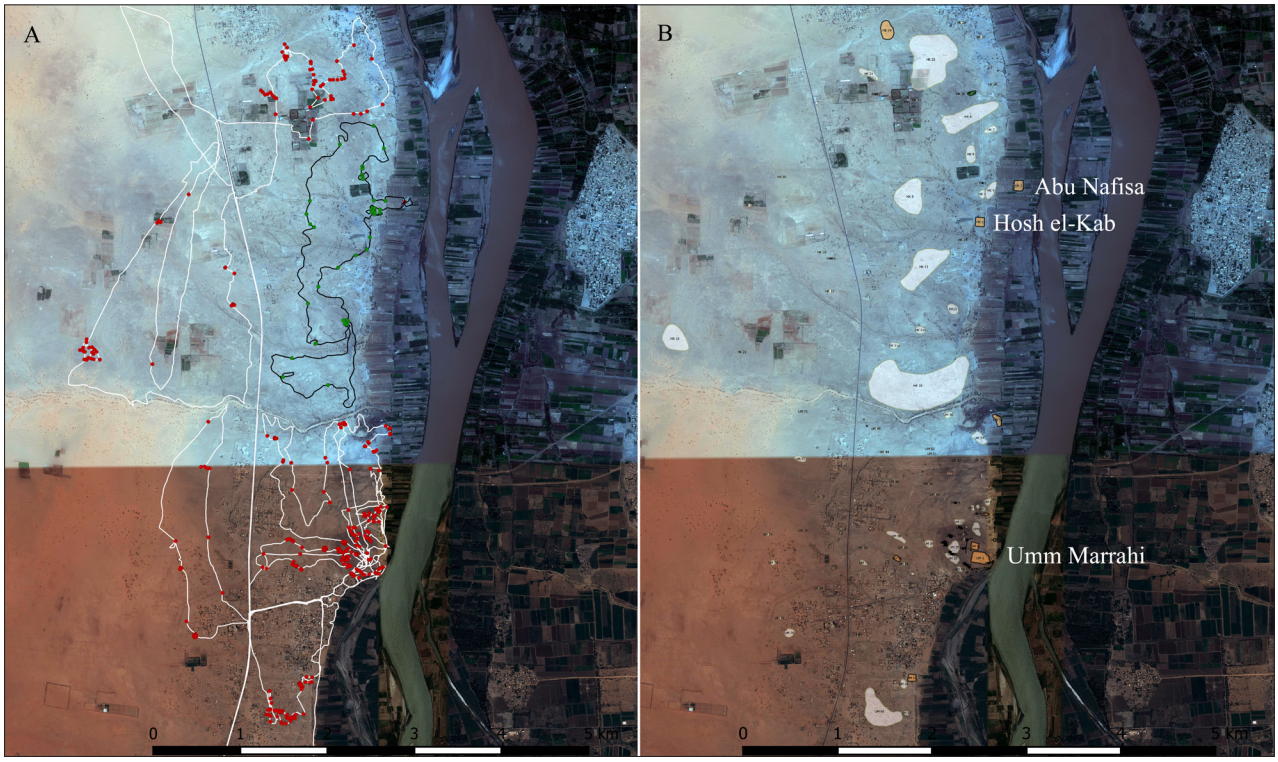

Fig. 6. Archaeological survey around Hosh el-Kab, Abu Nafisa and Umm Marrahi. A – Google Earth satellite image with tracks and waypoints: black and green in 2011, white and red in 2012. B – Google Earth satellite image with archaeological sites located during the survey: white – cemeteries, red – settlements, black – quarries, green – rock art, blue – caves and rock shelters (M. Drzewiecki).

the people in different parts of the Nile Valley could differ. In this case, local legends separate the modern population from archaeological remains and thus they do not treat the structures as part of their own heritage. On the other hand, the studies conducted by Ali Osman (Mahas region) indicated a traditional relation between the modern inhabitants and the relics of the past.

The *Fortresses of Sudan* project was resumed, in cooperation with NCAM, in 2011 as part of the Polish-Sudanese Research Expedition.

As a result of this cooperation, there were two seasons of work – in January 2011 as well as in January and February 2012. Altogether, ten fortified sites, located up the Nile from the Fifth and Sixth Cataracts were recorded: Ab-Sideir, Abu Mereikh B, Abu Mereikh C, Karni, Hosh el-Sheitan, Wad Mukhtar, Abu Nafisa, Hosh el-Kab (**Fig. 6**), Umm Marrahi 1, Umm Marrahi 2 (Ali El-mirghani Ahmed, Drzewiecki, Maliński 2012; Drzewiecki 2013a; 2013b; Drzewiecki, Polkowski 2015; Drzewiecki, Stępnik 2012; 2014).

Summing up, the research conducted from the 1990s has not been published for the most part. However, it is already clear that fortified sites are of key importance for understanding of the past of the Middle Nile valley. Many scholars associated the presence of centralised power with fortified sites *ad hoc*. Some others were inclined to assume their exclusively military purpose or consider their religious, residential, and/or economic nature. Yet another group treated changes in the functions of these sites as evidence for social transformations. Nonetheless, these studies have been dominated by cultural-historical approach. The main questions asked in accordance with this approach are *when*?, *how*? and *where*?, which are descriptive by nature. The shift from description to interpretation in a broader context was frequently fluid and intuitive. *Why*? was normally not asked as the general chronological sequences did not make it possible to explain human behaviour.

These are the main objections raised to cultural-historical archaeology. It has been suggested since the 1960s that it has no explanatory value, but only a descriptive one. For this reason, my interpretations will evoke the assumptions of processual archaeology, which follows research procedures based on clearly defined rules of deductive reasoning, and its main task is to explain why changes took place. The starting point for this approach is the systems theory.

CHAPTER 3

Systems theory in archaeology

3.1. BACKGROUNDS

The beginnings of reflections on systems can be seen already in ancient Greek philosophy. It is connected with the intention of studying complete phenomena instead of separate elements (Weinberg 1979: 7). The reasoning of this type was associated with attempts at explaining certain general issues such as human or animal behaviour, factors connected with weather, geological processes, *etc*. The systemic approach to scientific research came into use in the first half of the 20th century. It emerged in different fields: physics, biology, medicine, psychology, social sciences and philosophy. It was developed and popularised to the greatest extent by cybernetics, which dealt with control theory. According to Marian Mazur (Mazur 1987), a system is a set of elements and their interactions. The manners of arriving at systemic thinking and the subjects of study in each science were different, nevertheless, they led to comparable conclusions (Bertalanffy 1950: 135–136). The observations of this phenomenon by Ludwig von Bertalanffy, a biologist based in Vienna, consider the general applications of systems in science (Weinberg 1979: 7). He coined the term *general systems theory*, and represented his approach to science within that framework. It was possible to apply it to all fields of science and Bertalanffy called it the *theory of wholeness* (Bertalanffy 1950: 134). Regardless of the science, be it biology, sociology, or physics, according to Bertalanffy, there are systems everywhere and they function in accordance with definite general rules. It was precisely such rules that were the subject of his interest (Doran 1970: 290).

Due to the fact that it is very difficult or even impossible to distinguish all elements which belong to a particular system in practice, simplified models are used for research. Each system consists of sub-systems, *i.e.* elements of the system which themselves are systems. The division into sub-systems, according to cyberneticists, must be precise, fixed, and absolute. This means that each element must be clearly and precisely fitted into the structure of the system.

The sub-systems interact according to definite rules. Using emerging cybernetics as support, Bertalanffy defined fundamental rules which govern the functioning of the system. Each system constantly seeks homeostasis (from Greek *homeo* – the same, *stasis* – state). In order to achieve it, the system regulates its own work by means of feedback (positive or negative), *i.e.* the effects of that work affect its further functioning. It could be an impulse for intensified "work" of the system (positive feedback) or precisely the opposite (negative feedback). It means that the system is active all the time and the feedback generates its oscillation. Observation of activity of the system leads to a conclusion that its state of balance is dynamic (Renfrew, Bahn 2002: 455–457). The system changes constantly as a consequence of its own activity.

The concept of systems is present in modern science not only at a theoretical level. Applications for European Union grants and scholarships must contain graphic representations of researched issues, objectives, progress, and results of the projects. It normally takes the form of a block diagram which connects all elements according to logical reasoning – cause and effect. It is a characteristic form of visualisation of systemic thinking (Trocki, Grucza 2007: 77–87).

3.2. APPLICATION OF SYSTEMS THEORY IN ARCHAEOLOGY

Systems theory was introduced in archaeology in the 1960s by Lewis R. Bindford (Bindford 1962; 1965) in America and by David L. Clarke (Clarke 1968) in Great Britain. It resulted from criticism of existing forms of reasoning in archaeology. Lewis Bindford arrived at a conclusion that cultural-historical archaeology cannot represent the multiple aspects of the functioning of past societies. Therefore, he built a new model for explanations. He began his study from the definition of culture. He took that definition from Leslie White, who described it as the *extra-somatic means of adaptation* (White 1959: 3; Binford 1964: 425). That system was supposed to consist of three main sub-systems responsible for the economic, social and ideological spheres of past human groups. The sub-systems penetrated one another and thus their boundaries could not be precisely established, which constitutes the difference between the systems in archaeology from those defined for cybernetics. This mutual penetration resulted in a conclusion that artefacts, which belonged to the economic subsystem reflected mainly that sphere, however, they also corresponded with the other ones to a certain degree (Binford 1972: 95; Maetzke 1986: 274–275). Therefore, it was possible to answer questions on *e.g.* belief systems or social structure on the basis of material culture studies.

In order to perform such an analysis, according to Bindford, it was necessary to apply deductive reasoning characteristic for the sciences. It was supposed to introduce verification of the correctness of conclusions at all stages of research. These rules had to be clear and precisely defined. Research commenced with a generalisation made by application of a theory, in this case systems theory. Next, on the basis of actualistic studies such as ethnoarchaeology or experimental archaeology, it was necessary to form a middle-range theory and build a model.

Initially, attention was directed to the occurrence of regularities in various, sometimes unconnected assemblages of artefacts. Certain statements emerged, which were intended to connect material artefacts with particular types of behaviour. These statements began to be treated as laws, *i.e.* something permanent. As supported by views of philosopher Carl Hempel (Hempel 1965: 231–243), it was possible to clarify the explained phenomenon (*explanandum*) on the basis of description of initial conditions and application of a relevant law (*explanans*). This led to transcription of human behaviour to material remains, frequently without taking social and ideological diversity into consideration. The laws which were created (from Greek *nomos*) were general and could be applied to any human group regardless of the time and place of functioning. This type of explanation was termed the deductive-nomological model.

Another form of reasoning exploited by processual archaeologists was based on the concept created by Karl Popper. He assumed that there are theories which cannot be tested 100%. There could always emerge new data which might change and contradict statements previously regarded as true. He suggested application of the method of falsification, *i.e.* constant checking of the correctness of hypotheses, according to which models required testing by means of all available instruments. This meant that no model would be 100% certain. In order to perform falsification in archaeology, a series of hypotheses connecting dynamic social structures (the model) with static archaeological material were created. The test showed their correspondence or its absence, *i.e.* confirmation or contradiction of the model. Hypotheses were not laws and if empirical study did not confirm their existence, they were rejected (Popper 2005: 57–73). This type of reasoning gained a number of followers in the 1970s and was termed hypothetico-deductive.

Many archaeologists decided to exploit the possibilities offered by systems theory, including Kent Flannery (Flannery 1976), Henry Claessen (Claessen 1978), Clive Orton (Orton 1976) or Collin Renfrew (Renfrew 1972). This approach resulted in a completely new view of archaeological material. It served as a counter-balance for diffusionist theories, which claimed that changes were consequences of external impulses. In this case, changes happened slowly and systematically. Long before an obvious turn and change, the processes which led to that event were in progress and directed the system towards such a shift. An uprising or fall of an empire ceased to be perceived as a result of an invasion, human migration, or a sudden climate change, but rather a complex process which could be viewed from a number of different perspectives. The place *where everything began* was no longer looked for, *e.g.* the oldest, first remains of farming activity, since the change was no longer the result of diffusion from place A (the older one) to place B (more recent one).

Richard Bradley (Bradley 1981) applied a processual approach to explain changes in settlement patterns in the Middle and Late Bronze Age. He provided two examples which were supposed to confirm the hypothesis – one from the area of the north-western Czech Republic (Knoviz culture) and the other from southern England. The phenomena had been explained before in the context of religious changes within the Urnfield cultural circle. On the basis of examples from ethnologic studies, Bradley tried to prove that changes in funerary rituals could result from differences in the economic sphere. In the Middle Bronze Age, the richest burials were located in river valleys, even though settlement activity and agriculture surpassed these areas. Rich burials were identified on the basis of numerous metal artefacts, often imported. Constant correspondence between the distribution of these graves and the location of the most fertile lands was not detected. Assemblages of that period, found also outside the valleys, mostly consisted of irregular, unidentified pieces of metals, probably collected for re-smelting. According to Bradley, this state of affairs could be accounted for by the influence of long-distance trade. Inhabitants of river valleys could organise such trade by means of water transport. This made the merchants wealthy and as a consequence they were not forced to work the land. The scholar provides examples from contemporary societies such as *Big Man* or *potluck* phenomena – in these cases, funerary ritual was a form of manifestation of wealth and power, and it strengthened social bonds by distribution of goods. Bradley associates the disappearance of this type of graves with centralisation of areas outside river valleys. He also mentions an example from the Torres Strait Islands (the area between Australia and Papua New Guinea), where the island societies increased their agricultural production to participate in long-distance trade.

In the north-western Czech Republic the change was displayed as a gradual increase in the volume of storage pits discovered in settlements outside valleys and changes in the content of assemblages – complete metal vessels appeared in the Late Bronze Age. Forts built on hilltops were supposed to be centres which concentrated surpluses and determined new destinations for long-distance trade. The situation of the inhabitants of river valleys became more difficult due to gradual impoverishment of soils. The process is represented in a block diagram (**Fig. 7**).

According to archaeologists who apply it, systems theory is a tool for reaching spheres of past societies which cannot be seen in archaeological material. It could be stated that it "opened archaeologists' eyes" to totally new fields of research. Observation of the interdependence between production, population, trade and transport made many scholars consider previously neglected issues (Hodder, Orton 1976). Attempts at representation of the manner of transformations within past societies led to *brainstorming*. Scholars noticed the magnitude and importance of the economic sphere, which could not have

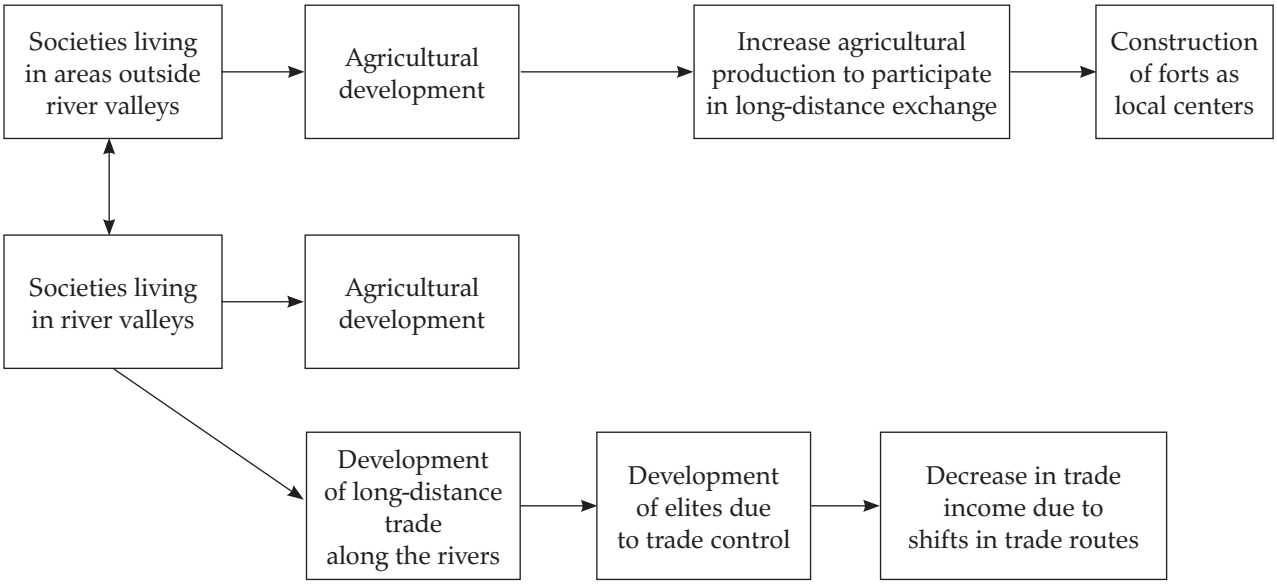

Fig. 7. Block diagram illustrating the model of changes in the Knoviz culture (north-western Czech Republic) in the Middle and Late Bronze Age (based on Bradley 1981).

been researched by methods of cultural-historical archaeology. On the other hand, the methodology proposed by Lewis Bindford made it possible to apply other theories to archaeology. Soon this *liberation of* archaeologists' *minds* turned against the concept of systems itself. Conflicts emerged at the level of applied theory. This led to a situation in which many circles perceived systemic approach as negative (Johnson 1999: 75).

3.3. CRITICISM

Even those archaeologists who applied systems theory saw great potential danger in the generalisations it made. Some of them realised how far they could stray from the *truth* in the process of forming this type of explanation (Clarke 1972: 4). Certain processual archaeologists also undertook criticism of the deductive-nomological model. Kent Flannery doubted whether it was possible to form universal laws for human behaviour. He often called laws formed in absurd ways *Mickey Mouse laws* (Flannery 1973).

Application of the systems theory was a simplification which mainly concentrated on the economy of the investigated human group (Urban, Schortman 2012: 78–84). Culture was a form of adaptation to the environment. It often omitted socio-political and religious spheres. General assumptions of the concept of systems state that elements which do not influence the functioning of the system can be omitted, hence the followers of Marxism indicated that ignoring the social activity of the researched group is a fundamental error. These are human interactions which frequently lead to tensions, conflicts and resulting changes. Adapting systems theory, scholars showed a group of people, whose social activity was of inferior importance, and was just a collection of minor incidents, distractions without influence on the whole system. Systems theory accepted the use of force in order to maintain the state of balance. The homeostasis of the system was the superior good, which justified all activities against *social anarchy*. Such interpretations led to the perception of systems theory as dangerous in certain circles (Shanks, Tilley 1987: 53).

Structuralists believed that human behaviour is governed by beliefs and symbols. Therefore, it is necessary to study thinking structures (ideas) in order to answer the *why*? question. The systemic approach helped to understand how a group of people functioned in the past and for this reason one of the claims against processualists was that it was insufficient to explain why the situation developed as it did, why a past society behaved in a particular manner. A similar issue emerges in the case of the answer to the question why such and not any other manner of adaptation was applied. It would seem that systems theory did not fulfil the basic role for science – it did not explain, it did not strive to find the roots of the researched interdependencies, but only identified them (Johnson 1999: 82).

Systemic models presented by early researchers implied that they required an impulse from outside to begin functioning, *e.g.* a drying of the climate or external danger. It is a return to the question of the structure of explanation. Low explanatory value was an evident weak point of hypotheses built on the basis of the systems theory. That defect was best seen in the attempts to explain the beginnings, for instance, how a certain country, empire, or culture emerged (Johnson 1999: 76–77).

Post-processual criticism additionally attacked another aspect of systems theory. The universalism of the concept of systems was negated, namely, the claim that it could be exploited to study different human groups living in different conditions by means of the same notional apparatus. The assumption that regardless of whether nomads in the Asian steppes or farmers from the Nile Valley are researched, the mechanisms of change as well as the distinguished sub-systems were the same was perceived as a defect (Giddens 1984: 164). That manner of thinking went further by showing the absence of humans in systemic models (Hodder 1995: 45–47). Post-processualists claimed that in the systemic approach humans have no influence on the functioning of the system, on their own fate, and that everything is governed by economic forces and that man is just *a cog in a machine moved by external forces*. The view that systems theory actually seeks to introduce authoritarian political views using the neutrality of science as a veil appeared within the framework of Critical Theory, developed by Jürgen Habermas (Johnson 1999: 83). According to such scholars as Michael Shanks and Christopher Tilley, the manner of reasoning advocated by processual archaeology is questionable (Shanks, Tilley 1987). It is a consequence of the belief in the objectivity of sources. In fact, it is merely a sign of ideology and presentation of scholar's own opinions. The approach taken by Shanks and Tilley is radically relativistic and assumes that everything is socially constituted.

3.4. ATTEMPT AT MODIFICATION

It is very difficult to respond to such criticisms and many archaeologists stopped using systems theory for this reason. In my opinion, however, systems theory is a very good research tool and it merely depends on the approach of the scientist as to how it is applied. This has been illustrated very well by Arkadiusz Marciniak (Marciniak 1996: 18):

> *Despite many years of field studies, Binford's works have only brought information on the behaviour and functioning of a group in a system of relationships with changing external conditions, including availability of caribou as the basic source of food.* [...] *On the other hand, Hodder's studies on the Baringo group from Kenya supply very little information about functional aspects of these societies. I would not like to comment on which of these options is more relevant and which helps to explain and understand the essence of these phenomena in more detail.* [...] *I would simply like to indicate the consequences of selection of a certain theoretical framework for the possibilities of understanding.*

According to Topolski (Topolski 1978: 39–40), it is not possible to build a methodology which would answer all questions and show all aspects of a particular issue. He indicates the cause of such state of affairs in social theories and paradigms followed by scholars. In the course of research, a scholar pays attention to the issues regarded as the most important in a particular paradigm (*e.g.* symbolism and religiousness, economy, actions of an individual, competition for power, *etc*.) and selects methods as well as analyses appropriate in that context.

This conclusion is just a step away from the extreme relativism advocated by representatives of the Frankfurt School. However, Topolski's reasoning has had an inspiring influence on science by showing its multi-thread nature and trying to mitigate its internal conflicts. On the other hand, extreme relativism *paralyses* science by representing it in a form of one of the possible options, others being common sense reasoning or drawing conclusions *ad hoc*. It seems that it is unnecessary to follow methodological rules since objectivity is not possible. For this reason, many archaeologists return to processual ideas and especially value the manner of reasoning. Application of clear and strict methodological rules appears to be the key to preserve the place of archaeology among sciences (Marciniak 1996: 30). This manner of thinking results in emergence of many works which combine processual concepts with post-processual elements. I provide two examples below.

Kent Flannery and Joyce Marcus (Marcus 1983) made research into the religion of Zapotecs in the pre-Columbian times. They undertook analysis of the ideological sphere (ideological subsystem) and tried to find its reflections in economic sub-systems and settlement patterns. They confirm themselves that they could only begin such analysis because they were in possession of information about the Zapotec religion written down by a witness in the 16th century (Flannery, Marcus 1993: 260). This approach was termed cognitive-processual archaeology to distinguish it from functional-processual archaeology. A hypothetico-deductive reasoning model was adopted in this case and extreme relativism was rejected. Hypotheses were tested on the basis of the correctness of reasoning, consistency with other statements and confirmation in the empirical material, which did not have the status of a fact any more. The role of the individual as well as internal conflicts within human groups were also taken into consideration (Johnson 2010: 99–101). Nevertheless, just as in the case of Zapotecs, a source of information feed is necessary as a starting point for interpretation. This is connected with the other example.

Arkadiusz Marciniak (Marciniak 1996) attempted to form an outline of methodology for the purposes of faunal material analysis. He emphasises the importance of the objectifying processual methodology (Marciniak 1996: 21) and contextual research suggested by Ian Hodder. He represents osteological remains as an exceptional category of artefacts, for which the actualistic and experimental data constitute an important element of research procedure. Starting from the division into explanation and understanding proposed by Wilhelm Dilthey (Topolski 1978: 11), he builds a two-stage methodology of study according to the diagram shown below (**Fig. 8**). Actualistic analysis was supposed to be the first stage, and the second – contextual analysis of a particular assemblage.

Actualistic analysis fulfils the same role for the study of faunal remains as information provided by a witness for the research made by Flannery and Marcus. It constitutes the first stage of the analysis in Marciniak's methodology. The model is created on the basis of available information. After that, hypotheses are formed,

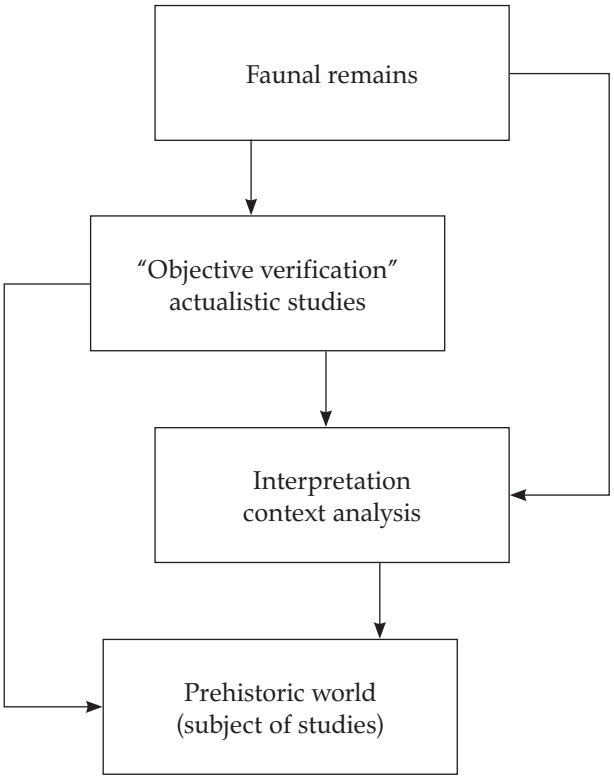

Fig. 8. Diagram for the study of faunal materials (Marciniak 1996: Fig. 1).

and they translate the model into the past reality. If the model is relevant, testing is the next step. Marciniak describes it as the second stage, which involves proving consistency with or contradiction of the context. In the case of the study of osteological materials, references must be made to other categories of portable and fixed artefacts at the site and in the regional settlement network. The method works in accordance with the rule of the hermeneutic circle, which involves reasoning from the theory downwards to the empiric material and then from the context back upwards to the main assumptions (Marciniak 2005: 7).

3.5. RESEARCH PROCEDURE

I would like to apply a combination of the approaches mentioned above to the study of the social significance of fortified sites. The analysis will be divided into two stages:

1) formation of the model;
2) testing of the correctness of the model on the basis of observation of the context.

The first stage will be covered on the basis of George Kingsley Zipf's model and experiments (Zipf 1949). He assumed the existence of the principle of least effort. Its definition strays from common sense thinking and is represented in more detail in Chapter 4. The result of this principle is the proportionality in amounts/numbers of researched categories of artefacts created by humans.

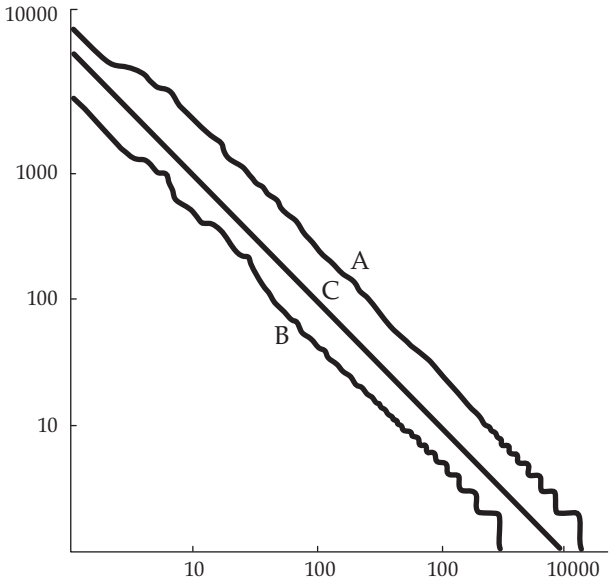

Fig. 9. Logarithmic graph of the relationship of the number (y axis) and rank (x axis). A – number of words and their repetitions used in James Joyce's novel *Ulysses*; B – data from analyses of American newspapers made by R.C. Eldrige; C – logarithmic graph curve (*log-normal*). Graph made by G.K. Zipf (Zipf 1949: Fig. 2–1).

On the basis of these amounts/numbers, Zipf created rankings of importance within particular groups. Next, he represented them in a graphic form of a logarithmic chart, where the ranking was the value of the x axis and the amount/number of a given object in the researched group was marked on the y axis (**Fig. 9**). All elements incorporated in this manner formed a line (*log-normal*), which was supposed to prove the existence of the principle of least effort. Diversions from the line (**Fig. 10**) were regarded as a sign of incoherence of the system or the existence of several systems in one researched group (Savage 1997).

I will apply this model to analyse fortified sites in Upper Nubia. I will divide them chronologically into the Late Meroitic/post-Meroitic Periods (2nd–6th century) and Early Christian Period (6th–9th century). It is the time of essential socio-economic-political transformations in the Middle Nile valley. Zipf's model will help me to establish the number of systems in Upper Nubia and define them as centralised or homogeneous.

The second stage will involve testing whether the systems distinguished in accordance with the aforementioned rule are internally coherent

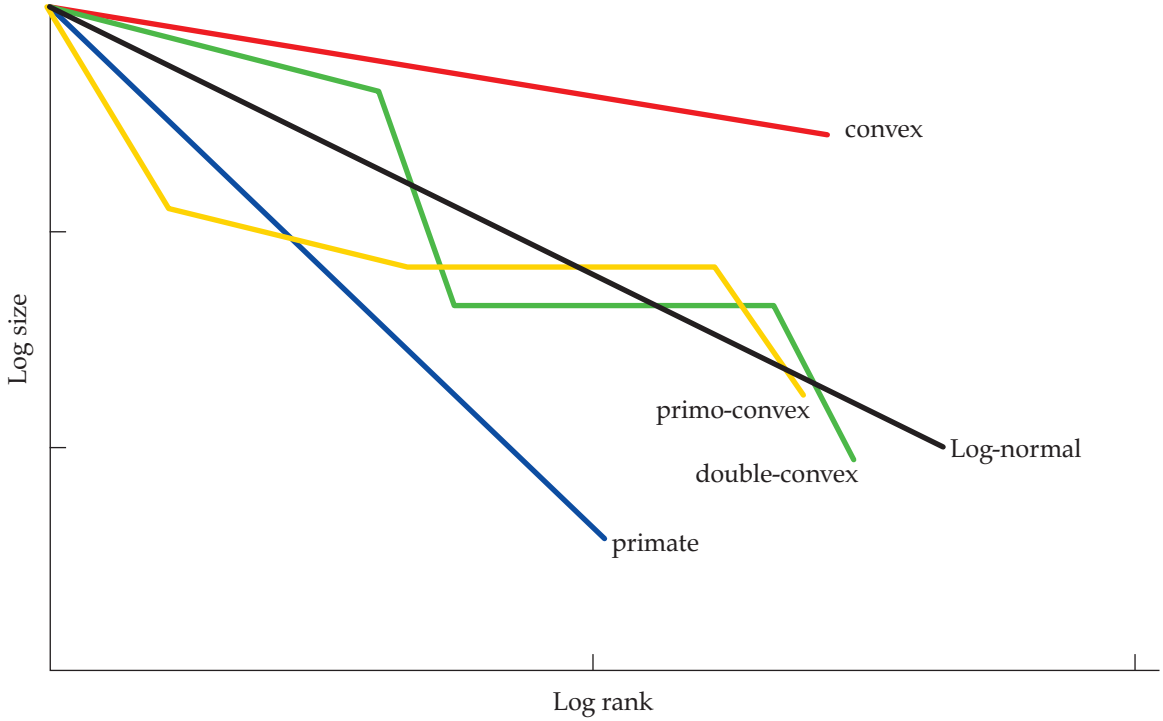

Fig. 10. Possible diversions from the logarithmic graph curve, acc. Stephen H. Savage (Savage 1997: Figure 1).

and whether the centralisation or homogeneity can also be detected by application of other notions. Starting from the definition of the early state and the concept of strategies of rulers (Claessen, Skalnik 1978; Lightfoot, Feinman 1982), I will attempt to find features which could indicate centralisation or its absence in defensive architecture as well as in its topographic-settlement pattern context (Chapters 5 and 6). The study is intended to show whether Zipf's method proved appropriate for fortified sites in Upper Nubia. If the observations made by means of two methods are consistent and form one image of political systems, it will be possible to confirm that the analysis is effective. However, if the observations do not overlap, this experiment might reveal the errors or defects of the method and will help to modify it in the future.

CHAPTER 4

Features of fortification systems in Upper Nubia

The first stage of the analysis of fortified sites will be based on studies made mainly by George Kingsley Zipf, who constructed a model and a procedure for testing it on the basis of numerical data. I will use his theory and apply the model for my analysis of fortifications in Upper Nubia.

4.1. THE ZIPF-AUERBACH THEORY

Felix Auerbach noticed proportional sizes of contemporary cities (Auerbach 1913). This observation was developed by other scholars, for instance Alfred James Lotka and Robert Gilbrat, nevertheless, the most significant research in this field was made by George Kingsley Zipf (Zipf 1949). Zipf tried to prove that all aspects of human behaviour are influenced by the principle of least effort, from writing letters, grammar, sexual practices, to tax systems, populations of whole countries and also the sizes of cities. He accomplished this by analysing the results of statistical studies conducted at that time in the fields in which he was interested.

The fundamental assumption made by the scholar (likewise by Topolski and Żak later) was that humans undertake rational actions guided by their experiences and predictable results. This means that they do not only consider present circumstances but also try to predict future conditions based on their knowledge and experiences. Thus subjective qualities of an individual, such as intelligence, emotional setup, *etc*. constitute a very important element in the decision-making process. Another critical factor is the social and economic context in which the individual lives. This leads to the conclusion that an individual does not reduce solely the immediate efforts, but rather anticipated present and future efforts (Zipf 1949: 7). For this reason, application of the simplest contemporary solutions to past situations might prove ineffective. Least effort, according to Zipf, is not a universal value. Least effort will be completely different to a modern individual who is building a castle from least effort in the case of a person who lived in the Middle Ages. These relationships can be represented in a graphic form with a block diagram (**Fig. 11**).

How can application of the principle of least effort be studied? Zipf distinguishes two additional terms which might aid observation: force of diversification and force of unification. They are not *forces* in the physical sense but they are natural consequences of the assumed economy of effort (Zipf 1949: 22). As the names suggest, one of the forces leads to dispersal of human actions, the other to their concentration.

Zipf provides many examples of how these forces functioned in the world in which he lived. He finds confirmation in many areas of human life. He illustrates these relationships in the actions of individuals and large groups (Zipf 1949). In one of them, he describes an economic geography, which he presents in the following manner: if it is assumed that a certain existing population requires supplies dispersed in the surrounding area for proper functioning, the force of diversification will lead these people to settle as close to these resources as possible. The population will split into smaller groups which will live in separate settlements. In the same situation, the force of unification will push the people to establish a central settlement which will be located at an optimal proximity to all the areas where the supplies can be found. The balance between these forces is the most important factor. If it is

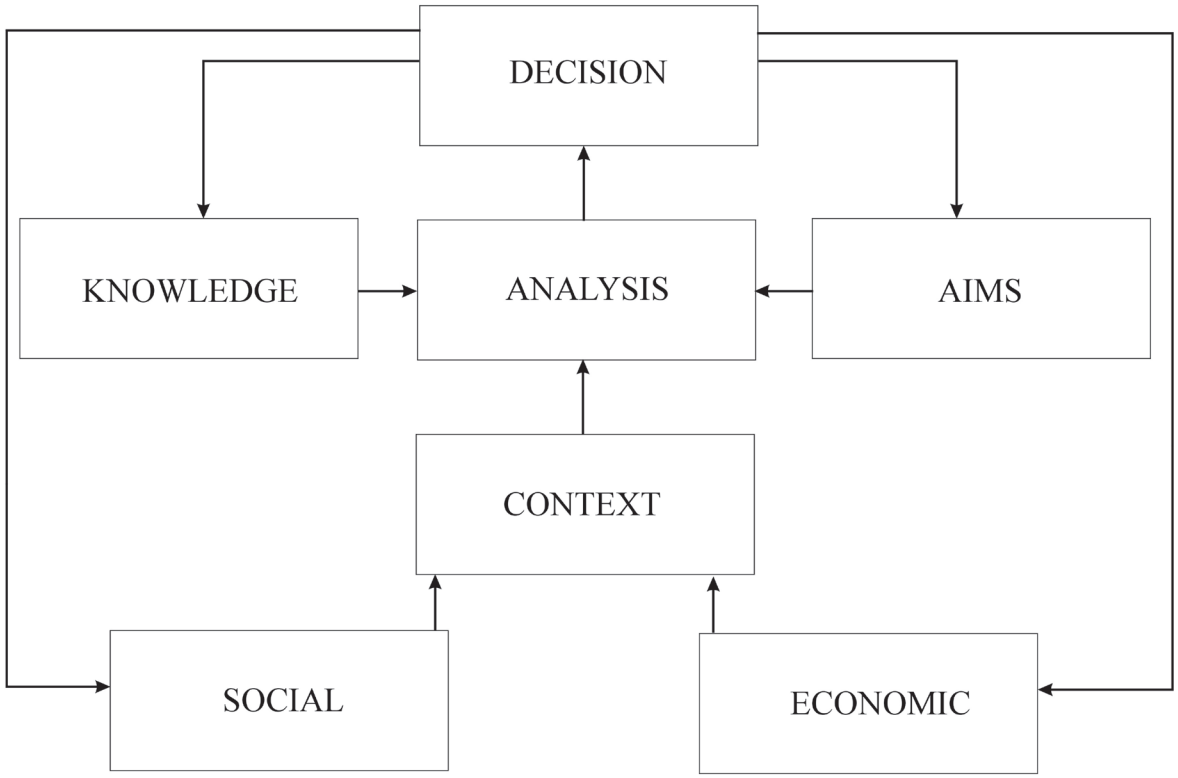

Fig. 11. Factors which affect the decision-making according to Zipf's principle of least effort, represented in a graphic form.

achieved, the system is stable, it reaches *equilibrium* according to systems theory.

How to measure whether a particular system is in the state of balance? Forces of unification and diversification are theoretical notions. Zipf shows their existence on the basis of compared selected quantitative and qualitative data. In the example above, the size of the populations would be the measured value. The result of such measurement would be represented as a table which would show the name of each settlement with the number of its inhabitants. If the numbers are next organised in a ranking from the biggest to the smallest, then, according to Zipf, this system will display proportionality, which confirms the existence of the principle of least effort.

This proportion would be shown in the following manner: the object marked as first in the ranking represents a size which I will define as 1 in this example. In such a case, the size of the object marked second will be 1/2 of the value of the first object, of the object marked as third – 1/3 of the value attributed to the first object, and so on. In the case of that example, if the settlement ranked as first has a population of 1,000, then the second largest settlement will have a population of approx. 500 people. The settlement on the third position in the ranking will have approx. 330 inhabitants, and so on. This proportion could be represented by the formula:

$$R \times S = C$$

where R – rank of a particular object; S – size of the object attributed with rank = R; C – size of the object attributed with rank = 1.

If this proportion is shown on a graph as the logarithmic function (proportion of numbers without the use of units), it should take the form of a descending line (*log-normal*). This rule is now represented under the name of *rank-size rule*, the relation of the rank and size (this rule was applied to medieval settlements in Nobadia by Artur Obłuski 2009; 2014).

If the distribution of researched elements strays from the regular proportion (*log-normal*), it might mean that changes are necessary in that society. For instance, Zipf analysed the distribution of income in Indonesia, and according to him, the sudden difference visible in the analyses for 1940 heralded changes, in this case a revolution which broke out in 1945 (Zipf 1941).

The rank-size rule has been lately applied *i.a.* to study the Internet (Adamic, Huberman 2002). Deviations from the values of *log-normal* are now subjected to many studies (Kamecke 1990; Soo 2005) and it has also been applied in archaeology precisely in this context.

It is most frequently used in archaeology in the analysis of settlement patterns by comparing the sizes of towns and cities (Pounds 1969; Wobst 1974; Pearson 1980). However, researchers of the past often possess incomplete source bases and their conceptual frameworks do not reflect past socio-political situations in many cases. When such a set of data is subjected to Zipf's analysis, it most frequently displays deviation from *log-normal* on a logarithmic graph (Savage 1997: 234–235). Four such variations have been distinguished (Drennan, Peterson 2004; Obłuski 2009). It is possible to establish on their bases whether the analysed dataset includes one or more settlement complexes or solely their fragments, and additionally gain information concerning the relationships between the major and smaller towns, and thus evaluate integration within each system.

4.2. CONSISTENCY OF THE TERM *POST-MEROE*

Cultural-historical archaeology introduced a conceptual framework which has been constantly and consistently reproduced and exploited by scholars who study the past all over the world. The basic term is the archaeological culture defined as remains of past societies, discovered as assemblages which contain similar groups of artefacts in a specified area and time (Kossinna 1911; Childe 1929: v-vi). Further concepts were derived on the basis of that definition, in this case, connected with the chronology of particular cultures. Periods which were supposed to organise phases of development of particular archaeological cultures – early, classic, late, final – were distinguished, most frequently, on the basis of the theory of evolution (Trigger 1989: 162). Relative chronologies of this type were then plotted on a timeline (absolute chronologies) by means of a variety of methods, from the typology of pottery vessels or other portable or fixed artefacts, to information provided in written sources, methods of physico-chemical dating (*e.g.* radiocarbon dating) and biological dating (*e.g.* dendrochronology).

Attribution of artefacts to archaeological cultures leads to differentiation and organisation of the material. As a result, it was possible to conduct studies on whole regions and make comparisons on a larger scale. The world appeared as a cluster of archaeological cultures which interacted with each other to a greater or lesser extent. Diffusionism as a theoretical trend in archaeology introduced a map with marked ranges of cultures and directions of mutual penetration which reflected migrations, trade, wars, *etc*. as scientific tools into these studies. Diffusion was the main cause of changes detected in archaeological material (Rączkowski 2002: 87–88). The concept of archaeological culture was associated by many scholars with different peoples who lived in the past (*e.g.* Merowites in the Meroitic Period).

Even the authors of the term doubted whether archaeological cultures should be treated as equal to human groups which functioned in the past (Childe 1929: V–VI). They were aware of the fact that independent territorial units, such as tribes or kingdoms, might go beyond the borders of one archaeological culture or on the other hand that several of them could function in the territory where scientists today recognise homogeneous archaeological cultures. The same reflection appeared when relative chronological periods were created.

This situation can also be seen in the archaeology of Sudan. The term Post-Meroitic Period has its roots in the concept formed by George Reisner at the beginning of the 20th century (Reisner 1910: 313–348). He distinguished Group X for the area of Lower Nubia on the basis of the differences in the structure of tombs and grave goods. Research at Qustul and Ballana in the 1930s and interpretations of written sources (later compiled by Vantini 1975 and Eide *et al.* 1998) proved to be the key factors for that region. The term Ballana culture (Trigger 1978: 110–117) was introduced. The research conducted by Shinnie at Tanqasi led to the emergence of the term Tanqasi culture, which was thought to be the counterpart of the Ballana culture in the region of Upper Nubia. Exploration of cemeteries at Firka, Gemai, Tanqasi again, El-Hobagi, Zuma, Hagar el-Beida increased the number of available archaeological materials which were used to indicate a direct relationship between the size of the barrows and the social status of the buried person. Thus the term of prestigious barrow cemeteries emerged (Welsby 2002: 22–23). The time frame of that period was defined on the basis of information from written sources.

Problems with such a division of the history of Sudan were most visible in the course of studies

associated with the salvage projects in the area of the Fourth Cataract. Barrow cemeteries, earlier dated to the Post-Meroitic Period, also comprised tombs which should be dated to the Late Meroitic Period on the basis of grave goods. Moreover, there were cases of Christian *box-grave* type burials in the contexts of barrows.

At that time, after the fall of the Meroitic Empire, numerous local centres of power emerged, which gave rise to three Nubian kingdoms that adopted Christianity in the 6th century. Scholars such as Patrice Lenoble doubted whether the Meroitic Empire ceased to exist before the beginning of the Post-Meroitic Period. These deliberations result in a complicated and diversified image of the societies which lived in the Nile Valley. Even the inhabitants of the Meroitic Empire did not constitute a homogeneous group. According to László Török, there were certain groups, tribes which constituted independent political organisations, which exploited cultural achievements of the empire to some extent, *e.g.* symbols of power deposited in the graves of representatives of elites.

Therefore, it could be concluded that the artefacts attributed to the Post-Meroitic Period might have been fashioned and used by the people who came from different tribes, kingdoms, diverse social systems. The same concerns fortified sites. They might have been built for different purposes by members of distinct political groups. In such a case, several systems overlapped in one area at approximately the same time. This means that some regularities could be overlooked in the course of analysis of the whole group of fortified sites dated to the Late Meroitic/Post-Meroitic Periods. Nevertheless, if an attempt is made to distinguish these systems and each is analysed separately, then perhaps it will be possible to discern the differences in the architecture and context of the structures. This is where exploitation of Zipf's ideas seems justified.

4.3. ANALYSIS

If such an analysis is performed for the fortified sites attributed to the Late Meroitic/Post Meroitic Periods in Upper Nubia, it might result in an interpretation concerning the number of independent settlement patterns as well as their comparison. In order to make that simulation, chronologically identified sites should be ordered in a ranking from the largest to the smallest and then represented in a logarithmic scale on a chart.

Accurate plans of the fortifications have not been made for many sites. For this reason, to ensure that the data are fairly homogeneous (subjected to comparable error), all the fortified sites were measured on satellite images by means of measuring tools in the GoogleEarthPro application, bearing in mind the existence of different construction phases, if such information was available.

Post-Meroitic Period

Due to ongoing research projects, the group of fortified sites dated to the Late Meroitic and/or Post-Meroitic Periods is expanding. In many cases, archaeologists who suggest such chronology of the sites indicate that further research in this field is necessary. At the moment, there are 14 fortified sites (**Table 1**). Starting from Dongola Reach and heading towards the upper course of the river, there are the following:

- the first phase of the fortifications of Old Dongola (dating based on pottery and radiocarbon samples – Godlewski 1991: 108; 1997: 178),
- first phases of Merowe Sheriq (dating based on pottery – Godlewski 2008: 465–468),
- Suegi, the first phases of both sites (dating based on pottery and radiocarbon samples – Żurawski 2007a: 325; Wiewióra 2010: 113),
- Umm Ruweim 1 (dating based on pottery and radiocarbon samples – Lohwasser 2010a: 90; Helmbold-Doyé 2011: 87; Eiger, Karberg 2011: 81–82),
- Umm Kuweib (dating based on pottery – Chittick 1955: 90),
- the first phase of the site at El-Ar (dating based on pottery – Żurawski 2010b: 202–203),
- Mikeisir (dated on the basis of radiocarbon samples and portable artefacts – Rees, Lahitte, Näser 2015: 192),
- Gandeisi (Meroitic pottery on the island – Jackson 1926: 22–23; Meroitic stone blocks inside the fortress Crawford 1953a: 30),
- Nakhara (dating based on architectural analysis – Crawford 1953a: 18–19),
- Hosh el-Kafir (dated on the basis of radiocarbon samples and portable artefacts – Lenoble 2004c: 124–125),
- Wad Mukhtar (dating based on pottery – Drzewiecki, Polkowski 2016: 81–82),
- Hosh el-Kab (dating based on pottery – Drzewiecki, Polkowski 2016: 81–82),
- Umm Marrahi (dating based on pottery – Hakem 1979: 155; radiocarbon samples – El-Hassan 2006).

Rank	Name	Surface area [m²]	Surface area log	Rank log
1	Old Dongola	39367.17	4.595134	0
2	Merowe Sheriq	13425.55	4.127932	0.30103
3	Suegi N	11097.69	4.045233	0.477121
4	Hosh el-Kafir	9033.63	3.955862	0.60206
5	Suegi S	7943.02	3.899986	0.69897
6	Hosh el-Kab	7867.34	3.895828	0.778151
7	Umm Ruweim 1	4234.67	3.62682	0.845098
8	Umm Marrahi	4211.82	3.62447	0.90309
9	Nakhara	3748.92	3.573906	0.954243
10	Umm Kuweib	3479.69	3.541541	1
11	Mikeisir	3329.76	3.522413	1.041393
12	El-Ar	2900	3.462398	1.079181
13	Gandeisi	2415.09	3.382933	1.113943
14	Wad Mukhtar	1913.22	3.281765	1.146128

Table 1. Metric data on fortified sites from the Late Meroitic/Post-Meroitic Periods for the analysis of the relationship between rank and size.

The graph of the fortified sites built and used in the Late Meroitic/Post-Meroitic Periods deviates from the *log-normal* (**Fig. 12**). It forms a zigzag curve (*primo-convex* according to Savage 1997: 234), which begins from Old Dongola (left end), next it drops lower than the *log-normal*, and then rises above it (at the level of Hosh el-Kab, site no. 6 in the ranking). Further on, the curve stays below the *log-normal* and forms a falling arch, characteristic for final elements. How should this graph be interpreted?

This type of distribution (*primo-convex*) means that the group consists of remains of two systems (Johnson 1980). The upper (left) part of the graph, which falls below the *log-normal*, would indicate the strongly centralised system with the main site at Old Dongola. On the other hand, the low, (right) part of the graph, represents the other order, of a different structure. Nevertheless, depiction of the two systems on one graph could lead to deformations of the line. In order to represent the difference between the two systems, I will perform the analysis again. I will draw two graphs, one for the centralised system (around Old Dongola) and another for the other system. How can the sites be distinguished in terms of their

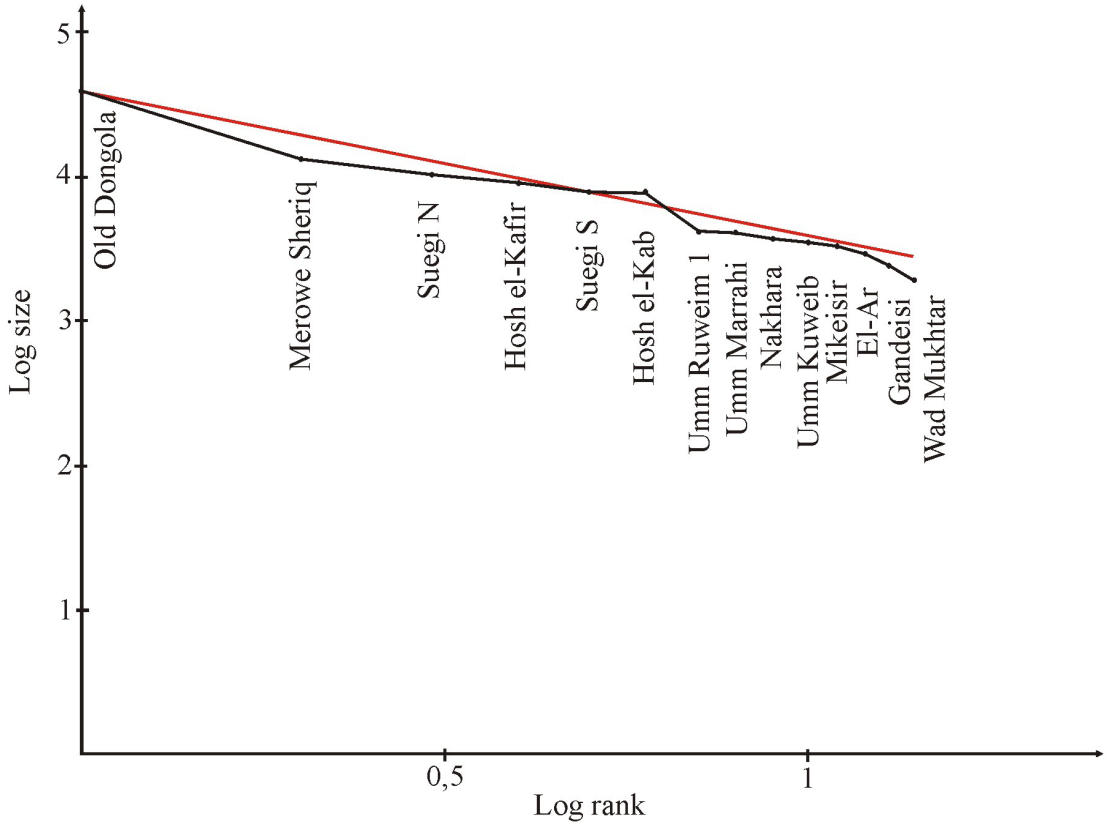

Fig. 12. Representation of the relationship of the rank log and size log for fortified sites from the Late Meroitic/Post-Meroitic Periods. Red line shows the *log-normal.*

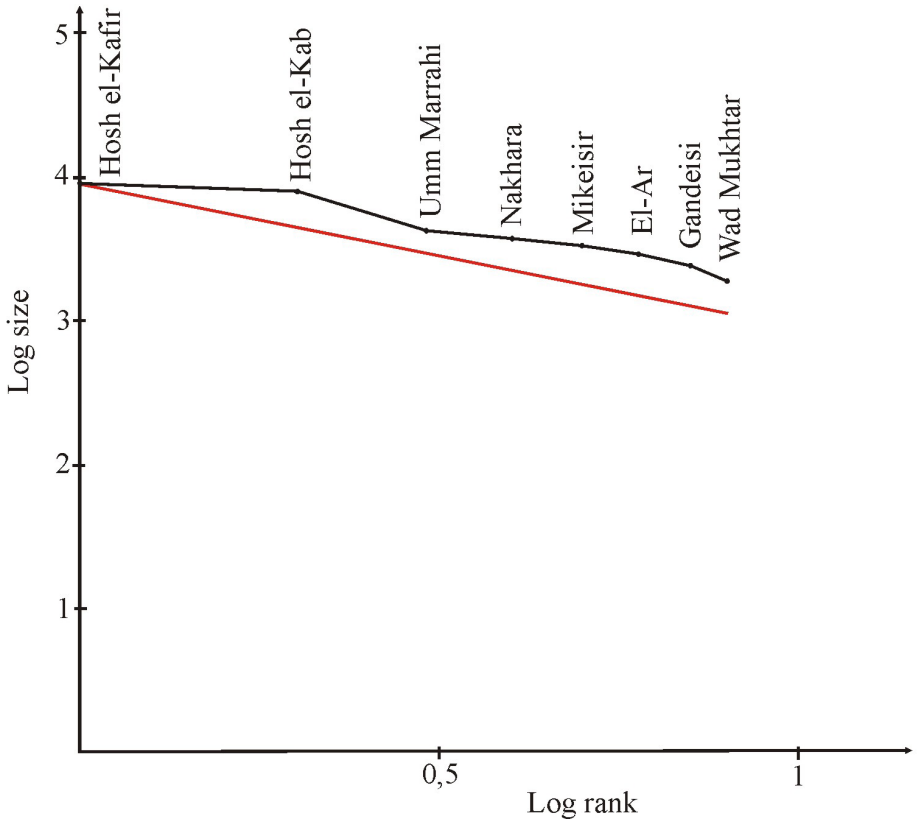

Fig. 13. Representation of the relationship between the rank log and size log for fortified sites from the Late Meroitic/Post-Meroitic Periods for the area from El-Ar up the course of the Nile.

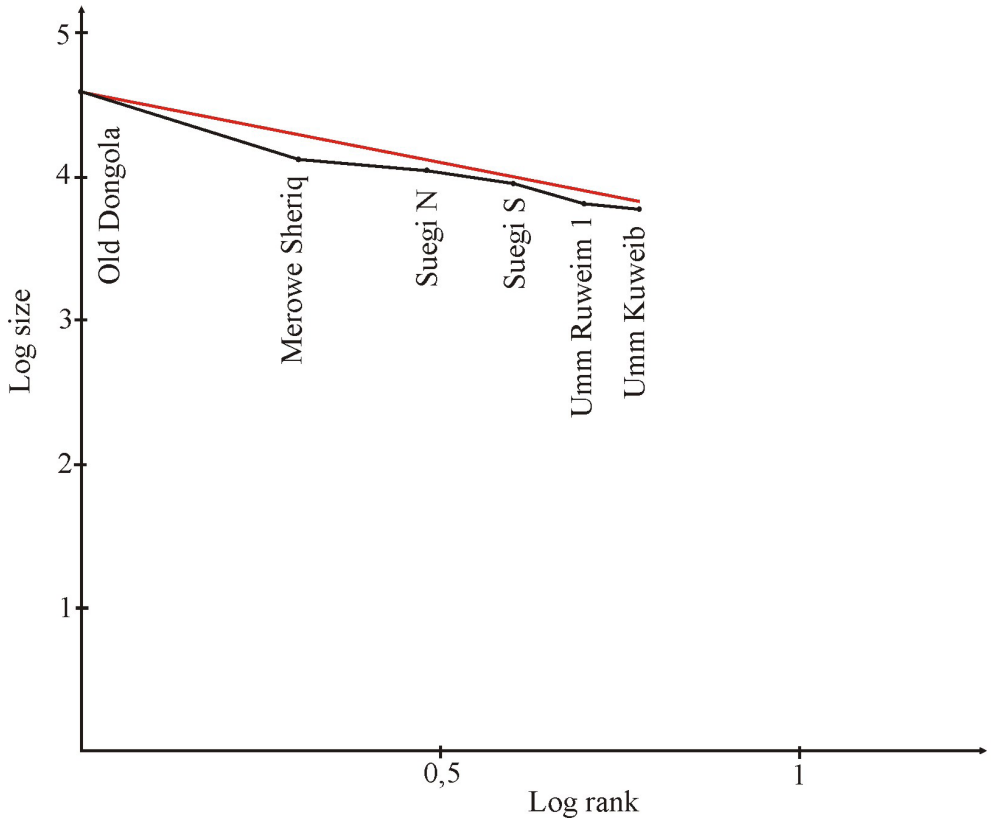

Fig. 14. Representation of the relationship between the rank log and size log for fortified sites from the Late Meroitic/Post-Meroitic Periods for the area of Dongola Reach and the Fourth Cataract.

attribution to the two systems? The left part of the graph will correspond with one of the systems. This portion encompasses the sites from below the *log-normal*, structures mainly from the regions of southern Dongola Reach and the Fourth Cataract. Therefore, I will assume that the more centralised system was situated in this area. The remaining locations, *i.e.* from El-Ar up the course of the Nile could be tentatively described as the other system.

Analysis made in such a manner returns a representation of differences between the two systems. One of them remains above the *log-normal* (**Fig. 13**), which implies the homogeneity of the sites. The other, situated below the *log-normal* (**Fig. 14**), displays a considerable difference between the first site and the remaining ones. It is a strongly centralised distribution with the main settlement in Old Dongola. Larger fortified sites of irregular shapes were built in this system. It also consists of sites Umm Ruweim 1 and Umm Kuweib, located outside the Nile Valley. Their structures show certain common traits, however, they differ in architectural terms from the sites situated closer to the river. They have been examined over the last few years as part of *The Wadi Abu Dom Itinerary* project headed by Angelika Lohwasser (Lohwasser 2009; 2010b; 2011; Lohwasser, Karberg 2013; Lohwasser, Eger, Karberg 2014; 2015).

On the other hand, a higher degree of unification can be noted among the sites located up the river from El-Ar (**Fig. 13**). Most of them were built in a similar way, according to a similar plan. This group incorporates sites dated to the Late Meroitic Period. Hosh el-Kafir seems notable in this group – its architecture and situation (approx. 4 km outside the Nile Valley) diverge from the common ones in this system. At the same time, it is the largest, although it does not dominate the group.

Early Christian Period

A number of 24 fortified sites have been distinguished for this period (**Table 2**; references in the Appendix). The information is incomplete, just like in the case of the Late Meroitic/Post-Meroitic Periods, which means that future studies might modify the contents of this list.

Rank	Name	Surface area (m²)	Surface area log	Rank log
1	Old Dongola	39367.17	4.5951342	0
2	Bakhit	33430.73	4.52414586	0.301029996
3	Diffar	32867.33	4.51676443	0.477121255
4	Merowe Sheriq	27138.05	4.43357864	0.602059991
5	Banganarti	11665.86	4.06691676	0.698970004
6	Seugi N	11097.69	4.04523259	0.77815125
7	Suegi S	10314.15	4.01343344	0.84509804
8	Abkur	10032.99	4.00143038	0.903089987
9	Nakhara	9209.34	3.96422851	0.954242509
10	Kuweib	6836.4	3.83482747	1
11	Redab	6595.57	3.81925233	1.041392685
12	El-Kab	4180	3.62117628	1.079181246
13	Umm Ruweim 2	4153.34	3.61839748	1.113943352
14	Kurgus	3934	3.59483436	1.146128036
15	El-Karmal	3612.3	3.55778381	1.176091259
16	Umm Khafur	2908.27	3.46363472	1.204119983
17	El-Ar	2900	3.462398	1.230448921
18	Kassi-Markol	2822.33	3.45060779	1.255272505
19	Deiga	2552.06	3.40689088	1.278753601
20	Gandeisi	2415.09	3.38293332	1.301029996
21	Ras el-Gezira	1850	3.26717173	1.322219295
22	Wadi Dam et-Tor	1732.46	3.23866322	1.342422681
23	Haraz	465.94	2.66833	1.361727836
24	Shofein	386.89	2.5875875	1.380211242

Table 2. Metric data on fortified sites from the Early Christian Period for the analysis of the relationship between rank and size.

The chart made on the basis of the data from the table (**Table 2**) strongly deviates from the *log-normal*. Most points are above it (**Fig. 15**, black line). The curve falls only in the final part, crosses the *log-normal* and plunges rapidly.

This type of distribution implies that the biggest sites (high in the ranking) differ slightly. There are no drastic changes between the first, most important site and the ones that follow. The distribution is highly integrated (Moore 1959). A major fall and deviation from the curve

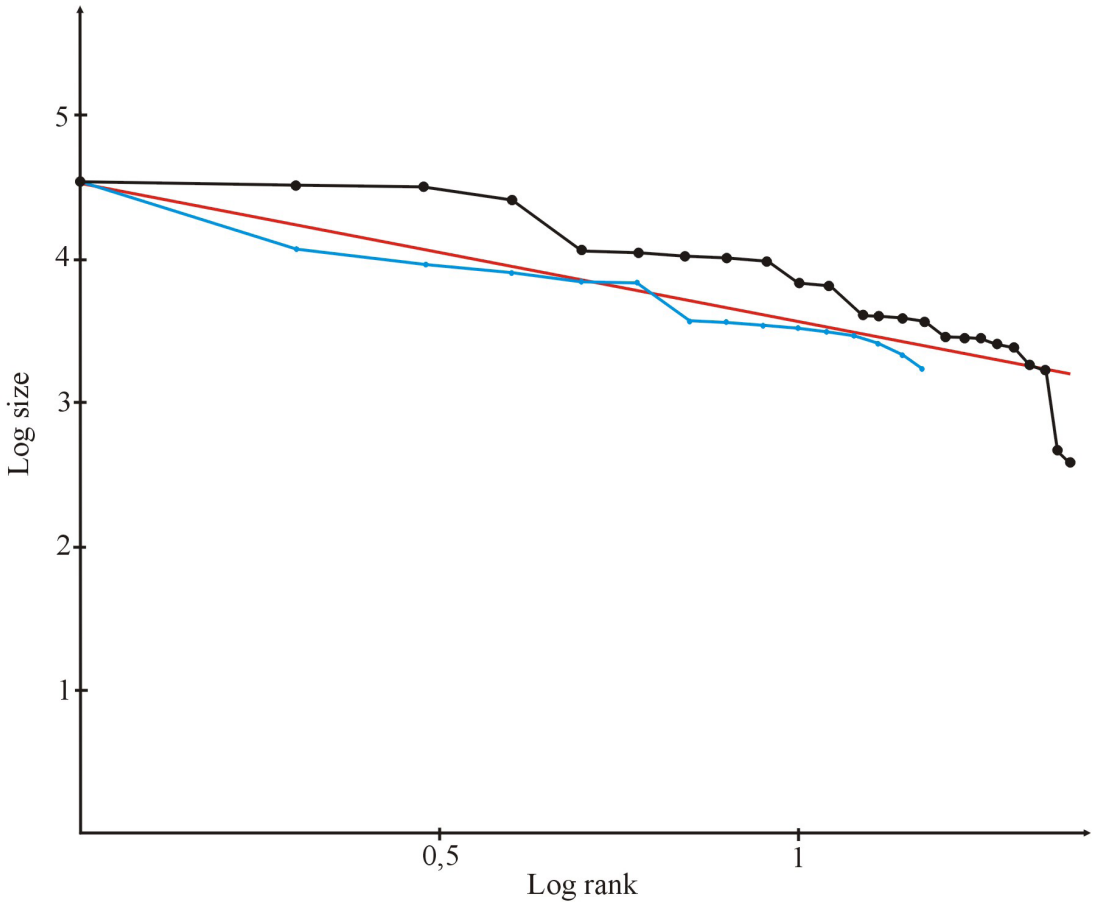

Fig. 15. Representation of the relationship of the rank log and size log for fortified sites from the Early Christian Period. Red line shows the *log-normal.*

in the final (right) part of the chart is a common situation in rank-size relationship analysis and is not connected with the interpretation presented above. The graph often takes stair-step form in the final portion (Zipf 1949: 36). This type of distribution on the graph might also imply that the system is incomplete – our group does not contain all the sites of that system.

The interpretations in the analysed case do not mutually exclude one another. Most of the analysed fortified sites are located between the Third and Fifth Cataracts. According to written sources, this is the territory of the Kingdom of Makuria. However, in the Early Christian Period Makuria combines with Nobadia and they constitute one state, which extends as far as the First Cataract region. The precise date of that event is still a subject of discussion (Edwards 2004: 237). Did it transpire in the 7th or the 8th century? It does not change the fact that the area between the Third and the Fifth Cataracts was only a part of the Kingdom of Makuria, and, as it can be concluded from the chart above, it was highly integrated.

4.4. SUMMARY

The first stage of the analysis built on the basis of Zipf's studies has shown the existence of at least two different systems of fortified sites in Upper Nubia in the Late Meroitic/Post-Meroitic Periods – a centralised one in the region of the southern Dongola Reach and the Fourth Cataract, while the other, a homogeneous one was located in the area from El-Ar up the course of the Nile. In the Early Christian Period, one system, which covered the area from the Third to the Fifth Cataracts, can be distinguished.

The graphs show increasing integration of the region between the Third and the Fifth Cataracts. According to written sources, most of this area belonged to the kingdom of Makuria (Vantini 1975: 17). The results of the analysis imply that initially there was a centralised

system around Old Dongola and a fragment of a homogeneous system (beyond the Fourth Cataract). The differences between Old Dongola and the sites which followed decreased, however, none of the latter exceeded the capital of Makuria with regard to size. It was the biggest fortified site in Upper Nubia but it did not dominate others so evidently in the Early Christian Period, and the system ceased to be centralised. On the other hand, the state of research is not sufficiently advanced to indicate which structures were used in the area from the Fifth Cataract up the course of the Nile in the Early Christian Period. Generally, it seems that very few, if any, defensive structures were erected in that region in the Christian Period[6]. Soba, the capital of Alodia, was probably not fortified (Welsby 2002: 120; Welsby, Daniels 1991: 11–30). Fortified sites are again erected in Alodia at the end of the Middle Ages, which is reflected by the examples of Jebel Irau (Chittick 1963) and Fangool/Hosh esh-Sheitan (Nada Babekir Mohammed 2014; Drzewiecki, Polkowski 2016: 80–81). Nevertheless, both sites have been insufficiently researched.

What do the differences between Makuria and Alodia result from? Was Alodian society organised differently and, as a consequence, construction of fortified sites was not needed as much as in Makuria? These conclusions surprisingly contradict the written sources, which describe it as the most potent one of the medieval kingdoms in Nubia, and whose king possessed more power than the ruler of Makuria (Welsby, Daniels 1991: 7). These discrepancies do not rule each other out but merely show how incomplete our understanding is with regard to the structure of the kingdom as well as the social and political role of fortified sites.

These remarks concern the Nubian kingdoms which accepted Christianity in the 6th century. The analysis of the rank-size relationship distinguished one more system, which perhaps should be associated with the declining Meroitic Empire. If we assume, like Lenoble does, that the Empire might have functioned in a form limited in terms of the territory as late as the Post-Meroitic Period or connect it with problems in establishing a chronology between the Late Meroitic and Post-Meroitic Periods, it is possible that the fortified sites of similar size, which cover the area from El-Ar up the course of the Nile, were built to serve the needs of that kingdom. If so, then the extent of the Empire decreased significantly in comparison with that of the Early Meroitic Period (3rd–1st century BC). It had lost lands of Lower Nubia, present-day regions of Mahas and Dongola Reach. Nevertheless, the area where these fortified sites are scattered stretched along approx. 550 km of the Nile Valley, therefore, the Empire was still a country of the largest territory in Upper Nubia in the Late Meroitic/Post-Meroitic Periods.

On the basis of these arguments, I will interpret the construction of fortified sites at this stage of research in the following manner:

- fortified sites located from El-Ar up the Nile and dated to the Late Meroitic/Post-Meroitic Periods will be attributed to Meroitic rulers;
- fortified sites in the regions of southern Dongola Reach and the Fourth Cataract, dated to the Late Meroitic/Post-Meroitic Periods will be attributed to kings of Makuria;
- fortified sites between the Third and Fifth Cataracts dated to the Early Christian Period will be attributed to the Kingdom of Makuria.

The next stage of my analysis is testing of the hypotheses. I will look for confirmation or contradiction of the interpretations presented above on the basis of the observation of the context of all fortified sites.

[6] When this information is interpreted, it must be remembered that this area has been poorly researched as far as fortified sites are concerned. This situation might lead to emergence of different hypotheses. The alternative to the one discussed in this chapter has been published in an article written by Derek Welsby (Welsby 2002: 131–133; 2005: 48–49; 2014: 188–190), who assumes that the Kingdom of Alodia initiated and developed defensive architecture in the area from Kurgus up the Nile in the formative period of that kingdom as well as in the Early Christian Period (it covered the area of the Fifth Cataract and the Nile Valley further south).

CHAPTER 5

Fortified sites of the Late Meroitic/Post-Meroitic Periods and centralised systems of power

The procedure created by Arkadiusz Marciniak involves a step which aims to test and verify the hypotheses. In this case, they concern the existence of two independent fortification systems in Upper Nubia in the Late Meroitic/Post-Meroitic Periods. As a starting point, a model of centralised power will be built. Then, I will try to relate this model to the archaeological remains and topographic properties of the areas surrounding the fortified sites by means of four hypotheses. The observations from the previous chapter will be confirmed if I arrive at contradictory results while comparing the two systems. They should be comparable for the system in the regions of southern Dongola Reach and the Fourth Cataract. In the case of the system located in the area from El-Ar up the course of the Nile, the results should be inconsistent.

5.1. CENTRALISED SYSTEMS OF POWER

The process of formation of central power is one of the key themes considered in processual archaeology. Many scholars have raised that issue with regard to various societies, both modern and past ones (for instance Adams 1975; Balandier 1970; Claessen, Skalník 1978; Price, Feinman 2010). Many similarities, frequently among very distant societies, have been noted (Bailey 1969; Balandier 1970: 68–79). The general term early state has been coined to describe this phase of the development of systems (Claessen 1978: 21). The term was used to refer to the organisation process which regulated relationships between representatives of a society in the course of formation of state organisms. The *early state* has a set of general features. According to Claessen, they are the following:

- a considerable number of people, which will make it possible to introduce social classification, division and specialisation;
- power is centralised and it possesses forces required to keep law and order; it could be manifested in the form of moral authority or threat of violence;
- power is independent, at least *de facto*, and possesses sufficient forces to prevent divisions and respond to external dangers;
- production is developed to such a degree that there are regular surpluses used *i.a.* for the maintenance of the representatives of the system of power;
- the society is divided into at least two classes: the ruling and the ruled;
- there is an ideology which is exploited to justify the role and existence of the ruling class.

Why do such social organisations emerge? Processual approach applies the hypothetico-deductive model (for example Carneiro 1970) to present the reasons in the form of a set of actions and circumstances which might begin long before central power is formed. Models are constructed on the basis of analysis of qualities which, according to scholars, might have led to the creation of such a social structure.

5.2. CENTRAL POWER AND SETTLEMENT PATTERN

The aforementioned definition of the *early state* alone emphasises the importance of certain features in the formation of central power. What should be stressed in this respect is

the demography, people's awareness of the social structure, production of surpluses and ideology which legitimises power. The processes which might be related to these features constitute a particular network (Binford, Chasko 1976; Cohen 1978; Aldenderfer 2010). For instance, so-called demographic pressure could be a power-instituting factor. Esther Boserup (Boserup 1965) tried to show that an increase in population might influence the development of farming technologies, which, by means of feedback, could generate a further rise in population and complexity of social structures. The development of farming production is perceived as the leading factor in the population increase in the Neolithic Period and has been observed at a number of sites dated to that period in the present-day territory of Israel (Cohen 1978: 40). According to Steward (Steward 1955: 199), an irrigation system exploited on a big scale might have led, as a consequence of demographic pressure, to the emergence of social divisions. Irrigation required organisation, effort and coordination. As a result, a division was formed: the people who coordinated the whole system and the people who performed physical work.

Ideology and people's awareness of existing social structures are very important factors in the creation of power as indicated by Claessen's description above. In this case, individual activity of leaders might have the key influence. Rulers often act in a particular manner to build their authority. Their behaviour is a consequence of conscious strategies (Lightfoot, Feinman 1982: 66). The main factor in the development of the ruler's status is attracting and maintaining groups of people who obey his/her authority. It is expressed in a form of respect, support, loyalty and recognition of the superior status of the ruler. In order to initiate this type of strategies, a ruler might begin by collecting surpluses of food and luxury goods, manufactured locally or imported. These surpluses could be re-distributed freely, or constitute a form of assistance or loan for the rulers of neighbouring regions (Mair 1964: 62–70; Stevenson 1968: 170–201). In the case of despotic rulers, they could serve for expansion of oppression and enforcement systems. Such actions form foundations for social affinities, where individuals define their positions. Leaders could confirm their authority as well as manifest their power and influence by organising lavish social occasions.

Construction of artificial structures in the landscape might be another form of building and manifestation of social status (Johnson 2002: 68–69). Monumental edifices, which constitute a prominent element of topography, could be perceived as illustration and reflection of the structure of power. Construction of temples, buildings for public services, or palaces could be arranged in accordance with that rule (Pugh 1990). Building activity of a ruler might also take another form of expression, strictly connected with ideology, *e.g.* it could be royal tombs which are a part of the cult of power and at the same time legitimise the status of future leaders (Metcalf, Huntington 1992: 133–151).

5.3. ASSUMPTIONS OF THE MODEL

A series of hypotheses must be formed to test whether a model of this type could be applied to explain the processes which left their remains in the form of fortified sites from the Late Meroitic/Post-Meroitic as well as Early Christian Periods, discovered in Upper Nubia. These hypotheses will be made on the basis of theoretical considerations (Lightfoot, Feinman 1982: 71), and next they will be tested on the material from Upper Nubia. This test will be first performed for two systems distinguished by the rank-size analysis for the Late Meroitic/Post-Meroitic Periods, and then (in Chapter 6) for Early Christian fortified sites.

If the rulers adopted strategies which led to the establishment of centralised power, these actions might be manifested by the artefacts discovered in the archaeological material.

Hypothesis 1

If it is possible to distinguish structures which deviate from the standard set by other edifices of a similar type in the archaeological remains, it might mean that a building policy was implemented, and one of its tasks was representation of ideology. In the case of structures erected by rulers it could have been the establishment and strengthening of the image of their high social status.

Hypothesis 2

In order to produce the necessary surplus of crops, rulers should introduce/popularise new technologies which would help intensify production. They should also have access

to an area of significant agricultural potential. If it is assumed that the territory of the ruler was reduced to the lands surrounding his/her seat at the initial stage of development, it should be located in an area of a high agricultural potential.

Hypothesis 3

If the ruler used luxury goods to express and confirm his/her status, such objects will be found in repeated contexts. These contexts should be the key points of presentation and formation of status.

Hypothesis 4

A high standard of living and luxury goods exploited to manifest status need a considerable economic basis. For this reason, manufacturers, craftsmen, as well as providers of objects and products for elites might be concentrated in the vicinity of the ruler's seat. Remains of such activity could form clusters of workshops or even whole settlements around castles or palaces. The number of people who lived in the complex could have been higher than in other centres, hence the number of graves at the cemeteries located nearby could also be higher unless the religious rituals connected with the funerary practices required a different manner of burial.

5.4. TESTING THE MODEL OF CENTRAL POWER

The analysis of the rank-size relationship indicated that the fortified sites erected in the regions of southern Dongola Reach and the Fourth Cataract are parts of a system which could be described as centralised. In this case, the test of the aforementioned hypotheses should return positive results. On the other hand, the fortified sites located up the course of the Nile from El-Ar represented a homogeneous system in the rank-size relationship analysis. If this is a correct observation, the arguments mentioned above should not be supported by the central power analysis in that region.

Hypothesis 1

Regions of southern Dongola Reach and the Fourth Cataract

Old Dongola, which is referred to as the seat of the kings of Makuria in written sources, is distinguished by its size and construction technique among other fortified sites in Upper Nubia.

The people who populated the vicinity of Old Dongola in the 5th century had not known this type of structures before. For this reason, the construction must have evoked emotions and raised controversies among the inhabitants of the emerging Kingdom of Makuria. Sources which could provide any information on the building process have not been preserved. Therefore, the discussion below is based on the results of archaeological research, statistical data, and analogies from the closest regions for which such information is available.

Fortifications of Old Dongola were designed as a large structure in the earliest phase. They were built of mud bricks and stone. Remains of this edifice were documented in the northern, western and eastern part of kom A (Godlewski 1997: 175; 2014: 159; 2015). However, it seems that the line of the wall overlaps with remains of more recent fortifications which surround the whole kom A. The fortified site was built on an elevation over the Nile. It was nearly ellipse-shaped and measured[7] approx. 360x150 m. On the riverside, an additional wall which connected the river bank with the main structure was built to form a port.

For the clarity of further analysis, I would like to consider the organisation and division of work in the period of construction of the fortifications of Old Dongola. That building process required labour of a considerable number of people for a long time. The length of time and number of people depended on the size of the structure and organisation of work. In the case of large fortified sites, the work could have taken years and involved most of the inhabitants of the neighbouring area (Martin, Renucci 2011)[8]. The fortifications are preserved to height of 6.70 m at most, but originally were higher. The thickness of the walls reaches 5.30 m (northern flank) and 3.60 m (western flank, closest to the river). The thickness was measured at a height of 6 m and it should be noted that the closer to the foundations, the greater

[7] Measurements taken from satellite images in Google Earth.

[8] Guédelon project described in this publication is an experiment performed in order to collect information on the manner of building of a medieval castle. It involves construction of a castle in Yonne department in Bourgogne. The period of construction of the castle has been set for 30 years.

it was. The core and the inner face were built of mud bricks, while the outer face of the northern flank consisted of a homogeneous layer of stones of irregular shapes, and the most external ones were fitted precisely so that they would form a continuous surface. In the north-western part, a platform which levelled the surface along the river bank was erected at the same time as the fortifications. Six massive fortified towers were built in the north and east. Their width reached 5.60 m and they protruded up to 8.90 m ahead of the face of the wall (Godlewski 1997).

One metre of the wall in its weakest part required approx. 2,500 mud bricks for construction[9]. It was necessary to use more than 2.5 million bricks to build the whole fortified site[10]. The volume of the stone coating (probably weighing tonnes) should be added to that, together with a massive amount of mortar to bind these elements. These simple calculations are intended to show that the construction of fortifications surrounding Old Dongola was not an easy task. The building process was not a short-term project either, especially if such factors are considered as the manner of construction of walls from mud bricks, which require drying time to prevent cracking (Clark, Engelbach 1990: 210–212).

It is impossible to provide any data, even approximate estimation, concerning the number of people involved in the construction process, *i.a.* due to the insufficient architectural identification. However, it could be assumed that such an enormous project needed excellent organisation of work. If a designated team had not worked on the manufacture of mud bricks, they would not have been made so homogeneous. If there had not been quarry workers who sourced the stone and stonemasons who shaped it, this material would be more heterogeneous. The observations imply that an evident division of work functioned at the site. What is more, to create such division, certain individuals were necessary to plan it and maintain it in the course of work.

It could be assumed that the following groups existed:

- those that could be defined as the specialists who managed the work. That group might have been responsible for the construction and logistics of the whole project;
- a larger group, which consisted of workers. These people were responsible for completion of physical tasks planned by the specialists.

It is likely that there were some further internal divisions, which resulted from a variety of factors, such as skills, practical experience, social status, *etc*.

The whole project also needed to collect the basic provisions for the people who were employed for the construction. Assuming that the group of builders must have consisted of at least several hundred people, food deliveries must have been of considerable volume and required supplies from most, if not all, households in the vicinity of Old Dongola.

It could be concluded that most of the population living near Old Dongola participated in a certain manner in the building of the fortified site for a relatively long period (from months to even several years). They were involved in a project whose aim was to build a fortified site – a seat for the king, which undoubtedly strengthened his power and consolidated the new structure.

Did it affect the awareness of the people? It should be noted that participation in the work might have shaped people's perception of the edifice. They accepted the existence of such a system by taking part in the construction of the capital for the ruler. Social relationships established in such a manner could have been solidified afterwards even by just the use of the fortified site. It could have happened already at the stage of the decision who would live inside and who outside the fortifications, or who would live in which part of the area inside. Social relationships which functioned before the construction must have changed and the building process was a particular time of transition, the time of shaping and testing of the new order.

Thus the construction of such an enormous fortified site as Old Dongola acquires yet another aspect. The ruler builds his seat and at the same time creates a new centralised social system. By involving the whole population in the project of building the capital - specialists, logistics ex-

[9] The number results from the assumption that the bricks used for construction measured 41–42x18–19x9 cm (Godlewski 1997: 175) and that the wall is 3.6 m thick and 6 m high (these are the lowest values adopted on the basis of measurements of the preserved parts of the fortified site, originally, the walls might have been thicker and higher).

[10] The number is a result of multiplying the number of bricks necessary to build 1 m of the wall by its length shown by the satellite image in Google Earth. A significant potential error of this calculation is a consequence of the present state of research. The numbers are only intended to reflect the scale of needs for such a construction project.

perts, workers, and providers of food, the king marks their positions in the new system, which they have accepted by their participation.

The society which had a clearly defined system of power could function more efficiently. In addition to that, fortified sites, apart from their purely utilitarian properties, might have constituted a symbol of power and organised the living space of the inhabitants of the Nile Valley by their very presence. Perhaps this is why fortified sites became such an important element of the landscape of the whole Kingdom of Makuria.

Area from El-Ar up the course of the Nile

All fortified sites should be comparable in terms of size in a system described as homogeneous. Certain differences might be noted but they should not be so significant as in the centralised system, *e.g.* Old Dongola covers an area which is three times bigger than the surface of the second largest fortified site, located at Merowe Sheriq. Hosh el-Kafir is the biggest structure in the area from El-Ar up the river course. It is a fortified site which does not differ in terms of size from Hosh

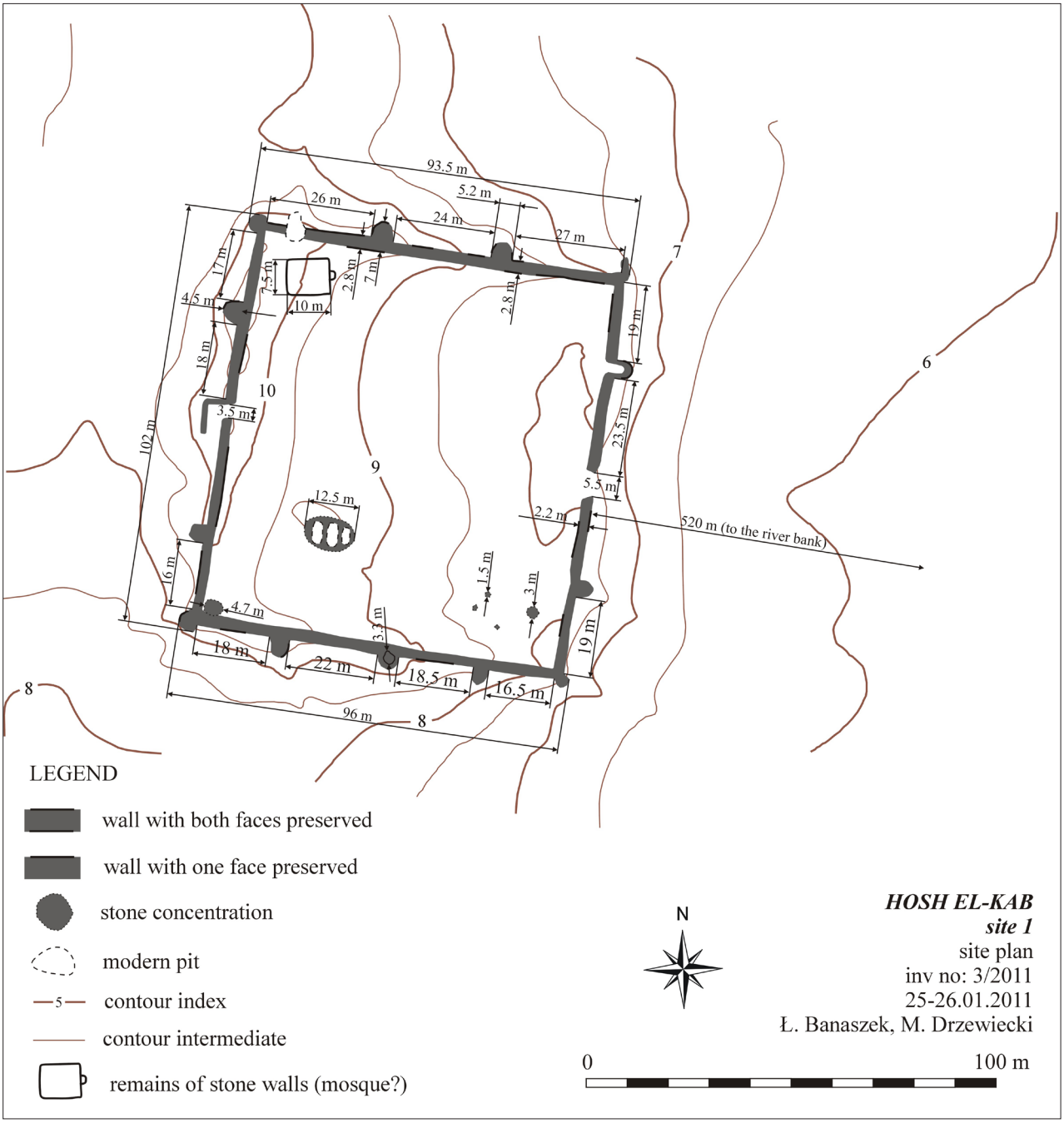

Fig. 16. Plan of the fortified site at Hosh el-Kab.

el-Kab, which is second in the ranking. Moreover, Hosh el-Kafir is four times smaller than Old Dongola. It displays modifications from the standard set by other sites, its shape is irregular. It does not have towers or bastions. The gates do not have extensive defences. The enclosure wall, constructed from rough stones, is only 1 m thick. A series of rooms were built along its internal face, which made Patrice Lenoble (Lenoble 2004c), the head of excavations at this site, relate them with the fortified sites at Umm Ruweim 1 and Umm Kuweib.

The location of Hosh el-Kafir, far from the Nile Valley and on a flat area which is not distinguished in the landscape, might lead to the conclusion that the construction of this fortified site was not supposed to have similar consequences to the ones described in the case of construction of the fortifications around Old Dongola.

The second biggest site, situated at Hosh el-Kab (**Fig. 16**), does not occupy a dominant position in the landscape either. In two cases (Gandeisi, El-Ar), fortified sites of the homogeneous system are located even in farming areas. Hosh el-Kab is architecturally close to other defensive structures from that region, characterised by their regular shapes. Towers/bastions are situated in the corners and at comparable distances along the whole length of the walls. Two gates were built at that site (one facing the river, the other facing the desert), including at least one with additional defences.

Summing up, hypothesis 1, which concerns the significance of fortified sites in the strategy of leaders, is confirmed for the regions of Old Dongola and the Fourth Cataract. However, it is not reflected by relevant features in the structures located along the Nile, upstream from El-Ar.

Hypothesis 2

In Meroitic times, farming lands were limited to the so-called *seluka*, *i.e.* areas of the Nile Valley inundated during the annual flooding. Cranes called *shaduf* were the only devices which served to raise the water level. Mechanisms of that type were capable of raising water by 3 m at a time (Welsby 2002: 185). At the end of that period or in the Post-Meroitic Period, waterwheels emerged – *saqia* (Trigger 1965: 123; Edwards 2004: 202–203). These sophisticated devices driven by rotational force could draw water to a height ranging from 3 m to 8 m (Welsby 2002: 185). Owing to a mechanism which consisted of a number of connected pottery vessels of *qawadis* type, *saqia* was a much more efficient tool than *shaduf*. Copious fragments of *qawadis* vessels can be detected in settlement contexts, starting from the 4th or 5th century AD (Edwards 2004: 202–203). Some scholars claim that the popularisation of the waterwheels was equivalent to the introduction of combustion pumps at the beginning of the 20th century (Welsby 2002: 185). *Saqia* expanded the area available for farming dramatically, which changed the systems of division and value of land. Agricultural colonisation of the landscape ensued (Rowley-Conwy 1989; Edwards 2004: 203; Fuller 2013: 172–174).

Another factor which influenced the development of agriculture was the introduction of a different group of crops. Changes in diet have been confirmed on the basis of isotopic analysis of human remains from Upper Nubia. It consisted of the so-called summer crops from the south and winter crops from the north. This shift made it possible to exploit fertile land throughout the year (Kobischtschanow 1980; Rowley-Conwy 1989).

Does that show any connection with the emerging kingdoms? In order to check that, I will conduct a test of agricultural potential around the supposed seats of rulers. If these areas are equipped with such possibilities, then perhaps the strategies of rulers also involved innovations in agriculture.

Studies of agricultural potential have been largely developed within the framework of *site catchment* analyses (Vita-Finzi, Higgs 1970). Nevertheless, the possibility of distinguishing this type of areas on the basis of modern information on topography and soils has been questioned from the very beginning (Flannery 1976; Foley 1977). For this reason, that type of analysis is performed for the region of Upper Nubia only as an approximation and there are many additional reservations/assumptions.

It must be emphasised that only potential farming lands will be measured, therefore it will remain unclear whether they were actually exploited for agriculture in the Post-Meroitic or Early Christian Periods.

At the moment, a significant part of the Nile Valley is used for agricultural exploitation. A considerable development in this field has taken place over the last century – apart from the irrigation system which uses combustion pumps, a number of channels, parallel to the river or located on the bottom of old river beds, have been dug (Kurcz 2007: 100–104). Interpretation of agricultural potential is the most difficult

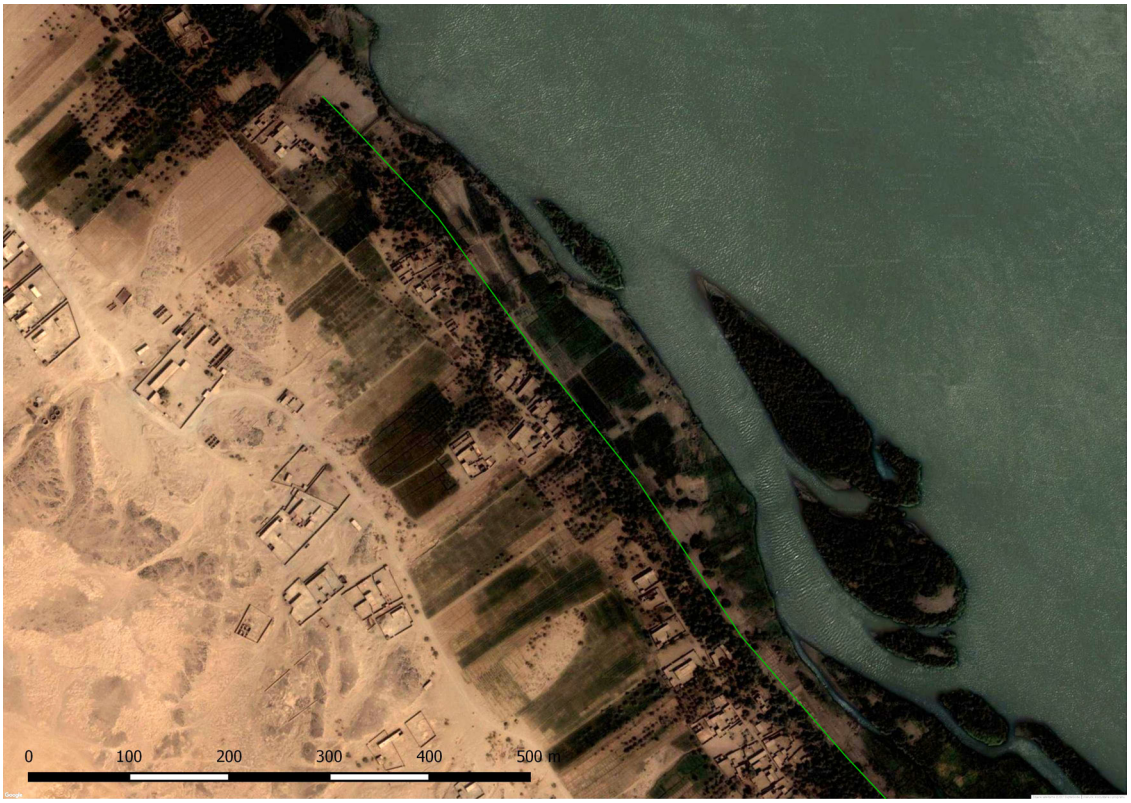

Fig. 17. Satellite image of the Nile Valley in the vicinity of the island of Artul. The green line indicates the area covered with trees. Area irrigated by an artificial channel is located on the left of the green line, while on the right there is an area watered with supplies from the river.

in such area, since this is where the most serious changes in the landscape have materialised. However, it is often possible to notice differences which help to establish the old area (subjected only to waterwheel irrigation) of crop fields.

The areas which were possible to supply with water by means of the waterwheel irrigation system were used as crop fields. Trees, mostly palms, were planted on the stretches of land located further up, at the border of the watered area. Special wells were dug for seedlings of these trees. When a new channel parallel to the river was opened, cultivation of another area commenced and the previously existing system remained unchanged, that area was regarded as the most valuable (Kurcz 2007: 100). As a result, the satellite images of the lands subjected to agricultural exploitation show trees planted between crop fields (**Fig. 17**).

There are still some portions of land where works modernising agriculture have not been conducted so far. These are mostly cataracts and places where rocks reach the river bank. In such situations, I regarded the currently cultivated lands as a potential agricultural area in the past.

I additionally exploited CORONA satellite imagery (Ur 2013) and used the images which are available free of charge via EarthExplorer (http://earthexplorer.usgs.gov/, accessed on the 2nd Sept. 2016).These images come from the end of 1960s and the 1970s, *i.e.* they depict the Nile Valley at the time when combustion pumps were not as common as today and the farming lands were not so well developed.

Certain areas were significantly transformed due to accumulation of the sand carried by regular winds from the north. Sites such as Banganarti, Abkur or Ubri E1 are now located at a considerable distance (approx. 2 km) from the Nile (**Fig. 18**). The situation might have been different earlier, which is indicated by the information provided by travellers in the past (Żurawski 2003: 230).

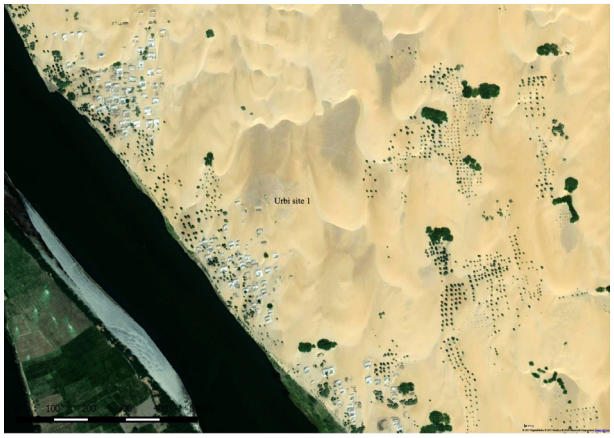

Fig. 18. Satellite image of the area around the site of Urbi E1. The landscape is dominated by moving dunes.

I also measured agricultural potential for three regions around fortified sites. They were marked by three concentric circles of 1.5-km, 3-km, and 4.5-km radii (**Fig. 19**). The maximum value was determined as an estimation on the basis of the distance between Old Dongola to the closest fortified site, *i.e.* Banganarti. That distance is approx. 9 km.

The aim of the division into three zones is to test whether areas of high agricultural potential were located directly next to the fortified sites, and therefore, whether such a situation could have influenced the location of these sites.

SYSTEM	NAME	RADIUS (area measured in km²)		
		1.5 km	3 km	4.5 km
Centralised	Old Dongola	1.52	4.1	8.5
	Merowe Sheriq	1.30	5.7	7.8
	Suegi N and S	0.83	2.1	5.1
	Umm Ruweim 1	0.05	0.07	0.08
	Umm Kuweib	0.03	0.05	0.07
Homogeneous	El-Ar	0.85	1.93	3.23
	Mikeisir	0.39	0.87	1.58
	Gandeisi	1.42	4.40	7.79
	Nakhara	0.85	3.70	5.87
	Hosh el-Kafir	0	0	0
	Wad Mukhtar	0.90	3.04	5.14
	Hosh el-Kab	1.68	5.7	8.87
	Umm Marrahi	1.60	5.42	9.22

Table 3. Results of the agricultural potential measurement of areas surrounding fortified sites.

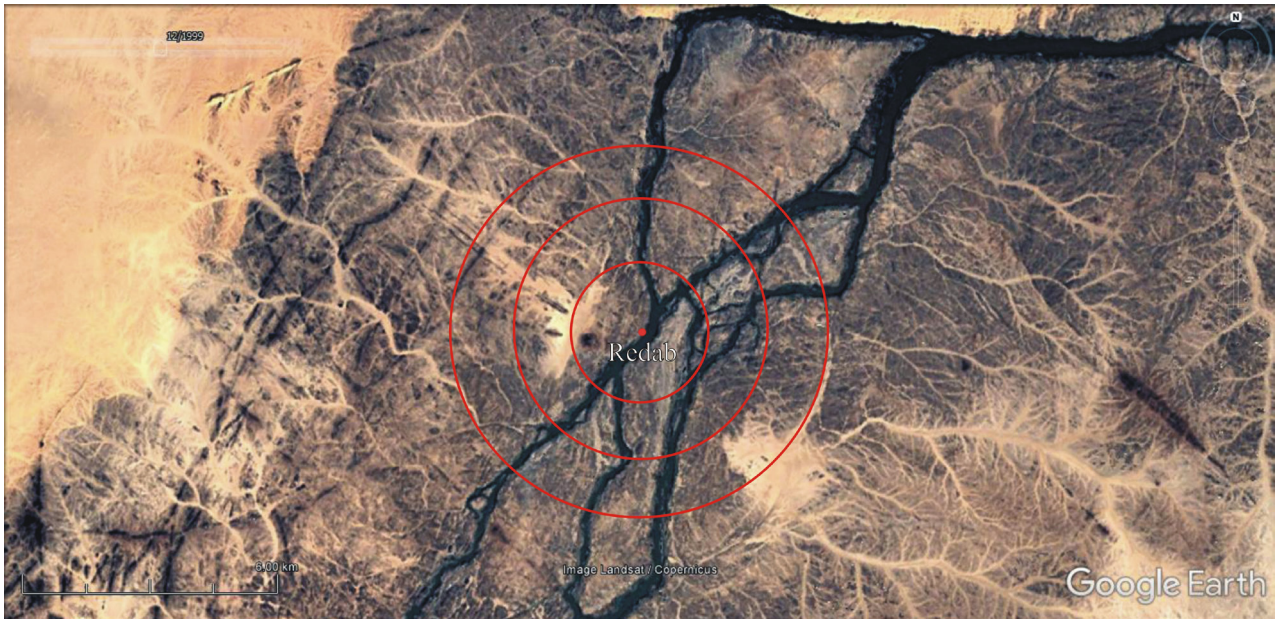

Fig. 19. Satellite image of the area around the fortified site at Redab. The red circles indicate the range of lands which were measured for their agricultural potential.

Regions of southern Dongola Reach and the Fourth Cataract

The sizes of areas representing agricultural potential in the closest proximity (r=1.5 km) of fortified sites correspond with the list compiled on the basis of the rank-size relationship analysis. The highest agricultural potential belonged to Old Dongola, with the fortified site at Merowe Sheriq on the second position. They are followed by the two sites at Suegi, Umm Ruweim 1 and Umm Kuweib. The difference between Old Dongola and Merowe Sheriq is relatively small. However, the low potential in the vicinity of Suegi is surprising. That region was shaped by weathered rocks and the surface area of the soils suitable for cultivation is smaller nearly by half than those around Old Dongola. There were two fortified sites at Suegi, located at a close distance on the opposite banks of the Nile. Were these crop fields sufficient to feed the people who lived there permanently or temporarily in the Post-Meroitic Period? Or perhaps they had to rely on supplies of agricultural produce from other regions? The inhabitants of the fortified sites at Umm Ruweim 1 and Umm Kuweib most probably used produce delivered from other areas. In this part of Abu Dom, only the bottom of the wadi was suitable for crop cultivation, and only in the periods when it was supplied with water.

The areas located at a bigger distance (3 km and 4.5 km) do not display any changes in the case of Umm Ruweim 1 and Umm Kuweib. The situation is slightly better for Suegi and very good for the lands around Old Dongola and Merowe Sheriq. Both of the fortified sites with the highest agricultural potential are located on the edges of the so-called basins. These areas are parts of the old river bed of the Nile or its branches, and they were often filled with water at the time of river flooding, which left fertile silt on the soil surface. The presence of such stretches of land significantly increases the area of potential crop fields.

This means that both the region of Old Dongola and Merowe Sheriq had a potential to generate and accumulate a surplus of agricultural production under proper management.

Area from El-Ar up the course of the Nile

The agricultural potential in this region does not correspond with the order set in accordance with the rule of rank-size relationship. Hosh el-Kafir from the first position in the size ranking occupies the last position in regard to the potential agricultural area. Similarities to the fortified sites at Umm Ruweim 1 and Umm Kuweib can be noted in this case.

The next fortified site on the list, Hosh el-Kab, occupies a prominent position, and constitutes, together with Marrahi and Gandeisi, areas of considerable agricultural potential, reaching the level of Old Dongola and Merowe Sheriq in this regard. Therefore, it appears that agricultural potential was not the main element taken into consideration when this system of fortified sites was created.

Hypothesis 3

Luxury goods or imported artefacts have been detected at Post-Meroitic sites, mainly in funerary contexts. This could stem from the fact that relatively few settlements inhabited at that time have been identified. It is usually supposed that they were constructed from material of low durability, which has not been preserved. Continuity of settlement activity over centuries might be another explanation. It is connected with many rebuilding projects which could have erased traced of previous phases of settlement (Jakobielski 2001: 11).

Nevertheless, when cemeteries alone are analysed, an irregular distribution of luxury goods can be detected. The so-called elite barrow cemeteries, defined above (chapter 3.2), are the main source of information concerning these objects. Scholars have distinguished a group of a few dozen tumuli at several cemeteries (**Fig. 20**), which were equipped with the highest number of luxury goods. They mostly included: metal vessels with lavish decoration, a wide range of weapons, jewellery made of rare metals and precious or semi-precious stones, *etc.* These tombs often contained animal sacrifice, or relatively rarely, human sacrifice. Superstructure of the graves – barrows of a remarkable size covered the shaft leading to burial chamber or chambers.

Patrice Lenoble developed a hypothesis that the largest tombs which he examined at El-Hobagi were tombs of kings. He tried to reconstruct their funerary rituals on the basis of information concerning the ritual practices from the Meroitic Period and analogies in Europe (Lenoble 1999). According to him, following the traditions of Meroitic religion, the deceased was identified with Osiris. He was buried by his successor, who adopted the role of Horus. The funerary ritual

was supposed to function as a particular imperial propaganda, an ideology which legitimised political decisions (Lenoble 1999: 171). All offerings deposited in the tomb had a symbolic meaning according to Lenoble. For instance, he regarded iron spearheads, which often exceeded 0.5 m of length, as a weapon of little functional value. He was inclined to interpret such artefacts as remains of *triumphant weapons* (Lenoble 2004a: fig. 133). The funeral of the deceased leader is an exceptional event in all societies (Metcalf, Huntington 1992: 134). It has a symbolic meaning, which aims at strengthening, legitimising, sanctioning and a manifestation of power in an unstable period. In some situations, the funeral is more opulent than the coronation of the new ruler (Metcalf, Huntington 1992: 135–141).

Considering the arguments stated above, the rulers of Upper Nubia endeavoured to create an ideology of power *i.a.* on the basis of funerary rituals, as part of their strategy. However, the signs of such strategy can be found along the whole length of the Middle Nile valley. This ruling strategy is manifested in the area of both systems distinguished on the basis of rank-size relationship analysis (**Fig. 20**).

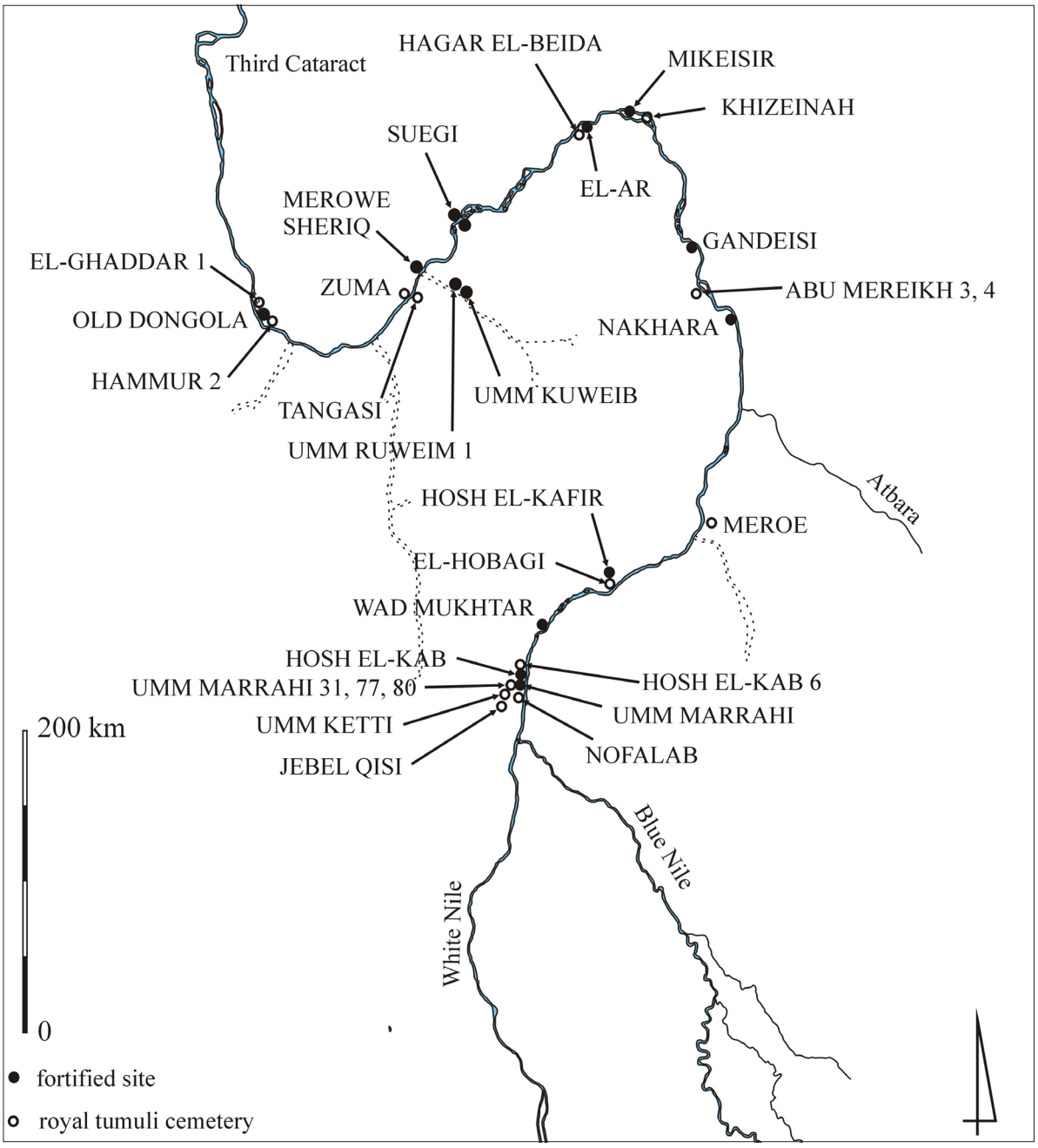

Fig. 20. Map showing locations of fortified sites dated to the Late Meroitic/Post-Meroitic Periods and elite barrow cemeteries.

This means that there were at least several groups of elites in Upper Nubia, which manifested and solidified their status by means of funerary rituals. Relationships of distances between cemeteries and fortified sites will be analysed below in this chapter (when hypothesis 4 is tested).

The rulers of the region of southern Dongola Reach probably possessed a more extensive system of ruling strategy. These differences could have resulted from a different socio-political situation. The highly unified system of fortified sites which extended over the length of approx. 550 km along the Nile Valley, from El-Ar to Umm Marrahi, was, in my opinion, the work of Meroitic rulers. Thus these fortifications were rather intended to control and limit the ambitions of the local leaders, who were buried under the biggest barrows at the numerous cemeteries located in the area from El-Ar up the course of the river. If this conclusion is correct, perhaps the differences in the distribution of fortified sites in relation to elite barrow cemeteries in the two systems can be observed. This is one of the elements of the test for hypothesis 4.

Hypothesis 4

The most important features which will be analysed in this section are:

- the presence of settlements directly outside the walls of fortified sites;
- the number of cemeteries located within a 1.5-km radius around fortified sites;
- the distance from elite barrow cemeteries.

In the context of this model, the settlements located directly outside the walls of fortified sites might have emerged as a consequence of the substantial needs of the residing elites. The court was a good market to sell goods, thus it brought together merchants, craftsmen and other providers of merchandise. These people, due to their lower status or the shortage of living space inside the fortified site, could have settled in its vicinity. In my research I only take settlements situated immediately outside fortified sites into consideration since that location might indicate their relationships with the sites in question. Settlements located at a farther distance could also display such relationships, however, the present state of research is usually not sufficiently advanced to confirm that. The settlements might have comprised elements connected with the manufacture of goods for the *tables of the rulers*, for instance: a variety of kilns used by craftsmen, large hearths, wells, *etc*.

This means that large groups of people concentrated around the seats of elites. They lived in the settlements located nearby, and when they died, they might have been buried at the cemeteries situated close to that area unless there were any religious reservations or any other arguments connected with social rules (*e.g.* related to the tribal affiliation). Hence it could be assumed that the size and number of these cemeteries should be bigger in such a situation. Nevertheless, information about the necropoleis located around fortified sites is rare, and frequently imprecise or fragmentary. For this reason, apart from the research results of the *Fortresses of Sudan* project, satellite images are the main source for this analysis. I adopted the smallest circle among those marked for the agricultural potential, *i.e.* r=1.5 km (see above). Barrow cemeteries can be spotted easily in satellite images on condition that the mounds of the graves have been preserved. The number of tombs can also be established relatively easily. However, it should be assumed that the number of burials might be higher due to the possibility of burying more than one person under one barrow as well as because of the state of preservation. Some tombs might not be visible on the surface in modern times. Therefore, the numbers listed below are the minimum values.

The chronology of the cemeteries is another challenge. It was established for the areas examined within the framework of the *Fortresses of Sudan* project on the basis of fragments of pottery vessels discovered on the surface. In the case of sites detected only by interpretation of satellite imageries, the division of cemeteries was made on the basis of the tomb shapes: flat, barrow type, and Christian *box grave* type. Christian graves will be taken into consideration only in the case of analysis of fortified sites from the Early Christian Period (see Chapter 6). The remaining cemeteries (with flat and barrow tombs) are treated as potential sites from the Post-Meroitic Period in this work. Therefore, the values listed in the tables below are merely potential and intended to show the possibility of the existence of certain relationships.

In the case of the analysis of the distance between fortified sites from prestigious cemeteries, I will consider the distance measured in a straight line from the closest necropoleis of that type. The objective of the analysis is to check whether there was a minimum distance between cemeteries and fortified sites. Were the cemeteries of elites

located at definite distances from fortified sites? Are there any differences which could be noted between the systems distinguished before in this regard? This analysis is aimed as an attempt to find more similar features, yet allowances should be made since the location of cemeteries could have been established more by religious rituals and tradition, rather than by currently understood least effort as a universal value.

The table below (**Table 4**) contains figures concerning cemeteries and settlements situated around fortified sites in Upper Nubia, dated to the Late Meroitic/Post-Meroitic Periods.

System	Name	Settlements located directly next to the site	Cemeteries within the 1.5-km radius
Centralised	Old Dongola	1	–
	Merowe Sheriq	1	–
	Suegi N	–	–
	Suegi S	–	
	Umm Ruweim 1	–	1 barrow type (more than 25)
	Umm Kuweib	–	2 barrow type (more than 60)
Homogeneous	El-Ar	–	6 barrow type (more than 103)
	Mikeisir	1	10 barrow type (more than 200) 2 flat grave type (more than 3)
	Gandeisi	–	5 barrow type (more than 355)
	Nakhara	1	3 barrow type (more than 300)
	Hosh el-Kafir	–	2 barrow type (more than 30)
	Wad Mukhtar	–	–
	Hosh el-Kab	–	9 barrow type (more than 223) 2 flat grave type (more than 10)
	Umm Marrahi	–	19 barrow type (more than 129) 15 flat (more than 81)

Table 4. Number of cemeteries located within the 1.5-km radius and settlements situated directly outside the walls of fortified sites.

Regions of southern Dongola Reach and the Fourth Cataract

Settlements located immediately outside the analysed fortified sites were detected in two out of the six cases. A settlement termed MSh 2 functioned at Merowe Sheriq in the 5th and 6th centuries (Godlewski 2008). It was surrounded with an additional defensive wall and connected with the main fortifications of MSh 1. A well was one of the features discovered at MSh 2 in the course of archaeological prospection. In the case of Old Dongola, more recent (Christian and Islamic) settlement activity covered the whole area surrounding kom A and thus destroyed any potential remains of earlier structures. Kilns for iron smelting are the only remains from the Post-Meroitic Period. Włodzimierz Godlewski associates them with the process of construction of the fortifications (Godlewski 1991: 107–108). There were also remains of building Y (BY) at kom B with church XB superimposed on them later (Jakobielski 2001: 11). The part of the quay adjacent to kom A was protected by an additional stretch of the wall.

Notable relationships can be observed by comparing the number of cemeteries within the radius of 1.5 km from fortified sites. Fortified sites located in the Nile Valley are not situated in a close proximity of Post-Meroitic cemeteries. In the case of the fortified sites outside the river valley, on the other hand, such as Umm Ruweim 1 and Umm Kuweib, small barrow fields have been discovered. It is another trait which distinguishes the sites located in wadi Abu Dom from most sites on the Nile banks. It could be concluded that the areas designated for burial grounds were situated at greater distances from fortified sites in southern Dongola Reach in the Post-Meroitic Period. It differs dramatically form the results of analysis of the region located up the course of the river.

Area from El-Ar up the course of the Nile

Many remains of settlement activity have been discovered in the area adjacent to the fortified site at the hill of Nakhara. Some of them, just like in the case of Merowe Sheriq, were surrounded with an additional stretch of wall which connected them with the main edifice. At the moment however, it is impossible to establish when the extension took place. Derek Welsby suggested the presence of more recent settlement activity apart from the Post-Meroitic one, which should be

dated to the Christian Period on the basis of pottery (Welsby 2002: 131–132). The added area, as well as the land outside of it, contained circular stone structures. O.G.S. Crawford interpreted them as remains of small dwellings (Crawford 1953a: 17–19). The „roads" which can be seen to the north of the site are unique in the context of Upper Nubia.

Minor activity was also noted in the case of the fortified site at Mikeisir. A wall which issued from its NE corner led towards the river. There was a gate in the northern section of the structure. It might imply the important role fulfilled by river transport in the functioning of the site. Whether that fortified quay was built at the same time as the whole complex or later remains unknown.

In the case of the cemeteries, the situation within the homogeneous system differs dramatically from the one in the region of southern Dongola Reach. Several necropoleis were detected within the 1.5-km radius from particular fortified sites. The areas adjacent to the sites of Mikeisir, Gandeisi, Nakhara, Hosh el-Kab and Umm Marrahi accommodate from 200 to more than 300 barrows or flat tombs. In most cases, they are concentrated in a few smaller cemeteries. Major dispersal can be noted in the vicinity of Umm Marrahi, Hosh el-Kab and Mikeisir. The necropoleis with the highest number of tombs were discovered in the regions of Gandeisi and Nakhara. Most of these cemeteries remained within eyesight for the people who used the associated fortified sites. It was possible to see the fortifications in the distance during the funerary rituals if they were performed at the grave of the deceased. If the sites actually corresponded in terms of their chronology, there were definitely certain interactions between them.

In the case of the site at El-Ar, I only detected 50 tombs spatially organised in four cemeteries. On the other hand, no necropoleis have been discovered around Wad Mukhtar, which might imply isolation of this site, a temporary exploitation of the structure, or destructive influence of post-depositional processes.

Elite cemeteries in relation to fortified sites

It can be concluded from the information above that there were differences in the distribution of barrow cemeteries in relation to fortified sites between the regions of southern Dongola Reach/ Fourth Cataract and the areas located up the Nile course from El-Ar.

Is that conclusion justified with regard to elite barrow cemeteries as well? The table below (**Table 5**) presents distances between fortified sites and the closest necropoleis of elites.

System	Name of fortified site	Elite barrow cemeteries	
		Distance	Name of cemetery
Centralised	Old Dongola	3.4 km/6.4 km	El-Ghaddar 1/ Hammur 2
	Merowe Sheriq	14 km/10.5 km	Zuma/Tanqasi
	Suegi N i S	61 km/ 55 km	Zuma/Tanqasi
	Umm Ruweim 1	27 km/18 km	Zuma/Tanqasi
	Umm Kuweib	33 km/25 km	Zuma/Tanqasi
Homogeneous	El-Ar	24 km/45 km	Hagar el-Beida/Khizeinah
	Mikeisir	22 km	Khizeinah
	Gandeisi	31 km	Abu Mereikh 3 and 4
	Nakhara	42 km/130 km	Abu Mereikh 3 and 4/Meroe
	Hosh el-Kafir	4.5 km	El-Hobagi
	Wad Mukhtar	62 km/37 km	El-Hobagi/Hosh el-Kab 6
	Hosh el-Kab	1 km	Hosh el-Kab 6
	Umm Marrahi	1 km	Umm Marrahi 31 and Umm Marrahi 77

Table 5. The distances between fortified sites and the closest known elite barrow cemeteries.

Regions of southern Dongola Reach and the Fourth Cataract

Two areas with elite barrow cemeteries have been detected in this section of the Nile. One of the areas consists of sites at Ghaddar 1 and Hammur 2. They are relatively close to Old Dongola – one of them is located upstream and the other downstream the Nile on the same bank. The other area is represented by sites at Zuma and Tanqasi. Fortified sites have not been documented in recent years there, nevertheless, in the course of his expedition at the beginning of the 20th century, James Henry Breasted took a photograph of a fortified site which was supposed to be located at Zuma. One of the tasks of the *Meroe to Makuria* project is to attempt to find remains of that site. Recent seasons have not brought satisfactory results, thus the problem remains open.

Area from El-Ar up the course of the Nile

There are more elite barrow cemeteries in this region and the distances are more varied. Starting from El-Ar, the next four fortified sites are located more than 20 km away from necropoleis. Hosh el-Kafir is situated approx. 4.5 km from the cemetery at El-Hobagi, which is not in accordance with the distribution marked by other fortified sites in that region. According to the scholar who has researched these two sites, Patrice Lenoble, the existence of Hosh el-Kafir is somehow connected with El-Hobagi. One of the suggestions was that the burial ceremony was prepared, and possibly partially conducted, at Hosh el-Kafir (Lenoble 2004: 195).

Wad Mukhtar is situated at a considerable distance from prestigious cemeteries – isolation of this site is confirmed also in terms of this parameter.

The region around Hosh el-Kab and Umm Marrahi has the most sizeable concentrations of elite barrow cemeteries in Upper Nubia. Tombs of that type can be found within a close range, and such situation has been detected only there. How should this situation be interpreted? The area of Hosh el-Kab and Umm Marrahi is also exceptional with regard to other features. Even the distance between these sites is surprising – everything is located on a 10-km stretch of the Nile bank. For this reason, it seems that the social relationships which led the emergence of these remains might have been very complicated.

Summing up, the present state of research is the major difficulty in verification of hypothesis 4. However, certain differences and similarities can be identified. The distribution of the auxiliary settlements might imply that Old Dongola and Merowe Sheriq were seats of rulers. Similar spatial distribution of settlements among the group of fortified sites located up the Nile course from El-Ar was observed on the top of Nakhara hill and at Mikeisir, nevertheless, the chronology of the settlement outside the first phase of fortifications has not been established.

The question of tomb distribution seems to be more complex. There have not been any cemeteries discovered in the immediate surroundings (within 1.5-km radius) of fortified sites in southern Dongola Reach and the Fourth Cataract regions. It might be a consequence of beliefs and local traditions. Elite barrow cemeteries are located at farther distances (radius between 1.5 km and 14 km) from the key[11] fortified sites of that region, Old Dongola and Merowe Sheriq. In the area from El-Ar up the course of the Nile, cemeteries are found in the closest proximity of fortifications (within 1.5-km radius). Necropoleis of elites in the northern portion of that region are situated at relatively far distances from fortified sites. (more than 20 km), in the southern part the distances are varied (from 1 km to 37 km).

Considering the arguments above, the study of the relationships between cemeteries and fortified sites should be more profound and include the influence of religion.

5.5. SUMMARY

Having performed the analysis of the four hypotheses formed before, I can state that the two systems distinguished by the rank-size rule display a number of differences (**Table 6**).

The system defined as centralised at the first stage of the research procedure (by rank-size relationship analysis) was confirmed as such in the course of the testing process. It corresponds with three hypotheses (nos. 1–3) completely and partially with one (no. 4). It is characterised by monumental buildings which required considerable labour investment. The fortified sites ranked at high positions possess outstanding agricultural potential, and remains of settlement activity can be

[11] They are key sites according to the rank-size relationship analysis (see Chapter 3.3).

system	hypothesis 1 (monumental buildings)	hypothesis 2 (agricultural potential)	hypothesis 3 (luxury goods)	hypothesis 4		
				Settlements outside the walls	Cemeteries within 1.5-km radius	Distance from prestigious cemeteries
centralised (Kingdom of Makuria)	Fortifications of Old Dongola	The biggest potential in the area of Old Dongola and Merowe Sheriq (in accordance with the list distinguished by the rank-size relationship).	most likely at four cemeteries of elites	found in the case of Old Dongola and Merowe Sheriq.	Absent in the Nile Valley, Scarce in Wadi Abu Dom.	varied (from 3.5 to 61 km)
homogeneous (Meroitic Empire)	absent	The biggest potential in the area around sites at Umm Marrahi, Hosh el-Kab and Gandeisi (not in accordance with the list distinguished by the rank-size relationship).	most likely at least ten cemeteries of elites	Found only in the case of Nakhara and Mikesir (uncertain chronology).	Apart from Wad Mukhtar, found around all fortified sites (from 30 to more than 300 tombs).	varied (from 1 to 130 km)

Table 6. Summary of the results of hypotheses testing.

found outside their walls. It might imply that, in accordance with the model represented at the beginning of this chapter, the rulers of the system implemented a particular policy. They exploited a strategy which was aimed at legitimising and manifesting their power. In order to achieve that, they generated economic surplus and used luxury goods. They also presented their ideology in the architecture of tombs (remarkable sizes of barrows) and utilitarian architecture (fortifications of Old Dongola). One of the results of their activity was a greater development of centres of power. The settlements which emerged around the fortified sites were supposed to manufacture goods for the needs of elites. Old Dongola, later known as the capital of the Kingdom of Makuria, stands out in this model as the seat of central power. Nevertheless, another potential place of that type might have been located at Merowe Sheriq. That site is not shown as superior to Old Dongola in any respect. Therefore, it could be concluded that it was the second most important point of central power in Makuria. That dualism can also be noticed in the location of elite necropoleis, which are situated around Old Dongola and not far from Merowe Sheriq (10.5 km). The issue of interdependencies between these two fortified sites and the structures depicted in the photographs taken by Breasted in the process of formation of the Kingdom of Makuria is studied by Włodzimierz Godlewski and Mahmoud El-Tayeb as part of the *Meroe to Makuria* project (Godlewski 2005; 2008; 2010b).

The analysis presented above also indicated the distinct nature of the fortified sites located outside the Nile Valley. Umm Ruweim 1 and Umm Kuweib varied from other edifices in terms of architecture, agricultural potential, and the presence of cemeteries. Thus the rank-size relationship analysis, despite being correct in its assumptions and returning consistent results, seems very general when scrutinised closely. On one hand, it might not account for a number of differences, as it can be seen in the case of Umm Ruweim 1 and Umm Kuweib, on the other, due to its general perspective, it might reveal certain relationships which cannot be observed in the course of analysis of detailed context. This is true in regard to Suegi.

The debate concerning the function of two fortified sites at Suegi (Adams 1977; Welsby 2002; Wiewióra 2005a; 2007; 2010; Żurawski 2003; 2007; Godlewski 2008), located opposite each other and controlling a part of the Nile which is very difficult to navigate, has been alive since the time when major Titherington documented them precisely (Titherington 1939). The sites at Suegi have been classified as belonging to the centralised system as a result of rank-size relationship analysis. They became the two fortified sites located farthest up the course of the Nile in the early Kingdom of Makuria. Farther on, the area was subjected to the influence of local leaders, who, after their death, were buried under barrows at Hagar el-Beida and El-Ar was the first fortified site among the ones included in the homogeneous system. The analysis of the context can only confirm this conclusion since it showed the isolation of this region by the fairly low agricultural potential, absence of settlements and cemeteries.

The system defined as homogeneous by means of the rank-size relationship analysis was partially

confirmed as such in the course of hypothesis testing. It lacks monumental structures (hypothesis 1). The list of sites characterised by the highest agricultural potential does not correspond with the ranking list (hypothesis 2). Settlements located directly outside the walls of the fortified sites have not been discovered apart from Nakhara, which has not been dated with certainty, and Mikeisir (part of hypothesis 4). Nevertheless, the local leaders might also have created and exploited ideology for their purposes, which is implied by the presence of elite barrow cemeteries. However, a major dispersal of power can be noted in this case, since 13 necropoleis of this type have been detected in that region. For this reason, the claim that the homogeneous system of fortified sites was built by Meroitic rulers holds true.

The situation becomes more complicated in the case of more detailed studies. The rank-size relationship analysis again omits non-statistical features due to its general nature. It can be seen at the testing stage that the fortified site at Hosh el-Kafir stands out from the system. When the results of the test are analysed, it can be concluded that Hosh el-Kafir should rather be associated with the sites at Umm Ruweim 1 and Umm Kuweib, which are included in the centralised system. All the three sites are conspicuous in the whole testing process. They feature similar architectural solutions, comparable agricultural potential, and are isolated to a certain degree. In all the three cases, small barrow cemeteries have been detected in the vicinity of the fortified sites.

The fortified sites at Umm Marrahi and Hosh el-Kab also stood out in the verification process. They displayed remarkable agricultural potential and a number of cemeteries in the vicinity, including many elite burial grounds. The distance between these sites has not been accounted for by the analysis described above. If they co-existed within the same time frame[12] it is in conflict with the homogeneity of the whole system. The sites in the northern part of the system, from El-Ar to Nakhara, show a higher level of consistency. This is also confirmed by architectural details of the walls. They all featured a bond which is atypical of defensive architecture in Nubia: stones laid horizontally, also called *opus spicatum* (Żurawski, personal communication) or *vertical masonry* (Jesse, personal communication). Thus, on one hand, the homogeneous system actually seems to be highly uniform (in the northern part), on the other, despite common traits, it displays certain inconsistencies (southern part).

[12] The chronology of these sites is still a subject of debate (El-Tayeb 1995; El-Hassan 1986; 2006; Drzewiecki, Polkowski 2016). Generally, they could be qualified as Late Meroitic/Post-Meroitic, which corresponds with five centuries. Dating methods used at the moment are insufficiently advanced to answer questions concerning their co-existence, therefore other traits must also be compared to understand mutual dependencies between these fortified sites.

CHAPTER 6

Hypotheses of centralised power and Early Christian Period settlements

According to the rank-size relationship analysis, Early Christian fortified sites did not represent the centralised system. Old Dongola, which dominated in the preceding period (Post-Meroitic), was still the largest in Christian times, however, other towns, which were only slightly smaller, appeared. These results led me to the conclusion that the Kingdom of Makuria emerged as a centralised organism at the beginning of its history, but the territorial development and changes resulting from the adoption of Christianity as the official religion caused adjustments in the structure of power/administration. In order to confirm the correctness of this conclusion, I will exploit the previously compiled model of centralised power to conduct additional testing analyses. The four hypotheses (Chapter 5), which refer to the centralised model, will be applied to the fortified sites dated to the Early Christian Period. If the hypotheses are confirmed by empirical observations, it will mean that the results of the rank-size relationship analysis are irrelevant in this case. However, if the results are inconsistent, it might indicate that the system of administration of Early Christian Makuria was no longer concentrated around the main, dominant centre of power.

6.1. MONUMENTAL ARCHITECTURE – HYPOTHESIS 1

The hypothesis concerned the exploitation of a monumental building as an instrument for the creation and manifestation of the ideology of power. The superior nature of that structure was derived from its comparison with other structures of similar function which were erected at that time in Upper Nubia. Monumental architecture was subjected to transformations in the Early Christian Period. It was not limited to one centre any more – a network of fortified sites was built, but their sizes varied. Some fortifications covered extensive spaces (exceeding 30,000 m^2) while smaller ones were also constructed (below 500 m^2). Concentration of the former can be observed in southern Dongola Reach, *i.e.* in the area where the Kingdom of Makuria had been formed (**Fig. 21**). Some of the newly-built fortifications were bigger than Merowe Sheriq (the second largest in the Post-Meroitic Period). Nevertheless, they did not reach the size of Old Dongola. The differences between the largest fortified sites and the ones which followed in the size ranking were not as significant. It appears that it was no longer one centre which dominated, but the whole region of southern Dongola Reach.

The only palace which could be dated to that period is an edifice at kom A in Old Dongola. Work in that location (site SWN, building B.I) has been in progress since 1999 (Godlewski 2002: 205). The palace was built in the first half of the 7th century. It was a two-level building located on the Nile bank, most likely with a separate harbour. Its surface exceeded 1,000 m^2 (Godlewski 2006: 289). The edifice was notable due to its size and the manner of construction as well as finishing techniques. It was definitely a monumental structure. So far, comparable complexes have not been discovered in the Nile Valley between the Third and Fifth Cataracts.

The change of the official religion led to the disappearance of monumental barrows associated with individuals who enjoyed a high social status. Christian graves, at least in theory, should be

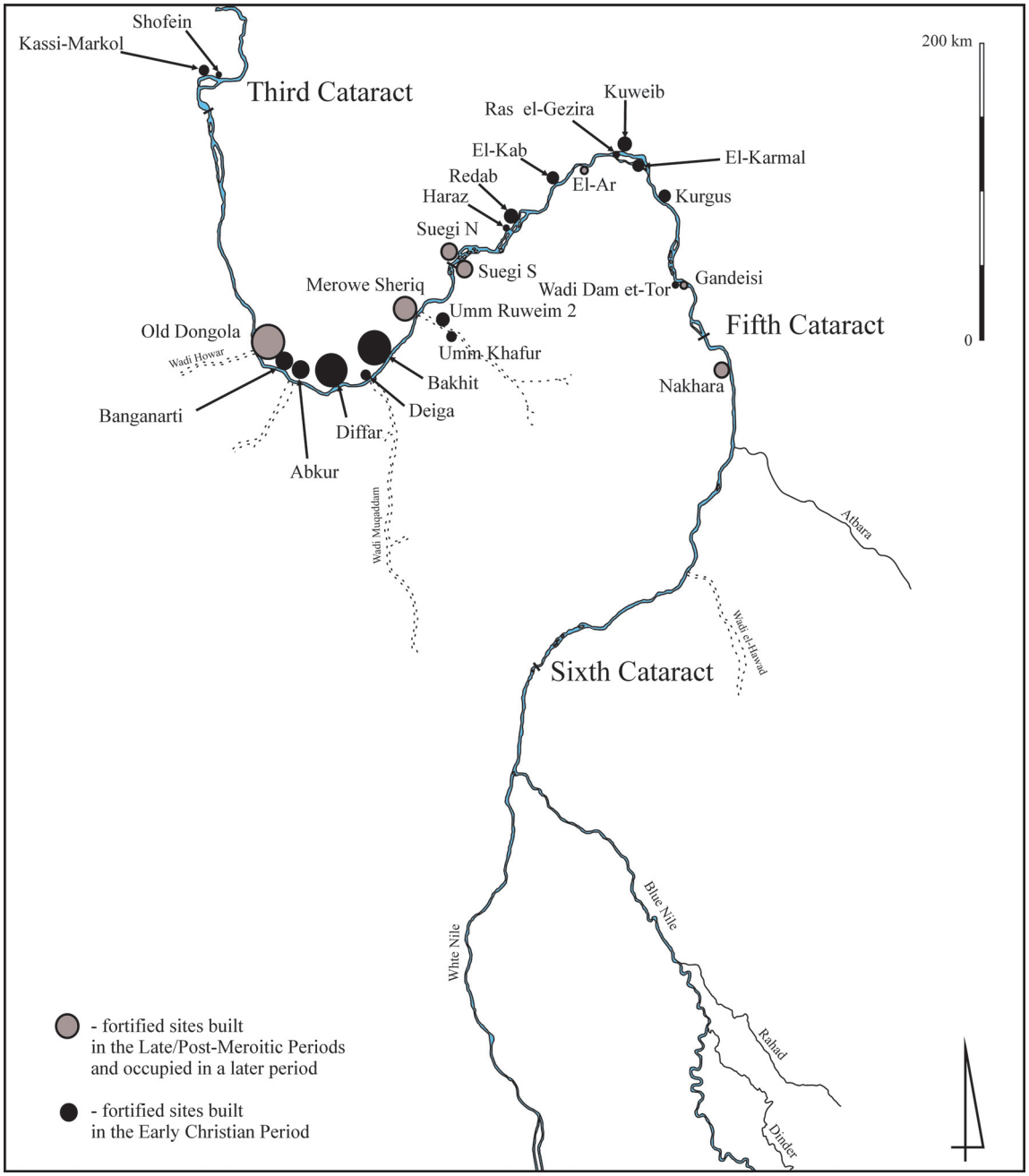

Fig. 21. Map showing locations and sizes of fortified sites which functioned in the Early Christian Period.

equal, and the dead were buried without grave goods (Welsby 2002: 57). Nonetheless, a few types of graves can be distinguished at the cemeteries which are being discovered at the moment. The so-called *box graves* are the most common among them. They were built of irregular stones that formed a mastaba, which was not much bigger than the burial pit located below. A structure which consisted of one layer of bricks or stones which constituted a flat, square or rectangular platform over the burial pit was another type. Apart from these simplest graves, there were also mastabas constructed from mud or fired bricks, covered with a layer of lime mortar and plaster. They might be slightly bigger than box graves and take different forms, *e.g.* a cross. Oil lamps and stelae with inscriptions are occasionally discovered in the context of these graves. The stelae usually bear a prayer for the soul of the deceased, his/her name and sometimes names of functions which the individual was in charge of. These graves are frequently situated in the vicinity of churches or monasteries. Burials located in churches constitute another category. It is assumed that exceptionally religious people, or those who represented a high religious status were honoured in this manner.

It has not been possible to establish the traits which would help to indicate burials of rulers. For this reason, the tombs of the rulers of Early Christian Makuria and Alodia have not been conclusively identified so far (Żurawski 1987).

A new type of building emerged in the Early Christian Period – the church. It differed from other structures in terms of architecture and the use of better, more durable building materials. Construction of churches commenced soon after the baptism (6th century) in the whole area of the Nile Valley which belonged to Nobadia, Makuria, and Alodia. Initially, churches were built in the capitals, and then all over the lands of the kingdoms. The oldest churches in Old Dongola are dated to the mid-6th century (Godlewski 1992: 278). The oldest known church in Soba (kom B) was dated to the mid-7th century, however, it is suggested that the remains of another one, situated at kom C, might be older (Welsby, Daniels 1991: 34). The size and quality of craftsmanship in the construction and finishing of churches reflected their hierarchy. This means that the most important structures were the largest ones. On the basis of that statement, it is assumed that the seats of bishops were the most impressive edifices. Old Dongola could serve as an example in this case, since apart from the fortifications of kom A, remains of many churches have been unearthed there. The Church of the Granite Columns was the biggest (Gartkiewicz 1990). It covered 697 m², *i.e.* more than the smallest fortified sites erected at that time. The situation was similar in Soba, where the church complex at kom B is regarded as the capital of the bishop. A building which was at least two storeys high, located to the south-west of that complex, was discovered and it has been interpreted as the seat of the metropolitan bishop by Derek Welsby (Welsby 2004: 228). Apart from episcopal churches, the so-called memorial churches often take monumental forms. The grave of an individual who was most probably venerated there constituted their most important element. These churches were built in such a manner that the grave was located under the eastern, main part of the building. They represented different architectural forms, *e.g.* were built with the cross-shaped plan or a higher number of apses.

More recent sources report the existence of nine bishoprics in the territory of the Kingdom of Makuria[13]. They were (in geographic sequence): *Termus, Korta, Ibrim, Buccoras, Sai, Dunkala* and *Suenkur* (Vansleb 1677: 20–30; Monneret de Villard 1938: 162–165). Another source mentions two more: *Merkē* and *Kallama* (Jakobielski 1972: 27). Episcopal centres were established most frequently in the towns of great importance in the local government systems[14]. They were located near royal courts or administrative centres. According to Stefan Jakobielski (Jakobielski 1972: 27), the distribution of episcopal centres reflected earlier administrative divisions. They are thought to have been located in Kalabsha (*Talmis*) and Qurta (*Corton*) in the region of *Dodekaschoinos* (**Fig. 22**). Further south, in *Triakontaschoinos*, cathedrals were located in Qasr Ibrim and Faras (**cf. Fig. 22**), two significant, if not the most important, towns in Nobadia. The church on the island of Sai, regarded as the seat of a bishop, has not been analysed in detail so far (Welsby 2002: 99). *Dunkala* is associated with the capital of the Kingdom of Makuria. The location of other centres is questionable due to the absence of monumental churches which could confirm the relevance of the established area. *Suenkur* is often identified with the region of Šanqīr in the vicinity of the present village of Shemkhiya (Żurawski 2007b: 183–184). Bogdan Żurawski connects it with the province of *Shenka* in the times of Al-Omari (approx. 10th century), reported by Maqrizi (Vantini 1975: 708). His description could confirm the location of this centre in the area of Mograt island. References to *Merkē* were found in Qasr Ibrim and Abu Oda. *Kallama* remains the most ephemeral of the centres.

In the case of the Kingdom of Alodia, Johann Michael Vansleb reports the existence of six dioceses: *Borra, Gagara, Martin, Arodias, Banazi* and *Menkesa*. Monneret de Villard (Villard 1938: 156) suggested that *Arodias* referred to the capital. The remaining centres have not been identified. When were the next dioceses formed in Nubia? It has not been established. The first reports of the episcopal centre in Old Dongola come from the 8th century

[13] Nobadia was at that time a province of the Kingdom of Makuria, thus the area of the kingdom also covered Lower Nubia.

[14] A new inscription describing an otherwise unknown sinod which took place in Old Dongola at the beginning of 9th century has recently been discovered. The inscription was in Church BV at kom A in Old Dongola and its translation might shed some light on church organisation in Makuria. Unfortunately, only brief information about the inscription has been published so far (http://www.polacynadnilem.uw.edu.pl/sezony/2015–2016/misje-polskie-sudan/255-dongola-polska-misja-archeologiczna-w-starej-dongoli/, accessed on 11th Feb 2017).

Fig. 22. Map showing locations and sites of Nubian episcopal centres.

(Jakobielski 1972: 27), however, the construction of the monumental cathedral (Church of the Granite Columns) could be dated to the end of the 7th century (Jakobielski 2001: 9–10).

Summing up, monumental buildings were discovered only in the capital of Alodia – Soba[15] and the area of southern Dongola Reach. However, in the latter case, they were not limited solely to the capital (Old Dongola). Fortifications at Bakhit and Diffar also exceed a surface area of 30,000 m² (**cf. Fig. 21**). Barrow cemeteries disappear in the Early Christian Period, therefore, that part of the royal ideology also changed. Together with the appearance of Christianity, church administration penetrated the lands along the Middle Nile Valley. It based its activity on the earlier divisions, erected monumental buildings, and situated its main branches in the vicinity of administrative centres (Jakobielski 1972: 27). In Upper Nubia, there were most probably two to four dioceses in the territory of the Kingdom of Makuria[16] (between the Third and Fifth Cataracts) and six in the whole Kingdom of Alodia. Thus on one hand, the changing image of royal power could be observed (the disappearance of prestigious tombs and associated rituals; reduced scale of monumentality in Makuria (except for Old Dongola) and the emergence of new force in the form of religious power (which also exploited monumentality in expression of its status and was located in the vicinity of the centres of the main and local power).

6.2. ECONOMIC RESOURCES AND CENTRALISED POWER – HYPOTHESIS 2

Agricultural potential was one of the elements which I took into consideration when I characterised centralised power. I assumed that the rulers could have attempted to accrue a surplus of agricultural production in accordance with their ruling strategy. In order to do this, their seats had to be surrounded with fertile soils, and the rulers had to introduce new technologies and more efficient crops. Analysis of plant remains[17] (Kobischtschanow 1980; Rowley-Conwy 1989) has not indicated innovative elements in farming at that time. The same applies to technologies. It appears that the systems (*saqia* as well as summer and winter crops) introduced in the Post-Meroitic Period were popularised in the Early Christian times.

[15] The territory of Alodia has been researched archaeologically to a lower degree than the area of Makuria.

[16] However, this situation can be changed due to recent finds in Church BV at kom A in Old Dongola.

[17] It must be stressed that the research conducted by Kobischtschanow and Rowley-Conwy covers a small part of the material recovered from selected and isolated sites.

The table below shows the size of lands which could be exploited for farming in the area of all 24 fortified sites dated to the Early Christian Period (**Table 7**). The number of sites and contents of this list might change as a result of future archaeological projects. Fortified sites dated generally to the Christian Period are not included in the list.

Ranking	Name	RADIUS (surface area in km²)		
		1.5 km	**3 km**	4.5 km
1	Old Dongola	1.52	4.1	8.5
2	Bakhit	1.20	3.3	5.6
3	Diffar	1.80	5.7	7.8
4	Merowe Sheriq	1.30	5.7	7.8
5	Banganarti	-	-	-
6	Seugi N	0.83	2.1	5.1
7	Suegi S	0.83	2.1	5.1
8	Abkur	-	-	-
9	Nakhara	0.85	3.70	5.87
10	Kuweib	-	-	-
11	Redab	0.71	1.94	3.51
12	El-Kab	0.57	1.54	2.32
13	Umm Ruweim 2	0.05	0.07	0.08
14	Kurgus	0.37	1.35	2.88
15	El-Karmal	0.35	1.73	2.78
16	Umm Khafur	0.03	0.05	0.07
17	El-Ar	0.85	1.93	3.23
18	Kassi-Markol	0.85	1.42	1.98
19	Deiga	1.45	3.37	6.13
20	Gandeisi	1.42	4.40	7.79
21	Ras el-Gezira	1.32	2.30	3.35
22	Wadi Dam et-Tor	0.82	1.54	3.47
23	Haraz	0.43	0.93	1.63
24	Shofein	0.72	1.17	2.04

Table 7. Surface area of potential farming lands within 1.5-km, 3-km, and 4.5-km radii from the fortified sites which functioned in the Early Christian Period.

The first and second columns on the left (Ranking and Name) show fortified sites from the largest to the smallest, *i.e.* fortified site no. 1, Old Dongola, covers the biggest area, and the fortified site no. 24, Shofein, is the smallest. The next columns show the results of the measurements of agricultural potential. The analysis was performed on the basis of observation of satellite images under the conditions described in the previous chapter (see Chapter 5.4). It was not possible to establish agricultural potential for some regions due to significant changes in the landscape, which most likely resulted from the presence of moving dunes and a gradual displacement of the Nile river bed. The increasing distance from the river led to desertification of the area.

The most fertile soils were located within a 1.5-km radius around fortified sites in the region of southern Dongola Reach, and also in the vicinity of Gandeisi and Ras el-Gezira. The dominating position of the first, however, is significant. All the sites in Dongola Reach[18] were located directly next to farming lands.

In the case of areas located somewhat farther (3 km), the situation changed only slightly. More than 3 km² of fertile lands can be indicated again around fortified sites in the territory originally associated with the Kingdom of Makuria and in the area of Gandeisi. The site of Nakhara and its farming lands also exceed this limit. There is no significant change in the largest of the analysed ranges (4.5 km). It can be concluded from these observations that the best agricultural areas were located in the vicinity of the fortified sites in southern Dongola Reach. This is also the area of the largest fortified sites. Gandeisi and Nakhara were built in the Late Meroitic/Post-Meroitic Periods. Their occupation is also confirmed for the Early Christian Period. Perhaps agricultural potential was one of the factors in the continuity of the settlement activity.

Summing up, I am not able to indicate the dominant centre on the basis of agricultural potential analysis. Nevertheless, as in the previous case, the whole area of southern Dongola Reach is conspicuous against the background of other parts of the Nile Valley between the Third and Fifth Cataracts.

[18] The ones for which it was possible to establish the agricultural potential.

6.3. LUXURY GOODS AND CENTRALISED POWER – HYPOTHESIS 3

Luxury goods from the Late Meroitic/Post-Meroitic Periods were discovered mainly in funerary contexts. The following objects were deposited in tombs as offerings: metal vessels with rich decoration, jewellery, insignia of power, daily-use objects with decorative features, *etc*. Early Christian graves stand in complete opposition. For this reason, luxury goods from that period have been discovered in non-funerary contexts, mostly in churches. The palace in Old Dongola (building B.I, in SWN part of kom A) is an exception to this rule.

The manner of deposition of these artefacts was different from that observed in the Late Meroitic/Post-Meroitic Periods. Therefore, the objects are not comparable with the funerary deposits of the earlier period. For instance, metal artefacts or jewellery are very rarely found. Permanent damage, misplacement, or an unexpected situation might have been the factors which led to their deposition in the Early Christian Period. In earlier periods, grave goods were deposited with a purpose and in accordance with accepted or emerging social rules. In the Early Christian Period, their presence could rather be a chance find.

The palace in Old Dongola is where remains of luxury goods have been discovered in great numbers. Many fragments of pottery amphorae from various regions of the Mediterranean, mostly its eastern part, have been found. Animal remains indicate the presence of rare or foreign species (Osypińska 2004: 226). Artefacts crafted by artisans have also been found: pottery vessels with rich decoration, stone objects, *etc*. (Godlewski 2000; 2002; 2003; 2006; 2010a).

Churches and monasteries make up a group of other places in Old Dongola where luxury goods have been detected. Most of them are fragments of pottery vessels or oil lamps with lavish decoration (Bagińska 2005). Apart from the architecture and portable artefacts, the scenes painted on the walls had a great influence on the perception of churches. They represented Biblical motifs as well as officials of the church and laity in exquisite clothing and with the insignia of power. The objects discovered in the modern archaeological contexts could be merely a minor part of the wealth of churches. Written sources mention a case of a church robbery in Sus (13th century). Muslim robbers stole *i.a.* crosses and other artefacts made of gold as well as many silver vessels. That church was attacked due to the fact that it had been erected by the king of Makuria, David, who had exploited prisoners of war (Muslims) for its construction captured at Aidhab (Vantini 1975: 681–682). This short text shows how important the symbolic significance of actions and places was. They were an active part of the image of both the invaders and defenders.

To recapitulate, in the Early Christian Period, royal power co-exists with a new institution – the Church, which exploited the previously created means to legitimise its social status, as well as expanded these instruments, adding other media such as paintings. Thus an ecclesiastical system emerged in addition to already existing secular power. Luxury goods are detected in non-religious contexts only in the region of Old Dongola, however, churches, even the provincial ones, possess rich equipment.

6.4. CONCENTRATION OF SETTLEMENT ACTIVITY AROUND CENTRES OF POWER – HYPOTHESIS 4

This hypothesis assumes that settlement activity should concentrate in the vicinity of administrative centres. To test this assumption, I will analyse the number of graves at the cemeteries located within a 1.5-km radius from fortified sites and the existence of settlements directly outside enclosure walls (**Table 8**). The sites are organised from the largest to the smallest, *i.e.* the upper part of the table shows the biggest and the lower part the smallest ones.

The issue of settlements around fortified sites in the Early Christian Period becomes very complicated as a consequence of the different methods of construction of fortifications. This is best reflected by the example of the fortified site at El-Ar. It was built in the Late Meroitic/Post-Meroitic Periods and rebuilt in the Early Christian Period. In the beginning it was a structure of a regular, rectangular shape without internal divisions. In the course of the rebuilding, the enclosure wall was thickened and, what is more important, the inner space was divided into two parts. Such separation of space can also be observed in other structures from that time.

Name of fortified site	Settlements adjacent to fortified sites	Number of cemeteries within 1.5-km radius Number of graves Type of graves or building material
Old Dongola	1	6 cemeteries possibly more than 1000 *box graves* and brick mastabas
Bakhit	concentration of pottery vessels	2 cemeteries ? red brick, stone, fragments of lime plaster
Diffar	internal division into the „upper" and „lower" castle	2 cemeteries ? red brick, stone, fragments of lime plaster
Merowe Sheriq	1	1 cemetery more than 17 mud brick in construction of burial chambers
Banganarti	-	-
Suegi N	-	2 cemeteries more than 100 *box graves* and brick mastabas with lime plaster
Suegi S	internal division	
Abkur	-	-
Nakhara	1	-
Kuweib	internal division and remains of a kiln to the west of the fortified site (chronology unknown)	1 cemetery more than 50 *box graves*
Redab	1	4 cemeteries ? *box graves* and brick mastabas (?) terracotta stelae with inscriptions
El-Kab	-	-
Umm Ruweim 2	-	1 cemetery more than 40 *box graves* (fragments of terracotta stelae with an inscription)
Kurgus	-	2 cemeteries ? *box graves*
El-Karmal	internal division	2 cemeteries ? *box graves* and brick mastabas with lime plaster (fragments of terracotta stelae with inscriptions)
Umm Khafur	-	2 cemeteries more than 90 *box graves*
El-Ar	internal division	2 cemeteries more than 1100 *box graves*
Kassi-Markol	-	3 cemeteries ? ?

Name of fortified site	Settlements adjacent to fortified sites	Number of cemeteries within 1.5-km radius Number of graves Type of graves or building material
Deiga	internal division	4 cemeteries ? *box graves* and red brick mastabas
Gandeisi	1	2 cemeteries more than 30 *box graves* and red brick mastabas
Ras el-Gezira	kiln (chronology unknown)	3 cemeteries more than 150 *box graves*
Wadi Dam et-Tor	internal division and remains of settlement activity	4 cemeteries ? red brick, stone, fragments of terracotta stelae with inscriptions
Haraz	-	1 cemetery more than 72 *box graves*
Shofein	-	1 cemetery ? ?

Table 8. Selected features of the surroundings of the fortified sites which functioned in the Early Christian Period.

Fig. 23. Satellite image of the fortified site in Diffar.

A satellite image of the site in Diffar (**Fig. 23**) shows that the so-called upper castle existed in the central part. It was surrounded with a dense network of buildings and the whole complex was framed with the enclosure wall. This situation was comparable at Wadi Dam et-Tor and possibly Gandeisi[19]. The fortified sites at Kuweib, El-Karmal, and Deiga incorporate natural elevations, and the areas which occupy the highest points (hilltops) are separated from the rest.

[19] Satellite images (Google Earth) show the boundary between farming lands and the area with ruins. Surface survey was conducted in 2008 (as part of the *Fortresses of Sudan* project), however, it was not possible to establish whether the ruins are the remains of the enclosure wall and dwellings built outside the wall.

In the case of Old Dongola, apart from the walls surrounding kom A, many buildings, both secular and those connected with the new faith, were erected in the Early Christian Period. This was a time of a remarkable architectural development of the capital. Written sources report that Old Dongola was enclosed with seven walls. So far, apart from the fortifications of kom A, one wall in a very poor state of preservation has been discovered. It frames the capital in the southwest. Its chronology, however, is uncertain and is generally associated with the Dongola Period (Żurawski 2003: 112; Wiewióra 2003b: 501).

Internal division can be observed in small fortified sites (*e.g.* Wadi Dam et-Tor) and the bigger ones (*e.g.* Diffar). At the same time, both the lower part of the list (*e.g.* Haraz) and the upper part (*e.g.* Bakhit) show sites where such formal separation did not take place. This indicates that the size of the fortified site was not a factor which determined the existence of internal divisions.

The list of Christian graves also evokes a number of questions. On one hand, the chronology of burials devoid of grave goods is usually very general. The only more precise answers about chronology can be provided by means of physico-chemical methods. On the other hand, these sites could differ in terms of the state

of preservation. Some cemeteries might not even be detectable by conducting a surface survey. A cemetery could contain different types of burials, which might overlap, or the more recent burials could destroy the older ones. Such a situation was observed, for instance, at site Shemkhiya 9 (Żurawski 2008: 436–440). The number, chronology, and, to a lower degree, the presence of Christian cemeteries are difficult to establish without more detailed research. Therefore, the information represented in the table (**Table 8**) should be treated as general, and its value as minimal.

Despite such limitations and problems, certain relationships can be indicated. Apart from rather few cases, Christian cemeteries have been discovered in the vicinity of all sites (within a 1.5-km radius). This is in contrast to the situation observed for the Post-Meroitic Period. The cemeteries where fragments of inscriptions and more extensive forms of graves, with fired bricks and lime plaster, have been found concentrate around the fortified sites located in the territory occupied by Makuria in the Post-Meroitic Period. Apart from that, they are found in the vicinity of some sites: Redab at the Fourth Cataract, El-Karmal on the island of Mograt, as well as Wadi Dam et-Tor and Gandeisi near the Fifth Cataract.

Suegi South is an exceptional site, which seriously complicates the question of the interpretation of the presence of settlements or internal divisions within the sites as well as the presence of Christian graves. Burials inside the fortified site were discovered in the course of research in season 2004/2005 (Żurawski 2007a: 326–329). They were located in the central part of the courtyard which emerged after the rebuilding of the fortifications. According to Bogdan Żurawski, the presence of these burials and the expansion of the site are related. He noticed building materials, which most likely came from the tomb superstructure. The remains consisted of fired bricks, hard lime plaster, and wedge-shaped bricks, which might imply the existence of columns. It is the only instance of columns in the structure of a Christian tomb in Upper Nubia. Three graves were explored – they accommodated men aged 40–50. Apart from one case, the bodies were wrapped in mats. In contrast to this, there were no remains of mats at the cemetery located outside the fortifications. A small church was erected over the remains of one of the towers in more recent times. It was possible to reach the aforementioned cemetery from the church via a staircase. To conclude, Bogdan Żurawski introduced the term of the holy protection, which guaranteed safety to all inhabitants of the fortified site (Żurawski 2007a: 326).

The number of graves in the vicinity of the fortified site at El-Ar is also intriguing. The extensive cemetery of *box graves* at El-Ar, site 4, consists of at least 1,000 individual superstructures which can be seen on the surface. This is the biggest Christian necropolis discovered in the region of the Fourth Cataract. Bogdan Żurawski, who has conducted research at the site, associates this place with the area of *Shenka*, known from written sources (Vantini 1975: 708). It was a territory where gold was mined. The cemetery at El-Ar could be the burial ground for the people employed to search for and mine gold (Żurawski, personal communication).

6.5. SUMMARY

The results of the testing of hypotheses for the fortified sites which functioned in the Early Christian Period are inconsistent. It is impossible to indicate one, dominant centre. Therefore, the verification confirms the results of the rank-size relationship analysis. Monumental buildings appear in whole southern Dongola Reach. This corresponds with the area of the greatest agricultural potential. Palaces were only detected in the capitals of kingdoms, where concentration of luxury goods also occurred. Once the new faith was introduced, old funerary rituals began to disappear. Elite barrow cemeteries also ceased to be used, which means that an important part of the ideology of kings and minor local rulers changed dramatically.

Ecclesiastical organisation was introduced in the Middle Nile valley. Just like royal power, it exploited visual means of expression. However, its form and scale were more complex. Apart from the monumental buildings and luxury goods, wall paintings appeared. Churches were usually constructed from better, more durable materials. Each church, even a provincial one, was conspicuous due to its architecture and furnishings.

Information about the ecclesiastical entity is important since it might overlap with the secular division of the kingdoms in the Middle Nile valley. In the territory of Makuria (between the Third and Fifth Cataracts) there were two to four dioceses, only one of which has been located with certainty (in Old Dongola). It was suggested that another one (called *Suenkur*) was situated

in the area of the island of Mograt. However, it has not been possible to identify the episcopal seat in Abu Hamed Reach. In the case of another two, *Merkē* and *Kallama,* it is not even certain that they were located in this part of the Middle Nile valley. Six dioceses functioned in Alodia, but it was possible to indicate the location of one – in the capital.

What were the relationships between ecclesiastical and secular power? On the basis of written sources (Vantini 1975), it can be concluded that the two were strictly connected. Who ruled over whom? Officially, the king had the supreme power, however, these relationships might have depended on the individuals who occupied the highest positions in both hierarchies. The influence of both institutions could have been comparable in the territory of Makuria.

Verification of hypothesis 4 posed the greatest challenge (settlement activity and cemeteries surrounding fortified sites). Due to the changes in the internal plans of fortified sites, the settlements outside fortifications became more ephemeral and more difficult to detect. It is impossible to identify rules concerning the presence of internal divisions within big or small fortifications. Cemeteries are situated in the vicinity (1.5-km radius) of most fortified sites. Different types of graves and state of preservation impair the identification of such areas and counting of the graves. The most extensive graves have been detected in the region which belonged to the Kingdom of Makuria in the Post-Meroitic Period (centralised system), in the vicinity of the fortified site at Redab (Fourth Cataract), El-Karmal on the island of Mograt (the supposed location of the diocese in *Suenkur*), as well as Wadi Dam et-Tor and Gandeisi (Fifth Cataract). Some sites are completely inconsistent in relation to the hypotheses, which was most clearly shown by the results of testing hypothesis 4 for the fortified site at Suegi South, where graves of exceptionally rich structure were discovered inside the fortifications. Another outstanding case was the site at El-Ar, which, despite its small surface, had the largest *box-grave* cemetery in the region of the Fourth Cataract.

Conclusion

The objective which I set when I began this work was an attempt to understand who built fortified sites in Upper Nubia in the Early Middle Ages and why did they undertake this effort. In order to achieve my goal, I exploited a research procedure created by Arkadiusz Marciniak (Marciniak 1996). He applied it to his analysis of faunal remains from Neolithic contexts (Marciniak 2005). A two-stage structure is a characteristic trait of his approach. At the beginning, it is necessary to build a model, he based his on actualistic studies, and apply it to the empirical material. Testing is the second stage. It involves the analysis of the same set of data, but with reference to other features which are supposed to confirm or contradict the results of the first stage.

I used the studies on human behaviour conducted by George Kinsley Zipf (Zipf 1949) as the basis for the first stage of my research. His rule as to the relationship between rank and size can be exploited to compare many elements which belong to the same group and establish their interdependencies. A comparison of the fortified sites dated to the Late Meroitic/Post-Meroitic as well as Early Christian Periods resulted in distinguishing three systems of fortifications in Upper Nubia. The systems were:

- the centralised system in the regions of southern Dongola Reach and the Fourth Cataract in the Late Meroitic/Post-Meroitic Periods;
- the homogeneous system in the area from El-Ar up the course of the Nile in the Late Meroitic/Post-Meroitic Periods;
- the homogeneous system in the Nile Valley between the Third and Fifth Cataracts in the Early Christian Period.

This led me to the conclusion that two different systems of fortifications, built by independent state organisms, emerged in the Late Meroitic/Post-Meroitic Periods. Old Dongola was the dominant fortified site in the centralised system, more recent sources report it as the capital of Makuria. Conclusion was that the kingdom was a highly centralised system in its earliest history. However, the construction of the other, homogeneous system of fortifications, which covered the regions of the Nile Valley that stretched over a length of approx. 550 km up river from El-Ar, could not, in my opinion, have been completed by local leaders, who most likely ruled over limited parts of that area. The only sufficiently organised entity in that part of the Nile Valley was the Meroitic Empire.

Why should the rulers of the Meroitic Empire build a number of fortified sites along the Nile? Most settlements and all urban sites associated with the Empire in the area from the great meander up the course of the river were located on the right bank or at longer distances from the river in the region of Butana (Edwards 1989: 126–31). In the same area, all fortified sites which functioned in the Late Meroitic/Post-Meroitic Periods are situated on the left bank or on islands (**Fig. 24**). According to Strabo, who wrote his works in the 1st century BC and quoted the Greek geographer Eratosthenes from the 3rd century BC in this case, the Middle Nile valley was divided at that time. The right bank belonged to Aethiopians (the Meroitic Empire) in that period, and the left bank was occupied by Nubae (Nubians). Power in the Meroitic Empire was personified by a ruler, while Nubians, according to Strabo, were divided into several kingdoms, and the people were described as nomads and bandits (Strabo XVII. C.1 §2). This text might provide explanation

for the distribution of Late Meroitic/Post-Meroitic archaeological sites which are currently discovered. The only problematic issue is the time when the text was written. This information most likely comes from the 3rd century BC, and the fortified sites were built in the Late Meroitic/Post-Meroitic Periods (2nd–6th century AD). What changes transpired to result in the construction of fortified sites?

Nubians are next mentioned in the context of an invasion led by the king of Axum, Aezana. The inscriptions describe victorious military campaigns, which are now dated to the mid-4th century. This date is also the accepted beginning of the Post-Meroitic Period. It can be concluded from the description that the territory between the White Nile and the Blue Nile (*Gezira*) was then occupied by Nubians (*Noba*). They lived in cities built of stone, two of which they captured from the Meroitic Empire (*Kasu*). They also had temples and representations of gods, as well as gold and silver vessels. Farming was the basis of their economy. Remnants of the Meroitic

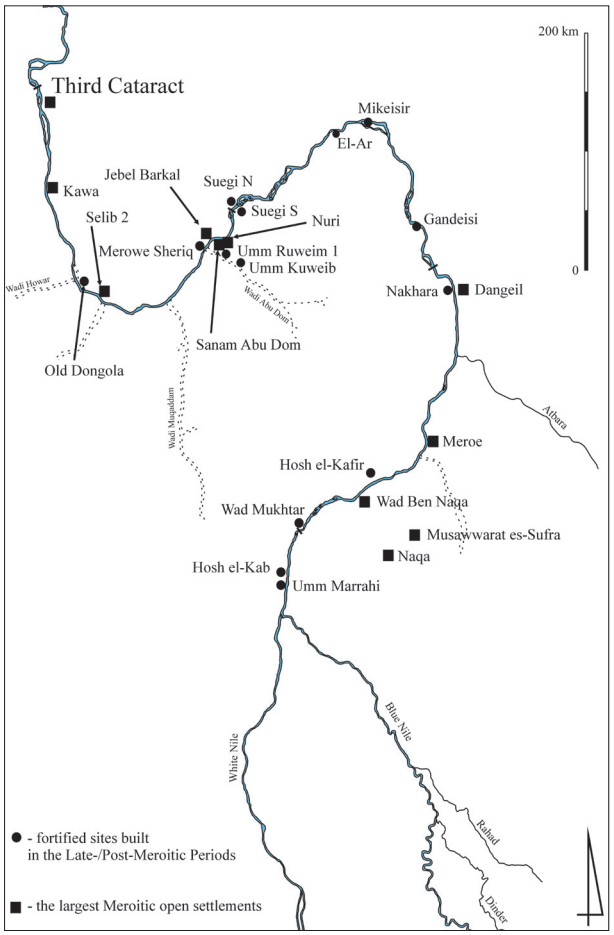

Fig. 24. Map of major Meroitic cities and fortified sites in the Late Meroitic/Post-Meroitic Periods.

Empire (*Kasu*) were supposed to have survived farther north. The territory down the river was occupied by Red Nubians (*Red Noba*). The information reflects the change in the situation of Nubians in terms of economy and territory (Eide *et al.* 1998: 1097–100). Therefore, the increasing ambitions of Nubians and the weakening of the Meroitic Empire, which might have been a vassal of Axum at the time (Eide *et al.* 1998: 1102), could have been one of the reasons for the emergence of such a system of fortifications.

Early Christian fortified sites have been discovered in the region between the Third and the Fifth Cataracts of the Nile. It is an area which, according to information provided by written sources (Vantini 1975) belonged to the Kingdom of Makuria when it was a Christian monarchy. On the basis of the rank-size relationship analysis I concluded that the system of power in the Kingdom of Makuria was modified as a consequence of territorial development and change of the official religion. It was no longer a centralised system, and the position of Old Dongola, although still strong, was not dominant in the whole organisation. The system which I earlier associated with the Meroitic Empire ceased to function. The state of research on the fortified sites in the area from the Fifth Cataract up the course of the Nile is not sufficiently advanced to unequivocally confirm whether they functioned without interruption. Pottery material recovered at these sites is generally dated to the Christian Period, however, it is unclear how it corresponds with permanent occupation. On the other hand, from Nakhara down the river course, all sites, apart from Mikeisir, reflect uninterrupted settlement activity, rebuilding or expansion of fortifications, as well as yield numerous artefacts. New defensive structures were also built in this area, for instance Kurgus or Ras el-Gezira.

The conclusions which I arrived at on the basis of the analysis of the rank-size relationship are of general nature. They refer to whole kingdoms, which emerged and fell in the period in question. In order to verify whether my interpretations are correct, I performed additional analyses in accordance with Arkadiusz Marciniak's research procedure. I built a model of centralised power on the basis of studies conducted by Henry J.M. Claessen (Claessen 1978) and thanks to four hypotheses I applied it to all systems distinguished as a result of the rank-size relationship analysis. The hypotheses were reflected in the empiric material only in the case of the centralised system,

which functioned in the regions of southern Dongola Reach and the Fourth Cataract in the Late Meroitic/Post-Meroitic Periods. This means that the results of the rank-size relationship analysis are consistent at a general level.

As a consequence, it could be believed that the rulers of Makuria implemented plans based on strategies of ruling. They developed agriculture by introducing new, more efficient crops and increasingly advanced irrigation techniques. The objective of these modernisations was to create surpluses which would help to develop the kingdom and means of more elaborate manifestation of power. It led to the use of luxury goods and exploitation of monumental buildings. This is where the role of fortified sites emerged. They took part in the formation and later support of the Kingdom of Makuria. Apart from the defensive application, they had a complex symbolic significance exploited in the strategy of the rulers of the new state. The construction of the fortifications of Old Dongola, which I described earlier (Chapter 4.4), could have covered most, if not all, inhabitants of the area and constituted a visual representation of the authority possessed by the ruler of Makuria. This had an additional meaning if it is assumed that the fortified sites in the area from El-Ar up the course of the Nile were erected by Meroitic kings. When such associations of meanings are taken into consideration, it is easy to understand why kings of Alodia might not have exploited the symbolism of fortified sites to a similar degree as Makurian kings – it was attributed to the earlier, Meroitic system.

Zipf's analysis explains the distribution of the empirical material on a general level, nevertheless, the situation proves to be more complex when it is analysed in detail. I made this observation in the course of the testing procedure as it involved more detailed study as well as a higher level of diversity, and the previously evident division lost part of its validity. In the case of fortified sites which functioned in the Late Meroitic/Post-Meroitic Periods, it was most notable in the course of the analysis of Umm Ruweim 1 and Umm Kuweib included in the centralised system and Hosh el-Kafir, the largest site in terms of size in the homogeneous system. When I tested the hypotheses with regard to these sites, I discovered similarities which led me to the conclusion that the functions of these centres were comparable and might have been connected with the trails which crossed Bayuda. Information on the trails connecting opposite edges of the desert can be found in written sources and it became the basis for the Wadi Abu Dom Itinerary project (Lohwasser 2010a: 85–89). In this system, fortified sites located at a short distance from the Nile Valley might have functioned as assembly points for the caravans which began or completed their journeys across the desert.

Another element which returned surprising results was the analysis of the presence and size of cemeteries situated in the vicinity of fortifications. According to hypothesis 4, the fortified sites which functioned as administrative centres in the centralised system concentrated settlement activity in their surroundings. It was supposed to be reflected in archaeological material *i.e.* by the presence of large cemeteries within the 1.5-km radius from the sites. However, I have not found any cemeteries around the sites which belonged to the centralized system (except for Umm Ruweim 1 and Umm Kuweib), and the elite necropoleis were located even farther. The situation appeared completely different in the homogeneous system (from El-Ar up the river course), where in most cases, barrow cemeteries, and sometimes also elite burials, were located within the 1.5-km radius.

Tradition and religion may have played a more prominent role in the location of cemeteries than in the case of settlements or fortified sites. It might account for the longer distances in the centralized system. However, in the homogeneous system, the explanation could be different. If it is assumed that the fortified sites in the area from El-Ar up the course of the Nile were built by Meroitic rulers, then their location in the vicinity of large necropoleis or elite cemeteries could be intentional. The research conducted by László Török (Török 1999) indicates the symbolic meaning of funerary rituals and tombs in the ideology of power in the Post-Meroitic Period. Local leaders could have built and expressed their social status by means of funerary rituals and worship of their predecessors. Control over these places, the elite cemeteries, might have been crucial for submission of the local leaders and for the maintenance of the Meroitic state in these regions.

The change of the official religion and conversion to Christianity in the 6th century led to major transformations in the kingdoms of Makuria and Alodia. One of the most important ones was the disappearance of elite barrow burials. These necropoleis were the main places where dispersal of power in the Post-Meroitic Period was observed

in archaeological material. If these tombs were the exclusive medium of ideology of power for the local rulers in the past, the diffusion of Christian religion was an exceptionally unfavourable process for these leaders. Kings of Makuria and Alodia could have significantly weakened the elites of newly-conquered territories by introduction of Christianity as well as ensured a higher level of integrity of the kingdom. It could have led to conflicts and attacks on the churches which had been built. On the other hand, Christianity gradually became an influential power in both kingdoms, which could also challenge the royal power.

The further process of the weakening of central power can be noted in the distribution of fortified sites. The prominent role of whole southern Dongola Reach can be seen by analysing the surface area of fortified sites (hypothesis 1), agricultural potential (hypothesis 2), as well as the presence of graves with superstructures made of fired bricks and covered with lime plaster (hypothesis 4). The region which earlier (in the Post-Meroitic Period) constituted the territory of emerging Kingdom of Makuria formed its central, most developed part in the Early Christian Period.

Just like in the case of the analysis of fortifications from the Late Meroitic/Post-Meroitic Periods, hypothesis 4 returned unexpected results. As a consequence, it was possible to detect a change in the construction of fortified sites. The settlements situated directly outside the enclosure walls were either surrounded with added fortifications, or the main structure was rebuilt in such a manner that its inner part was divided into at least two sections (for instance El-Ar). Such divisions can be observed in both the largest centres and also the smallest ones. At the same time, both ends of the ranking show sites which did not feature such additional enclosures. This situation evokes a question: why did such divisions emerge? The instance of Suegi South with Christian graves inside the fortified area shows how individualised this process could have been. It might have been caused by situations which took place in these particular places rather than result from a major project of rebuilding or a process which concerned the whole kingdom.

With regard to the analysis of cemeteries, hypothesis 4 also provides significant observations. As opposed to Late Meroitic/Post-Meroitic cemeteries, the necropoleis dated to the Christian times can be detected in the vicinity of most fortified sites (in 1.5-km radius). On one hand, their considerable sizes could be associated with the presence of administrative centres, on the other hand, the cause of the existence of large necropoleis (more than 1000 individual graves) could be different. The fortified site at El-Ar is a good example to illustrate that. A *box-grave* cemetery with approx. 1,000 separate graves was discovered about 300 m to the south-east of that site. It is the largest Christian necropolis in the region of the Fourth Cataract. Bogdan Żurawski exploits the high number of the simplest graves as one of the arguments in his interpretation of the region as the location of *Shenka* (Żurawski 2007b: 183–4), known from medieval written sources. The people who lived in the area were supposed to have mined gold in the gold-bearing fields located nearby. The fortified site might have fulfilled the supervisory function for the process of mining, transport, and serve as a place of storage.

Summing up, I believe that the procedure which involves additional testing analyses is a very good research tool. Investigation by means of different methods, which test different features, shows many elements overlooked in the first stage of the analysis. As a result of such a method, it is possible to observe the complexity and multi-faceted nature of the researched issues. When I began this analysis, I had a number of research questions. However, when I finished it, the list had surprisingly expanded.

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Bibliography

Abbreviations

Periodicals

AmAnt – *American Antiquity*, Washington, D.C., *et al.*
ANM – *Archéologie du Nil Moyen*, Lille.
BAR – *British Archaeological Reports.*
CRIPEL – *Cahier de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille*, Lille.
ÉtudTrav – *Études et Travaux*. Institut des Culture Méditerranéennes et Orientales [*until 2010*: Centre d'Archéologie Méditerranéenne] de l'Académie Polonaise des Sciences, Warsaw.
GAMAR – *Gdańsk Archaeological Museum African Reports*, Gdańsk.
JEA – *The Journal of Egyptian Archaeology*, London.
JJP – *The Journal of Juristic Papyrology*, Warsaw.
Kush – *Kush, Journal of the Sudan Antiquities Service* (vols I–XV); *Journal of the Sudan National Board for Antiquities & Museums* (vol. XVI); *Journal of the National Corporation for Antiquities and Museums* (from vol. XVII), Khartoum.
MittSAG – *Der Antike Sudan. Mitteilungen der Sudanarchäologischen Gesellschaft zu Berlin e.V.*, Berlin.
PAM – *Polish Archaeology in the Mediterranean*, Polish Centre of Mediterranean Archaeology. University of Warsaw, Warsaw.
S&N – *Sudan & Nubia, Bulletin of the Sudan Archaeological Society*, London.
SASOP – *Sudan Antiquities Service Occasional Papers*, Khartoum.
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APPENDIX

Catalogue

LEGEND

▲ – barrow cemetery
✝ – Christian cemetery
✱ – flat graves
◆ – settlement, concentration of pottery sherds
● – fortified site
☾ – Muslim cemetery
◎ – rock art
⅄ – isolated fragments of pottery vessels

Chronology in site descriptions (sites in Dongola Reach):

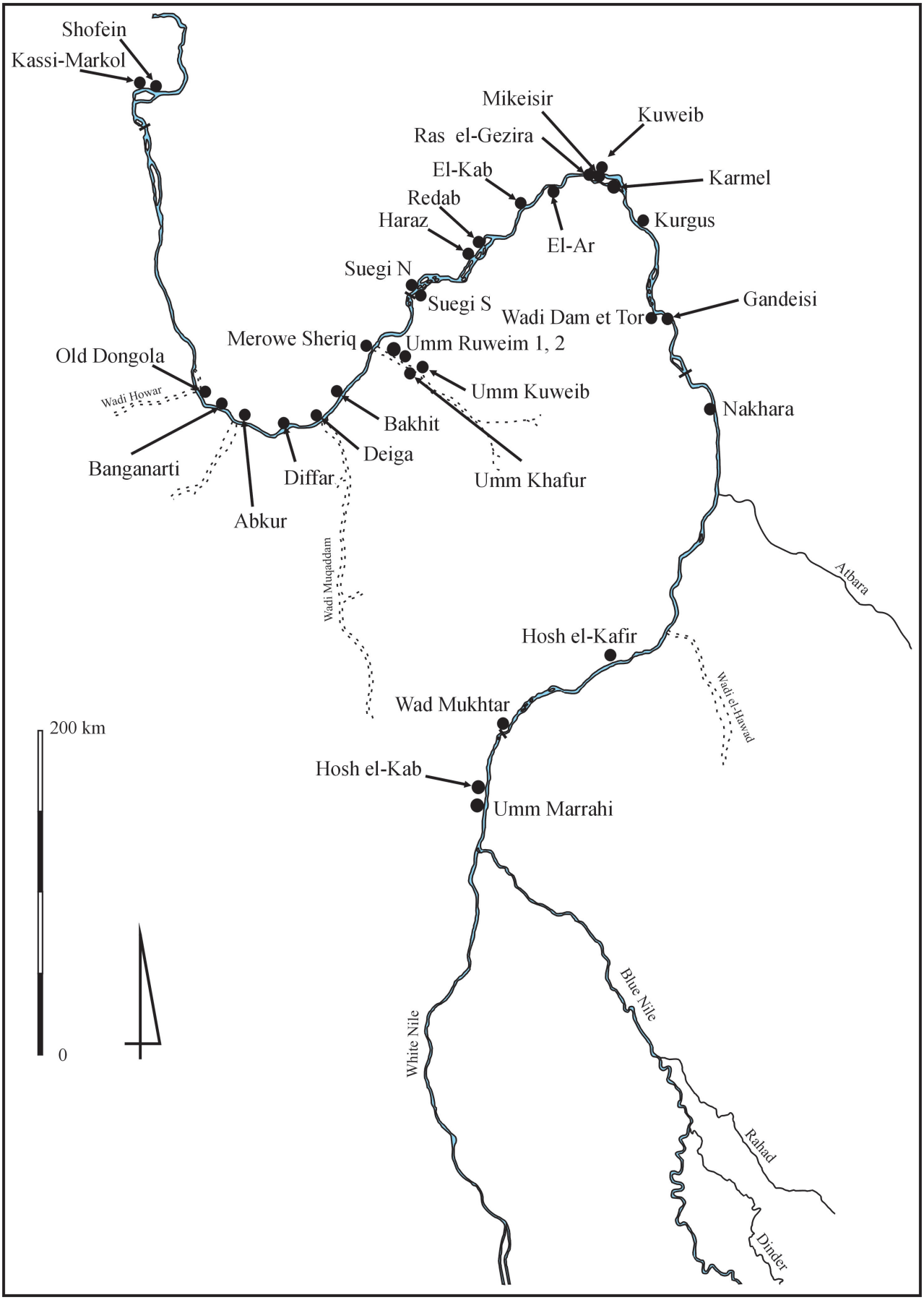
PM – *Post-Meroitic (350–550)*
D – *Dongola (550–1365)*
ED – *Early Dongola (550–850)*
CD – *Classic/Middle Dongola (850–1100)*
LD – *Late Dongola (1100–1365)*
F – *Fung (1504–1820)*

Numbers in the descriptions of cemeteries indicate the minimum number of graves at the site. Abbreviation, *e.g.* "max 28 m" means that the biggest barrow at the site measures approx. 28 m in diameter. For instance:

316 ▲ max 24 m
KRG 3

Site: KURGUS 3, barrow cemetery, with at least 316 barrows, the biggest has a diameter of approx. 24 m.

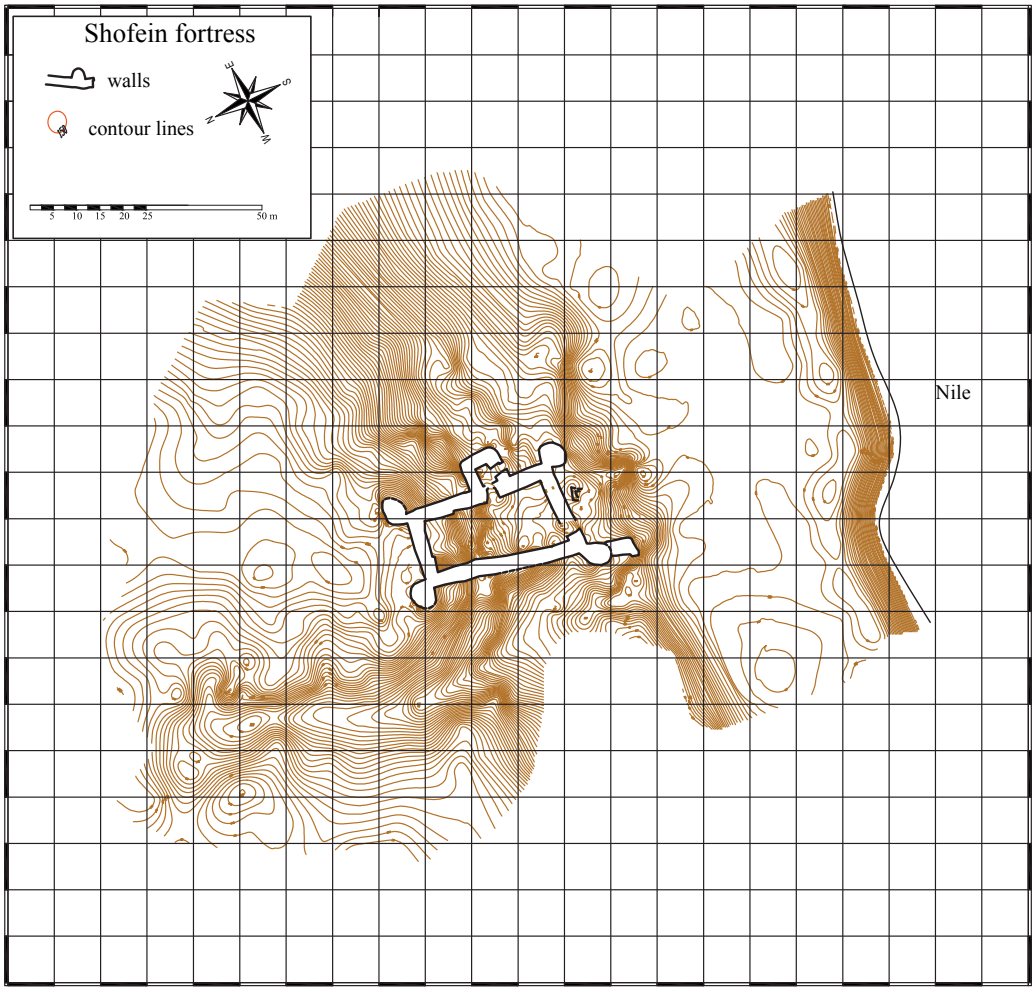
The individual sites are described following their geographical position along the Nile, from North to South.



Sites described in the catalogue

Shofein

QUOTED AS:	Shofein (Osman, Edwards 1994: 49) Site 90–43 (Osman, Edwards 1994: 49) Oshiindiffi – means fort of slaves in Nobiin (Osman, Edwards 1994: 49) Old Fort (Sudan Survey Map – marked on the map NE-36-A) DFF001 (Osman, Edwards 2002: 19) Kasa Shoofeen (Osman, Edwards 2012: 249)
COORDINATES	19°56′38.37″N 30°25′39.99″E
CHRONOLOGY	Based on pottery material: most fragments dated to the Post-Classic Period, but there are some Early Christian pieces (Osman, Edwards 1994: 49).



Plan of the fortified site (courtesy of Bogdan Żurawski, drawing Roman Łopaciuk)

SHAPE	Trapezium
DIMENSIONS	wall N – approx. 13 m, walls W and E – approx. 30 m, wall S – approx. 18 m (Osman, Edwards 1994: 49)
SURFACE AREA	approx. 386.89 m²
THICKNESS OF WALLS	2.4–3.3 m (Osman, Edwards 1994: 49)
GATES	One entrance in the east curtain wall with rectangular additional defences.
TOWERS/BASTIONS	Round, in four corners

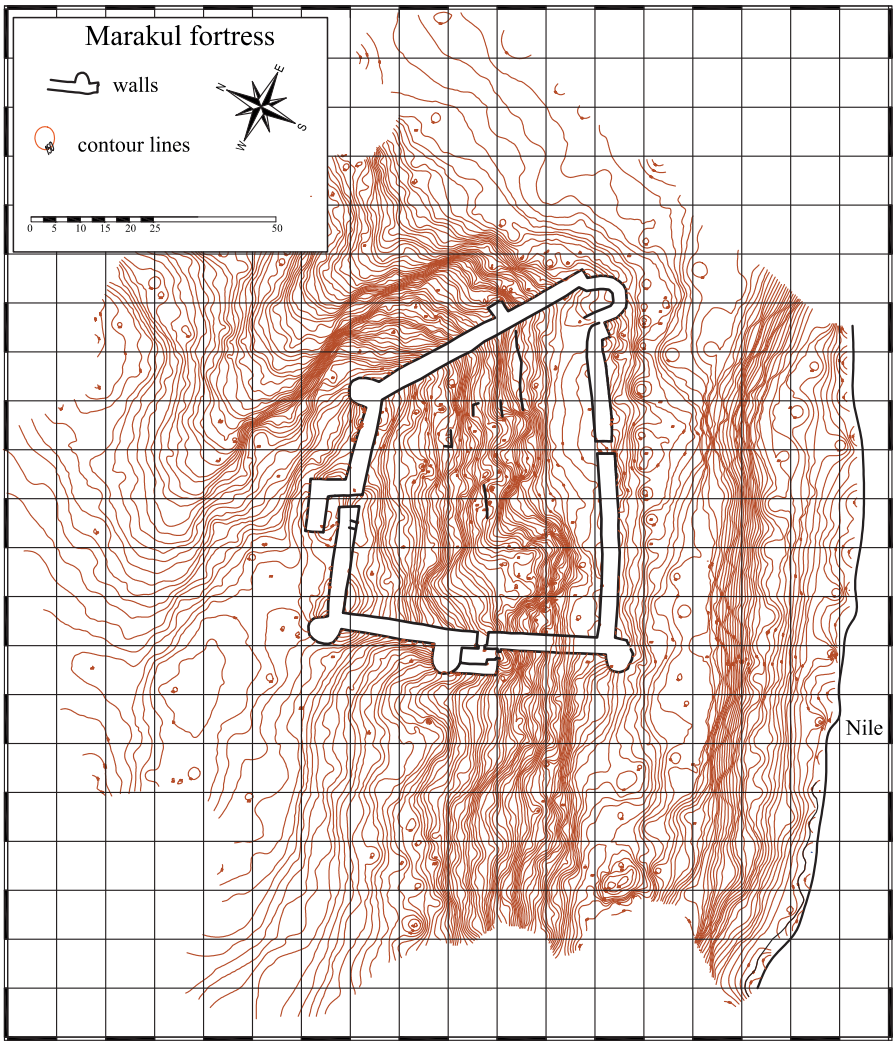
OTHER ARCHITECTURAL FEATURES	Two walls issue from curtain wall S towards the river, poorly-preserved due to the road which crosses that part of the site (Osman, Edwards 1994: 49). Only one wall is marked on the plan above. The other wall can be seen in the photograph (Osman, Edwards 1994: pl. XXXVII) and photographs taken by RAF pilots (SARS_RAF archive). Sometimes interpreted as remains of a detached tower (Osman, Edwards 2012: 249). Joints can be seen in the wall faces – phases of construction (Osman, Edwards 2012: 249). Rock carvings on the stones in the gate (Osman, Edwards 2012: 250).
BUILDINGS INSIDE	No remains of buildings inside (Osman, Edwards 1994: 49).

Satellite image of the vicinity of the site at Shofein (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Remains of small dwellings (Osman, Edwards 1994: 49; 2012: 250), which cannot be seen in the satellite image. Settlement located to the west of the fortified site, generally dated the Christian Period (approx. 90x45m) as a concentration of pottery sherds (site 90/42 – Osman, Edwards 1994: 49). Church (site 90/44 – Osman, Edwards 1994: 51; 2012: 250). Jebel Nauri site 91/82 - fortified settlement dated to the Classic Christian Period and later (Osman, Edwards 1992: 68–69). In a more recent publication NAR001 (Osman, Edwards 2012: 350–352). NAR003 located to the east – concentration of medieval and post-medieval pottery. DFF002 – Diffi Haj Abbas (Osman, Edwards 2002: 19). JWG 012 – concentration of red bricks and pottery dated to the Early Christian Period (Osman, Edwards 2012: 245). JWG 011 – concentration of pottery in an area of more than 200 m², dated to the Early and Classic Periods (Osman, Edwards 2012: 245). JWG 018 – concentration of Early Christian pottery sherds (Osman, Edwards 2012: 246).
CEMETERIES WITHIN 1.5-km RADIUS	JWG 010 – cemetery dated to the Meroitic Period and Middle Ages, number of graves unknown (Osman, Edwards 2012: 245).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.72 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.17 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	2.04 km²

Kassi-Markol

QUOTED AS	Kassi-Markol (Osman, Edwards 1994: 41) Site 90/35 (Osman, Edwards 1994: 41) Marakol (Osman, Edwards 2000: 16) Marked as "Ruins" on Sudan Survey Map NE-36-A JWG001 (Osman, Edwards 2002: 19) Markuul (Osman, Edwards 2012: 241) Kassi-Markuul (Osman, Edwards 2012: 241) Kaafriinkisse (Osman, Edwards 2012: 241)
COORDINATES	19°57′21.11″N 30°20′17.46″E
CHRONOLOGY	Based on pottery material: most fragments dated to the Early Christian Period (Osman, Edwards 1994: 41).



Plan of the fortified site (courtesy of Bogdan Żurawski, drawing Roman Łopaciuk)

SHAPE	Irregular trapezium
DIMENSIONS	Measurements taken by means of Google Earth: wall S – approx. 82 m, wall E – approx. 52 m, wall N – approx. 55 m, wall W – approx. 62 m.
SURFACE AREA	approx. 2822.33 m²
THICKNESS OF WALLS	3–4 m (Osman, Edwards 2012: 241)

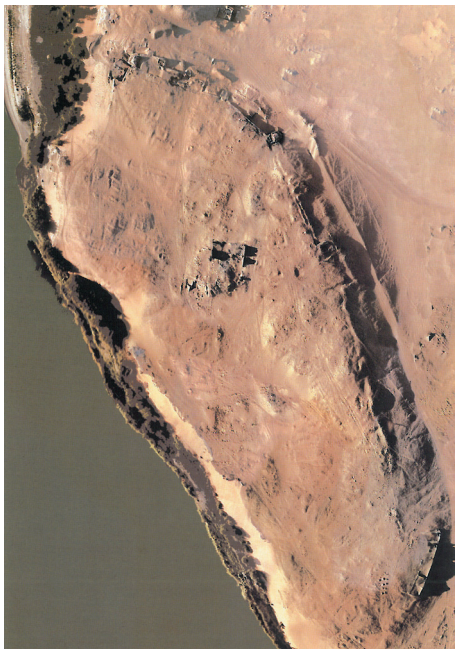
GATES	Two gates with additional defences, one in the west curtain wall, the other in the north curtain wall. Perhaps another gate is located under the collapsed south curtain wall (Osman, Edwards 1994: 41).
TOWERS/BASTIONS	Round, in four corners
OTHER ARCHITECTURAL FEATURES	A wall issues from the east corner tower towards a bay located nearby (remains barely visible in the satellite image and photographs taken by RAF pilots – SARS archive).
BUILDINGS INSIDE	Remains of buildings inside can be seen in the form of stone foundations which constitute terraces on the slope of the hill (Osman, Edwards 1994: 41).

Satellite image of the vicinity of the site at Kassi-Markol (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Jawgul – at least 17 *unit house* buildings (site 90/36) and a church (site 90/37). Settlement activity in the area is dated to the Early and Classic Christian Periods, buildings erected probably in the Late Christian Period (Osman, Edwards 1994: 43–5; 2012: 243–244). Mugur – fortified site *vis à vis* Kassi-Markol (MUG 004-dated to the Late Middle Ages/Post-medieval Period). Settlements in the eastern part of the island (MUG 001, 2) dated to the Middle Ages (Osman, Edwards 2000: 17; 2012: 403–405). Settlement on the island to the east of Kassi-Markol detected in the satellite image. Remains of oval buildings (approx. 50 items), most likely made of stone. Chronology: unknown.
CEMETERIES WITHIN 1.5-km RADIUS	Jawgul – at least two Christian cemeteries (sites 90/38 and 90/39 – Osman, Edwards 1994: 45; 2012: 244) Mugur – medieval cemetery (Osman, Edwards 2000: 16)
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.85 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.42 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	1.98 km²

Old Dongola, kom A

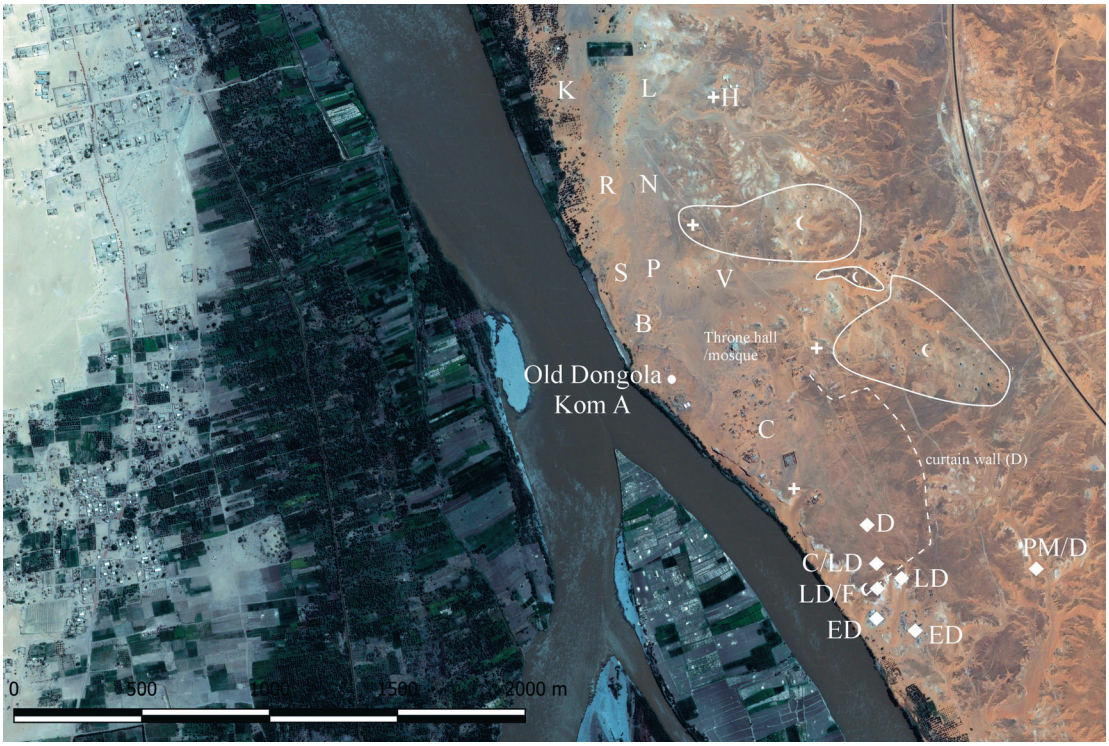
QUOTED AS	Old Dongola, kom A (Michałowski 1966: Plan 11) Citadel (Godlewski 2010: 313) Upper city (Jakobielski 2001: 6) Acropolis (Godlewski 2007: 287)
COORDINATES	18°13′24.51″N 30°44′34.08″E
CHRONOLOGY	Phase I – second half of the 5th century AD (Godlewski 1997: 178) Partially damaged during Mamluk raids in the final quarter of the 13th century (Wiewióra 2007: 199). Kom A was in use during the Fung Period and later until the beginning of the 20th century, some houses in the abandoned village as late as 1960s (Godlewski 2015b: 183–214).



Aerial photograph of kom A (courtesy of Bogdan Żurawski)

SHAPE	Oval
DIMENSIONS	approx. 360x150 m (Google Earth)
SURFACE AREA	approx. 39367.17 m²
THICKNESS OF WALLS	3.6–5.7 m
GATES	Marcin Wiewióra (Wiewióra 2007: 196–197) – there were probably four gates in N, S, E, W parts of fortifications. Włodzimierz Godlewski (Godlewski 2003: 100) unearthed the north gate. Godlewski (Godlewski 2000: 206) mentions „rivergate". Evliya Çelebi mentions three gates (Żurawski 2001b: 361).
TOWERS/BASTIONS	Firm towers in NW and NE, smaller towers between them: **Tower NW** – preserved up to a height of approx. 6.7 m. Width: 6.3 m, extended 6.9 m in front of the curtain wall. Faced with stones (curtain wall 1.2–1.5 m thick). Faced with mud bricks inside. Foundations directly on the rock. Restoration phases: 12th–13th century and 14th–16th century. **Tower NE** – approx. 50 m to the east from tower NW. Extended approx. 8.55 m in front of the wall. Stone coating approx. 0.7–1.3 m thick. **Tower N.1** – approx. 40 m from tower NE. Repair made with mud bricks. Extended 7 m in front of the wall, width: 5.63 m. **Tower N.2** – badly damaged. Extended 8.1 m in front of the curtain wall. **Tower E.1** – 31 m from tower NW. Mud brick core, stone facing. Extended 8.5 m in front of the wall, thickness at the base: 6.25 m. Remains of the floor paved with pottery tiles discovered on the top (dated to the period preceding the fall of the city).

TOWERS/BASTIONS	**Tower E.2** – 31.5 m from tower E.1. Dimensions similar to E.1. Dwellings were built on its ruins in the Post-Makurian Period (Godlewski 1997: 175–178).
OTHER ARCHITECTURAL FEATURES	Additional line of walls connects the main site with the river bank (Godlewski 1995: 95).
BUILDINGS INSIDE	Urban buildings, including a two-level building interpreted as a royal palace in SWN (Godlewski 2006: 289; Godlewski, Danys, Osypińska 2015: 65–84).

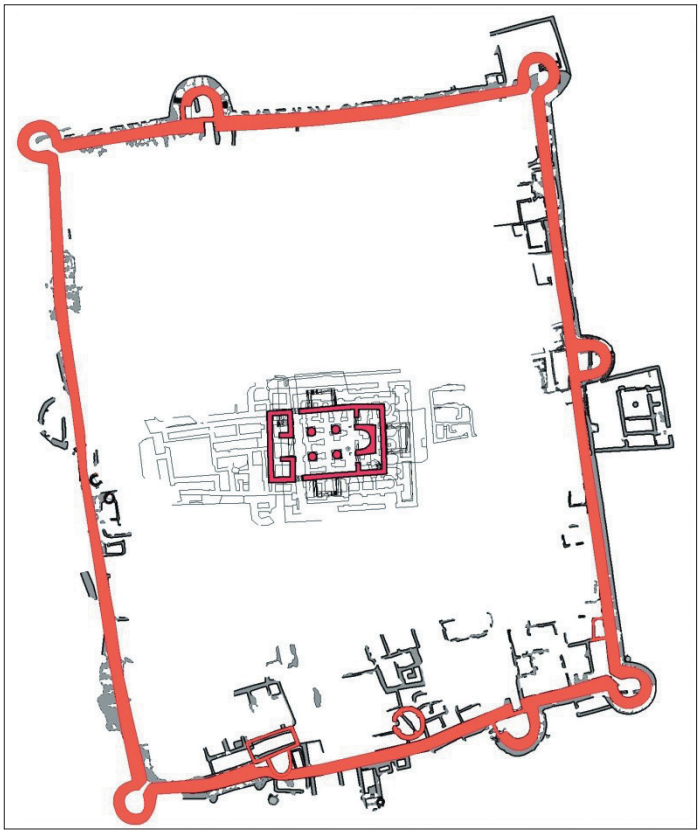


Satellite image of the vicinity of the site at Old Dongola (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	**Remains dated to the Post-Meroitic Period:** Furnaces for iron smelting (Godlewski 1991: 107–108). Remains of building Y (BY) at kom B with a superimposed church BX (Jakobielski 2001: 11). **Christian Period remains:** Koms B to T (Jakobielski 2001: 6–26).
CEMETERIES WITHIN 1.5-km RADIUS	Kom RT – two tombs carved in rock at a considerable distance (Jakobielski 2001: 28–29). Kom T – Christian and Muslim cemeteries (Jakobielski 2001: 26–28).
OTHER	So-called "ochre mine" – site OP, section V (Jakobielski 2001: 5). Remains of the enclosure wall in the south-east, Old Dongola site 23 (Żurawski 2003: 112–114).
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	El-Ghaddar 1 (3.4 km) Hammur 2 (6.4 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	1.52 km²
AGRICULTURAL POTENTIAL (R=3 km)	4.1 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	8.5 km²

Banganarti

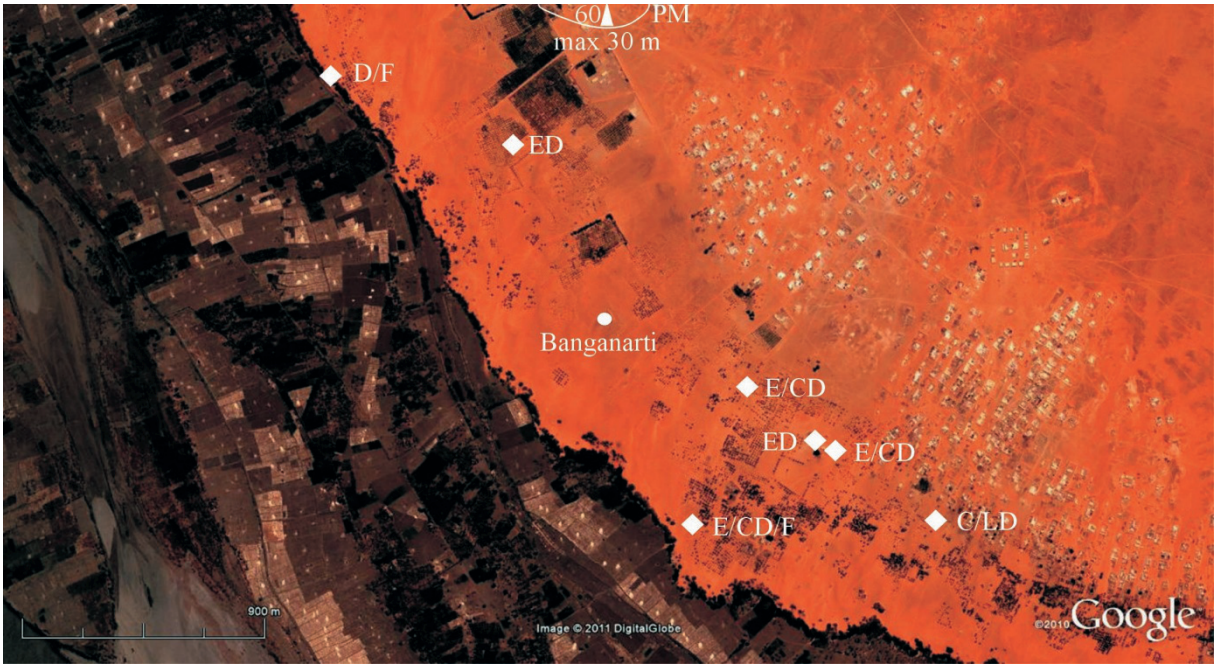
QUOTED AS	Banganarti (Caillaud 1823–1827, II: 27) ROM 53 (Grzymski 1987: 11) Banganarti site 1 (Żurawski 2003: 141) Sinada (Grzymski 1987: 11) Kom es-Sinada (Żurawski 2003: 141) Jebel En-Nusara (Żurawski 2003: 141) Kenissa (Żurawski 2003: 141)
COORDINATES	18°09′59.61″N 30°47′04.83″E
CHRONOLOGY	I phase – 6th-7th century AD until the 14th century, (Żurawski 2003: 143)



Plan of the fortified site, phase I marked red (drawing Mariusz Drzewiecki, Roman Łopaciuk)

SHAPE	Quadrilateral
DIMENSIONS	wall E – approx. 116 m, wall N – 100 m, wall W – 130 m, wall S – 100 m
SURFACE AREA	approx. 11665.86 m²
THICKNESS OF WALLS	approx. 2 m (phase I) approx. 0.8–3.2 m (subsequent phases)
GATES	Three gates with additional defences, in curtain walls N, S, W (Drzewiecki 2010). Marcin Wiewióra indicated the location of a potential fourth gate in wall E (Wiewióra 2007: 205).
TOWERS/BASTIONS	Remains of towers discovered in two corners (NE and SE), state of preservation of other corners is not good enough to confirm conclusively whether they were fortified with towers. Additionally, there is a semi-cylindrical tower in the centre of the east curtain wall (Wiewióra 2005b: 265–266).

OTHER ARCHITECTURAL FEATURES	Structure built of mud bricks, only selected elements of gates were built of fired bricks and stones of irregular shapes (Drzewiecki 2010: 353).
BUILDINGS INSIDE	Superimposed churches in the central part (Żurawski 2004). Dense concentration of dwellings and buildings, mainly built of mud bricks.

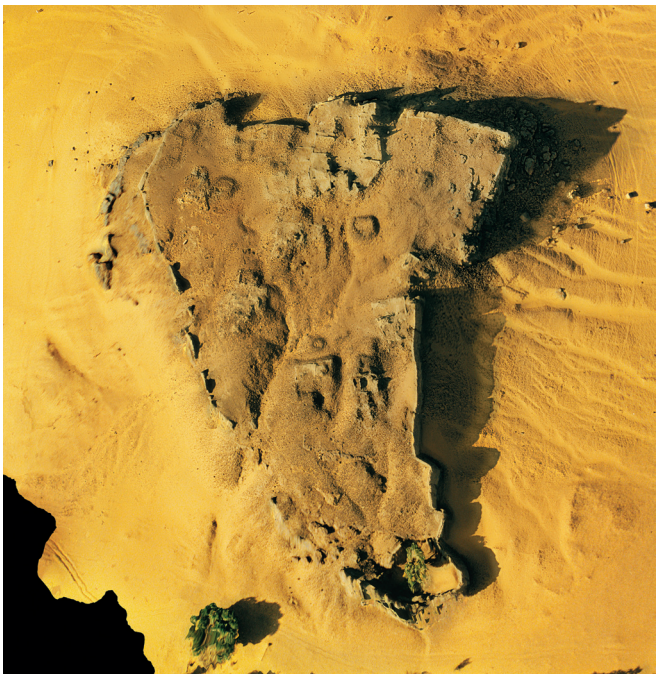


Satellite image of the vicinity of the site at Banganarti (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Buildings added to the outer face of fortifications: to the south curtain wall in the 8th/9th century and to the east curtain wall in the 11th–14th century (Wiewióra 2005b: 268; Drzewiecki 2010: 350–358). Concentrations of pottery were discovered within the 1.5-km radius (Żurawski 2003: 139, 153–155).
CEMETERIES WITHIN 1.5-km RADIUS	Hammur 2 – barrow cemetery: approx. 60 tumuli, the biggest approx. 30 m in diameter (El-Tayeb 2003: 130–139).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Hammur 2 (1.4 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	–
AGRICULTURAL POTENTIAL (R=3 km)	–
AGRICULTURAL POTENTIAL (R=4.5 km)	–

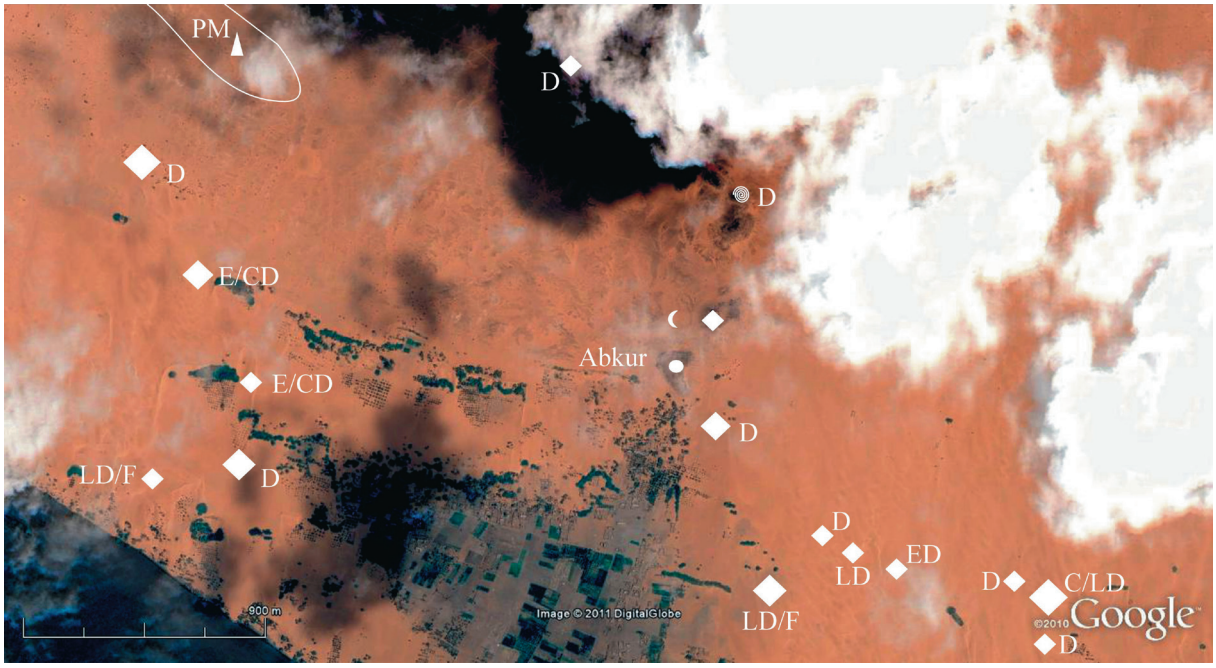
Abkur

QUOTED AS	Abkur (Żurawski 2001b: 365) Estabel (name on Sudan Survey Map 45-E) Abker (Anderson 1996: 322) Jebel El-Gren (Żurawski 2003: 229)
COORDINATES	18°02′32.30″N 31°04′36.59″E
CHRONOLOGY	Phase I – fortifications built of broken stone, dated to the Early Christian Period (Żurawski 2003: 232, Wiewióra 2007: 204) Phase II – enclosure of earlier fortifications with a mud brick wall (Żurawski 2001b: 368) Fortified site in use until the 19th century (Wiewióra 2007: 204)



Orthophoto of the site taken in 2016 (courtesy of Bogdan Żurawski)

SHAPE	Irregular, adapted to the shape of the elevation
DIMENSIONS	approx. 155x103 m
SURFACE AREA	approx. 10032.99 m²
THICKNESS OF WALLS	unknown
GATES	According to Caillaud (Żurawski 2001b: 368), in the southern, lowest place of the site.
TOWERS/BASTIONS	–
OTHER ARCHITECTURAL FEATURES	–
BUILDINGS INSIDE	Remains of buildings can be seen in great numbers on the surface. Stone capital and column found outside the wall, at the foot of the hill, according to Żurawski (Żurawski 2001b: 368), indicate the presence of a church, located at the highest point, inside the fortifications (Wiewióra 2005b: 269–279).

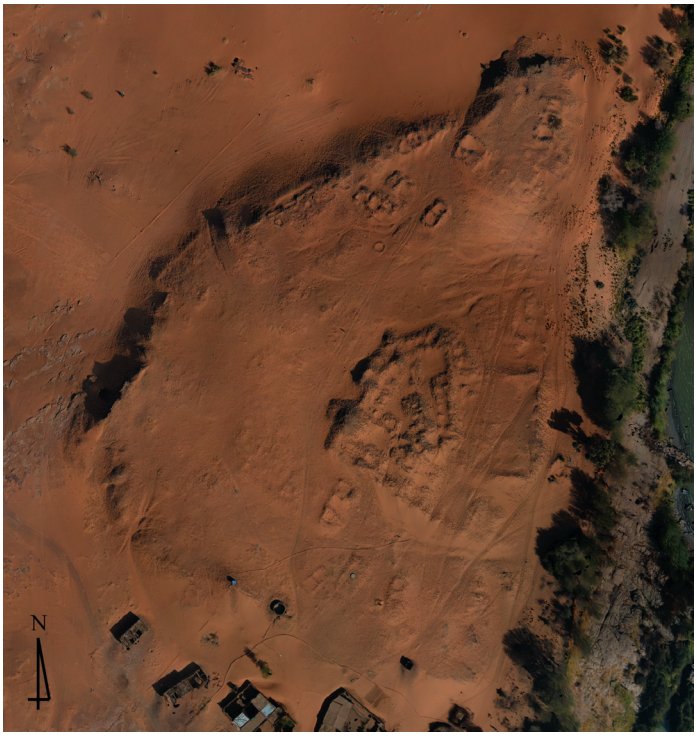


Satellite image of the vicinity of the site at Abkur (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	There are many sites within 1.5-km radius identified on the basis of pottery sherds found on the surface, in very few cases – relatively low koms (Żurawski 2003: 221–239). Remains of a round stone structure discovered on the top of a hill located to the north of the main fortifications (visible in satellite images).
CEMETERIES WITHIN 1.5-km RADIUS	Muslim cemetery to the north of the fortifications, probably associated with a late phase of the functioning of the site.
OTHER	Rock carvings located to the north of the site – site Abkur 83 (Żurawski 2003: 228).
AGRICULTURAL POTENTIAL (R=1.5 km)	–
AGRICULTURAL POTENTIAL (R=3 km)	–
AGRICULTURAL POTENTIAL (R=4.5 km)	–

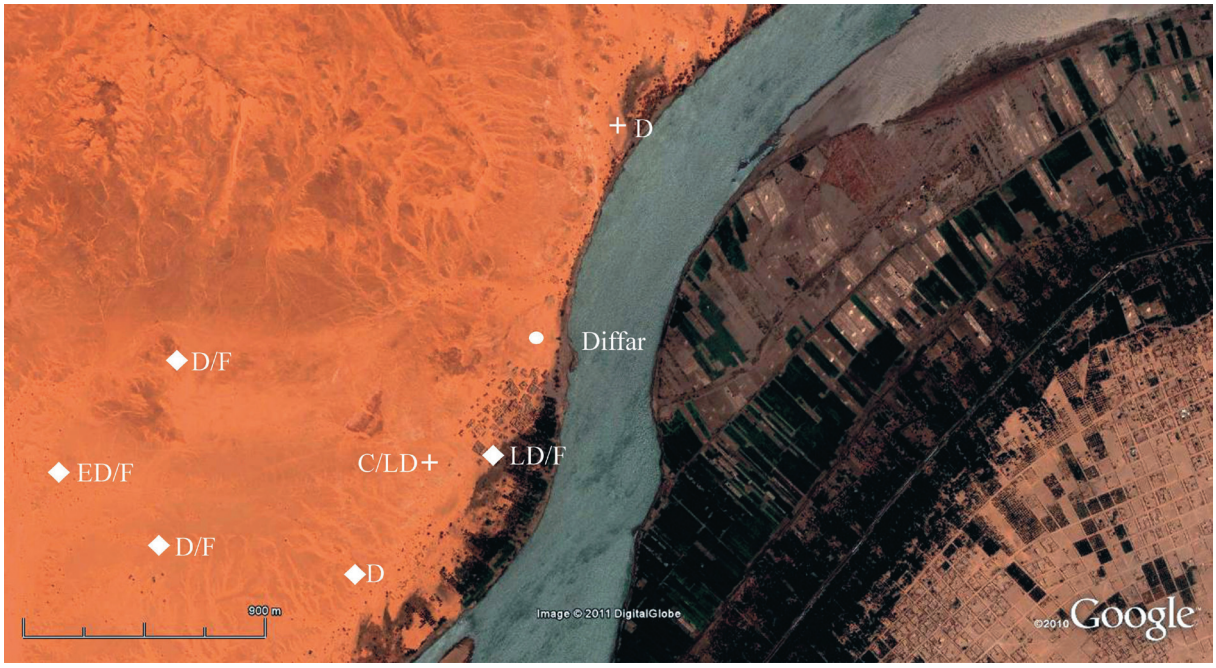
Diffar

QUOTED AS	Diffar (name on Sudan Survey Map 45-E) Ed-Diffar 11 (Żurawski 2003: 294) Kidjab or Kadjub (Żurawski 2003: 294) Defar (Rüppel 1829: 16) El Hau (Edwards 1989: 101) Ed-Dafār (Monneret de Villard 1935 I: 249) Tifar (Anderson 1996: 324)
COORDINATES	31°04′36.59″E 31°17′36.09″E
CHRONOLOGY	Phase I – Early Christian Period Phase II – Late Christian/Early Islamic Periods (Żurawski 2000: 221)



Orthophoto of the site taken in 2016 (courtesy of Bogdan Żurawski)

SHAPE	Irregular
DIMENSIONS	approx. 250x200 m
SURFACE AREA	approx. 32867.33 m²
THICKNESS OF WALLS	unknown
GATES	In one of the corner towers
TOWERS/BASTIONS	Round, with loopholes and rectangular in the corners, unknown number (Wiewióra 2007: 206).
OTHER ARCHITECTURAL FEATURES	Buildings can be seen in drawings made by Wilkinson in 1849, Linant de Bellefonds in 1821, Baron von Müller in 1847. (Wiewióra 2007: 207).
BUILDINGS INSIDE	Internal division into “upper castle” and “lower courtyard” (Wiewióra 2007: 206).

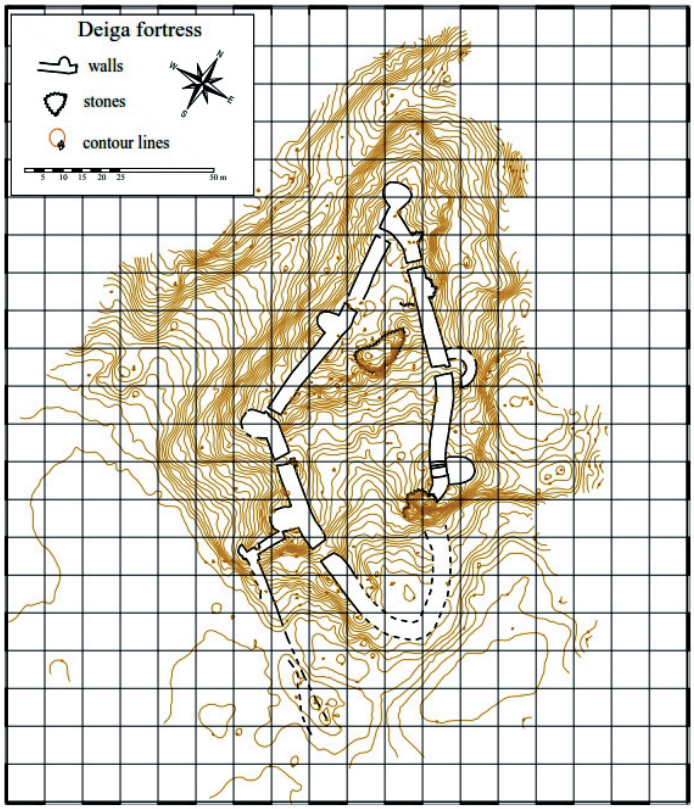


Satellite image of the vicinity of the site at Diffar (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Settlements marked by preserved concentrations of pottery sherds (Żurawski 2003: 292–298).
CEMETERIES WITHIN 1.5-km RADIUS	Two Christian cemeteries dated to the Classic Dongola/ Late Dongola Periods and generally to the Dongolan Period. In both cases, tombs made of fired bricks (Żurawski 2003: 293, 298).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	1.80 km²
AGRICULTURAL POTENTIAL (R=3 km)	5.7 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	7.8 km²

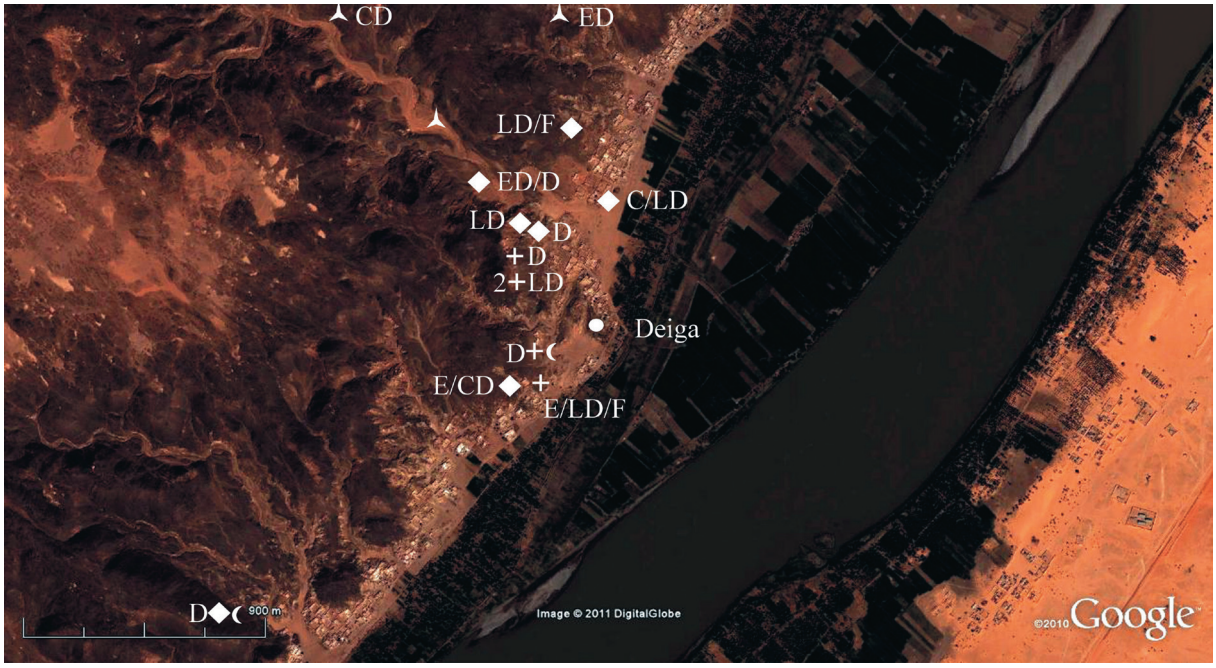
Deiga

QUOTED AS	Deiga (Shinnie 1958: 40) Ed-Deiga 1 (Żurawski 2003: 343) Gebel Dêga (Lepsius 1913: 251)
COORDINATES	18°10′44.40″N 31°36′18.95″E
CHRONOLOGY	Phase I – Early Christian Period – 7th/8th century (Żurawski 2003: 343) Subsequent phases of occupation begin in the Post-Classic Period and continue until the Fung Period/modern times. December 1820 – battle between Shaiqiya and Ismail Pasha's troops (Egyptian artillery shoots at the fortifications of Deiga).



Plan of the fortified site (courtesy of Bogdan Żurawski, drawing Roman Łopaciuk)

SHAPE	Irregular, adapted to the shape of the bedrock
DIMENSIONS	approx. 150x90 m
SURFACE AREA	approx. 2552.06 m²
THICKNESS OF WALLS	Up to approx. 5 m
GATES	Eight gates from 1 to 4 m wide, not reinforced additionally (Żurawski 2003: 345). In the late phase semi-ellipsoidal defences were added to one gate.
TOWERS/BASTIONS	Only the "upper castle" was fortified. At least six rounded towers were discovered.
OTHER ARCHITECTURAL FEATURES	The structure was rebuilt, however, the range of the work has not been researched well.
BUILDINGS INSIDE	Division into "upper castle"/"acropolis" and "courtyard" (Lepsius 1913: 251). Remains of a church and buildings interpreted by B. Żurawski as barracks were discovered in the "upper castle" (Żurawski 2003: 343).



Satellite image of the vicinity of the site at Deiga (archaeological sites within 1.5-km radius)

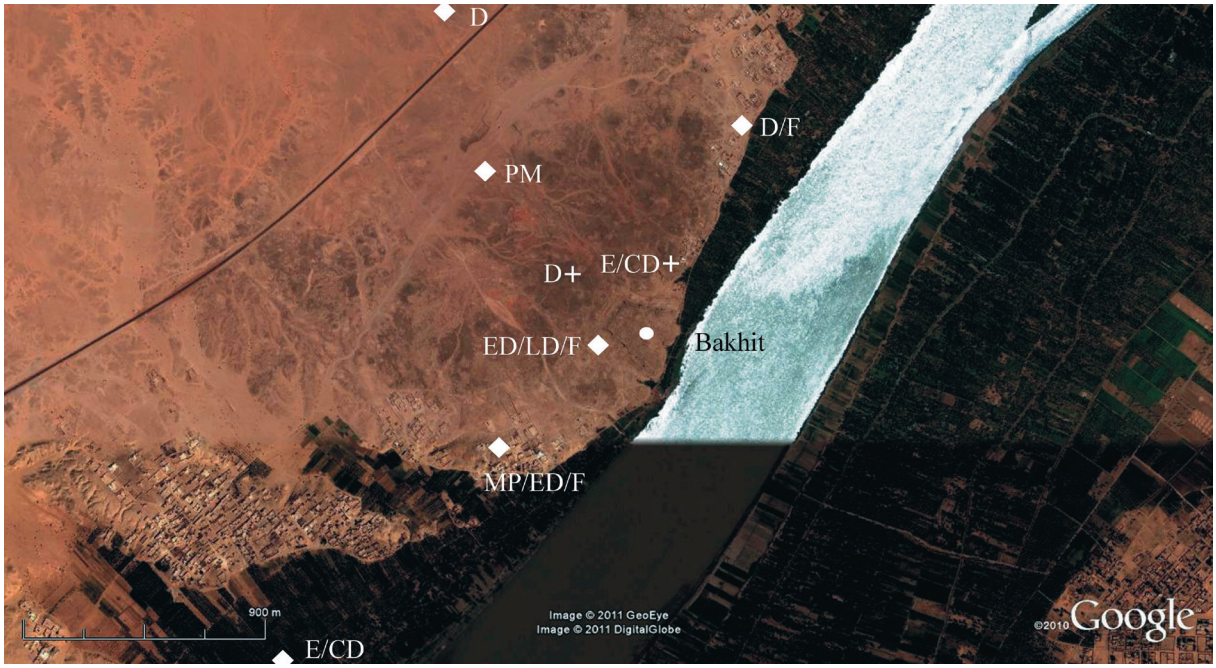
ASSOCIATED SETTLEMENTS	Remains of a church, generally dated to the Dongola Period – site Ed-Deiga 8. Nine sites identified on the basis of pottery sherds (Żurawski 2003: 343–354).
CEMETERIES WITHIN 1.5-km RADIUS	Four Christian cemeteries, at one of them – fired bricks in the construction of tombs (Żurawski 2003: 343–354).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Tomb with many skeletons was supposed be located nearby (Nicholson 1933: 85).
AGRICULTURAL POTENTIAL (R=1.5 km)	1.45 km²
AGRICULTURAL POTENTIAL (R=3 km)	3.37 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	6.13 km²

Bakhit

QUOTED AS	Bakhit (Żurawski 2003: 369) Helleila (Żurawski 2003: 369) Bakhit 11 (Żurawski 2003: 369) Bachit (Lepsius 1913: 252) Bakheit (Godlewski 2005: 387) Maqal (Donadoni 1997: 19)
COORDINATES	18°16′56.14″N 31°40′46.75″E
CHRONOLOGY	Phase I – Early Christian Period (Żurawski 2003: 373) Functioned until the Fung Period

Plan of the fortified site (courtesy of Bogdan Żurawski, drawing Roman Łopaciuk)

SHAPE	Trapezial, with some remains of the curtain wall on the river-side (Żurawski 2003: 370)
DIMENSIONS	approx. 240x220 m
SURFACE AREA	approx. 33430.73 m²
THICKNESS OF WALLS	3–5 m
GATES	At least nine gates throughout the period of occupation. They were frequently rebuilt (equipped with reinforcements) or walled up.
TOWERS/BASTIONS	13 towers/bastions built in the period of occupation. B. Żurawski (Żurawski 2003: 371) generally distinguished two types: with a room inside (towers) and solid (bastions).
OTHER ARCHITECTURAL FEATURES	Two dry moats in the north-east (Crawford 1951: 47)
BUILDINGS INSIDE	Church (Budge 1907 II: 301; Breasted 1908: 39; Żurawski 2001b: 378)



Satellite image of the vicinity of the site at Bakhit (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Preserved as concentrations of pottery sherds (Żurawski 2003: 367–375).
CEMETERIES WITHIN 1.5-km RADIUS	Two Christian cemeteries located to the north of the site. Fired bricks used in the construction of the tombs (Żurawski 2003: 368).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	1.20 km²
AGRICULTURAL POTENTIAL (R=3 km)	3.3 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	5.6 km²

Merowe Sheriq

QUOTED AS	Merowe Sheriq (Godlewski 2008: 463) Merawe Sheriq (Godlewski 2005: 387) MSh. 1 (Godlewski 2008: 465) El Markaz (Donadoni 1997: 19) Merowe East (Shinnie 1958: 167) Merowe (Lepsius 1913: 282)
COORDINATES	18°28′50.45″N 31°48′03.24″E
CHRONOLOGY	Phase I – Early Christian Period (Godlewski 2008: 467; Klimaszewska-Drabot 2008: 438) Intensively used by Shaiqiyya leaders and later Turks (Crawford 1951: 48).

Satellite image of the site (Google Earth)

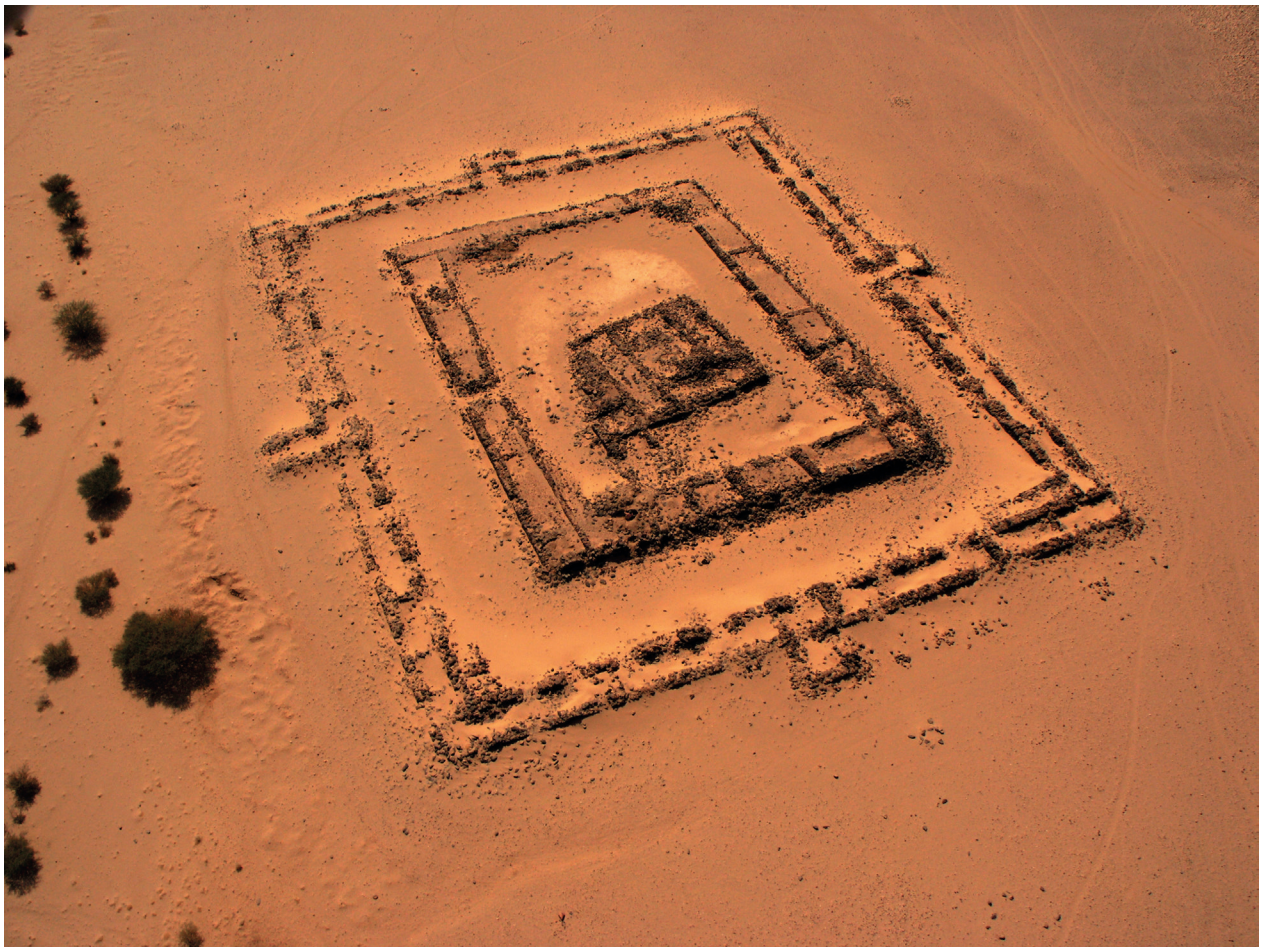
SHAPE	Rectangular
DIMENSIONS	133x105 m
SURFACE AREA	approx. 13425.55 m² (together with site MSh. 2 = 27138.05 m²)
THICKNESS OF WALLS	Up to 4.5 m
GATES	One gate in the south, strengthened with quadrilateral additional defences. Walled up in a later phase (Godlewski 2008: 466).
TOWERS/BASTIONS	Two round towers in corners (NW, SW) and one, rectangular, halfway between corners (Godlewski 2008: 466).
OTHER ARCHITECTURAL FEATURES	At least three phases of construction of the wall (Godlewski 2008: Fig. 4). Building material was reused, among others pieces with figural decoration and inscriptions (Davies 2014: 12).
BUILDINGS INSIDE	Buildings constructed in modern times

Satellite image of the vicinity of the site at Merowe Sheriq (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	MSh. 2 – fortified settlement which emerged next to the north curtain wall of MSh. 1, occupied from the 6th century AD. (Godlewski 2008: 467–468).
CEMETERIES WITHIN 1.5-km RADIUS	MSh. 4 – Christian cemetery, at least 17 tombs carved in rock with superimposed mud brick structures (Godlewski 2008: 468–469).
OTHER	Crosses carved on the wall of a well – site MSh. 3 (Godlewski 2008: 467–468; Davies 2014: 14–15).
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Zuma (14 km) Tanqasi (10.5 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	1.30 km²
AGRICULTURAL POTENTIAL (R=3 km)	5.7 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	7.8 km²

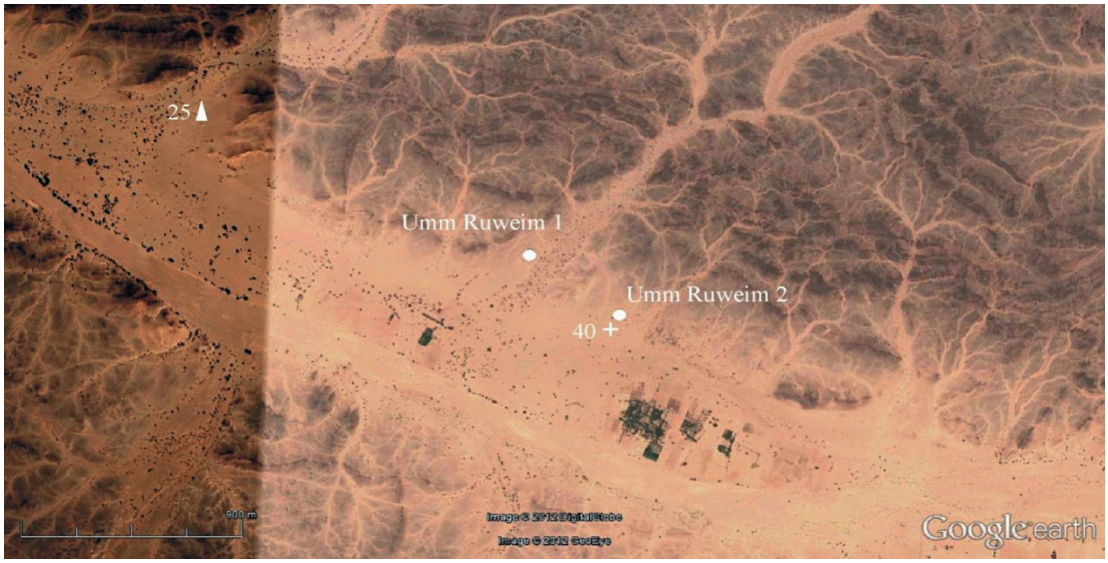
Umm Ruweim 1

QUOTED AS	Umm Ruweim 1 (Chittick 1955: 88)
COORDINATES	18°24′42.16″N 31°59′18.97″E
CHRONOLOGY	**Late Meroitic/Post-Meroitic Periods** (C14 dates – Eiger, Karberg 2011: 81)



Aerial photograph of the site (courtesy of Henryk Paner; taken by M. Szmit, A. Kamrowski, D. Ciesielski)

SHAPE	Rectangular
DIMENSIONS	approx. 73x62 m
SURFACE AREA	approx. 4234.67 m²
THICKNESS OF WALLS	Up to 1 m
GATES	Four additionally reinforced gates located in the centre of each curtain wall (Eiger, Karberg 2011). According to P. Lenoble (Lenoble 2006: Fig. 9), only one gate in SE curtain wall.
TOWERS/BASTIONS	–
OTHER ARCHITECTURAL FEATURES	Ramps in corners, which led up to a higher level, roofs of buildings (which constituted the parapet of the wall?).
BUILDINGS INSIDE	51 rooms altogether. Centrally located building with the axis different from the rest of the site. (Lohwasser 2010a: 90). "Altar" or "throne" situated in the middle of the largest room in the building (Eiger, Karberg 2011: 77).

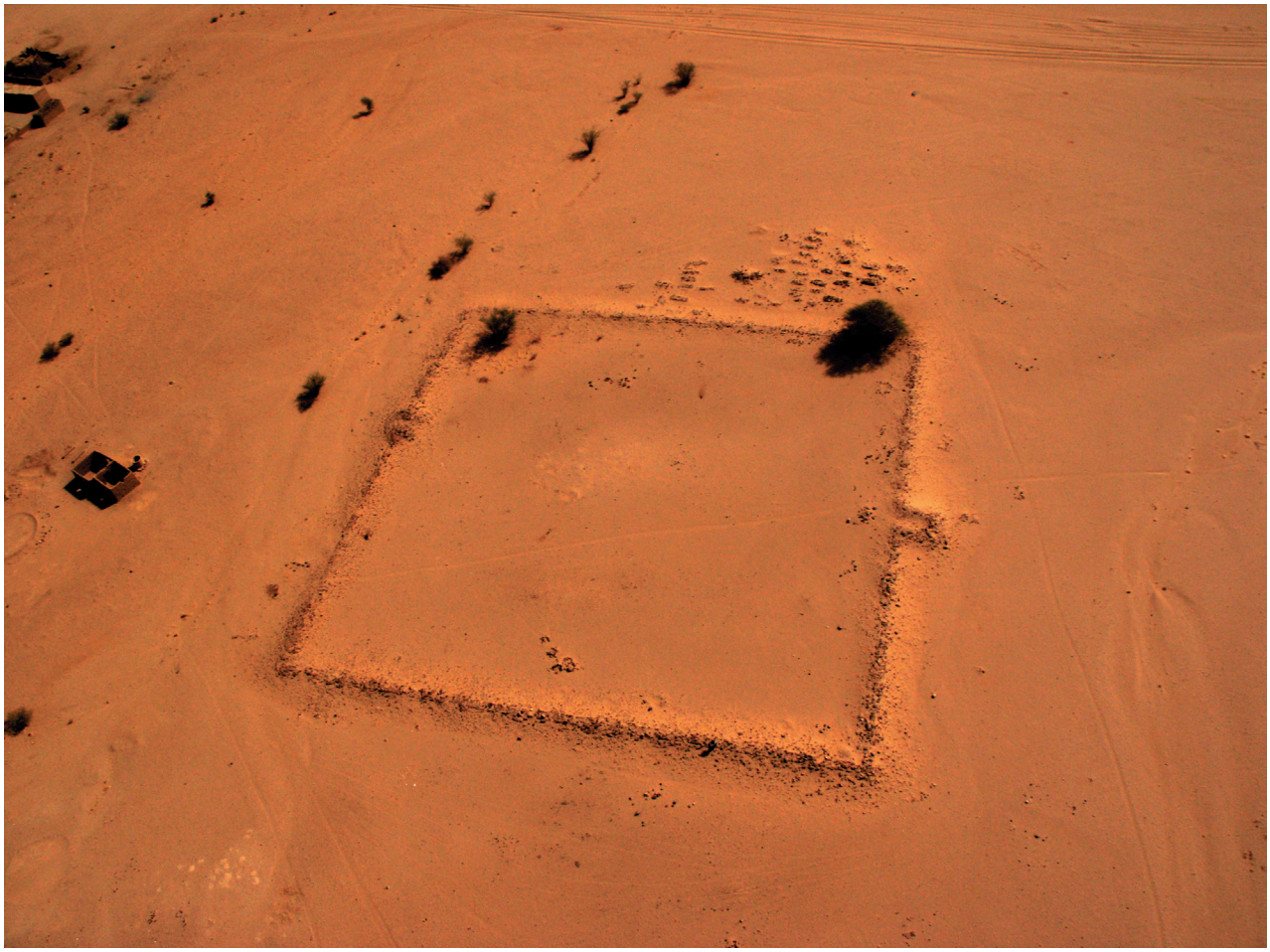


Satellite image of the vicinity of the site at Umm Ruweim 1 (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site Umm Ruweim 2 is located approx. 400 m to the east.
CEMETERIES WITHIN 1.5-km RADIUS	One barrow cemetery detected in the satellite image. One Christian cemetery (*box grave* type of tombs) near Umm Ruweim 2 (Paner, Pudło 2010: 125).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Zuma (27 km) Tanqasi (18 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.05 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.07 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	0.08 km²

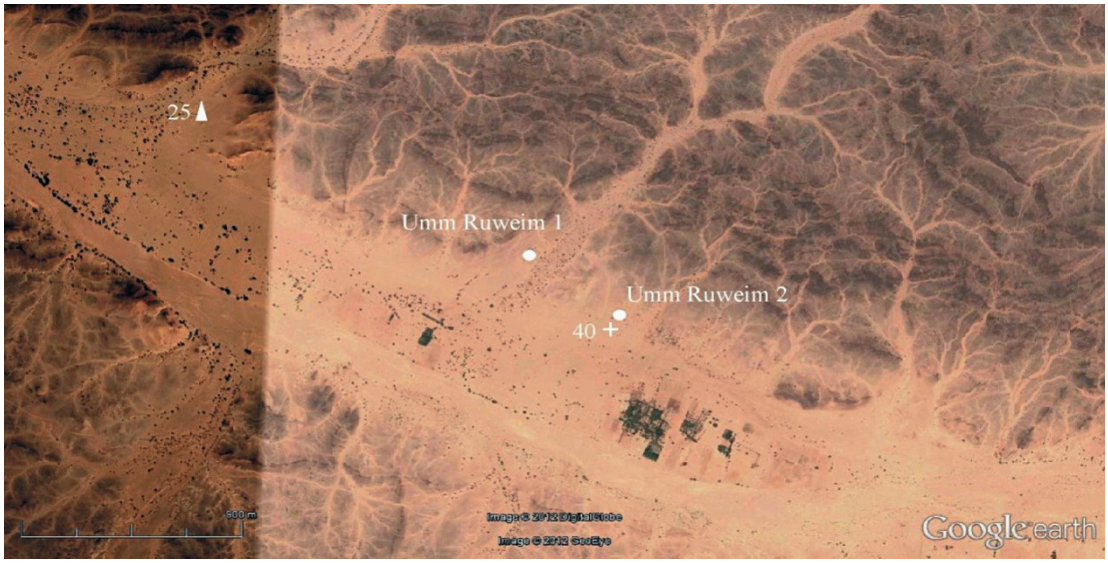
Umm Ruweim 2

QUOTED AS	Umm Ruweim 2 (Chittick 1953: 87)
COORDINATES	18°24′34.04″N 31°59′31.30″E
CHRONOLOGY	Early Christian Period (Chittick 1953: 87; Lohwasser 2010a: 91)



Aerial photograph of the site (courtesy of Henryk Paner; taken by M. Szmit, A. Kamrowski, D. Ciesielski)

SHAPE	Nearly rectangular
DIMENSIONS	approx. 68x65 m
SURFACE AREA	approx. 4153.34 m²
THICKNESS OF WALLS	approx. 2.5 m
GATES	One gate with rectangular defences in the west. Possible second gate visible in the opposite curtain.
TOWERS/BASTIONS	–
OTHER ARCHITECTURAL FEATURES	–
BUILDINGS INSIDE	–

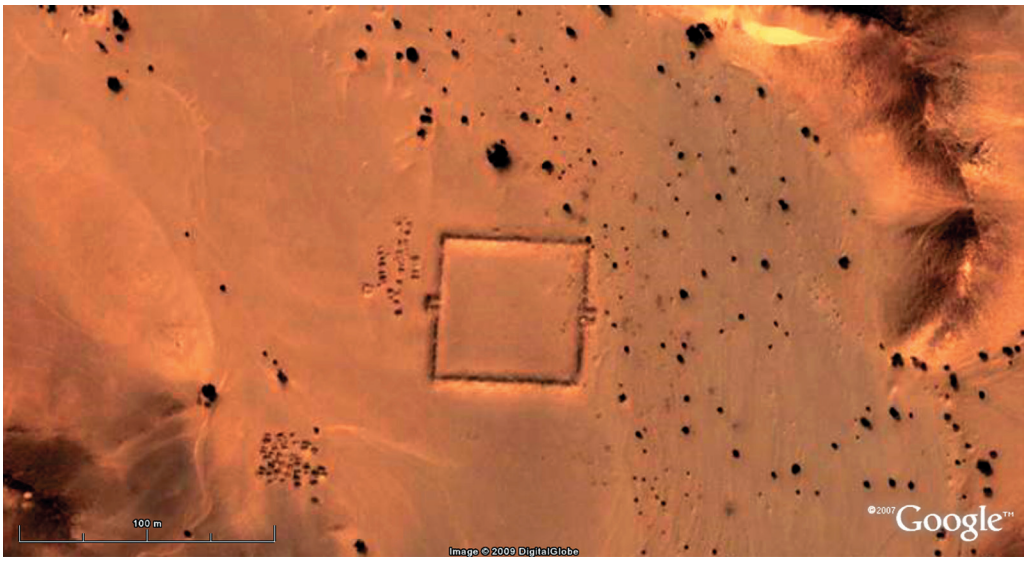


Satellite image of the vicinity of the site at Umm Ruweim 2 (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site Umm Ruweim 1 located approx. 400 m to the west.
CEMETERIES WITHIN 1.5-km RADIUS	One barrow cemetery detected in the satellite image. One Christian cemetery (*box grave* type) (Paner, Pudło 2010: 125).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.05 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.07 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	0.08 km²

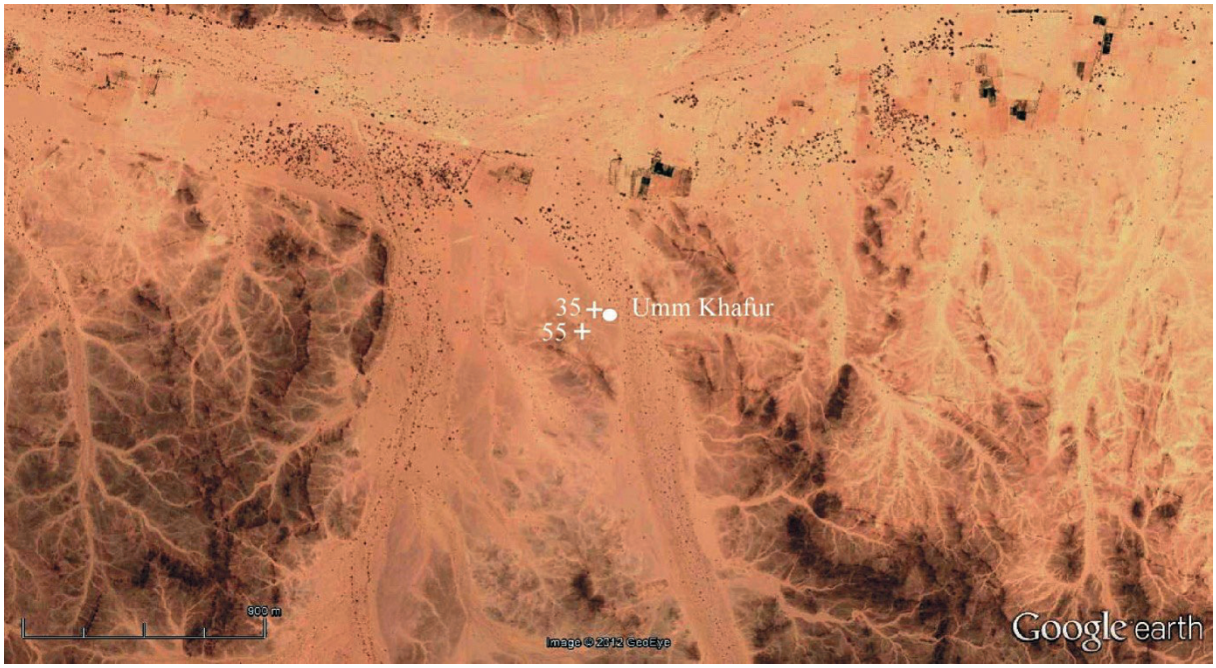
Umm Khafur

QUOTED AS	Umm Khafur (Chittick 1955: 90)
COORDINATES	18°23′25.99″N 32°02′04.21″E
CHRONOLOGY	Early Christian Period (Chittick 1955: 90)



Satellite image of the site (Google Earth)

SHAPE	Rectangular
DIMENSIONS	approx. 59x54 m
SURFACE AREA	approx. 2908.27 m²
THICKNESS OF WALLS	Up to 2 m
GATES	Two gates with rectangular defences, in the centre of E and W curtain walls.
TOWERS/BASTIONS	–
OTHER ARCHITECTURAL FEATURES	–
BUILDINGS INSIDE	–



Satellite image of the vicinity of the site at Umm Khafur (archaeological sites within 1.5-km radius)

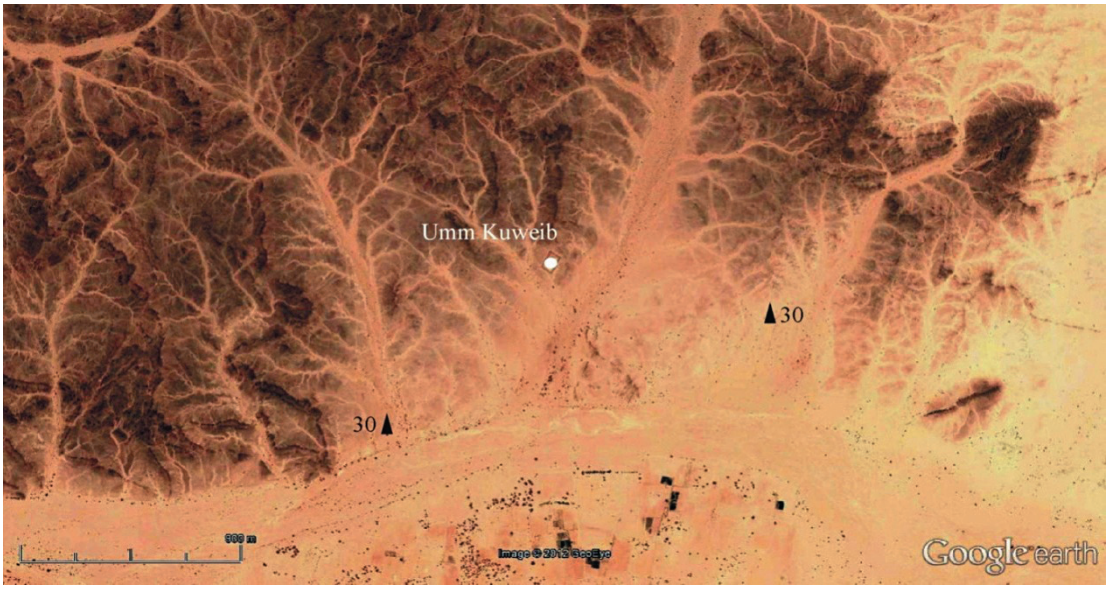
ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	Two cemeteries (*box grave* type) to the west and south-west of the site. One of them is mentioned by Chittick (Chittick 1955: 90).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.03 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.05 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	0.07 km²

Umm Kuweb

QUOTED AS	Umm Kuweb (Chittick 1955: 90) Umm Quweib (Paner, Pudło 2010: 125) Quweib (Eigner, Karberg 2012: 47) Al Badia (Negro, Castiglioni, Castiglioni 2006: 416)
COORDINATES	18°24′31.37″N 32°02′50.86″E
CHRONOLOGY	Late Meroitic/Post-Meroitic Periods (Chittick 1955: 90; Lenoble 2004c)

The fortified site (courtesy of Henryk Paner; taken by M. Szmit, A. Kamrowski, D. Ciesielski)

SHAPE	Rectangular
DIMENSIONS	approx. 78x51 m
SURFACE AREA	approx. 3479.69 m²
THICKNESS OF WALLS	approx. 1.4–1.8 m
GATES	One in the south-east (Lenoble 2004c: 134).
TOWERS/BASTIONS	–
OTHER ARCHITECTURAL FEATURES	–
BUILDINGS INSIDE	At least 14 rooms built along the external wall (Paner, Pudło 2010: 125). Perhaps their roofs served as parapets of the enclosure wall.



Satellite image of the vicinity of the site at Umm Kuweib (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	Two barrow cemeteries. One to the south-west of the fortifications (barrows in concentration) and the other to the east (barrows at long distances from each other).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Zuma (33 km) Tanqasi (25 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.03 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.05 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	0.07 km²

Suegi N

QUOTED AS	Jebel Kalidob I (Anderson 1996: 345) Suweiqi Shark (Donadoni 1997: 19) Dar el Arab (Anderson 1996: 345) Jebel Kalidob (Tiherington 1939: 269) Es-Suegi (Wiewióra 2007: 209) Soueyqat (Crawford 1951: 49) Jebel Sueigat (Crawford 1951: 49) Suweiqi (Welsby 2002: 135) "Fort" – map 45-F Merowe
COORDINATES	18°49′44.38″N 32°03′43.13″E
CHRONOLOGY	Post-Meroitic Period (C14 date – Wiewióra 2007: 210)

Aerial photograph of the site (courtesy of Henryk Paner; taken by M. Szmit, A. Kamrowski, D. Ciesielski)

SHAPE	Quadrilateral, irregular
DIMENSIONS	Curtain wall E – approx. 140 m, curtain wall S – approx. 123 m, curtain wall W – approx. 130 m, N curtain wall N – approx. 100.5 m (Wiewióra 2007: 209–210).
SURFACE AREA	approx. 11097.69 m²
THICKNESS OF WALLS	Up to 3.2 m (Wiewióra 2005a: 173)
GATES	10 gates spaced irregularly along the whole length of walls. They are 2.5 m wide at most (Wiewióra 2005a: 174–175). One located in S corner (facing the river).
TOWERS/BASTIONS	Three, rounded, in corners N, E and W (Wiewióra 2007: 209) and three spaced irregularly along curtain walls NE, NW, and SW (Wiewióra 2005a: Fig. 1).
OTHER ARCHITECTURAL FEATURES	Different phases of construction can be distinguished on the basis of wall joints (Wiewióra 2005a: 170–171).

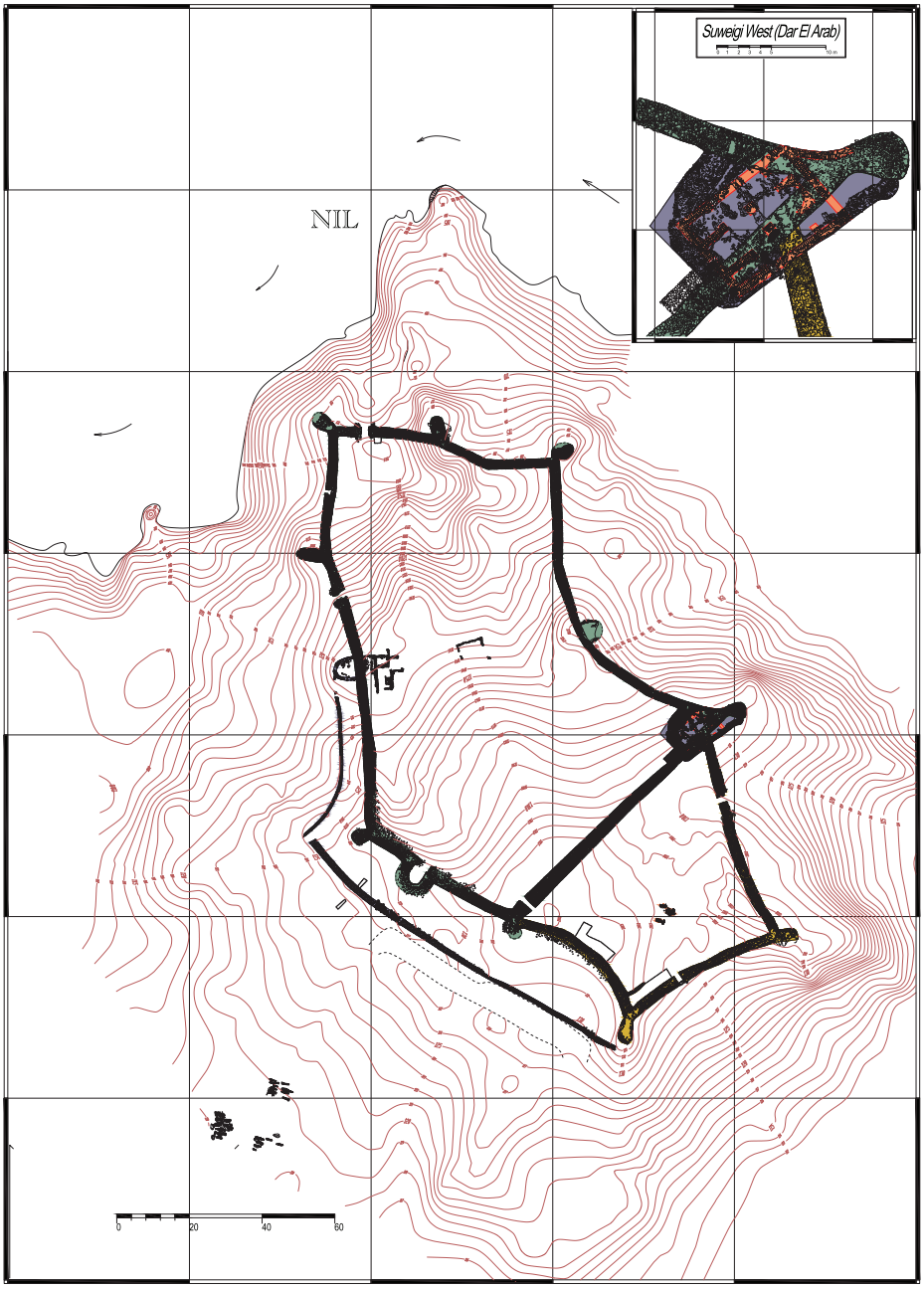
BUILDINGS INSIDE	Remains of a church on a rocky elevation (Wiewióra 2007: 210; plan in Donadoni 1997: Fig. 14). Crosses carved near the gate, facing the river (Donadoni 1997: 19)

Satellite image of the vicinity of the site at Suegi N (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site Suegi S, on the opposite bank of the river.
CEMETERIES WITHIN 1.5-km RADIUS	Two Christian cemeteries. One inside fortifications of Suegi S, the other to the west of Suegi S (Żurawski 2007: 326–328).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Zuma (approx. 61 km) Tanqasi (approx. 55 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.83 km²
AGRICULTURAL POTENTIAL (R=3 km)	2.1 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	5.1 km²

Suegi S

QUOTED AS	Suweiqi Gharb (Donadoni 1997: 19) Dar el-Arab (Żurawski 2007: 325) Swueqi el-Gharb (Żurawski 2007: 325) Jebel Kalidob II (Anderson 1996: 345) El Sweegi (Anderson 1996: 345) Suweiqi (Welsby 2003: 1) Kalidob (Wiewióra 2007: 210; Wiewióra 2010: 111) Suegi West (Paner, Borcowski 2005b: 106)
COORDINATES	18°49′30.78″N 32°03′45.54″E
CHRONOLOGY	Post-Meroitic Period (C14 date – Wiewióra 2010: 116) Two more building phases (Wiewióra 2007: 210–212)



Plan of the fortified site (courtesy of Bogdan Żurawski, drawing Roman Łopaciuk)

SHAPE	Irregular
DIMENSIONS	courtyard N – approx. 70x87x166x100 m courtyard S – approx. 60,5x47x56 m (Wiewióra 2010: 115)
SURFACE AREA	phase I – approx. 7943.02 m² phase II – approx. 10314.15 m²
THICKNESS OF WALLS	2.45–3.80 m (Wiewióra 2010: 113)
GATES	At least five gates (Wiewióra 2010: 113)
TOWERS/BASTIONS	12 – different types, built in different phases of occupation.
OTHER ARCHITECTURAL FEATURES	Parapet wall *proteichisma* and dry moat in the west were built in phase II (Wiewióra 2010: 116).
BUILDINGS INSIDE	Phase I – buildings next to the west curtain wall (Wiewióra 2007: 212) phase II – Christian tombs in the courtyard S (Żurawski 2007: 326)

Satellite image of the vicinity of the site at Suegi S (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site Suegi N, on the opposite bank of the river.
CEMETERIES WITHIN 1.5-km RADIUS	Two Christian cemeteries. One inside fortifications of Suegi S, the other to the west of Suegi S (Żurawski 2007: 326–328).
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Zuma (approx. 61 km) Tanqasi (approx. 55 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.83 km²
AGRICULTURAL POTENTIAL (R=3 km)	2.1 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	5.1 km²

Haraz

QUOTED AS	Haraz (Paner, Borcowski 2005b: 108)
COORDINATES	19°01′56.16″N 32°26′30.66″E
CHRONOLOGY	Early Christian Period (Paner 2010: 163)

Aerial photograph of the site (courtesy of Henryk Paner; taken by M. Szmit, A. Kamrowski, D. Ciesielski)

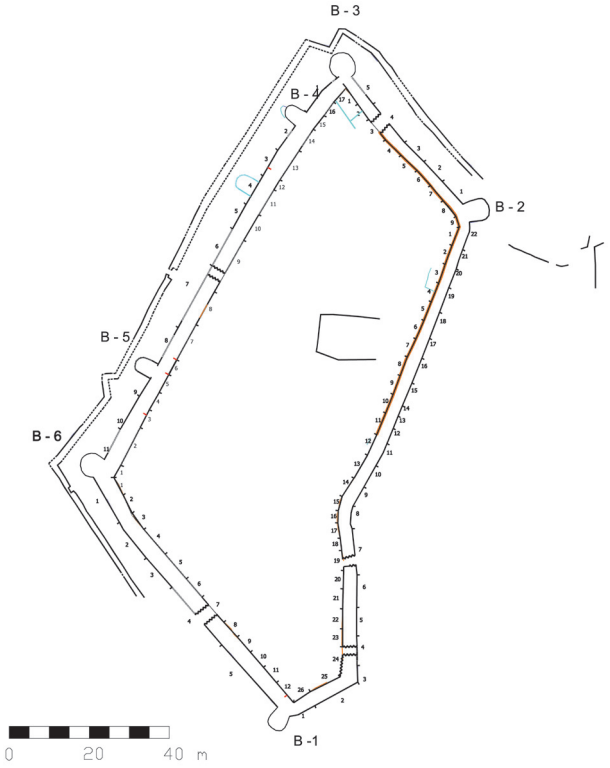
SHAPE	Trapezial
DIMENSIONS	wall SW – approx. 34 m, wall NW – approx. 19 m, wall NE – 18 m, wall SE – approx. 29 m
SURFACE AREA	approx. 465.94 m²
THICKNESS OF WALLS	On the river-side – approx. 1.6 m; other – 2.48–2.6 m
GATES	Two small entrances. One in wall NW, originally probably topped with an arch of approx. 1.4 m of width, later walled up. The entrance was additionally strengthened with *proteichismai*. The other entrance, in wall SE, is in a poorer state of preservation (width – 1 m). According to H. Paner (Paner 2010: 158), it might have been strengthened with an additional wall, whose remains could be seen along bastion B1.
TOWERS/BASTIONS	Four bastions in corners: B1 – south bastion; B2 – west bastion; B3 – north bastion; B4 – east bastion. Bastion B3 is in the best state of preservation (Paner 2010).
OTHER ARCHITECTURAL FEATURES	*proteichisma*, which can be seen from the land-side, is preserved in three sections. Section I – at the level of bastions B3 and B4 – length – approx. 35 m and width – approx. 1.3–1.5 m, preserved to a height of 0.5–1.2 m. Section II – approx. 6.3 m long, approx. 1.4 m wide, preserved to a height of approx. 1.2–1.7 m – located opposite the gate in wall NW. Section III – 9.3 m long, 1.3 m wide and 1.2–1.4 m high. The distance between *proteichism* and walls is approx. 8.5 m (Paner 2010).
BUILDINGS INSIDE	–

Satellite image of the vicinity of the site at Haraz (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	Post-Meroitic/Christian cemetery was discovered to the east, on the island of Us (HUNE US1) (Näser 2007). Small barrow cemetery located to the west of the site (Google Earth).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.43 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.93 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	1.63 km²

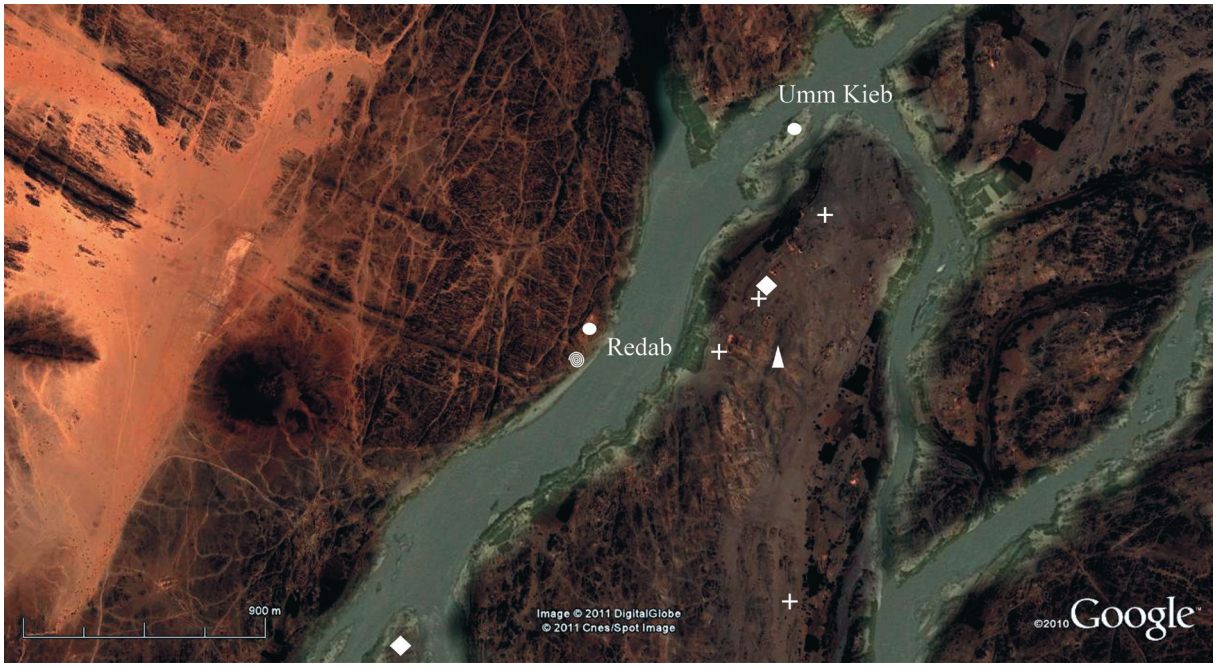
Redab

QUOTED AS	Redab (Paner 2005) HP560 (Paner, Borcowski 2005: 225)
COORDINATES	19°05′48.30″N 32°29′48.76″E
CHRONOLOGY	Early Christian Period (Paner, Borcowski 2005: 225)



Plan of the fortified site (Paner 2005: 182, Fig. 3)

SHAPE	Irregular
DIMENSIONS	wall NW – approx. 117 m, wall SW – approx. 78 m, wall NE – approx. 48 m, wall SE – approx. 140 m.
SURFACE AREA	approx. 6595.57 m²
THICKNESS OF WALLS	approx. 2.5 m (Paner, Borcowski 2005: 225)
GATES	Remains of gates at two points, however, gaps in the wall might indicate more entrances (Paner 2005).
TOWERS/BASTIONS	In four corners and along wall NW
OTHER ARCHITECTURAL FEATURES	Wall joints visible in both faces. Additional wall erected on the land-side (*proteichisma*), with an entrance in the centre of wall NW and at least one bastion (Paner 2005: 182).
BUILDINGS INSIDE	Rectangular structure (15x11.5 m) aligned with E-W axis, probably remains of a church. Remains of mud brick buildings can be seen along the inner faces of the wall (Paner 2005: 197).



Satellite image of the vicinity of the site at Redab (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Additional fortifications located directly outside the walls in the south-east (*the SE enclosure*), which cover a flat area on the river bank, with an entrance from the north-east (Paner 2005: 197). Many remains of Post-Meroitic and Christian settlement activity were discovered on the island of Sur, located opposite the fortifications. Christian settlement with church SUR022.A is situated on the eastern shore of the island. Small irregular fortified site was discovered on a small island of Umm Kieb – chronology uncertain. Christian settlement was discovered in the northern part of Us – US063 (Näser 2007).
CEMETERIES WITHIN 1.5-km RADIUS	At least four Christian cemeteries and one barrow cemetery on the island of Us (Näser 2007).
OTHER	Representations of cattle and camels on rocks located to the south-west of the site (Paner, Borcowski 2005: 225).
AGRICULTURAL POTENTIAL (R=1.5 km)	0.71 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.94 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	3.51 km²

El-Kab

QUOTED AS	El-Kab (Cailliaud 1826: III, 191–192) HP555 (Paner, Borcowski 2005: 224) El-Kab site 6 (Crawford 1953a: 10–14) El-Kab I (Edwards 1989: 87) El Cab (Shinnie 1958: 60) "Ancient Fort" – Map of Abu Hamed
COORDINATES	19°18′10.38″N 32°43′46.64″E
CHRONOLOGY	Early Christian Period (Paner 2005: 199) Used as a storage place for crops and shelter for livestock, protection from Shaiqiyya raids (Cailliaud 1826: III, 191–192).

Aerial photograph of the site (courtesy of Henryk Paner; taken by A. Kamrowski)

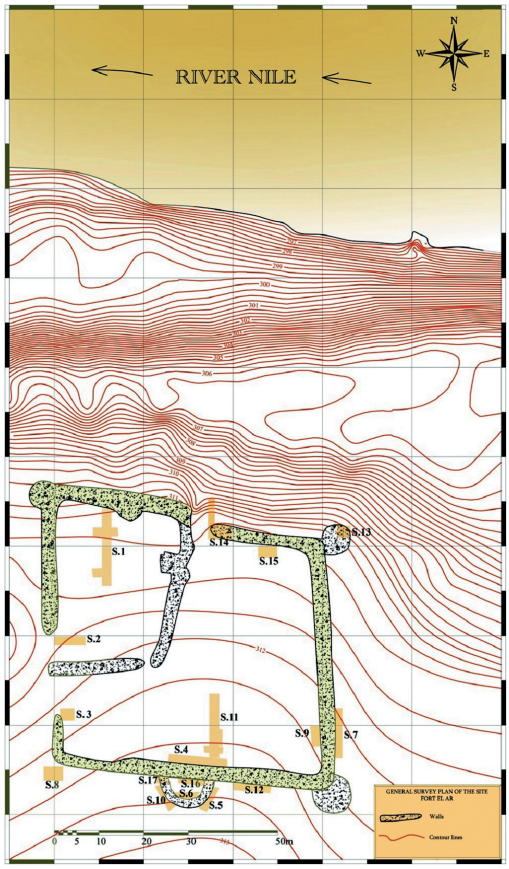
SHAPE	Irregular
DIMENSIONS	100x80 m (Sidebotham, Thomas, Harrell 2010: 77)
SURFACE AREA	approx. 4180 m²
THICKNESS OF WALLS	Up to 3.8 m (Sidebotham, Thomas, Harrell 2010: 77)
GATES	Five or six gates (Sidebotham, Thomas, Harrell 2010: 77)
TOWERS/BASTIONS	Six, round, of different sizes, spaced irregularly
OTHER ARCHITECTURAL FEATURES	Wall discontinuity was detected in three places, which might imply phases of rebuilding (see plan by Crawford).
BUILDINGS INSIDE	Preserved mainly as accumulations of mud or fired bricks. Crawford (1953a: 12) found the "best" pottery in the northern part of the enclosure. He also mentions relics of round buildings with remains of red plaster (Crawford 1953a: 13).

Satellite image of the vicinity of the site at El-Kab (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Es-Sadda 8 – remains of a dam on the *wadi* dated to the Christian Period (Chłodnicki, Żurawski 2005: 371) Hagar el-Beida – fortifications dated to the Christian Period (Chłodnicki, Żurawski 2005: 371) El-Kab site 7 – fortified site dated to the Islamic Period (Crawford 1953a: 13–14)
CEMETERIES WITHIN 1.5-km RADIUS	Jackson (1926: 26) mentions a barrow cemetery in the vicinity, however, its location is currently unknown.
OTHER	Crawford mentions examples of rock art, representations of cattle and ibex (Crawford 1953a: 14).
AGRICULTURAL POTENTIAL (R=1.5 km)	0.57 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.54 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	2.32 km²

El-Ar

QUOTED AS	El-Ar (Żurawski 2010a: 374) El-Hella (Żurawski 2010b: 202)
COORDINATES	19°27′57.14″N 32°56′15.71″E
CHRONOLOGY	Phase I – second half of the 5th century (Żurawski 2010b: 202) Phase II – 6th-7th century (Żurawski 2010b: 203)



Plan of the fortified site (curtesy of Bogdan Żurawski)

SHAPE	Rhomboid
DIMENSIONS	approx. 65x65 m
SURFACE AREA	approx. 2900 m²
THICKNESS OF WALLS	2.7–3.0 m
GATES	At least one on the river-side (northern flank).
TOWERS/BASTIONS	In three corners and in the middle of the south wall. They are architecturally associated with phase II. No remains of tower/bastions from phase I have been discovered (Żurawski 2010b: 204).
OTHER ARCHITECTURAL FEATURES	In phase I, faces built in *opus spicatum* technique (vertical masonry). Phase II – internal division and new faces emerge (Żurawski 2010b: 204).
BUILDINGS INSIDE	According to local oral traditions in 1960s there was still a large building inside the fortifications (Żurawski 2010b: 204).

Satellite image of the vicinity of the site at El-Ar (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	Christian: approx. 100 graves – site El-Ar 26 (Chłodnicki *et al.* 2010: 392); approx. 1000 graves – site El-Ar 4 (Żurawski 2010b: 200–201). Barrow: 2 barrows – HP 552 (Paner, Borcowski 2005: 223); 20 barrows – HP 550 (Paner, Borcowski 2005: 223); At least 12 barrows At least 30 barrows At least 27 barrows 12 barrows – SH 20 (Chłodnicki *et al.* 2007: 347)
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Hagar El-Beida 1 (24 km) Khizeinah (45 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.85 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.93 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	3.23 km²

Ras el-Gezira

QUOTED AS	Ras el-Gezira (Jackson 1926: 31) MOG048 (Näser 2008) Ras al Jazira (Becker 2008) Ras el Gezira I (Edwards 1989: 90)
COORDINATES	19°31′38.10″N 33°06′23.05″E
CHRONOLOGY	Early Christian Period (Näser 2008)

Satellite image of the site (Google Earth)

SHAPE	Trapezial
DIMENSIONS	curtain wall N – approx. 35 m curtain wall E – approx. 48 m
SURFACE AREA	approx. 1850 m²
THICKNESS OF WALLS	Up to 6 m
GATES	At least five entrances led inside (E1-E5), one of them directly to tower B4. Gate E3 is at least 2 m wide (Becker 2008).
TOWERS/BASTIONS	Remains of at least 6 towers/bastions. The best-preserved is located in the north-east corner (marked as B3). B2 is the biggest (Becker 2008).
OTHER ARCHITECTURAL FEATURES	Stone faces and mud brick core 36x18x6 cm – according to Abbas Sid Ahmed (Abbas Sid Ahmed 1971: 5). Abbas Sid Ahmed mentions wooden beams in the construction of tower NE. Remains of other walls are situated near B2 and B3 as well as B3 and B4, they enclosed the area directly in front of the outer face of the fortifications; further on, there were *Chevaux de frise* – distributed more densely and stones were bigger in comparison with El Usheir (Crawford 1953a: Fig. 4). Remains of a furnace for metal smelting was discovered a few metres from B1, it contained some bronze and iron (Becker 2008).

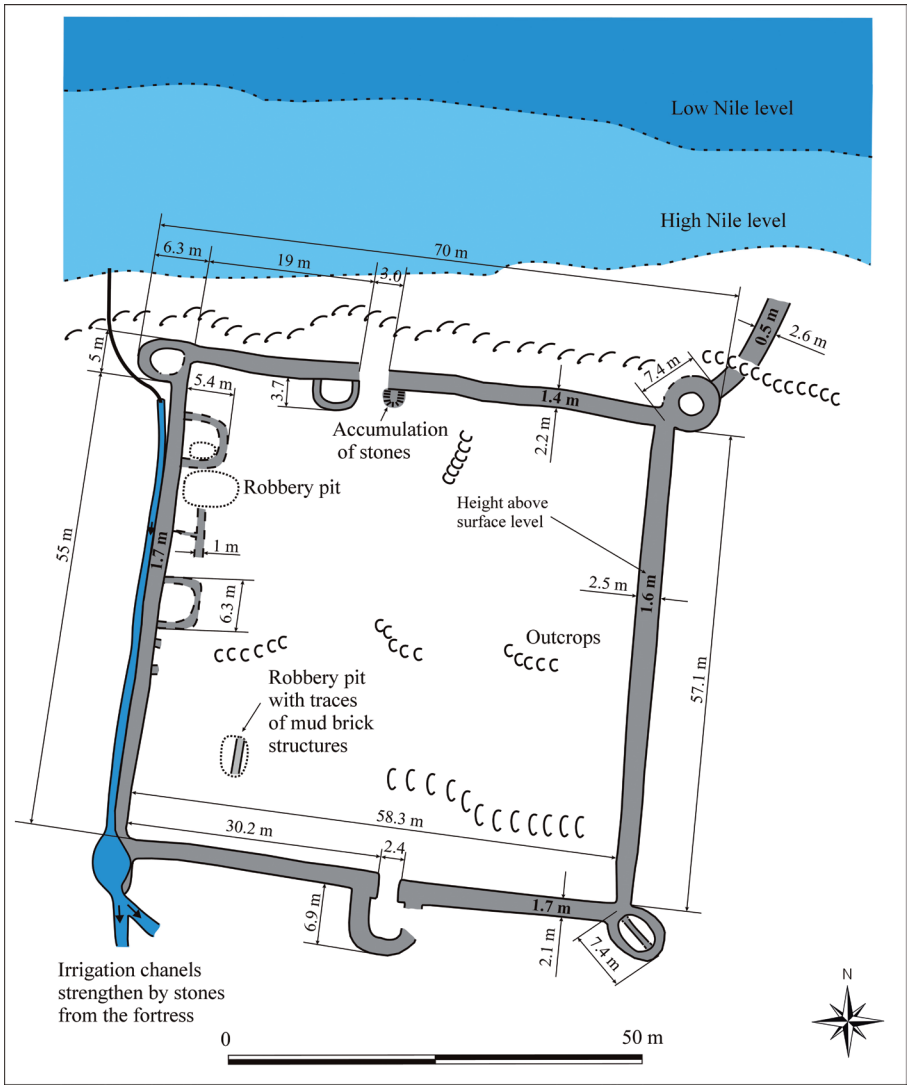
BUILDINGS INSIDE	Remains of fired brick buildings inside and many badly damaged walls (Abbas Sid Ahmed 1971: 6) Identified as church by HUNE, dated to 800–1250 on the basis of architectural analogies (Billig 2008: 72–73).

Satellite image of the vicinity of the site at Ras El-Gezira (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	A few well-built houses located outside the walls, along the bank (Abbas Sid Ahmed 1971: 7). Their remains are not visible on the surface today. Chronology unknown. Additional stone walls between bastions (Abbas Sid Ahmed 1971: 5–6) might be remains of the second line of walls, like in the case of El-Usheir. Abbas Sid Ahmed (Abbas Sid Ahmed 1971: 6–7) mentions presence of a furnace for metal smelting between the fortifications and the cemetery.
CEMETERIES WITHIN 1.5-km RADIUS	Cemetery – 30 rectangular Christian graves of *box grave* type (Abbas Sid Ahmed 1971: 7). At least 5 barrow cemeteries, two which also include *box graves* (Näser 2008).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	1.32 km²
AGRICULTURAL POTENTIAL (R=3 km)	2.30 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	3.35 km²

Mikeisir

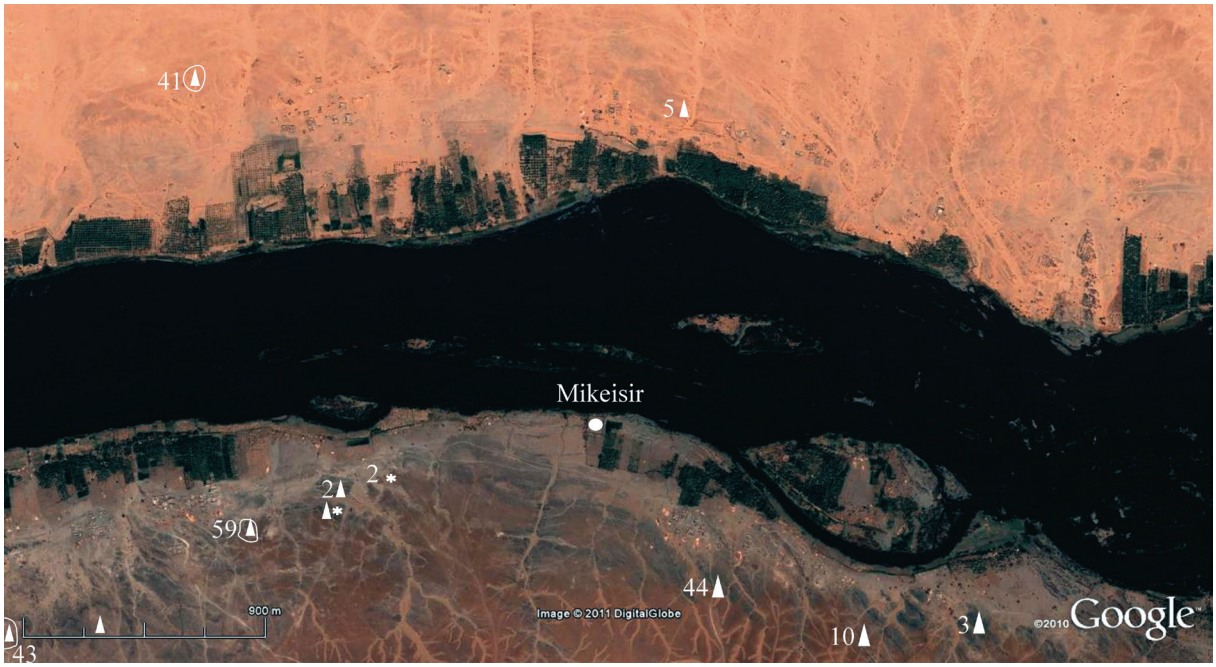
QUOTED AS	Mikeisir (Abbas Sid Ahmed 1971: 9) MOG047 (Näser 2008)
COORDINATES	19°32′13.55″N 33°09′12.80″E
CHRONOLOGY	Late Meroitic/Post-Meroitic Periods based on small finds and Post-Meroitic Period based on radiocarbon dates from occupation layers (Rees, Lahitte, Näser 2015: 192–193)



Plan of the fortified site (drawing Mariusz Drzewiecki)

SHAPE	Rectangular
DIMENSIONS	approx. 55x58 m
SURFACE AREA	approx. 3329.76 m²
THICKNESS OF WALLS	1.4–1.7 m
GATES	Two: on the river-side and the opposite one with semi-circular additional defences
TOWERS/BASTIONS	Round, in corners

OTHER ARCHITECTURAL FEATURES	Additional wall, unbonded, between the fortifications and the river bank (harbour?).
BUILDINGS INSIDE	A series of buildings added to the inner face along the wall, built of broken stone. Similar structures next to gate N. Robbery trench (SW part) contained remains of mud brick walls. MIAMi team excavations revealed a series of buildings added to the inner face along the wall, built of mud brick (Rees, Lahitte, Näser 2015: 185–187).

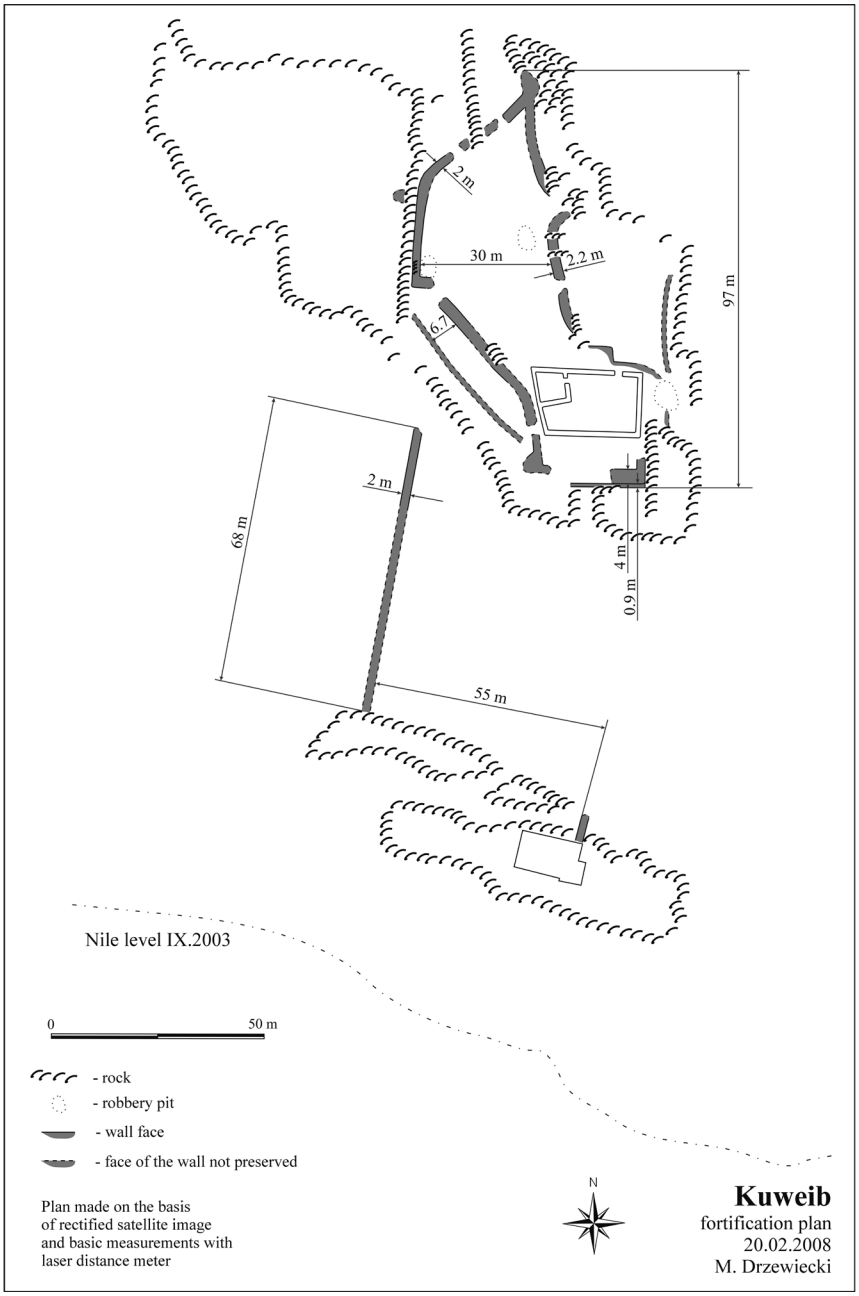


Satellite image of the vicinity of the site at Mikeisir (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	10 barrow cemeteries 2 cemeteries with flat graves (results of research of the *Fortresses of Sudan* project and analysis of satellite images)
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Khizeinah (approx. 22 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.39 km²
AGRICULTURAL POTENTIAL (R=3 km)	0.87 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	1.58 km²

Kuweib

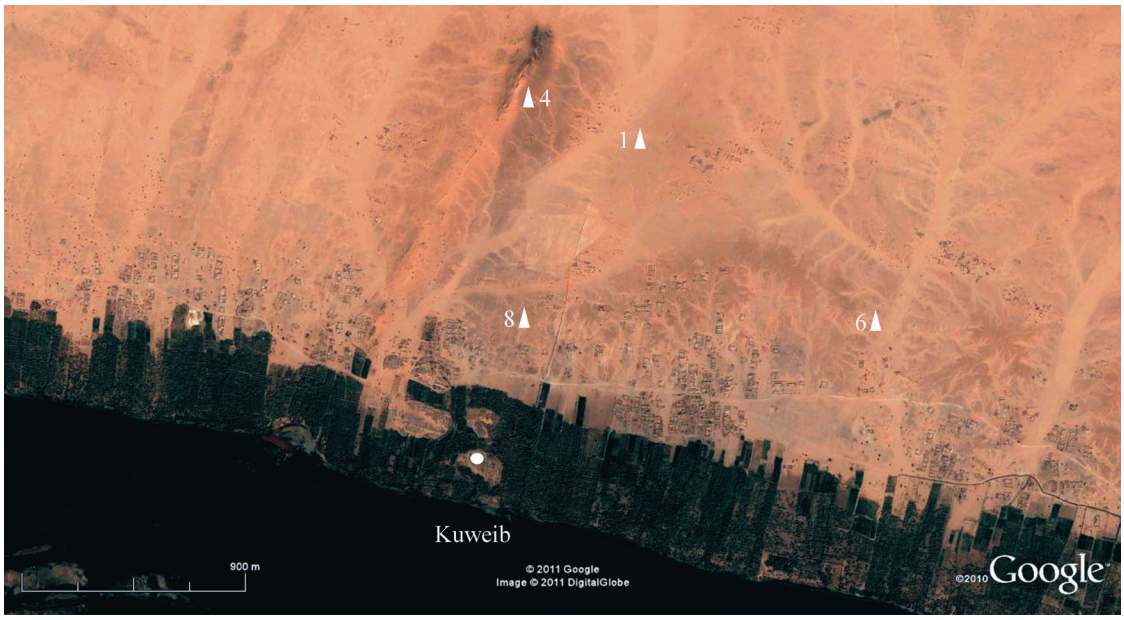
QUOTED AS	Kuweib (Crawford 1951: 51) Carmel (Cailliaud 1926: II, 187–189) El-Kueb, HP540 (Paner, Borcowski 2005: 221)
COORDINATES	19°32′00.59″N 33°13′47.33″E
CHRONOLOGY	Early Christian Period (Edwards 1989: 89)



Plan of the fortified site (drawing Mariusz Drzewiecki)

SHAPE	Irregular, divided into two parts: one on the hill and the other in a palm grove (Crawford 1953a: 7–11).
DIMENSIONS	See Plan of the fortified site

SURFACE AREA	approx. 6836.4 m²
THICKNESS OF WALLS	2–4.9 m
GATES	Crawford (1953a: 9) mentions two gates – N and S. The state of preservation made it possible to identify one gate on the basis of architectural details (curtain wall E). There are many gaps in the wall.
TOWERS/BASTIONS	Three irregular bastions detected, located in the elevated part on the hill, one in the north, two in the south.
OTHER ARCHITECTURAL FEATURES	Clever use of bedrock to reinforce the structure of fortifications, bastion N is based on a rock mound, outer face of curtain wall W is constituted by a long rock.
BUILDINGS INSIDE	Surface inside is irregular, the only level area on the hill is now occupied by a modern building. Many fragments of fired bricks can be seen in the central part of the site on the hill.

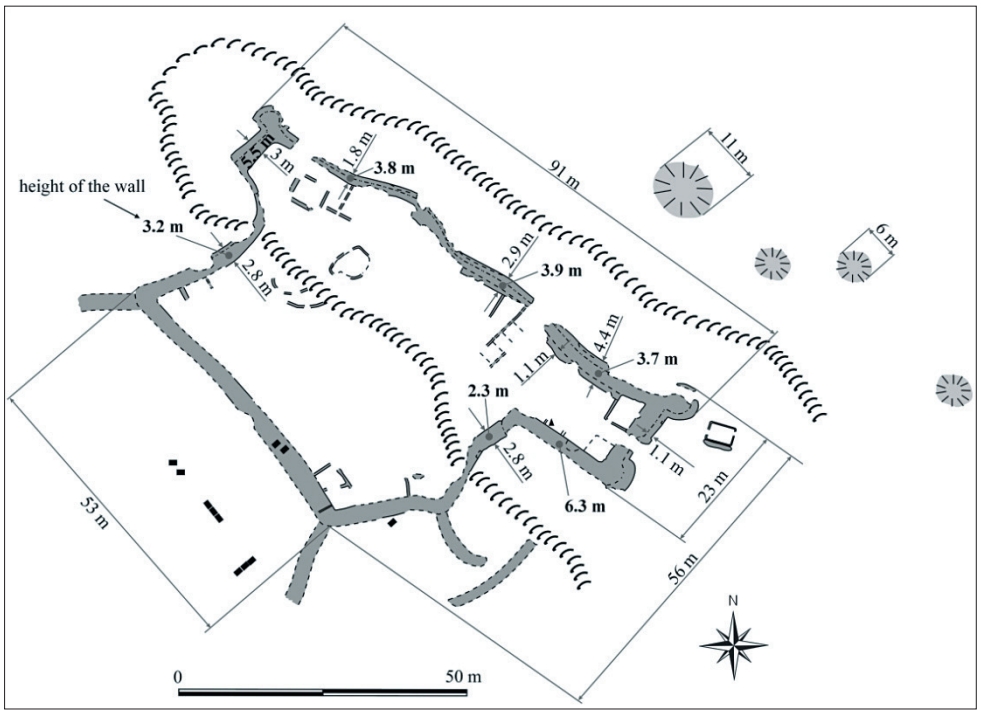


Satellite image of the vicinity of the site at Kuweib (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Crawford (1953a: 9) mentions the presence of an kiln to the west of the southern hill.
CEMETERIES WITHIN 1.5-km RADIUS	Crawford (1953a: 9) indicates a Christian cemetery to NE of the site. It has most probably been destroyed by the palm grove. Four small barrow cemeteries discovered in the course of research of the Fortresses of Sudan project.
OTHER	HP541 – rock carvings, five representations of long-horned cattle (Paner, Borcowski 2005: 221).
AGRICULTURAL POTENTIAL (R=1.5 km)	In the 1950s the area was mainly a desert with a narrow strip of farming lands directly next to the river bank (Crawford 1951a: Pl. I). In 2008, the area was covered with date palm plantations. Groves grew all around the fortifications. For this reason, it is not possible to identify agricultural potential on the basis of satellite images.
AGRICULTURAL POTENTIAL (R=3 km)	–
AGRICULTURAL POTENTIAL (R=4.5 km)	–

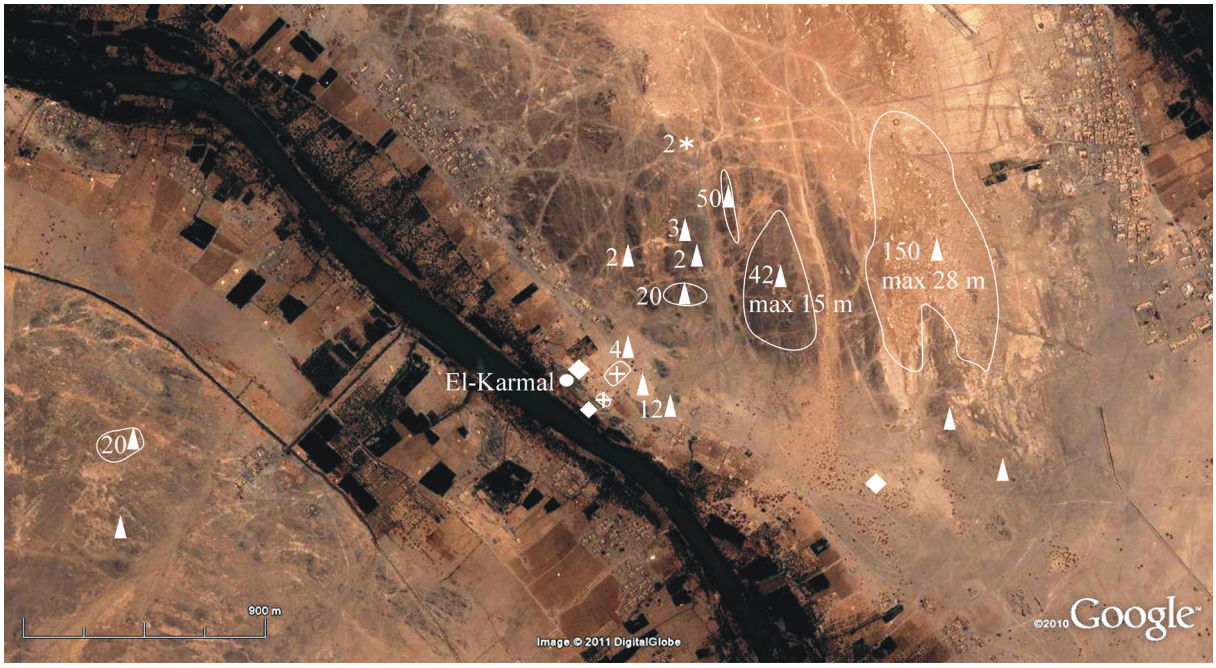
El-Karmal

QUOTED AS	Al-Karmal (Jackson 1926: 25, 31) Al Carmi (Shinnie 1958: 67) MOG004 or Gebel al-Hilla (Näser 2006: 104–114) Kelesaikal (Crawford 1953a: 35–36; 1953b: 18)
COORDINATES	19°27′25.29″N 33°20′13.28″E
CHRONOLOGY	Early Christian Period (author's observation based on similarities with Ras el-Gezira and Kuweib) Medieval Period (Rees, Lahitte, Näser 2015: 183)



Plan of the fortified site (drawing Mariusz Drzewiecki)

SHAPE	Irregular, adapted to the shape of the hill
DIMENSIONS	approx. 91x56 m
SURFACE AREA	approx. 3612.3 m²
THICKNESS OF WALLS	2.8–4.4 m
GATES	One gate was located on the hilltop in the east, between two towers (Abbas Sid Ahmed 1971: 2–5). It was approx. 2 m wide. Another gate might have been located along the line of the wall which connected the "harbour" with the hill, now visible as a gap in a stone fill.
TOWERS/BASTIONS	Round, in three corners
OTHER ARCHITECTURAL FEATURES	Internal division into the part on the hill and the flat "harbour" (?) part. A series of rebuilding phases can be identified. The lowest part of the site (at the bottom of the hill) was preserved in a much better state in the 1960s than it is shown in photographs taken by Brian Haycock (SARS archive, photos. nos. HAY S030–20, HAY S030–23, HAY S031–01, HAY S031–03, HAY S031–06).
BUILDINGS INSIDE	The site was still occupied in 1821 (Cailliaud 1826, II: 186–187). Many remains of buildings which were most likely built in the final phase of occupation can be seen on the surface. Remains of red brick buildings were discovered in the "harbour" part.

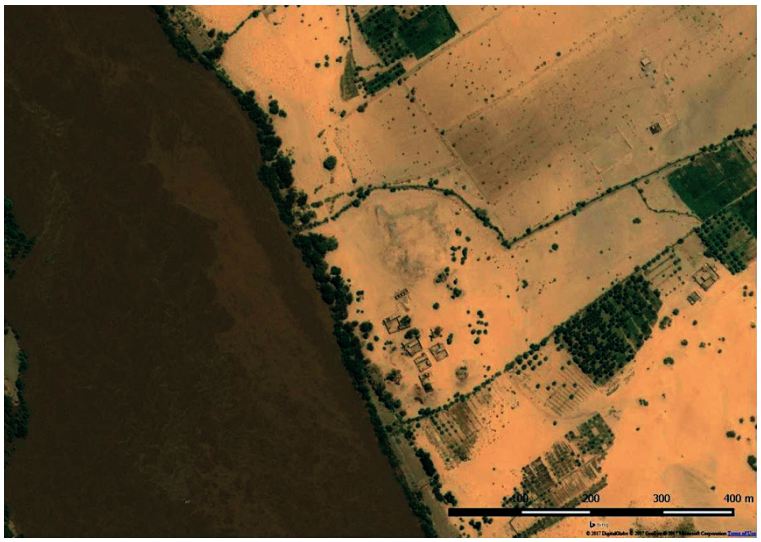


Satellite image of the vicinity of the site at El-Karmal (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Remains of three settlements were discovered in the closest proximity, one, located to the south-east, is probably dated to the final phase of occupation of El-Karmal, the same applies to MOG003 (Näser 2006), and the third at the foot of the hill (see plan of the site) of unidentified chronology.
CEMETERIES WITHIN 1.5-km RADIUS	Two Christian cemeteries. One contains only *box graves*, the other (MOG001) mainly brick mastabas with lime plaster, where fragments of terracotta stelae with inscriptions were found (Näser 2006: 104–114). Further into the island, there are many barrow cemeteries.
OTHER	Outcrop of *geer* (kaolin-rich rock) outside the walls (see plan of the site).
AGRICULTURAL POTENTIAL (R=1.5 km)	0.35 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.73 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	2.78 km²

Kurgus

QUOTED AS	Kurgus (Welsby Sjöström 2003: 58) Kanisa Kurgus (Jackson 1926: 25; Arkell 1950: 39) KRG 2 (Welsby Sjöström 1998: 33) "Christian Remains" – map of Abu Hamed Hajar el-Merwa (Anderson 1996: 343) Hagar el Meroe (Anderson 1996: 343)
COORDINATES	19°13′50.63″N 33°28′37.35″E
CHRONOLOGY	Early Christian Period (Welsby Sjöström 1998: 33; Welsby Sjöström 2001: 60) with continuation in Classic Christian and subsequent periods (Nicholas 2014: 154)



Satellite image of the site (Google Earth)

SHAPE	Nearly square (Welsby Sjöström 1998: 32)
DIMENSIONS	approx. 72x72 m
SURFACE AREA	approx. 3934 m²
THICKNESS OF WALLS	approx. 5 m
GATES	State of preservation made it possible to identify a gate only in the centre of curtain wall E (Welsby Sjöström 1998: 32). Arkell mentions a "small" entrance from the north (Arkell 1950: 39). Ginns recorded three gates in N, W and E wall (Ginns 2015: 136–138).
TOWERS/BASTIONS	Round towers in corners NE, NW (Nicholas 2014: 148–152) and SE (Ginns 2015: 136–137). Smaller tower in SW corner and rectangular tower in the middle of southern wall – both built in later phases of the fort construction (Ginns 2016: 130–131).
OTHER ARCHITECTURAL FEATURES	Built of mud bricks. Remains of a stone wall, built in more recent times, were discovered along the wall on the outside (Welsby Sjöström 1998: 32); according to Arkell (1950: 39), it was supposed to protect the structure from flooding, more recent studies considered this to be more likely the result of wall collapse rather than a deliberate construction (Weslby Sjöström 1998: 33; Nicholas 2014: 154).

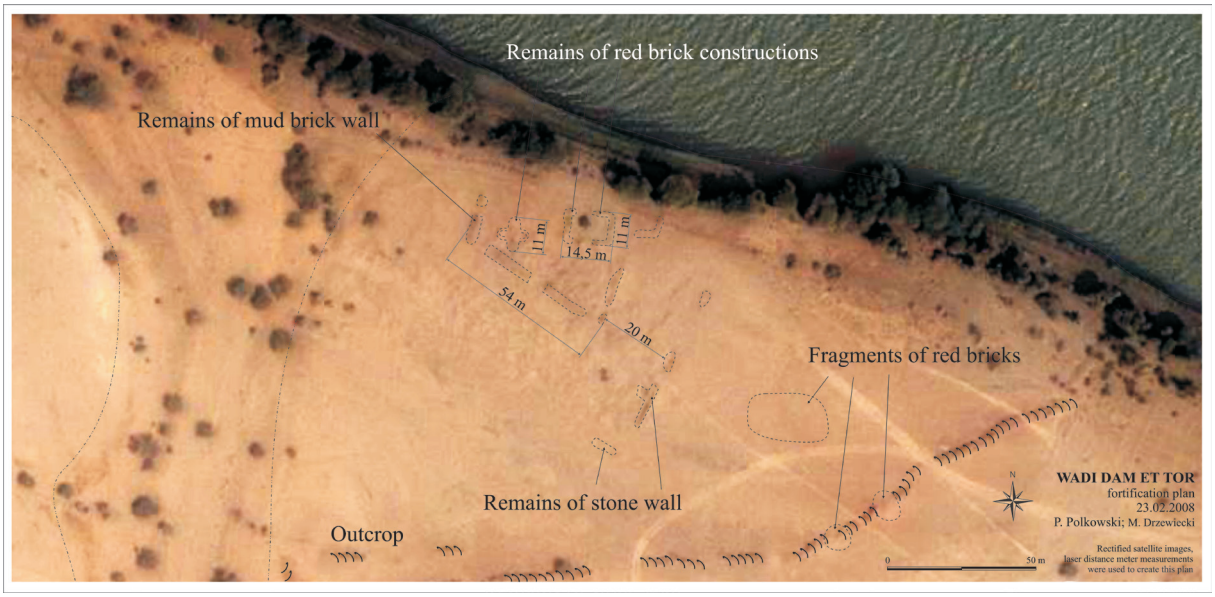
BUILDINGS INSIDE	Many fired bricks can be seen on the surface (Welsby Sjöström 1998: 32). Remains of mud brick walls were discovered in the course of trial excavations in 2000 (Welsby Sjöström 2001: 59) and excavations in 2014 (Nicholas 2014: 152). Post-Classic Christian period buildings were discovered, built against the inner side of the enclosure walls (Ginns 2015: 138–139). Interior architecture of the fort was of such a dense nature that individual structures were commonly not separated but abutting each other and access into individual buildings would be by way of alleyways running across the fort's interior (Ginns 2016: 130–131).

Satellite image of the vicinity of the site at Kurgus (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Remains of mud brick structures with addition of red brick stone outside the NW tower, however, appear to have been built before the fortifications (Nicholas 2014: 154).
CEMETERIES WITHIN 1.5-km RADIUS	Seven burials displaying Christian characteristics just outside the walls (Ginns 2015: 139). Six barrow cemeteries, the ones on the east bank detected as a result of archaeological field survey (Welsby Sjöström 2003, 2014). West bank sites identified in satellite images (Google Earth) and field survey (Welsby Sjöström 2014). The superstructures on most of the cemeteries are quite homogeneous, except for site KRG3 (Welsby Sjöström 2014: 134). The burials at site KRG 3 are marked by superstructures of about ten different types dating probably from the Post-Meroitic to Islamic Periods (Welsby Sjöström 2001: 63, 2014: 130; Haddow 2014). One box grave was detected at barrow cemetery KRG 8 (Welsby Sjöström 2003: 61).
OTHER	Hagr el-Merwa (KRG 1) – rock carvings, the best-known ones were made during the reign of Thutmose I and Thutmose III (Davies 2003). Mahdiya period fort of the opposite bank and another on Kurgus Island (Welsby Sjöström 2014: 132–133).
AGRICULTURAL POTENTIAL (R=1.5 km)	0.37 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.35 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	2.88 km²

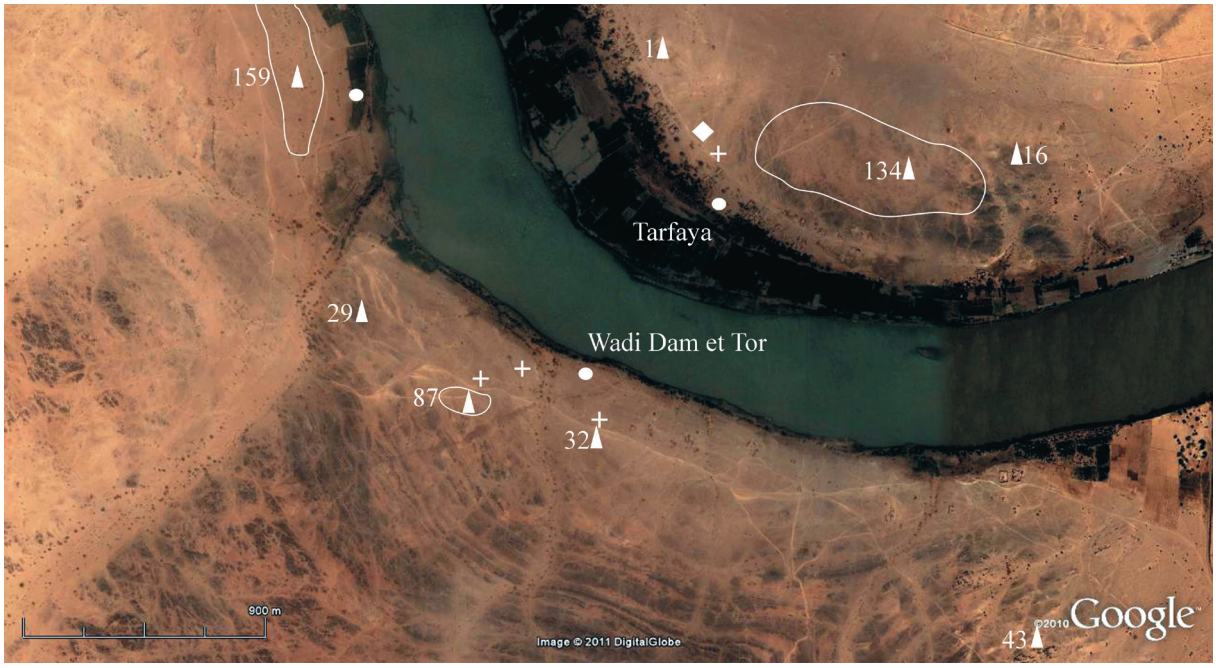
Wadi Dam et-Tor

QUOTED AS	Wadi Dam et Tor (Crawford 1953a: 24–26) Wadi Dam al-Tor (Anderson 1996: 341)
COORDINATES	18°43'52.66"N 33°33'55.61"E
CHRONOLOGY	Early Christian Period (Anderson 1996: 341; on the basis of fragments of pottery sherds collected by Bryan Haycock – SARS archive, photos. nos.: HAY S034–18, HAY S034–19)



Plan of the fortified site (drawing Paweł Polkowski, Mariusz Drzewiecki)

SHAPE	Quadrilateral
DIMENSIONS	approx. 109x61 m
SURFACE AREA	approx. 1732.46 m²
THICKNESS OF WALLS	approx. 2–3 m
GATES	Poor state of preservation of surface remains made it impossible to identify gates.
TOWERS/BASTIONS	Not found
OTHER ARCHITECTURAL FEATURES	Inner wall built of mud bricks, Outer wall built of broken stone (Drzewiecki 2011: 104, fig. 9). Poor state of preservation made it impossible to identify phases of construction.
BUILDINGS INSIDE	Remains of two fired brick buildings – one rectangular, the other cross-shaped (Drzewiecki 2011: 105).

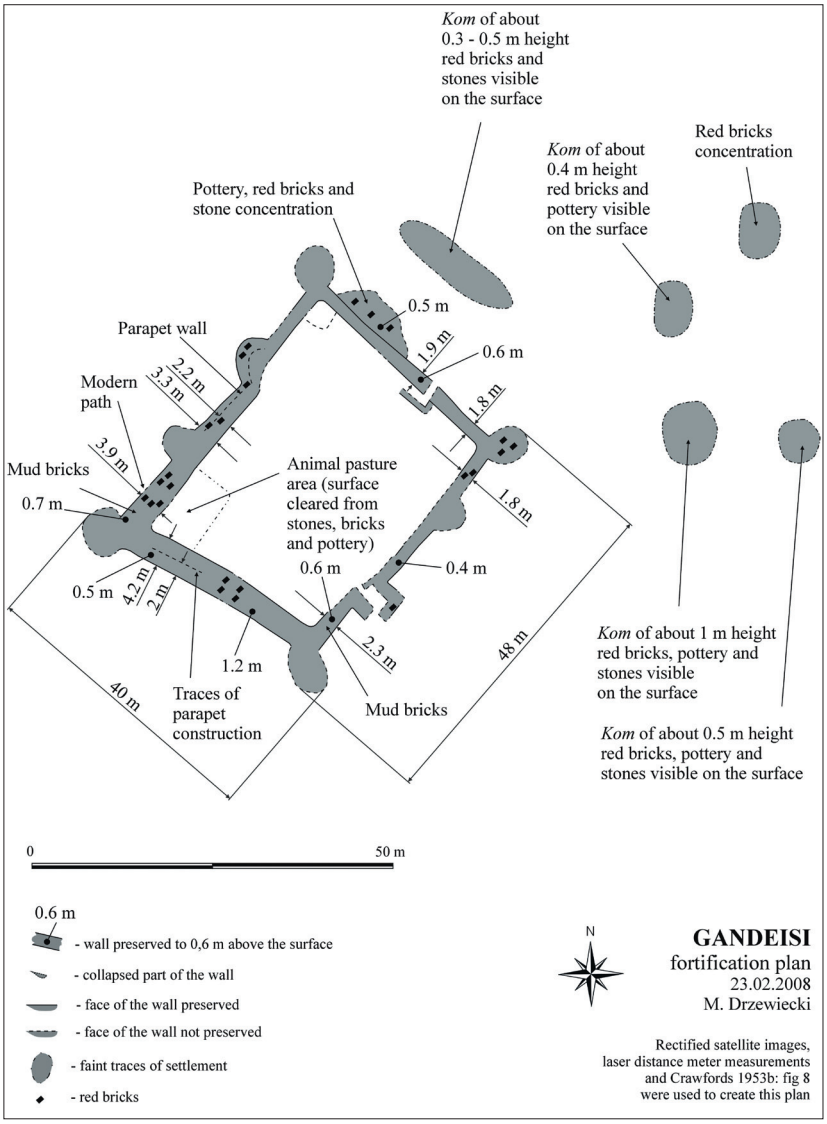


Satellite image of the vicinity of the site at Wadi Dam et Tor (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Concentrations of fired bricks visible on the surface outside the walls in the east. Chronology unknown (Drzewiecki 2011: 105). Another Christian site is located *vis a vis*, at Tarfaya (Crawford 1953: 15–17). The sites have been interpreted as a border between the kingdom of Makuria and El-Abwab in the Late Christian Period (Drzewiecki 2011). Zimama is a rectangular site dated to the Mahdiya Period (Crawford 1953b: 29).
CEMETERIES WITHIN 1.5-km RADIUS	There are many Christian and barrow cemeteries in the vicinity (Drzewiecki 2011). Crawford discovered fragments of terracotta stelae with inscriptions at the necropolis to the south-east of the fortifications (Crawford 1953a: 24–26; Macadam 1953: 43).
OTHER	–
AGRICULTURAL POTENTIAL (R=1.5 km)	0.82 km²
AGRICULTURAL POTENTIAL (R=3 km)	1.54 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	3.47 km²

Gandeisi

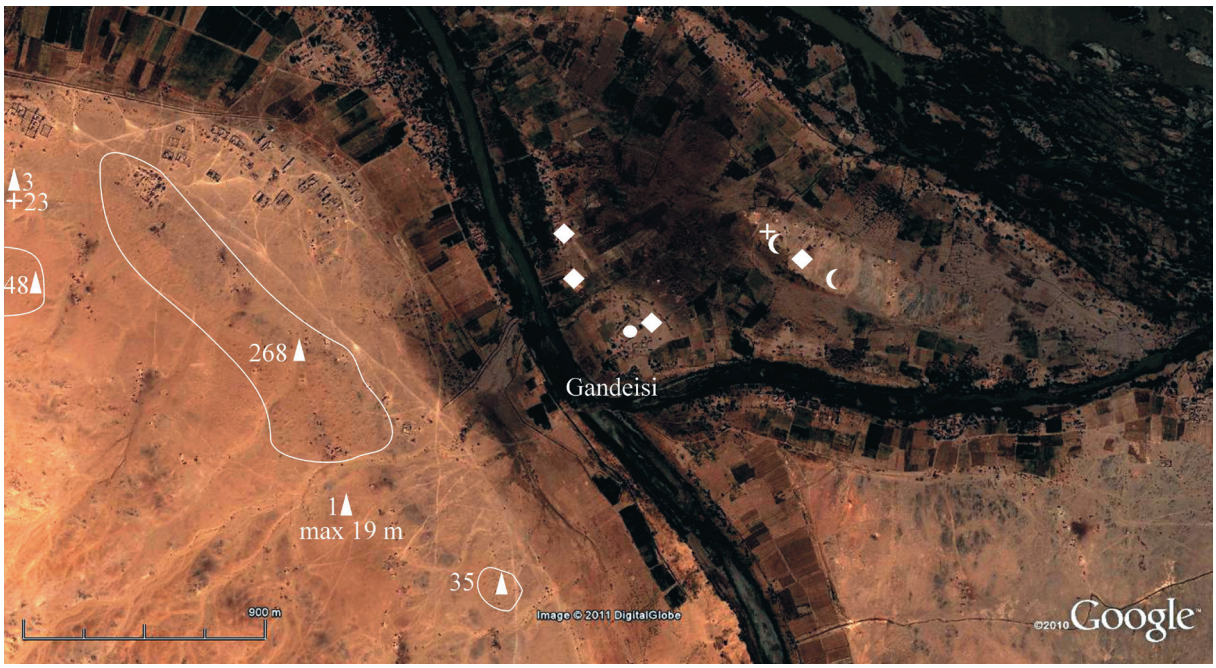
QUOTED AS	Gandeisi (Jackson 1926: 22–23, 26, 31; Fig. 5)
COORDINATES	18°42′10.59″N 33°38′30.05″E
CHRONOLOGY	Meroitic blocks inside (Crawford 1953a: 30) Meroitic pottery in the vicinity (Jackson 1926: 22–26) Mainly Christian pottery (Edwards 1989: 85)



Plan of the fortified site (drawing Mariusz Drzewiecki)

SHAPE	Quadrilateral
DIMENSIONS	approx. 48x40 m
SURFACE AREA	approx. 2415.09 m²
THICKNESS OF WALLS	approx. 1.8–3.9 m
GATES	At least two gates. One in the south-east, with extensive additional defences. The other in the north-east, with an additional L-shaped wall inside.
TOWERS/BASTIONS	Round, in corners and at regular distances along the longer curtain walls.

OTHER ARCHITECTURAL FEATURES	*Opus spicatum* technique in the inner and outer faces. Parapet wall in the west. Many fragments of fired bricks over the ruins of the enclosure wall.
BUILDINGS INSIDE	Crawford found stone blocks of regular shapes, which he identified as Meroitic (Crawford 1953a: 30). Remains of mud brick building discovered in corner N (Drzewiecki 2016).



Satellite image of the vicinity of the site at Gandeisi (archaeological sites within 1.5-km radius)

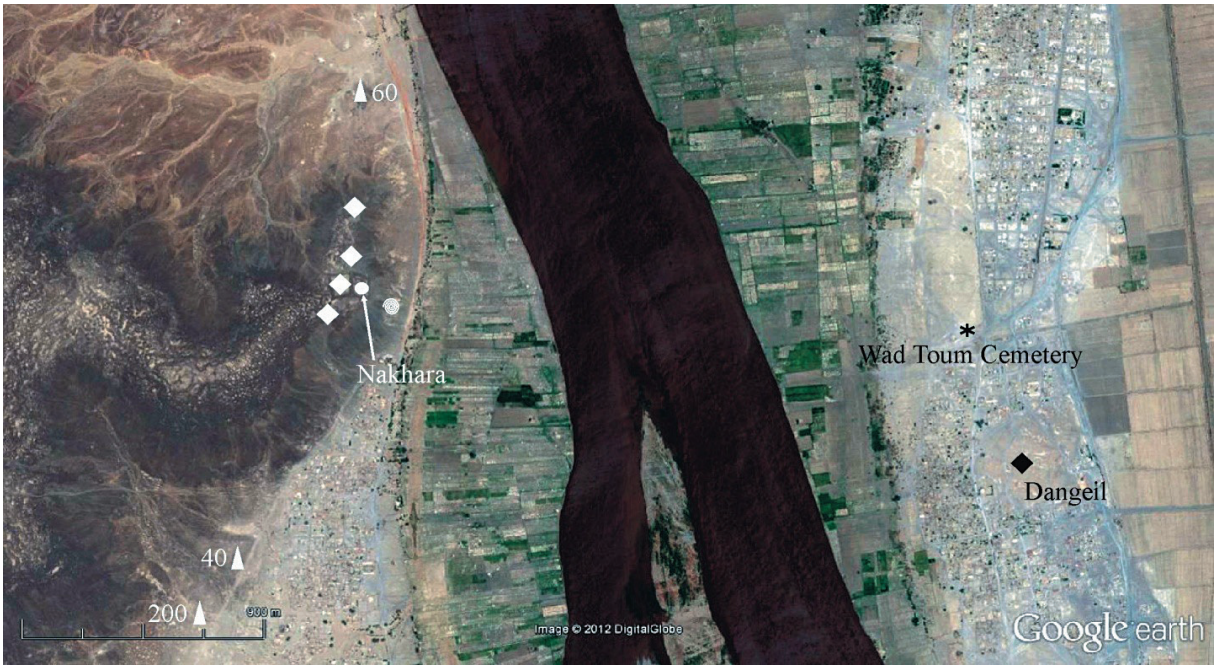
ASSOCIATED SETTLEMENTS	Settlements were established around the fortifications in the Christian Period. Crawford (1953a: 26–28) also found remains of a church.
CEMETERIES WITHIN 1.5-km RADIUS	Five barrow cemeteries (355 tombs altogether), all located on the west bank. Two cemeteries with *box graves* and fired brick superstructures (Crawford 1953a: 30).
OTHER	Crawford claimed that outside the walls (NE) there was a road, along which he found remains of houses (Crawford 1953a: 30).
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Abu Mereikh 3 and 4 (approx. 31 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	1.42 km²
AGRICULTURAL POTENTIAL (R=3 km)	4.40 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	7.79 km²

Nakhara

QUOTED AS	Nakhara (Mohammed Ahmed Abdel Mageed, personal communication, January 2011) Jebel Nakharu, site 15 (Crawford 1953a: 17) Jebel Nakharu II (Edwards 1989: 74)
COORDINATES	18°08′14.90″N 33°56′06.65″E
CHRONOLOGY	Phase I – Meroitic Period (Crawford 1953a: 18) Subsequent phases – Christian Period (Edwards 1989: 74)

Satellite image of the site

SHAPE	Quadrilateral, rhomboid
DIMENSIONS	approx. 86x73 m
SURFACE AREA	approx. 3748.92 m²
THICKNESS OF WALLS	Up to approx. 4 m
GATES	One, in the middle of the western curtain wall. There are remains of a large rectangular enclosure (an annex) which was later added to the fortifications in the west (Crawford 1953a: 17–18).
TOWERS/BASTIONS	In corners NW, SW, SE and in the centre of curtain walls S and N, as well as two in the centre of curtain wall W.
OTHER ARCHITECTURAL FEATURES	*Opus spicatum* technique can be seen on preserved and visible faces of the wall.
BUILDINGS INSIDE	Circular concentrations of stones (Google Earth). According to Crawford (Crawford 1953a: 18), inside there were only rectangular buildings.

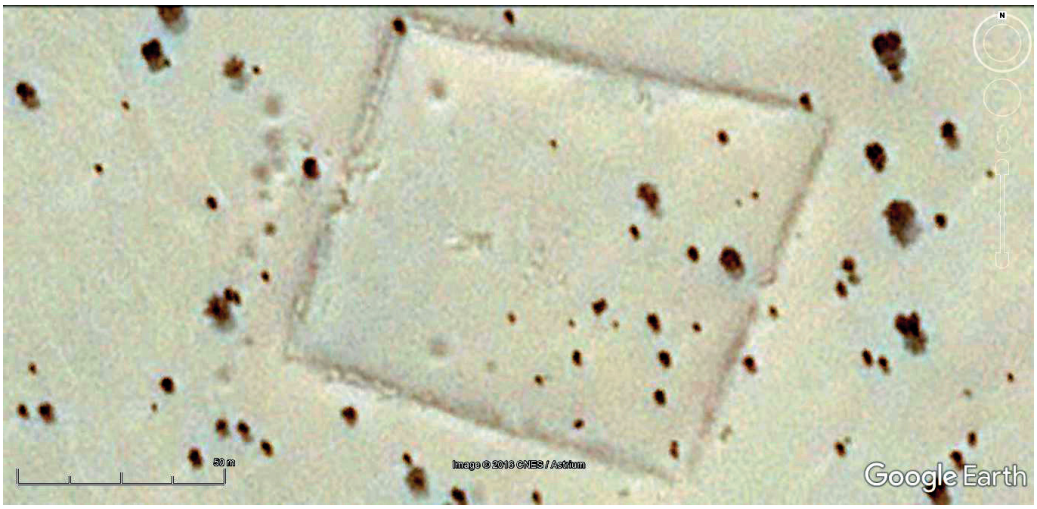


Satellite image of the vicinity of the site at Nakhara (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Auxiliary fortified settlement, called an annex, is located in the west (Edwards 1989: 74). A stone wall issues from corner NW of the annex down the *khor* (Crawford 1953a: 18). Directly outside the fortifications (in N and S) there are remains of round stone buildings (Crawford 1953a: 17). A line of isolated walls stretches down the hill. One begins at the south-east corner of the fort, another at the southern end of the road, some other farther north (Crawford 1953a: 18). Dangeil on the other side of the river.
CEMETERIES WITHIN 1.5-km RADIUS	Two barrow cemeteries (more than 240 tombs) identified to the south of the fortifications in a satellite image (Google Earth). One barrow cemetery is located to the north of the site – approx. 60 graves (Jebel Nakharu I – Edwards 1989: 74; Crawford 1953b: 11). Wad Toum Cemetery – Meroitic Period (Anderson, Salah Eldin Mohamed Ahmed 2011: 85).
OTHER	Rock carvings located on the slope of a hill to the east of the site represent horsemen, footmen with weapons, and geometric symbols; there is also one image of a boat (Crawford 1953a: 17, 19). Remains of a road can be seen to the north of the site, at the hilltop. It is a stretch of land, approx. 7.5 m wide, where stones were removed. It finishes near the mud brick building at the northern edge of the elevation (Crawford 1953a: 18).
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Abu Mereikh 3 and 4 (approx. 42 km) Meroe (approx.130 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.85 km²
AGRICULTURAL POTENTIAL (R=3 km)	3.70 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	5.87 km²

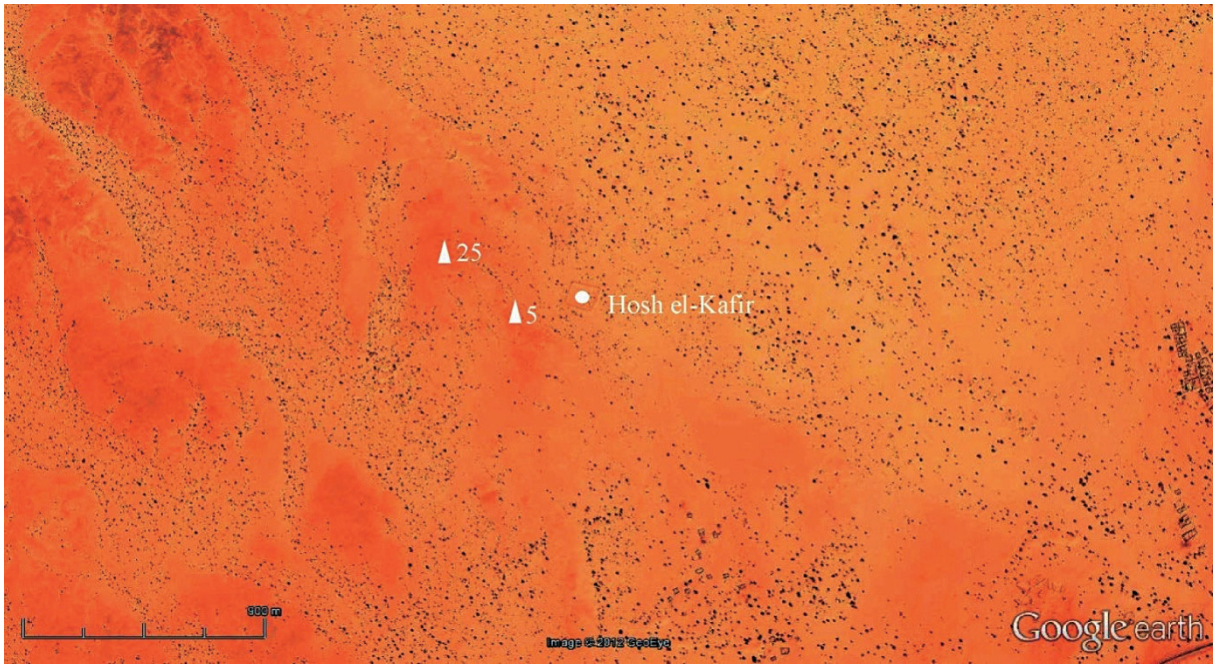
Hosh el-Kafir

QUOTED AS	Hosh el-Kafir (Reinolds, Lenoble 1987: 61–62)
COORDINATES	16°38′56.32″N 33°09′21.45″E
CHRONOLOGY	Late Meroitic/Post-Meroitic Periods (C14 date – Lenoble 2004c: 124–125)



Satellite image of the site

SHAPE	Quadrilateral
DIMENSIONS	Curtain wall S – approx. 102 m, curtain wall W – approx. 85 m, curtain wall N – approx. 107 m, curtain wall E – approx. 94 m (Google Earth).
SURFACE AREA	approx. 9033.63 m²
THICKNESS OF WALLS	approx. 1 m
GATES	Two gates, in the centre of curtain walls E and W. The entrances lead through rectangular rooms built of the same material as the wall.
TOWERS/BASTIONS	Rectangular buildings which flank the gates are interpreted as remains of towers (Lenoble 2004c: 119–122).
OTHER ARCHITECTURAL FEATURES	Only 4% of the inside has been archaeologically researched. Discovered material includes: • many organic remains associated with animal husbandry; • remains associated with food processing – fragments of grinding stones; • remains of weapons – iron arrow heads, stone archer's rings; • remains of iron processing – fragments of iron furnace waste, crucibles. The structure of the site resembles Roman *castra* (Lenoble 2004b: 193).
BUILDINGS INSIDE	Remains of small rooms built of large bricks bound with mud mortar were found along the inner face of curtain walls N and S – according to P. Lenoble they were dwellings. Small partition walls built of bricks and stones were discovered along the inner face of the east and west curtain walls. Central part of the site is occupied by a building which consisted of 12 rooms, stone foundations are the only preserved elements (Lenoble 2004c: 118).

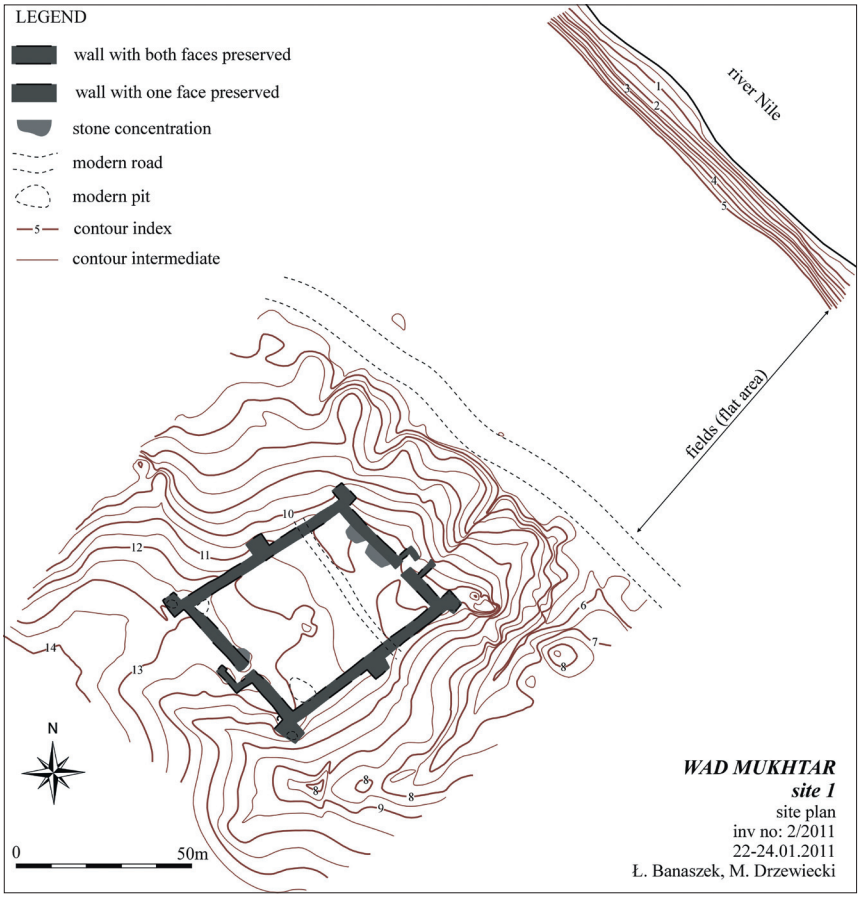


Satellite image of the vicinity of the site at Hosh El-Kafir (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	–
CEMETERIES WITHIN 1.5-km RADIUS	Two barrow cemeteries (Google Earth)
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	El-Hobagi (approx. 4.5 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0 km²
AGRICULTURAL POTENTIAL (R=3 km)	0 km² (dams built across the numerous *wadi* can be seen at a distance between 1.5 and 3 km to the W and N, however, their chronology is unknown)
AGRICULTURAL POTENTIAL (R=4.5 km)	0 km²

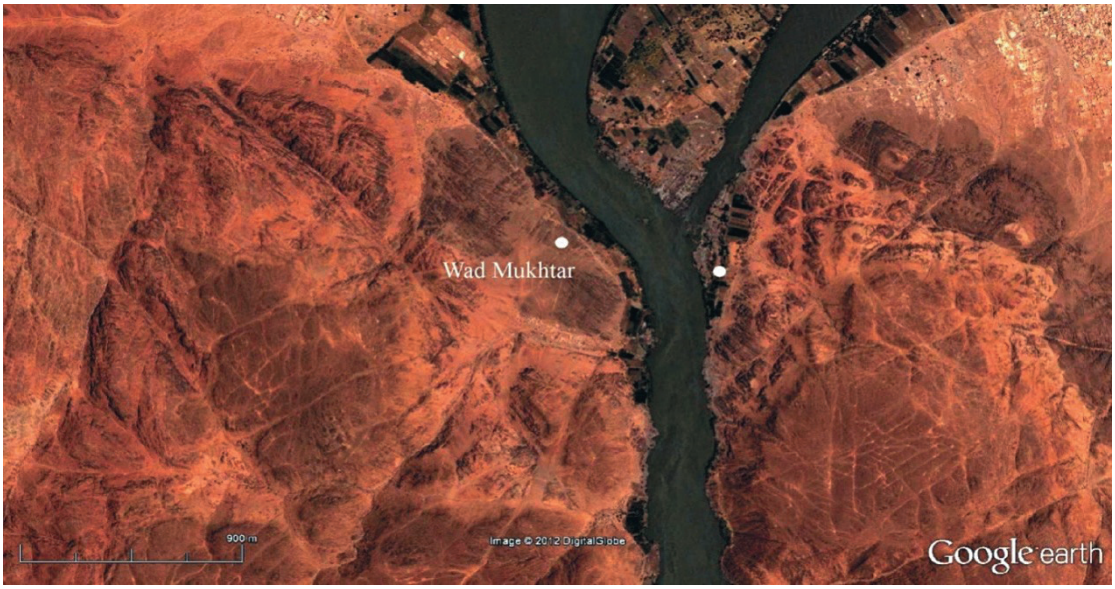
Wad Mukhtar

QUOTED AS	Wad Mukhtar (Suková, Cílek *et al* 2010; Suková, Cílek 2012) "Old fort" – Map 45N – Sabaloka
COORDINATES	16°19'55.29"N 32°41'05.45"E
CHRONOLOGY	Late Meroitic/Post-Meroitic Period (Drzewiecki, Polkowski 2016)



Plan of the fortified site (drawing Łukasz Banaszek, Mariusz Drzewiecki)

SHAPE	Quadrilateral
DIMENSIONS	approx. 62x56 m
SURFACE AREA	approx. 1913.22 m²
THICKNESS OF WALLS	approx. 3–3.7 m
GATES	Two gates with additional defences, one on the river-side, the other opposite (Drzewiecki, Polkowski 2016).
TOWERS/BASTIONS	Quadrilateral in each corner and in the centre of curtain walls NW and SE.
OTHER ARCHITECTURAL FEATURES	Structure of corner bastion E bears marks of rebuilding – transition from quadrilateral to round bastions. Poor state of preservation of the whole site made it impossible to confirm that observation in other places (Drzewiecki, Polkowski 2016).
BUILDINGS INSIDE	Concentrations of stones can be seen along the inner face of curtain walls NE and SW which might be remains of buildings.



Satellite image of the vicinity of the site at Wad Mukhtar (archaeological sites within 1.5-km radius)

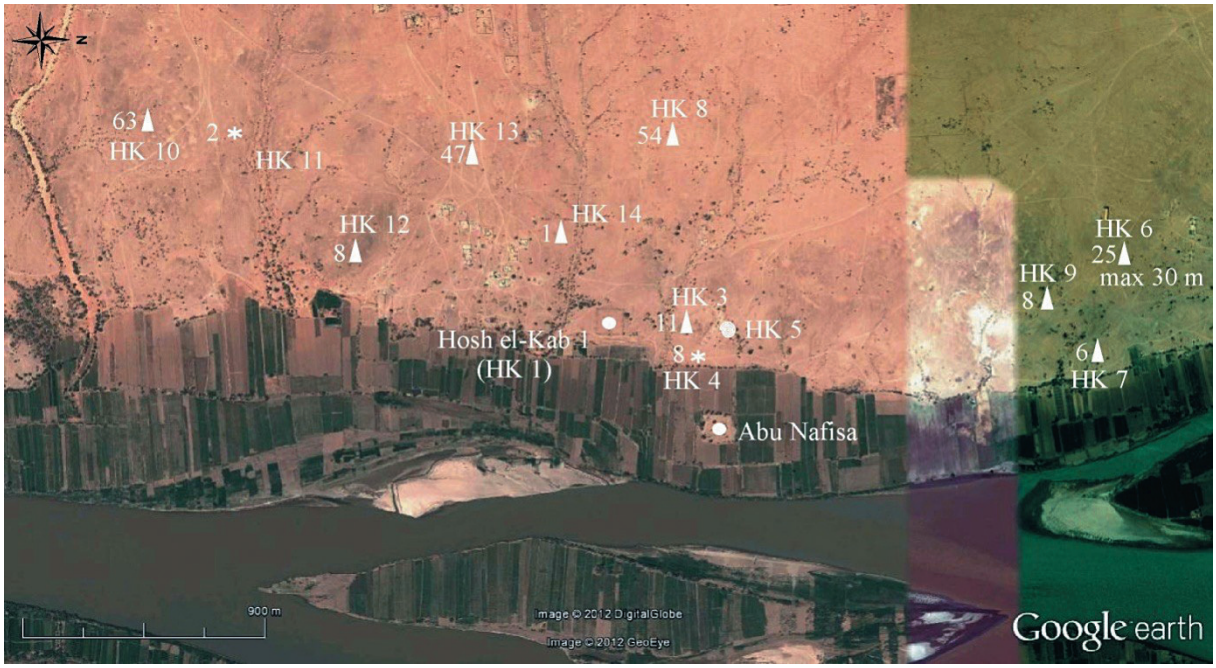
ASSOCIATED SETTLEMENTS	Remains of a fort dated to Mahdi Uprising are located opposite.
CEMETERIES WITHIN 1.5-km RADIUS	–
OTHER	–
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	El-Hobagi (approx. 62 km) Hosh el-Kab 6 (approx. 37 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	0.90 km²
AGRICULTURAL POTENTIAL (R=3 km)	3.04 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	5.14 km²

Hosh el-Kab

QUOTED AS	Hosh el-Kab (Lenoble 2004b: 195) El-Gerera „Umm Marrahi" (El-Tayeb 1995: fig. 30) El-Gerara (Lenoble 2004b: 195)
COORDINATES	16°00′37.03″N 32°33′00.50″E
CHRONOLOGY	Late Meroitic/Post-Meroitc Periods (Drzewiecki, Polkowski 2016)

Plan of the fortified site (drawing Łukasz Banaszek, Mariusz Drzewiecki)

SHAPE	Rectangular
DIMENSIONS	approx. 102x96 m (see Fig. 16 for details)
SURFACE AREA	approx. 7867.34 m²
THICKNESS OF WALLS	2.2–2.8 m (see Fig. 16 for details)
GATES	At least two: one in the east (river-side), the other in the west. Poor state of preservation made it impossible to examine architectural details of the east gate (Drzewiecki, Polkowski 2016).
TOWERS/BASTIONS	13 round bastions at regular distances (16–27 m).
OTHER ARCHITECTURAL FEATURES	Poor state of preservation made it impossible to examine architectural details and distinguish potential phases of construction.
BUILDINGS INSIDE	Three types of structures can be seen on the surface, none of them is identified with the beginning of occupation of the site. Remains of a building in a form of a *kom*, approx. 1 m high, were discovered in the south-western part (it is the best preserved element at the site). Fragments of lime mortar were discovered in the fill. Five round stone structures were discovered in the south-eastern part. They are probably remains of a temporary camp dated to modern times. Outline of a mosque, built of one layer of irregular stones (Drzewiecki, Polkowski 2016).

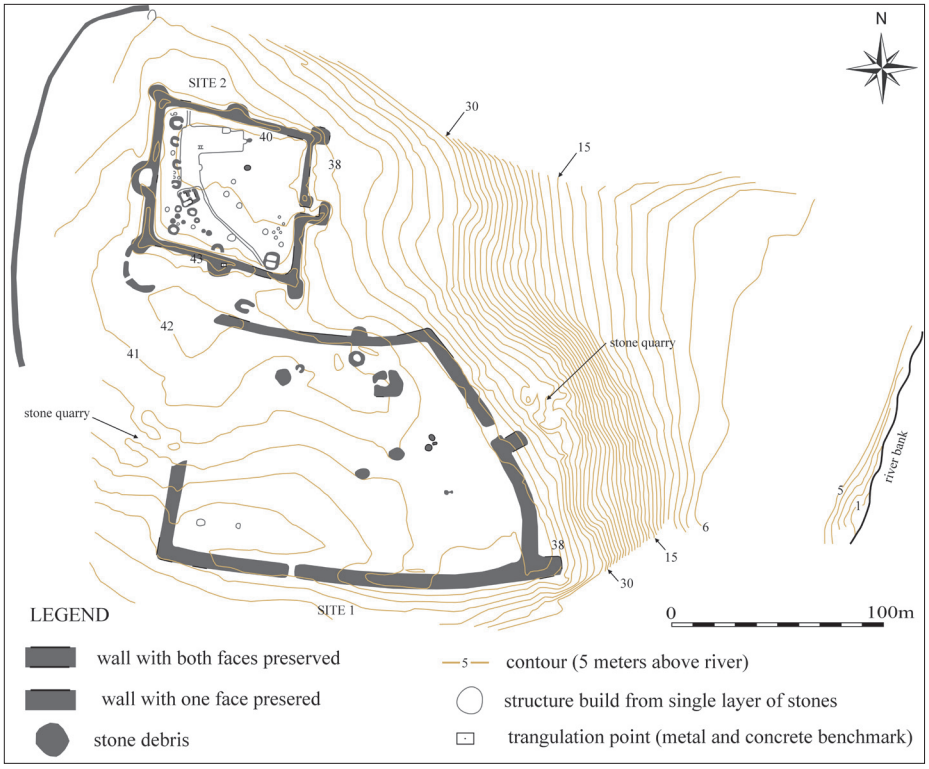


Satellite image of the vicinity of the site at Hosh El-Kab (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site of Abu Nafisa is located approx. 500 m to the north-east (Welsby 2002: fig. 9), generally dated to the Middle Ages (Drzewiecki, Polkowski 2016).
CEMETERIES WITHIN 1.5-km RADIUS	Nine barrow cemeteries (more than 223 tombs) Two cemeteries with flat graves (approx. 10 graves) (Drzewiecki, Polkowski 2016: fig. 18)
OTHER	HK 5 – regular round rows of concavities in bedrock – game board (?), *cup-marks* (Drzewiecki, Polkowski 2016).
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Hosh el-Kab 6 (approx. 1 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	1.68 km²
AGRICULTURAL POTENTIAL (R=3 km)	5.7 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	8.87 km²

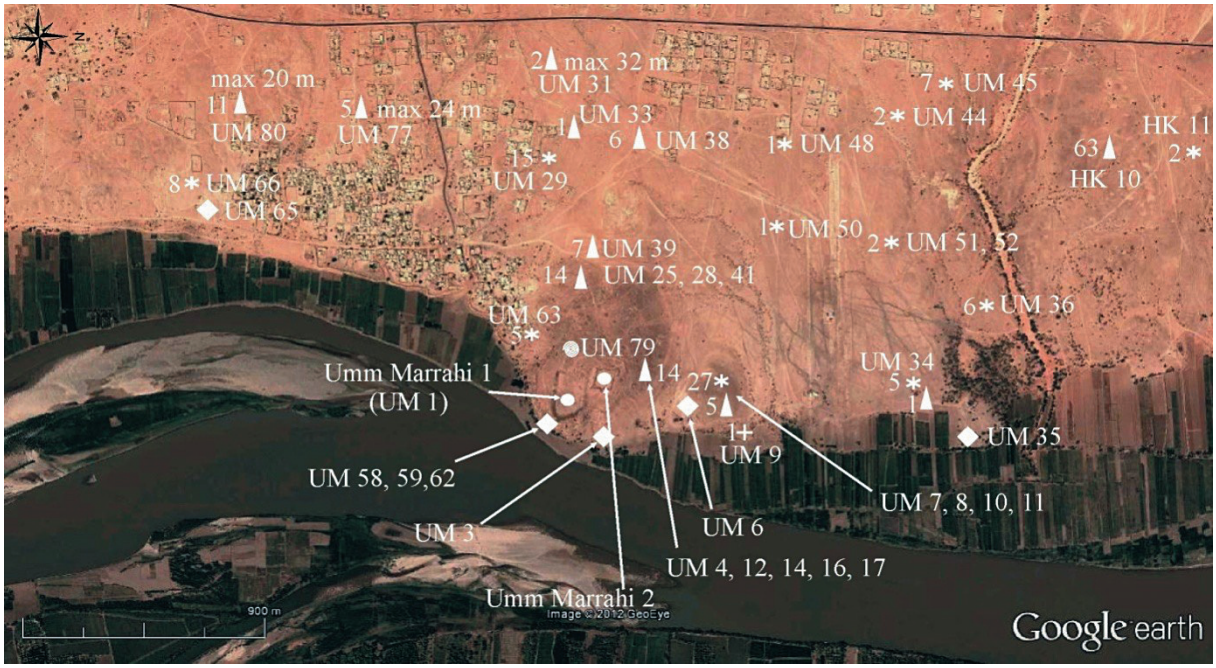
Umm Marrahi

QUOTED AS	Umm Marrahi (Crawford 1953b: 29) Jebel Umm Marrihi (Crawford 1953a: 39) Umm Marrahi, site 2 (number system adopted for the field research of the Fortresses of Sudan project)
COORDINATES	15°58′39.94″N 32°32′59.13″E
CHRONOLOGY	Meroitic Period (Crawford 1953a: 39; El-Hassan 1979: 155) Post-Meroitic Period/Early Middle Ages (El-Hassan 2006)



Plan of the fortified site (drawing Adrian Chlebowski, Mariusz Drzewiecki)

SHAPE	Rhomboid
DIMENSIONS	approx. 80x71 m
SURFACE AREA	approx. 4211.82 m²
THICKNESS OF WALLS	approx. 3 m
GATES	One gate in the east with additional defences, perhaps a similar gate has survived in the opposite wall (curtain wall W), however, in a poorer state of preservation.
TOWERS/BASTIONS	In corners and in the centre of curtain walls N and S. They might have been quadrilateral, which is suggested by preserved remains of the face of corner tower NE. At the moment the remaining towers are of round shape due to the rock debris which cover them.
OTHER ARCHITECTURAL FEATURES	Face of the wall can be seen in some places, *opus spicatum* technique has not been detected.
BUILDINGS INSIDE	The site was occupied in the Islamic Period up to the modern times as the seat of a Sufi sheikh and a venue for religious rituals. The remains identified on the surface should be associated with these practices. There are remains of a large open mosque (northern part of the site) and round structures, which, according to local informants, were buildings where arriving pilgrims spent nights.



Satellite image of the vicinity of the site at Umm Marrahi (archaeological sites within 1.5-km radius)

ASSOCIATED SETTLEMENTS	Fortified site UM 1 (dated to the 19th/20th century). Remains of a wall to the west of the site – chronology unknown. Rounded wall which issues from tower SW – joints with the fortifications unknown (poor state of preservation). The rock of the hill bears many marks left by quarries, location of two largest ones can be seen on the plan of the site. Due to intensive activity at the site in later periods (especially in the Islamic Period), the structures mentioned above are not taken into consideration in the analyses described in this work. Settlements located at a certain distance from the site: UM 6, UM 3, UM 35, UM 65.
CEMETERIES WITHIN 1.5-km RADIUS	19 barrow cemeteries (more than 129 tombs) 15 flat (more than 81 graves) One Christian cemetery (1 *box grave*)
OTHER	Sites UM 58, 59, 62 – caves or rock shelters in the slope of the hill UM 79 – rock carvings
ELITE CEMETERIES (DISTANCE FROM FORTIFIED SITE)	Umm Marrahi 31 and Umm Marrahi 77 (approx. 1 km) Umm Marrahi 80 (approx. 1.8 km)
AGRICULTURAL POTENTIAL (R=1.5 km)	1.60 km²
AGRICULTURAL POTENTIAL (R=3 km)	5.42 km²
AGRICULTURAL POTENTIAL (R=4.5 km)	9.22 km²

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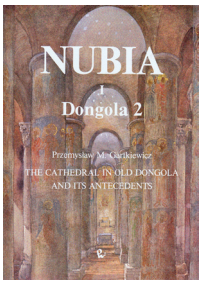

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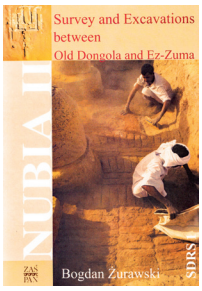

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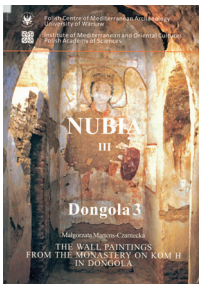

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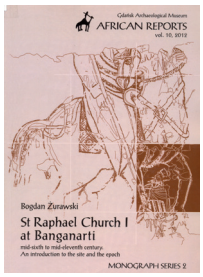

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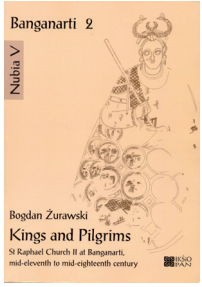

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