

Assessment of Merowe Dam Salvage Archaeological Project (The Sudan)

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Abstract: *In the region of the Fourth Cataract of the Nile (North Sudan), little was known of its archaeology prior to the threat posed by the construction of the Merowe Dam. The subsequent surveys and the excavations made at various impact areas revealed the richness of cultural heritage and the diversity of its archaeological artifacts. This paper presents the results of various archaeological surveys and excavations conducted at the endangered areas and evaluates them from an archaeological heritage management perspective. The paper also focuses on assessing the research strategy that had been adopted in the salvage archaeological work in the impact areas. The Merowe Dam Project has provided a challenge for archaeologists to implement the various methods, techniques and theoretical models for managing archaeological salvage operations in the impact areas. The salvage archaeological work, at Merowe Dam and in the reservoir area, has had some obvious short-comings especially in formulating a coherent strategy and clear-cut guidance policy and these have affected successful salvage operations and hence the results obtained. The paper concludes with the results that have been achieved, provides a critical review of the strategy that was adopted in the salvage archaeological work and explores the possibility of future negative environmental impacts resulting from the Merowe Dam on World Heritage Sites in the Kareima Region.*

Introduction

Salvage archaeology

Salvage archaeology is a branch of archaeology in which archaeological survey and excavation are carried out in areas threatened by, or revealed by construction or other development projects (Neumann and Sandford 2001: 27). These conditions can include: the building of hydro-dams, highway roads, irrigation schemes and other large scale development constructions. In terms of survey or excavation, salvage archaeology has to be performed swiftly to avoid damage and possible destruction of archaeological sites owing to the imminent perceived hazard.

Salvage archaeology is also referred to as «rescue» or «preventive» archaeology. Its major aim is to recover historical artifacts that are in

danger of being destroyed in the geographical area in which they are found (Rahtz, 1994:17). In salvage work, archaeologists are often working to protect and preserve the archaeological findings while trying to recover maximum possible information relevant to the culture history of the region.

Salvage archaeology in The Sudan

The major archaeological salvage works in The Sudan were carried out in Nubia, as exemplified by the First Archaeological Survey (1907-1912), the Second Archaeological Survey (1929-1934), and the High Dam Campaign (1960 – 1970), under the auspices of UNESCO. These salvage archaeological works were undertaken to save the archaeological sites threatened by the successive dams built on the Nile in Nubia and the progressive inundation of

a large area in the reservoir area.

Archaeological research in The Sudan still lacks a system of designation; this is mainly because there has not yet been a general archaeological survey covering the whole country. Only recently has such work been initiated by Hinkle on an archaeological map of The Sudan (Gisema, 2000: 59). Only during the past 30 years has systematic surveying been extended south of the third cataract to other projects initiated in the Dongola and Shendi Reaches, and the western Butana, (Edwards, 1989 : 7).

Considering the state of the salvage archaeology carried out in Nubia, the following points could be made:

The salvage archaeological work conducted in Nubia resulted in an accumulation of a large body of archaeological data, yet there was felt to be a shortcoming in the manner in which the archaeological heritage was managed and a clear gap between archaeological heritage collection and a preservation policy (Gisema, 2000 : 60).

Due to the variety of approaches that had been developed in earlier salvage research carried out in Nubia, many important issues were likely to have remained unexplored. For example, the development of Merotic studies has been partially influenced by the research traditions of Egyptology (Trigger, 1988).

Due to the widely accepted culture history approach at that time, Nubian culture was little known in terms of what might be called <dynamic of living>. The predominance of evidence from temples, churches, or rich burials contrasts sharply with the poverty of information on other aspects of community lifestyles. (Edwards, 1989 : 19).

The theoretical and methodological shortcomings of salvage archaeology in The Sudan are reflected in current propositions made in considering local cultural development and change (Osman, 1990 : 9).

The objectives of the paper

In the light of the above-mentioned observations the main objectives of this paper can be summed up as follows:

To present the results of various archaeological surveys and excavations that have been made in the impact areas due to the construction of the Merowe Dam.

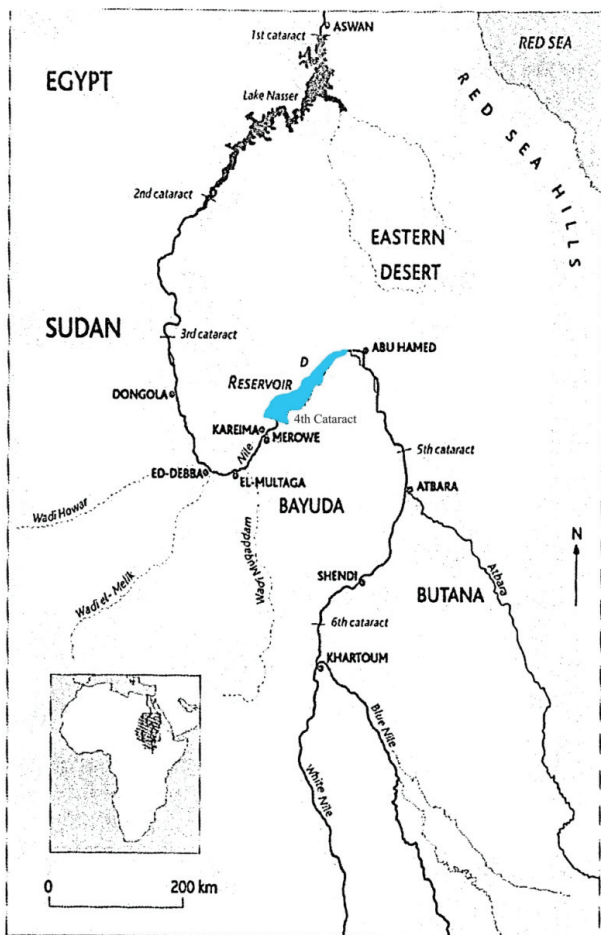
To assess the research strategy that has been adopted in the salvage archaeological work in the impact areas.

To explore the archaeological heritage management in relation to the construction of the Merowe Dam.

To shed light on the expected future environmental impact of the reservoir on the World Heritage Sites in the Kareima Region⁽¹⁾.

Merowe Dam Archaeological Salvage Project

The idea of constructing a dam at the Fourth Cataract Region is not a new one. It goes back to (1942-1952) when the Egyptian Ministry of Public Works made a study of the Fourth Cataract Region with the aim of building a dam at Merowe Island for flood control measures and water storage. Merowe Dam was re-assessed in a study made in 1979 for the Sudan Ministry of Irrigation and Hydroelectric Power (Coyne et Belier et al, 1979:7). In 1984 a Swedish consortium (SWECO) made a pre-feasibility study for the same project, between Abu Hamad and Merowe for hydro-generation. However, insufficient funding and a lack of



Map 1: The location of Merowe Dam and the reservoir

(Source: Sudan and Nubia 10-2006:1)

investor interest effectively stalled the project at the planning stage, but this situation appears to have changed fundamentally once the Sudan started exporting oil in commercial quantities in 1999/2000. Contracts were signed in 2002/2003 for the construction of the Merowe Dam, and work on the concrete dam began early in 2004.

The dam is located in the Fourth Cataract Region, 40km upstream from the modern town of Merowe and about 350km north of the capital Khartoum (See map 1). Merowe Dam is a concrete rock fill dam with a crest at an elevation of 300m to meet a maximum flood supply level of 298m and a low supply

level of 290m and extends for 6 to 8 km.. A reservoir (about 174km long and 4km wide) was formed immediately upstream of the dam and necessitated the relocation of more than 48,000 people before the completion of the dam, which was inaugurated in 2009.

The Merowe Dam Project, as outlined in the terms of reference, promises to be a multipurpose development plant: to utilize water resources stored in the Abu Hamad - Merowe area for irrigation, and to generate electricity for the mounting demand in agriculture, industry, and civilian consumption (Ali, 1993:17-20, Gisema, 2000:2).

Worldwide, the construction of dams for power or irrigation development along with the consequent formation of reservoirs has given rise to controversial views. On the one hand, there are the optimistic estimates of the expected benefits and, on the other, there are the negative impacts such as the neglect of social and environmental results that such projects may bring about. The adverse impacts have been known for a long time, but it is fair to say that it is the manner in which impact assessments are made that has been organised in a systematic way and this can be said to be 'recent', i.e. within the past 30 years. Impacts from construction of dams usually include physical, biological, cultural, economical and social issues, as well as involuntary resettlement (World Commission on Dams, 2002 : 2).

Early archaeological research in the Fourth Cataract Region (the endangered region)

The Fourth Cataract Region has received little attention from archaeologists. No excavations had been carried out in this region prior to the 1980s (Gisema and Ali, 1999:63), and W.Y. Adams described the region as

“devoid of important remains from Napatan-Merotic civilization, and from the high period of medieval kingdoms” (Adams, 1977, 31-32).

Most information about the region comes from the earlier reports of Cailliaud (1826), Lepsius (1913) and Linant de Beffonds (1958) who traveled in this area of The Sudan in 1822. Another nineteenth century report mentioning the antiquities of the Fourth Cataract Region is that of Chelu (1891), (Ahmed, 1984, 17).

The first expedition devoted solely to the search for archaeological remains in the Fourth Cataract Region was that of J. H. Breasted, who sailed down the river from Abu Hamad to Merowe between 21 and 30 November 1906. Breasted (1908: 22-24) was interested particularly in finding hieroglyphics inscriptions but failed to locate a single text during a swift passage. His short description of the region is limited to the mention of medieval strongholds.

However, the brief note of T. Grey's unpublished survey on the right bank of the Nile between Kareima and El Kab highlights best the potential of the region; the note reported finding 221 sites of all periods, mainly situated on the islands “though the Meroitic, and the Christians being regularly represented as the final occupation” (Grey 1949: 121).

There are two groups of fortified sites in this stretch. One pair of sites lies on either side of the river at Kubinant, at the foot of the Fourth Cataract, and has massive bastioned dry-stone walls made of sandstone (Edwards, 1989:81). Surface evidence includes quantities of painted Christian sherds, suggesting an early medieval data (Titherington, 1939; 269-71). Upstream at El Kab, another pair of forts, recorded by Cailliaud as abandoned, were surveyed by O.G.S. Crawford, and showed similar surface

indications of Christian occupation, with a late medieval date proposed for at least one of the standing buildings (Crawford, 1961:10). Some confirmation of medieval occupation has been provided by a limited survey conducted by Caneva (1988) near the Fourth Cataract.

The most valuable report was that of M. L. Jackson who recorded a number of “Anaj”⁽²⁾ cemeteries in this region. His general description suggested Christian “box-grave” six feet in length and two to two-and-half feet in height, (Jackson, 1926:25).

The archaeological survey, directly relevant to the present project and carried out before the archaeological investigation of the dam, was the 1969 survey of Mogrart Island by Abbas (1971) which indicated that, from an archaeological viewpoint, this island was one of the richest areas in close proximity to the Merowe Dam reservoir.

The recent salvage archaeological work at Merowe Dam and its results

In 2003 the Sudan National Corporation for Antiquities and Museum (NCAM) launched an international appeal for archaeological missions to conduct surveys and excavations in the threatened areas of the Merowe dam and reservoir areas before the construction of the dam and the resultant inundation, so as to avoid damage of the archaeological heritage. As a result, both national and foreign institutions responded and became involved in massive salvage archeological work in the impact region. The national academic institutions included: University of Khartoum, Dongola University, and the National Corporation for Antiquities and Museums (NCAM). Numerous foreign institutions were also involved in the salvage work; e.g. Gdansk Archaeological Museum

Expedition, Polish Academy of Sciences, Humboldt University of Berlin, the Italian Institute for Africa and Orient, the University College London, the Sudan Archaeological Research Society, the British Museum, the Hungarian Merowe foundation, the University of California at Santa Barbara, the Arizona State University, and the Oriental Institute Museum of the University of Chicago.

For the purpose of giving information on the basic cultural spectrum of the whole impacted region, this paper illustrates the archaeological findings and results that cover cultural periods in the impacted areas, with emphasis on some less known sites in the region that were only discovered recently (e.g. Kerma culture in the fourth cataract area)⁽¹⁾.

In 1989 and March-April 1991, NCAM made intensive surface surveys on both banks of the Nile and on islands. These surveys were conducted partly in anticipation and partly within the framework of the Feasibility Study of the Merowe Dam Project. The surveys resulted in establishing the location and identification of at least 750 sites (Ali, 1993:17-20). The preliminary field investigation of April-May 1989 was considered the most important archaeological reconnaissance undertaken within the frame work of the Feasibility Study of the dam (Monenco, 1990: 2-8). The March-April 1991 survey, which completed the archaeological survey of the impacted region, succeeded in gathering an intensive database of information which allowed the basic cultural spectrum in the survey area to be established for the prehistoric, post Meroitic, Christian and Islamic periods (Gisema, 2000: 83).

Although the NCAM 1989-and March-April 1991 surveys were biased in having concentrated

mainly on the boundaries of the reservoir area and lacked test excavations, they indicated the archaeological richness of the impact region.

The Gidansk Museum mission started its explorations in 1996 and, directed by Panner, concentrated mainly on the right bank of the Nile. In addition to the survey, the mission made test and rescue excavations. The surveys resulted in recording sites of all periods (prehistoric, Kerma, post-Meroitic, Christian, Islamic). In terms of their function, the sites recorded were classified as cemeteries, settlements, and rock drawings (Panner 1998:4). The most important achievement of this mission has been the discovery of a number of Kerma sites in the Fourth Cataract Region (Kolsowska, E, 2003), and the previously known geographical extent of the Kerma Culture has been extended for more than 200km to the south.

The surveys of the Sudan Archaeological Research Society (SARS) in collaboration with the British Museum was directed by D. Welsby as a series of intensive surveys and excavations. The work of this mission concentrated on the left bank of the Nile and on the Islands and extended from Dar el-Arab to Kerbikan (Welsby 2003:26-32). It recorded many sites representing all phases of the cultural history of the Sudan. The recognition of remains of Kushite pyramid (Welsby, 2003) is considered an outstanding discovery, and it will enhance the cultural heritage of the region and settle previous speculation on the cultural history of this area.

The archaeological field work which was conducted at the Fourth Cataract Region in 1995 by the Department of Archaeology, Dongola University, under the direction of the present writer, was a major survey to be made in the

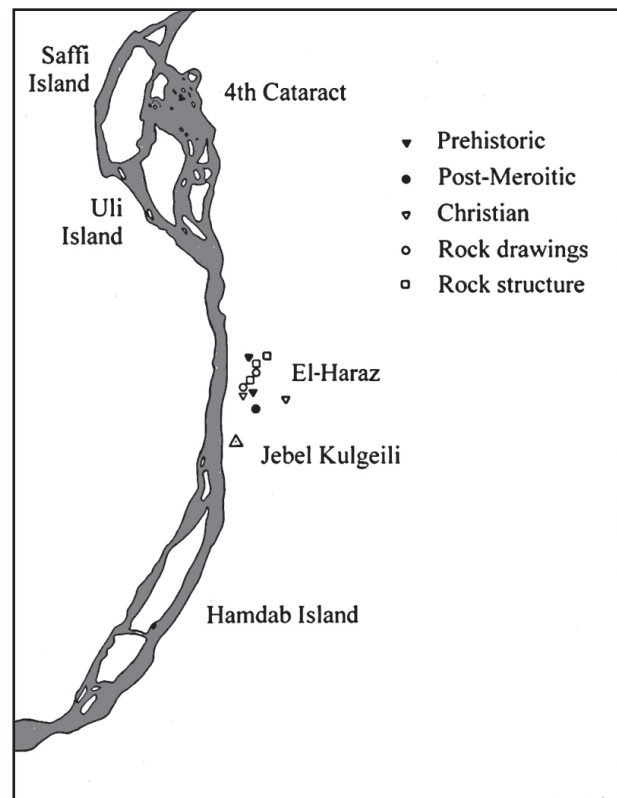
region prior to the archaeological investigation for the dam (Gisema and Ali 1999: 60-70).

In 1995 the Department of Archaeology of the Faculty of Arts and Human Studies, University of Dongola, and the NCAM, established a joint research project in the Fourth Cataract Region at a locality in the Hamdab area called Jebel Kulgeili, map (2). In addition to the survey, the mission conducted test-pits and rescue excavation, which resulted in recording a number of archaeological sites that covered most of the cultural periods (prehistoric, Post Meroitic, Christian and Islamic).

A national Sudanese mission (2001/2002) under the direction of the NCAM in collaboration with Khartoum and Dongola universities, had sought to rescue the sites endangered by the engineering activities on the left bank of the Nile over a distance of 8km that extended from the dam site to Dar-el-Arab. The result of this campaign was the recording and testing of many sites including prehistoric settlements, Post Meroitic, and Christian periods. Many rock drawings were also recorded; they were mainly drawings of animals (camels, donkeys, and horses), boats and crosses.

The work was concentrated mainly on El-Haraza site, Post-Meroitic cemetery. Although most of the excavated burials were found to have been robbed of antiquity, they produced an abundance of ceramic and a variety of other archaeological materials. It is expected that this cemetery will shed considerable light on the history of the Fourth Cataract Region and particularly on the transition between Meroitic and post-Meroitic phases.

The mission also conducted thorough archaeological work in the dam site area of Mirowe Island, north of Hamdab Island. A large



Map 2: The location of Jebel Kulgeili Area

(Source: Sudan and Nubia 3, 1999: 60)

mound in the middle of the island was excavated and revealed repeated use of Christian period houses in a settlement area. In addition, a few prehistoric tools were found scattered on the surface of the island.

The presence of different archaeological materials in Merowe Island indicated that the island witnessed at least four cultural periods of occupation (prehistoric, post-Meroitic, Christian, and Islamic).

It was noticed that the sites located in the resettlement areas (outside the flood zone) were destroyed by the building of houses and digging of irrigation canals, as also occurred in the Multaga area,⁽¹⁾ located about 40km to the south-east of Debba, (See Map.1).

The archaeological work carried out in the Multaga area by the NCAM in collaboration with



Fig. 1-a: Remains of Granite Pyramids Looking West. (Source: Sudan and Nubia, 2003: 34).



Fig. 1-b: S-E angle of Granite Pyramids Looking West. (Source: Sudan and Nubia, 2003: 34).

the French Archaeological Section (SFDAS) succeeded in the recording over one hundred prehistoric sites and a Christian settlement near the Nile (Geus, F, 2003:31).

The archaeological findings

The surveys of and excavations in the various impact areas revealed the richness and the diversity of this region in terms of its archaeological components, including rock drawings, pottery, cemeteries, and settlements.

Among the most significant archaeological findings was the discovery of a granite pyramid with its offering chapel and enclosure wall, dating to the early Kushite period (8th – 5th



Fig. 2: Rock drawing. (Source: Sudan and Nubia 10, 2006: 36)

century B.C) (Fig. 1, a-b). Unfortunately, most of the pyramid was dismantled when the tomb, which lay beneath it, was plundered in antiquity. The tomb monuments, which belong to an important and wealthy individual, have contributed largely to highlighting the importance of the region, and to forcing a reappraisal of the role of cataract zones in the Nile valley.

Rock art, which was carved on granite boulders and outcrops, was abundant: some drawings are isolated whilst others are closely grouped together. Camels and cattle are the most common subject of the rock artists (Fig. 2).

The surveys and excavations made in the impacted region indicated its richness in pottery production, but the most outstanding discovery was Kerma pottery. The most common type of pottery found in the region consists of hand-made vessels, mostly hemispherical bowls (Kolsowska et al., 2003:20). These were hand-made items of pottery, black-topped, lightly burnished, and decorated with an incised geometric pattern (Fig.3). A pan grave of middle Kerma bowl was also found (Fig. 4).

Cemeteries were readily visible features in the impact area, particularly at the dam site



Fig. 3: Middle Kerma Bowl.
(Source: Sudan and Nubia 7, 2003: 24).

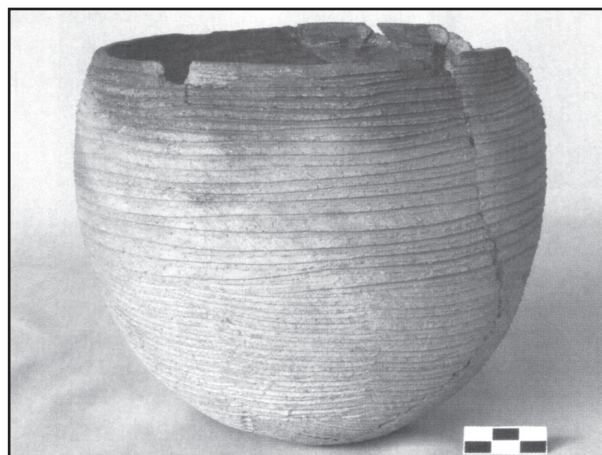


Fig. 4: Bowl (Pan grave type).
(Source: Sudan and Nubia 7, 2003: 24).

and also in the reservoir area; they are either marked by Tumuli (Fig. 5) or box graves. The cemeteries mostly date from either Post Meroitic, or Islamic periods.

Evidence for Post-Meroitic occupation was particularly abundant, and a number of medieval settlements were discovered in the region, of which evidence for the Kerma culture is of special interest in this region.

To summarize, the results of the surveys and excavations conducted in the impact area has highlighted the immense richness of the archaeological remains. It is now clear that the importance of the Fourth Cataract region for potentially filling the gaps in our knowledge of the Nile Valley archaeology is unquestionable.

Assessment of the research strategy of Merowe Dam Salvage Project

The experience and the lessons archaeologists have gained from the recent archaeological research must be the starting point to formulate a new strategy for salvage archaeological work in the Sudan. The shortcomings of the Nubian salvage archaeology, particularly the lack of a well-defined set of special objectives and

methods appropriate to the salvage context, should be avoided. The archeologists who worked in recording and saving the endangered archaeological heritage at the Fourth Cataract Region could have formulated a strategy and programme prior to starting any archaeological work. But this did not happen due to the fact that, in terms of its coordination efforts, the NCAM failed in formulating a definitive salvage strategy that could have been adopted by all participating missions.

What is really needed in the Sudanese salvage work is a coherent strategy policy and well organized programme for rescue archaeology in areas such as the Merowe Reservoir and the adjacent impacted areas. This should be implemented well in advance of field work. The archaeological work should be designed to answer as many questions as possible within the time available and allocated funds. Unfortunately, the Merowe Dam Salvage Project had not followed an organized model and guidance strategy in advance of the initiation of the salvage operations.

Concerning the survey strategy that was adopted in the salvage work, it was noticeable

that systematic archaeological surveys had been made and had covered the whole endangered area. It was clear that the survey strategy had lacked defined objectives in terms of materials that might be available for investigation. The survey strategy should have defined the number of sites to be investigated in the impacted region. The investigation of the sites should have included their size, their state of preservation, their spatial distribution, and their physical characteristics. The purpose of the survey strategy is to locate sites for excavation and to make an accurate description of every site encountered.

As far as the archaeological excavation strategy was concerned, it is concluded that on the basis of the reconnaissance survey results, decisions had to be taken on the selection of sites

for excavation using a sampling method. Since not all sites (or the majority) could be excavated in the time available, it was essential to have a consistent scale of priorities to determine what could be achieved. It was noticeable that, with the exception of the excavation conducted at Harza site (the joint national team season 2001-2002), no sampling method with a defined strategy had been adopted in the excavations. The strategy of salvage excavation in the Merowe Dam Project could have been oriented towards excavating a sample of sites of each cultural period, with special attention to the less-known sites and the newly discovered cultures in the endangered region. NCAM is the body that has the responsibility for this in the Sudan, but it is concluded that organization had been lacking or insufficiently developed in the Merowe Dam Salvage Project. If there had been



Fig. 5: Post-Meroitic tumuli at el-Haraz. (Source: Sudan and Nubia 7, 2003: 31)

better organization and coordination among the missions, a more appropriate organized salvage programme could have been provided for saving the archaeological heritage of this endangered region.

Conclusions

Throughout the last decade the Fourth Cataract Region pulsated with life, and perhaps never in its long history had it experienced such a flow of peoples, scholars and machinery. The Fourth Cataract Region was ready for a turn in its history and this took place as a result of the construction of Merowe Dam Project.

Prior to the threat posed by the construction of Merowe Dam, the Fourth Cataract Region had been studied only superficially and been, from an archaeological perspective, one of the least known reaches of the Nile Valley. The results of the archaeological surveys and excavations that have been made in the impact region, particularly at the dam site and reservoir area, reflect the importance of the Nile Valley civilizations. The surveys and excavations indicate that the region, once described as “devoid of important remains” (Adams, 1977: 31-32), has proved to be very rich in terms of its archaeological heritage. The surveys and the excavations also show that all phases of cultural history of the Sudan are represented.

The Merowe Dam Project has provided a challenge for the archaeologists in terms of using the best methods, techniques, theories and models for managing the archaeological

salvage operations in the impact areas, it proved that a coherent strategy and guidance policy was lacking both in the pre-salvage reconnaissance works, and during the main salvage operations. It is clear that the monuments of the Kareima Region, which are World Heritage-class monuments, notably the pyramids, temples, and palaces at Gebel Barkal, Nuri, Sanam, and el-Kurru, represent a separate case. Although they are located outside the flooded zone of the reservoir and lie above the proposed irrigation areas, they could be affected in the long term by the project, such as leakage from canals and ad hoc irrigation development. The possible negative impact on this World Archaeological Heritage area is due to possible changes in microclimate and rising of the ground water level from canal leakage and irrigation in adjacent areas. The threat to the palaces, temples and pyramids of the Kareima region must be assessed, and conservation work should be done immediately by professional conservators rather than by archaeologists. Time passes rapidly and there is no tomorrow for the future generation to correct such mistakes. Badly needed are allocated funds for the monitoring of environmental impacts at the World Archaeological Sites of this Region. It is regrettable that there appears to have been no post-construction heritage monitoring of the reservoir area and the adjacent archaeological heritage downstream of the Merowe Dam, through which to assess negative or positive impacts and make provision for mitigation.

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Notes:

- (1) Five archaeological sites in Kareima Region chronologically refers to the Napatan era (900-270 B.C.) of the Kushite period, were listed as World Heritage in 2003 by the Sudan National Corporation for Antiquities and Museums (NCAM).
- (2) (the term Anaj refers to both the population and the tribe that governed the Christian Alwa Kingdom during the medieval history of The Sudan (Fadul 1989: 24-25).
- (3) The chronological sequence of the basic phases of the Sudan cultural history could be outlined as follows: Prehistoric Period. First Kushite Period (Kerma Culture: 2500-1500 B.C.). Second Kushite Period (Napatan Period: 900-270 B.C.) and the Meroitic Period (270 B.C. -350 A.D.). Post Meroitic Period (350 A.D-7th C, AD). Medieval Period (Christian Period—7thC,AD-1300AD). The Islamic Period (from the end of 1300AD).
- (4) Multaga is an Arabic name for the resettlement area that had been chosen for relocating the impacted population of Hamdab area of Merowe province. The settlement area is also called New Hamdab.

ملخص: لم يُعرف الكثير عن آثار منطقة الشلال الرابع على نهر النيل (في السودان)، قبل أن يهدد المنطقة بناء سد مروى. أما المسوحات والحفريات الأثرية في المنطقة المهدة فقد أثبتت ثراء المنطقة بالموروث الثقافي، وتنوع محتوياتها الأثرية. يسعى هذا البحث إلى معالجة ثلاثة أمور: عرض نتائج المسوحات الأثرية المختلفة، والحفريات المنفذة في المناطق المهدة؛ ثم تقييم هذه النتائج من منظور إدارة الموروث الأثري؛ وأخيراً التركيز على تقييم الإستراتيجية المتبعة في عملية إنقاذ البقايا الأثرية في المنطقة المتأثرة. ومن المعروف، أن سد مروى أثبت تحدياً قوياً للآثاريين في مساعيهم لتطبيق السبل المختلفة، والوسائل المتعددة، والنماذج النظرية على عمليات إنقاذ البقايا الأثرية في المنطقة المعنية؛ إذ كشف عمل الإنقاذ في منطقة السد وخزانه المائي عن عيوب واضحة، وبخاصة في مجال رسم خطة إستراتيجية متماسكة، ودليل إرشادي دقيق؛ ما انعكس سلباً على عمليات الإنقاذ، ومن ثم على النتائج. ويختتم البحث بالإشارة إلى النتائج، وعرض نقدي للإستراتيجية التي تبنتها عملية الإنقاذ الأثري، ثم يستقصي احتمال ما لسد مروى مستقبلاً، من آثار بيئية سلبية على مواقع الموروث العالمي في منطقة كريمة.

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