The pre- and protohistoric togué of the Niger alluvial plain, Mali

Schmidt, A.M.

The pre- and protohistoric *togué* of the Niger alluvial plain, Mali

Proefschrift

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Annette Margaretha Schmidt
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Recherches archéologiques à Dia dans le Delta intérieur du Niger (Mali) : bilan des saisons de fouilles 1998-2003
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GENERAL INTRODUCTION

Introduction

During the Lomé Conferences[1] many African countries expressed a wish for more attention for sociocultural projects in EU development programmes. In Africa there was a need for activities to promote and acknowledge the cultural identity of African peoples as expressed in their histories and value systems. The aims of such activities should include preserving and assessing the value of the countries' cultural heritage. This would have to involve inventorying, describing and protecting historical and cultural monuments, including the extensive archaeological heritage, which had hitherto been only summarily recorded. It was hoped that such broadening of knowledge would lead to a greater appreciation and understanding of African peoples and their histories in the rest of the world.

The Republic of Mali was one of the countries that signed the Lomé Conventions. The people of Mali had long ago realised that studying their history was an integral aspect of their development. Modibo Keita, the first president of Mali, encouraged Malinese students to study historical sciences outside Mali because such academic studies were not available in Mali itself. One of those students was the archaeologist Alfa Konaré, who was later to become the first democratically elected president of Mali. Because the Republic of Mali does not have the means required to finance large-scale archaeological research independently, the country often works together with foreign researchers and institutes in this field. The Netherlands has always been an important partner in such research.

I first became involved in Malinese archaeology during my participation in the *Projet Togué*, which was supervised by professor Dr J.D. van der Waals and financed by the Dutch Ministry of Foreign Affairs. It was led by the

Note

1. Conferences of the European Union and the African countries to the south of the Sahara, the Caribbean and Pacific (ACP) countries in the field of economic and commercial cooperation and also development cooperation.

Malinese *Institut des Sciences Humaines* in Bamako and took place from 1989 until 1996 in the southern part of the Inland Niger Delta. The *Projet Togué* was a regional part of a national survey intended to make an inventory of the archaeological heritage of Mali. It marked the beginning of my great love for this country, its history and its people.

I was offered an opportunity to conduct my doctoral research into 'The pre- and protohistoric *togué* of the Niger alluvial plain, Mali. A multi-scale archaeo-geographical approach' from 1 May 1994 until 1 May 1998. This research was subsidised by the *Stichting voor Wetenschappelijk Onderzoek van de Tropen* (WOTRO Science for Global Development; dossier number W28-372), part of the Netherlands Organisation for Scientific Research (NWO). I was appointed to the former Faculty of Pre- and Protohistory of the University of Leiden as a trainee research assistant for a period of four years. My research comprised a regional survey in the southern Inland Niger Delta in Mali.

Three months after my contract ended, by which time I had not yet completed my doctoral thesis, the *Rijksmuseum voor Volkenkunde* (RMV; National Museum of Ethnology) in Leiden offered me a job as field director of a large international archaeological research project in Mali (1 October 1998 until 1 October 2002). This research, for which the museum was responsible, was financed by the Dutch Ministry of Foreign Affairs in The Hague. It was to take place at Dia, one of the largest archaeological sites in the southern Inland Niger Delta. I would never have been able to accept this challenge without the four years' experience I gained during my doctoral research.

Contrary to my doctoral research, which I carried out mainly independently with the necessary and dedicated support of the *Institut des Sciences Humaines* in Mali, the excavation at Dia was a collaborative project. It was financed and organised in the Netherlands and involved various universities and institutes in the Netherlands, Belgium, France, England and Mali. The project was led by the *Rijksmuseum voor Volkenkunde*, represented by professor Dr R.M.A. Bedaux and myself. In England the project was supervised by Dr K. MacDonald of the University College in London. We also cooperated with professor Dr J. Polet of the Sorbonne (Paris I) and Dr A. Person of the Université Pierre et Marie Curie (Paris VI) in France, and with Dr O. Gosselain (Université Libre de Bruxelles) in Belgium. In Mali the project was supported by the Ministry of Culture and Tourism, the *Mission Culturelle de Djenné* and the Ministry of Education and Sciences. Dr S. Sidibé of the *Musée National du Mali*, Dr K. Sanogo of the *Institut des Sciences Humaines*, Dr B. Diaby of the *Mission Culturelle de Djenné* and professor Dr D. Konaté of the University of Bamako were responsible for the scientific cooperation with Mali. It was this exceptional cooperation that turned this excavation project into an example of archaeological cooperation in Africa on

an international scale. The excavation at Dia is one of the largest international excavations carried out south of the Sahara.

This dissertation discusses both the results of my doctoral research and my contribution to the monograph on the Dia excavation.

Research Strategy

The archaeological settlements discovered during the survey and the Dia site all lie in the southern Inland Niger Delta in Mali. They form part of the thousands of *togué* that have been found all over the Inland Delta, from San to Timbuktu. These tell-like occupation mounds vary in date from the Late Stone Age to the present. Their golden age was in the days of the powerful medieval West-African kingdoms.

Since 1980 efforts have been made to make an inventory of the archaeological sites in the Inland Niger Delta for the purpose of gaining a better understanding of their size and preservation. The southern part of this region differs from the rest of the delta area in two important respects. In the first place, the density of archaeological sites is the highest in the southern Inland Delta and, secondly, the archaeological heritage of this region is unfortunately seriously threatened by looting. Many of the archaeological sites are illegally excavated by treasure hunters causing irreparable damage to this archaeological heritage. Scientific research is essential for obtaining the information needed to reconstruct the region's history of occupation, and emergency excavations hence have high priority.

In spite of the professionalisation and intensification of archaeological research in Mali in the last half of the last century, West Africa is still way behind the rest of the world in this field. The relatively recent development of large-scale, systematic archaeological research, and the tremendous size and diversity of the country's archaeological heritage make it a great challenge to attempt to overtake this arrears. Unfortunately insufficient means are available in Mali and elsewhere to reduce this arrears because other projects are usually given priority. Many basic archaeological research questions concerning Malinese prehistory, such as those relating to the transition from the Late Stone Age to the Iron Age and to the introduction of iron working, have consequently not yet been answered. Reducing the aforementioned arrears is a matter of urgency. This underlines the importance of all professionally gathered information.

The general aim of both the regional survey and the excavation was to obtain a better understanding of the history of occupation of the southern Inland Niger Delta in Mali.

In the context of the regional survey attention initially focused on the

following aspects:

1. obtaining a general impression of the *togué* in the southern Inland Niger Delta on the basis of their function, geographical distribution, chronology and possibly ethnic differentiation;
2. closer analysis of settlement sites using GIS as an archaeological analytical tool;
3. developing an archaeological model for the development of the settlement system and the socioeconomic organisation of the earliest *togué* community.

At the time when the request for my doctoral research was submitted, GIS was a very promising new tool. Throughout the period of my research its use in archaeology intensified tremendously. Over the years the great benefit of GIS came to be widely acknowledged and it evolved into a highly satisfactory and much appreciated method. The GIS applications that were used to analyse the results of the survey are now no longer exceptional in archaeology, but are still used only very little in African contexts.

The main foci of attention in the Dia excavation were as follows:

1. the sites' roles in the earliest colonisation of the southern Inland Nige Delta. Where did the first occupants come from and in what period did they settle in the southern Inland Delta? An important issue in this context is the transition from the Late Stone Age to the Early Iron Age;
2. the sites' natural environment in the period of their occupation with special at tention to the impact of the introduction of crop cultivation and pastoralism on the ecology of the sites' immediate surroundings;
3. the external characteristics of the cluster of sites around Dia, which suggest the former existence of a town, a supposition confirmed by written and oral sources. Other than the information obtained at Djenné-Djeno, very little is known about the early urban development of this region and the layout of towns.

My share in answering these research questions comprised the general scientific supervision of the excavation and my contributions towards the monograph on the Dia site complex.

The two datasets offered two interesting perspectives: the regional orientation of a survey and the site-specific depth of an excavation. Each perspective has its own opportunities and limitations, but combined, their datasets supplement one another. The survey threw light on the level of regional diversity, but was restricted to surface finds, whereas the excavation yielded detailed, chronologically stratified information, but was limited to a single site. Each approach has its own limited benefits, but combining the information they yield indisputably leads to added value and places previously obtained information in a new perspective.

Another interesting aspect of this approach is that it enabled comparison of finds recovered in an urban context with the results of a geographical survey of the rural hinterland. The Inland Delta is an ecologically rich area surrounded by a much drier Sahel landscape, and we may assume that people will have exploited this environmental diversity in the past. But to what extent was this diversity in resources responsible for the region's urban development, or was it the result of trade contacts? The great homogeneity of the region's material culture tells us that there were indeed close contacts between the urban centres and their surrounding hinterland.

The Regional Survey

In order to answer the various research questions I studied the evidence obtained during the *Projet Togué* – a dataset comprising information on 834 *togué* – supplemented with the results of my own three fieldwork campaigns in 1995, 1996 and 1997, in which I revisited 128 of those *togué*.

Using GIS to compare the distribution map of the sites with geomorphological information on the area shed light on the *togué* occupants' site-selection strategies. A preference for specific sites, for example close to good fishing grounds, arable land or pastures, may tell us something about the occupants' socioeconomic background. Whereas many of the sites are distributed along waterways in a ribbon pattern, others show unmistakable clustering. Differences in the sizes of the sites and their clustering patterns reflect hierarchic differentiation between the sites and the urban development of the region.

Thanks to its great ecological wealth, the Inland Delta had a lot to offer its much drier surroundings. The region was also strategically well situated for the trans-Saharan trade. The waterways probably played an important part in transporting the imported products to the hinterland, where they were presumably exchanged for surplus farming products. The surface finds reflect the degree to which the occupants of the abandoned settlements had access to the various trade networks.

Dating the last occupation phase was crucial for the research because it made it possible to chronologically differentiate the individual sites. Two approaches were followed to determine that last occupation phase:

1. dating on the basis of phase-specific artefact types;
2. dating on the basis of the surface pottery.

The surface artefacts were also used to determine the sites' functions: were they permanently occupied settlements or special-activity sites? At some sites burial pots or flat graves provided a glimpse of the former occupants themselves. Such finds combined with any surviving surface architectural remains provided an impression of the layouts of the settlements. In some cases sites could be associated with local oral traditions on the basis of information obtained from the local population.

An important research question was whether the composition of the surface finds and differences between individual assemblages from the investigated sites revealed any ethnic diversity between the settlements' occupants. The surface

finds however show a high degree of homogeneity and no other form of intersite differentiation besides chronological. As we know from historical sources that the population of the Inland Delta indeed consisted of different ethnic groups, this could imply close contacts between the sites and an extensive exchange network of commodities and products. It should moreover be borne in mind that any intrasite differences will not be reflected by surface finds. On top of this, the existence of a multitude of different ethnic groups makes it difficult to individually distinguish specific ethnic groups.

The Excavation

The settlement complex at Dia consists of an agglomeration of three large archaeological sites: Dia-Shoma, Dia and Dia-Mara. They are separated from one another by various depressions. With an area of 49 ha, Dia-Shoma is the largest. It is also the only one of the three that was permanently abandoned. Dia, measuring 23 ha, is still occupied today, while Dia-Mara (28 ha) has been largely abandoned but is still partly in use, e.g. as a burial site. There are many more sites in the immediate vicinity of the Dia complex.

Three complementary archaeological research methods were used in answering the formulated questions: a regional survey, a site survey and an excavation. The research was carried out in four field campaigns (1998-1999, 1999-2000, 2000-2001 & 2002), of two to three months each. The excavation was restricted to Dia-Shoma and Dia-Mara. The local population did not allow us to excavate in Dia itself.

Before the excavation was started a surface survey was carried out at Dia-Shoma. The best positions of the excavation units were determined on the basis of the results of that survey. In total, 18 excavation units were plotted at Dia-Shoma and Dia-Mara. Of those units, thirteen were excavated to the natural subsoil. In the case of the other five units the digging was stopped before that level was reached. All the trenches were excavated in 10-cm layers, with each exposed surface being interpreted and recorded. Differences between stratigraphic units were determined on the basis of colour, soil composition and density. All the excavated sediments were sieved through a 1-cm mesh width. Only wall sherds smaller than 3 cm were counted. All the other wall sherds were collectively described. All the rim sherds, including those smaller than 3 cm, all base fragments and all exceptional wall sherds were individually described and stored. Extensive sampling was carried out in units A, B, C and F for the purpose of gathering botanical and zoological remains. In the other units only layers of ash and hearths were sampled, except in the last field campaign. The recovered human skeletal remains were analysed by physical anthropologists (V. Zeitoun, E. Gatto & H. Rougier).

The history of occupation and the dynamism of the settlement can be followed over a period of almost 3000 years on the basis of the stratigraphically obtained evidence. The earliest occupants and their origins can be inferred from the oldest remains. These finds and the results of the analyses of the samples inform us about the introduction of the use of metal and the domestication of rice and animals.

The beginning of urbanisation depends on the employed definition, key criteria being the size of the site, the presence of monumental mudbrick architecture (such as town walls), increasing specialisation in subsistence strategies, diversity in trade contacts and an extensive cemetery. The overwhelming amount of pottery, sadly mostly in a severely fragmented condition, enabled us to set up a local typological sequence, while a comparison of the finds from Dia Shoma and those from Dia Mara shed light on differences in the development of these two satellite sites.

While the site survey at Dia-Shoma was of great help in locating interesting excavation sites, the regional survey was beneficial for placing the excavation data in a regional context. With the aid of aerial photos, 102 archaeological sites were inventoried and visited within a circle with a radius of 5 kilometres around Dia. One of the results of the regional survey was that burial in flat graves was not restricted to Dia-Shoma, but indeed a regional practice.

Development?

The survey and the excavation yielded well-documented information on a large number of archaeological sites, several distribution maps and information on the extent to and rate at which archaeological remains in this region are being affected by looting. The research also generated some new questions, and provided an empirical basis and an essential database for further discussion and the development of theories on the history of occupation and the urbanisation process of the southern Inland Delta. For many years this discussion had revolved mainly around the urban centre Djenné-Djeno and its immediate surroundings. The present research has now shown not only that the history of occupation and the urban development of the southern Inland Niger Delta actually started much earlier than hitherto assumed, but also that several urban centres evolved side by side. It is now generally acknowledged that such urban centres should always be considered in relation to their surrounding hinterland, and that it should be borne in mind that they were able to reach such a high level of development only within an already existing, efficiently functioning settlement system. The survey has shown that Djenné-Djeno indeed had such a hinterland and formed part of a differentiated, structured settlement system within which other large settlements, such as the town of Dia, were also able to evolve.

An unforeseen outcome of the research was an understanding of the extent and rate of the damage being done by illegal looting. They are actually quite alarming: we found that the illegal looting of archaeological sites had doubled in five years' time. These are the only concrete figures available on looting in Mali and elsewhere in Africa and they confirm existing concerns regarding its extent and rate. If this development is not stopped, we will in the near future find ourselves without a database with which to reconstruct the history of this region. The consequences will be disastrous for the future of the region's inhabitants.

It is necessary - indeed crucial - for the results of scientific research to be distributed to the widest possible public. Museums can play an important part in this respect. The bitter need to contribute towards a better understanding and appreciation of African peoples and their histories is underlined by the following quote from the speech that the French president Nicolas Sarkozy gave on 26 July 2007 at the Université Cheikh-Anta-Diop in Dakar, Senegal, during his first official visit to Africa south of the Sahara:

« La drame de l'Afrique, c'est que l'homme africain n'est pas assez entré dans l'histoire. Le paysan africain, qui depuis des millénaires, vit avec les saisons, dont l'idéal de vie est d'être en harmonie avec la nature, ne connaît que l'éternel

recommencement du temps rythmé par la répétition sans fin des mêmes gestes et des mêmes paroles.

Dans cet imaginaire où tout recommence toujours, il n'y a de place ni pour l'aventure humaine, ni pour l'idée de progrès.

Dans cet univers où la nature commande tout, l'homme échappe à l'angoisse de l'histoire qui tenaille l'homme moderne mais l'homme reste immobile au milieu d'un ordre immuable où tout semble être écrit d'avance.

Jamais l'homme ne s'élance vers l'avenir. Jamais il ne lui vient à l'idée de sortir de la répétition pour s'inventer un destin.

Le problème de l'Afrique et permettes à un ami de l'Afrique de le dire, il est là. Le défi de l'Afrique, c'est d'entrer davantage dans l'histoire. C'est de puiser en elle l'énergie, la force, l'envie, la volonté d'écouter et d'épouser sa propre histoire.

Le problème de l'Afrique, c'est de cesser de toujours répéter, de toujours ressasser, de se libérer du mythe de l'éternel retour, c'est de prendre conscience que l'âge d'or qu'elle ne cesse de regretter, ne reviendra pas pour la raison qu'il n'a jamais existé. »
(http://www.elysee.fr/elysee/root/bank/print/79184.htm)

If the results of the research discussed here can do anything towards refuting this complete misrepresentation of Africa's past I will have succeeded in my task.

THE PRE- AND PROTOHISTORIC TOGUÉ OF THE NIGER ALLUVIAL PLAIN, MALI

Abstract

The Inland Niger Delta in Mali is scattered with thousands of tell-like dwelling mounds that testify to the rich archaeological heritage of this attractive occupation area. The results of archaeological research suggest an occupation history of more than two millennia in which large urban settlements such as Djenné-Djeno and Dia play a central role. Regional surveys have revealed primary information on the vast rural hinterland of these extensive cities, but little is known about the structure and evolution of this considerable settlement system. The aim of the re-examination of 128 sites in the southern part of the Niger alluvial plain was to obtain an understanding of intersite relations based on the sites' chronological, functional, socio-economic and hierarchical differentiation and their participation in different trade networks. For the research it was crucial to find a method to date the last occupation period of the sites using surface remains. The results of the study emphasise the former occupants' preference for the most elevated landscape units close to fertile pastures, good cultivation grounds and extensive fishing potential for their settlement sites. The occupants' ability to distribute and exchange agricultural surplus for luxury goods – imported via regional, interregional and trans-Saharan trade networks - is imposing, showing that they were able to compete with the occupants of the large urban centres. Although the rural sites were much smaller than Djenné-Djeno and Dia, they were well connected. The rural hinterland apparently played an important role in most of the great West African empires. Population densities of the Inland Niger delta were high for a long time, until the trade routes changed in the 15th century and the region became socio-politically unstable. This led to the abandonment of settlements, first of all around the urban settlements, and later also in the rural hinterland. Today's occupation of the region is only a poor reflection of its impressive past.

Introduction

For three months a year the alluvial plain of the Niger in Mali is an oasis in the dry Sahelian landscape. Comprising an area of 50,000 km², this Inland Delta attracts various ethnic groups, each supporting themselves in their own way, as farmers, fishermen or pastoralists. In the past millennia a series of expanding kingdoms flourished in West Africa, south of the Sahara. The kingdoms of Ghana, Mali, Gao, Segou and Macina all covered parts of the Niger alluvial plain. The numerous archaeological sites tell us that this area is not only an attractive occupation area today, but was also so in the distant past.

Six geomorphologically and hydrologically defined landscape units can be distinguished within the Inland Niger Delta (R. McIntosh 2005, 58; Makaske 2007) (Fig. 1a & 1b). Whereas some of these areas are still active parts of the alluvial plain, others have degenerated into inactive delta areas. The entire Inland Niger Delta is scattered with thousands of tell-like occupation mounds that are known as *togué* or *toguéré* (sing., Pula toponyme) (Mauny 1961; Bedaux *et al.* 1978; 1994; 2005; McIntosh & McIntosh 1980; 1986; Haskell *et al.* 1988; Raimbault & Sanogo 1991; MacDonald 1994; S.K. McIntosh 1995; Insoll 1996; Togola 1996). The density of these *togué* is highest in the southern Inland Niger Delta. Two key questions are raised by the occurrence of such a large number of sites; how was the settlement system they represent structured and how did it evolve?

Following the first systematic archaeological excavations of *togué* Galia and Doupwill (Bedaux *et al.* 1978) and extensive research in and around the town of Djenné (McIntosh & McIntosh 1980; S.K. McIntosh 1995), a regional survey was launched under the heading of *Projet Togué*. Between 1989 and 1991, 966 sites were inventoried within an area of 2000 km² (Dembélé *et al.* 1993). The project formed part of a national survey of archaeological remains in Mali and was carried out by the *Institut des Sciences Humaines*, with support from the Dutch University of Groningen. The research resulted in a reconstruction of the occupation history of several sites, a description of the local material culture and a distribution map of the sites in the southern Inland Delta. Although the research was of great importance in gaining a better understanding of the archaeological history of the region, a few research questions remained unanswered.

Projet Togué yielded an impressive survey of sites, but little information on how those sites were related. What factors influenced the settlement pattern, could the socioeconomic identity of the former occupants be inferred, and what trade contacts were there between individual sites? Essential information needed to answer the question of how the sites were related is the sites' dates.

The archaeological excavations focused on urban centres, such as Djenné-Djeno, and later also Dia, well-known towns and their immediate surroundings that are mentioned in the oral tradition and historical sources. But how did these urban centres relate to their extensive rural catchment area? What part did this agrarian hinterland play in the region's urbanisation? Was it perhaps the economic basis for the powerful medieval West-African kingdoms?

Re-examination and sampling at some of the sites detected in *Projet Togué* with the specific aim of finding answers to these questions and expanding the know-how previously obtained has led to a better understanding of the relationships between the sites.

Fig. 1a:.
Mali, West-Africa

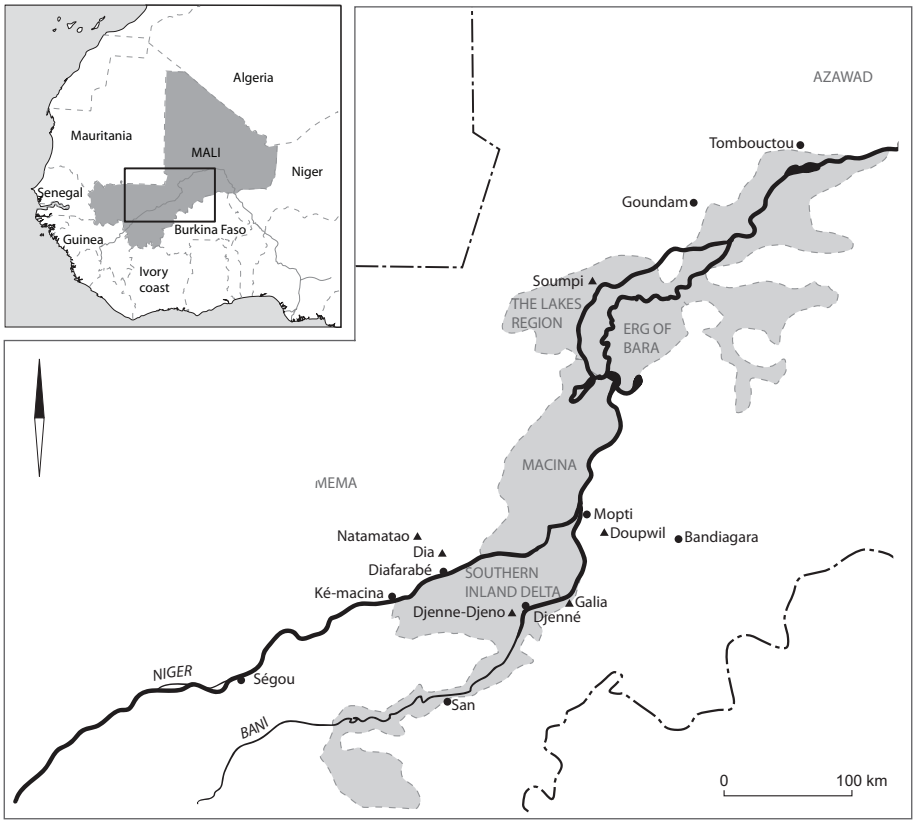

Fig. 1b:
The Niger inner delta, Mali

Research Strategy

In preparation of the fieldwork 150 sets of aerial photographs were stereographically studied (Dembélé *et al.* 1993). Stereoscopic aerial photo research is restricted in that it can only help in detecting elevations in the landscape. Settlements that did not involve an artificial elevation, such as temporary camps, are not detected with this method. It is likely that our settlement system did include such settlements. It was nevertheless decided to use this research strategy because temporary camps are difficult to detect with other methods, too, and stereographic research does offer an opportunity to cover a large research area in an efficient manner.
Variation in the morphology of the *togué*, their situation on the various geomorphological units and clustering along water courses or in groups played an important role in the selection of sites for reanalysis. The microregions selected for the research all lie in the rural hinterland of the southern Inland Niger Delta. The research focused on the *togué* to the south of the village of Nantinoré and the archaeological ribbon occupation along the river Tokouyaoro around the village of Soye. Some small-scale additional surveys were carried out around Toguéré Ladikouna and at an exceptionally large site that lay partly buried beneath the village of Kolonqui (Figs. 2 & 3).

The archaeological sites were identified in the field on the basis of the following criteria.

1. The sites' morphology.
   An anthropogenic elevation usually has clearly defined outlines and is higher than natural elevations with less regular outlines such as levees. Sites that were abandoned long ago and have since undergone substantial erosion, sites that were occupied for only a short length of time and sites on dunes are however difficult to distinguish from natural elevations.
2. Surface finds representing several categories of materials besides pottery.
   The fact that the research area is still occupied by sedentary and nomadic pottery-producing groups sometimes makes it difficult to distinguish between present-day refuse and archaeological objects. Houseplans and/or burial vessels and/or iron slag are reliable indicators of an archaeological site.
3. The existence of a local name for a site and/or the occurrence of a *toguéré* in the regional oral tradition confirm(s) an abandoned settlement's historical role.

This way natural and anthropogenic elevations were distinguished.

Each site was first subjected to a general inspection with the aim of gaining an impression of its shape, height, represented find categories and plans of structures. Features such as houseplans, kilns, burial vessels and flat graves were drawn and the mound's state of preservation and its situation in the landscape were also described. Secondly, the dwelling mounds were divided into different sectors on the basis of their dimensions and all rim sherds with a profile of at least five centimetres were randomly collected in those sectors. The rim fragments were collected in order to obtain as much information as possible on rim type, vessel type and decoration. As the ratios were to be expressed in percentages, it was decided to collect at least 100 rim fragments at each site, so that each sherd would represent at least 1%. This way the representativeness of the pottery sample and the comparability of the individual sites would be

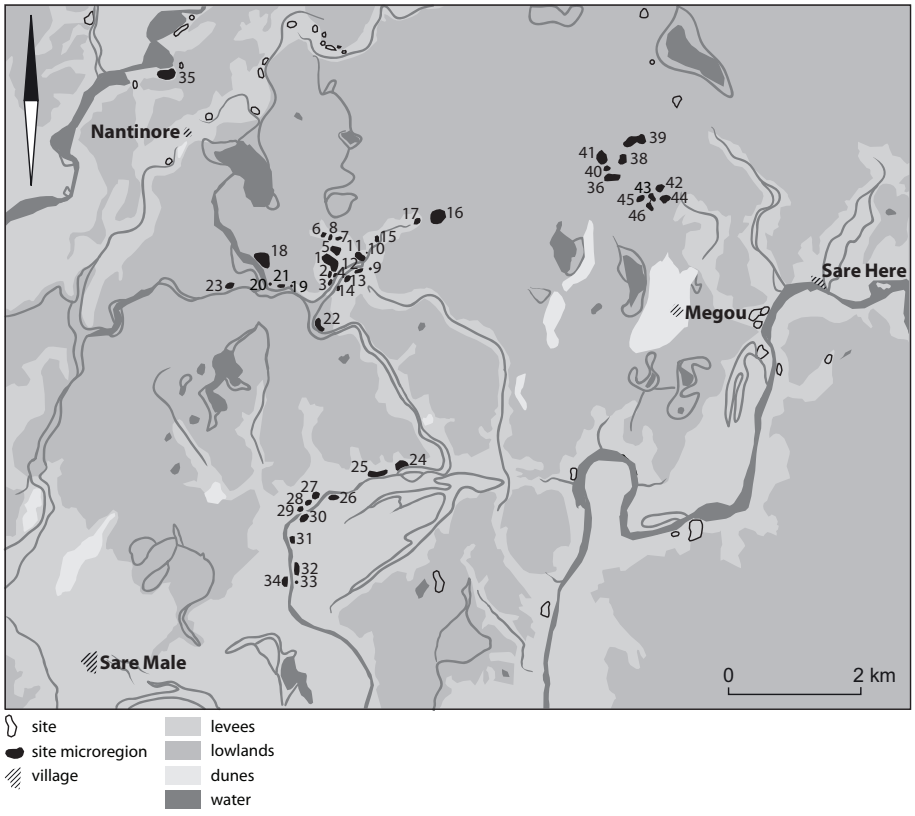

Fig. 2: Microregion to the south of the village of Nantinoré (see fig. 13)

guaranteed. The sherds were left at the sites. A complicating factor is that phase-specific pottery types are rare in the southern Inland Niger Delta, where the different occupation periods distinguished are based primarily on the ratios of different types of pottery, and not on their presence or absence (Bedaux *et al*. 1978; Gallay & Huysecom 1989; S.K. McIntosh 1995, 157&163; Schmidt *et al.* 2005, 252). Thirdly, artefacts other than pottery were collected from all over the surface of each mound. A selection was then made on the basis of the artefacts' relevance with respect to answering the defined research questions.

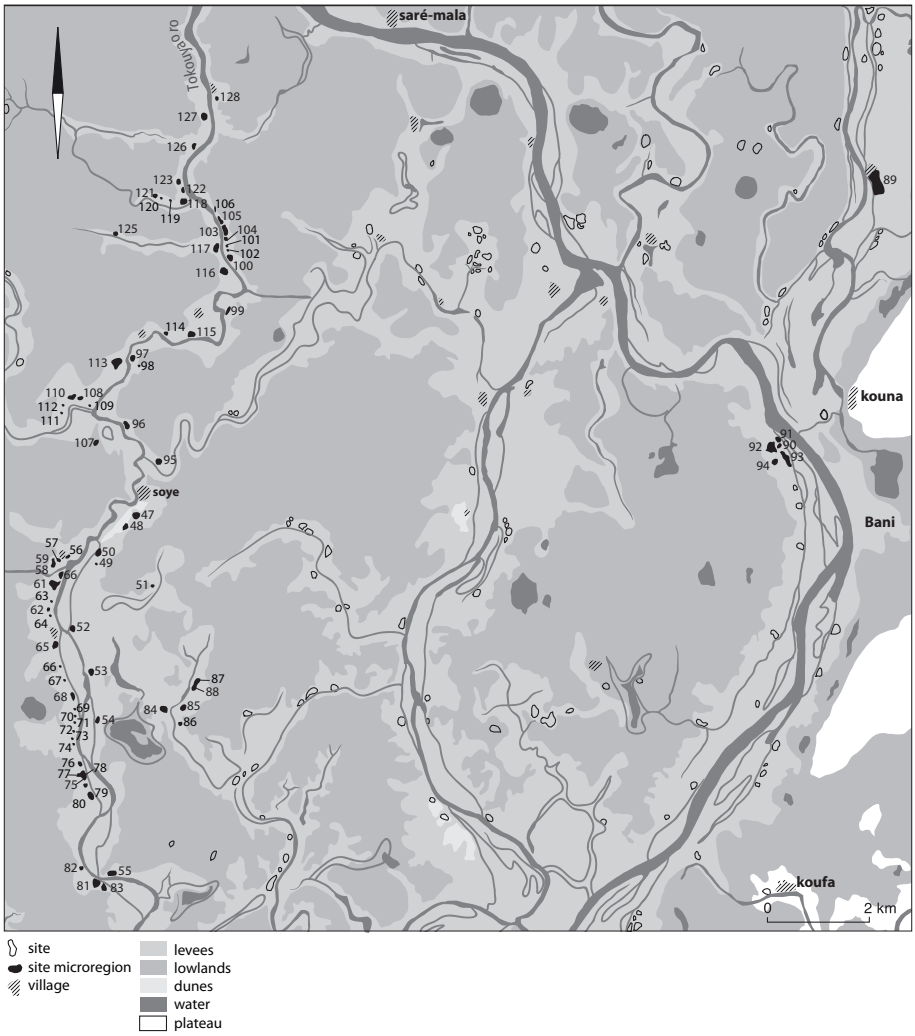

Fig. 3: Microregion alang the river Tokouyaoro, the Landikouna cluster (90-94) and the site near Kolonqui (89) (see fig. 13)

Chronological Differentiation

The chronological differentiation of the surveyed sites is essential with respect to understanding how the sites relate to one another. Working with surface finds restricts dating to the last occupation phases. The dates obtained can nevertheless be used to demonstrate contemporaneity of sites and establish chronological differentiation. The last occupation phases of the settlements were dated with the aid of phase-specific artefact types and pottery found at the surface of the sites. The first tell us in which period a settlement was definitely occupied. In this case the pottery tells us only until when a site was occupied, and so provides a *terminus ante quem*.

The most influential postdepositional factors that have affected the visibility and composition of the surface remains are looting and water erosion. The precipitation involved in heavy downpours during the rainy season, from May until October, cannot all be absorbed into the ground, leading to the formation of streams. Those streams wash away the fine matrix of the top layers, leaving behind the heavier material. The flowing water also wears out deep gullies. In those gullies remains from older occupation layers are exposed and become mixed with younger remains. So over the centuries water erosion has affected the composition and spatial distribution of large and small, light and heavy, and young and old surface remains (Dembélé *et al.* 1993).

The visibility and composition of the surface remains are also greatly affected by increasing looting of archaeological sites by treasure hunters. These activities are prompted by deteriorating local living conditions, caused partly by increasing drought, and are encouraged by the growing interest of museums, galleries and private collectors of ancient Malian 'art' in the West (Sidibé 1995; Panella 2002). This has caused the problem to aggravate in scale, and at the same time the looting is being more systematically organised. Although it is illegal to excavate archaeological sites without official permission in Mali, 45% of the sites investigated in 1991 were found to have been affected by looting. In the case of 28% of the mounds the damage was limited to the effects of small-scale pits dug by individual treasure hunters, but 17% were badly affected by large-scale organised pillage (Dembélé *et al.* 1993). Only sites that still play an active role in the local population's daily life - as a cemetery or place of offering - or sites that feature prominently in the local oral tradition run a lesser risk of being looted.

In total, 128 of the sites detected in the *Projet Togué* were re-examined. Phase-specific artefacts were found at 39 sites. At 85 sites sufficient surface

pottery was collected for an extensive pottery analysis. As the present occupants of the Inland Niger Delta still actively collect artefacts to sell at markets we may assume that the original numbers of artefacts among the surface remains were much higher.

Phase-specific artefacts

Three polished stone axes were found at the re-examined sites. They clearly resemble amulet axes from Asselar and In Koufa and could well belong to the Late Stone Age tradition (Gaussen & Gaussen 1988, 94 &103; MacDonald 1998). The polished axes represent an exceptional category within the homogeneous surface finds of the sites in the southern Inland Niger Delta. There are no records of other finds of polished axes from this region. They were probably made in the period preceding the currently known Iron Age occupation of this region, like the Ndondi Tossokel facies of the Dhar Tichitt tradition in the Méma region, and used secondarily at a later stage (Fig. 4) (MacDonald 1996)

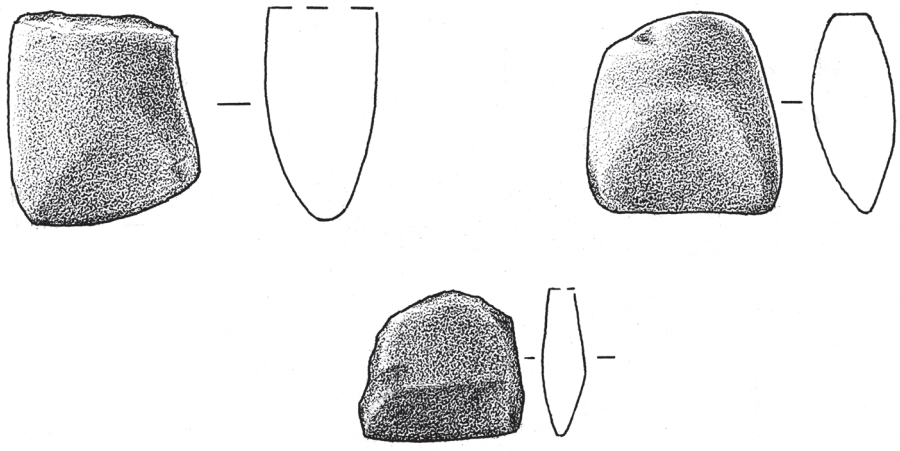

Fig. 4:
Polished stone axes from sites 48, 49 & 26 (scale 1:2)

Spindle whorls are often found in archaeological excavations and surveys in West Africa (Schmidt & Bedaux 2005). Spindle whorls were found lying at the surface of 20% of the re-examined sites (Fig. 5). The small, light spindle whorls were used mainly in spinning yarns of fine materials such as cotton, while the heavy larger ones were used to make yarns of coarser materials such as wool and

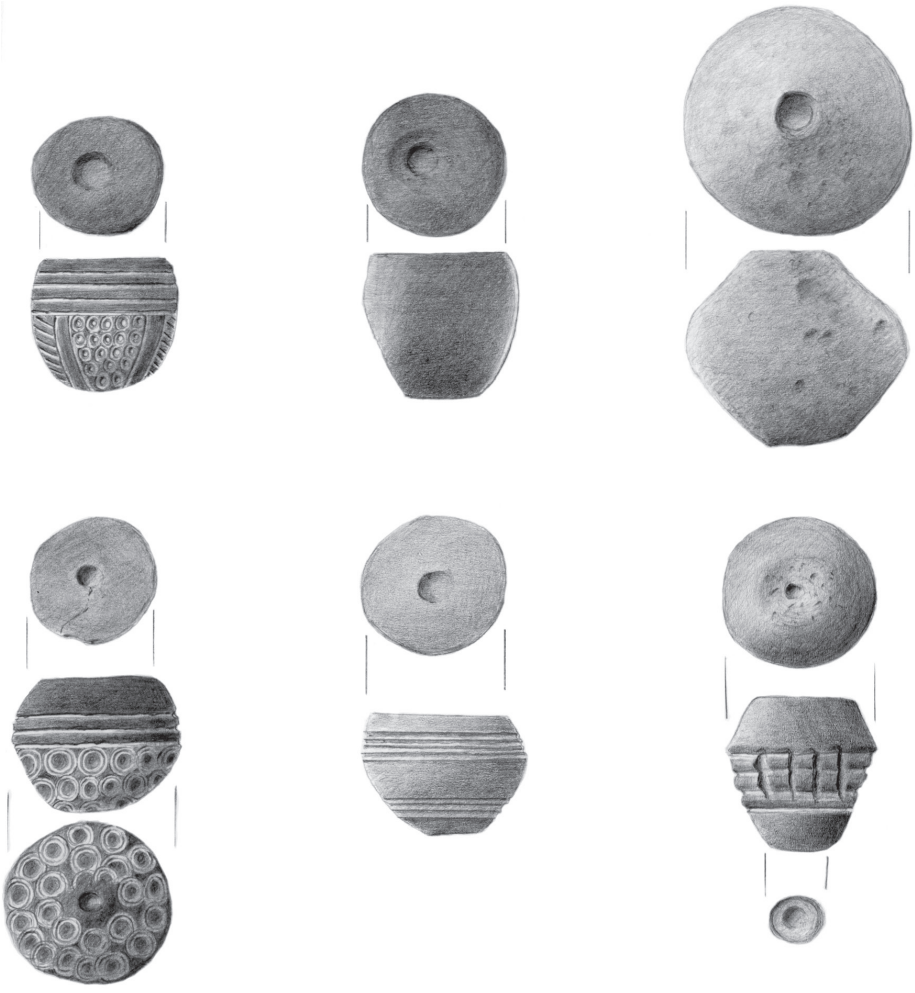

Fig. 5:
Spindle whorls from sites 99, 98, 53, 51 & 30 (scale 1:1.5)

wcamel/dromedary hair (Barber 1991, 52; Bedaux 1993, 456).

The earliest cotton finds of Dia date from the oldest occupation layers (8th century BC-0), but they are fairly rare. Cotton is represented in large quantities only from the 10th century AD onwards (Murray 2005). From Arabic sources it is known that cotton was grown in the lands of the Sahel during the kingdom of Ghana at the beginning of the second millennium (Levtion & Hopkins 2000, 144-145). Around the same time, cotton tissues were produced in the Falaise of

Bandiagara (Bolland 1991).The cotton fabrics that were produced in leading production centres such as Timbuktu, Djenné and Dia were sold at local markets and via trans-Saharan trade (Levtzion 1973, 179).

Cowries are found mainly on and around the Maldive Islands in the Indian Ocean, but they also occur in other reef areas. From the 10th century onwards they were imported into West Africa via trans-Saharan trade to be used as currency or for decorative purposes (Mauny 1961, 420-1; Johnson 1965; Monod 1969; Togola 1996). After the arrival of the first Europeans, in the 15th century, the trans-Saharan cowry trade largely moved to the coast (Connah 1987, 147). Cowries went out of use as currency around 1900. Cowries were found at 5% of the re-examined sites.

Ornaments include lip plugs, beads, bracelets and rings. The sources and times of introduction of the employed materials provide useful information on trade contacts and the settlements' periods of occupation.

Earthenware beads were found at many sites in various occupation layers (Gaussen & Gaussen 1988, 121; Togola 1993, 109; S.K. McIntosh 1995, 216; Insoll 2000, 102; Schmidt 2005b). Beads made of sandstone, quartz, quartzite, diorite, granite, schist, rock crystal, tufa, marble and carnelian come from more restricted sources. The closest source of the sandstone found in the Inland Niger Delta is the Bandiagara plateau and the Boulel Ridge (Mauny 1961, 57; S.K. McIntosh 1995, 247; Togola 2008, 41). Beads of harder materials were from the LSA onwards produced by specialist bead makers in the north of Mali (Gaussen & Gaussen 1988, 179). According to Al-Bîrûnî, the rock crystal will have come from Basra in Iraq, but Al-Dimashqî quotes Egypt, Venice and the Maghreb as sources (Lewicki 1967). The sources of the tufa and marble have not yet been identified. Neither is it clear where the carnelian came from. Many authors assume that carnelian does not occur in Africa, and that it must have been imported from the Gulf of Cambay in India. The carnelian beads are assumed to have made their way into West Africa via Arabian trade in the early 15th century (Mauny 1961, 58; Connah 1987, 179; DeCorse 1989; Insoll & Shaw 1997; Insoll 2000, 102). Arabic sources however claim that the source of carnelian, *tasi-n-samt*, does lie in West Africa (Lewicki 1967). That the trade in carnelian began earlier than previously assumed is demonstrated by a LSA carnelian bead industry at Ilouk (Gaussen & Gaussen 1988, 177-8). Where the carnelian used there came from is not known, but the Adrar-n-Ifoghas is a more likely source than the Gulf of Cambaya. Glass beads were imported from three different areas. The beads with dates around the 9th century probably came from the Near East or the Islamic world (DeCorse 1989). The source of the glass beads with dates around the 15th century is also the Near East or Europe. Only very recently did people in Africa itself, for example the Nupé and Yoruba, start producing glass beads (Mauny 1961, 372; Menzel 1975; Magnavita 2003).

The bracelet remains are of schist and glass. Neolithic schist bracelet industries have been found in Gourma (Gaussen & Gaussen 1988, 253). Only one piece of a green glass bracelet was found. Glass bracelets are known from the 14th century onwards. They were imported from Egypt, with which there were intensive trade contacts, especially after the famous pilgrimage of the Malian king Mansa Moussa in 1324-1325. The glass beads that were found at Teghaza are of later dates and came from the Near East (Mauny 1961, 372).

Lip plugs are made of earthenware or quartz. The use of lip plugs is probably an old tradition that was upheld until very recently (Lhote 1942-1943; Gaussen & Gaussen 1962; Bedaux 1988).

The ornament finds also include two fragments of finely polished and finished agate rings. They came from the Idar-Oberstein gemstone industry in Germany, which between 1830 and 1980 produced more than a hundred million agate beads and rings for the African market. With the aid of the catalogue of the Idar-Oberstein gemstone industry one ring fragment could even be identified as production type 9.8.2: an arched ring with an annular groove (Trebbin 1985, 3 & 39).

Pipe fragments were found at 16% of the re-examined sites. At half of those sites they were encountered in large concentrations, especially at the *togué* near Ladikouna. The earthenware pipes were produced locally. Pipe smoking is associated with the introduction of tobacco into West Africa, so the oldest pipes date from the 17th century (Daget & Ligers 1962; Welling 2000-2001; S.K. McIntosh *et al*. 2003).

Some of the artefacts of which it is known when they were introduced into West Africa can be used as 'type fossils', phase-specific artefacts (Mauny 1964). Polished axes represent an LSA tradition. Undecorated spindle whorls were used from the 8th century onwards, cowries from the 10th century onwards and decorated spindle whorls were first used in West Africa in the 11th century (Schmidt & Bedaux 2005; Mauny 1961, 420-1). Glass beads with dates going back to the 8th century have sporadically been found, but most beads date from the 11th and later centuries (Schmidt 2005b). The *terminus post quem* of glass bracelets is the 14th century, that of pipes is the 17th century (Mauny 1961, 372; S. McIntosh *et al*. 2003). Fragments of agate rings from Idar-Oberstein, finally, date from the 19th century (Trebbin 1985, 3). At sites with several phase-specific artefacts, the artefact with the youngest date indicates the settlement's last occupation phase. In the case of sites without type fossils either the site was abandoned before the introduction of the phase-specific artefacts or the artefacts concerned were removed or not found. Most significant in terms of chronological differentiation are decorated or undecorated spindle whorls, pipes and agate rings. The results of the dating of the sites on the basis of phase-specific artefacts are presented in Table 1.

Pottery

Phase-specific artefacts were not found at all the sites. Pottery was better represented than phase-specific artefacts: 85 sites yielded 100 rim sherds or more, making dating on the basis of surface pottery an alternative dating method. But as the pottery of the Inland Niger Delta is very homogeneous and shows little diachronic change it is difficult to infer last occupation phases from the surface pottery. Differences between phases are determined far more by changing ratios than by changes in the composition of the range of vessel types.

The pottery was coded in the field. Rim types, vessel types and decoration were all described separately. Each rim fragment was classified under one rim type and one vessel type. So the rim and vessel types together are always 100%. This is not necessarily the case with the types of decoration. Different types of decoration may be combined on a single sherd, so the total score may be higher than 100%, and some sherds are undecorated (Table 2).

It was initially hoped that it would be possible to expand the typological sequence of Djenné-Djeno with information obtained in the excavation at Dia. The pottery research at Dia however showed that the typological sequence of Djenné-Djeno could not be used there, and is of only limited regional use (Schmidt *et al.* 2005, 251). Our microregion criteria therefore had to be formulated on the basis of the closest typological sequence available: that of Djenné-Djeno (McIntosh & McIntosh 1980; S.K. McIntosh 1995). But this sequence involves a chronological limitation, because it stops around AD 1400 (S.K. McIntosh 1995, 156). Many of the re-examined sites yielded pipes, implying that they were abandoned later. We therefore had to complement the sequence with a Phase V.

The following criteria, phases and terminology are based on McIntosh & McIntosh 1980 and McIntosh 1995.

The range of rim types became more diverse with time. Phase I/II (250 BC-AD 350) is characterised by a limited number of rim types: exclusively simple rims and outturned rims. Characteristic of Phase IV (850-1400) is a great diversity of rims, including T rims and inturned rims. The pottery of Phase III (350-850) has ledged rims, but does (so far) not include vessels with T rims or inturned rims.

The decisive factor with respect to the vessel types is the ratio of the vessel types. Phase I/II is characterised by predominantly open and closed types and the almost complete absence of plates. The pottery of Phase III includes more carinated types than pot lids, but they are always combined with plates. Pot lids are the dominant type in the pottery of Phase IV.

As far as the decoration of the rim fragments is concerned, the pottery of Phase I/II is characterised by twisted cord roulettes (Twine 6/7) and that of Phase III by accordion-plaited strip roulettes (Twine 4) combined with painted

decoration. Standard 2- or 3-cord-plaited roulettes (Twine 1) were particularly popular in Phase IV (Figs. 6a, 6b, 6c). Rim sherds with stamped decoration were found neither at Djenné-Djeno nor at *togué* Galia and Doupwil. So stamped decoration would appear to be a distinguishing feature of the pottery of Phase V, from the period after 1400.

Fig. 6a:
Twine 6/7

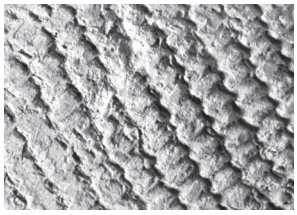

Fig. 6b:
Twine 4

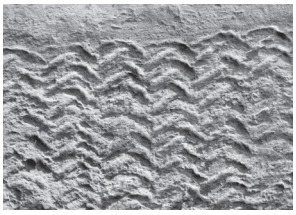

Fig. 6c:
Twine 1

Each site was attributed to a specific phase on the basis of three variables: the rims, vessel types and decoration. Subsequently the three series were combined. In the case of attribution to different periods two identical attributions were taken to be decisive. In the case of several periods the most recent was chosen. As Phase V was only represented by decoration, precluding a double score, the presence of stamped pottery was taken to imply a date in the late period (Table 2).

Periodisation of the sites

In most cases one of the two dating methods or a combination of the two led to a date for the last occupation phase, and it proved to be possible to infer chronological differentiation between the individual sites. In four cases there was a discrepancy because the phase-specific artefacts are of more recent date than the surface pottery.

Three periods were distinguished. The periodisation is unfortunately fairly coarse, including periods that lasted for several centuries. The earliest period, before the 8th century, is characterised by the absence of phase-specific artefacts and by pottery of Phases I/II and III. At 11 sites the occupation was limited to this period. The middle period, from the 8th until the end of the 14th century, is characterised by the occurrence of spindle whorls, cowries and/or glass and by pottery of Phase IV. At 24 sites occupation came to an end in this period. The distinguishing features of the late period, from the 14th until the 19th century, are pipes, fragments of agate rings and stamped pottery. With a total of 50 sites,

this period is the best represented (Table 3). The present occupation of the region is of course the most recent occupation phase. The only site whose date could be stratigraphically checked is Toguéré Ladikouna, which was excavated by the *Instituut des Sciences Humaines* in 1994. The C14 dates of the most recent occupation layers agree with the outcome of the dating method described above.[1]

Comparison of the results of the surveys around the urban centres Dia and Djenné-Djeno and those in the rural hinterland showed that the majority of the sites around the towns were abandoned in the middle period and those in the hinterland on the contrary in the late period (McIntosh 1980, 382; Schmidt 2005e). We may assume that living conditions around the large urban centres deteriorated after the collapse of the Mali Empire, prompting the population to move elsewhere. Apparently the consequences of the collapse affected the towns earlier than the rural areas.

The three most important settlement clusters – Ladikouna (90-94), Sonon (1-14) and Megou (36-46)– each show a different chronological differentiation. Ladikouna consists of a group of occupation mounds that were all occupied until the late period. Sonon is different in that it includes one site that was abandoned at an early stage, a few sites that were abandoned in the middle period and sites that were abandoned in the late period. The cluster in the lowlands beyond the levees near Megou comprises three sites that were abandoned early and five that were abandoned late. Only one site was abandoned in the middle period.

Functional Differentiation

Is it possible to distinguish functional differentiation between the sites, besides chronological differentiation? During the survey it was found that almost all the potential elevations in the stereo photos were archaeological sites. Irrespective of their height, which was sometimes quite insignificant, or their atypical appearance, the mounds that were found to consist of loam will at some time have supported mudbrick buildings, implying that they are anthropogenic in origin - even mounds that yielded only few surface remains. But did the mounds in question all bear actual settlements?

Burial mounds and cemeteries

The excavation of the El Oualadji mound by Desplagnes in 1904 showed that some of the archaeological sites in the Inland Niger Delta are burial mounds (Desplagnes 1951; Raimbault & Sanogo 1991, 253). When we consider only the mounds' morphology, tumuli can be characterised as small, tall, squat mounds with steep flanks. In a survey it is however difficult to determine a mound's original morphology due to erosion, which may be quite substantial (Raimbault & Sanogo 1991, 253 & 257). In the *Projet Togué* research area (N=834) only a small number of sites (N=8) could be identified as such. It is likely that none of the re-examined sites are burial mounds.

Two burial traditions can be distinguished in the research area: burial in earthenware vessels and inhumation in flat graves.

Burial vessels projecting from the eroded surface were found at 87% of the re-examined sites (Fig. 7). The custom of burying the deceased in vessels was very common throughout the entire southern Inland Niger Delta and beyond (Bedaux *et al.* 1978; McIntosh & McIntosh 1980; Curdy 1982; Stössel 1983; Kiethega *et al.* 1993; Sanogo 1994). Burial vessels were found in concentrations (as a cemetery) on the *togué* and in association with structural remains. Burial vessels are large storage vessels that were secondarily used for burial (Bedaux *et al*. 1978). Often only the rim of the vessel was visible at the surface, but the presence of human bones then confirmed that the vessels were burial vessels.

Flat graves were encountered at 26% of the re-examined sites. The eroded inhumations were likewise found in clusters or in association with structural remains. Exceptionally large numbers of inhumations were found at two sites in the immediate vicinity of Soy. The local population associates this cemetery with a historical battle, the battle of Noukouma, which is said to have been fought here on 21 March 1818 (Bâ & Daget 1984, 36). The orientation of the deceased

Fig. 7:
Burial vessels, pottery scatters and erosion at site Kaniana

could only rarely be determined, but in the case of some inhumations it appeared to reflect an Islamic burial tradition. Today, people still often bury their dead in abandoned nearby settlements. So burials that are visible at the surface may also represent a period of reuse of an abandoned occupation mound. Burial in vessels is known to be a pre-Islamic tradition, which is assumed to have been replaced by inhumation in a flat grave with an Islamic orientation. However, burial vessels and flat graves have often been found together (Bedaux *et al*. 1978; S.K. McIntosh 1995, 66-7). The practice of burial in vessels continued into the late period. This could imply that this region was late in converting completely to the Islamic faith, or that the transition was a gradual process, with the two customs being practised side by side for a long time. Interestingly, in the region around Dia burial in vessels seems to have played a much smaller role in the burial tradition than elsewhere and inhumations, with and without an Islamic orientation, seem to be more common (Schmidt 2005e).

Ritual function

Sites with a specific ritual function, such as Toguéré Natamatao, are difficult to distinguish from other sites on the basis of morphological features (Polet 2005). It is not sure to what extent a site may have been used exclusively for ritual purposes, or whether the settlements included a sacred component. For the time

being such a sacred component may be assumed to be defined by the presence of earthenware statues, which were in the survey found predominantly at looted sites (Fig. 8). The sites in question were all occupation mounds.

The earthenware statues are the reason why archaeological sites are looted. Because various sites were re-examined in the survey it was for the first time possible to assess the rate at which the local archaeological remains are being affected. In 1991 the extent to which the sites in our microregions were affected by looting was way below the regional average of 45%. Within only five years this arrears was however made up at an alarming rate. In those five years' time looting in the microregions by individual treasure hunters rose from 13% to 31%, while illegal digging by organised groups increased from 5% to 25% (Panella *et al*. 2005).

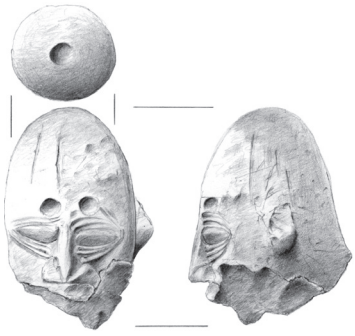

Fig. 8:
Head of earthenware statue from site 101 (scale 1:2)

Special-activity sites

The survey yielded a lot of evidence of iron production and ironworking in settlement contexts. Iron slag was found at 80% of the re-examined sites. Raw bloom, kilns, crucibles and bellows are evidence of local iron production or metalworking. The only indisputable iron kiln was found at one of the sites belonging to the cluster around Toguéré Sonon; it is comparable with the kiln of type 1 of Soumpi SMP 3 (Chièze 1991). Another settlement site contained visible evidence of early forges. Iron and bronze objects are often difficult to distinguish from present-day contamination.

Exceptions as far as iron production in settlement contexts is concerned are small sites in the immediate vicinity of a larger site that were covered with vast quantities of iron slag. They would appear to have been special-activity sites. The reasons why the activities concerned were carried out beyond the boundary of the settlement may have been practical or sacred.

The earliest colonists of the southern Inland Niger Delta, in the last millennium BC, were already familiar with the craft of ironworking. Iron objects were found in the earliest occupation layers at both Djenné-Djeno and Dia (McIntosh & McIntosh 1980, 74; Schmidt 2005a). But ore suitable for iron smelting does not occur naturally in the Inland Niger Delta, so ore or iron must have been imported. The source of iron nearest to Djenné-Djeno is in the Bénédougou area, approximately 75 kilometres southwest of the city (McIntosh & McIntosh 1988). Iron production seems to have been associated more with the availability of the necessary technical know-how and craftmanship than with the proximity of a source of iron (Coulibaly & Chièze 1993).

Built structures

The structural remains yield information on the settlements' internal structure. 27% of the re-examined sites contained remains of circular and rectangular structures made of cylindrical (*djenné-ferey*) or rectangular (*toubabou-ferey*) sundried mudbricks. From oral tradition it is known that *djenné-ferey* were used in the town of Djenné until around 1930, when masons switched to *toubabou-ferey* (LaViolette 2000, 71). The occurrence of rectangular mudbricks at *togué* whose last occupation phase has been dated to the early, middle or late period however shows that rectangular mudbricks were introduced at a much earlier stage elsewhere in this region. The frequency of rectangular mudbricks among remains from the late period is however substantially higher.

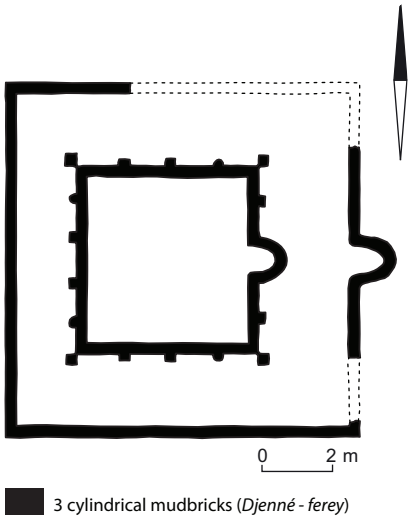

Fig. 9a:
Plans of the two mosques at site 99

Fig. 9b:
Remains of two mosques at site 99

The walls built of *djenné-ferey* vary in width from one to five mudbricks. In the case of the walls built of rectangular mudbricks it is not only the number of bricks that varies (from one to three), but also their positioning (horizontal or diagonal). The most obvious factors that will have played a role in the variation of the thickness of the walls are the weight of the roof structure, the presence or absence of upper floors and safety considerations. We may assume that progressive erosion will have caused the visibility of structural remains to decrease at the surface of sites that were abandoned at an early stage. Among the occupation sites there are however sites from all periods that were found to be devoid of structural remains, whereas some sites that were abandoned in the earliest periods did contain structural remains.

The absence of a frame of reference makes it difficult to interpret the round and rectangular structures. Many factors have influenced the appearance of the remains, and the encountered plans may represent buildings with different functions, but the associations needed to determine those functions are absent. The only structures whose function is not open to doubt are three mosques. The presence of a *mihrâb*, a prayer niche, and the buildings' eastward orientation show that the plans are those of Islamic prayer houses. The last occupation phase of the sites in question was dated to the late period, from the 14th until the 19th century (Fig. 9a & 9b).

One of the sites (no. 106) was found to contain an exceptional concentration of building plans. No fewer than 28 round and rectangular plans were observed within an area of 35 by 23 metres (Fig. 10). The plans are probably contemporary because the surviving remains differ little in height and because the plans do not overlap; many are indeed connected to one another by walls. Those walls and the building plans together represent several structures surrounded by yards. One of the yards contained nine circular and square plans of different dimensions. There is only one entrance to the yard. So the internal layout of the settlement was based on a yard system. At this site, too, the last occupation phase – and hence the buildings – was dated to the late period.

In addition, the remains of small round structures were found at 6% of the re-examined sites. These structures had a maximum cross-section of 1.5 metres and their floors were covered with a layer of ash. The structures were smoking hearths of nomadic fishermen who still regularly visit this region today. The hearth remains that were found at the surface are subrecent, and younger than the underlying occupation layer. They were built by migrating fishermen during secondary use of the sites and tell us nothing about the socioeconomic identity of the former occupants.

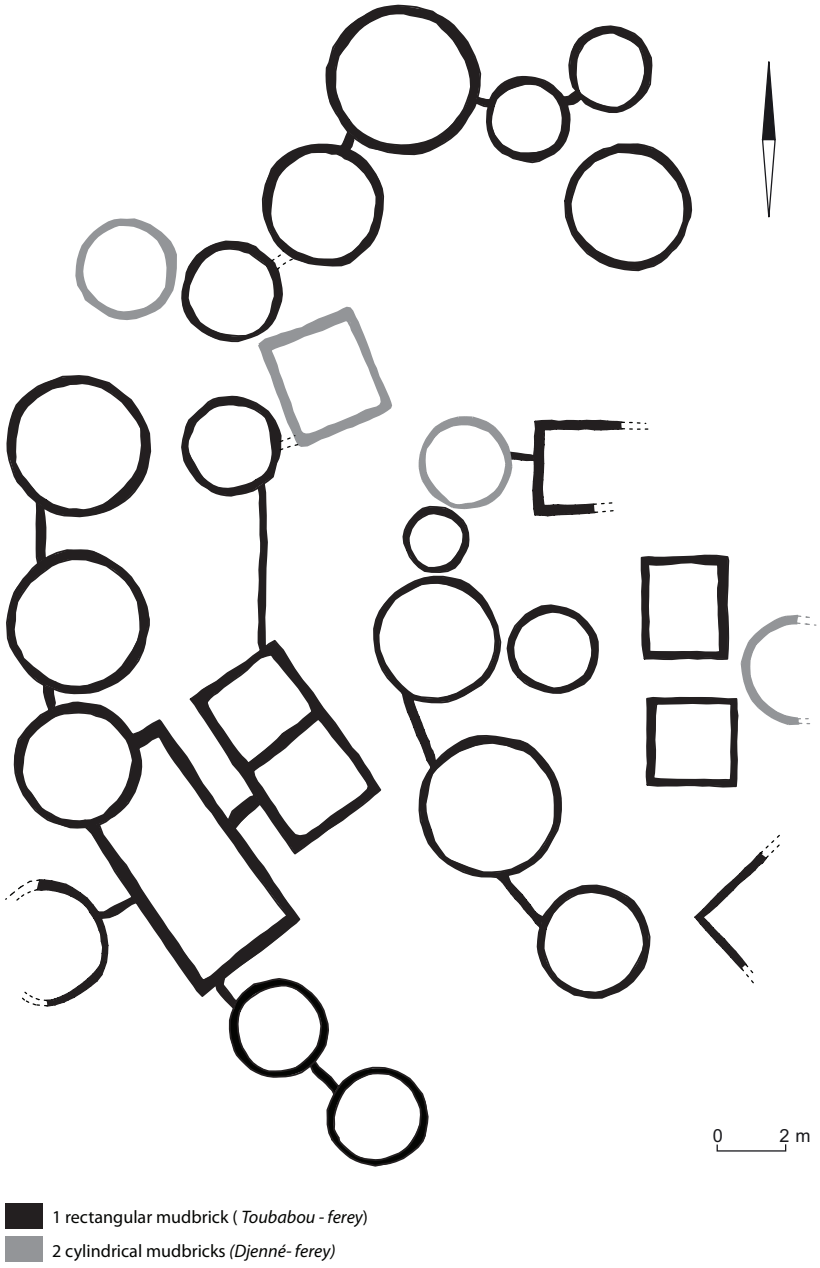

Fig. 10:
Houseplans at site 106

Socioeconomic Differentiation

Information obtained on the sites in *Projet Togué* was combined with information on the sites' position in the landscape and their proximity to water, to see whether these factors may have played a role in the selection of the sites.[2] The *Projet Togué* database was used for this analysis (N=853). The analysis showed that only on the active levees the number of sites is higher than expected. 63% of all the sites are contained in the levees, which account for 29%

Fig. 11:
Distribution pattern of the togué in relation to geomorphology (N=853)

of the overall area (Fig.11). The levees in question are the most elevated landscape units. It is not surprising that people chose to settle at these sites, in a delta area that is submerged for three months a year (Fig. 12). The majority of the other sites lie in the lowlands beyond the levees. The low percentage of *togué* on the plateau adjoining the floodplain shows that the *togué* are a delta-bound phenomenon.

The sites in the lowlands must have been affected more by the rising water levels during the flood periods than the other sites. At these sites it may have been necessary to artificially raise the natural ground level. This phenomenon is indeed observable in the composition of the section of Toguéré Doupwil (Bedaux *et al*. 1978). The average height of the sites in the lowlands is however

Fig. 13:
Distribution pattern of the togué in relation to open water (N=853)

the same as that of the sites in the rest of the Inland Delta (2.4 m).

In the drier part of the year close proximity to water is a prerequisite for survival. Waterways will also have constituted an important infrastructure connecting the individual sites. So it's not surprising that 82% of the sites in the macroregion lay within 300 metres from water (Fig. 13). They reflect a preference for permanent waterways over periodic ones. Proximity to water will of course also have been an influential factor in the preference for levees.

Other factors that may have played a role in site selection besides proximity to water and a desire to keep one's feet dry may have been the former occupants' subsistence practices. The lowlands will have been ideal for the cultivation of rice, the dunes for that of millet and the levees will have been most suitable for growing sorghum (R. McIntosh 2005, 63). Fishermen will have wanted to live close to the water's edge while cattle farmers will have needed pastures. The site selection pattern is most in accordance with the cultivation of sorghum (on the levees) and the cultivation of rice and/or cattle keeping (in the lowlands). The situation of sites along water courses is polyinterpretable, the possible decisive factors being communication, water supply and fishing. The small number of sites in the dunes could be attributable to the employed detection method: sites are difficult to detect in this area by means of stereo photography. On the other hand the absence of water courses, and hence accessible drinking water, may well have deterred the region's former occupants from settling in the dunes.

Fig. 12:
View on the Landikouna cluster (90-94)

The artefacts unfortunately provide little extra information. Querns meet a general need and are not restricted to farmers. The fact that the number of quern fragments found at sites in the lowlands (54%) is slightly higher than that found at sites on the levees (37%) has little significance. Net sinkers were equally distributed at sites on all the geomorphological units. They moreover represent only one specific fishing method. Other fishing methods – using dams or traps – are difficult to demonstrate. In the survey they were found at 38% of the sites, but they are only very rarely found in excavations (Bedaux *et al.* 1978; Schmidt 2005d; S.K. McIntosh 1995, 234). So the many net weights found among the surface remains must be associated with the activities of (sub)recent nomadic fishermen, like the afore mentioned smoking hearths.

There is little archaeological evidence to tell us more about the origins of the present specialist niche system (Gallais 1967; 1984), in which socioeconomic and socio-ethnic backgrounds are closely linked.

Hierarchical Differentiation

The dimensions of the *togué* are a good starting point for obtaining an understanding of the hierarchical differentiation of the sites. The morphological characteristics of the sites are their height, length, width and shape. The height and shape were taken as rough indicators of the duration of occupation and the size of the settlement's population, respectively. These data had to be interpreted with some caution, however. Site-formation factors and differences in population density, continuity of occupation and the use of building materials other than mudbrick may affect the extent to which morphological data are comparable.

It was not possible to use a fixed reference level in the Inland Delta, so the quoted heights of the *togué* are not absolute, but relative to the surrounding flat land. The longest side of each mound was taken as the length. The width is the largest dimension perpendicular to the longitudinal axis. As for the shape, a distinction was made between round, oval and irregular. The areas of the sites were calculated by combining the length, width and shape.[3] Information on the composition of the settlement system was obtained by combining the sites'

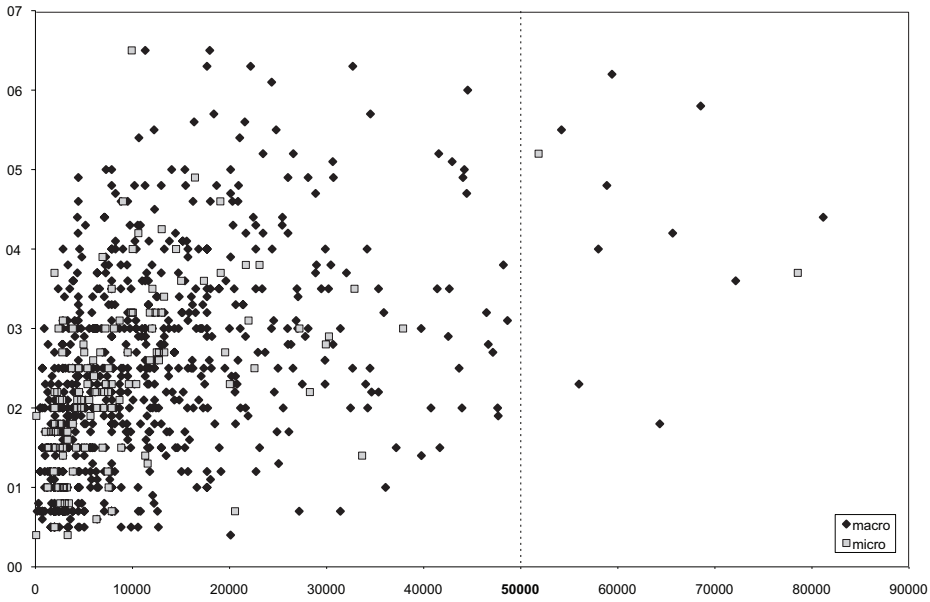

Fig. 14a:
Relations between size (M^2) and height (M) of the microregion (N=127) and the macroregion (N=847) at two scales

height and size (Fig 14). In the macroregion a large group of small sites was distinguished and the number of large sites is relatively small. The three largest sites, toguére Djenné-Djeno, Diaabé and Kaniana[4] (see Fig. 14b), are to be found in the immediate vicinity of Djenné.

In the microregion, the hinterland of these large sites, it was possible to combine site size with chronology. Before the 8th and after the 14th century abandoned sites were relatively large, with maxima of 2.9 and 5.1 ha[5]. In the intermediate period the abandoned sites were much smaller, with a maximum of 1.2 ha. The site near Kolonqui in the microregion (89: 7.9 ha) is the tenth largest site in the macroregion. A settlement system differentiated in terms of site dimensions had already evolved during the early period, before the 8th century. With time, the larger sites in the rural hinterland grew only slowly in size. This led to an increasing gap between the exceptionally large centres (Djenné-Djeno, measuring 33 ha, and the Dia complex, measuring 100 ha) and the surrounding rural areas.

The sites arranged in a ribbon along the river Tokouyaoro differ from one another predominantly in terms of their dimensions, and show virtually no clustering. Remarkably few very large settlements were found; the majority of the sites are medium-sized. If, however, size is not the only decisive factor and a

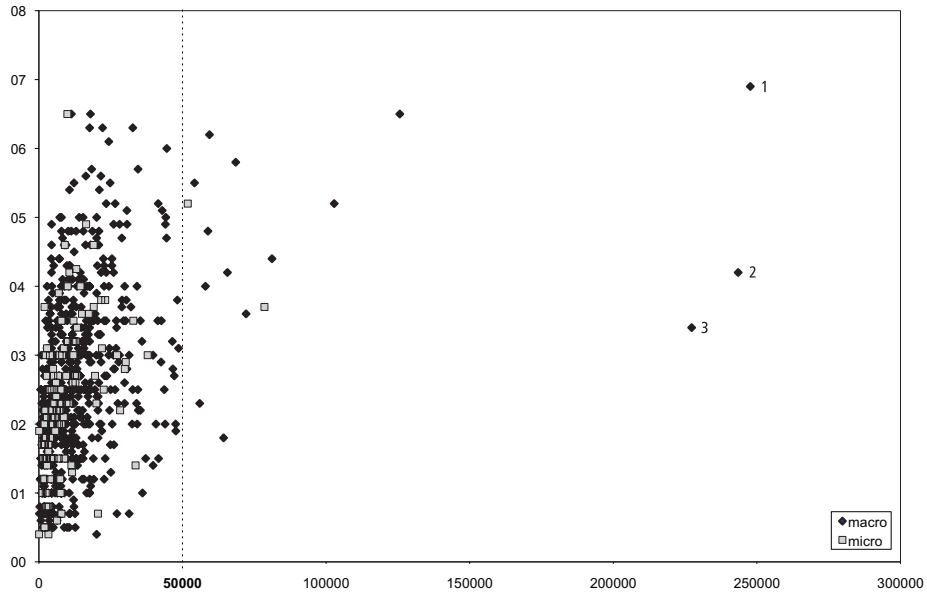

Fig. 14b:
1 Djenné-Djeno, 2 Diaabé, 3 Kaniana

clustering of sites may also represent an urban structure – as proposed by R. McIntosh (1998; 2005, 111) – this would change things. Several medium-sized sites together may have constituted an entity that exceeded the individual sites in size. But this would imply that the sites were interlinked, to distinguish them from the others.. We may only regard a polynuclear cluster as a distinct unit if the sites show some form of functional, socio-ethnic or socio-economic differentiation. An example of such a polynuclear cluster is to be found in Dia: Dia-Shoma and Dia-Mara yielded differently composed find assemblages, but their occupation histories are closely linked (Schmidt *et al.* 2005; Bedaux *et al.* 2005). If clustering was caused for example by limited availability of land suitable for occupation, then we should regard the cluster simply as a collection of individual sites. Two clusters, the sites around Toguéré Sonon and a cluster of sites in the lowlands near Megou, were distinguished in the Nantinore microregion.

Trade

Three complementary trade networks are traditionally distinguished in West Africa: the trans-Saharan, (inter)regional and local trade networks (Giri 1994, 69). These networks complemented one another: the trans-Saharan trade was dependent on efficient regional and local networks. The trading towns were the links in this chain. They were strategically positioned, e.g. at intersections of trade routes, along navigable waterways or in a wealthy catchment area. The towns in the southern Inland Delta meet all these conditions. The origins of the raw materials of which the surface finds are made tell us to what extent the former occupants of the *togué* had access to the different trade networks. Only the re-examined sites that could be dated (N=85) were included in the analysis. The relatively limited archaeological deposition of prestigious objects, their visibility and the fact that they are still actively collected today indicate that the percentages represent the lower limits. There will probably have been many more prestigious objects originally.

Local and regional trade networks

The local trade networks consisted of local markets that sold mostly locally produced agrarian produce and consumer goods. Everyone had access to these local markets, where the goods were traded by barter. The local trade network left no archaeological traces and can only be inferred indirectly, via absence of evidence of other networks. Fortunately none of the datable sites in the microregion were restricted to the local network and they all yielded evidence pointing to other networks. The regional trade networks were expansions of the local markets involving products from outside the home region. Besides agrarian consumer goods they also included raw materials such as iron ore and sandstone querns, both of which came from regions directly adjoining the southern Inland Delta. 52% of the re-examined sites participated in such regional trade networks.

Interregional trade network

As the distances between the production areas and the markets increased a need arose for middlemen, traders and means of payment. The traders constituted an independent group that developed a trade network spanning the entire western Sudan. The activities of these Mande-speaking Islamic traders, who are also known as *Wangara*, peaked around the mid-14th century (Levtzion 1973, 132; Perinbam 1974). The interregional trade network boomed under the protection

of the rulers of the various West-African kingdoms, who benefitted economically from the transactions by levying taxes (Tymowski 1974). In return they secured safe conditions for the traders and made sure that the trade routes remained readily passable. It was not until the days of the Mali Empire that the Sahel and Sudan were integrated in a single monetary system in which cowries became the general currency (Levtzion 1973, 122-3). Participation in the interregional trade network presupposed the availability of a currency. With the distances between the sources and the markets being much greater it is more likely that the goods were traded via a network of exchange systems than via direct barter. In de microregion, 24% of the re-examined sites were involved in this interregional trade network (Table 4). Apparently traders and a commonly accepted currency were not prerequisites for interregional trade networks, because the archaeological evidence shows that sites from the early period also formed part of this exchange network.

The trans-Saharan trade network

The trans-Saharan trade network was a connecting link between the West-African and North-African kingdoms. Via the trading towns of the northern Sahel luxury goods from North Africa were introduced into the West-African interregional trade network and distributed. This made it possible to capitalise any surpluses and turn them into scarce prestige goods that an elite could use to distinguish itself (Tymowski 1974).

The oldest trade route crossing the Sahara emerged in the sixth century. This was the western route, which began in southern Morocco and ended in Ghana (Swanson 1978, 173-4). With time, the trade route shifted eastwards, causing the old trading towns along the western route to go into decline and enabling new towns, such as Djenné, to evolve into important centres of commerce (Devisse 1972). One of the most important products that was introduced into West Africa via the Sahara was salt (Alexander 1993). From Timbuktu the salt was transported along the Niger by canoes to Djenné, where it was broken into smaller pieces and sold on. Other commodities that were transported to West Africa were textile, metals, ornaments, glass, cowries, perfume, books, horses, weapons and small numbers of white slaves (Giri 1994, 110-1; Levtzion & Hopkins 2000, 169; Levtzion 1973, 173 & 180; Ly 1981). Of the objects found at the sites in the microregions it are in particular the ornaments made of glass, rock crystal and agate that testify to participation or involvement in this trade network. The most important basic merchandise that West Africa had to offer in exchange for the imported goods were gold and slaves. The arrival of the Portuguese along the coast of West Africa internationalised trade in the coastal areas (Giri 1994, 141). The Inland Delta was at first not affected by this emerging trade, but with the passing of time the trans-Saharan trade declined and the commercial activities moved to the coast. Distant products made their

way to at least 24% of the sites in the rural hinterland, besides to the well-known urban centres such as Djenné and Dia. There must have been considerable wealth, probably based on agricultural surplus, to cater to this luxurious taste in goods. The high density of these prestige objects testifies to a well-functioning distribution network.

Almost all the sites that formed part of the trans-Saharan trade network were abandoned in the late period. There is a general connection between the size of the sites and the level of their participation in the trade networks: the larger the sites, the higher the probability that they participated in a larger-scale trade network. The largest datable site in the micro regions (5.2 ha.) however had access to the regional network only, and the smallest site to have participated in the trans-Saharan network measured only 0.4 ha. It would seem logical that sites in the larger-scale trade networks will have been situated predominantly on the active levees, as such a situation would have granted them good access to waterways. In actual fact however, only half of the sites that participated in regional trade lie on levees. In the case of interregional trade the ratio is 1:3, and 2/5 of the sites that were involved in trans-Saharan trade lie in the lowlands. Perhaps the waterways were as infrastructural facilities a less important factor in site selection than initially assumed (Tymowski 1967). Another possibility is that the wealth needed to participate in this trade network was an equally important factor, and that that wealth was also to be found at the sites in the lowlands.

Conclusion

The Inland Niger Delta in Mali is scattered with thousands of archaeological sites. Relatively little is known about the structure of their settlement system and how it evolved.

This research has shown that in the southern Inland Niger Delta the rural hinterland of urban centres such as Djenné and Dia consisted of a large settlement system of permanently occupied sites, most situated on the highest landscape units and within 300 metres from water. The settlement system was structured according to the sizes of the settlements, their locations on the different landscape units, the ribbon or clustered distribution of the sites and their access to the different trade networks.

The source of the Inland Niger Delta's wealth was its natural resources. The sites' distribution is most likely related to the cultivation of sorghum and rice and/or cattle keeping, but shows little archaeological evidence for the origins of the present-day specialist niche system, in which socioeconomic and socioethnic backgrounds are closely linked. Not only did the rural hinterland 'feed' the large West African kingdoms, but it was also an important market for prestige goods from extensive trade networks. Traders and a common currency were no prerequisites for interregional trade networks, because the archaeological evidence shows that sites formed part of this exchange network at a very early stage already. Cities had no monopoly on luxury goods because the trans-Saharan trade network did not only include well-known urban centres such as Djenné and Dia, but also extended to many sites in the rural hinterland. Although Dia and Djenné are the only important centres mentioned in historical and oral sources, in an archaeological respect they appear to differ from other sites in terms of size only.

After the 15th century conditions deteriorated in the Inland Delta. Trade routes moved and the power of the Mali Empire over the Inland Delta gradually decreased, aggravating the region's sociopolitical instability. The ultimate outcome of this was that many settlements around the large towns were abandoned. The rural hinterland had a natural buffer, enabling it to hold out longer. Nevertheless, the present population density of the Inland Niger Delta is but a faint reflection of the region's wealth in the past.

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Table 1

site code	polished axes	undec. spindle whorls	cowries	dec. spindle whorls	glass beads + bracelet	pipes	agate ring		introduction in centuries AD		period
48	●	–	–	–	–	–	–		<8th		early
19	–	●	–	–	–	–	–		8th		middle
21	–	●	–	–	–	–	–		8th		middle
83	–	●	–	–	–	–	–		8th		middle
29	–	●	–	–	–	–	–		8th		middle
68	–	●	●	–	–	–	–		10th		middle
103	–	–	●	–	–	–	–		10th		middle
118	–	–	●	–	–	–	–		10th		middle
41	–	–	–	●	–	–	–		11th		middle
65	–	–	–	●	–	–	–		11th		middle
4	–	–	–	●	–	–	–		11th		middle
122	–	–	–	●	–	–	–		11th		middle
55	–	●	–	●	–	–	–		11th		middle
84	–	●	–	●	–	–	–		11th		middle
107	–	●	●	●	–	–	–		11th		middle
49	●	●	–	●	●	–	–		11th		middle
2	–	●	–	●	●	–	–		11th		middle
51	–	●	–	●	●	–	–		11th		middle
54	–	●	–	●	●	–	–		11th		middle
34	–	–	–	–	●	–	–		11th		middle
81	–	–	–	–	●	–	–		11th		middle
121	–	–	–	–	–	●	–		17th		late
94	–	–	–	–	–	●	–		17th		late
9	–	–	–	–	●	●	–		17th		late
92	–	●	–	–	●	●	–		17th		late
16	–	●	–	–	●	●	–		17th		late
26	–	●	–	–	●	●	–		17th		late
96	–	●	–	–	●	●	–		17th		late
91	–	●	–	●	–	●	–		17th		late
1	–	●	–	●	●	●	–		17th		late
30	–	●	–	●	●	●	–		17th		late
35	–	●	–	●	●	●	–		17th		late
53	–	●	–	●	●	●	–		17th		late
97	–	●	–	●	●	●	–		17th		late
106	–	●	–	●	●	●	–		17th		late
99	–	–	–	●	●	●	–		17th		late
117	–	–	●	●	●	●	–		17th		late
93	–	●	●	–	–	●	●		19th		late
90	–	●	●	●	●	●	●		19th		late

Dates of the sites based on phase-specic artefacts

Table 2

site code	N =	rims %					shape %					decoration %							
		simple rims	outturned rims	inturned rims	ledged rims	T-rims	phase	open	closed	portid	plate	carinated	phase	painted	twine 6/7	twine4	twine1	stamped	phase	ceramic phase	period
48	154	68	32	0	0	0	1&2	19	64	6	6	4	1&2	1	23	21	1	0	1&2	1&2	early
43	169	69	31	0	0	0	1&2	39	20	25	0	16	1&2	15	65	48	1	0	1&2	1&2	early
25	492	76	24	0	0	0	1&2	40	22	10	0	28	1&2	19	43	44	4	0	1&2,3	1&2	early
31	157	84	16	0	0	0	1&2	36	18	19	2	25	3	12	42	47	3	0	1&2,3	1&2,3	early
87	266	70	29	0	1	0	3	16	26	21	14	23	3	33	17	37	17	0	3	3	early
46	286	68	30	0	1	0	3	15	20	20	16	28	3	34	11	26	28	0	3	3	early
68	222	71	28	0	1	0	3	13	19	26	12	30	3	39	5	27	30	0	3	3	early
26	146	73	21	0	4	1	4	22	20	24	7	27	3	27	8	18	20	0	3	3	early
61	377	69	29	0	1	1	4	11	28	24	10	28	3	38	11	43	25	0	3	3	early
42	206	72	24	1	3	0	4	24	19	21	4	33	3	25	31	42	14	0	3	3	early
14	113	59	27	0	14	0	3	17	18	25	14	27	3	0	6	2	35	0	4	3	early
27	378	33	60	0	7	0	3	16	34	17	5	28	3	3	15	5	47	0	4	3	early
18	122	53	35	0	11	0	3	20	15	18	16	31	3	0	6	1	23	0	4	3	early
101	115	79	21	0	0	0	1&2	10	18	38	5	28	4	39	16	46	20	0	3	4?	middle
103	210	73	26	0	0	0	1&2	16	19	31	7	26	4	37	11	49	13	0	3	4?	middle
44	147	59	35	1	5	0	4	29	27	14	5	24	3	14	29	18	24	0	1&2,3	4?	middle
32	119	32	65	0	3	0	3	8	61	21	1	9	4	2	2	1	63	0	4	4	middle
85	142	55	43	0	2	0	3	12	27	30	9	22	4	19	8	17	36	0	4	4	middle
62	141	61	38	0	1	0	3	4	21	41	12	23	4	16	7	16	28	0	4	4	middle
34	146	55	37	0	7	1	4	22	27	18	10	22	3	22	7	19	25	0	4	4	middle
10	106	46	39	8	6	1	4	8	34	22	10	25	3	7	4	0	50	0	4	4	middle
21	157	47	46	3	3	2	4	8	23	21	22	25	3	4	4	2	20	0	4	4	middle

Dates of the sites based on surface pottery

Table 2

		rims %						shape %						decoration %							
site code	N =	simple rims	outturned rims	inturned rims	ledged rims	T-rims	phase	open	closed	potlid	plate	carinated	phase	painted	twine 6/7	twine4	twine1	stamped	phase	ceramic phase	period
19	100	45	44	2	9	0	4	12	28	24	9	27	3	1	3	0	22	0	4	4	middle
22	315	62	30	0	7	1	4	16	19	29	7	30	3	11	5	0	19	0	4	4	middle
20	115	57	36	2	6	0	4	8	15	31	15	31	3	0	4	0	8	0	4	4	middle
28	100	47	46	0	6	1	4	10	37	18	2	33	3	2	7	6	41	0	4	4	middle
23	100	43	53	1	3	0	4	9	27	10	7	47	3	7	6	0	35	0	4	4	middle
93	117	62	37	1	1	0	4	15	38	22	7	17	4	29	13	30	27	0	3	4	middle
60	183	74	24	1	2	0	4	16	34	25	2	22	4	16	11	53	15	0	3	4	middle
59	100	82	17	1	0	0	4	16	16	35	5	28	4	25	2	36	23	0	3	4	middle
13	177	46	34	4	14	2	4	24	21	23	13	19	4	8	12	2	34	0	4	4	middle
75	133	57	39	1	3	0	4	8	38	26	11	17	4	14	12	14	34	0	4	4	middle
121	106	37	52	3	6	2	4	8	50	26	3	12	4	0	0	0	54	0	4	4	middle
11	121	43	40	5	9	3	4	16	21	28	20	15	4	18	2	1	41	0	4	4	middle
123	214	54	35	6	5	0	4	7	35	29	7	22	4	11	11	14	43	0	4	4	middle
58	217	69	28	2	1	0	4	8	27	30	9	26	4	24	5	19	39	0	4	4	middle
64	160	67	28	1	4	0	4	11	18	36	13	23	4	13	1	3	39	0	4	4	middle
12	161	63	25	0	10	2	4	16	19	37	11	17	4	4	9	7	23	0	4	4	middle
117	236	67	33	0	0	0	1&2	9	26	26	5	33	3	39	13	18	22	2	5	5	late
94	105	77	21	0	0	2	4	13	30	36	0	20	1&2	30	9	10	15	3	5	5	late
104	121	69	28	0	2	0	3	12	26	28	5	28	3	26	7	23	21	1	5	5	late
33	324	35	54	0	10	0	3	13	41	18	6	23	3	4	6	3	52	2	5	5	late
49	474	65	34	0	1	0	3	15	33	21	8	23	3	25	24	29	21	1	5	5	late
97	124	65	33	0	2	0	3	5	34	27	1	33	3	29	23	2	8	3	5	5	late

Dates of the sites based on surface pottery

Table 2

site code	N =	rims %					phase	shape %					phase	decoration %					phase	ceramic phase		period
		simple rims	outturned rims	inturned rims	ledged rims	T-rims		open	closed	portid	plate	carinated		painted	twine 6/7	twine4	twine1	stamped				
97	124	65	33	0	2	0	3	5	34	27	1	33	3	29	23	2	8	3	5	5		late
37	108	36	63	0	1	0	3	12	31	19	5	33	3	1	4	0	49	3	5	5		late
51	227	60	38	0	1	0	3	7	24	28	2	38	3	0	4	2	56	3	5	5		late
53	268	44	52	0	4	0	3	4	8	23	5	59	3	6	7	1	54	6	5	5		late
30	349	51	44	0	5	0	3	10	17	20	5	48	3	7	7	4	35	7	5	5		late
54	262	58	39	0	2	0	3	5	17	24	11	44	3	26	5	7	46	8	5	5		late
7	100	34	34	9	22	1	4	28	32	14	6	20	3	8	4	0	34	2	5	5		late
9	283	51	38	2	8	1	4	17	22	19	12	29	3	8	5	0	42	1	5	5		late
5	158	37	61	1	1	0	4	9	29	19	14	29	3	7	9	1	51	2	5	5		late
113	524	68	31	1	1	0	4	14	20	26	11	30	3	52	10	36	29	1	5	5		late
100	176	49	43	1	6	1	4	7	28	27	6	32	3	8	5	4	52	1	5	5		late
6	171	41	50	2	4	3	4	13	24	20	11	32	3	9	5	1	43	2	5	5		late
92	166	71	27	1	1	0	4	15	20	24	8	33	3	40	19	1	27	17	5	5		late
122	158	41	51	5	3	0	4	7	30	23	7	34	3	1	1	1	65	1	5	5		late
90	141	81	17	0	1	1	4	8	25	30	3	34	3	47	25	1	14	11	5	5		late
4	256	48	42	4	5	1	4	9	20	13	23	35	3	5	4	1	57	3	5	5		late
106	257	49	46	1	4	0	4	8	19	27	10	35	3	14	6	17	47	3	5	5		late
40	116	45	50	0	4	1	4	11	26	24	3	36	3	1	2	1	51	1	5	5		late
41	220	34	56	1	5	4	4	11	32	16	5	36	3	2	2	0	48	3	5	5		late
83	154	42	51	3	4	0	4	8	29	18	6	38	3	3	5	1	64	1	5	5		late
96	196	60	35	2	3	0	4	10	23	23	7	38	3	8	4	7	37	4	5	5		late
2	129	54	36	2	4	5	4	14	15	25	8	39	3	3	7	2	29	2	5	5		late

Dates of the sites based on surface pottery

Table 2

		rims %						shape %						decoration %							
site code	N =	simple rims	outturned rims	inturned rims	ledged rims	T-rims	phase	open	closed	potlid	plate	carinated	phase	painted	twine 6/7	twine4	twine1	stamped	phase	ceramic phase	period
29	218	50	41	1	6	1	4	9	26	22	4	39	3	12	6	5	45	2	5	5	late
116	165	58	36	3	4	0	4	7	22	20	10	41	3	6	0	5	56	5	5	5	late
55	127	51	43	1	5	1	4	8	28	19	4	41	3	19	9	3	45	8	5	5	late
16	232	41	55	3	2	0	4	7	27	16	8	42	3	3	13	0	47	1	5	5	late
118	278	53	42	1	3	0	4	3	22	24	9	42	3	5	2	1	62	3	5	5	late
107	187	59	35	1	4	1	4	8	13	29	6	44	3	3	5	2	47	4	5	5	late
1	734	55	42	1	1	1	4	7	20	22	6	45	3	15	14	1	30	3	5	5	late
84	350	55	43	1	2	0	4	2	18	28	3	48	3	3	6	2	58	2	5	5	late
81	174	51	44	1	3	0	4	4	23	16	8	49	3	6	2	2	53	3	5	5	late
2	131	52	41	5	2	0	4	8	12	25	5	49	3	2	4	4	45	5	5	5	late
39	395	54	40	0	3	3	4	11	13	18	9	49	3	9	6	6	40	8	5	5	late
99	178	53	44	1	2	0	4	6	15	24	3	52	3	1	7	1	53	3	5	5	late
38	193	54	43	0	2	1	4	9	13	18	7	53	3	2	3	1	45	6	5	5	late
35	364	39	53	1	6	2	4	6	14	23	1	56	3	4	8	1	38	2	5	5	late
105	272	73	26	0	1	0	3	10	22	31	7	29	4	29	13	27	23	1	5	5	late
91	138	72	25	0	2	0	3	12	19	38	7	24	4	26	15	1	21	9	5	5	late
65	351	44	52	3	2	0	4	5	34	26	10	25	4	2	2	1	56	2	5	5	late
24	119	53	37	2	8	0	4	15	29	27	7	22	4	7	11	2	17	1	5	5	late
126	165	52	41	3	4	0	4	10	24	29	14	23	4	7	8	12	50	1	5	5	late
63	124	59	39	2	1	0	4	2	18	40	23	16	4	7	2	19	32	1	5	5	late

Dates of the sites based on surface pottery

Table 3

site code	phase-specific artefacts	period based on phase-specific artefacts	ceramic phase	period based on surface pottery	over all period
48	<8th	early	1&2	early	early
68	10th	middle	3	early	middle?
19	8th	middle	4	middle	middle
21	8th	middle	4	middle	middle
103	10th	middle	4?	middle	middle
34	11th	middle	4	middle	middle
83	8th	middle	5	late	late
118	10th	middle	5	late	late
2	11th	middle	5	late	late
4	11th	middle	5	late	late
41	11th	middle	5	late	late
49	11th	middle	5	late	late
51	11th	middle	5	late	late
54	11th	middle	5	late	late
55	11th	middle	5	late	late
65	11th	middle	5	late	late
81	11th	middle	5	late	late
84	11th	middle	5	late	late
107	11th	middle	5	late	late
122	11th	middle	5	late	late
1	17th	late	5	late	late
9	17th	late	5	late	late
16	17th	late	5	late	late
30	17th	late	5	late	late
35	17th	late	5	late	late
53	17th	late	5	late	late
91	17th	late	5	late	late
92	17th	late	5	late	late
94	17th	late	5	late	late
96	17th	late	5	late	late
97	17th	late	5	late	late
99	17th	late	5	late	late
106	17th	late	5	late	late
117	17th	late	5	late	late
26	17th	late	3	early	late?
29	8-11th	middle	5	late	late
121	17th	late	4	middle	late?
93	19th	late	4	middle	late?
90	19th	late	5	late	late

Final periodisation of the sites

Table 4

			interregional						trans-Sahara			trade		
site code	geomorphology	over all period	schist	quartz	granite/diorite	marble	carnelian	bronze	rock crystal	glass	agate	regional	interregional	trans-Sahara
94	low	late	●	–	–	–	–	–	–	–	–	●	●	–
19	low	middle	–	●	–	–	–	–	–	–	–	●	●	–
23	low	middle	–	●	–	–	–	–	–	–	–	●	●	–
24	levee	late	–	●	–	–	–	–	–	–	–	●	●	–
27	levee	early	–	●	–	–	–	–	–	–	–	●	●	–
100	levee	late	–	●	–	–	–	–	–	–	–	●	●	–
31	levee	early	–	●	●	–	–	–	–	–	–	●	●	–
42	low	early	–	–	●	–	–	–	–	–	–	●	●	–
38	low	late	–	–	–	–	●	–	–	–	–	●	●	–
25	levee	early	–	●	–	–	●	–	–	–	–	●	●	–
33	levee	late	–	–	–	–	–	●	–	–	–	●	●	–
58	levee	middle	–	–	–	–	–	●	–	–	–	●	●	–
65	levee	late	–	–	–	–	–	●	–	–	–	●	●	–
84	low	late	–	–	–	–	–	●	–	–	–	●	●	–
91	levee	late	–	–	–	–	–	●	–	–	–	●	●	–
92	low	late	–	–	–	–	–	●	–	–	–	●	●	–
118	levee	late	–	–	–	–	–	●	–	–	–	●	●	–
4	levee	late	●	–	–	–	–	●	–	–	–	●	●	–
83	levee	late	●	–	–	–	–	●	–	–	–	●	●	–
113	levee	late	–	●	–	–	–	●	–	–	–	●	●	–
9	levee	late	–	–	–	–	–	–	–	●	–	●	–	●
96	levee	late	–	–	–	–	–	–	–	●	–	●	–	●
16	low	late	–	–	–	–	–	●	–	●	–	●	●	●
34	levee	middle	–	–	–	–	–	●	–	●	–	●	●	●
35	low	late	–	–	–	–	–	●	–	●	–	●	●	●
53	low	late	–	–	–	–	–	●	–	●	–	●	●	●
54	levee	late	–	–	–	–	–	●	–	●	–	●	●	●
117	levee	late	–	–	–	–	–	●	–	●	–	●	●	●
1	low	late	●	–	–	–	–	●	–	●	–	●	●	●
26	levee	late	–	●	–	–	–	●	–	●	–	●	●	●
29	levee	late	–	●	–	–	–	●	–	●	–	●	●	●
81	low	late	–	●	–	–	–	●	–	●	–	●	●	●
30	levee	late	–	–	●	–	–	●	–	●	–	●	●	●
2	low	late	–	–	–	–	●	●	–	●	–	●	●	●
99	levee	late	–	–	–	–	●	●	●	●	–	●	●	●
49	levee	late	●	●	–	–	●	●	–	●	–	●	●	●
97	levee	late	●	●	–	–	●	●	–	●	–	●	●	●
106	levee	late	●	●	–	–	●	–	–	●	–	●	●	●
90	low	late	●	●	–	–	–	–	–	●	●	●	●	●
93	low	late	●	–	–	●	●	–	–	–	●	●	●	●

Trade networks

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Notes

[1] GRN 23025, 155 ± 25 BP: 1662 – 1953 cal AD, Pretoria curve.

[2] The detailed geomorphological information was inferred from the map of the southern Niger Inland Delta by Makaske (1998). The limits chosen for the research area are the Niger on the northwest, the tarmacced road from San to Mopti on the east and the edges of the map on the south and southwest. This information is available exclusively for the settlements lying within these limits.

[3] The formula for calculating the area of a circle was used for the round sites. The area of the oval sites was calculated with the aid of the formula for an ellipse. As for the areas of sites with unclear outlines: ten widely different irregular sites were digitised, after which their areas were automatically calculated. The areas were then calculated once more using length and width data of the same sites and the formula for calculating the area of an ellipse and a square. Comparison of the results showed that the results obtained with the formula for calculating the area of a square differed least from the most detailed digitised area. The next step was to calculate a constant for correction, which ultimately led to the formula length x width x 0.72141.

[4] Measurements based on the observations made during Projet Togué (Djenné-Djeno 24.8 ha, Diaabé 22.3 and Kaniana 22.7 ha)

[5] The largest site, at Kolonqui (7.8 ha.) is still partly occupied.

SAMENVATTING

Zowel de archeologische nederzettingen van het survey-onderzoek, als de vindplaats Dia, zijn gelegen in de zuidelijke Binnendelta van de Niger in Mali. Ze maken deel uit van de duizenden *togué* die zijn aangetroffen in de gehele Binnendelta, van San tot Tombouctou. Deze tell-achtige nederzettingsheuvels dateren van de late Steentijd tot aan de huidige bewoning. Hun grootste bloeiperiode vond plaats tijdens de grote middeleeuwse West-Afrikaanse rijken.

Vanaf 1980 zijn de archeologische sites in de Binnendelta van de Niger op grote schaal geïnventariseerd. Het doel van deze inventarisatie was om meer inzicht te krijgen in de omvang en de conserveringsstaat. De zuidelijke Binnendelta onderscheidt zich van de rest van het deltagebied door twee belangrijke kenmerken. Ten eerste is in de zuidelijke Binnendelta de dichtheid van archeologische vindplaatsen het hoogst. Ten tweede wordt het archeologische erfgoed in deze regio ernstig bedreigd door schatgraverij. Veel van de archeologische sites worden illegaal opgegraven waarbij het archeologische databestand onherstelbaar wordt vernietigd. Om de noodzakelijke informatie voor het reconstrueren van de bewoningsgeschiedenis van die regio te kunnen verzamelen, is wetenschappelijk onderzoek noodzakelijk en hebben noodopgravingen een hoge prioriteit.

Ondanks de professionalisering en toename van het archeologisch onderzoek in Mali in de laatste helft van de vorige eeuw, bestaat er in West-Afrika in vergelijking met de rest van de wereld toch een flinke achterstand. De relatief recente ontwikkeling van grootschalig, systematisch archeologisch onderzoek en de immense omvang en diversiteit van het archeologische erfgoed maken het inhalen van deze achterstand tot een uitdaging. Helaas zijn er in binnen- en buitenland onvoldoende middelen beschikbaar om deze achterstand in te lopen, omdat de prioriteiten bij het besteden van de middelen meestal elders liggen. Hierdoor blijven veel basale archeologische onderzoeksvragen, zoals die naar de overgang van Late Steentijd naar IJzertijd en die naar de introductie van ijzerbewerking, binnen de Malinese prehistorie vooralsnog onbeantwoord. Voor het inlopen van deze achterstand is spoed vereist. Dit maakt alle professioneel verzamelde informatie van groot belang.

De algemene doelstelling van zowel de regionale survey als de opgraving is het verkrijgen van een beter inzicht in de bewoningsgeschiedenis van de zuidelijke Binnendelta van de Niger in Mali.

De combinatie van beide gegevensbestanden biedt verschillende, interessante perspectieven: de regionale oriëntatie van een survey en de site-gebonden diepgang van een opgraving. Het survey-onderzoek laat de regionale diversiteit zien maar is gebonden aan oppervlaktemateriaal. De opgraving biedt gedetailleerde, chronologisch ingebedde informatie maar is gebonden aan één enkele locatie. Beide hebben een beperkte bruikbaarheid, maar de combinatie van gegevens levert duidelijke meerwaarden op en zet eerder verzamelde gegevens in een nieuw perspectief.

Daarnaast is er sprake van een interessante vergelijking tussen het in een urbane context verzamelde opgravingsmateriaal en de geografische survey-gegevens van het agrarische achterland. De Binnendelta is een ecologisch rijk gebied dat wordt omringd door een veel droger Sahel-landschap en het ligt voor de hand dat er in het verleden geprofiteerd is van deze landschappelijke rijkdom. Het is echter de vraag in hoeverre deze rijkdom verantwoordelijk is geweest voor de urbane ontwikkeling van de regio of dat daar (tevens) handelscontacten aan ten grondslag hebben gelegen. Dat er in ieder geval intensieve contacten hebben bestaan tussen de centra en het omliggende achterland wordt aangetoond door de grote homogeniteit van de materiële cultuur van de regio.

Voor het beantwoorden van de verschillende onderzoeksvragen is gebruik gemaakt van de gegevens, die zijn verzameld tijdens *Projet Togué*. Dit gegevensbestand van 834 *togué* werd aangevuld met drie eigen veldwerkperioden in 1995, 1996 en 1997, waarin 128 van deze *togué* opnieuw werden bezocht.

Door de verspreidingskaart van de vindplaatsen met behulp van GIS te confronteren met de geomorfologische informatie van het gebied, is inzicht verkregen in de locatiekeuzen van de *togué*-bewoners. De voorkeur voor specifieke locaties, zoals een positie dicht bij goede visgronden, landbouwgrond of weidegrond, kan verwijzen naar de socio-economische achtergrond van de bewoners. Naast een lintverspreiding langs de waterwegen, bestaat er soms ook een duidelijke clustering van vindplaatsen. Een hiërarchische differentiatie tussen de sites blijkt uit verschillen in omvang en het clusteringspatroon van de sites.

Door zijn ecologische rijkdom heeft de Binnendelta veel te bieden aan de omliggende veel drogere gebieden. Tevens was dit gebied strategisch gelegen voor het trans-Sahara handelsverkeer. Waarschijnlijk hebben de waterwegen een belangrijke rol gespeeld voor het transport van de geïmporteerde producten naar het achterland, dat daarvoor waarschijnlijk zijn overvloed aan agrarische producten in ruil aanbood. Het oppervlaktemateriaal geeft indicaties van de grootschalige verspreiding van prestigieuze goederen op vele vindplaatsen in het rurale achterland.

Het dateren van de laatste bewoningsfase was cruciaal voor het onderzoek omdat hiermee een chronologische differentiatie tussen de verschillende vindplaatsen kon worden aangebracht. Voor het bepalen van deze laatste bewoningsfase werden twee methoden ontwikkeld:
1. het dateren aan de hand van gidsartefacten;
2. het dateren aan de hand van het oppervlakteaardewerk.

Het oppervlaktemateriaal is tevens gebruikt voor het vaststellen van de functie die de sites vervulden. Soms kwamen de oude bewoners zelf in beeld door de aanwezige grafpotten of vlakgraven. In combinatie met eventueel aanwezige oppervlaktestructuren werd een beeld verkregen van de interne structuren van de nederzettingen. Door de lokale bevolking naar inlichtingen te vragen, was het soms mogelijk de sites te koppelen aan de lokale orale traditie in de regio.

Een belangrijke onderzoeksvraag was of op basis van de samenstelling van en de verschillen in het oppervlaktemateriaal van de onderzochte sites misschien een etnische diversiteit van de nederzettingsbewoners kon worden vastgesteld. Het oppervlaktemateriaal vertoont echter juist een hoge mate van homogeniteit. Omdat vanuit historische bronnen bekend is dat de bevolking van de Binnendelta wel degelijk bestond uit verschillende etnische groepen, zou dit intensieve onderlinge contacten en een uitgebreid uitwisselingsnetwerk van goederen en producten kunnen reflecteren. De aanwezigheid van een veelheid aan verschillende etnische groepen bemoeilijkt bovendien het individueel onderscheiden van een specifieke etnische groep. Daarnaast realiseren we ons dat eventuele *intra-site* verschillen zich niet altijd in het oppervlaktemateriaal aftekenen.

Het nederzettingscomplex bij Dia bestaat uit een agglomeratie van drie grote archeologische vindplaatsen: Dia-Shoma, Dia en Dia-Mara. Deze sites worden van elkaar gescheiden door een aantal depressies. Dia-Shoma is, met een oppervlak van 49 ha, de grootste vindplaats en als enige verlaten. De vindplaats Dia, 23 ha groot, wordt nog steeds bewoond, terwijl Dia-Mara (28 ha) grotendeels verlaten is maar nog gedeeltelijk wordt gebruikt o.a. als de begraafplaats van het dorp. In de directe omgeving van het complex van Dia bevinden zich een groot aantal andere vindplaatsen.

Er is gebruik gemaakt van drie complementaire archeologische onderzoeksmethoden: een regionale survey, een site-survey en een opgraving. Er is uitsluitend opgegraven op Dia-Shoma en Dia-Mara. Voor een opgraving in Dia zelf werd door de lokale bevolking geen toestemming verleend.

Voorafgaande aan de opgraving is een surface survey uitgevoerd op Dia-Shoma. Op basis van de resultaten daarvan is de plaats van de opgravingsunits vastgesteld. In totaal zijn er, verdeeld over Dia-Shoma en Dia-Mara, 18

opgravingsunits aangelegd. Daarvan zijn er 13 tot op de natuurlijke ondergrond opgegraven. Bij vijf units is ervoor gekozen de opgraving eerder te beëindigen. Al het sediment afkomstig uit de opgraving werd gezeefd. De wandscherven kleiner dan 3 cm, werden uitsluitend geteld. De overige wandscherven werden collectief beschreven. Alle randscherven, ook de randscherven kleiner dan 3 cm, alle bodems en alle uitzonderlijke wandscherven zijn individueel beschreven en bewaard. In de units A, B, C en F zijn uitgebreide monsterprogramma's uitgevoerd, gericht op botanische en zoölogische resten. In de overige units, met uitsluiting van het laatste veldseizoen, zijn alleen aslagen en haardplaatsen bemonsterd. Het onderzoek van het menselijke skeletmateriaal is uitgevoerd door fysisch antropologen.

Aan de hand van de stratigrafisch verzamelde gegevens is het mogelijk de bewoningsgeschiedenis en de dynamiek van de nederzetting over een periode van bijna 3000 jaar te volgen. De eerste bewoners kwamen vanuit het noordwesten. Metaal en gedomesticeerde rijst waren vanaf het begin van de bewoning bekend. Veeteelt, visserij en de jacht droegen, per perioden in verschillende verhoudingen, allemaal bij aan het voedselpakket van de bewoners. De overgang van dorp naar stad is afhankelijk van de gehanteerde definitie, maar de omvang van de site, de omvangrijke lemen structuren van de stadsmuur, de toenemende specialisatie in de manier waarop in het onderhoud werd voorzien, de uiteenlopende handelscontacten en het omvangrijke grafveld zijn belangrijke indicatoren voor het urbane karakter van de conglomeratie. De overweldigende hoeveelheid aardewerk gaf de mogelijkheid tot het opstellen van een lokale typochronologie. De vergelijking van de vondsten van Dia Shoma met die van Dia Mara gaf inzicht in de verschillen in de ontwikkeling van deze twee satelliet-sites.

Zoals de site-survey op Dia-Shoma heeft bijgedragen aan het lokaliseren van interessante opgravingslocaties, zo zorgde de regionale survey voor het inbedden van de opgravingsgegevens in een regionale context. In een cirkel met een straal van 5 kilometer rond Dia zijn met behulp van luchtfoto's 102 archeologische vindplaatsen geïnventariseerd en bezocht. Hieruit bleek bijvoorbeeld dat het begraven van de doden in vlakgraven zich niet beperkte tot Dia-Shoma maar een regionaal fenomeen was.

Het survey-onderzoek en de opgraving hebben goed gedocumenteerde informatie over een groot aantal archeologische vindplaatsen, verschillende verspreidingskaarten en gegevens over de omvang en het tempo van de schatgraverij in de regio opgeleverd. Dit onderzoek heeft ook een aantal nieuwe vragen gegenereerd en heeft gezorgd voor een empirische basis en voor een essentieel gegevensbestand als basis voor de discussie en theorievorming over de bewoningsgeschiedenis en het urbanisatieproces van de zuidelijke Binnendelta.

Lange tijd was deze discussie voornamelijk geconcentreerd op het urbane centrum Djenné-Djeno en zijn directe omgeving. Met dit onderzoek is niet alleen aangetoond dat de bewoning en de stedelijke ontwikkeling in de zuidelijke Binnendelta van de Niger veel ouder zijn dan werd gedacht, maar tevens verschillende urbane centra naast elkaar hebben bestaan. Tegenwoordig is men zich ervan bewust dat een dergelijk urbaan centrum niet los gezien kan worden van zijn omringende achterland en zich alleen goed kan ontplooien binnen een reeds bestaand, goed functionerend nederzettingssysteem. Het survey-onderzoek toont aan dat Djenné-Djeno zo'n achterland tot zijn beschikking had en werd omringd door een gedifferentieerd en gestructureerd nederzettingssysteem, waarbinnen zich ook andere grote nederzettingen, zoals de stad Dia, konden ontwikkelen.

Een van de onvoorziene resultaten van het onderzoek was het inzicht in de omvang en het tempo van de illegale schatgraverij. Deze zijn schrikbarend: de illegale plundering van archeologische vindplaatsen was in vijf jaar verdubbeld. Dit zijn de enige concrete cijfers over schatgraverij in Mali en zij onderbouwen de bestaande vermoedens omtrent de omvang en het tempo daarvan. Als deze ontwikkeling niet kan worden gestopt, zal er in de nabije toekomst geen archeologisch databestand meer bestaan dat kan dienen als basis voor de reconstructie van de geschiedenis van de regio. De gevolgen hiervan zijn desastreus, vooral voor de identiteit en het historisch bewustzijn van de bewoners van dit gebied.

CURRICULUM VITAE

Annette Margaretha Schmidt was born on 21 November 1967 in Leiden, the Netherlands. She completed her secondary education at the Rijnlands Lyceum in Sassenheim, where she obtained her VWO diploma in 1986. Till 1987 she studied History at the University of Leiden, followed by a MA in Prehistoric Archaeology that she concluded in 1992. During her training she did, among other countries, extensive archaeological fieldwork in Mali. After a year of being employed at the Dutch Archaeological Services (ROB) she returned to Leiden University in 1994 for her PhD research, funded by a grant from the Netherlands Foundation for the Advancement of Tropical Research (WOTRO). Before finishing her PhD thesis she was appointed in 1998 by the National Museum of Ethnology in Leiden as field director for the international excavation in Dia, Mali. Since 2002 she has been working as curator of the African department at the museum, continuing her affiliation with Mali in several cultural heritage projects financed by the Dutch Ministry of Foreign Affairs.