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## AN OUTLINE OF RECENT STUDIES ON THE NIGERIAN NOK CULTURE

Peter Breunig & Nicole Rupp

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### Abstract

Until recently the Nigerian Nok Culture had primarily been known for its terracotta sculptures and the existence of iron metallurgy, providing some of the earliest evidence for artistic sculpting and iron working in sub-Saharan Africa. Research was resumed in 2005 to understand the Nok Culture phenomenon, employing a holistic approach in which the sculptures and iron metallurgy remain central, but which likewise covers other archaeological aspects including chronology, settlement patterns, economy, and the environment as key research themes. In the beginning of this endeavour the development of social complexity during the duration of the Nok Culture constituted a focal point. However, after nearly ten years of research and an abundance of new data the initial hypothesis can no longer be maintained. Rather than attributes of social complexity like signs of inequality, hierarchy, nucleation of settlement systems, communal and public monuments, or alternative African versions of complexity discussed in recent years, it has become apparent that the Nok Culture, no matter which concept is followed, developed complexity only in terms of ritual. Relevant information and arguments for the transition of the theoretical background are provided here.

### Résumé

Jusqu'à récemment, la Culture de Nok au Nigeria était surtout connue pour ses sculptures en terre cuite et l'existence de la métallurgie du fer, figurant parmi les plus anciens témoignages connus de sculpture artistique et du travail du fer en Afrique sub-saharienne. De nouvelles recherches ont été entreprises en 2005 afin de mieux comprendre le phénomène de la Culture de Nok, en adoptant une approche holistique considérant toujours les sculptures et la métallurgie comme des éléments centraux mais incluant également d'autres aspects archéologiques tels que la chronologie, les modalités de peuplement, l'économie et l'environnement comme des thèmes de recherche essentiels. Ces travaux ont initialement été articulés autour du postulat d'un développement de la complexité sociale pendant la période couverte par la Culture de Nok. Toutefois, après une dizaine d'années de recherches et l'obtention d'une importante quantité de nouvelles données, cette hypothèse de départ semble devoir être écartée. Plutôt que caractérisée par des attributs de complexité sociale tels que signes d'inégalité, hiérarchie, nucléation des établissements, présence de monuments publics et communs ou autres éléments propres à l'Afrique récemment débattus, il apparaît que la Culture de Nok, quel que soit le concept retenu, n'a développé de complexité que dans le domaine rituel. Cet article présente les informations et les arguments pertinents pour une transition du cadre théorique.

**Keywords:** Nok Culture, Central Nigeria, West Africa, Iron Age

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**Peter Breunig** ✉ [breunig@em.uni-frankfurt.de](mailto:breunig@em.uni-frankfurt.de) / **Nicole Rupp** ✉ [n.rupp@em.uni-frankfurt.de](mailto:n.rupp@em.uni-frankfurt.de)

✉ Institute for Archaeological Sciences, African Archaeology & Archaeobotany, Goethe University,  
Norbert-Wollheim-Platz 1, 60629 Frankfurt a. M., Germany

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## Introduction

The term “Nok Culture” was coined by British archaeologist Bernard Fagg. In the middle of the 20<sup>th</sup> century, he came across anthropomorphic and zoomorphic sculptures made of burnt clay (terracotta). They were discovered by chance in the alluvial deposits of open air tin mines in the farther surroundings of a Central Nigerian village called Nok (**Fig. 1**). Over the years Fagg gathered approximately 150 fragments of terracotta sculptures. In 1977 he published the collection and summarised what had been achieved concerning the age determination of the Nok Culture and the styles, function and interpretation of its terracotta figurines (FAGG 1977). Excavations in Taruga, carried out by Fagg in the 1960s close to the Nigerian capital of Abuja, provided the first evidence that the Nok Culture existed during an early stage of iron metallurgy (FAGG 1968; TYLECOTE 1975). Further research on the Nok Culture was conducted by Fagg’s daughter Angela Fagg Rackham (A. FAGG 1972, 2014) and by Nigerian archaeologist Joseph JEMKUR (1992, 2014). Besides terracotta finds, materials such as pottery, iron objects and stone artefacts were excavated, enabling insights into the Nok complex beyond its art. Originally, radiocarbon and thermoluminescence dates set the period of the Nok Culture between 500 BCE and 200 CE. A somewhat earlier beginning and earlier end (*ca* 800–200 BCE) were later suggested by radiocarbon dates on charcoal from the inside of Nok terracotta figurines in European collections (BOULLIER *et al.* 2002/2003). New evidence is available from recent research outcomes by the Frankfurt project which will be presented here.

## Theoretical prologue

The motivation of our team to resume research on the Nok Culture after it had been off the scientific radar for more than two decades was based on results we gained during investigations carried out in the late 1990s and early 2000s northeast of the Nok Culture area. There, in the Nigerian Chad Basin (**Fig. 2**), we explored the agricultural beginnings or rather the West African versions of the so-called “neolithisation” and retrieved evidence of significant cultural change around the middle of the first millennium BCE, correlating in time with the assumed emergence of the Nok Culture (BREUNIG 2009a).

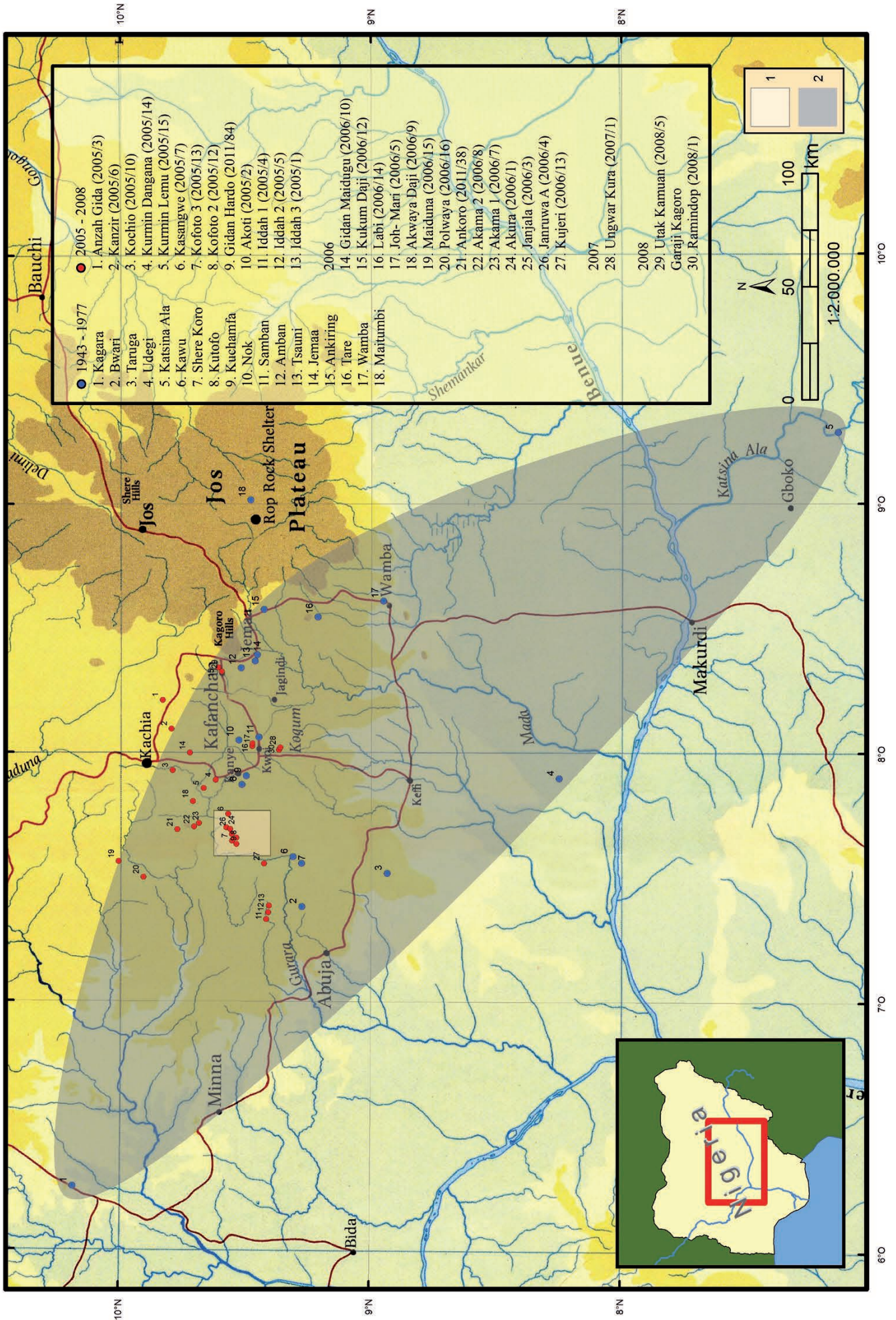
Most conspicuous were large settlements covering areas of more than ten hectares (MAGNAVITA 2003; BREUNIG *et al.* 2006; MAGNAVITA *et al.* 2006), in some cases even up to 30 hectares (BREUNIG *et al.* 2008: 430). Roughly contemporaneous smaller settlements with sizes of one to three hectares existed in the vicinity,

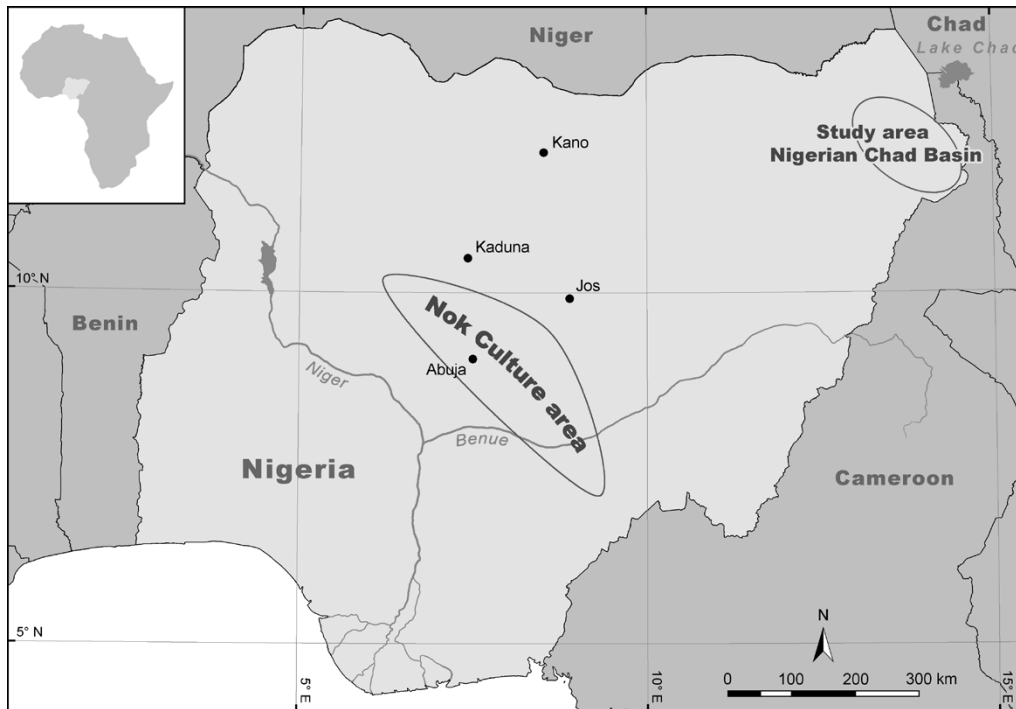
suggesting site hierarchies, possibly denoting functional differences, diverging political orders, economic arrangements and the like. The large settlements stand in sharp contrast to the preceding homesteads or hamlets and the presumably family-based life in small pastoral and agropastoral groups that had lived in the region since the early second millennium BCE (BREUNIG & NEUMANN 2002; BREUNIG 2004, 2005). The size, domestic features and quantity of cultural materials of the large settlements indicate populations of more than one thousand inhabitants (MAGNAVITA 2004: 87). Further, these settlements create the impression that they constitute a kind of “proto-urbanity” (MAGNAVITA & MAGNAVITA 2001). The high number of inhabitants invites speculation on a new form of communal life requiring divergent social organisation and rules.

This aspect is reflected by the structure of the settlements. In one region each settlement was surrounded by trenches of up to 6 m in width and more than 2 m deep (MAGNAVITA *et al.* 2006: 163). Fortification seems to be the most conclusive purpose of these constructions. Thus, raids or war might have prevailed at this time. The sheer length of these moats adds up to hundreds of metres, which suggests the need for large groups of labourers and, since construction work of this scale would have required organising and directing, higher-ranked members of the community to commission and coordinate the efforts.

We also found evidence of change concerning the acquisition of basic food resources. The preceding period — especially phases I and II of the Gajiganna complex in the second and early first millennium BCE (WENDT 2007) — is characterised by a broad food spectrum comprising domestic animal products, hunting of game, cultivation of millet, and gathering of wild plants. Thus, the risk of shortage was minimised by nutritional diversity. The inhabitants of the large settlements in the mid-first millennium BCE switched from this broad-spectrum strategy to a diet that relied on the high productivity of millet (*Pennisetum glaucum*) and cowpea (*Vigna unguiculata*) (KAHLHEBER & NEUMANN 2007), probably accompanied by a decreasing importance of keeping livestock (LINSEELE 2007: 158). This new food strategy is underlined by abundant

**Figure 1 (next page).** Map showing the location of archaeological sites discovered by Bernard Fagg and others during the 20<sup>th</sup> century (blue dots) and by the Frankfurt project between 2005 and 2008 (red dots) as well as the presumed expanse of the Nok Culture according to site distribution determined by researchers in the last century (after FAGG 1977). The outlined rectangle in the centre indicates the project’s key study area, where investigations have been carried out since 2009 (see **Fig. 3**).





**Figure 2.** Map showing the study area in the Chad Basin of Northeast Nigeria with the large settlements referred to in the text, which date to the middle of the first millennium BCE, and the spatial relation to the Nok Culture distribution area in central Nigeria.

finds of storage facilities in the form of subterranean granary pits inside the settlements and large ceramic vessels unknown before. Finally, during the existence of the large settlements iron metallurgy emerged, a fact that places the aforementioned changes into a time of technological upheaval. The social consequences that communities had to face during the very beginning of a period experiencing radical technological change are not well understood for Africa, yet.

Referring to the classic scheme of cultural anthropologist Elman Service who ranked societies in four evolutionary stages: bands, tribes, chiefdoms, and states (SERVICE 1962), the archaeological record of the mid-first millennium BCE in the Chad Basin of Northeast Nigeria points to either ‘tribes’ or ‘chiefdoms’. However, such social classifications are defined by a system of categories from outside Africa. In anthropological theory this categorisation was therefore regarded as inapplicable to Africa, where societies had their own forms of social organisation with particular markers of complexity (MCINTOSH 1999). For this reason, rather than applying an inadequate classificatory framework we consider the characteristics found in the Chad Basin: social units exceeding kinship-based dimensions, intensive food production reflected in substantial food storage facilities, an elite supervising cooperative projects and

defence work possibly pointing to wartime events, and site hierarchies consisting of large central sites with proto-urban dimensions, which surrounded by small satellite sites (MAGNAVITA & MAGNAVITA 2001). Also present were medium-distance exchange or trade networks to supply communities with stone tools or stone raw materials, which are absent in the Chad Basin (RUPP 2003). All this denotes social specialisation, as does iron metallurgy. Iron metallurgy appeared in the course of these developments and hypothetically could have triggered further transitions in terms of improved agricultural tools, war techniques, and extended social stratification with iron objects as status symbols. There is also evidence of mainly zoomorphic clay figurines showing more intrinsic artistic expressions than known from the previous period (BREUNIG *et al.* 2008), which probably reflect a change of ritual attitudes or practices. In conclusion, the sites of the mid-first millennium BCE in the Nigerian Chad Basin seem to demonstrate radical social changes displaying an unprecedented level of complexity in the region.

Looking for similar cases of emerging social complexity in the West African past, the Tichitt tradition in the western Sahel with its very large settlements, once classified as ‘chiefdoms’ or “West Africa’s first large-scale complex society” (MACDONALD 2013: 833), provides the most appropriate example. It is, however,

a chronologically isolated case. Respective phases date almost a millennium earlier than in the Chad Basin, and the geographic distance between the two rules out any kind of relation or influence. Basically, apart from the Kerma Culture in northern Sudan and initial developments which led to the Aksumite Empire in northern Ethiopia, no other cases of emerging social complexity similar to those found in the Chad Basin and likewise dated to the first millennium BCE are known from sub-Saharan Africa. African civilisations, to follow Graham CONNAH (2001), and their cultural roots including archaeologically detectable signs of emerging complexity beyond family or village-based farming communities or livestock keepers appeared at later times (see also MAYOR *et al.* 2014).

Suggesting that the exceptional findings in the Chad Basin represent early signs of the rise of social complexity, from which later African kingdoms developed, we consequently focused our research on the “origin of complex societies in sub-Saharan Africa” (BREUNIG 2009b; BREUNIG & RUPP 2010). A hypothetical equivalent to the Chad Basin development, suitable because of similar age, was found not too far away: the Nok Culture in Central Nigeria, located some hundred kilometres to the southwest. However, according to research from the 1990s (JEMKUR 1992) a classification of the Nok Culture as “complex society” had no sound basis. Apart from speculations about a kingdom (EHRET 2002: 234) or temple architecture (DE GRUNNE 1999: 25), notions of social complexity exclusively were based on the compelling attraction of the splendid terracotta figurines known from Bernard Fagg’s work and from objects that flooded the international art market in the wake of his publications. At that time little was known of the Nok Culture besides their sculptures and their evident knowledge of iron metallurgy. However, assuming that the sophisticated level of artistic expression represented by the Nok terracotta sculptures could unlikely have been created by hunters and gatherers, incipient farming groups or pastoralists, the objects had to have been derived from a complex society in which specialists created them and in which some sort of social institution controlled and maintained the rules of the complex ritual world the sculptures obviously were made for. Bearing in mind that ‘art’ is a western concept and thus a rather inexact term regarded from an African perspective (VANSINA 1984) and that objects might not have been interpreted in the same way by its creators, the ‘primitive art’, as it was once called, is regarded nowadays as “essential elements of shrines, as insignia of royalty, as the foci of ceremonies, celebrations, and dances, as agents and channels of power, as symbols of identity, as expressions of values and beliefs” (GARLAKE 2002: 21).

## Resuming research

With the intention to test the hypothesis that the Nok Culture represents one of the earliest examples of complex societies in sub-Saharan Africa, a team of archaeologists from the German Goethe University Frankfurt/Main set out in 2005 to investigate Nok Culture sites together with its Nigerian research partners from the National Commission for Museums and Monuments (RUPP *et al.* 2005). Of foremost importance was the acquisition of new data. Thirty previously not scientifically known Nok sites were located with the help of local informants until 2008 in the central region of the supposed Nok Culture distribution area (*Fig. 1*). The alarming and frustrating reality was that all of them were affected by looting, most of them dug up and destroyed entirely. Where intact sections with undisturbed cultural layers existed between the looting holes perforating the landscape, we conducted small-scale excavations. Thereby, especially at sites less affected by looting, we gained insight into the cultural materials of the Nok Culture: iron objects, although extremely rare and only in two cases clearly identifiable as a miniature axe and a ring, iron slags, and stone artefacts, in particular grinding equipment and ground stone axes (RUPP 2014a). We also uncovered an abundance of potsherds providing a first detailed impression of how Nok pottery actually looked like — which subsequently enabled the identification of Nok sites independent of terracotta finds and provided the basis for a chronological subdivision (FRANKE 2015, 2016). Fragments of terracotta sculptures were found consistently during excavations. In one case deliberately shattered sculptures and the burial of their fragments indicated an otherwise rarely found ritual context (RUPP 2014b). Other results of the initial phase of the project concerned food economy. Archaeobotanical investigations proved the constant presence of charred seeds of *Pennisetum glaucum* (KAHLHEBER *et al.* 2009). Less satisfying was the overall scarcity of features, which hampered the collection of data beyond the objects and their spatial locations. The only exception were pits, occasional accumulations of small stones, sometimes arranged in pavements, as well as not yet fully understood arrangements of larger stones, terracotta pieces, vessels, and stone beads, interpreted as possible graves. It quickly became clear that the structural analysis of Nok sites would be extraordinarily challenging and would require advanced methods to illuminate everyday life at the time of the Nok Culture.

In order to better understand the Nok phenomenon and its terracotta art complex and to document its unquestionable significance for the knowledge of the African past — made urgent by the persistent threat of looting and thus the immanent elimination of

traces of the Nok Culture — a long-term project was established in 2009 and has since been supported by the German Research Foundation (DFG) (RUPP *et al.* 2008; BREUNIG 2009b; BREUNIG & RUPP 2010; RUPP 2010). The project's research design was based on the hypothesis that the Nok Culture with its sophisticated terracotta art and iron metallurgy could represent the origin of complex societies in sub-Saharan Africa. The initial information gained from our investigation of Nok sites — dense population as reflected by the large number of sites in some areas, productive economy as indicated by charred millet grains in almost every site, and evidence of iron working which was regarded as a meaningful technological transition that propelled social complexity — was an indication that the Nok Culture could have experienced a development similar to the contemporaneous complex developments in the Chad Basin. The research programme was divided into four phases, each with a duration of three years: 1) chronology, 2) structure of Nok sites, 3) inter-regional diversity, and 4) overall conclusion. For logistic reasons fieldwork focused on a case study area of approximately 300 km<sup>2</sup> located about 40 km west of the village of Nok in the surroundings of Janjala, a village near which a certain density of sites was recorded during the preliminary studies (*Fig. 1*). With local assistance, Nok sites were systematically located and test excavated by digging pits measuring up to 6 m<sup>2</sup>. The work mainly took place in the dry season because of better accessibility and visibility of the sites which are located in remote areas and overgrown by a dense vegetation classified as Guinea savannah (KAHLHEBER *et al.* 2009: 4). The affiliation of sites with the Nok Culture was easily discernible from diagnostic materials like terracotta fragments and potsherds left behind by looters, inventories from archaeological excavations, or radiocarbon measurements of charred organic material from reliable archaeological contexts as well as from thermoluminescence dating of ceramic materials. The project has so far tested and excavated more than 80 sites and obtained more than 200 absolute dates. This has resulted in a Nok chronology ranging from the middle of the second millennium BCE to the turn of the eras (FRANKE & BREUNIG 2014; FRANKE 2015, 2016), thus revising the previously known duration from 500 BCE to 200 CE. Having completed its second phase in 2014, the project is currently in its third phase, though the current political situation in Nigeria prevents extensive field work and regional surveys. This article will summarise in the following the results of studies conducted since 2009. More detailed information on iron, archaeobotanical analysis, terracotta and pottery have been published recently (FRANKE 2016; HÖHN & NEUMANN 2016; JUNIUS 2016; MÄNNEL 2016).

### Reconsidering the position of the Nok Culture in West African prehistory

The revised chronology of the Nok Culture calls for a reassessment of its position in West African prehistory. Formerly thought to have emerged around 500 BCE, the Nok Culture was until recently defined as an Early Iron Age complex, which differed from other African Early Iron Age complexes particularly because of its sophisticated terracotta figures. Based on the results of current research we propose a new classification of the Nok complex (FRANKE 2016). Most importantly, the archaeological record, mainly pottery and absolute dates, recognises the beginning of the Nok Culture around the middle of the second millennium BCE. The very two circumstances that were for a long time considered the central classificatory attributes of the Nok Culture, namely the manufacturing of terracotta sculptures and the production of iron, appeared not before the first millennium BCE and thus existed only during a certain phase of the Nok Culture. Apart from one undated pre-ceramic site associated with a microlithic industry (Tudun Kaura), no remains of human occupation that date earlier than the mid-second millennium BCE have been found in the key study area. Therefore, we put forth the hypothesis that the region was colonised by migrating people at that time. Their origin is unknown, but since the plants they used as crops (especially millet) are indigenous to the Sahel region, a northern homeland is more probable than any other. The first generations of immigrants seem to have preferred mountainous regions for their settlements, as some of the oldest radiocarbon dates originate from sites found on or next to hilltops (*e.g.*, Ankoro, *Fig. 1*; Kachama 2, *Fig. 3*, site 2009/4; Puntun Dutse, *Fig. 3*, site 2011/63). However, contemporaneous sites exist in the plains as well. From the very beginning of their appearance these colonists were farmers which cultivated pearl millet (*Pennisetum glaucum*) (HÖHN & NEUMANN 2016). Several radiocarbon measurements of charred grains of millet have been dated to the second half of the second millennium BCE (see *Table 1* in FRANKE 2016). Therefore, the farmers of this period seem to belong to a group of incipient sedentary farming communities which appear in West Africa in different regions at the same time or earlier (MCINTOSH 2006; OZAINNE *et al.* 2014).

These settlers represent the earliest known food producers in the eastern part of the West African Guinea savannah. The significance of hunting game or the domestication of animals remains unknown since bones are not preserved due to the highly acidic soil. For this early Nok phase no traces of iron production have been found yet. Likewise, the production of terracotta sculptures has not been irrefutably proven. Associated finds are rare and might belong to remains of subsequent

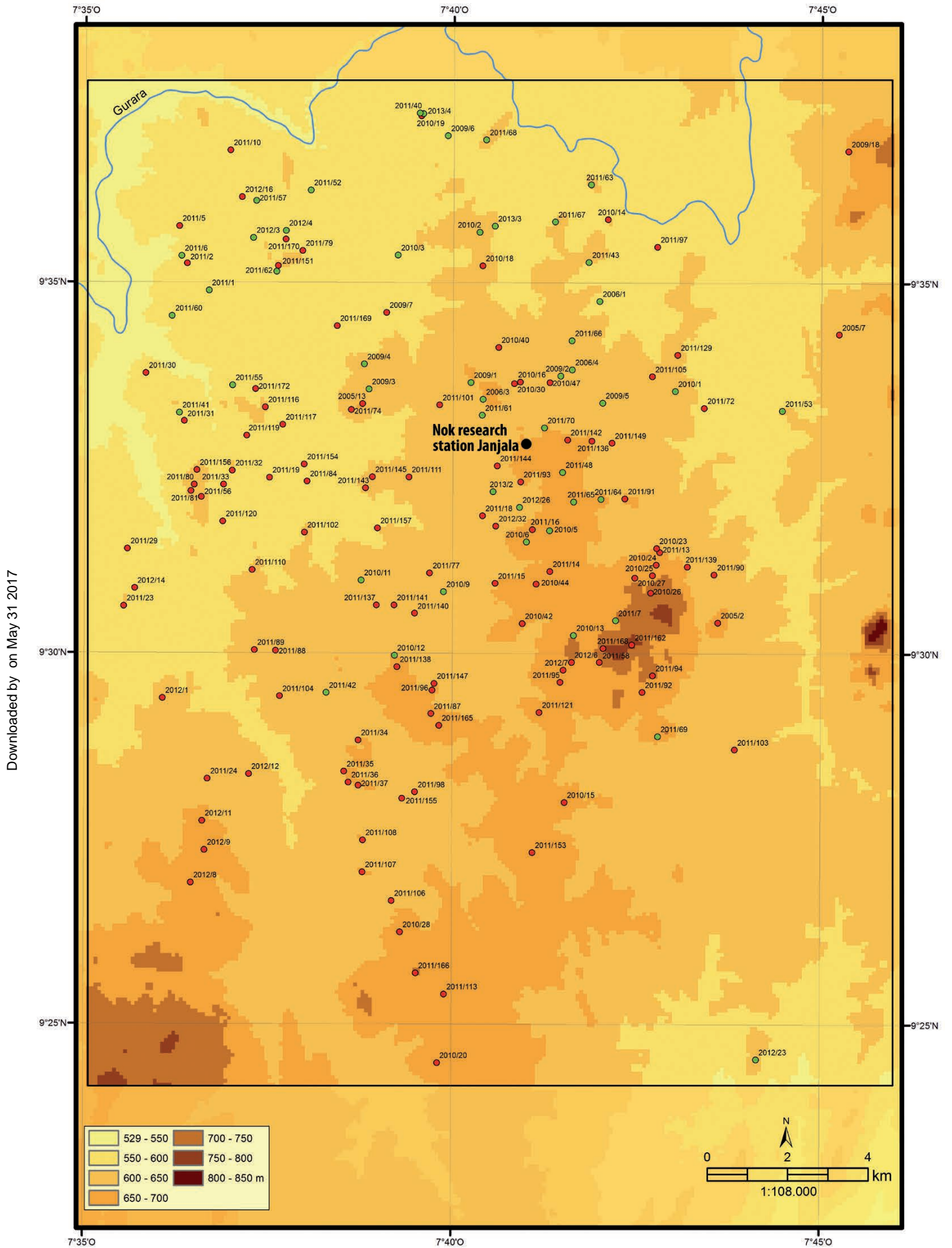


Figure 3. Map showing the distribution of Nok sites in the Janjala key study area. Green dots indicate excavated sites.

phases because many sites show signs of a multi-phased occupation. Nevertheless, we consider this period as belonging to the Nok Culture — an approach that is supported by similar pottery decorations and forms in the second and first millennium BCE (FRANKE 2015) as well as by a continuity in clay sources used for pottery production (BECK 2015). Consequently, the farmers of the first phase are most probably the predecessors of the iron and terracotta-producing people of the subsequent phase. For this reason, we extend the term “Nok Culture” to include a preceding phase representing a pre-iron stage of the archaeological complex, labelled “**Early Nok**”, which lasts until the early first millennium BCE, when the “**Middle Nok**” phase begins, which is distinctive due to a sudden increase of evidence reflected in the summed probability density curve of all radiocarbon dates, indicating an increased settlement density (see *Fig. 9* in FRANKE 2016). The beginning of the terracotta production as well as the first iron objects fall into the Middle Nok phase. While the beginning of the terracotta production can be quite exactly dated into the 9<sup>th</sup> century BCE, the dating of the first evidence for iron production is more difficult. The first furnaces date between 800 and 400 BCE, a period in which a plateau in the calibration curve prevents radiocarbon dates to be more accurate; luminescence dates are equally imprecise. There is, however, evidence from pottery analysis that iron production did not start much earlier than the 7<sup>th</sup> century BCE (see FRANKE 2015, 2016 for more details). In addition, we see an increase in settlement density to a thus far unknown dimension. If social complexity was on the rise within the Nok Culture, it emerged during this phase. The archaeological record clearly shows a flourishing period with an abundance of sites and a large production of terracotta sculptures until about 400 BCE. Then, archaeological evidence in form of sites and finds decreases substantially. Until about the turn of the eras, Nok terracotta sculptures and Nok pottery continue to appear in the few sites recorded, thus forming a “**Late Nok**” phase.

Conclusively, the Nok Culture can be viewed as a tripartite complex: starting with the onset of farming in the middle of the second millennium BCE, leading to a flourishing period between approximately 900 and 400 BCE with dense occupation, elaborate terracotta art and the advent of iron metallurgy, followed by its sudden decline and ultimate disappearance in the last centuries BCE. The Nok tradition vanishes around the turn of the eras, possibly related to unfavourable environmental changes (HÖHN & NEUMANN 2016). Younger sites, up to historical times, are grouped together artificially as “Post-Nok” sites, in order to separate them from the Nok sites. Besides the complete absence of Nok sculptures, there is also a marked difference in pottery decoration techniques as well as in the chemical composition of the clay used for pottery making (BECK 2015; FRANKE 2015).

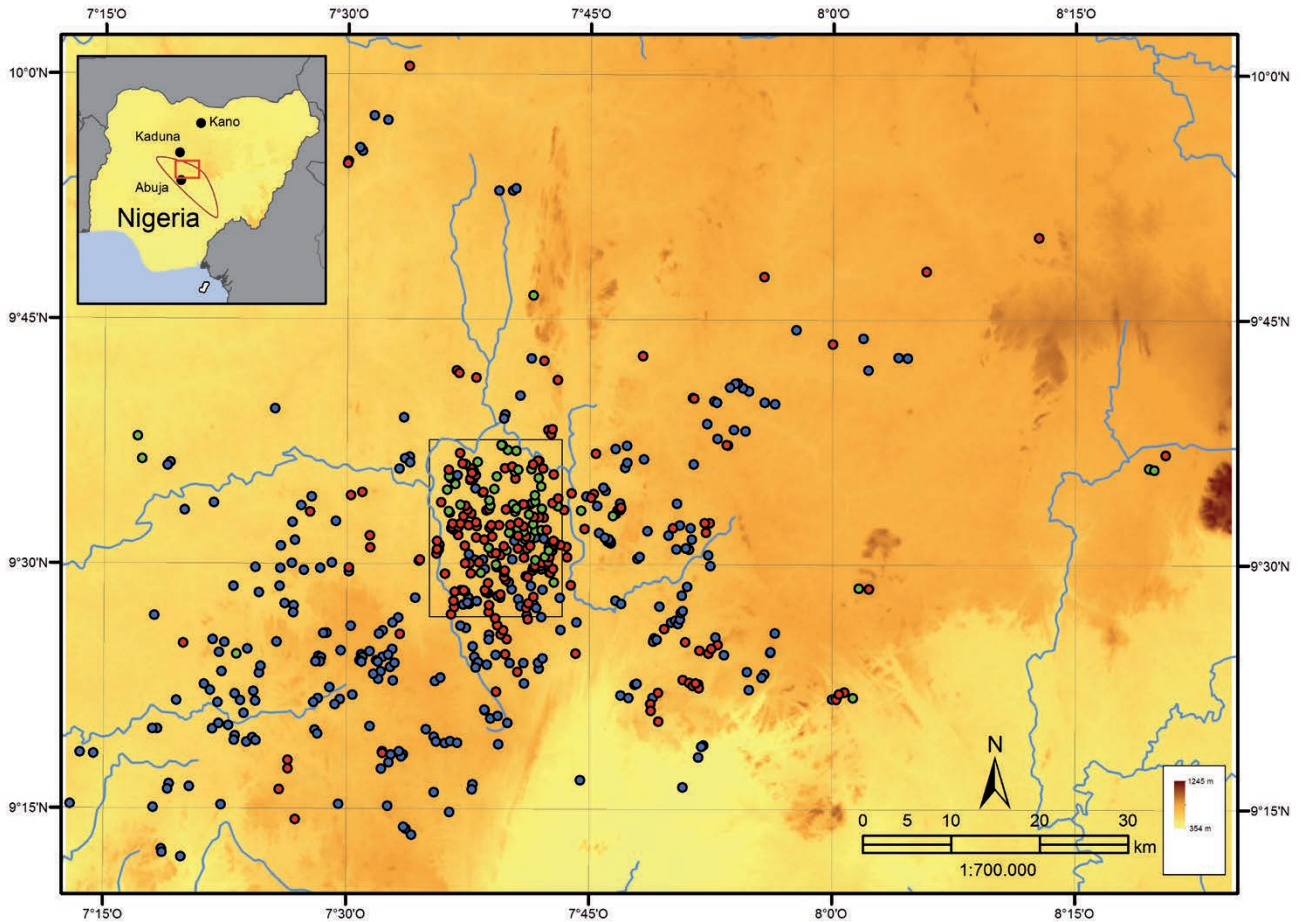
## Settlement patterns

One of the most astonishing survey results is the **quantity of sites** that were located during prospections. Until spring 2014 a total of 165 Nok sites were recorded in the key study area, of which 49 sites were excavated. Plundered sites dominate; many have been at least partly destroyed, and very few were untouched. As much as the looting of the sites is a lamentable matter, it must be mentioned that we owe the discovery of the unexpected quantity of sites to these illicit activities, due to the fact that Nok sites are virtually invisible on the surface. Most sites are indeed discovered by chance; terracotta figurines are found in the ground for instance when the foundations of a house are dug or when a field is being ploughed. These news spread fast and come to the knowledge of organised looters, who are known to pay landowners for the permission to dig. Metallurgical sites are generally not looted because terracotta sculptures are absent in such furnace sites. Such sites mostly are identified as Nok sites based on corresponding radiocarbon dates on charcoal recovered from the furnaces and on the similar form of the furnaces, which differs from later times.

*Figure 3* shows the even spread of Nok sites, demonstrating that the whole region was densely occupied during the time of the Nok Culture — in particular in its middle phase, as reflected by the presence of terracotta fragments and a well-defined Middle Nok ceramic style (FRANKE 2015). During the project’s third and current phase, aimed at exploring interregional diversity, we have started to survey and localise illicitly excavated sites outside our key study area. The results so far indicate a similar site density which adumbrates a uniformly dense settlement pattern throughout the whole Nok Culture area (*Fig. 4*).

Other information obtained by examining illicit diggings concerns the average **size of Nok sites**. Commonly, looters will continue to dig as long as they come across cultural deposits which are an indicator for potentially valuable finds. They cease their efforts once they reach sterile soil, or — although according to local accounts this very rarely happens — a more promising site is discovered nearby. For this reason the extent of the looted area, which is rather unmissable because the pits are usually not backfilled and leave a landscape perforated by hollows (*Fig. 5*), roughly reflects the distribution of cultural deposits in the ground and thus indicates the size of a site. Naturally, not every recorded illicitly excavated Nok site has been measured in detail to confirm its respective expanse, but if the assumed relation between the visibly looted area and the extent of the site is correct, many Nok sites cover an area of about one to two hectares. There are few exceptions, with sites spreading over up to four hectares, implying





**Figure 4.** Map showing all known Nok sites in the central section of the presumed area of distribution of the Nok Culture. The outlined rectangle denotes the key study area with recorded (red dots) and excavated sites (green dots). Blue dots inside and outside the key study area indicate looted sites which have been located during prospections since 2013 and classified as Nok sites due to the existence of numerous recent pits from illicit diggings and diagnostic finds in the spoil.

an intriguing difference in site proportions, but the number of samples does not provide enough clarity or systematic spatial relation between large and small sites to claim the existence of a site hierarchy.

Nok sites had **brief occupation episodes**. We infer this from a circumstance that occurs in several excavations: sites never show substantial stratigraphies. Evidence of mound formation processes is absent. In most cases first finds appear in a greyish-brown top layer of 10–20 cm (*Fig. 6*). Such finds consist mainly of pottery and iron slag and are not connected with the Nok Culture but date to later occupation episodes. Below, a reddish soil then contains the Nok Culture material. In this reddish soil, no layers can be differentiated. Only in pits reach the finds down for more than 40–50 cm; pits can reach depth of 2 m (see below). This means that there is no evidence of a continuous occupation over a longer time period. The thin stratigraphy rather

indicates that the sites were recurrently occupied during different periods of the Nok Culture or in subsequent times, which left no clear occupational layers or stratigraphic separation. The assumption of brief occupation episodes is supported by rather small quantities of excavated materials.

Small sites with small amounts of finds generally indicate few inhabitants, few dwellings, and settlement that were not occupied over the course of generations, but for short periods. Apparently Nok communities were characterised by a certain kind of mobility. This mobility may have been caused by ecological transitions like exhausted soils or shifting cultivation of different plants, or it was due to social reasons. Intending to integrate the empirical findings and their interpretation into a settlement system, the idea of **scattered farmsteads** or **dispersed settlements** provides a reasonable explanation.



Figure 5. Gidan Maidugu site (see Fig. 1 for location) with illicit digging holes (Photo: P. Breunig, 2006).

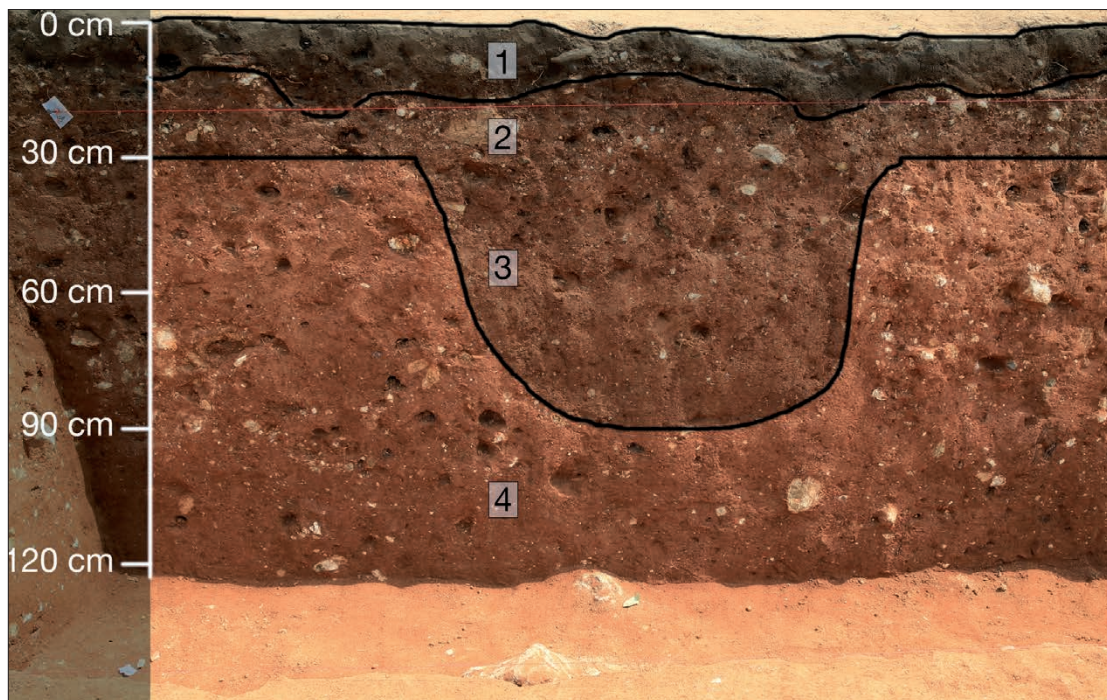


Figure 6. Schematic structure of Nok site stratigraphy: 1) greyish-brown top layer (in most cases farming horizon), 2) thin reddish soil with undisturbed lower cultural deposits, 3) pit or shallow depression filled with cultural materials, and 4) sterile subsoil. The depth and thickness of layers vary from site to site, but the general sequence of the layers remains the same.

Modern farmsteads of farming groups in the study area resemble Nok settlements in size and in quantity of cultural materials like waste consisting of broken pots, plastic bags, charcoal or food remains — they display approximately the same dimensions assessed in Nok sites. Just like most of these modern farmsteads the Nok settlements could have been inhabited by extended families that lived in a single compound as an economically autonomous group, surrounded by their farmland and the land of their neighbours, sharing common rituals manifested in a strictly adhered terracotta sculptural tradition — forming the social backbone of the Nok Culture.

As mentioned above, a few sites extend — based on the spatial distribution of illicit digging holes — over up to 4 hectares and do not fit into this concept. The find quantity points to once well-populated villages that may have existed over longer periods of time. Since many sites, however, were multi-phased it is also possible that site size and structure reflect translocations, expansions and reductions, which took place in the individual occupation episodes. Consequently, our current investigations focus on excavating intact Nok sites not affected by looting in total, thus exemplarily testing the dispersed settlement hypothesis.

### Topographic position of sites

The abundance of Nok sites offers the opportunity to determine environmental parameters relevant for the location of Nok settlements — provided that the assumption that most sites can indeed be classified as settlements is correct. Evidence of only minor geomorphological changes during the Late Holocene allow inferring that today's landscape does not differ too much from the topography and vegetation at the time of the Nok Culture. Initially, we had assumed that high population density motivated Nok people to clear the forests in order to retrieve more space, which would have enabled the cultivation of crops to augment food supply, and to obtain charcoal to operate iron-reduction furnaces. We further assumed that this resulted in increased erosion, degradation of soil, and a heightened accumulation of colluvial deposits in depressions — a scenario that would have explained the position of the discoveries of the first terracotta figurines at Nok, several metres beyond today's surface. However, geoscientists from Frankfurt's Goethe University performed geomorphological prospection in our key study area and did not verify the existence of places displaying such substantial colluvial activities correlated to Nok times. In consequence, it seems more likely that erosional activities and high depositional rates in and around Nok village were

regional exceptions. In general, it seems that the Nok Culture had no profound impact on or altered the shape of the landscape in the area under consideration. This impression of environmental stability during Nok times is supported by the analysis of charred organic remains, which suggests recognisable changes in vegetation and environment only during the Late Nok phase and around the turn of the eras (HÖHN & NEUMANN 2016). Landscape features like elevations or river courses did not undergo significant transitions but remained nearly unchanged and are thus suited for modelling Nok Culture settlement behaviour.

At first glance it appears that Nok people settled virtually everywhere, because the natural landscape ubiquitously provides favourable living spaces offering water resources and fertile soils. Sites have been found in flat plains, on hilltops, and on slopes and summits of mountains. However, a closer look reveals one general pattern: there is a preference for specific topographic features like elevations and gentle slopes. Possibly this kind of settlement topography was chosen because it provided favourable drainage during the rainy season. The annual precipitation in the region exceeds 1200 mm per m<sup>2</sup>, which falls between the months of April and October. A sloping landscape is a desirable location for a settlement to let the torrential waters pass by that come down from the sky almost every day during the rainy season. A systematic analysis of environmental data and site locations by means of Geographic Information Systems (GIS) is currently in progress.

### Structure of sites

Back in 2005, at the beginning of our explorations, when only Taruga and a handful of other sites with archaeological material in primary context were known, speculations about kingdoms and terracotta sculptures serving as decorative art for palaces or temples were so intriguing that even we considered the possible existence of towns with solid architecture. Therefore, we at first misinterpreted geological phenomena as constructional components of large-scale stone structures (RUPP *et al.* 2005: 287). Until today we have not come across any structure that resembles any kind of large-scale stone building and therefore we claim that the Nok Culture erected no stone architecture, apart from the rare exception of the circular stone foundation of a hut discovered in Puntun Dutse. Houses must have been built primarily of organic materials like wood, plant stalks, grasses, and animal hides, which decomposed without leaving visible traces in the soil. Lumps of clay with twig impressions are found regularly in excavations and demonstrate the use of wattle and daub for the construction of walls.

As already recognised in our preliminary studies, pits of different shapes and sizes remain the only constant features found in Nok sites. In some cases the term 'pit' is not quite correct, because the feature bears more resemblance to a shallow natural depression than to an intentionally dug hole with steep walls. The structures are of circular or irregular shape measuring between 1–2 m in diameter and usually about 50 cm, occasionally even up to 2 m, in depth. Pits or depressions display a markedly darker colour than the surrounding soil, because in addition to different cultural materials they usually contain vast amounts of charcoal. The majority of finds retrieved from Nok sites stem from this sort of features. Their purpose remains unknown. In the modern settlements of our study area similar pits result from clay extraction or naturally occurring depressions, which are filled by accumulating cultural material: natural processes (erosional dislocation) as well as human activity (waste disposal) cause a rapid backfill.

After many excavations and the application of a variety of modern methods of archaeological survey (magnetic prospection, electrical resistance measurements, X-ray fluorescence analysis of soil samples and element mapping, thermographic analysis of sites and features) it has become clear that structural components of Nok sites do not exist or are preserved only in highly fragmented condition. This is for several reasons: First, former living floors have not been preserved at Nok sites. Apparently they remained on or close to the surface and were not preserved under protective layers of soil. Therefore, the stratigraphy of Nok sites follows a uniform and simple pattern comprising top layers of up to 30 cm, which represents either the farming horizon or the zone of leaching (*Fig. 6*), followed by irregularly shaped pit-like structures of dark-brown colour, saturated with charcoal. The encompassing sterile soils are easily recognisable due to their reddish colour. Disturbances of especially the uppermost layer happen mainly through farming activities which shape the contemporary landscape in our research area almost everywhere. Additionally, the farmed soil is deprived of its protective vegetation cover and becomes subject to erosion and degradation. For this reason the topsoil horizon in most cases consists of mixed cultural deposits without a primary context of finds and features. The majority of finds can be traced to the aforementioned pits or depressions.

Further reasons for the lack of structural features concern post-depositional processes, in particular the effect of seasonality. Due to torrential rainfalls the ground is saturated with water and expands during the rainy season, whereas the absence of precipitation in the dry season causes shrinking of the soil. After more than 2000 years of swelling and shrinking, the sensitive and

fragile traces of human activity in settlements without stone architecture have almost completely vanished.

The only significant and constantly available structural data are derived from patterns observed in the spread of cultural materials throughout the sites. The underlying idea is the reasonable assumption that human activity has a spatial dimension and that the realm of the respective activities is mirrored by the spread of materials involved in these activities.

In consequence, the three-dimensional position of each individual find is recorded digitally employing total stations. The large excavation area in Pangwari gave us the opportunity to thoroughly analyse the distribution of cultural materials on a large scale (more than 2600 m<sup>2</sup>) for the first time (SCHMIDT 2014).

### Site categories

So far, excavations have revealed four categories of Nok sites: settlements, ritual sites, iron-smelting sites or furnaces, and burial sites. Finds from the days of Bernard Fagg form a separate category. Most of the artefacts recovered by Fagg derived from relocated positions in alluvial deposits — a situation we did not encounter because they were buried so deep in the ground that only the open-air tin-mining during colonial times went into such a depth.

#### *Settlements*

The majority of the Nok sites are interpreted as settlements, although this cannot be validated in every case due to the lack of features and therefore the lack of structural data and diagnostic elements. This holds true particularly for the meagre inventories procured from the many small-scale test trenches, which were dug not for the purpose of categorising sites but in order to acquire chronological data in the form of pottery and organic material for radiocarbon dating.

Inventories composed of objects like grinding equipment and ordinary waste, especially potsherds in large quantities, mixed up with many other artefacts of domestic background as well as material that usually does not occur in any other site category, are easily detectable classificatory characteristics of a settlement. Most sites will fit this definition, but some do not or do so less clearly. Grinding stones, for instance, sometimes appear as constructional element of features which we interpret as graves (see below). Regarding the quantities of the different find categories, most inventories from Nok settlement sites, no matter which phase, comprise of *ca* 80% potsherds, followed by stone artefacts and

fragments of terracotta sculptures, which oscillate around 10% (RUPP *et al.* 2008).

Occasional signs of iron metallurgy are mainly represented by slags. These, however, cannot always clearly be associated with the Nok Culture. The reason for this might be that the recorded finds of slags do not or at least not all derive from Nok occupation episodes, but are more recent intrusions. The pattern of the inventories' quantitative composition is indistinct and may just reflect a trend, because radiocarbon measurements and pottery classification of many sites demonstrate the possibility of a multi-phased occupation. Defining a settlement by means of find quantities constitutes one approach. However, the ideal strategy to be exerted in ongoing and future research is to reveal structural elements.

#### *Ritual sites*

Apart from settlement sites, there are a few sites containing deliberately positioned stone arrangements combined with clay vessels and occasionally terracotta fragments (RUPP 2010: 71). Some of them are suggested to represent burials and are discussed below. Other sites contain large parts of one or more terracotta sculptures which were mostly intentionally deposited. In the case of Utak Kamuan Garaje Kagoro (RUPP 2014b), no settlement site has been found in the vicinity suggesting that ritual sites were located away from inhabited areas in remote and isolated places and are thus rarely discovered. Apart from the deposition of several large fragments of terracotta sculptures, we found very few examples where just one individual piece of terracotta might have been intentionally buried in the ground.

Dogon Rafi, located on lowland sloping towards a river valley, is a special site where only a single terracotta part was found, a large body fragment of an anthropomorphic Nok terracotta. The terracotta piece was visible on the surface, possibly exposed by stronger erosion along the slope, and extended to not more than 30 cm depth. However, this discovery is an isolated case and the question whether it is to be regarded as a deposition or a dislocation into secondary position cannot be answered.

At the site of Ifana 1 large body parts of six terracotta sculptures were found ca. 70 cm below surface, situated on a bed of fist-sized stones. Comparatively small amounts of other associated finds in the surroundings point to a location at the fringe of a settlement. At Pangwari we found more than a dozen terracotta fragments in a pit reaching down more than 1 m below surface (MÄNNEL & BREUNIG 2016). Here, the sculptures were definitely buried inside a settlement, as confirmed by the presence

of large amounts of objects typical for settlement sites. Although the Pangwari settlement site was repeatedly occupied and precise stratigraphic information is lacking, it is most probable that the site was uninhabited at the time the terracottas were deposited.

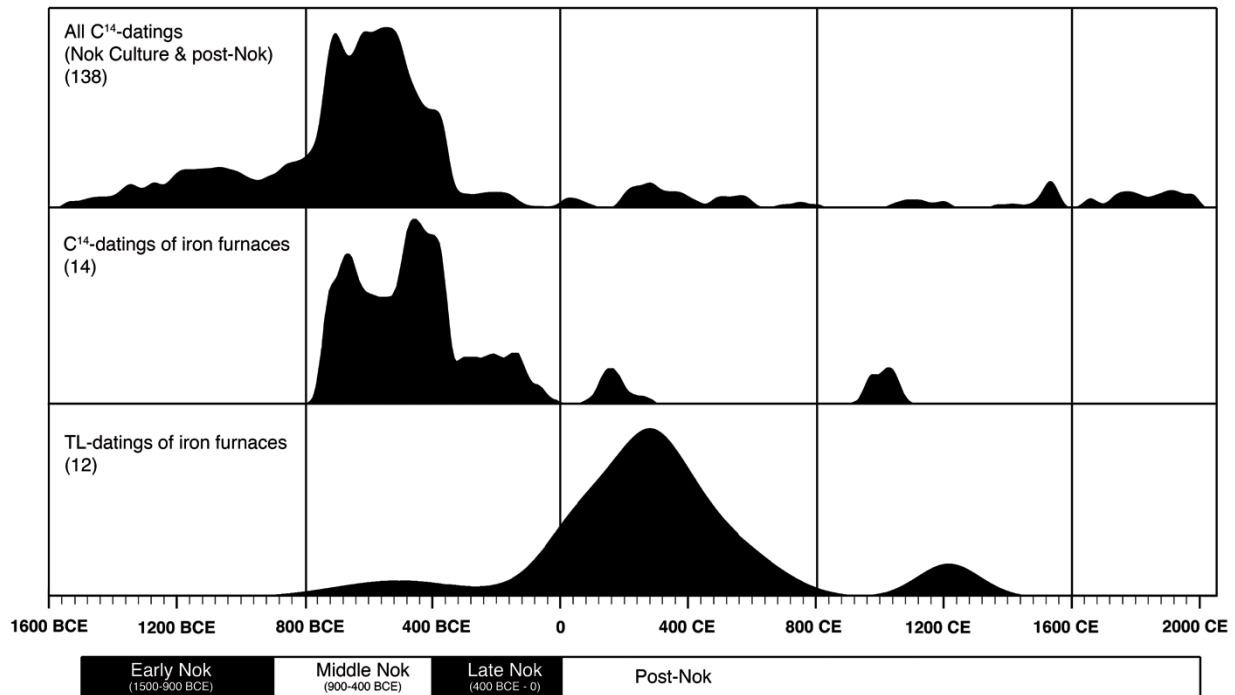
Regarding the composition of the archaeological inventories, the few sites we dare to classify as ritual sites do not display homogeneity. Ifana 1, for example, possesses an unusually high number of terracotta fragments constituting roughly a third of all finds. To the contrary, the inventory from the excavated trench at Pangwari, where a deposition of terracotta sculptures was discovered, does not differ from the general composition of settlement inventories.

As yet there seems to be no explicit rule for ritual sites: they appear both inside and outside of settlements or alternatively might have come into being at a time when the settlement was uninhabited. Examining the results of large-scale excavations carried out at Pangwari, the latter version has to be regarded as the more probable. Here, pottery analysis as well as radiocarbon measurements indicate a multi-phased occupation. In addition to activities in the Middle Nok phase and in the Common Era, one occupation phase is dated to the "early", "pre" or "initiating" terracotta stage of the Nok Culture. We assume that the Middle Nok phase is most clearly represented through depositions of large numbers of terracotta sculptures, suggesting a ritual use of the site. Therefore it might be possible that abandoned settlements became ritual sites, perhaps seen as a place of the ancestors – a concept that would fit the hypothesis of the sculptures being related to veneration of ancestors (BREUNIG 2014).

At most Nok sites terracotta fragments also appear in association with potsherds, charcoal and stone artefacts without specific contexts in pit-like structures, which have consequently been interpreted as ordinary waste dumps. The growing amount of contextual data still insufficiently explains the purpose of the sculptures, but reveals a dichotomous nature of the figures either having been disposed of as waste or buried as intentionally and ritually fragmented and deposited objects, enhancing our understanding of the Nok sculptures (BREUNIG 2012; RUPP 2010; RUPP 2014b; RUPP 2014c).

#### *Furnace sites*

Furnaces represent the third group of sites. In accordance with information derived from investigated sites dated to the Nok Culture period, Nok furnaces or places where iron was produced exhibit distinct characteristics (RUPP 2014d; JUNIUS 2016) which separate them from



**Figure 7.** Dating of Nok Culture iron-smelting furnaces by radiocarbon (middle) and thermoluminescence measurements (below) in comparison to all radiocarbon datings available for the Nok Culture (above). The height of the curves reflect the probability distribution of the respective dates. Calculation and diagram were created using CalPal (IntCal13), a programme developed at the University of Cologne (Weninger B., Jöris O. & Danzeglocke U. 2014, CalPal (Cologne Radiocarbon Calibration & Paleoclimate Research Package), [www.calpal.de](http://www.calpal.de), accessed February 3, 2014).

remnants of iron production in subsequent times. Nok furnaces are large: their bases measure more than 1 m in diameter and the preserved lower parts of furnace walls reach heights of not more than 70 cm. Slags from Nok iron-smelting sites are scarce. Furnaces do not appear solitarily, but in groups. At the site of Baidesuru seven furnaces, dated to the Middle Nok phase, were excavated in a trench measuring only 22.5 m<sup>2</sup>. More furnaces are located in the close vicinity of the trench, but have not yet been excavated. In Pulu, two out of five furnaces were excavated, also dating to Middle Nok.

Apart from the analysis of slags that is currently undertaken, we focus our attention on the dating of Nok iron metallurgy because the debate whether iron emerged in sub-Saharan Africa autochthonously or was imported from the Mediterranean North can be brought forward by appropriate dating of the evidence (KILLICK 2004; ALPERN 2005; EGGERT 2014). For this reason, remains of furnaces, which are potentially associated with the Nok Culture based on the characteristics mentioned above, have been investigated since 2006 and dated using the radiocarbon and thermoluminescence methods. Radiocarbon measurements were preferably conducted on seeds of annually regrowing plants, and thermoluminescence samples derive from fragments

of furnace walls. Results are summarised in curves composed of stacked normal distribution curves of each individual dating (*Fig. 7*). The calibrated radiocarbon dates for furnaces (*Fig. 7* middle) largely coincide with the Middle Nok phase, dated by all available Nok radiocarbon dates to 900–400 BCE (*Fig. 7* above). Because of the plateau in the calibration curve between 800 and 400 BCE it is not possible to obtain a more precise age within this phase at the level of the 2-sigma standard deviation of radiocarbon dates. The oldest radiocarbon date associated with a furnace site is 2555±27 bp (Ruga Fulani), calibrated to ca 800–550 BCE. Overall, the radiocarbon dates as well as the analysis of pottery present at furnace sites suggests a beginning of iron working not much earlier than the 7<sup>th</sup> century BCE (FRANKE 2016). Thermoluminescence (TL) dating was carried out for cross-checking, but grossly contradicted radiocarbon results showing a concentration in the first millennium CE (*Fig. 7* below), possibly due to erroneous results caused by dating of vitrified material (KRESTEN *et al.* 2003). The dating of furnaces to Middle Nok confirms what has been recently brought forth by Manfred Eggert, who stated that the current body of source materials provides arguments in favour of an autochthonous development of iron smelting in sub-Saharan Africa (EGGERT 2014).

### Burial sites

Finally, there are find contexts that have been interpreted as burial sites (**Fig. 8**). Graves or burials are rare. Distinctive markers are up to seven upright standing stones which are arranged in a row (RUPP 2010, 2014c) — sometimes grinding stones were used for this purpose (RUPP 2010: 71) — and one or two ceramic pots of especially fine quality. Associated fragments of terracotta sculptures were only found in the feature at Janruwa A (RUPP 2014c: 145). There, the fragments possibly served as a kind of marker for the grave. The stone setting with the finely decorated pots was found approximately 20 cm below the terracotta fragments.

At the sites of Janruwa A and Ido we found stone beads arranged in the form of a necklace next to the pots (RUPP 2014a: 166). However, there is no final proof to the grave concept due to the absence of human remains, because the acidity of the soil does not allow for the preservation of bone. X-ray fluorescence analysis of soil samples taken along a grid at the site of Kurmin Uwa 2B demonstrated high concentrations of phosphor and calcium next to the stone and pot arrangements interpreted as burials. These element concentrations might reflect traces of a decayed organic agglomeration like a dead body (NAGEL 2014). To illuminate this circumstance, respective analysis is currently carried out at similar features recently discovered at Pangwari (**Fig. 8** below). No burial pit or any soil discolouration was found, only a slightly less compact texture of the ground surrounding the feature. Mapping the archaeological finds, a zone void of any archaeological material immediately next to the stone-pot-arrangements in Pangwari as well as in other sites like Ido or Kurmin Uwa 2B (locations see sites 2011/1, 2009/1 und 2010/6 in **Fig. 3**) becomes apparent. This find-free area might result from digging the burial pit, which either was located in a protected area inside a compound or at the periphery or on the outside of the settlement, possibly in the ground of an abandoned settlement. Thus, due to the lack of stratigraphic evidence, the relation between graves and settlements remains unclear and the question whether the dead were buried among the living cannot be answered definitely.

### Conclusion

Taking the cultural changes of the mid-first millennium BCE in the Chad Basin of Nigeria as a starting point, the Nok Culture of Central Nigeria originally was considered to be another potential case of contemporaneous incipience of social complexity. In the beginning, investigations of Nok Culture sites provided results that neither confirmed nor contradicted

this theory. We came across adjoining sites and assumed a high population density as a prerequisite of social complexity. In addition, intensified agricultural production based on millet cultivation was attested, possibly realised through collaborative projects and coordinated by a centralised organisation, framed by further indications of iron metallurgy and its supposed social consequences as a revolutionising technological transition. We continued research with the intention to augment respective data and sought to verify our hypothesis. However, after almost ten years of excavating in the central distribution area of the Nok Culture, a wealth of new data exposed an opposite point of view that requires a re-examination of our concepts.

In sum, we have not found unambiguous evidence of social complexity and the often suggested highly advanced social system of the Nok Culture. Although there is an abundance of archaeological remains in the ground of the area where it once spread, there is no indication of agglomerations of people above village level, thus there is no evidence that would warrant the existence of communities of a size that would be necessary to develop social stratification, which is regarded as one of the attributes of social complexity. Numerous excavations and prospections have contributed to the notion that no towns or any kind of urban environments existed. The rather small size of almost all recorded sites and the comparatively small quantities of excavated cultural remains even rule out village communities. Apparently the typical settlement of the Nok Culture which occupied the prehistoric landscape during all phases was either a hamlet or a single compound. What can be concluded from this is that there was no high population density and that Nok communities were small-scaled and organised in locally autonomous groups. Probably these groups consisted of only one or a few extended families or a comparable number of people living together at one site.

As demonstrated by the uniformity of their material culture and their presumed belief system, most prominently reflected by the terracotta sculptures, external contacts within their culture must have existed. However, such a larger social network apparently was not organised and maintained in a way as to infer social inequality, social hierarchies or other signs of internal demarcation traceable by available archaeological data. None of the numerous excavations brought to light architectural remains of specified buildings or the spatial organisation of housing areas that might have been occupied by high-ranking members of the community. Further, among the admittedly few features interpreted as graves there is no evidence of any heterogeneity pointing to a difference between burials of elite members or commoners. Nowhere, an accumulation of valuable objects neither of iron



**Figure 8.** Supposed graves of the Nok Culture from the sites of Kurmin Uwa 2B (above), Ido (middle), and Pangwari (below).



nor any other materials signifying inequality in terms of property or prosperity was found. There are no indications of far- or middle-distance exchange or trade contacts (apart from a few stone raw materials that do not occur locally and the depiction of a sea shell on the head of a male terracotta sculpture), no signs of communal construction activities, and no preserved facilities to store agricultural surplus. According to the European understanding of social complexity this evidence would not support any suggestion of complexity for the Nok Culture. There is, however, an agreement among archaeologists that there are different cases of complexity in Africa, like for example ritual complexity which does not require palaces, community buildings or other characteristic of European-style complexity. In this regards, the Nok Culture would be a case of ritual complexity.

It has to be considered that the preservation of features in Nok sites is generally poor and that the amount of data is not too large and regionally restricted to a rather small key study area. Currently, there are indeed no facts that verify the hypothesis that the producers of the skilfully manufactured terracotta sculptures and early iron artefacts were members of stratified social communities. At this point we tend to classify the Nok Culture as small-scale groups of sedentary farmers which lived autonomously in dispersed settlements and for unknown reasons successfully started to produce sculptures and afterwards iron, albeit with hardly assessable social or ecological consequences. There might have been rulers, chiefs or big men, possibly residing in “palaces” that did not differ from the ordinary houses of common people, although none of them left status markers or anything related that would allow us to prove their existence. There also might have been a higher population density than ever before, economic surplus or other occurrences commonly related to complexity, but without necessarily coinciding with other developments in Africa as outlined by Susan McINTOSH (1999).

Bound on what is indisputable, we may safely assert that the standalone peculiarity of the Nok Culture concerns its terracotta sculptures. Excavations have revealed contextual data emphasising their ritual significance — using the term “ritual” in a spiritual context — and their role as materialised expression of a religion. Should it not be possible that the remarkable transregional uniformity of the complex, particularly mirrored by the omnipresence of the sculptures, was caused by the power of rituals and a complex system of beliefs? To accentuate this perspective, the Nok Culture deserves further investigation before the remaining evidence is irreversibly lost by looting which still takes place at many sites in Nigeria every day.

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