



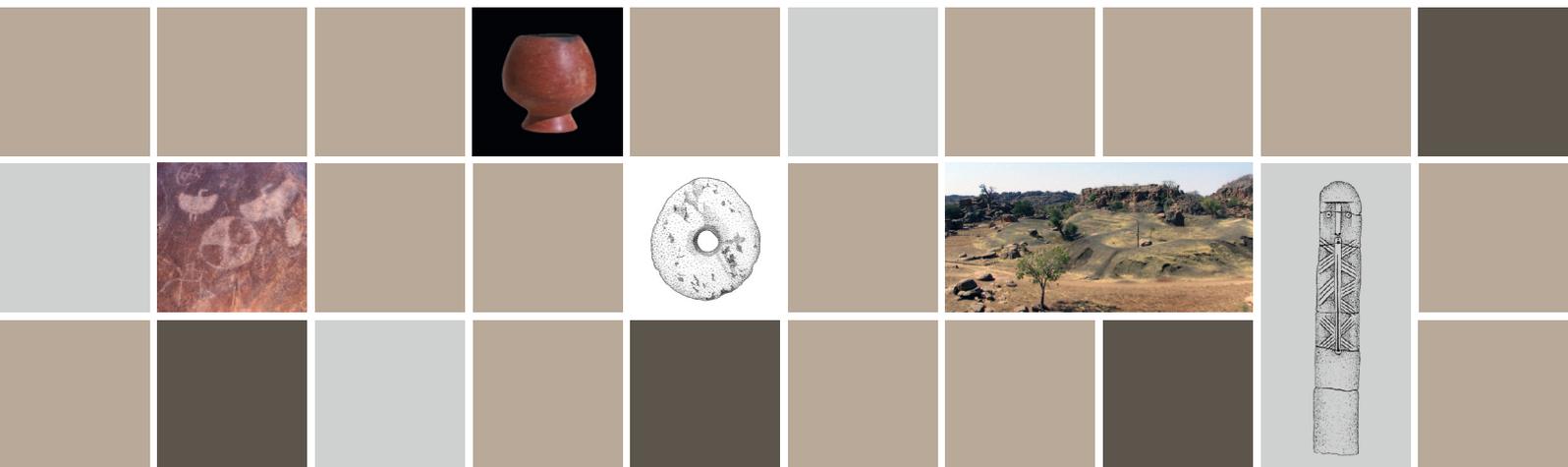
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François-Xavier FAUVELLE-AYMAR



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Claire LETOURNEUX

Translation

MAGEN O'FARRELL

Layout, graphics

Fabien TESSIER

The contributions should be addressed to:

REVUE P@LETHNOLOGIE

Vanessa LEA, Research associates

TRACES - UMR 5608 of the CNRS

Maison de la recherche

5 allées Antonio Machado

31058 Toulouse cedex 9, FRANCE

Phone: +33 (0)5 61 50 36 98

Fax: +33 (0)5 61 50 49 59

Email: vanessa.lea@univ-tlse2.fr

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Article outline

THE BELI VALLEY (MARKOYE, BURKINA FASO):

an Important Siderurgical District
in the Time of the Great Empires

Jean-Marc FABRE

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THE BELI VALLEY (MARKOYE, BURKINA FASO):

an Important Siderurgical District in the Time of the Great Empires

Jean-Marc FABRE

Abstract

The surveys carried out in the valley of the Beli in the north of Burkina Faso enabled to identify numerous metallurgical sites. The uniqueness and specialisation of the area, together with the intensity and standardisation of the production, seem to characterise a siderurgical district from the late 1st and the early 2nd millennium AD. With the exception of the excavations carried out on the neighbouring sites of Kissi and Oursi, the chronocultural regional contexts are little known and do not yet enable the identification of the actors or sponsors of the metallurgical activity. We identify here the various avenues of investigation provided by the comparison of the different written and oral sources.

Keywords

Burkina Faso, Markoye (Burkina Faso), archaeology, metallurgy (low furnaces), Protohistory, Middle Ages (10th-13th century).

1 - Introduction

Africa at last has a history! The French Ministry of Education has added the teaching of this subject to the secondary syllabus, and this is one of the reasons why the Centre Régional de Documentation Pédagogique de Marseille has produced a work intended to assist teachers, who have received little training in the subject (Simonis, 2010). The synthesis produced by F. Simonis was a particularly difficult and awkward task, and the author, broadly comparing the written and oral sources, offers particularly interesting commentaries and contextualisations of the traditional narratives. However, one aspect seems to have been neglected: the archaeology. How frustrated the archaeologist feels when reading the few lines dedicated to his / her field (Simonis, 2010: 20)! And while the bibliography provided is not quite complete, this does not explain why, in a general manner, the contribution of archaeology to historical construction still remains marginal. In the current article, taking the example of the Markoye region ([figure 1](#)), we will examine some of the reasons why archaeology remains almost ignored. In a recent article (Fabre, 2012), several aspects of issues regarding the research methodology and metallurgical technology involved have been partially developed; in a previous publication (Fabre, 2009), the cartography of the workshops and the scale of metallurgical production had also been presented. Consequently, these points will just be touched on here to leave space for a broader vision of the siderurgical production and its historical context on the regional scale.

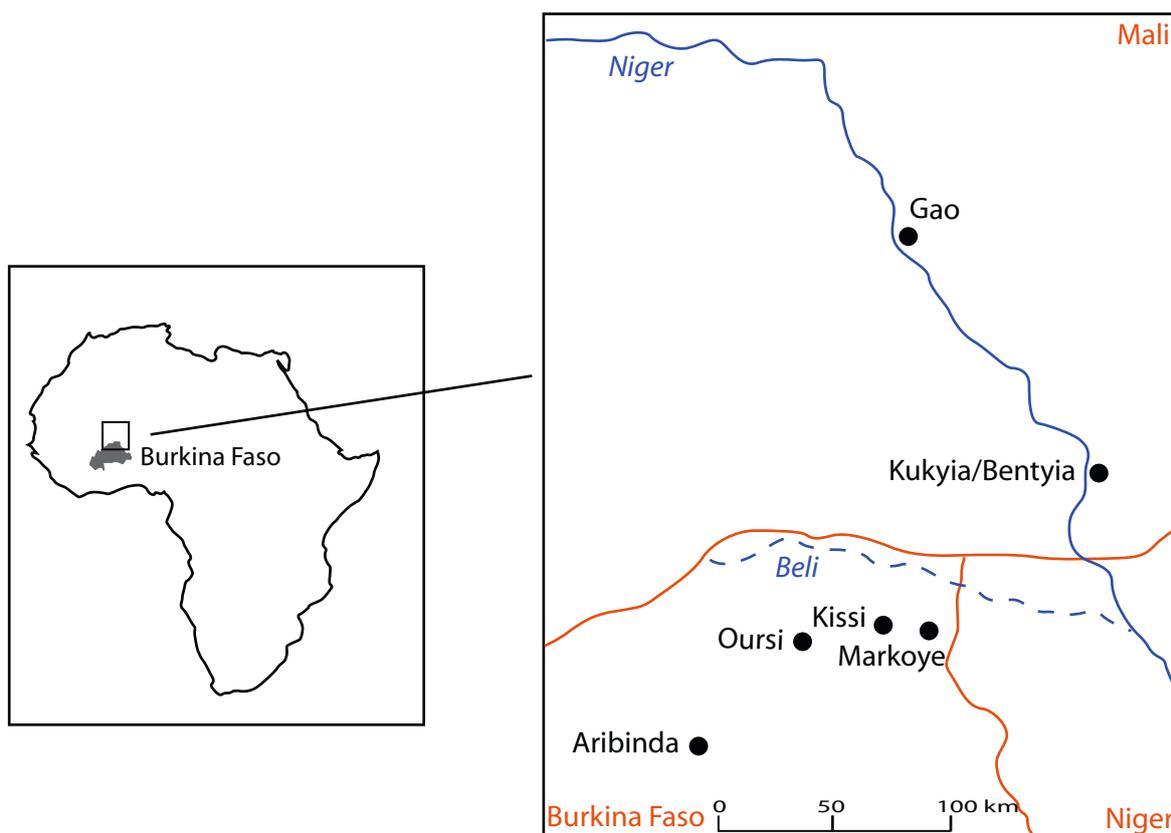


Figure 1 - Location map of the main sites mentioned in the text (CAD: J.-M. Fabre).

2 - Uniformity and specialisation

Designating a territory, the term “district” has, during the medieval and modern periods, taken on legal and then administrative meanings, all the time retaining the sense of an “uniform territorial subdivision”. In the mining field, where the term is commonly used, the uniformity is emphasised, the legal and administrative aspects being defined by the concession. In this way, a mining district is often characterised by the uniformity of some geological or metallogenic data, such as an identical association of minerals. For metallurgy, the parameters are slightly different because the supply of ore to be processed may result from different sources, as several examples have clearly demonstrated it (Martinelli, 2002). If, as for the mining district, the physical uniformity of the region may sometimes be emphasised, the anthropogenic parameters such as the choice of a technology or the organisation of production are the main key.

In the Markoye region, we are not currently aware of the sources of iron ore supply. The deposits are numerous, but have not yet been the subject of in-depth research. Therefore, it is not possible to examine this parameter. However, the three other resources necessary to the functioning of a metallurgy workshop – fuel, clay and water – are available in considerable quantities, which is one of the unusual features of this Sahelian region. While the region as a whole is characterised by the presence of bands of dunes running east-west and punctuating any northward progress, the metallurgical production area is found at some distance from these features. To reach the workshops from any direction needs to cross huge sterile spaces (clay plains and *regs*), briefly but regularly interrupted by numerous marshes which are tributaries of the river Beli, itself a feeder of the river Niger that runs around 50 km to the east. In these marshlands the early

metallurgists found all the resources necessary for their workshops to function (figure 2). Water and clay are found here in abundance; they were necessary in great quantities for the construction of the low furnaces, which thousands of remains are found in close proximity. Today, some of the watercourses, while not permanent, still retain relatively significant pockets until the end of the dry season. During the production phases, the entire orographic system ensured – seasonally but on a large scale – the supply of the workshops. At least 100 litres of clay were necessary to make the pit of a low furnace, the only part now preserved (Fabre, 2009). The elevation of the structure is difficult to reconstruct, but was probably even more massive than the pit, and it is easy to understand the reason why the workshops were settled along the margins of marshlands.



Figure 2 - Tin Sawas west [Burkina Faso], metallurgy site on the edge of the Kuna marshland (photograph: J.-M. Fabre).

The transport saving also applies to fuel, which is rather abundant on the site. A substantial gallery forest runs along the edge of the marshes, in depressions which are regularly flooded during the rainy season. Acacias are common, particularly the *bani* (*Acacia nilotica*), the metal-workers' tree according to local Songhai tradition (personal communication from Kouni, Markoye). It was not the mass of charcoal, the most common fuel for early siderurgy, which created the transport problems, but rather its volume and fragility. In the Sahel, some oral traditions mention the direct use of wood without prior carbonisation (Kiethéga, 2009). This is a possibility here, but the remains studied do not enable the hypothesis to be confirmed¹. In any case, whether charcoal or wood were used, it would have been unnecessary to transport it as water and clay were found in the same location.

1. For B. Eichorn, an anthracologist at the University of Frankfurt specialized in these issues, the use of wood in siderurgy has not been clearly demonstrated in West Africa (personal communication).

Far from being ideal, as we will see it later, the region does offer – with a relative uniformity – the conditions necessary for the establishment of a number of workshops. Undoubtedly, this juxtaposition of resources constitutes one of the characteristics of this sector, that its inhabitants seem to have employed in an almost systematic manner (figure 3).



Figure 3 - An important siderurgical site on the bank of the Beli [Burkina Faso]. In the foreground can be seen the pits of the low furnaces from the second production phase, with diameters between 0.9 and 1.1 m (photograph: J.-M. Fabre).

The surveys carried out in the valley of the Beli and along its tributaries have enabled about one hundred metallurgy sites to be located², but the technologies used, indicated by the architecture of the low furnaces and the nature of the waste left on site, are surprisingly uniform. In the neighbouring regions (Kiethéga, 2009), many different metallurgy traditions are found alongside or succeed each other, and the archaeologist attempting to disentangle these technological spillikins must use multiple datings in order to reconstruct the metallurgical history of the region. This is not at all the case in the region of Markoye. With just one exception, in which three large diameter combustion structures have been observed, a single type of trapped slag single-use low furnace was used (figure 4). While attested in the neighbouring regions (Kiethéga, 2009), the technology of tapping the slag, which constitutes progress insofar as it enables the reuse of the furnace and thus avoids its continual reconstruction, has not been used here³. Only two variants

2. The field works were carried out in collaboration with L. Koté (University of Ouagadougou) and some of his students, to whom I express my deepest thanks

3. In the sub-region, there exist several models of trapped slag low furnaces, with their characteristic waste tip, but few examples are dated accurately. However, we consider the coexistence of these two types of structure as highly likely.

of a low furnace with trapped slag were used (Fabre, 2009). Studying them from a technological viewpoint has demonstrated the desire of the metallurgists to improve the capacity of the structure for processing ore by slightly modifying its architecture without this leading to additional work during its construction. The few radiocarbon dates obtained from the two variants attest to their succession in time and confirm the idea of a search for productivity gains. In consequence, we can only note the remarkable technological uniformity of this region of siderurgical production.

The reasons of this technological uniformity are difficult to establish, as the cultural contexts in which they developed are poorly understood. However, since more technologies existed in neighbouring regions, we must presume that the metallurgists here did not have access to these technologies. Was this isolation simply geographical, or rather ethnic or political? We cannot currently say for certain. This model of low furnace, of which tens of thousands of examples exist in the region, was completely satisfactory to the metallurgists or their sponsors, who had reproduced it for several centuries. Even if the model has been improved over its long history as we have seen above, this type of structure requires significant construction work, which is far from specialised but which requires a lot of hands to carry it out. This can be seen as an indication of low value being placed on labour, or as an evidence of the presence of menial workers.



Figure 4 - N'Tongom [Burkina Faso], on the bank of the Beli. Section through the pit of a trapped slag single use low furnace (photograph: J.-M. Fabre).

The technological uniformity, which implies some production standardisation, may also be considered as an evidence of the metal-workers' specialisation; a specialisation leaving no scope for originality. All of them using the same recipes, they probably belonged to a single society, certain complex cultural characteristics of which have been defined by the study of rock engravings carried out by M. Barbaza (2005 and this volume). There are many of these engravings in the region, indicating a close connection between populations issuing from different cultural contexts, whose origins are located at opposite ends of the Sahara. This society, which we can easily imagine to be sedentary through at least a large part of the year, has contributed by means of its metallurgical activity to the specialisation of an area.

In the 1980s and the 1990s, teams of German researchers from the University of Frankfurt have carried out a large-scale programme of surveys and test excavations in the north of Burkina Faso, as a result of which they were able to propose an archaeological map of the province of Oudalan (Vogelsang *et al.*, 1999). This work constituted a genuine advance for the region, that was previously considered as an archaeological no man's land. The first observation resulting from this map is the relative density of habitations, diagrammatically represented (figure 5) by a pot.

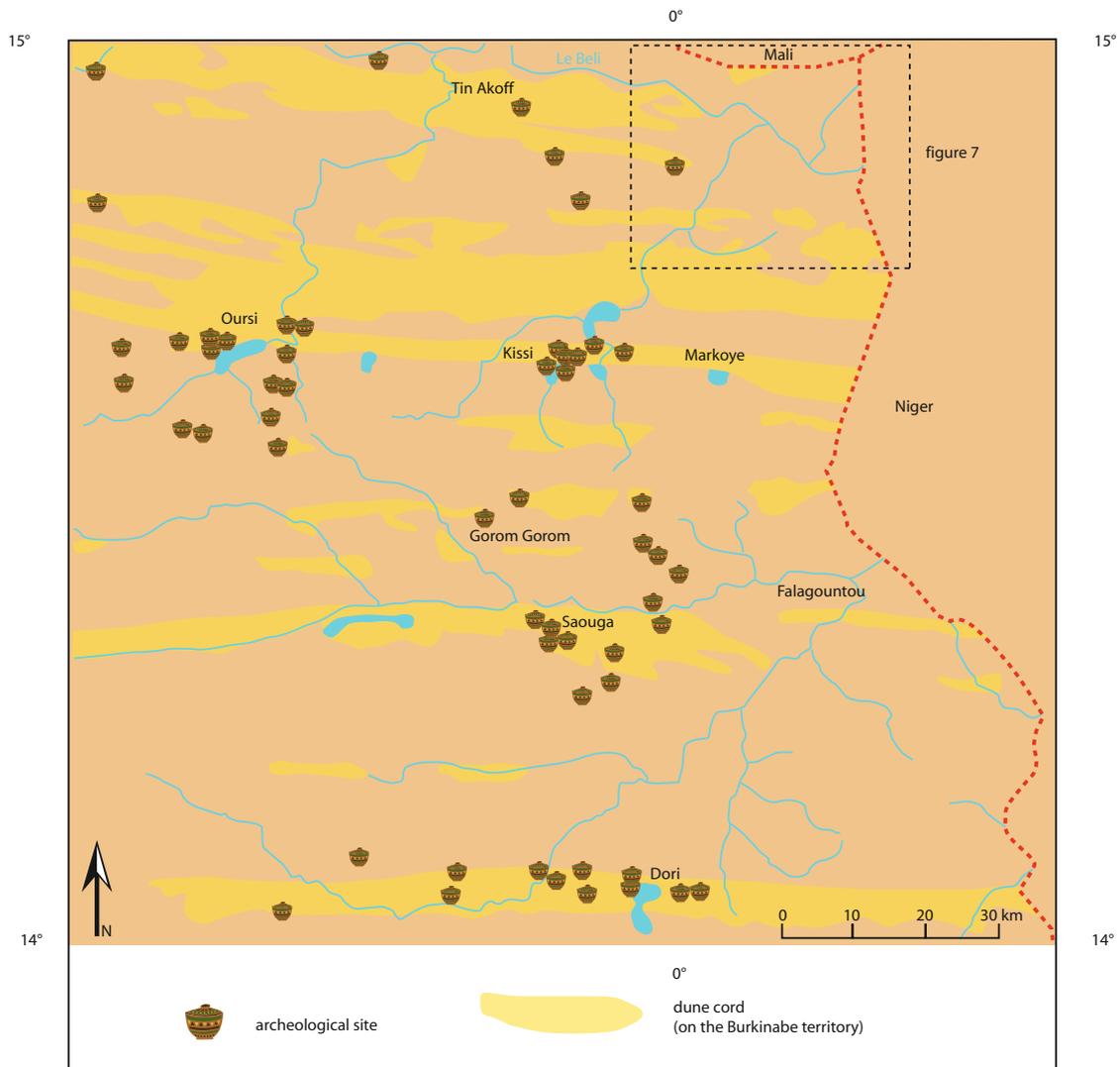


Figure 5 - Archaeological map of the Oudalan [Burkina Faso]
(CAD: J.-M. Fabre, after Vogelsang *et al.* 1999: 53).

They mainly are hill top sites, called “anthropogenic mounds” and dated to the early 2nd millennium AD (figure 6). The second, equally evident observation, concerns the spatial organisation of these habitation sites, arranged in lines from east to west and in close correlation with the dune system. There are two principal explanations for this organisation. On one hand, these lines of dunes prevent the circulation of water, which is concentrated into a number of depressions forming



Figure 6 - Anthropogenic mound on the bank of the Beli [Burkina Faso], close to the metallurgy sites (photograph: J.-M. Fabre).

permanent pools. On the other hand, the accumulations of sand constitute one of the rare landscapes in the region with sufficient capacities in terms of hydric retention to allow the cultivation of crops using rainwater and to promote the growth of vegetation (Barral, 1977). Consequently, the dunes and pools offer both farmers and shepherds an exploitable land. Given the rarity of inventoried sites, there were few other organisational possibilities. This is particularly remarkable in the north east angle of the map (figure 7), in the neighbourhood of Mali and Niger, where the dunes are almost absent. In the 2000s, it was in this sector that the majority of metallurgy sites were observed. This implantation, closely linked as we have seen above to the presence of the resources necessary for metallurgy, deviates from the rules for the installation of habitations that we have just described. The most revealing aspect for the most of these workshops is the absence of any opportunity for growing crops for several kilometres all around. Naturally, the local populations could reckon with on the few resources offered by fishing, hunting and probably also extensive animal raising. But it seems highly probable that a significant complement to their diet came from outside the siderurgical production area.

This is an indication of a high degree of specialisation in an area where the activity was essentially, if not exclusively, siderurgical. The valley of the Beli therefore constituted an important metallurgy district.

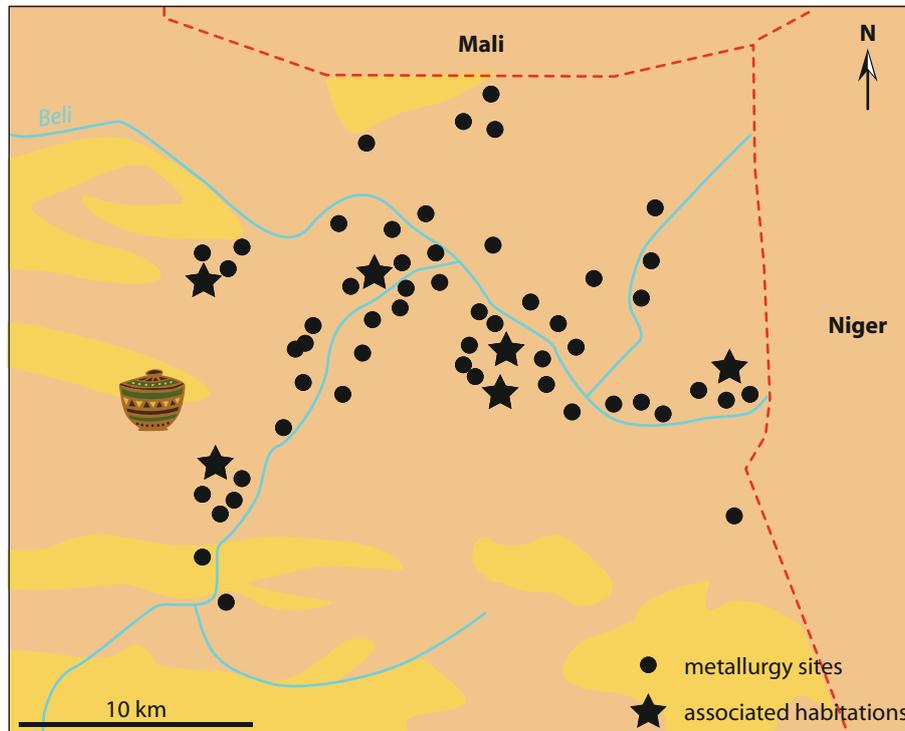


Figure 7 - Beli siderurgical district [Burkina Faso] (CAD: J.-M. Fabre).

3 - Problems of time and space

As we have seen, the characterisation of the siderurgical district, though incomplete, provides us with significant information. From a chronological point of view, the few dates obtained for low furnaces indicate two production phases, each one corresponding to a technological variant, the first one from the end of the 1st millennium AD, and the second one around the 13th century. The district is also rather well spatially circumscribed, over an area of around one hundred square kilometres, even though we can easily imagine that it overlapped the neighbouring territory of what is now Nigeria, where the conditions for the implantation of workshops are identical to those described above⁴.

Within the northern confines of what is now Burkina Faso, and a little more than 200 km south of Gao – the Kaw-Kaw of the early Arab texts (Cuoq, 1975) – the valley of the Beli formed the industrial epicentre of the region, belonging to the Songhai empire which, under the Askia dynasty in the 16th century, extended across a large part of the Sahel. Unfortunately, such a statement is, from our point of view, anachronistic. In fact, the current state of research provides no evidence for metallurgical production after the 14th century. And this is where the problems begin! For the earlier periods, including the most well-known, the region which interests us has been isolated from the identified major territorial entities, and consequently we cannot connect this economic

4. An expansion of the survey work towards the Niger has been considered, in collaboration with O. Idé (IRSH, Niamey), but unfortunately the political and security situation in the area prevents any such project.

phenomenon with any political power. In addition, the historical cartography of western Africa is based to a large extent on medieval Arab sources which were not written for this purpose and which as a result are somewhat vague on the subject. For example, it is currently impossible to propose a serious cartography for the area of influence that may have belonged to the kingdom of Gao at the end of the 1st millennium AD. Nor do we understand the socio-economic or political realities of the period.

With of so many uncertainties, given the scale of the district's production and the contribution of M. Barbaza's studies on the rock art of the area, we have developed the hypothesis of a trans-Saharan iron trade (Fabre, 2009). This must not, however, supplant the possibility of major local markets justifying production on such a scale; indeed this possibility has already been evoked for the supply of the town of Gao (Insoll, 1996). Our lack of knowledge of early local populations and their daily practices prevent any evaluation in terms of iron needs, particularly for agriculture. However, the oral traditions and chronicles of Timbuktu describe a great number of events, particularly in the martial context, which might justify siderurgical production on such a scale. But recent research, particularly in the field of epigraphy, demonstrates how it is difficult to exploit these sources, which remain above all highly politicised historical constructions (Moraes Farias, 2003). In addition, the region studied is located at a distance from the great centres of tradition, at the crossroads of many cultures: Mandé culture in the west, Songhai or pre-Songhai in the north and east, but also Tamasheq in the north and, finally, Mossi in the south. In studies dedicated to these great ethnic or cultural entities, it has been possible to note some elements directly concerning our region. This information gathering is not yet completed and shall be followed by a process of analysis; meanwhile, we present here some aspects of this work.

The only research work taking into account the Oudalan region is that of C. Pelzer who, while studying the history of the current populations and their oral traditions, has examined those preceding them (Pelzer, 2003). He demonstrates how the early populations, settled on anthropogenic mounds, were sedentary, and that 'nomadisation' is a relatively recent phenomenon. According to the oral traditions, these were Gourmantché people, except in the area of Pobe Mengao and Aribinda, which were inhabited by the Kurumba⁵. C. Pelzer states that these two ethnonyms have the same meaning: "those of the Gourma", i.e. the right bank of the Niger. This is not, therefore, a true exception, but rather simply a distinction in the way these early local populations were designated. However, this fact seems interesting to us as the two locations present another particularity: that of being – other than Markoye – the two only sites with rock engravings in the whole northern Burkina Faso⁶ (figure 8). According to local oral tradition, the sedentary Songhai, who are now the chief component of the population of Markoye, have no links with the populations who carried out these engravings and exploited these metallurgy sites, both of them being attributed to "those from before". Were these the Kurumba who, according to Mossi oral tradition, are associated with iron working? It is not impossible, as the trail of the Sudanese savannah peoples does not end there. On the basis of the chronicles of Timbuktu, M. Izard, a specialist in the study of the Mossi, evokes incursions by the Mossi into Songhai territory from the 13th century (Izard, 1997). He sees these as evidence of a well-organised military society, whose objective was to control west African trade, providing us with an impression of the role that these populations may have played in the Sahel from the first half of the 2nd millennium AD.

5. C. Pelzer has since called into question the age of this oral tradition (Pelzer *et al.*, 2009). For Aribinda, the fact has already been discussed by J. Rouch (1954) during his enquiry into the early populations of the Niger in which he associated the Kurumba with iron working. In the neighbouring Yatenga, the Kurumba, or Fulse, constituted the population predating the Mossi, who arrived in the 15th and 16th centuries (Izard, 1985).

6. This is, of course, the same type of engraving, most probably attributable to the same population.



Figure 8 - Aribinda [Burkina Faso], engraving representing a rider armed with a sword (photograph: J.-M Fabre).

Prior to the second Mandé expansion and the taking of Gao in the 16th century, the district of Markoye thus appears to have been relatively isolated from the centres of power and of Malian tradition. The Mandé oral tradition does contain two constants which may be of interest to our examination: the omnipresence of the figures of the blacksmith and the recurring problem of slavery. These constants would also be at the source of the empire forming. We find these two themes in some versions of the astonishing story of Sumaworo Kanté and his nephew Fakoli (Simonis, 2010). It is difficult for a non-specialist to distinguish between what is commonplace in different oral traditions and the information or historical interpretation which may be derived from them. But it is important to emphasise that the Sahel has been the reservoir of slaves that supplied a flourishing trade for several centuries. The numerous raids, which are also mentioned in Songhai traditions, were probably regular local events. We must then pose the question of the conditions for the success of the metallurgical activity over such a long period. How could permanent, sedentary production intended for a particular market be guaranteed in such an insecure context? The other recurring element in the region's traditions, the figure of the blacksmith, symbolises the metal necessary, both in terms of quality and quantity, to manufacture the tools and/or weapons which ensured the prosperity of a society and/or the supremacy of a power. On the quantitative level, at least, we can be certain that the district of Markoye could play this role, but for whom?

In Songhai tradition, with the exception of the legendary kingdom at Kukyia (today Bentyia, in Mali), the majority of the events took place at Gao. We have already seen that it was difficult to connect our sector with this latter area, despite its relative geographical proximity. The famous Kukyia (figure 1) is located much closer to the district in question, less than 100 km away, but tradition and the Arab texts contain few references to the city and, in any case, the reported facts predate the activity in our district. However, in his epigraphic study, P. F. de Moraes Farias (2003; Triaud, 2005) observes a chronological discrepancy on the subject – and not the only one – between the oral traditions and the inscriptions discovered at Bentyia. The corpus contains 63 inscriptions dated from 1182 to 1489, with an absence of epigraphic data at times which can be explained by doctrinal reasons such as Ibadi or Sunni influences⁷. However, P. F. de Moraes Farias notices a paradox: the Za, the first Songhai dynasty mentioned by the chronicles, left no traces at Kukyia, where they are nevertheless said to have ruled, while they are evoked in inscriptions at Gao. Whatever the case, the element from this study that we will retain is the presence of an important economic centre at Kukyia, with a dynamic and well-established Muslim community from the 13th century. Kukyia, until now presented as an ancient pagan city of Songhai myth, was in fact an important commercial centre taking an active part in major trading activities. Its eminently strategic location, at a point of transshipment due to the impassable Labbezenga rapids on the river Niger, 50 km to the east of our study area, ensured its continued success. These new data, provided by epigraphy, encourage us to relativise the isolation of the siderurgical district of Markoye, whose production was perhaps intended for the cosmopolitan city of Kukyia, where Songhai, Tuareg and Mandé cultures co-existed⁸. The latter are mentioned in the inscriptions confirming the presence at Kukyia of a major Wangara community referred to in the chronicles. In consequence, it is now possible to reconsider the problem of the location of Kūgha – a city mentioned in numerous texts, in particular those of al-Bakrî and al-Idrîsî in the 11th and 12th centuries (Cuoq, 1975), and presented as an important trading centre under Wangara domination, somewhat surprisingly given its location far to the east, distant from the centres of Mandé power and in the heart of Songhai territory. Considering its proximity to and contemporaneity with our metallurgical district, this is another trail that we shall explore.

4 - Conclusion

We have initially attempted to characterise the metallurgical district of Markoye on the basis of a certain number of parameters collected under the theme of uniformity and specialisation. The question of the identity of the actors involved was then raised; a problematic issue, as we have seen in the second part of this study, due to our lack of knowledge of the early history of the region's populations. An additional element deserves to be taken into consideration in this research. Such a degree of standardisation and specialisation in production on such a large scale most probably indicates the intervention, of an external or local power able to organise this district, to ensure its security and probably also its trading outlets. It does not yet seem possible to identify this power; the most we can establish with certainty, at least for the second phase of

7. However, the same causes do not always lead to the same effects, as demonstrated by the comparison of the corpus from Bentyia with those from Tadmekka and Gao.

8. D. Lange (1991) favoured the hypothesis of an early Wangara settlement, from which the kings of Gao were descended. However, the new information provided by P. F. de Moraes Farias (2003) indicates rather an ancient co-habitation of several cultures: Mandé, Songhai and Tamasheq.

production, during the 13th century, is that there was an important regional market together with the possibilities offered by the proximity of a flourishing city firmly established as part of the great trading circuits. In order to do this, we must explore the many avenues of investigation previously mentioned, but above all we shall develop our understanding of the regional chrono-cultural contexts. The rare stratigraphical milestones marking this Sahelian region (Magnavita, 2009; Pelzer *et al.*, 2009) are still insufficient and only a better archaeological understanding of the early populations, through the study of pottery production in particular (von Czerniewicz, 2004), will enable us to progress with some confidence⁹. Archaeology, with its collection of original data, will then naturally find its place in the historical syntheses.

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9. The excavations carried out at Oursi and Kissi constitute excellent standards which we must now expand upon in order to make a comparison possible with the different contemporary archaeological facies and, if possible, to circumscribe the cultural areas. Unfortunately the insecure conditions in this area are likely to prevent any such project in the near future.

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Jean-Marc FABRE
 Research engineer
 CNRS, Traces (UMR 5608)
 Toulouse, FRANCE
 jfabre@univ-tlse2.fr



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