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# METALS AND METALLURGISTS IN WOLLO AND NORTH SHEWA AREA (AMHARA REGIONAL STATES), PRELIMINARY RESULTS OF THE SURVEY CONDUCTED IN SPRING 2021

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## Introduction

The goal of this project was to contribute to understanding the history of metals in Ethiopia. To achieve this, an ethnological and archaeological field survey was conducted in the Wollo and North Shewa area. During two weeks, in February 2021, we interviewed the local populations to identify current techniques and past metallurgical workshops. This was followed by site visits and a brief archaeological survey.

## Background

Our knowledge of the history of metals in the Horn of Africa is quite limited compared to the rest of Africa (Robion-Brunner 2018). Use of non-ferrous and ferrous metals dates to the first millennium BCE. The presence in Ethiopia of artefacts from Egypt, Nubia, and Arabia, such as the bronze vessels of Addi Galamo (cf de Contenson 1963) (Figure 1), bear witness to the traffic of goods at that time both within Northeast Africa and between it and the Near East. A few centuries earlier, the openwork metal plates of South Arabian tradition found in the tombs of the Necropolis of Yeha offered an eloquent testimony of trade with the Arabian Peninsula (Anfray 1963).

The recent analysis of iron ore and furnace walls found in Aksum suggests a date between the third and fourth centuries CE and demonstrates that an independent metal production started in Ethiopia in the first half of the first millennium of our era (Severin *et al.* 2011). Yet the material evidence of this activity is still very tenuous, whereas the Aksumite civilization, from its coinage to

its architecture (metallic clamps and dowels to bind the blocks), presupposes a significant presence of metal.

On the Tigray Plateau, some coins and slag were discovered at the site of Wakarida, but metallurgical and metallic remains are rare (Dugast & Gajda, 2011). Not too far, two iron smelting sites were identified at Myriam Takot and Myriam Kadith. No chronological attribution has been established at this time, but they seem to belong to the medieval period (Humphris, 2017). In the same area, the Gud Bahri site contains all the steps of the metallurgy in a 9-hectare area: mining of hematite-rich veins on a hillside, smelting and smithing workshops, and a habitat site. Thanks to pottery identification and the radiocarbon dating, the occupation of the site dates between the seventh-eighth and the eleventh century (Berhe *et al.* 2020). In south-west Ethiopia, this was still practiced at the beginning of the twenty-first century (Haaland 2004).

This rapid presentation of the available data on the history of metals in Ethiopia reveals the lack of data to truly understand the processes of the invention, innovation (borrowing/non-borrowing), and diffusion of techniques; the social, ritual, and symbolic dimensions of craftsmanship; the relationship between power and wealth production; the networks and circuits of economic exchange; etc.

## Archaeological background

Compared to the other regions in Northern Ethiopia known for their rich archaeological resources, the central highlands have been neglected. Archaeological investi-

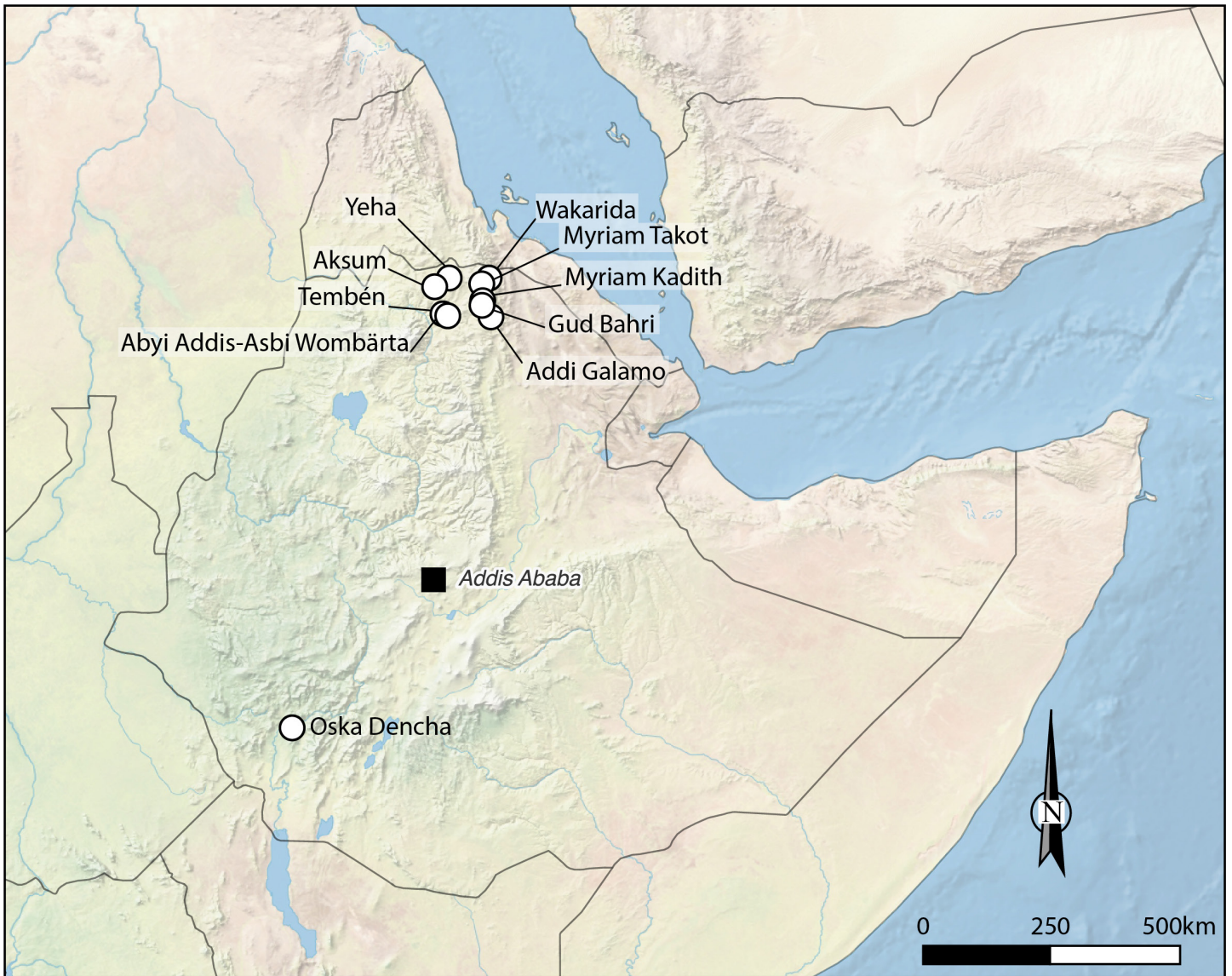
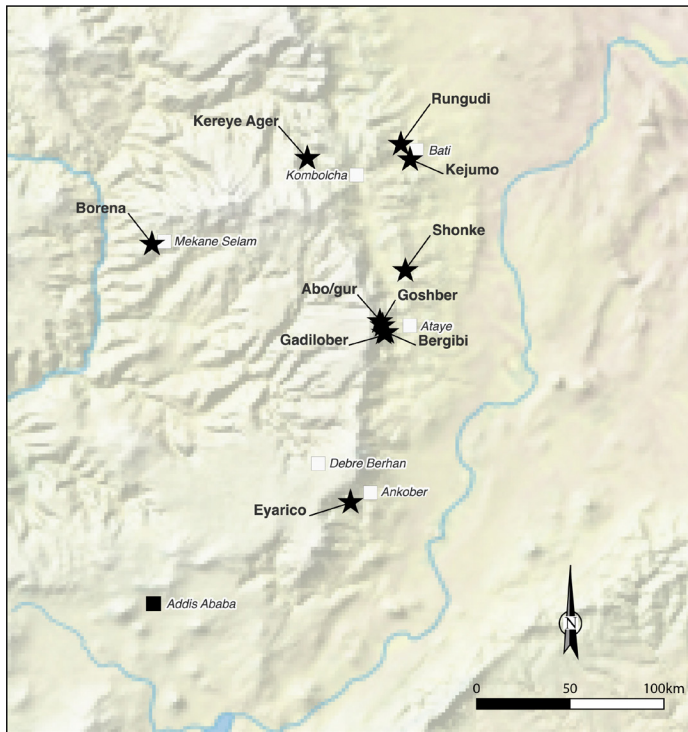


Figure 1: Map showing the localities alluded to in the text. (Map by Robion-Brunner.)

gations there began in the 1990s and have focused on three major themes: 1) megalithic ('pagan') archaeology, 2) church archaeology and 3) the archaeology of Islam. Thanks to the initial observations made by Francis Anfray (1983) on various megalithic and historical structures in the region, historical and archaeological missions were initiated from 1997 onwards using this baseline information (Fauvelle-Aymar & Hirsch 2011; Derat & Jouquand 2012). Results of excavations conducted on five megalithic sites in South Wollo and North Shewa as well as subsequent studies on collected artefacts and ecofacts shed light on the protohistoric and medieval periods and

constitute one of the most important contributions in the archaeology of the region (Fauvelle & Poissonnier 2016).

Meanwhile, there have been some historical explorations of medieval royal camp sites conducted in the region for the fulfillment of doctoral and master studies (Deresse 2009; Mengesha 2011). Recent work by members of the department of history and heritage management of Debre Berhan University have tried to document archaeological sites in the North Shewa Zone of the Amhara Regional States (Alebachew Belay & Chalachew 2016). Finally, a PhD thesis by Alebachew Belay (2020), provides comprehensive archaeological research focus-



**Figure 2:** Map showing the localities where the survey was conducted. (Map by C. Robion-Brunner.)

ing on the megalithic sites in the Central Highlands with a comparative overview on the other two themes i.e., church archaeology and archaeology of Islam.

Nevertheless, no attempt has been made to understand the technological advancement of the society that lies behind the architectural excellence attributed to the local Christian and Islamic groups. Thus, this metal history report fills this gap in our knowledge of the region.

### **Ethnographic survey**

The ethnographic survey was designed to help us understand the relationship between the current inhabitants and past metal production. In-depth interviews were conducted in eleven blacksmith/jewelry quarters (Figure 2). Where ancient workshops were mentioned, we validated the information through site visits.

At the beginning of our project, we lacked a general understanding of how the local metal economy was organized in the eastern part of the Amhara region. We choose to conduct research around three cities: Bati, Ataye and Ankober. At the weekly markets, we interviewed sellers of jewelry and farming tools. These interviews allowed us to

identify the type of metal goods sold, to obtain information on the transactions and buyers, and finally to obtain appointments with some craftsmen in their workshops or sometimes in their homes. We collected the family history, the training framework, the techniques mastered, and the past and present origin of the raw materials. Several informants also offered us the possibility of directly observing their work, the organization of their workshop, the tools used, and the other people involved such as those who operate the bellows, the clients and wives.

The only jewelers we met who still practiced their craft live in the village of Kejumo (Bati District). All the male inhabitants of this village are involved in jewelry making, while their wives are potters. The craftsmen work with silver and nickel. The metals come from jewelry bought from local women on market day. They also transform old coins like the Maria Theresa Thaler (MTT). They have no memory of a time when they extracted or used local silver. If they know how to recycle MTT, we assume that it dates back to the arrival of this coin in Ethiopia (i.e., in the mid-eighteenth century). The other raw materials are clay, charcoal, and a liquid to facilitate welding. The clay crucibles in which the silver is melted can only be used six times. Charcoal comes from acacia because it does not produce much ash. It is prepared in an open space. Jewelers master a brazing technique with a mouth torch to melt and to weld the metal (Figure 3). Today they are producing less and less jewelry. Instead, they sell industrial products.

Blacksmiths are more common than jewelers. Despite the lack of interest in this profession by the younger generation because it requires hard work and income is low, the region under study is not devoid of this craft. Generally, technical skills are acquired within the family. However, in the villages around Ankober - Bergibi, Gadllober and Goshber - the blacksmiths learned their trade from another blacksmith to whom they had no family ties. Blacksmithing is a skill learnt during life. Currently, they are not marginalized and do not live in a special or separate place as was the custom in the past. They also do not even have a problem in the intermarriage processes.

Blacksmiths mainly produce agricultural tools: ploughs, axes, scythes, and knife blades. Farming is done on terraces where farmers use their 'maresha', a wood-and-iron plough, to dig the land (Lefebvre 1845). The



**Figure 3:** Brazing technique with a mouth torch. (Photo by C. Robion-Brunner.)

plough is the main animal-drawn cultivation implement currently used in Ethiopia. It consists of a sharply pointed metal shear and a metal hook 'wogel'. The rest of the components of the plough are a wooden yoke, a long beam and two flat wooden parts (diggers). The iron parts are made by the blacksmiths while the wooden ones are made by the farmers. Blacksmiths produce around ten plough blades per day between January to April. Their productivity depends of course on demand. A plough blade has a lifespan of three years depending on the nature of the soil. In the past, a hook that held the blade on the wooden parts was made with two pieces of iron. Now, blacksmiths just split a thick iron plate into two pieces (Figure 4). Worn blades are repurposed as digging sticks.

The issue of an Ethiopian plough age has been raised by several authors. Marks left by the plough on blocks in cultivated terraces have been dated by archaeological material (Ciampalini *et al.* 2012). They allow the idea of structures already in place 2,500 years ago to be put forward. These techniques have been maintained un-

til the present day. The quantity of iron used to make the plough blade may have increased over the centuries, but most definitely not from the nineteenth to the twenty-first century. Since the end of the nineteenth century, the raw material used to produce the iron tools is the spring plate from imported trucks or cars.

Some informants know that in the past, iron ore was mined in Borena, a place near Mekane Selam. Unfortunately, this village is outside our research permit, which meant that we could not visit it on this mission. However, Shefa Wosine, a Bergibi blacksmith, indicated two iron smelting sites near his village: Astaberete and Goshber. According to him, the furnace had four bellows and took a day to smelt the ore. The raw iron came from the soil and was a ball that the blacksmiths separated in several pieces to make objects.

Charcoal is still being produced in this region for blacksmithing. Craftsmen choose different tree species to make it: acacia, Myrtaceae, Pinaceae, juniper, etc. The technique for making charcoal seems broadly the same.



**Figure 4:** The different steps to produce a hook. (Photo by C. Robion-Brunner.)

The differences are in the position of the wheel in relation to the ground. In Kereye Ager, the blacksmith put down the branches and pieces of trunk on a flat space. In Goshber and Eyarico, they dig a hole, put down the pieces of trees, then they set the fire, and after that they cover the wheel with leaves. After two or three days, they can retrieve the charcoal.

At least two people per forge are necessary; one for the bellows and one to hold and strike the iron (Figure 5). The smith sits in front of the hearth in a slightly staggered position. In his left hand, he holds a pair of tongs that allow him to manipulate the piece of iron to be worked between the hearth and the anvil. He hammers it with his right hand using a sledgehammer or a hammer. In front of him is a first anvil, often made of metal; to his right is a second, larger one made of stone. The stone anvil is used for actions that need power. It is changed every two months. Sometimes, it has a concave shape that makes it possible to form the plough blade socket. The iron anvil is for finishing touches. We assume that it was recently introduced because it contains a very large volume of metal. At the bellows stands his helper. He is preferably seated on a sort of platform placed at the back and overhanging the hearth. Putting the bellows up high allows more air to flow. Made of goat skin, they last between one and two years. The tuyères are made of stone and they are changed every six months.

### **Archaeological survey**

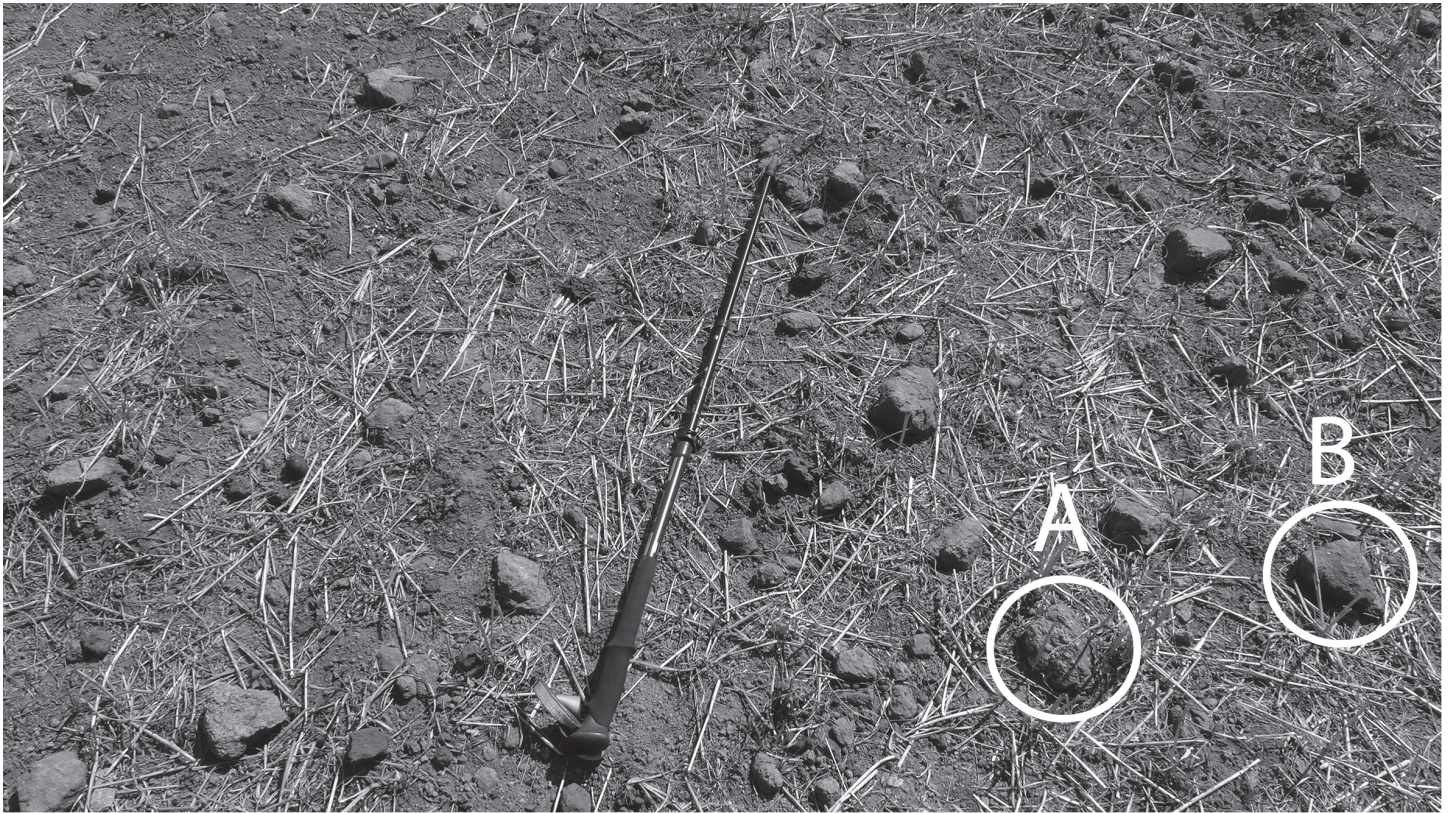
Since the existence of paleometallurgical sites in the region was not previously known, our aim was to discover if



**Figure 5:** The forge at Kereye Ager. (Photo by C. Robion-Brunner.)

there are ancient workshops or not. We therefore chose to follow the information given by our informants. Only two places where their ancestors were smelting iron ore before the use of modern metal were known. The first, Borena, is located outside our present study area. The second was reported by several blacksmiths in the villages of Goshber and Bergibi (see Figure 2).

This last site is located in a hamlet called Abo/gur. In the fields and the western side of an old church, we found a scattering of slag covering several hectares (Figure 6). The slag is very fragmented, only a few centimeters long. Despite this fragmentation, two kinds have been observed: tapped slag and pit slag. Most of the slag is tapped. This waste belongs to the smelting phase during which the ore is transformed into metal in a furnace. Tapped slag has a characteristic shape, resembling a flow of lava, with rivulets of slag on the upper surface and a rough undersurface which has adhering sand and clay. Here, most of them have individual runs. They flow out of the furnace through an opening at the bottom of the shaft. There are also several small pieces of pit slag. No slag block was identified. The outer surfaces of the pit slag are irregular and have a jagged appearance. Their density and weight are lower than tapped slag, but they have more pores. They are rust-colored and magnetic because they still contain metallic iron in their matrix. They formed and solidified at the base of the furnace and in contact with the bloom. No slag concentrations, tuyères, nor furnace bases were observed in the fields. However, the characterization of the slag confirms the presence of an ancient iron smelting site at this location.



**Figure 6:** Slag scattered in a field near Abo/gur (Slag A: tapped slag; Slag B: pit slag). (Photo by C. Robion-Brunner.)

### Future research directions

This pilot survey has proven that there are potential paleometallurgical resources in the eastern part of the Amhara region. Unfortunately, the current political crisis in northern Ethiopia has prevented us from continuing our investigations for the time being. However, here are some thoughts on future research to be conducted:

- Interviews with craft practitioners should be expanded geographically. The knowledge of jewelry making is disappearing. Industrial jewelry is appearing on the market and displacing traditional objects. It is therefore necessary to undertake in-depth ethnographic research before it gets completely lost.
- Blacksmith Hussen Seid, whom we met at Aliyu Amba, told us that there are many blacksmiths in Shonke, an Argoba-inhabited area in Eastern Wollo. It would be interesting to conduct oral surveys there, as it has a certain originality in its social organization.
- Geological investigations must be conducted with an aim to identify the place of possible metal deposits.

- Archaeological prospections have to be undertaken in Borena with a view to determine if there are traces of paleometallurgical practices in the area.
- Archaeological excavations should be conducted at Goshber to date the iron smelting site and identify the techniques mastered with greater precision.

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