

# *Copper, Trade and Polities: Exchange Networks in Southern Central Africa in the 2nd Millennium CE*

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*A rare, scattered resource in Central Africa, copper was produced in the Copperbelt since the 4th–7th centuries CE and traded over large distances from the 9th to the 19th centuries. It was exchanged mainly in the form of cross-shaped ingots, also called croisettes, varying in form and size over time and space. In this article, we explore and compare the spatial distribution of these ingots over time. This approach offers an opportunity to study pre-colonial trade. Indeed, during the 2nd millennium CE, the use of the same type of ingots is attested in distant regions, from the Great Zimbabwe area to the Upemba depression (north Katanga, Democratic Republic of Congo [DRC]). Over the centuries, changes in geographic distribution patterns and styles indicate shifts in contacts and the appearance of new boundaries. These variations reflect changes in the regional distribution networks and suggest areas of exclusive political influence. Historical information available for the 19th century shows that it is possible to link the diffusion of copper with political entities, a hypothesis supported by evidence related to other kinds of production, such as ceramics and salt. For remote periods, confrontation of the croisettes' distribution with other aspects of material culture suggests that such links between socio-political spaces and copper distribution may also have occurred in the distant past.*

**Keywords:** Copperbelt; copper ingots; *croisettes*; precolonial trade; exchange networks; socio-political boundaries; social spaces

## Introduction

For many regions of sub-Saharan Africa, the study of history and archaeology remain in their infancy. Assessing the economy of past African societies is hampered by the scarcity of well-preserved evidence pertaining to ancient production and trade systems. Written records are indeed rare for a large part of African history, and the low chances of survival in the archaeological record of important commodities, such as smoked fish, cloth or salt, are slim, seriously reducing the direct assessment of core economic activities. Also, for periods before European or Arab contacts, we simply lack historical data for large parts of the continent. Moreover, certain areas, such as some regions of Central Africa, remain archaeologically largely unexplored. While external sources such as Arab historical documents report on the existence

of trade at least since the 8th century CE, both local and international, the details of economic activities in sub-Saharan Africa remain elusive.

Elements of material culture such as copper artefacts are therefore particularly interesting for the reconstruction of ancient trade systems and economic networks. First, they are rather resistant to corrosion and thus stand a chance of being found in archaeological contexts. Secondly, copper is an important trade item in many areas of the world.<sup>1</sup> For example, ‘oxhide’ copper ingots materialise the extensive trade networks around the Mediterranean Sea during the European Bronze Age.<sup>2</sup>

Sub-Saharan Africa is not an exception, especially because of the high symbolic and economic value many societies of the continent gave to this metal through time. Named as ‘red gold’ by some scholars, copper was essentially used for adornment and artworks.<sup>3</sup> Its trade is well documented by historical sources for areas in contact with Europeans and Arabs throughout the last millennium. Although these sources mainly mention importations to Africa, such as through the trans-Saharan trade or as exchange items in the slave trade, there are also a few mentions of exportation from Africa, as for example the copper bought in the 17th century by Dutch merchants on the Loango coast.<sup>4</sup>

In southern central Africa particularly, scholars generally assumed that regional and long-distance trade played a role in the expansion of several polities in the 18th and 19th centuries.<sup>5</sup> At least partly, the control of prized resources such as salt and copper often motivated these expansions – as is the case of the eastward Lunda expansion and the formation of the Kazembe kingdom of the Luapula during the 18th and 19th centuries.<sup>6</sup> More recently, during the late 19th century, the formation in central Katanga of the Yeke kingdom by Busumbwa and Nyamwezi people – who came from areas located in the north-east of modern Tanzania – was clearly motivated by an interest in the copper and ivory trades.<sup>7</sup>

Archaeologically, this importance of copper in southern central Africa is clearly visible in some of the funerary sites, such as those of the Upemba depression between the 9th and 17th centuries or Ingombe Ilede around the 15th century. Some Upemba graves contained more than two kilograms of copper adornments, sometimes accompanied by objects of power, such as axes.<sup>8</sup> Scholars have interpreted these burials as a sign of the rise of rigid social hierarchies,

1 Copper has been extracted almost all over the world. A recent world overview on copper production can be found in B.W. Roberts and C.P. Thornton (eds), *Archaeometallurgy in Global Perspective: Methods and Syntheses* (New York, Springer, 2014).

2 See, for example, A. Harding, ‘Trade and Exchange’, in H. Fokkens and A. Harding (eds), *The Oxford Handbook of the European Bronze Age* (Oxford, Oxford University Press, 2013), pp. 370–81.

3 V.L. Cameron, *Across Africa* (New York, Harpers & Brothers, 1877), p. 470; E. Herbert, *Red Gold of Africa: Copper in Precolonial History and Culture* (Madison, University of Wisconsin Press, 1984), p. xx.

4 Herbert, *Red Gold of Africa*, pp. 113, 123ff; P.M. Martin, *The External Trade of the Loango Coast, 1576–1870* (Oxford, Oxford University Press, 1972), pp. 48–52 and *passim*.

5 Among others: D.M. Gordon, ‘Wearing Cloth, Wielding Guns: Consumption, Trade, and Politics in the South Central African Interior during the Nineteenth Century’, in R. Ross, M. Hinseelaar and I. Peša (eds), *The Objects of Life in Central Africa: The History of Consumption and Social Change, 1840–1980* (Leiden and Boston, Brill, 2013), p. 18; A. Wilson, ‘Long Distance Trade and the Luba Lomami Empire’, *Journal of African History*, 13, 4 (1972), pp. 575–89; T.Q. Reefe, *The Rainbow and the Kings: A History of the Luba Empire to 1891* (Berkeley, University of California Press, 1981); J. Vansina, ‘Long-Distance Trade Routes in Central Africa’, *Journal of African History*, 3, 2 (1962), pp. 375–90.

6 G. Macola, *The Kingdom of Kazembe: History and Politics in North-Eastern Zambia and Katanga to 1950* (Hamburg, Lit Verlag, 2002), p. 44.

7 H. Legros, *Chasseurs d’ivoire: une histoire du royaume Yeke du Shaba (Zaïre)* (Bruxelles, Éditions de l’Université libre de Bruxelles, 1996), p. 34.

8 J.A.E. Nenquin, *Excavations at Sanga 1957: The Protohistoric Necropolis* (Tervuren, Musée royal de l’Afrique centrale, 1963); P. de Maret, *Fouilles archéologiques dans la vallée du Haut-Lualaba, Zaïre. II: Sanga et Katongo, 1974* (Tervuren, Musée royal de l’Afrique centrale, 1985); P. de Maret, *Fouilles archéologiques dans la vallée du Haut-Lualaba, Zaïre. III: Kamilamba, Kikulu, et Malemba Nkulu, 1975* (Tervuren, Musée royal de l’Afrique centrale, 1992); B. Fagan, ‘Excavation at Ingombe Ilede, 1960–62’, in B.M. Fagan, P.D.W. and S.G.H. Daniels (eds), *Iron Age Culture in Zambia* (London, Chatto and Windus, 1969), pp. 55–161.

to which the growth of copper production and diffusion of particular types of ingots from the 14th century may have been related.<sup>9</sup>

The value of copper in the area may partly be explained by the scarcity of its sources, which, contrarily to iron, display a restricted geographic distribution.<sup>10</sup> Among these deposits, the Copperbelt is the principal area focused on in this article.<sup>11</sup> As the main copper source in southern central Africa – still of a major economic importance today – the Copperbelt extends from the North-Western province in Zambia to the former Katanga province in the Democratic Republic of the Congo (DRC).<sup>12</sup> In addition to this area, we will also consider other, smaller ore bodies such as Kansanshi, located just to the south of the Copperbelt, and, to a lesser extent, those of southern Zambia and northern Zimbabwe.

As for almost all of Africa's modern copper mines, ancient local exploitation is much older than the industrial exploitation, which began in the early 20th century, or the first mentions by European sources in the late 18th century.<sup>13</sup> Copper has been extracted since at least the mid 1st millennium CE, in the eastern Copperbelt and Kansanshi area.<sup>14</sup> In northern Zimbabwe, the earlier extraction sites in the area date to the early 2nd millennium CE, but some copper objects date from around the 7th–8th centuries CE in central Zimbabwe, suggesting older copper production.<sup>15</sup> The ancient works of the Hook of the Kafue, a copper deposit area in central Zambia, are not dated and remain poorly documented. However, given the proximity of this area to important archaeological sites, it could have been a source of copper for some Early Iron Age sites.<sup>16</sup>

When not directly fashioned into a final shape such as ornaments, copper was distributed from smelting sites in semi-finished products such as copper wire or ingots. The ingots produced in the Copperbelt are relatively well-known since the 2nd half of the 1st millennium CE. Most of them have been called *croisettes* because of their generic cross shape, but they vary in form and in size, and also in use, through time and space (see Figure 1). This evolution has been studied by several scholars, leading to a typological classification and a relative chronology of the various kinds of ingots.<sup>17</sup>

Regarding their production area, little archaeological data currently exist pertaining to the extraction and smelting of ores before the 19th century, but some interesting information may be drawn from associated artefacts, such as mould remains.<sup>18</sup> Thanks to the characteristic forms

9 M.S. Bisson, 'Precolonial Copper Metallurgy: Sociopolitical Context', in M.S. Bisson, S.T. Childs, P. de Barros and A.F.C. Holl (eds), *Ancient African Metallurgy: The Sociocultural Context* (Walnut Creek, AltaMira Press, 2000), p. 124; P. de Maret, 'Recent Farming Communities and States in the Congo Basin and its Environs', in P. Mitchell and P. Lane (eds), *The Oxford Handbook of African Archaeology* (Oxford, Oxford University Press, 2013), p. 881.

10 Herbert, *Red Gold of Africa*; A. von Oppen, *Terms of Trade and Terms of Trust: The History and Contexts of Pre-Colonial Market Production around the Upper Zambezi and Kasai* (Munster and Hamburg, Lit Verlag, 1993), p. 152.

11 When referring to the Copperbelt without any other context, we are talking about the geological region.

12 With the new 2006 Constitution in the DRC, the Katanga province has been divided into four new entities: Haut Katanga, Lualaba, Haut-Lomami and Tanganyika.

13 R.F. Burton, *The Lands of Cazembe: Lacerda's Journey to Cazembe in 1798* (London, John Murray, 1873); J.A. Bancroft, *Mining in Northern Rhodesia* (London, British South Africa Company, 1961), p. 36.

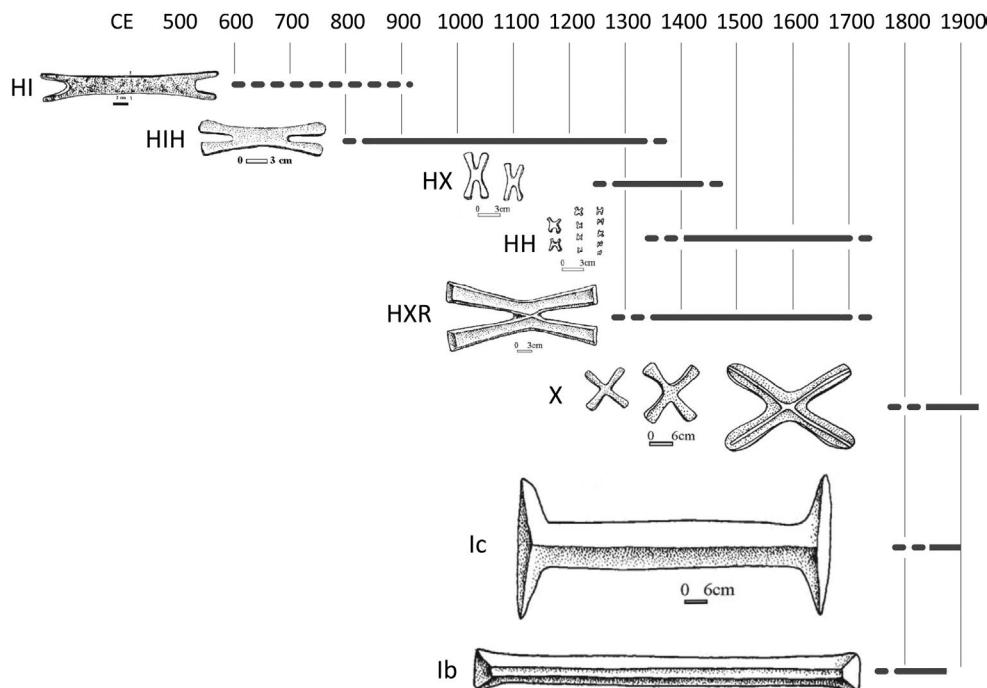
14 E. Anciaux de Faveaux and P. de Maret, 'Premières datations pour la fonte du cuivre au Shaba (Zaire)', *Bulletin de la Société royale belge d'Anthropologie et de Préhistoire*, 95 (1984), pp. 5–20; M.S. Bisson, 'The Prehistoric Copper-Mines of Zambia', (PhD thesis, University of California, 1976).

15 K.R. Robinson, 'Further Excavations in the Iron Age Deposits at the Tunnel Site, Gokomere Hill, Southern Rhodesia', *South African Archaeological Bulletin*, 18, 72 (1963), pp. 155–71; L.M. Swan, 'Economic and Ideological Roles of Copper Ingots in Prehistoric Zimbabwe', *Antiquity*, 81, 314 (2007), pp. 999–1012.

16 D.W. Phillipson, *The Later Prehistory of Eastern and Southern Africa* (London and New York, Africana Publishing Company, 1977), p. 150; Herbert, *Red Gold of Africa*, p. 25.

17 P. de Maret, 'Histoires de croisettes', in L. de Heusch (ed.), *Objets-signes d'Afrique* (Tervuren, Musée royal de l'Afrique centrale, 1995), pp. 133–45; N. Raes, 'Les croisettes de cuivre en Afrique centrale: approche archéologique, historique et ethnographique' (Mémoire de Licence, Université libre de Bruxelles, 1987); Swan, 'Economic and Ideological Roles of Copper Ingots'.

18 Anciaux de Faveaux, 'Premières datations'; Bisson, 'The Prehistoric Copper-Mines of Zambia'.



**Figure 1.** Broad chronology of ingots produced in the Copperbelt area. Dotted lines represent hypothetical dates (based on P. de Maret, ‘*Histoires de croisettes*’). Please note that drawings are shown at various scales.

of the ingots, by combining information about places of production and places where they were found, networks of exchange can be reconstructed or at least hypothesised.

In this article, we reappraise all the data available about copper ingots produced in the Copperbelt, and their diffusion. Drawing on the information collected by previous authors, but with added new materials, we will combine archaeological finds with written documents and oral testimonies available for the period between the late 18th and early 20th centuries. These data are compared to other forms of material culture likely to reflect ancient socio-economic spaces, in order to highlight the presence of local boundaries and relate them to larger, inter-regional trade networks.

## Archaeological and Historical Data

### 6th or 7th to 14th Centuries CE

In Zambia, a few sites have yielded copper artefacts between the 6th or 7th centuries CE and the 9th century, like Kumadzulo or Chondwe.<sup>19</sup> Copper is rare during this period, suggesting a small-scale trade, possibly hand-to-hand.<sup>20</sup> Copper artefacts mainly include manufactured objects such as bangle fragments or bracelets. The earliest ingots are flat bars with rounded or squared ends, which later change to ingots with indentations at the end, looking like ‘fish-tails’ (HI in Figure 1).<sup>21</sup> At this stage, there are no explanations for this typological change.

19 J.O. Vogel, *Kumadzulo: An Early Iron Age Site in Southern Zambia* (London and Lusaka, Oxford University Press, 1972); E.A.C. Mills and N.T. Filmer, ‘Chondwe Iron Age Site, Ndola, Zambia’, *Azania*, 7, 1(1972), pp. 129–45.

20 Herbert, *Red Gold of Africa*, p. 104.

21 Bisson, ‘Precolonial Copper Metallurgy’, pp. 115–18.

The production and use of copper increases from the 9th century onwards.<sup>22</sup> The typical ingots for this period are the HIH *croisettes* (see Figure 1). Roughly cross-shaped, they have an elongated central part prolonged with two ‘arms’ at each side, and measure 7–20 centimetres. According to P. de Maret, this type could be a further development of the previous ‘fish-tail’ ingots.<sup>23</sup> Moulds for this type of *croisette* were found on the surface in the central Copperbelt, near the Tenke and Fungurume areas, in surveys and excavations in the eastern Copperbelt, around Kipushi and Lubumbashi, but also far to the south, down to Great Zimbabwe (see Figure 2).<sup>24</sup> Ingots have been found in sites close to cupriferous areas in northern Zimbabwe, in the Urungwe and Lomagunde district, and in Kansanshi.<sup>25</sup> However, as no moulds have yet been recovered in these three cupriferous areas, we cannot be certain whether this kind of *croisette* was produced in these places or imported from the Copperbelt.

Although copper objects appear in older graves, as early as the 9th century, during the Kisalian period, HIH ingots appear only from the 13th century onwards in the Upemba depression in the north of the former Katanga province, during the period called Kabambian A (c.13th–15th centuries).<sup>26</sup> They seem to be in use until the late 14th century or early 15th century. While HIH ingots have been used mainly as raw materials – some have been found with some of their arms cut off – they appear to have gained a symbolic value in the 13th century, when they became a grave good.<sup>27</sup> According to Swan, the limited numbers of HIH ingots found in southern Zimbabwe might indicate their use as a prestige object.<sup>28</sup>

Finally, in addition to the previous examples, HIH ingots were also found out of context, lying on the surface or collected by farmers from western Katanga in the north to Zimbabwe or Mozambique in the south.<sup>29</sup> Even if we have no information about the nature and context of the sites where they were found, their location suggests a distribution of this type of ingots to the west, towards the Kasai, and to the east, towards the lower Zambezi areas.

#### *14th–18th Centuries CE*

HIH *croisettes* ceased to be produced sometime around the 14th century.<sup>30</sup> It seems that what constituted their former production and diffusion area can now be divided into two areas with a demarcation line roughly located in the middle of the Copperbelt, somewhere near the Lufira river. *Croisettes HX* and *HH* are found north-west of the Lufira river, while *HXR* are found south-east of the river (see Figure 3).

#### The North-Western Area

In the Upemba depression, *HX* types, small *croisettes* with a shorter mid-section than HIH, were found in graves dated from the Kabambian A. They are sometimes associated with HIH *croisettes* in the Upemba depression and in western Katanga. As of today, no mould

22 Bisson, ‘The Prehistoric Copper-Mines of Zambia’.

23 De Maret, ‘Histoires de croisettes’, p. 143.

24 N. Arazi, A. Livingstone Smith and D. Muya Wa Bitanko, *Tenke Fungurume Cultural Heritage Specialist Study*, Report (Bruxelles, Heritage Management Services, 2012), p. 37; Anciaux de Faveaux, ‘Premières datations’; Bisson, ‘The Prehistoric Copper-Mines of Zambia’; J.T. Bent, *The Ruined Cities of Mashonaland* (London, Longmans, Green and Co., 1892); R.N. Hall, *Great Zimbabwe, Mashonaland, Rhodesia* (London, Methuen and Co., 1907).

25 Swan, ‘Economic and Ideological Roles of Copper Ingots’; P.S. Garlake, ‘Iron Age Sites in the Urungwe District of Rhodesia’, *South African Archaeological Bulletin*, 25, 97 (1970), pp. 25–39; Bisson, ‘The Prehistoric Copper-Mines of Zambia’.

26 De Maret, *Fouilles archéologiques. II: Sanga et Katongo*; de Maret, *Fouilles archéologiques. III: Kamilamba, Kikulu, et Malemba Nkulu*.

27 De Maret, ‘Histoires de croisettes’, pp. 140–41.

28 Swan, ‘Economic and Ideological Roles of Copper Ingots’, p. 1008.

29 Raes, ‘Les croisettes de cuivre’, p. 48; M. Hall and W.G. Neal, *The Ancient Ruins of Rhodesia (Monomotapae Imperium)* (London, Methuen and Co., 1904), p. 233; Bisson, ‘The Prehistoric Copper-Mines of Zambia’, p. 386.

30 Even though some ingots may still have been in use later in the Upemba depression from 14th to 15th centuries.

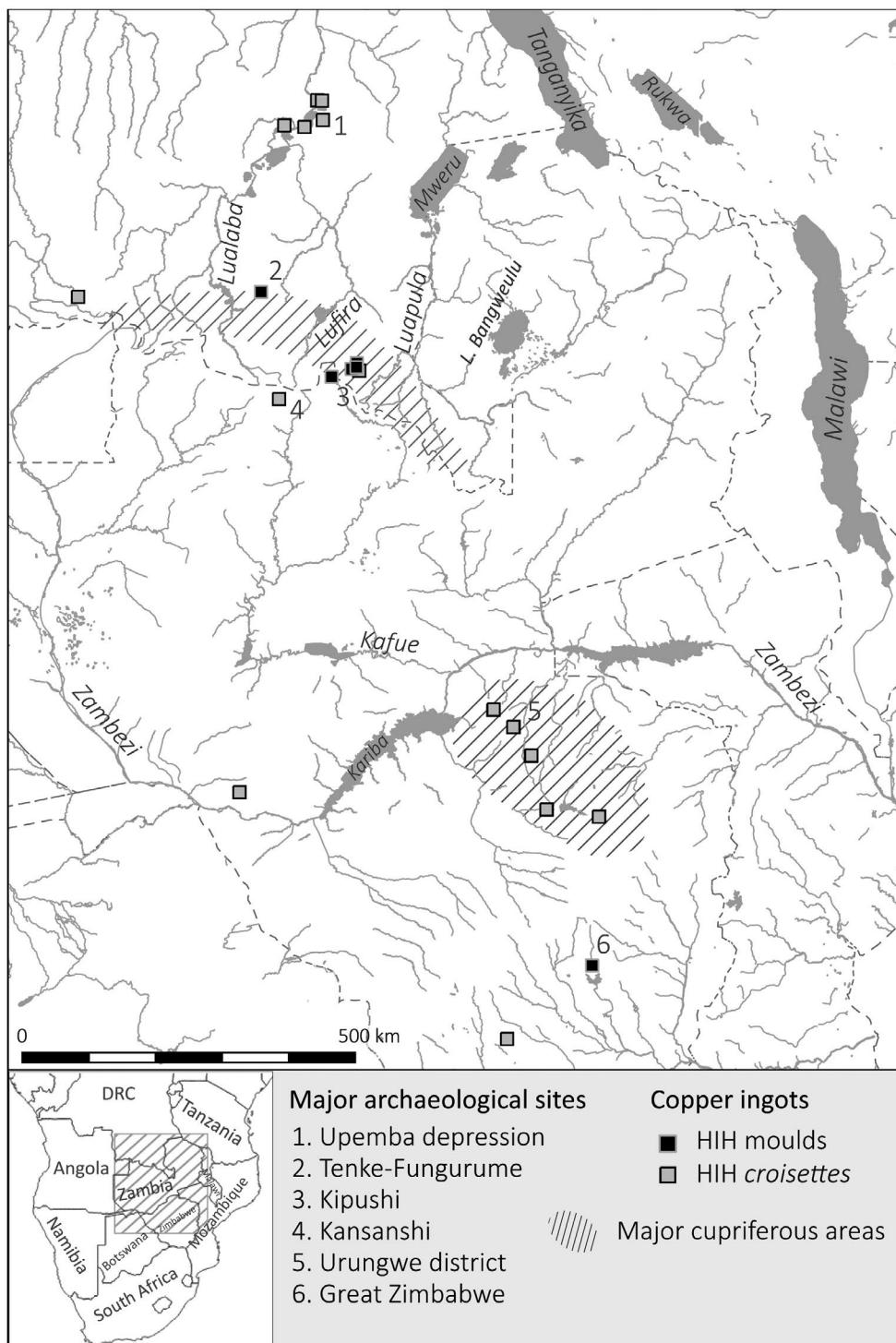


Figure 2. HIH ingots distribution, c.9th–14th centuries.

has been discovered. It is probably an intermediate type of ingot between the HIH and the HH types.<sup>31</sup>

HH ingots are small H-shaped *croisettes*. The longest, approximately 1.5–3.5 centimetres, have been found with HX type in Kabambian A burials, while those found in graves from Kabambian B (c.16th–18th centuries) vary from 0.5 to 1.5 centimetres in length. They are the only type of *croisettes* found in graves attributed to the Kabambian B. P. de Maret observed that as their size diminished, HH ingots became gradually more standardised and more numerous in the graves.<sup>32</sup> This standardisation and the fact that they are found in large quantities lend support to the idea that they were used as currency. Furthermore, HH *croisettes* were found as a large lump in a clay vessel, like a hoard or near the skeleton's hips or hands in Upemba graves, sometimes bundled up with wire.<sup>33</sup> This trend continues until their complete disappearance from the Upemba archaeological assemblages at the end of the Kabambian, sometime around the 18th century.<sup>34</sup>

Several HH moulds were found in the central Copperbelt, in the Tenke and Fungurume areas.<sup>35</sup> Further west, near Lualaba, some HH and HX ingots seem to have been produced in Kamoa site around the 16th or 17th centuries, and some *croisettes* have also been found close to the western Copperbelt deposits.<sup>36</sup> This would suggest that the HH *croisettes* were also produced in these areas. As regards their diffusion, ingots of this type were found in northern Katanga, in Kabongo, in western Katanga and near Lake Mweru, but nowhere in the south.<sup>37</sup>

### The South-Eastern Area

In the eastern Copperbelt, the HIH *croisettes* are replaced by the HXR type, an X-shaped ingot which has a short mid-section, long arms with square ends and a flange around the upper face.<sup>38</sup> Moulds were found in the eastern Copperbelt in the area of Kipushi – dated to the 14th century – and near Lubumbashi.<sup>39</sup> Eastwards, more than 20 ingots had been accidentally found in the late 19th century on Chishi Island in Lake Bangweulu, and since then, according to J.O. Vogel, kept in the Bisa royal relics; however, contrary to Vogel, these *croisettes* have been kept in a Ng'umbo shrine on the island near the site of the former palace of the first Ng'umbo chief, where they can be found today.<sup>40</sup> Further south, near the Zambezi, HXR ingots were discovered in 15th-century graves in Ingombe Ilede and in Urungwe plateau, north Zimbabwe, where the Chedzurgwe site was dated around the 15th and 16th centuries.<sup>41</sup> At least one mould

31 P. de Maret, 'L'évolution monétaire du Shaba central entre le 7e et le 18e siècle', *African Economic History*, 10 (1981), p. 138; Raes, 'Les croisettes de cuivre en Afrique centrale', p. 48; de Maret, 'Histoires de croisettes', p. 140.

32 De Maret, 'L'évolution monétaire du Shaba central', p. 133.

33 *Ibid.*; Raes, 'Les croisettes de cuivre', p. 48; unpublished HH ingots hoard conserved in Royal Museum for Central Africa, inv. PO.2010.1.1.

34 De Maret, 'L'évolution monétaire du Shaba central', p. 143.

35 G. de Plaen, 'La préhistoire de l'Afrique centrale', *Etudes scientifiques* (1978), pp. 3–41; J. Hiernaux, E. de Longree and J. De Buyst, *Fouilles archéologiques dans la Vallée du Haut-Lualaba* (Tervuren, Musée royal de l'Afrique centrale, 1971), p. 56; Arazi *et al.*, *Tenke Fungurume*, p. 38.

36 D. Cahen, *Le site archéologique de la Kamoa (Région du Shaba, République du Zaïre) de l'Âge de la pierre ancien à l'âge du fer* (Tervuren, Musée royal de l'Afrique centrale, 1975), p. 200; unpublished HH ingots conserved in Royal Museum for Central Africa, inv. PO.0.0.32185 and PO.0.0.33800.

37 Raes, 'Les croisettes de cuivre', p. 47.

38 De Maret, 'Histoires de croisettes', p. 141; Swan, 'Economic and Ideological Roles of Copper Ingots', p. 1003.

39 Bisson, 'The Prehistoric Copper-Mines of Zambia', p. 428; Anciaux de Faveaux, 'Premières datations'.

40 L. Schumaker's interviews with elderly informants and observation of a traditional ceremony at the shrine on Chishi Island provide evidence that most of these *croisettes* are still on the island. Some of the missing ingots, perhaps the ones mentioned by Vogel, could have been taken by Bisa people during a period of conflict in the lake region during the 19th century, though it is also possible that Vogel erred in thinking the Ng'umbo royal relics were those of the Bisa (Lyn Schumaker, pers. comm); Vogel cited by M.S. Bisson, 'Copper Currency in Central Africa: The Archaeological Evidence', *World Archaeology*, 6, 3 (1975), pp. 276–92.

41 Fagan, 'Excavation at Ingombe Ilede', pp. 65, 102–3; Garlake, 'Iron Age Sites in the Urungwe District'.

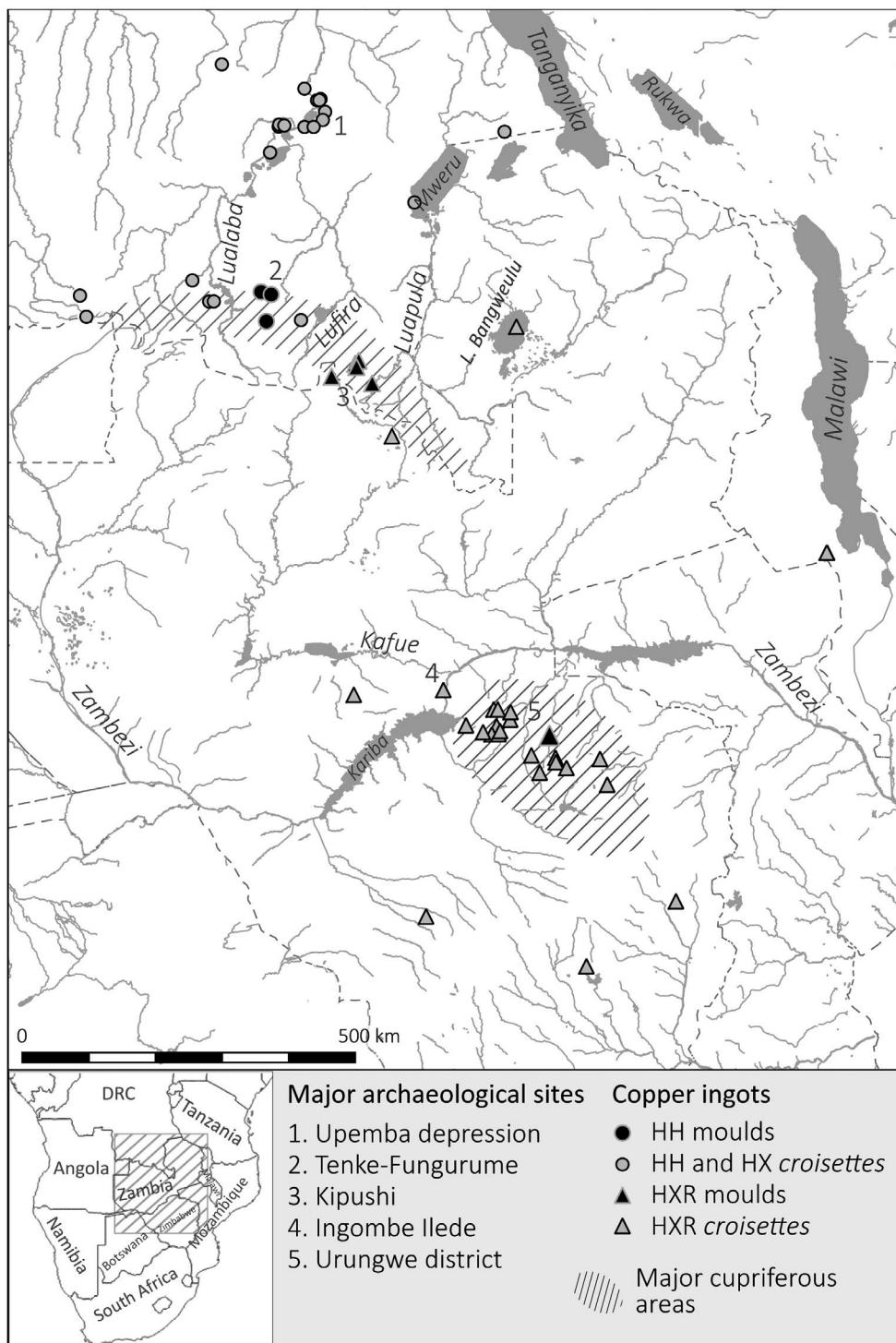


Figure 3. HH, HX and HXR ingots distribution, c.14th–18th centuries.

was collected in Golden Mile mine, confirming that this kind of ingot was also produced in northern Zimbabwe. A few isolated ingots were also found on the surface in Malawi, Zimbabwe and Zambia.<sup>42</sup> Portuguese sources mention that *aspas de cobre*, most probably HXR *croisettes*, were sold in Mbara kingdom or by the Mbara people in the 16th-century Mutapa state and used as currency in the 17th century.<sup>43</sup> Archaeological data, together with these accounts, suggest that this type of ingot was in use at least until the 17th century in regions near the Zambezi.<sup>44</sup>

HXR ingots represented raw materials that were reworked into objects – as suggested by some missing arms on *croisettes* – and used as currency, which is supported by the fairly standardised form of the ingots.<sup>45</sup> Portuguese sources confirm both aspects.<sup>46</sup> These ingots may also have played the role of status symbol, as illustrated by their position in the Ingombe Illede burials, where they were associated with tools and objects related to metalworking.<sup>47</sup>

### *From the 18th Century CE Onwards*

It is unclear when the production of the HH and HXR *croisettes* ceased in the Copperbelt, whether during the 18th century or earlier, but during the 19th century, at least three types of ingots were produced in this region: X, Ib and Ic (see Figure 4). Again, these ingots were not produced and distributed in the same regions, except that the limit between the two areas moved from the Lufira to the Lualaba, near modern Kolwezi. X *Croisettes* were made and distributed in the north-western area, while Ib and Ic were made and distributed in the south-eastern area.

### The North-Western Domain

The X type *croisettes* are well-known as a local symbol in the former Katanga province of the DRC. In the shape of a St. Andrew's cross, they are called *myambo* in Kiluba or *handa* – 'bifurcation' – in Kiswahili.<sup>48</sup> They were produced in the western part of the Copperbelt, around Kolwezi, in mining areas such as those of the Mwilu and Kamimbi chiefdoms.<sup>49</sup> From there, they reached the Luba heartland through the Samba, a Luba client kingdom,<sup>50</sup> where they became a component of the Katanga–Kasai trade. They were exchanged with the Songye and Kuba, among others.<sup>51</sup> They also reached the Maniema area and then, through Tanganyika, Tabora.<sup>52</sup> They are also documented at the Lunda Mwat Yav court, where they reached neighbouring populations and the Atlantic coast.<sup>53</sup> They were used as ingots, but also as social currency for bridal payment, for blood debt, as insignia of power in the Kanyok kingdom or as admission fees for the *bambudye* secret society.<sup>54</sup>

42 Swan, 'Economic and Ideological Roles of Copper Ingots', p. 1005.

43 Garlake, 'Iron Age Sites in the Urungwe District', p. 42.

44 De Maret, 'Histoires de croisettes', p. 139; Swan, 'Economic and Ideological Roles of Copper Ingots', p. 1001.

45 Swan, 'Economic and Ideological Roles of Copper Ingots', p. 1007.

46 Garlake, 'Iron Age Sites in the Urungwe District', pp. 42–4.

47 De Maret, 'Histoires de croisettes', p. 139; Swan, 'Economic and Ideological Roles of Copper Ingots', p. 1008.

48 De Maret, 'Histoires de croisettes', p. 135.

49 Mgr. de Hemptinne, 'Les Mangeurs de cuivre du Katanga', *Congo : Revue générale de la colonie belge*, I, 3 (1926), pp. 371–403; G. Gutzeit, 'La fonte de la monnaie (croisettes) chez les Baluba du territoire de Musonoi (Haut Katanga Ouest)', *Archives suisses d'anthropologie générale*, VII, 1 (1934), pp. 73–81; T.A. Rickard, 'Curious Methods Used by the Katanga Natives in Mining and Smelting Copper', *Engineering and Mining Journal Press*, 123, 2 (1927), pp. 51–8.

50 Reefe, *The Rainbow and the Kings*, p. 99.

51 De Maret, 'Histoires de croisettes', p. 137.

52 Cameron, *Across Africa*, p. 224.

53 Vansina, 'Long-Distance Trade Routes'; J.J. Monteiro, *Angola and the River Congo* (London, Macmillan and Co., 1875), p. 190.

54 De Maret, 'Histoires de croisettes', p. 137; W.F.P. Burton, *Luba Religion and Magic in Custom and Belief* (Tervuren, Musée royal de l'Afrique centrale, 1961), p. 160. The *bambudye* secret society was intimately associated to the Luba state as 'keeper' of the genesis myth and, then playing a role in the politico-religious order of the Luba state. Its members were encouraged to engage in co-operation and mutual support when travelling, enhancing their trading relations (Reefe, *The Rainbow and the Kings*, pp. 46–7, 96).

The origin and chronology of X *croisettes* are complex. According to N. Raes, they would have been produced since the second half of the 18th century as a result of the Lunda people's arrival in the Copperbelt.<sup>55</sup> Some bars of copper in 'extravagant forms' are mentioned in 1808 in Luanda,<sup>56</sup> whereas *handa* copper ingots are described in much detail in the second half of the 19th century.<sup>57</sup> One may also note that the *Pombeiros* visited the copper mines of chiefs 'Mwiro' and 'Cabembe' at the beginning of the 19th century, which might refer to the Mwilu and Kamimbi chiefdoms.<sup>58</sup> The production of bars of copper is mentioned, but without any other details, and they were sent as tribute to both Mwat Yav and Kazembe.<sup>59</sup> These bars may well be of the type labelled Ib by P. de Maret (see Figure 1), one of the two other kinds of ingots produced in the Copperbelt along with the Ic ingots (see Figure 1) during the 19th century. These two types are poorly documented as compared to other types. Only a few specimens are held in museums around the world, such as the Royal Museum for Central Africa (RMCA) in Belgium, the Museum of Lubumbashi in the DRC, or the Livingstone Museum in Zambia. They are better known from historical sources.

### The South-Eastern Area

The Ic ingots, also called *mukuba wa matwi*, 'copper with ears', are in the shape of a 'capital I' – that is, a central bar with transversal bars at its ends. They measure between 80 and 150 centimetres and weigh between 12 and 50 kilograms. They were produced in the central and eastern part of the Copperbelt, probably throughout the 19th century.<sup>60</sup> David Livingstone observed them in Kazembe's capital, and that they were traded towards the east and south-east.<sup>61</sup>

The aforementioned Ib ingots were also produced in the eastern part of the Copperbelt. They were bars of copper measuring 100–120 centimetres and weighing around 30 kilograms.<sup>62</sup> Such ingots were found in Luanshya in the Copperbelt province, and near present-day Lusaka.<sup>63</sup> In the early 19th century, F.S. Pinto observed bars of copper in Kazembe's capital, and J.P. Baptista and A. José described them later on as being sold to the Bisa and coastal traders.<sup>64</sup> David Livingstone mentioned seeing some bars in Chinsamba, near Lake Malawi.<sup>65</sup> These bars were probably the Ib ones. It seems that their production stopped, or at least slowed dramatically, during the second half of the 19th century, probably because of instability in the eastern Copperbelt.<sup>66</sup>

Regarding typology, Ib and Ic ingots share common features, such as their large size and weight and the shape of the central bar. Cross bars of Ic ingots could be a variation of the Ib model. Regarding their use, these ingots seem to have been valued only for their raw copper, and they do not seem to have had any symbolic or social value, unlike X *croisettes*.

55 Raes, 'Les croisettes de cuivre', p. 87.

56 Herbert, *Red Gold of Africa*, p. 157.

57 Cameron, *Across Africa*, pp. 227, 393; Monteiro, *Angola and the River Congo*, pp. 190–1.

58 Merchants from Cassange in Angola sent by the factories' head to create a commercial route between Cassange and the mouth of the Zambezi (A. Verbeken and M. Walraet, *La première traversée du Katanga en 1806: voyage des Pombeiros d'Angola aux Rios de Sena* (Bruxelles, Institut royal colonial belge, 1953)).

59 Burton, *The Lands of Cazembe*, p. 222.

60 Raes, 'Les croisettes de cuivre', pp. 79–80.

61 D. Livingstone, *The Last Journals of David Livingstone in Central Africa* (New York, Harper and Brothers, 1875), p. 214.

62 De Hemptinne, 'Les Mangeurs de cuivre'; R. Marchal, 'Renseignements historiques relatifs à l'exploitation des mines de cuivre par les indigènes de la région de Luishia', *Bulletin des juridictions indigènes et du droit coutumier congolais*, 7, 1 (1939), pp. 10–17; Raes, 'Les croisettes de cuivre', pp. 79–80.

63 A.H. Quiggin, *A Survey of Primitive Money: The Beginning of Currency* (London, Methuen and Co., 1949), p. 104; Bisson, 'The Prehistoric Copper-Mines of Zambia', p. 134.

64 Burton, *The Lands of Cazembe*, pp. 129, 228.

65 D. and C. Livingstone, *Narrative of an Expedition to the Zambesi and its Tributaries; and of the Discovery of the Lakes Shirwa and Nyassa. 1858–1864* (London, J. Murray, 1865), p. 389.

66 De Hemptinne, 'Les Mangeurs de cuivre', p. 373.

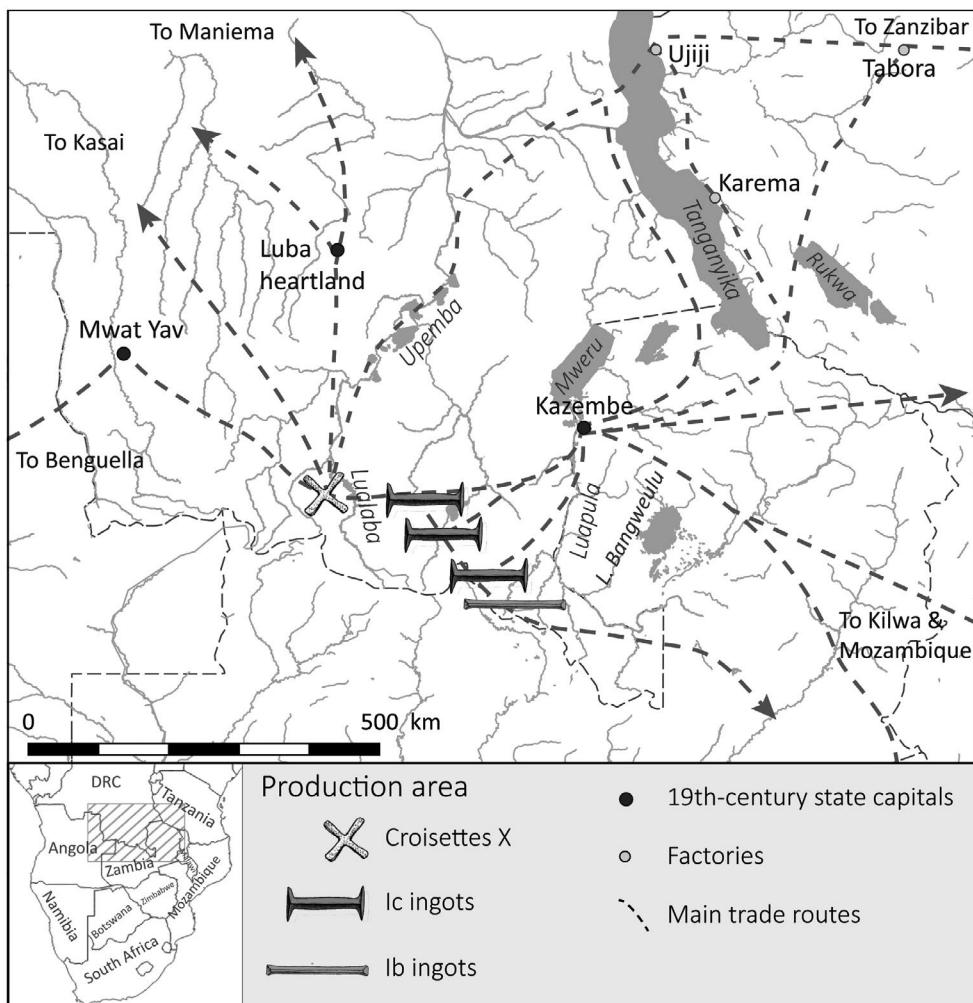


Figure 4. *Croisettes X* and Ib and Ic bars distribution, c.18th–19th centuries.

Indeed, the ingots observed by the authors at the RMCA do not display any particular care in their finish, and their weight seems to be linked to the burden that one or two men were able to carry.<sup>67</sup>

## Discussion

In a previous study devoted to pottery technology, A. Livingstone Smith showed that the Copperbelt area could be divided according to the methods used by potters to build their vessels.<sup>68</sup> Putting aside recent population movements, traditions defined by pottery-building and ornamental techniques enable us to distinguish several areas that fit with other aspects of society, such as languages, kinship systems or marital practices, but also with salt production

67 Mahieu, 'Exploitation du cuivre par les indigènes du Katanga', *Congo*, 2, 1 (1925), p. 113.

68 A. Livingstone Smith, 'Pottery and Politics: Making Sense of Pottery Traditions in Central Africa', *Cambridge Archaeological Journal*, 26, 3 (2016), pp. 471–91.

and distribution areas. That article hypothesised that these social spaces might have been shaped by ancient polities. In short, the conclusions of this study were that pottery traditions in this area materialised social spaces (networks of preferred social interaction), which endured even though the polities that had shaped them were long gone.

The geography of 19th-century copper production and distribution matches with the aforementioned results, but considerably extends their scope as regards ancient socio-economic networks. Firstly, clear evidence exists of a relationship between copper production and important centres of political power. Secondly, the information available on copper production and distribution allows us to broaden the perspective in terms of both geographic extension and time span.

Considering the situation just before the emergence of the Yeke state in the second half of 19th century,<sup>69</sup> we have seen that the Copperbelt area can be divided into two distribution areas (see Figure 4). X ingots are made in the western part of the Copperbelt and distributed to the north and west, while Ib/Ic ingots are made in the central and southern parts and distributed towards the south and east. For this period, several polities were active around the Copperbelt, and they seem to have played a structuring role in the study area.

The production area of Ib and Ic ingots appears to have been in the western periphery of the Kazembe state,<sup>70</sup> and most of the flow of copper seems to have been directed towards the heartland of the kingdom, south of Lake Mweru. The Kazembe rulers seem to have set up an institution of peripheral rule over the copper mines and some salt pans in order to gain a certain control over those resources.<sup>71</sup> Through tributes or ‘occasional gifts of deference’,<sup>72</sup> copper and salt reached the Kazembe kingdom’s courts. In addition, the spread of Lunda insignia as a link with the capital and a ‘strategy of lineage power-brokering’<sup>73</sup> allowed Kazembe’s kings to maintain relative control over the periphery through patronage links. Thus local rulers gained access to the redistributive networks of the long-distance trade in prestige goods. This trade was strictly controlled at the peak of the kingdom, and foreign merchants had access to regional commodities only through intermediaries of the Kazembe rulers or following their consent. As such, the Kazembe state acted as a magnet for local resources that it exchanged for imported items.

If the ‘Mwiro’ and ‘Cabembe’ mines mentioned in the early 19th century correspond to the Mwilu and Kamimbi chiefdoms of the early 20th century near Kolwezi, copper was cast into bars when the area was partly under Kazembe’s influence. Later, probably some time during the first half of the 19th century, the Kazembe state seems to have lost its influence, giving way to that of the Luba and/or Mwat Yav, and bars were replaced by X *croisettes*.

Large bars were the main medium of copper trade in the area of Kazembe’s influence. Their makers intended the Ib and Ic ingots to act as stocks of raw material adapted to the long-distance, large-scale trade. As noticed earlier, their weight seems to have been adapted to portage, with the transversal bars of Ib ingots making them easier to carry. Their production seems to have stopped when the Yeke settled in the central Copperbelt and started producing copper. They circulated this metal in media different from copper bars, such as bangles or wires, and along other trade routes than those used by the earlier polities of the Copperbelt.<sup>74</sup>

As regards copper mines west of the Lualaba, the political situation is not so clear. As we have seen, the area during the early part of the 19th century seems to have been under the influence of

69 Legros, *Chasseurs d’ivoire*.

70 Macola, *The Kingdom of Kazembe*, pp. 68–78.

71 *Ibid.*, p. 48.

72 M.N. Roberts and A.F. Roberts, ‘Audacities of Memory’, in M.N. Roberts and A.F. Roberts (eds), *Memory. Luba Art and the Making of History* (New York, Museum of African Art, 1996), p. 28.

73 Macola, *The Kingdom of Kazembe*, p. 78.

74 De Hemptinne, ‘Les Mangeurs de cuivre’, pp. 372, 402.

both Kazembe and the Mwat Yav. During the 19th century, Samba, a client kingdom of the Luba state, challenged them and became the main middle-man between the copper production area and the Luba heartland.<sup>75</sup> Who had control over the areas of the production of ingots remains unclear, but the spread of *X croisettes* is clearly oriented to the Luba state and the Mwat Yav.

Luba rulers, like the Kazembe, kept control over their neighbours through a strategy of lineage power-brokering, through diffusion of political insignia and through specialised brotherhoods such as the *bambudye*.<sup>76</sup> The *bambudye* were present in most of the area under Luba influence, such as among the Samba. This secret society fostered co-operation and communication between the members and the royal courts. This network of relations also favoured trade in the Luba state.

Through this control, the Luba court managed to attract a flow of regional goods and enhanced its position as a major emporium on the Katanga–Kasai trade route. For their part, client states gained access to the redistributive network of prestige goods from the regional and long-distance trade.<sup>77</sup> Trade with or tribute to the Mwat Yav would also have allowed access to the resources of long-distance trade, although there is no clear data on this topic for the western Copperbelt. This may explain why *X croisettes* became a common medium of exchange, accepted over a large area, although it only acquired an important symbolic value in the Luba sphere and neighbouring kingdoms such Kanyok. The origin of the shape is unknown, but it seems likely that these polities may have played a role in maintaining the standardised shape of the *croisettes* and their diffusion networks.

It is interesting to note that all 19th-century ingots became involved in the coastal trade, but their trading routes seem to meet outside the area controlled by the Copperbelt kingdoms. This trade to the Indian Ocean coast from the Kazembe and Luba heartlands appears to have been in the hands of middle groups or foreign merchants.<sup>78</sup> In the south and east, Bisa people were the main middle-men for the trade with the Kazembe state. They exchanged their wares with Yao people who were trading with Kilwa, or the Portuguese factories of Mozambique, from which some copper bars might have been exported to India.<sup>79</sup> Around the second half of the 19th century, commercial relations with Bisa peoples seem to have been supplanted by those with Swahili traders. The latter used routes passing by the Great Lakes region that reached factories such as Tabora.<sup>80</sup> In relation to the Luba heartlands, routes towards the interlacustrine region seem also to have been used, first by people originating in this area, such as Nyamwezi or Busumbwa traders, and later also by Swahili merchants.<sup>81</sup>

The situation is slightly different for the relations of the Mwat Yav with the coastal areas. At the end of the 18th century, the Lunda state controlled a large interior trade network, and some Lunda caravans reached Portuguese factories in Mozambique and Angola in the early 19th century. Besides these ‘official’ caravans, exchanges through intermediary groups such

75 They were called *Samba ya myambo*, ‘Samba with the *croisettes*’ (Reefe, *The Rainbow and the Kings*, p. 101).

76 Reefe, *The Rainbow and the Kings*, p. 102.

77 *Ibid.*, p. 96.

78 The 19th-century long-distance trade has already been widely discussed. See J. Vansina, ‘Long-Distance Trade Routes’; A. Roberts, ‘Nyamwezi Trade’, in R. Gray and D. Birmingham (eds), *Pre-Colonial African Trade* (Oxford, Oxford University Press, 1970), pp. 39–74; A. Roberts, ‘Pre-Colonial Trade in Zambia’, *African Social Research*, 10, (1970), pp. 715–46; C. St John, ‘Kazembe and the Tanganyika–Nyasa Corridor, 1800–1890’, in Gray and Birmingham (eds), *Pre-Colonial African Trade*, pp. 202–30; J-L. Vellut, ‘Notes sur le Lunda et la frontière luso-africaine (1700–1900)’, *Etudes d’Histoire africaine*, 3 (1972), pp. 61–166; E.A. Alpers, *Ivory and Slaves: Changing Patterns of International Trade in East Central Africa to the Later Nineteenth Century* (Berkeley and Los Angeles, University of California Press, 1975).

79 Roberts, ‘Pre-Colonial Trade in Zambia’; N. Sutherland-Harris, ‘Zambian Trade with Zumbo in the Eighteenth Century’, in Gray and Birmingham (eds), *Pre-Colonial African Trade*, p. 233; Macola, *The Kingdom of Kazembe*, p. 129.

80 St John, ‘Kazembe and the Tanganyika–Nyasa Corridor’; Macola, *The Kingdom of Kazembe*, p. 129.

81 Legros, *Chasseurs d’ivoire*; Roberts, ‘Nyamwezi Trade’; Cameron, *Across Africa*.

as Ovimbundu or Mbangala are mentioned, as are caravans organised from the Portuguese factories. Through these different exchange networks, copper reached the coastal trade and, in 1808, some copper ingots, most likely the X *croisettes*, were traded from Luanda to Rio de Janeiro in Brazil.<sup>82</sup>

The emergence of the Yeke kingdom in the 1860s and its implantation in the central Copperbelt also had consequences for the long-distance trade, challenging the Kazembe state's relationship with the Swahili traders and creating new routes to the Atlantic coast.

As mentioned above, the influence of polities in the organisation of economic networks is also visible when looking at salt production and distribution. In Katanga, the distinct geographical patterning of salt distribution networks was interpreted as a relic of ancient trade networks possibly under the control of the Mwat Yav, the Kazembe of the Luapula and the Luba state. When comparing the location of salt production centres and their distribution in the Copperbelt area, we can see a clear correlation with the geographic patterning of copper ingots: Ketshila salt marsh, located west of Lualaba, is directed to the Mwat Yav region, while Mwanshya, in the central Copperbelt, is directed to Kazembe.<sup>83</sup>

Political and economic concerns may have shaped more features than the trade routes. Indeed, other aspects of society seem to have aligned themselves with the politico-economic networks of kingdoms or copper and salt production. An examination of contemporary pottery practices in the area showed that the spatial distribution of pottery traditions matches, at least in part, this political geography. Furthermore, some of the boundaries also match the kinship systems and marital practices.<sup>84</sup> However, there seems to be no doubt that those political powers of the 19th century strengthened the ties of people in their respective areas of influence. We may therefore wonder how much these 19th-century polities benefited from pre-existing social spaces they had captured during their expansion.

Indeed, during the period between the 14th and the 18th centuries, we note that the Lufira river region seems to mark a boundary between two domains: that of HH and HX *croisettes* to the west and north, and that of HXR *croisettes* to the south and east (see Figure 3). It appears that HH and HX ingots were distributed in the same areas as the X types for the following period. The fairly standardised size and shape of the ingots point to exchange networks over a large area sharing a common cultural background. In the Upemba depression, this assumption is confirmed by a shared material culture among the various Kabambian sites of the area. P. de Maret suggests the possibility that the Kabambian culture was probably included in a larger entity, resulting from the rise of a centralised authority in the area with the emergence of the proto-Luba states.<sup>85</sup> This would be partly confirmed by the fact that pottery-building techniques of Kabambian vessels are identical to those used by modern potters in the Luba area.<sup>86</sup> These polities would be sufficiently powerful to attract flows of goods and, as in the case of the Luba state, act as emporia in the regional trade. The presence of *croisettes* in the Kabongo area, in the north-west part of the Haut-Lomami province, points to an early Kasai–Katanga trade. This is corroborated by the fact that ceramics with affinities to those found in Kabambian graves of the Upemba depression have been found far in the west, in the Bushimai river valley in Kasai.<sup>87</sup> The links, well attested in the 19th century, seem to be far older.<sup>88</sup> The presence of glass beads

82 Vellut, 'Note sur le Lunda et la frontière luso-africaine', pp. 89–91 and *passim*.

83 P. Petit, *Les sauniers de la savane orientale: approche ethnographie de l'industrie du sel chez les Luba, Bemba et populations apparentées (Congo, Zambie)* (Bruxelles, Académie royale des sciences d'outre-mer, 2000), pp. 12, 81.

84 Livingstone Smith, 'Pottery and Politics'.

85 De Maret, *Fouilles archéologiques. III: Kamilamba, Kikulu, et Malemba Nkulu*, p. 224.

86 A. Livingstone Smith and A. Vysserias, 'Shaping Kabambian Pottery: Identification and Definition of Technical Features', *Open Anthropology Journal*, 3 (2010), pp. 124–41.

87 De Maret, *Fouilles archéologiques. III: Kamilamba, Kikulu, et Malemba Nkulu*, p. 193.

88 Reefe, *The Rainbow and the Kings*, p. 201.

and cowries (*Cypraea annulus* and *Cypraea onyx*) in Upemba burials also supplies evidence that the area was involved in long-distance trade, probably with the Indian Ocean coast.<sup>89</sup> HH ingots found near Lake Mweru would be on the axis of this trade. The disappearance of HH ingots in the Upemba burials, observed around the 18th century, could be a consequence of the emergence of the Kazembe state in the Copperbelt area, disrupting the flow of copper and changing the medium of its diffusion into large bars.

With regard to the HXR ingots, we can see that they are essentially distributed to the south and east of the Copperbelt, and ingots of similar shapes are found at Ingombe Ilede and as far down as north Zimbabwe, where they were also produced. The area seems to have shared an extended interaction network, in which people at least shared a common view of what an ingot should look like. The growth of copper production in the eastern Copperbelt and the distribution of the HXR ingots could be related to the arrival of chiefly dynasties from south Katanga.<sup>90</sup> Some scholars link this arrival with a ceramic tradition labelled Luangwa, already established in the area and supposed to have appeared there between the 9th and the 12th centuries CE, coming from south-east Katanga and extending into southern and eastern Zambia.<sup>91</sup> These dynasties would have played an important role in the emergence of centralised power structures and in the differentiation among the Luangwa ceramics-making societies, and would have attracted valuable goods. Thus the Kazembe state, when establishing itself during the 18th century, would take over a network that already existed and extended far from the Copperbelt.

Further south, sites such Ingombe Ilede would have had a pivotal role in the diffusion of this type of ingot between the Luangwa tradition area and the emerging centralised power and the northern Zimbabwe area, such as at sites like Cherdzurgwe or the region of the Mobara people described in Portuguese accounts.<sup>92</sup> It is likely that the production of HXR ingots began in the Copperbelt – dates are slightly older in this area – and then, when this kind of ingot was in demand in the southern area, copper mines in northern Zimbabwe started production.

Thus the division between two extended social interaction networks, one to the north and west and one to the south and east, seems to be related to the development, on both sides, of a series of power structures sharing a common cultural background. *Croisettes* would operate like a currency in these networks where production areas were integrated. These people in these areas would take advantage of a redistributive system, perhaps as clients of more powerful polities.

Finally, during the period extending roughly from the 9th century to the 14th century, the distribution of copper ingot types is rather homogenous across the study area (see Figure 2). D.W. Phillipson, as seen above, argues for the existence of a large ‘Co-tradition’ whose parent culture, the Luangwa group would have moved south around the 9th–12th centuries CE.<sup>93</sup> Although the exact relationship between the pottery cultures from Katanga and those of southern Zambia remains to be examined in detail, this expansion from Katanga to the south may well explain, or at least be related to, the large-scale distribution of HIH ingots from the Copperbelt to the south.

The bearers of the Luangwa tradition may have followed pre-existing Early Iron Age trade networks south and spread a certain type of ingot with them. Alternatively, the copper trade may have developed after the expansion of the Luangwa pottery bearers, taking advantage of their networks. In the same way, HIH *croisettes* appeared late, around the 13th century, in the

89 De Maret, *Fouilles archéologiques. III: Kamilamba, Kikulu, et Malemba Nkulu*, p. 224.

90 Bisson, ‘Precolonial Copper Metallurgy’, p. 124; de Maret, ‘Recent Farming Communities’, p. 881.

91 D.W. Phillipson, ‘Iron Age History and Archaeology in Zambia’, *Journal of African History*, 15, 1 (1974), pp. 1–25.

92 De Maret, ‘Recent Farming Communities’, p. 881.

93 Phillipson, ‘Iron Age History and Archaeology in Zambia’.

Upemba depression, but copper is attested since the beginning of the Kisalian period (9th–13th centuries) and points to strong links with the Copperbelt.<sup>94</sup>

Even if it is difficult to know whether it was an organised trade or hand-to-hand transmission within and between neighbouring groups, it seems clear that the trade networks, which can be hypothesised or observed in the following periods up to the 19th century, took root during this period. HIH ingots would have spread primarily as raw materials from the Copperbelt. Then they gradually gained a symbolic or a currency value in both the Upemba and Zimbabwe, foreshadowing the use of later ingot models.

## Conclusion

The study of copper ingots smelted in the Copperbelt opens a fascinating window on more than 1,000 years of exchange networks in southern central Africa.

The structuring role played by 19th-century polities on exchange networks and some aspects of material culture is particularly striking. The distribution of copper ingots appears strongly related to areas of political influence and can probably be seen as an effect of the mechanism of peripheral rule. R. Zeebroek, in a study of late 19th-century and 20th-century monetary use of beads and raffia cloths postulates the use of specific bead models as a mark of sovereignty among the Luba–Kinkondja chiefdoms. In neighbouring regions, the beads used for similar purposes change in forms and type, suggesting that use and value are strongly related to territories controlled by known polities.<sup>95</sup> It is difficult to say if the same situation prevailed for copper, as we do not know, for example, who chose the original form of the ingots. But the attracting power of ancient polities and their leading role in regional networks must have contributed to maintaining the standardised shape and size. This includes adaptation to the purpose of the item: that is, as a stock of raw material in the Kazembe area, or as social currency and status symbol in the Luba area.

Previous archaeological studies have confirmed that the 19th-century inter-regional trade networks, like the Katanga–Kasai axis, were well established. HIH spatial distribution shows that, between the 9th century and 14th century, a large-scale network connected the Copperbelt to the Upemba depression in the north and to the Zambezi, and maybe further down, to Great Zimbabwe in the south. Interestingly, this period also saw the rise of the Kisalian in the Upemba depression and the arrival of the Luangwa tradition north of the Zambezi. Direct connections between distant areas are difficult to prove and, at the beginning, contact may have been through hand-to-hand exchange between neighbouring or related groups, in which Luangwa tradition bearers or Upemba cultures may have played a role. It is nevertheless most likely that these networks contributed to forging, at least from the 15th century, two distinct economic spheres in which specific kinds of ingot acted as currency. Indeed, the regionalisation in the production and use of copper ingots from the 14th century, associated with other aspects of material culture, could indicate the development of centralised authorities powerful enough to influence the style and the distribution of products. Certainly, taking part in this system gave copper producers access to other resources in the wider region and to imported goods from the coastal trade. But this could also be indicative of the development of a redistributive system of prestige goods from political centres. In this case, the appearance of copper ingots as grave goods would be a status symbol, but also an expression of belonging to a socio-economic space.

More generally in the 19th century, copper ingots are exchanged outside these socio-political domains and are, more specifically, part of the goods exported towards the Inner Congo region or in the long-distance trade with the Atlantic and Indian Ocean coasts. Archaeological data

94 De Maret, *Fouilles archéologiques. III: Kamilamba, Kikulu, et Malemba Nkulu*, p. 222.

95 R. Zeebroek, ‘Perles et tissus. Les instruments monétaires au Katanga’, *Afrique: Archéologie et Arts*, 11 (2015), pp. 21–38.

from Kasai or the Lower Zambezi region suggests that these trade routes may have been in place earlier, but this hypothesis needs to be confirmed by the discovery of diagnostic copper artefacts in East Africa or the Inner Congo area. Alternatively, a proper geological, elemental and isotopic characterisation of the Copperbelt deposits could be undertaken, such as is currently being done for Niari deposits in western central Africa or for some tin deposits in southern Africa.<sup>96</sup> This would allow for the development of copper artefacts provenance studies, relating the sources with objects found all over southern central Africa and possibly down trade routes leading out of the region.

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96 N. Nikis and T. de Putter, ‘Recherches géo-archéologiques dans les zones cuprifères du bassin du Niari en République du Congo’, *Nyame Akuma*, 84 (2015), pp. 142–53 ; F. Rademakers, N. Nikis, T. de Putter and P. Degryse, ‘Copper Production and Trade in the Niari Basin (Republic of Congo) during the 13th to the 19th Century CE: Chemical and Lead Isotope Characterization’ (in preparation); L.J. Molofsky, D. Killick, M.N. Ducea, M. Macovei, J.T. Chesley, J. Ruiz, A. Thibodeau and G.C. Popescu, ‘A Novel Approach to Lead Isotope Provenance Studies of Tin and Bronze: Applications to South African, Botswanan and Romanian Artifacts’, *Journal of Archaeological Science*, 50 (2014), pp. 440–50.