Tracing Ingombe Ilede's trade connections

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McIntosh and Fagan (above) write that "For 45 years, Ingombe Ilede has been viewed as a key nexus linking the Copperbelt and Great Zimbabwe". Some regional specialists have not believed this since the publication of Swan's (2007) important review of the sizes and shapes of prehistoric copper ingots found in modern Zimbabwe. Swan noted that both of the ingot moulds found at Great Zimbabwe (which have a clear stylistic connection to the Copperbelt) are of the earlier HIH style (ninth to fourteenth centuries AD; de Maret 1995; Nikis & Livingstone Smith in press). But neither the later HXR-style copper ingots (fourteenth to seventeenth centuries)—some of which were excavated at Ingombe Ilede—nor the moulds to make them have been found on a Zimbabwe tradition site. The distribution of HXR ingots within the modern nation of Zimbabwe is almost exclusively in the north, within the former territory of the Mutapa state (Swan 2007: fig. 2). The clear implication is that the HXR ingot style—and thus the elite burials at Ingombe Ilede—post-date the breakup of the state ruled from Great Zimbabwe, which gave birth to the Mutapa (northern) and Torwa (southern) states. The new radiocarbon dates by McIntosh and Fagan provide welcome confirmation of this inference.

The wider significance of the later cemetery at Ingombe Ilede is that it may represent a point of articulation between three major spheres of exchange in east-central Africa in the mid second millennium BC. These were 1) the Luba state of northern Zambia, southern Congo and eastern Angola; 2) the Mutapa state south of the Zambezi; and 3) the Swahili and/or Portuguese maritime networks along the East African coast. The Swahili era on the Zambezi ended abruptly in 1572, when the Portuguese massacred all Swahili traders along the river (Newitt 2005: 142). This event occurred in the second half of the two-sigma calibrated interval (1465–1635 AD) for the new radiocarbon dates. So were the elites at Ingombe Ilede trading with the Swahili, with the Portuguese or with both? Did they import the HXR copper ingots from the Zambian Copperbelt? Or were these instead made in the Hurungwe District, south of the Zambezi and much closer to Ingombe Ilede?

These questions could be addressed by determining the sources of the HXR copper ingots, the lumps of smelted copper and the drawn copper and bronze wire in the burials. A recent compilation of lead isotope ratios from the geological literature for southern African ore deposits shows that the Copperbelt, Zambezi Belt and Hurungwe ore deposits are well separated (Stephens 2016). It should be noted, however, that the lead isotope ratios of 60 analysed copper ingots from the Portuguese ship *Bom Jesus*, wrecked on the shore of modern Namibia in 1533 (Hauptmann *et al.* 2016), fall within the range of ratios for

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the Zambian Copperbelt. Hauptmann *et al.* (2016) show that these were produced by the Fugger trading company from copper sourced from the Slovak Ore Mountains (*Erzgebirge*); but the lead isotopic ratios, however, are those of the lead mines in the Cracow-Silesia region in modern Poland. (This is because the appreciable silver content of the Slovak ores was removed by melting the copper with lead, which extracted the silver; the lead was then mostly recovered from the copper by liquation.) The Fugger company dominated European copper production between 1500 and 1620, and it seems probable that they supplied most of the large quantities of copper on Portuguese ships bound for Africa at this time (Herbert 1984). The *Bom Jesus* was still carrying 20 tonnes (1845 ingots) of copper when it ran aground in 1533 (Hauptmann *et al.* 2016).

The source(s) of the bronze at Ingombe Ilede will be more difficult to establish. Potential sources of tin for the bronze at this time include the Iberian tin belt of Portugal and Spain, the *Erzgebirge*, Iran and India. Tin ore was mined at a dozen locations in modern South Africa and Zimbabwe in the twentieth century, but the only deposit proven to have been mined before 1900 is the Rooiberg mine in South Africa, which is thought to have been exploited from the thirteenth century (Chirikure *et al.* 2010). A tin ingot excavated at Great Zimbabwe in a context radiocarbon dated to 1450–1550 cal AD has lead isotope ratios consistent with Rooiberg; and bronze made with Rooiberg tin has been identified at several sites in northern South Africa and Botswana (Molofsky *et al.* 2014). A geologist has argued that the precolonial workings at Cornucopia in east-central Zimbabwe (see Swan 2007: fig. 2) were for tin extraction (Prendergast 1979), but archaeological research has yet to confirm this.

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