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## **September 2008 Newsletter**

### **Kongo Iron: Symbolic Power, Superior Technology and Slave Wisdom**

By John Ringquist

The role of blacksmiths in Kongo society was very different from that of their counterparts in European society. Observations from early geographers and explorers however are sparse and only mention Kongo ironworking in passing. While there is no implicit statement that ironworking in the Kongo was unremarkable, the lack of emphasis by authors such as Sanson and Dapper on ironworking may lead a casual observer to assume that Kongo ironworking was so primitive to be beneath comment. This observation would be incorrect however, as the roles played by Kongo ironworkers, their ancillary trade networks and ritual significance far outstripped that of European blacksmiths.

Bluntly expressed, Kongo blacksmiths were artisans and religiously significant figures favored, and monitored by Kongo royalty. After the collapse of the Kongo kingdom, Kongo blacksmiths continued to play important roles in society, even utilizing their skills in the New World. The skills of Kongo blacksmiths transcended cultures and technologies and their products embraced the sacred and profane equally in Kongo society. Unlike Europe where the sacred demanded gold, silver or other opulent substances for significant objects, in Kongo tradition iron was acceptable and the smith's hammer an appropriate symbol of royal power. It is prudent therefore to start with some of the earliest European observations of Kongo before exploring the ritual and economic significance of ironworking in Kongo society. What made Kongo ironworking so unique and how did it continue to influence Kongo and New World society after 1700, in the face of European iron imports?

Sanson's atlas of the world published in 1700 in Amsterdam is not based on the Sanson family's first-hand observations. Rather, it is based on what were described in the book's

dedication as “the best possible sources.”<sup>1</sup> European sources reported very little about ironworking or trade; the Sanson atlas makes a cursory mention of the Kingdom of Kongo’s iron mines<sup>2</sup>, but nothing about economic processes or products.

Olfert Dapper, a contemporary of the Sansons wrote *Description de l’Afrique* in 1686 and used a number of sources for his book as well. His sources reported that, “the iron that they mine from the mines of Sundo is greatly esteemed because it enables them to make knives, swords, axes and other items.”<sup>3</sup> Contact with the Portuguese brought many imports, namely luxury items, but also firearms. Dapper notes that in addition to infantry cutting and slashing weapons such as great axes and swords, the Kongo army utilizes muskets and fusils (light flintlocks) in battle.<sup>4</sup> Conversely, European iron did not seem to Dapper’s observers to have made major inroads as a trade good, only a military import as finished weaponry.

Georges Balandier’s (1968) sources however are more effusive on the subject of Kongo ironworking and define the relationship between ironworkers and the Kongo kingdom. Ironwork was not an exclusive monopoly in Kongo, but was subject to ritual qualifications and social status. Free men who had been initiated into smithing could operate their own forges and accounts from observers mention numerous workshops around the capital.<sup>5</sup> Amongst the Tio Kingdom of Kongo, “people who practiced the craft were called *bamukaana oculi*: ‘those of the descent group of the smith’. The craft was an ascribed status group, but not a caste.”<sup>6</sup> This last distinction is important because it recognizes that smiths share their wisdom and skills with their apprentices, and what better way to pass on the secret techniques that the smith has developed than by transmission to family? Kongo Houses are composed of descendants and matrilineal lines of descent. If blacksmithing was a caste, marrying into the trade would be difficult and social mobility limited. However, if a man could marry into a smith family, he could also achieve status and wealth provided he demonstrated skill in iron working. Skill with iron and its

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<sup>1</sup> Sanson, Nicolas. *Description de Tout L’Univers*. Amsterdam: Francois Halma. 1700, 2.

<sup>2</sup> Sanson, in the “Royaumme de Congo” section, 69. Pages in this atlas are numbered starting from the beginning of each geographic region’s description.

<sup>3</sup> Dapper, D. Olfert. *Description de L’Afrique*. Amsterdam: Chez Wolfgang, Waesberge, Boom and van Sameren, 1686, 348; Pigafetta alludes to the bartering of iron and describes ironworking in Nsundi as, “It is above all iron that is sought after by the inhabitants, for from it they make knives, weapons, axes, and other instruments of this kind which are necessary and useful to man,” 67.

<sup>4</sup> *Ibid*, 351.

<sup>5</sup> Balandier, Georges. *Daily Life in the Kingdom of The Kongo*. New York: Pantheon Books, 1968, 108.

<sup>6</sup> Vansina, Jan. *The Tio Kingdom of the Middle Kongo 1880-1892*. New York: Oxford University Press, 1973, 142.

production processes was essential for smiths as was the ability to craft tools and weapons of all types.

Smiths made agricultural implements in addition to the weapons that Dapper noted, and evidently made them in great quantities. Physical evidence of continuous and widespread iron making was evident from the great mounds of slag, or scoriae around iron making sites.<sup>7</sup> Cuvelier translated the observations of Pere Laurent de Lucques, who was in the Loango during this time period. Pere Laurent de Lucques noted that in Loango, “the metal was quarried by a primitive method: alternate layers of ore and charcoal filled a vast hole dug in the ground; all around large bellows controlled the intake of air.”<sup>8</sup> This observation is especially valuable in demonstrating the continuity of iron making techniques in the Kongo region.

The first observation of note is the use of charcoal and the layering process used to create a bloom of iron. This process is still in use today and Janzen observed the special arrangement of bellows and tuyeries characteristic of Kongo iron making during his research into North Kongo ironworking. The smelter’s bellows (*nsakusu wa ngangula*) have a shape that is derived from their connection to a central wooden tube that is linked to multiple bellows.<sup>9</sup> This provides large quantities of air that gets preheated before entering the furnace. The bellows and preheating of the air allowed for higher smelting temperatures and an iron bloom of purer content than contemporary European forces.

The tools of the Loango smiths were a curiosity for Pere Laurent de Lucques, and he described them and the bellows system in great detail. His keen observations of the tools and production methods reveal a more than passing interest in Kongo ironworking.

The blacksmiths use neither hammer nor anvil. In place of a hammer they use a large piece of iron stout enough to fill the hand, and whose shape resembles that of a nail. The anvil is a piece of iron weighing about ten pounds that is placed on the ground like a log. On this they do their forging. The bellows is made of hollow logs over which a hide has been stretched. They raise and lower this hide by hand and in this way blow air on the fire. With these three instruments they make everything.<sup>10</sup>

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<sup>7</sup> Pigafetta, Filippo and Lopes, Duarte. *Description du Royaume de Congo et des Contrees Environnantes*, Edited and translated by Willy Bal, Louvain, Belgium: Editions E. Nauwelaerts, 67.

<sup>8</sup> De Lucques, Laurent. *Relations Sur le Congo de Laurent de Lucques (1700-1717)*. Edited and translated by Jean Cuvelier, Brussels: Institut Royal Colonial Belge, 1953, 140. The accuracy of these observations begs the question: Did the priest have a specialist’s knowledge of iron working?

<sup>9</sup> Janzen, John. “Ironworking and Tools of Iron.” *Kongo Reader*, 2006, 1.

<sup>10</sup> De Lucques, 140.



**An anthropomorphic Chokwe bellows set. The breasts are the bellows and the feet direct the air into the furnace via a clay cone nzundu. Bellows and photo from the Claude Brown collection, Spooner Archives, Spooner Museum of Anthropology, University of Kansas. Photograph by Professor John Janzen.**

This observation like the one made about the bellows and iron smelting system is extremely valuable. Dr. Janzen described the bellows operating in a similar fashion in his research. A short video that he took in 1969 featuring a Kongo blacksmith, demonstrated the use of the unique Kongo hammer and bellows system, as well as a stone anvil.<sup>11</sup> After 250 years the methods employed to make iron implements (in that case an axe blade) had changed little. The comparison between Janzen and Lucque's observations is striking given the paucity of information about Kongo ironworking in the pre-colonial period. It is especially important given the relationship between iron production and power in Kongo society. However, before examining that relationship, a brief study of one European iron making guild and its relationship with those in positions of power provides a basis for comparing the two systems.

The differences between European and Kongo manufacturing processes and the social regard in which their respective kingdoms held them, are stark. European iron making was a commercial venture with the intent of generating revenue. Processes were jealously guarded and guilds created to carve out sectors of economic activity in cities and towns. One example of trade guilds from Europe is the Ironmongers of London.

English smiths were members of a guild and licensed to practice their trade. All aspects of their trade were controlled, from the price for wrought nails to the terms served by apprentices. Despite their guilds and regulations, English ironmongers did not enjoy an exclusive license to create wrought iron goods. Inferior merchandise was a threat and although they were skilled craftsmen, and their trade depended on a monopoly over the production of certain ironwares. When new technology or unknown wares threatened their livelihood (as happened in 1623), they reserved the right to confiscate ironwares and cutlery for examination.<sup>12</sup> London ironmongers faced maddening cycles of royal interference that contributed to such events as petitioning the King to disband a gun founder's royal monopoly on manufacturing cast-iron goods.<sup>13</sup> The elements of ritual and power that characterized Kongo blacksmiths and their creative processes were absent in the English system.

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<sup>11</sup> Janzen, John. "Scenes of Kongo Life: Janzen Ethnographic Film." 1969, 4:00-4:50.

<sup>12</sup> Noble, T.C. *A Brief History of the Worshipful Company of Ironmongers London, 1351-1889*. London: Spottiswoode and Company, 1889, 23.

<sup>13</sup> *Ibid*, 24.



**A blacksmith operating his furnace. His right hand is operating a set of four bellows by plunging down while his anvil stone and tools are in the foreground. Photograph courtesy of Professor John Janzen.**

In Kongo society blacksmiths occupied a status that transcended the mundane and placed them within echelons of power that recognized their valuable contributions to society and those in positions of power. Kongo smiths were more than artisans; they were also healers,



**Drawing of bellows in use. Artistic rendering by Twyla, courtesy of the Claude Brown collection, Spooner Archives, Spooner Museum of Anthropology, University of Kansas.**

kingmakers and instrumental to the process of creation. The smith's furnace is their space for creation. In the furnace separate elements are united to form a product that is completely unlike what was fed into the furnace. The comparison between birth and iron smelting is reflected in furnace construction. The furnace is, "shaped roughly like a woman, and often even clay breasts are added, while the actual extraction of the molten metal takes place in such a manner as to represent a birth."<sup>14</sup> The object produced by smelting was an iron bloom that could be worked into finished shapes as desired, an item with many potential uses from agriculture to politics.<sup>15</sup> Smiths were significant figures in their societies, and were accorded honored roles.

Oral tradition links blacksmiths to the rulers of the Kingdom of Kongo and the rituals of investiture reflect this both by the symbols of power and rites that confer power to kings. An Eighteenth Century French observer quoted by Randi Haaland, Pierre de Maret wrote that, "It is said that the founder of the Kongo kingdom was a 'master of smitheries,' perhaps even a

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<sup>14</sup> Schmidt, Peter (ed.). *The Culture & Technology of African Iron Production*. Gainesville, Florida: University Press of Florida, 1996, 153.

<sup>15</sup> *Ibid*, 161.

blacksmith.”<sup>16</sup> In Kongo the blacksmith is an intermediary between the secular and profane. Haaland observed that, “the tie between politics and iron working is particularly strong in the Congo basin.”<sup>17</sup> This tie may be due to past events that have become part of oral history and rituals. *Kitome*, or priests held positions of authority in Eastern Kongo kingdoms and it has been postulated that *kitome* may have once been smiths who achieved political power through their mastery of metalworking.<sup>18</sup> While successful in defeating the *Kitome*, Kongo Kings acknowledge the vital role played by blacksmiths by incorporating smith-related rituals and iron items in their coronations.

Blacksmiths were regarded as the masters of iron, fire and water and maker of arms and tools. Their power over such elements ranked them with the chiefs, priests and magicians (as suggested by his title *nganga lufu*).<sup>19</sup> This gave the royal smith a function in the enthronement process where the *mani Kongo* was invested with his insignia of office. The symbols included the drum *simbo e buto* which made a sound like a blacksmith’s hammer, the *sembo ansure*, the smiths whistle,<sup>20</sup> and the double bell *ngonge*, made in the shape of a horseshoe with two flattened brims and no clapper. Among the badges of chieftaincy, “the *ngonge* appeared at every important event of public life, attesting to power and ancestors; a group of three iron bracelets called *nlunga* signified the alliance between the king and his relations.”<sup>21</sup> The importance of iron is signified by its inclusion in the royal badges and symbols. In lieu of gold, iron bracelets are worn, and in recognition of the ancestors, a drum and a bell made of iron. Beyond the ritual values of iron badges, the items also demonstrated the skill of the ruler’s smiths.

The skills required to create the double bell were also applicable to other iron implements, especially weapons of war. Bell fabrication the required the ability to work sheet iron, weld iron and create midribs of the sort also required for spearheads.<sup>22</sup> The ubiquitous nature of the double bell for ritual and warfare purposes demonstrates that the skill required to fabricate such items was widespread. The ritual value of iron tools and symbols in Kongo

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<sup>16</sup> Haaland, Randi. *African Iron Working*. Oxford: Norweigan University Press, 1985, 75.

<sup>17</sup> Noble, 75.

<sup>18</sup> Hilton, Anne. *The Kingdom of Kongo*. Oxford: Clarendon Press, 1985, 24.

<sup>19</sup> Balandier, 110.

<sup>20</sup> Hilton, *The Kingdom of Kongo*, 37.

<sup>21</sup> Balandier, 111.

<sup>22</sup> Vansina, “The Bells of Kings.” *Journal of African History*, vol. 10, no. 2, 1969. Vogel, Joseph (ed.). *Ancient African Metallurgy*, Lanham, Maryland: Rowman and Littlefield, 2000, 188.

coronation ceremonies may have been reflective of the respect Kongo society had for smiths and their vital role in ensuring the vitality of the kingdom.

Haaland relates additional rituals used in coronations and how they were practiced up to the present day. In the Kongo area, “two hammers/anvils were struck against each other during enthronement rituals. The Mpangu have, until recently, retained this aspect of the ritual as it was performed in 1624 at the Kongo capital for the enthronement of King Garcia I.”<sup>23</sup> Interestingly enough, in the Kongo kingdom, “the blacksmith is required to work during the coronation.”<sup>24</sup> Whether this injunction was symbolic or practical, it underlines the importance of a smith to the ruler. Of all occupations that could be tolerated as idle for the coronation ceremony, the blacksmith was not included. His was an essential task that was required for the kingdom’s survival.

The smith was equipped with a collection of tools that enabled him to meet these sacred obligations. The equipment of the forge possessed symbolic and magical value to the smith and their community. The first, the hammer or *jundo*, was made in the shape of a large nail. Difficult to make, forged by and used by a master smith only, the hammer required sacrifices to the ancestors and the invocation of ancestral spirits.<sup>25</sup> The hammer in turn fabricated tools that differentiated man from beasts. Three tools were said to be of ancient origins and techniques, “the knife was the first, and separated the first human from animals, the African ceremonial axe that signifies the birth of political power, and the hammer and anvil that signify the beginning of the arts and manual techniques.”<sup>26</sup> The importance of blacksmith tools was so great that in the Tio Kingdom of the Kongo, tools were passed down from father to son, rather than placed upon the grave of the elder.

Pere Laurent de Lucques noted that the power of smiths to create and transform also translated to healing. Utilizing their bellows, smiths could heal the sick of their ailments through a remarkably simple process. With their bellows, “they blow into people’s faces. If a person is suffering from a disease, he goes to a blacksmith, gives him some payment, and has his face blown on three times. The air that comes out from the bellows is aid to drive evil out of the

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<sup>23</sup> Haaland, 80.

<sup>24</sup> Ibid, 80.

<sup>25</sup> Haaland, 80 and De Lucques, 140. Both authors stress the uniqueness of the Kongo hammer and its link to the ancestors through the act of creation.

<sup>26</sup> De Lucques, 140.

body.”<sup>27</sup> The bellows played a role in driving out impurities whether they existed in metal, ore or men. Mundane items by themselves, in the hands of a smith bellows became part of the transformative process. Other tools used by smiths had mundane origins but were transformed by processed that turned them from unproductive things to highly valued objects in the smith’s world.

The humble anvil was an object of social and commercial significance for the smith and their community. Unlike in Europe the anvil was not an immense block of metal or a steam piston-driven hammer system, but a stone that had been through a purification ritual that reduced the rock from unproductive boulder to hardened and purified anvil stone. In lieu of iron anvils, Kongo anvil stones were specially created from boulders.

The layout of Nzungani iron works included . . . two huge anvil Stones . . . . The preparation of these big anvil rocks was explained as being done in the forests where they were found. They were heated by fire, and as the soft rock chips off in the heat only the core remained, a hard anvil stone. Many pigs would have to be killed for the moving of such stones, because many people from villages around would be congregated for this work, especially carrying the stones to the atelier.<sup>28</sup>

The process of creating an anvil stone was a task that connected the smith and their community. Only a wealthy man could afford to pay for labor in pigs, but the payment held symbolic and real value. The smith profited from the in-kind payments he received for his work and in return the people would have access to iron tools. It was an exchange that united people and in aiding the smith in creating anvil stones, the villagers were sharing in the generation of power, power that was created through working and trading in iron.

Iron was an element that symbolized power for Kongo kings. Iron was power and wealth, and gave stability to trade networks and commercial transactions that in Europe were played by silver. Vansina identified that in the Kongo economic and social system, iron and copper (as opposed to gold and silver) were used for wealth transfers of many kinds and in a region infested with tsetse fly, fulfilled the same role as cattle in other regions.<sup>29</sup> Indeed, the power of a leader, both literally and figuratively, depended upon his access to metals, especially

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<sup>27</sup> Ibid, 140.

<sup>28</sup> Janzen, “Ironworking and Tools of Iron,” 2.

<sup>29</sup> Vansina, Jan. *Paths in the Rainforests*. Madison, Wisconsin: University of Wisconsin Press, 1990, 60.

iron. In places where good ores could be mined, smelting centers appeared and trade in iron resulted in the production of a prestige commodity and power.<sup>30</sup> Iron provided a stable medium of exchange that could be used for weapons or agricultural implements by the majority of the populace, and ceremonial items by elites. It was so valuable that it formed one leg of the Kongo currency triad along with copper and raffia squares.<sup>31</sup> Iron and iron products were a valuable medium of exchange and in aggregate displayed the military might of kings as well as their productive capacity to potential enemies and allies. Iron also formed the stuff of dreams.

Those fortunate enough to possess lands containing rich iron ores could use their dominance in metal to create kingdoms. Iron was useful as a bargaining tool in social situations and in places such as the lands north of the Gabon River estuary, “*bikie*, or iron rod currency was the currency used for social payments.”<sup>32</sup> This tradition exists today in other regions as well. Essomba, who has examined iron’s role in countries such as Cameroon and Nigeria, agrees that, “oral traditions are unanimous on the subject: bride payments could be made in the form of iron implements and weapons that if sufficient, could purchase a man a bride.”<sup>33</sup> In Kongo iron was also a means by which a House could generate power through marital alliances.

Power could be gained through peaceful or warlike means. Iron served as a readily accepted means by which two groups could create an alliance without overt form of dominance such as warfare. Iron ore, raw metal and objects became part of the bride wealth exchange, and Houses that could produce iron or that had amassed significant iron wealth could become hegemonic powers at a rapid rate through marriage.<sup>34</sup> These aspirations however rested on some assumptions on the part of the Houses: if an iron producer with smelting furnaces and smiths, great quantities of ore and charcoal were required. The economics and ecology involved in iron production are significant over a long time span, especially in regions that imported ore.

Iron deposits in the Congo basin vary widely in purity. Iron is mainly found in the east, in the [Virunga] mountains of Nsundi province, with the best for agricultural implements being

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<sup>30</sup> Ibid, 60.

<sup>31</sup> Ibid, 154.

<sup>32</sup> Vansina, *Paths*, 206.

<sup>33</sup> Essomba, Joseph. *Civilisation Du Fer at Societes en Afrique Centrale*. Paris: Editions L’Harmattan, 1992, 455.

<sup>34</sup> Vansina, *Paths*, 104.

found [in the northeastern mountains] at Kiova.<sup>35</sup> If a leader ruled an area distant from these iron-rich regions, he would by necessity impose dominance through conquest, or trade. However, the possession of iron ores was not a guarantee of success in iron production. Ores varied in mineral content and if a ruler lacked sufficient charcoal reserves, his smiths could not mass-produce iron.

Charcoal is the most important material used in the iron smelting process since it is key for reduction of the ore and produces carbon, which influences the hardness and usefulness of the iron produced. Carbon content affects the brittleness of iron and what a smith may manufacture it into.<sup>36</sup> Charcoal may be produced from a number of different trees, but the efficiency of the process varies between soft and hard wood trees. If a ruler wanted a vast amount of iron produced, he would be compelled to harvest a vast amount of trees for his smiths. Former furnace sites can be located by studying the vegetation since iron production requires large amounts of wood for charcoal and plays a large role in deforestation. Many open spaces are also used to create charcoal for furnaces.<sup>37</sup> Charcoal could be produced near furnaces in beginning stages of iron production, but as trees were consumed, the furnaces would need to be relocated or more charcoal brought in by slaves. The availability of charcoal depended greatly on the type of trees available.

Ratios have been worked out by scientists to express how much charcoal could be produced from a single tree. Hardwood is the best for charcoal and creates more charcoal than soft wood trees. The ratio is in some cases as high as 1.1 to .4 or three to one for tree harvesting. Deforestation can accelerate under such conditions. Charcoal production is time consuming as well and the wood must be tended during the process to ensure that the charcoal burns evenly.<sup>38</sup> Additional figures express the potential output of charcoal fired furnaces. One example from 1917 comes from Burkina Faso where it was estimated that five hundred nineteen tons of iron were produced by fifteen hundred furnaces using traditional techniques.<sup>39</sup> Expressing the industrial process behind iron production is highly technical. Instead of examining the chemical

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<sup>35</sup> Thornton, John. *The Kingdom of Kongo*. Madison, Wisconsin: University of Wisconsin Press, 1983, 34.

<sup>36</sup> Dupre, Marie-Claude and Pincon, Bruno. *Metallurgie et Politique en Afrique Centrale*. Paris: Editions Karthala, 1997, 82.

<sup>37</sup> Ibid, 86.

<sup>38</sup> Dupre, 87.

<sup>39</sup> Ibid, 142.

processes, I believe that the immensity of Kongo iron production capacity may be expressed through the economic relationship between ore, charcoal, smelting and finished product.

Dupre estimates that it requires thirty trees that are fifteen centimeters in diameter to produce one hundred fifteen kilograms of charcoal. Depending on the purity of the ore employed, the amount of charcoal, and type of furnace the results vary. One cubic meter of ore about seven hundred kilograms, will usually yield sixty to ninety kilograms of iron.<sup>40</sup> As an example of what a smith and his helpers may produce in a given time period, it takes five to ten hours of work to produce approximately two pounds of iron, or an axe head and a hoe head.<sup>41</sup> Further examination of the requirements a smith was expected to fulfill to meet his community's agricultural tool demands illustrates the power a king could wield if he controlled high quality ore deposits, and employed many smiths. To meet annual needs for a population of four hundred to two thousand persons a smith would be required to perform between sixty and three hundred smeltings.<sup>42</sup> This works out to one smelting approximately every six days for a small population or every day for a larger one. This rough calculation demonstrates the need for multiple smiths for large communities just to meet basic tool iron needs. In times of war the ability to supply large numbers of warriors with weapons of war was a true and tangible symbol of a ruler's power. War took time to plan and the logistical requirements would be immense.

In the pre-colonial period, iron production was one area in which Kongo rulers could control their relationship with other kingdoms. Possession of iron meant military power and trade dominance. Iron tools also meant increased agricultural output and potential food surpluses. Without the agricultural tools forged by the smiths, the large populations of Congo towns would not have been possible. Iron tools made agriculture on a large scale possible in the Congo Basin<sup>43</sup> and were in great demand for that exact reason: more food meant more people and more power. The Portuguese were among the first to trade in iron goods, exporting copper and iron manilas starting in 1470 to the Gold Coast.<sup>44</sup> Other iron trade goods included knives, weaponry, containers, firearms and tools like scissors.<sup>45</sup> While Alpern's observations concern mainly the

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<sup>40</sup> Dupre, 164.

<sup>41</sup> Ibid, 144.

<sup>42</sup> Ibid, 145.

<sup>43</sup> Gondola, Didier. *The History of Congo*. London: Greenwood Press, 2002, 24.

<sup>44</sup> Alpern, Stanley. "What Africans Got for their Slaves: A Master List of European Trade Goods." *History in Africa*, vol. 22, 1995, 13.

<sup>45</sup> Ibid, 18.

Gold Coast, such iron trade goods could enter Kongo commercial systems if smiths were unable to create the items, or if the Kongo kingdom was unsettled by war. Importing European luxury items made of iron was understandable if the items were to be displayed as prestige goods, or used to equip soldiers as with muskets.

Two examples of European efforts to compete with African iron production highlight the degree of skill possessed by Kongo smiths. The first was a Portuguese effort to establish an iron foundry in Angola in the 1750s. The foundry was unsuccessful in transferring technology to Kongo black smiths; rather, “it concentrated smiths from across the colony in one area under one wage-labor system.”<sup>46</sup> Such methods were a tacit recognition of Kongo ironworking skill. The Portuguese foundry at Novas Oerias utilized European techniques was unsuccessful, never becoming competitive with Angolan smiths.<sup>47</sup> The iron produced by Kongo smiths was superior to that of European imports produced under European processes.

There was no incentive to replace Kongo iron with European iron unless Kongo iron was unavailable. European iron of the period contained a high amount of sulfur and when compared to the high carbon steel produced by Kongo iron processes, was less durable, a “rotten” metal.<sup>48</sup> European iron was the second choice, whether the purchaser was from Asante, Yoruba or Kongo. The key to the gradual acceptance of European iron was ecological disaster. Gaucher (1981) believes that deforestation led to increased reliance on pre-forged European iron bars that could be carbonized in furnaces using less charcoal than smelting iron from ore. In a similar development elsewhere in the world, English iron production was crippled by the depletion of English forests for charcoal for English forges. In 1750 the Iron Act would force their American colonies to export their iron exclusively to England. This was amongst other well-known reasons one of the grievances the colonists had against the English crown and a contributory factor the American Revolution.<sup>49</sup> Another series of wars in Kongo however would ensure that the technical expertise to support English demand was in existence in America, albeit as slave

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<sup>46</sup> Thornton, John. “Precolonial African Industry and the Atlantic Trade, 1500-1800.” *African Economic History*, no. 19, 1990-1991, 16.

<sup>47</sup> *Ibid*, 16.

<sup>48</sup> Goucher, Candice. “Iron is Iron ‘til it is Rust: Trade and Ecology in the Decline of West African Iron-Smelting.” *Journal of African History*, vol. 22, no.2, 1981, 179.

<sup>49</sup> Cornwall Iron Furnace, [www.phmc.state.pa.us/ppet/cornwall](http://www.phmc.state.pa.us/ppet/cornwall), p. 3.

labor. When African techniques could no longer create high quality carbonized iron (steel) the lower quality European iron became a necessity.<sup>50</sup>

Lower quality iron also became more acceptable as the need to supply large numbers of warriors (numbering in the hundreds of thousands) with weapons quickly pushed out considerations of artisan-quality steel versus “rotten iron” imports. War broke out in the Kingdom of Kongo and after 1665; much of the stability and access to iron ore and charcoal necessary for smiths to ply their craft was disrupted. Many Kongo people were sold as slaves and their skills became invaluable in New World settings as blacksmiths, charcoal makers and ironworkers for their colonial masters.<sup>51</sup> Slaves were relied upon to produce vital components for the forges and as their skills in iron working became evident, their importance to colonial economies grew.

In the Americas charcoal was the dominant fuel for iron smelting up until the 1850s,<sup>52</sup> unlike Europe where it was coal. African expertise in charcoal production was sought out and men and women who were experts in charcoal were highly desired. Goucher cites Clifton Forge in Virginia where thirty-two slaves made charcoal to support smelting operations and Winkle Village in Guyana as examples of how slaves with knowledge about iron production were employed.<sup>53</sup> Charcoal was a product that took skill to produce and familiarity with the varieties of wood that produced the best charcoal for the desired iron working operation. Slaves with technical expertise could and did negotiate their way through colonial industry on the merit of their iron making skills and were accordingly more valuable to their owners.

In New World locales where slave blacksmiths were heavily relied upon to meet the iron demands of the rural and urban populace, the skills of smiths enabled them to successfully negotiate better conditions and pay.<sup>54</sup> On the other hand, the skills of smiths also enabled them to resist the demands imposed by colonial regimes. Goucher wrote that Morant Bay in Jamaica was home to ironworkers and their families who rebelled against British colonial rule.<sup>55</sup> While Landers cited numerous examples of Kongo maroons in Hispaniola who escaped their Spanish

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<sup>50</sup> Ibid, 189.

<sup>51</sup> Goucher, Candice L. “The Memory of Iron: African Technology in the Americas.” National Park Service, Places of Cultural Memory Conference, Atlanta, GA, 2004, 64.

<sup>52</sup> Goucher, Candice. “Iron is Iron,” 181.

<sup>53</sup> Ibid, 65.

<sup>54</sup> Thornton, “Precolonial African Industry,” 17.

<sup>55</sup> Goucher, “The Memory of Iron,” 65.

masters to resist their demands. Kongo smiths played active roles in resistance movements and were sought out by fellow escaped slaves for their ironworking skills.

In 1594 a maroon leader called Lemba (a link to Kongo) led a successful military force that utilized African military techniques and guerrilla warfare to resist colonial dominance on Hispaniola. Lemba recognized his need for iron weapons and to facilitate his military campaigns, acquired a “supply of steel and iron and a slave blacksmith.”<sup>56</sup> Landers astutely hypothesized that Lemba may have taken the smith due to his symbolic importance and link to kingship myths of Kongo.<sup>57</sup> Beyond symbolic value however is the practical value of such a technical expert. Smiths could manufacture weapons, iron trade items and as Landers notes, “the Bahoruco maroons were trading for iron and steel from which to fabricate arrow points and short, broad swords...the Archbishop commented that the men were good archers and ironsmiths.”<sup>58</sup> Steel is difficult to work into weapons unless the fabricator, or smith has skill in forging metal at very high temperatures and knowledge of weapon design. The evidence of Kongo-style weapons and worked steel indicated that Kongo smiths were practicing their ancient art in the New World and providing the means for active military resistance to colonial control. Trade in iron and steel could only logically be due to the presence of at least one smith capable of working such metals. Therefore period observations confirm that Kongo smiths were integral parts of resistance movements.

Evidence of the vital role played by maroon smiths was discovered at the Jose Leta site in which iron weapons, furnace slag and coiled metal bracelets were found. Each item has significance, but the last item is one of the kingship regalia of Kongo and may be a possible link to Kongo tradition.<sup>59</sup> Iron weapons take time to create. If the weapons were created from existing iron stock, the furnace would be employed to shape the iron into the desired tool or weapon. However, slag indicates that mining, charcoal making and traditional Kongo practices were being employed by the maroon communities to make their tools and weapons. Large communities existing in the mountains and forests also indicate that smiths were producing

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<sup>56</sup> Landers, Jane. “The Central African Presence in Spanish Maroon Communities.” In *Central Africans and Cultural Transformations in the American Diaspora*, ed. Heywood, Linda, 227-242. Cambridge: Cambridge University Press, 2002, 234.

<sup>57</sup> Ibid, 236.

<sup>58</sup> Ibid, 236.

<sup>59</sup> Landers, 236.

agricultural implements such as hoes, axes, machetes and adzes for their communities. One cannot effectively farm with short swords or harvest crops like manioc with arrows.

A dichotomy existed between the roles of slave smith and free maroon smith, centering on control of the smith's skills. Both communities wanted the smith's iron products, but for different reasons. Whether the Kongo smith was employed in Virginia, the Carolinas, Florida, Guyana or Hispaniola, the smith enabled a vital sector of colonial economies to be profitable. French plantations needed smiths to repair and forge machetes for cane cutters, the British needed their charcoal experience, and the Spanish wanted their compliance against other competing colonial powers. These examples are but few of many of the roles played by former Kongo peoples and slave smiths in the New World. As the Portuguese found to their dismay, even in Africa where it was assumed there would be a market for European iron goods, they needed Kongo smiths to make their iron exports to other parts of Africa competitive.

Other colonial powers also recognized the vital function of the smith in their economies. The British colonies used as examples -- Virginia, Guyana and Jamaica -- were rich in all the materials required to successfully produce ironwares. The Kongo slave smith was the final piece the colonial system needed to be successful on a large scale. It is impossible to judge the impact of Kongo smiths upon New World iron industry, but it can be hypothesized that their influence was formative and profound given their skill and numbers, especially after 1700. When smiths supported maroon groups, colonial powers feverishly sought to destroy their towns and peoples through whatever means available. Iron was a valuable tool for maroon resistance and when the skills of the Kongo slave were turned against colonial oppressors, they facilitated resistance while depriving colonial economies of valuable export products and vital services within colonies.

Kongo smithing was and remains a rare occupation that signifies elements of creation, power and wealth. A unique caste, Kongo smiths wielded political power, carried out religious ceremonies and channeled the energies of creation during the height of the Kongo kingdom. Their place in Kongo society was significantly more important than that of their counterpart in Europe of the period. The need for iron was so great in Kongo that historians (Goucher, Thornton) have hypothesized that by producing iron in great quantities that African iron producers devastated their environments and marginalized themselves by increasing reliance upon European imports as charcoal supplies dwindled. Their skills in iron making would be

influential in New World settings where charcoal was in great supply and the need for iron production great. Their skills enabled the export of iron from America in mass quantities, much like their skill had enabled iron trade across the massive Congo Basin.

Others have chosen to examine the oral history and traditions of iron making (Vansina, Janzen, Schmidt) in order to understand the relationship between iron and smiths in West Africa and Kongo society. Beyond the ritual significance of the smith's creative processes and the origin myth of Kongo kings, smiths were a symbol of civilization and stability. The smelting and working of iron required the marshalling of social capital and great organizational skills to be successful. It was marked by innovation in the face of a degraded environment as tuyleres were used to preheat air and by doing so, use less charcoal in the smelting process. Kongo ironworking was also one area in which Africans were demonstrably better than Europeans, and in which Africans could not be matched for high carbon steel production until the late nineteenth century. The techniques used in the sixteenth century and noted by European observers are in existence today. The sacred tools of the Kongo smith are also in evidence, virtually unchanged despite colonialism and competition from modern iron imports.

So did Kongo ironworking skill collapse in the wake of the fall of the Kingdom of Kongo, or did those skills adapt to new trade environments? The expertise of Kongo slave smiths (Goucher, Landers) was successfully applied to New World materials, facilitated resistance and sustained maroon communities or was practiced by Kongo craftsmen in the Congo under colonial rule.

The ironworking skill of Kongo smiths gained over 1500 years was passed down through a caste that defied convenient definition. Kongo ironworking was the skill that enriched Kongo Kings, provided the basis for agricultural advancements in a harsh environment, and cemented social bonds. It could buy you a wife or take your life; enrich or enslave. Kongo iron was practical wealth, and whatever ruler sought power required iron and smiths to bolster their legitimacy, either through kingship ritual or symbolic link with the ancestors of Kongo.

Kongo iron was anything but mundane. Produced in a ritual that mimicked birth, iron had the potential to enhance one's life on many levels. Smiths were able to harness the powers of creation to transform impure to pure and to drive impurity from the sick. Moving between the world of the ancestors and man through ritual, the smith took elements of the Kongo cosmology and united them in a finished iron product. Water, charcoal, metal (iron), white limestone flux,

and red ore; these were the materials used in iron smelting and each had its link to elements of the cosmology. The smith was able to move between *Mpemba* and its spirits and the physical world to create iron. His was a skill that could draw admiration from colonial slave masters, while allowing resistance through creation and the practice of Kongo religion under the noses of the overseers. The act of a Kongo smith creating iron in the New World was a link with the Kongo ancestors and by practicing their trade; the link with the past was maintained.

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