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Commodity and Anti-commodity: Linked Histories of Slavery, Emancipation and Red and White Rice at Sierra Leone¹

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Two species of rice are cultivated in West Africa. African rice (*Oryza glaberrima* Steud.) was domesticated in the region and today remains locally important.² Asian rice (*Oryza sativa* L.) is a widely cultivated exotic. The first introduction of Asian rice is unknown, but is assumed to have resulted either from trans-Saharan and/or Atlantic trade contacts. Asian rice grains can have either red or white pericarp (skin) colour.³ Farmers in West Africa have japonicas and indicas of both colours.⁴ All African rice, however, has a red pericarp, and the red colouring transfers to the starchy endosperm in cooking. African rice was an important crop for victualling slave ships from the Upper West African coast.⁵ Traders and British officials at the colony for freed slaves at Sierra Leone (founded in 1787) were convinced that red rice would not sell on overseas markets.⁶ Accordingly, they made strong efforts to promote the cultivation of white rice as an export crop. African rice ceased to be involved in international commerce with the ending of the slave trade, though it was still produced locally.⁷ In this paper we reconstruct the story of rice-seed selection in the hinterland of Sierra Leone (Figure 1) from a point where a ‘colour bar’ for rice was associated with the slave trade and abolition to a point where emancipated growers were free to make their own seed choices.

¹ This is an extended and refocused version of a chapter from Francesca Bray et al. (eds), *Global Rice: Promiscuity, Knowledge and Power*, Cambridge: Cambridge University Press, forthcoming 2012.

² Speculation by Roland Portères (‘Berceaux agricoles primaires sur le continent africain’, *Journal of African History* 3:2 (1962), pp.195-210) that the Inland Delta of the Niger was the area of domestication has received some recent genetic support (Zhi-Ming Li et al., ‘Genetic diversity and domestication history of African rice (*Oryza glaberrima*) as inferred from multiple gene sequences’, *Theoretical and Applied Genetics* 123 (2011), pp.21-31). Further sampling, including materials from the Togo Hills (Ghana and Togo) now seems desirable. Early consumption of wild rice (*O. barthii*) is reported for the Lake Chad basin (M. Klee et al., ‘Four thousand years of plant exploitation in the Chad Basin of north-east Nigeria I: the archaeobotany of Kursakata’, *Vegetation History and Archaeology* 9 (2000), pp.223-37). Selection pressure for domestication may have occurred over a wide area (Jack Harlan, ‘Agricultural origins: centers and noncenters’, *Science* 174 (1971), pp.468-74).

³ The term ‘red’ is here used to cover red, brown, purple, pink and orange. Recent research suggests that several genes exist for white pericarp and that one belongs to the japonica line of descent (Sweeney et al., ‘Global dissemination of a single mutation conferring white pericarp in rice’, *PLoS Genetics* 3:8 (2007), pp.1418-24).

⁴ It follows that scholars interested in the history of rice in West Africa should avoid species or sub-species identifications on grain pericarp colour alone. ‘White rice’ is also used in commerce to mean polished rice.

⁵ A report on the slave trade noted that “the quality of rice is very good, and particularly that which grows on the Hills and Sloping Ground. The Quantity purchased annually for Consumption of the Ships and Factories may be from 700 to 1000 tons” (‘Report of the Lords of Trade on the Slave Trade 1789’, *House of Commons Sessional Papers of the Eighteenth Century*, Vol.69, George III, Part I, pp.66 & 71). The crew of a slave vessel from Sierra Leone (Bance Island) to Charleston in 1796 lived “upon red rice and salt beef... the whole passage” (Bruce Mouser, ‘The voyage of the good sloop *Dolphin* to Africa 1795-1796’, *The American Neptune* 38:4 (1978), p.260). Samuel Gamble, master of the slave vessel, the *Sandown*, recorded in his log for 12 November 1793 that he “receiv’d on board one ton and a half of red rice” (Bruce Mouser, *A slaving voyage to Africa and Jamaica, The log of the Sandown 1793-1794*, Bloomington: University of Indiana Press, 2002, p.86).

⁶ A bias against red rice in international commerce still applies (Donald Grist, *Rice*, London: Longmans, 1975).

⁷ Some groups in West Africa (e.g. Guinea Bissau) prefer white types, and some red (e.g. Sierra Leone).

Commodity and anti-commodity

A commodity is a product shaped for sale. The process of shaping fits the commodity for abstract exchange. Grades, standards, dimensions and specifications are important in commodity dealing. Power is placed in the hands of merchants and inspectors to reject an item as not of sufficient quality. The hidden hand of the market sets the price and the producer has only limited scope to argue. The only option other than accept commodity discipline is to withdraw from the market. This is what in effect happened during the cocoa hold-ups in West Africa in the 1930s. Farmers went on strike, and withdrew or destroyed their produce when world prices fell. There were no alternative uses for cacao than to send it to the chocolate manufacturers on their terms. Where an item has alternative uses producers enter the market on better terms. The 'maguzawa' (peasant groups living in the more far-flung rural peripheries of the great Hausa city-states of northern Nigeria)⁸ had options to sell grain to the cities when prices were high or to turn sorghum and millet into beer when prices fell. Two factors were combined in the conversion of grain to alcohol - technologies of brewing and distillation (the latter to give an extended shelf life to the local product) and a social system capable of making good use of periodic boosts in beverage supply. Many West African savannah grain-producing peasant communities use alcohol to fuel work parties and social festivals.⁹ Weddings, birth ceremonies, initiations and memorial ceremonies are to some extent time-flexible. When the price for grain on urban markets dropped the surplus grain would be used to discharge a backlog of obligations through which the fabric of social cooperation was renewed.

Where a product is 'engineered' to have counter-cyclical uses we can meaningfully talk of an anti-commodity: something produced in such a way that price shocks associated with an over-reliance on commodity production can be absorbed. To decide whether or not an item is an anti-commodity we need to be able to demonstrate something specific about the configuration of local production processes guaranteeing alternative, shock-damping usages. For instance, the story of the oil-palm revolution in southern Nigeria in the late-nineteenth and early-twentieth centuries is not just the story of European industrial demand and the reorganisation of agricultural labour for production of an export crop. It is also the story (from the time of the Great War onwards) of the spread of distillation technologies allowing 'surplus' palms to be tapped for palm wine, and turned into gin for social ceremonies. Colonial hostility to the spread of distillation technology was not, of course, misplaced. The spread of local gin undermined a lucrative source of tax revenue from imported alcohol, and served to ease the stranglehold of export commodity merchants over local producers of palm products.

This paper traces out the re-engineering of another anti-commodity. It concerns the introduction of 'white' Carolina rice to the abolitionist settlement at Freetown in the early-nineteenth century. White rice was intended to be an export commodity to help provide the new settlement with its revenue base. But the Sierra Leone peninsula is mountainous, and the only places in which white rice could be produced were slave estates in the more distant interior. As the slave trade declined slaves were switched to the production of white rice as

⁸ Murray Last, 'The early kingdoms of the Nigerian savanna', in Jacob Ajayi & Michael Crowder (eds), *The history of West Africa* Vol. 1 (3rd edition), Harlow: Longman, 1985, pp.167-224.

⁹ See, for example, Mahir Saul, 'Beer, sorghum and women: production for the market in rural Upper Volta', *Africa* 51 (1981), pp.746-64; and Comfort Kudajie et al., 'Assessing production constraints, management and use of sorghum diversity in north-east Ghana: a diagnostic study', *NJAS-Wageningen Journal of Life Sciences* 52 (2004), pp.371-91.

an export commodity. Our paper shows what happened to ‘commodity’ rice when it was reshaped by local farmers to serve emancipatory purposes. The process of anti-commodification was so successful that local selections from Carolina rice (many no longer white, but having the locally preferred red pericarp) today out-compete, both in productivity and plasticity, so-called ‘improved’ and commercial seeds.

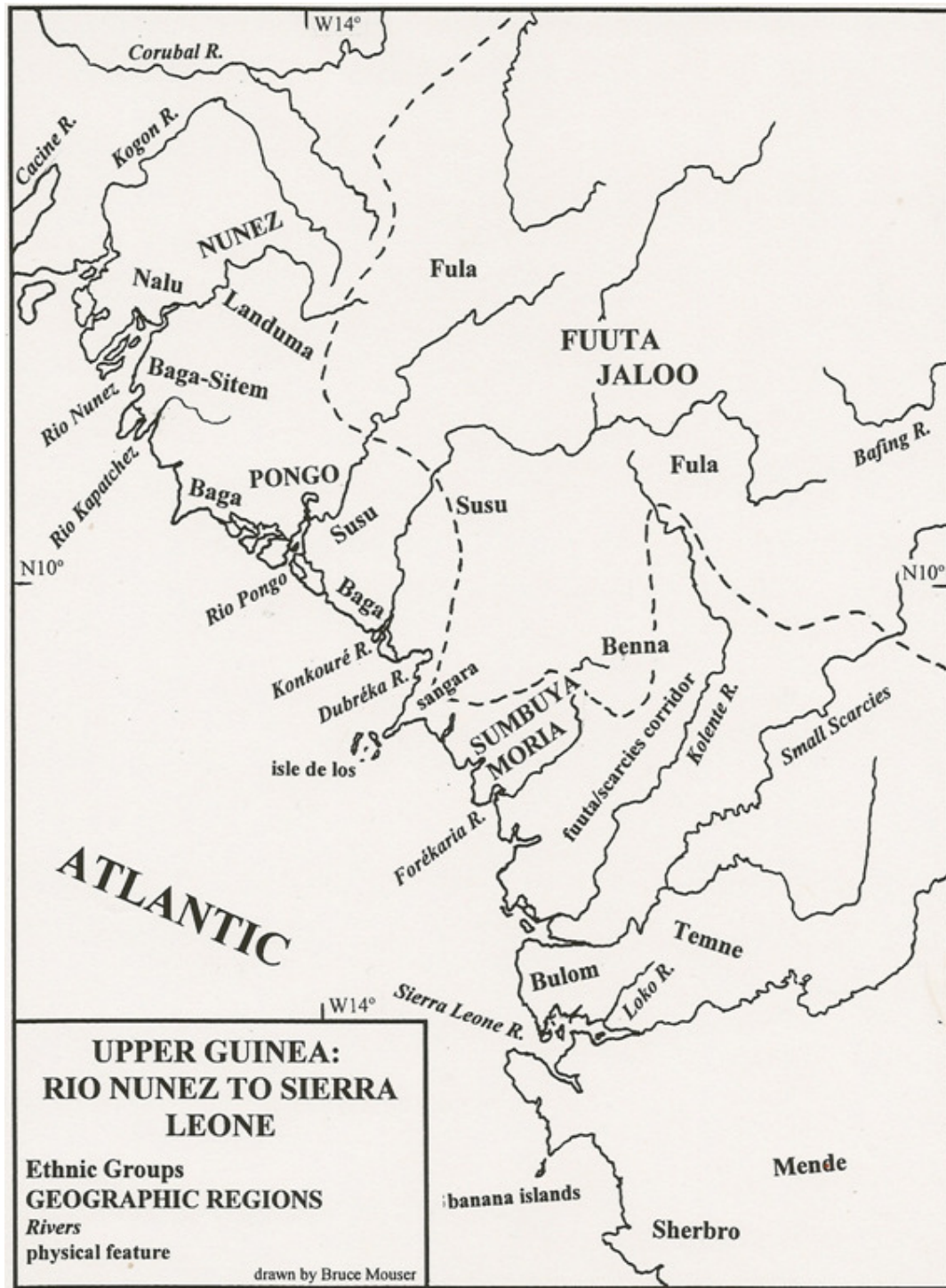


Figure 1: Upper Guinea coast in the vicinity of Sierra Leone

Rice in West Africa

Rice in West Africa is found in two major localities. It is associated with the great river valleys of the savanna, from Mauretania to Lake Chad, where it was often once grown by slaves, but is in some localities now mainly a woman's crop.¹⁰ It is also the main staple of the Upper West African coastal zone (from Cote d'Ivoire to Senegal), where it is generally grown by peasant households. Two major and dissimilar sorts of rice cultivation are practised in the coastal zone: on coastal mangrove soils and on interior interfluves.

On the savanna section of the Upper West African coast rice is particularly associated with mangrove wetlands. The Jola people of Casamance may have been the pioneers of this cultivation.¹¹ Mangrove-rice farming is labour-intensive, both to clear mangroves and to construct the dikes necessary to exclude estuarine salt water in the dry season. Other groups (for example the Baga of Guinea) may have cultivated some rice in the mangrove zone at an early date.¹² Hawthorne suggests that large-scale mangrove-zone rice cultivation spread to the Balanta of Guinea Bissau only during the era of the Atlantic slave trade. There was variation in the types of rice cultivated in the mangrove zone. Balanta mangrove-rice cultivators were early users of imported Asian rice types "introduced to West Africa by Atlantic merchants in the sixteenth century", whereas Diola (Jola) grew only "an ordinary [African] rice, very small, but with a good taste" and dark colour (presumably African rice).¹³

Mangrove-rice cultivators on the Upper West African coast have occasioned an impressive body of scholarly literature,¹⁴ but the mangrove-rice crop itself was probably dwarfed by the output of African rice cultivated by dryland methods on interfluves in the coastal plains and escarpment zone of the Upper West African high-rainfall zone.¹⁵ Local dryland cultivation – often, in practice, a farm laid out from hill crest to valley swamp¹⁶ – was a main source of red rice for the slave ships in the heyday of the Atlantic trade. Slave vessels trading higher on the coast sometimes sent cutters down to Sierra Leone or Cape Mount to purchase this rice.

Slavers, despite the brutality of their trade, were conscious of a need to feed slaves well, since this affected their condition on arrival, and thus the profits of the voyage. On-board slave resistance included the hunger strike, against which a technique of force feeding

¹⁰ Judith Carney, 'Converting the wetlands, engendering the environment: the intersection of gender with agrarian change in The Gambia', *Economic Geography* 69:4 (1993), pp.329-48; Edwin Nuijten, 'Gender and the management of crop diversity in The Gambia', *Journal of Political Ecology* 7 (2010), pp.42-58).

¹¹ Olga Linares, *Power, prayer and production: the Jola of Casamance, Senegal*, Cambridge: Cambridge University Press, 1992; and 'African rice (*Oryza glaberrima*): history and future potential', *Proceedings of the National Academy of Sciences (PNAS)* 99:5 (2002), pp.16360-5).

¹² Edda Fields-Black, *Deep roots: rice farmers in West Africa and the African diaspora*, Bloomington: Indiana University Press, 2008.

¹³ Walter Hawthorne, *Planting rice and harvesting slaves: transformations along the Guinea-Bissau coast, 1400-1900*, Portsmouth NH: Heinemann, 2003, pp.152 & 159.

¹⁴ For example, Fields-Black (2008), Hawthorne (2003), Linares (1992), Daniel Littlefield, *Rice and slaves: ethnicity and slave trade in colonial South Carolina*, Urbana: University of Illinois Press, 1981; and Ramon Sarro, *The politics of religious change on the Upper Guinea coast: iconoclasm done and undone*, Edinburgh: Edinburgh University Press for the International African Institute, 2009.

¹⁵ Under-representation of the importance of dryland-rice cultivation is a general feature of the literature on rice. Grist (1975, p.179) notes that "Dryland rice is grown on nearly a quarter of the world's rice area [but] despite its importance... has received far less attention than it deserves from both cultivators and investigators".

¹⁶ Paul Richards, *Coping with hunger: hazard and experiment in an African rice-farming system*, London: Allen & Unwin, 1986.

was developed, using a tool known as the *speculum oris*.¹⁷ Red rice was preferred because it was the staple food of captives from the Upper West African coast and readily available. Quite erroneously, it was thought less likely than white rice to induce “bloody flux” (dysentery), one of a slave voyage’s greatest hazards.¹⁸ More plausibly, African rice was considered to be nutritionally superior to other forms of rice.¹⁹

White rice and abolition

A group of British evangelical Christians centred around Granville Sharp and William Wilberforce spearheaded attempts to persuade the British parliament to abolish the Atlantic slave trade. A major step was to establish a settlement for freed slaves at Sierra Leone in 1787, at the heart of an important late-eighteenth century slave-exporting region. Planned by Sharp, the first settlement at Sierra Leone (Granville Town) failed, and was replaced by a company venture intended to offer an economic basis for emancipation. The governor (at various periods) from 1794 to 1799 of this second settlement (Freetown) was a Scottish abolitionist, Zachary Macaulay. Trained in trade in Glasgow and apprenticed to plantation management in the West Indies, Macaulay applied his business and accounting skills to the problem of the economic survival of the infant colony. The Freetown settlement became a British Crown Colony in 1808, after the passing of a parliamentary bill outlawing the Atlantic slave trade. Macaulay maintained his connections to Sierra Leone as an adviser to his successor as governor (Thomas Ludlum) and through the activities of his London trading house, Messrs. Macaulay and Babington.²⁰

A key focus of Macaulay’s advice was the need to develop export-oriented agriculture. Sierra Leone was not an agricultural colony: the topography was against it. Labour supply was also a problem, since slavery was banned. Macaulay proposed a system of indentured labour to replace slavery, but this was criticised as reintroducing slavery by the back door. In any case, those who acquired their freedom by being settled at Freetown preferred to trade, so Sierra Leone would be an unlikely source of agricultural exports. It could, however, be a centre of agrarian commerce and export agriculture for the surrounding region. This required efforts to stimulate such exports. Macaulay considered coffee, indigo and cotton. Since Freetown constituted a considerable market for food shipments from surrounding districts Macaulay was also keen to encourage the re-export of rice. This, he hoped, would help divert food supply from the slave trade. Macaulay and Ludlum were clear, however, that the London commodity market would not accept red rice.²¹ If the plan was to succeed Freetown needed to broker the export of white rice.

¹⁷ Marcus Rediker, *The slave ship*, New York: Viking, 2007, p.17.

¹⁸ Rediker (2007), pp.271-2, 274; Paul Richards, ‘Culture and community values in the selection and maintenance of African rice’, in S. Brush and Doreen Stabinsky (eds), *Valuing local knowledge: indigenous people and intellectual property rights*, Washington DC: Island Press, 1996a , p.217.

¹⁹ Thomas Clarkson wrote that “it is extraordinary that this rice should be finer in flavour, of greater substance, more wholesome, and capable of preservation, than the rice of any country whatsoever” (cited in Thomas Winterbottom, *An account of the Native Africans in the neighbourhood of Sierra Leone*, Vol.1, London: C. Whittingham, 1803, p.55). Thomas Jefferson imported a barrel of the seed of African rice for trial at Monticello, and for distribution to planters in Virginia, Georgia and the Carolinas, to improve slave subsistence (Richards 1996a, pp.216-20).

²⁰ Thomas Babington was Macaulay’s brother-in-law, and his initial link with the Clapham Sect, a group of evangelical Christians committed to the abolitionist cause.

²¹ Zachary Macaulay, *A letter to His Royal Highness the Duke of Gloucester, President of the African Institution*

Macaulay offered ‘proof of concept’, even as the Abolition Bill was before Parliament, by importing a consignment of a hundred tons of white rice from Sierra Leone, for which he applied for a prize offered by the African Institution.²² The amount he shipped was equivalent to between 10 and 15 percent of the total parliamentary estimate of annual commercial output of red rice for the slave ships. But where had the seed of white rice come from? Did Macaulay supply seeds to local planters? He certainly had the contacts to do so, but we have found no direct evidence for this. It seems more likely that white rice had already been introduced.

White rice may have reached the region of Sierra Leone in the Portuguese period of trade dominance. A Cape Verdean trader, Andre Donelha, who visited Sierra Leone around 1574, described a rebel community hidden in the Orugu Valley of the Peninsula mountains where (he claimed) the rice was as white as that at Valencia.²³ White japonicas were (and remain) among the main rices grown in Mediterranean Europe, and probably passed into Iberia from North Africa via the Moors.²⁴ But this is unlikely to have been the source of any white rice at Sierra Leone in the sixteenth century, since temperate japonicas appear not to be well-adapted to the West African climate. Any early (Portuguese) introduction at Sierra Leone is more likely to have been a tropical japonica from the East Indies. The remoteness from regular trade ascribed to the rebel community might have been effective in preventing out-crossing between white arrivals and local red varieties. Seemingly, Donelha visited the Orugu valley only after the camp had been destroyed, so it is hard to see how he knew what colour of rice the rebels had grown. Perhaps he drew on information from those who guided him to the spot. Some local farmers may have continued to cultivate this early japonica, but the possibility of it remaining white seems slight.²⁵

A more likely source of the seed would appear to be the American slave establishment at the Iles de Los. These traders had direct contact with rice planters in South Carolina. The Rev. Leopold Butscher, a missionary resident from 1806 to 1812 on the River Pongo confirms that Carolina rice had been introduced about ten years before his arrival, remarking “the natives do not think it so nourishing as their own kind”.²⁶

Was the rice reported by Butscher white enough to satisfy Macaulay’s concerns?²⁷ The slave trader Theophilus Conneau, who knew the River Pongo in the mid-1820s, found Carolina rice whiter than African rice though less solid and tasty.²⁸ Was it a japonica?

(with appended items, including various items of correspondence from 1807), London: Printed by Ellerton and Henderson for John Hatchard, 1815.

²² The African Institution (1807-1827) was an important group advocating for emancipation and the development of Africa, and linked royalty, parliamentarians and leading abolitionists. The prize was a silver plate worth 50 guineas, awarded as the bill to abolish the slave trade was before parliament (in 1807). Macaulay returned the value of the prize, as a donation in honour of the passing of the bill. His application was perhaps an ill-judged moment of vanity, since it occasioned some criticism, which Macaulay answers in a pamphlet (Macaulay 1815).

²³ Andre Donelha, *Descricao da Serra Leoa e dos rios de Guine do Cabo Verde*, ed. Avelino Texeira da Mota, trans Paul Hair, Lisbon: Junta de Investigacoes scientificas do ultramar, 1977 [1625], pp.79 & 81.

²⁴ Grist (1975), p.6.

²⁵ Red pigment is dominant and inherited as if a single gene pair is involved (Grist 1975, p.110).

²⁶ Bruce Mouser (ed.), ‘Account of the Mandingoes, Susoos, & Other Nations. c. 1815, by the Reverend Leopold Butscher’, *University of Leizig Papers on Africa, History and Culture Series 6*, 2000.

²⁷ There were two types: Carolina White or Carolina Gold. Gold was named for the colour of its husk, not its pericarp. Its origin is thought to be Indonesia (and thus probably a tropical japonica). Carolina Gold was hard to grow, since it is tall and lodges easily (John Tibbetts, ‘African roots, Carolina gold’, *Coastal Heritage* 21:1 (2006), pp.3-10). Carolina White appears to have been the more widely cultivated variety, and presumably the variety encountered by Butscher on the River Pongo.

²⁸ Theophilus Conneau, *A slaver’s log book, or 20 years of residence in Africa*, Englewood Cliff NJ: Prentice

According to Douglas the grains of Carolina rice were of a “relatively long and bold type”, contrasted with “long, thin, cylindrical grain, known as Patna” and “short, stout grain, known as Spanish-Japan”.²⁹ Patna and Spanish-Japan have the grain morphology commonly associated with indicas and japonicas. The information implies that Carolina rice, if indeed a japonica, had a distinctive grain morphology. A number of current farmer rice selections in Sierra Leone are japonicas with grain types consistent with the description just given.³⁰ Morphological and molecular findings in support of this claim will be assessed in a later part of this paper.

Macaulay’s white rice had to be kept pure by being cultivated beyond out-crossing distance of the normal red-skinned country rices (at this stage predominantly African rice). Butscher reported that Carolina rice was planted in areas of Guinea grass. He is explicit that these grassland sites were different from the “bushy places... [used by local farmers] for the planting of their own sort [of rice]”.³¹ Thus a separation barrier strong enough to keep Carolina rice white is implied. But clearing Guinea grass is very hard work, and hardly attempted by modern farmers except with machines. In the 1790s only landlords with numerous slaves were likely to attempt its cultivation.

Rice as an African slave plantation crop

The basic pattern of rice cultivation first observed in the vicinity of Sierra Leone by European visitors in the late eighteenth century was communal and subsistence-oriented. John Matthews, a trader on the Sierra Leone river, commented that:

the natives... at and about Sierra Leone... cultivate little more rice than is necessary for their own consumption”, noting that “the sides of the hills are generally preferred for their rice plantations.”³²

Each village (according to Thomas Winterbottom, resident at Freetown in the 1790s) cultivated a large field and shared the harvest, pouring rice to height of the village chief as his share. But Winterbottom also noted slave-worked private farms were emerging in the region, especially among the Fula of Futa Jalon.³³

Slave-based plantations also seem to have developed rapidly and extensively in the coastal plain north of Freetown. In the Mandingo state of Moria, founded about 1720, slaves were divided (as elsewhere) into two categories. Household slaves were often locally-born into slave status, and were partially assimilated. Farm slaves came from outside Moria, and were war captives or newly bought. They were assigned to outlying farming villages, where they were closely disciplined and watched. They had few rights, and were in danger of being sold into the Atlantic trade. Matthews estimated that about three-quarters of the population of this region were slaves: “some of the principal men among the Mandingoes have from seven hundred to a thousand [slaves]”. But he also noted that “about the Riopongees [River Pongo] they have three rice harvests in the year; one crop from the hills and two from the plains

Hall 1976 [1856], p.139.

²⁹ Cited in Grist (1975), p.95.

³⁰ Grain morphology, though an indicator, is not proof. This could be obtained by crossing a known indica with a presumed japonica to assess infertility, or through molecular evidence (see Figure 2).

³¹ Mouser (2000).

³² John Matthews, *A Voyage to the River Sierra Leone...*, London: B. White and Son, 1788, pp.23 & 55.

³³ Winterbottom (1803), p.53.

which [the rivers] overflow”.³⁴ The (red) hill rice would surely have been directed towards the slave ships, but the annual “two [crops] from the plains” were a vent for surplus through which Freetown was supplied white Carolina rice.

Cultivation of rice by slaves in the coastal plain apparently began as an *ad hoc* affair. Slaves destined for the Atlantic were put to work temporarily to grow their own food. Matthews noted that:

Every prisoner taken in battle was either put to death or kept as a slave...those captured before the commencement of the rice season... were reserved to cultivate the rice-ground; and sold after the harvest to... tribes bordering the sea....³⁵

From a peak in the 1760s (a decade in which more than one-hundred thousand slaves were exported from the region around Sierra Leone) exports dropped, in the decade of the 1780s, to less than half, in part because imports were curtailed during the American Revolution.³⁶ Slave-raiding war-lords were now forced to devise new forms of work for their captives. This included opportune diversification into white rice supply.

The more formalised system of slave plantations observed by Winterbottom in Futa Jalon also emerged on the coastal plain. Increasingly, farm slaves on the coast claimed rights not to be sold overseas. Where these rights were breached, as in cases where trumped-up charges for witchcraft or other crimes were used as a pretext for selling a slave to the Atlantic dealers, the risk of desertion or outright rebellion increased.³⁷ In 1785 there was a major rising of Bullom, Baga and Temne slaves from Moria.³⁸ The rebels received tacit support from the neighbouring Susu state of Sumbuya. A maroon community took root at Yangekori, a camp at the base of the interior hills. Eventually the Susu and Mandingo slave holders of Sumbuya and Moria combined forces to destroy the camp in 1796.³⁹ This unexpected alliance among trade rivals is itself suggestive of the growing importance of slave-based agrarian production to the region as a whole.

The older pattern of trade in which caravans from the interior shipped down cattle, hides, rice, slaves and gold, in return for salt, cotton cloth, and imported firearms and other

³⁴ Matthews (1788), pp.149 & 56. Butscher mentions the possibility of taking three crops of Carolina rice per year (Mouser 2000).

³⁵ Matthews (1788), p.147.

³⁶ Ishmael Rashid, ‘Escape, revolt and marronage in eighteenth and nineteenth century Sierra Leone hinterland’, *Canadian Journal of African Studies* 34 (2000), p.663.

³⁷ See, for example, David Richardson, ‘Shipboard revolts, African authority, and the African slave trade’, *William and Mary Quarterly* 58 (2001), pp.69-92, on slave revolts in Senegambia. Richardson argues that sale of slaves with acquired rights into the Atlantic trade was a key trigger for revolt. On the process of social declassification see David Lockwood, *Solidarity and schism*, Oxford: Oxford University Press, 1990; and on its application to a more recent revolt in Sierra Leone see Paul Richards, *Fighting for the rain forest: war, youth and resources in Sierra Leone*, Oxford: Currey, 1996b.

³⁸ There is some variation in accounts of the Yangekori rebellion as to its social composition. Bronislaw Nowak (‘The slave rebellion in Sierra Leone in 1785-1796’, *Hemispheres* (Warsaw), 3 (1986), pp.151-69) and Rashid (2000) stress the role of farm slaves. Bruce Mouser (‘Rebellion, marronage and jihad: strategies of resistance to slavery on the Sierra Leone coast, c. 1783-1796’, *Journal of African History* 48 (2007), pp.27-44) stresses the involvement also of domestic slaves as well. If the declassification argument is valid we should look for factors that eroded the rights of both classes of slaves.

³⁹ Fendan Modu of Sumbuya told Richard Bright in 1802 “that common he makes 100 tons of salt and grows 100 tons of rice, exclusive of his own consumption” (Bruce Mouser, ‘Richard Bright Journal 1802’, in B. Mouser (ed.), *Guinea Journals : Journeys into Guinea-Conakry during the Sierra Leone phase, 1800-1821*, Washington DC: University Press of America, 1979, p.80). This must have taken a large labour force, and suggests that slave production was well entrenched by that date.

European goods was far from changed overnight. The rulers of Moria and Sumbuya continued to sell slaves and rice to European and American merchants on the coast. But from 1808 a Royal Navy anti-slavery patrol was stationed at Freetown. Slave shipments from surrounding districts were progressively reduced, while at the same time the growth of Freetown demanded new sources of food supply. The extra two annual harvests that Matthews said the planters of Moria could get from farming their grassy plains must have seemed (as Macaulay hoped) a timely stimulus to legitimate trade.

Moria (with its capital at Forecariah) was the polity most directly in trade contact with the Freetown settlement. The landlord class elected a paramount ruler by selecting among candidates offered by leading families. In 1803 Moria accepted the rule of Almamy Amara, though not without some dispute as to his legitimacy and ability. For the next twenty years Amara became the strong man of Moria politics, and a determined opponent of British policy in the region. After 1807 he remained stubbornly tied to American markets for slaves, as well as obsessed with what he considered to be British attempts to replace his control of Moria. In effect, Amara was caught between contradictory sets of market signals. Part of his wealth came from continued involvement in the slave trade. But part came from trade caravans headed across Moria territory for the emporium of Freetown. Many of these caravans carried the new white rice.

Shared trading interests brought Amara and the Freetown authorities into conflict over emancipation. In an incident in 1814 a large caravan from Moria arrived at Freetown with rice and cattle, whereupon a number of Moria slaves, who were caravan carriers, escaped the control of their owners and requested [governor] Maxwell's protection. Amara's attempts to resolve the impasse included firing off a fiery epistle to Maxwell, in which he stoutly defended his interests in the slave trade.⁴⁰ His own preference surely would have been to continue to supply the slave ships with red rice, but demand for white rice from the colony increasingly engaged the Moria landlords who had elected Amara as chief. Going against their interests risked mobilising rivals for power against him.

By 1821 the British colony was receiving more than two-thirds of its white rice from the plantations of Moria and Sumbuya. Most of this rice came from the area loyal to Amara, but needed to cross lands in dispute before reaching Freetown. Trade tensions in these disputed areas erupted into open conflict when the rebellious Susu vassal town of Kukuna on the Kolenten (Great Scarcies) river continued to ship white rice down the Scarcies River to Kambia where contact with Freetown was fairly secure. Amara was determined to bring the Kukuna rebels to heel, and allied himself with the Mandingo chief of Magbeti, a Temne-Bullom town below Kambia, to blockade the river. He also threatened Moriba of Port Loko, a key trading node for Freetown, with war if the sale of white rice was not halted.

Fearing a threat to its food supply, Freetown was bound to act. Governor Grant sent Major Henry Ricketts and a Lieutenant Austin to Forecaria to ask Amara to reopen the road and allow the cultivation of white rice. Amara temporised, by offering the excuse that trade in all commodities had stopped in the interior because the Moria people were afraid of ambushes by Dala Modu, a trade rival. But he also recognised that pressure for change was becoming increasingly hard to resist. The Atlantic trade was in terminal decline, and the pull of red rice weakening. Amara offered the British a white flag. Or rather, he claimed now to be actively recommending the growth of white rice in his towns.

⁴⁰ Bruce Mouser, 'Moria politics in 1814: Amara to Maxwell, March 2', *Bulletin de l'Institut Fondamental d'Afrique Noire* 35, ser. B No. 4 (1973), pp.805-12.

Farm slavery and self-emancipation in the later nineteenth century

It was not only Amara who faced a dilemma in reconciling slavery and the new commodity trade. The commercial success of the abolitionist enclave also rested on a contradiction: strategic food supplies produced by interior slaves. Officials were not clear how to resolve the problem. Macaulay thought about offering the chiefs a bounty for emancipation, but realised bounty hunting might extend slave raiding and bankrupt the colony. Ludlum feared for trade if the slave-based plantation economy collapsed: “they will weave their own cloth, raise their own tobacco, smelt their own iron, and resume their bows and arrows”.⁴¹ In Ludlum’s eyes a return to subsistence betokened barbarity.

No such reversion occurred, but nor did slavery disappear. The plantation system in Moria was better adapted to commerce in food than either Ludlum or Macaulay had anticipated. It remained the basis for a well-organised interior economy producing white rice for Freetown and red rice for Futa Jalon until the mid-nineteenth century.

The Rev. William Cooper Thomson, passing through Moria as an emissary from Freetown to Futa Jallon in 1842-43, noted that the “farms occupy much space... cultivated by slaves” and that “export of rice to the colony” compensated for the decline in the slave trade. North of Kukuna rice was in short supply in Benna country, due to three years of locust attacks. But many people were said to be hoarding supplies “in the hope of purchasing slaves from their neighbours on the other side of the [Kolenten] river, who were much worse off than themselves”. Canny slave owners were manoeuvring in anticipation that the plantation economy would rebound as soon as the locusts left.⁴²

It was about this time, however, that a new episode of slave revolt occurred, with enduring consequences. Rashid describes how Kukuna became embroiled in the long-lasting Bilali rebellion (1838-72). The son of Alimamy Namina Sheka Dumbuya, the Kukuna ruler, and a Koranko slave woman, and thus born a domestic slave, Bilali was denied the freedom he had been promised on his father’s death. He fled from Kukuna and set up a refuge for runaway slaves in Tonko Limba country at Laminayah.⁴³ The Limba were a free peasant group with little use for slavery. With Limba support, Bilali was able to fend off many determined attacks over three decades.

The conflict drew in participants from as far away as Mende country, and so damaged the region’s trade (not least its food exports) that the British in Freetown repeatedly tried to mediate a peace. Governor John Pope Hennessey, acting on advice from Edward Wilmot Blyden, finally brokered a compromise in 1872-73 that reopened trade routes to Freetown. Bilali’s enemies conceded his right to fight for his freedom, if not to run Laminayah as a refuge for run-away slaves (a ‘New Freetown’). But by the late 1870s “Moriah lapsed into another round of internal civil conflict”.⁴⁴ With the Moria slave-owning elite weakened by in-fighting, the space for free peasants and self-emancipated slaves was enlarged. Pivot of the regional rice trade, in an ethnically mixed region of Susu plantations and Limba farms,

⁴¹ Ludlum to Macaulay, 1807, in Macaulay (1815), pp.50-1.

⁴² William Cooper Thomson, ‘Narrative of Mr William Cooper Thomson’s journey from Sierra Leone to Timbo, capital of Futa Jallo, in Western Africa’, *Journal of the Royal Geographical Society of London*, 16 (1846), pp. 110, 113 & 123.

⁴³ Rashid (2000), pp.673-7. Laminaya was about 40 km ESE of Kukuna on the Little Scarcies (Kabba) river (G. H. Garrett, ‘Sierra Leone and the Interior: to the 3 Upper Waters of the Niger’, *Proceedings of the Royal Geographical Society and Monthly Record of Geography*, 14:7 (1892), pp.433-55).

⁴⁴ Rashid (2000), p.676.

Kukuna became not only the focus of a struggle for political freedom but also of local attempts to redefine seed technologies.

Free peasant and self-emancipated groups provided a conduit for movement of seeds out of the plantation corridor north of Freetown and into the grassy and at times inaccessible bolilands stretching away towards the south-east. The region is named after *boli*, which are seasonally flooded grassy depressions associated with an ancient lagoon system in the extensive coastal plain behind Freetown. The boliland zone, however, contains more than *boli*. It is in fact a region with a huge range of both wetland and dryland niches for the determined cultivator to colonise.⁴⁵ Its more isolated recesses provided refuge for dissident groups from the Sierra Leone civil war in the 1990s.⁴⁶ A thinly populated mosaic of Guinea grass plains and forested islands, the area seems particularly suited to the Carolina rice that Butscher first associated with sites along the River Pongo. The self-emancipated peasants of Laminayah and surrounding areas set about the task of adapting the seeds of the plantation economy to the demands of the kind of small-scale rice production that now prevails over much of lowland Sierra Leone today.

A new source of slave-based food supply for Freetown

Before examining the evidence for this seed revolution ‘from below’, we will trace the slave-based food-supply system down to the point of general emancipation of domestic and farm slaves in 1928 and its aftermath. From 1882 the British and French began to delimit an international boundary through the plantation zone. Boundary delimitation was accompanied by French efforts to divert caravans from the interior away from Freetown and towards the new port of Conakry. Temne and Susu slave owners on the Sierra Leone side of the new border, pressed by looming trade barriers and threats of further interior slave revolts, started to move their assets closer to the Freetown market for rice, and the British protection it afforded. This move rested on the discovery of a simple but ingenious technique to utilise the hitherto neglected high-sulphur mangrove soils on the lower reaches of the Little and Great Scarcies rivers.⁴⁷ This involved keeping soils wet during the dry season (through the daily pumping action of the tides) and then delaying planting until sufficient rainfall and rising fresh water in the rivers washed out excess salt during the first part of the rains. Tall varieties of rice (nursed in adjacent freshwater swamps and river terraces) were transplanted into the riverine mud to ripen on the falling flood.

The initial development of mangrove soils required abundant capital and labour, beyond the assets and command over labour of local free peasant groups such as the Limba. Only landlords with access to large numbers of slaves, and the wherewithal to feed these slaves until the land became productive, could undertake the task.⁴⁸ Mangroves took three years from initial clearing to the point where the rotting process was sufficiently advanced to allow cropping to begin. Within two or three decades up to the start of the Great War most of

⁴⁵ A. R. Stobbs, *The soils and geography of the Boliland Region of Sierra Leone*, Freetown: Government of Sierra Leone, 1963.

⁴⁶ For example, rebel bases at Ro-Source (Sanda Tendaren chiefdom) and Yelima (Kamajei chiefdom)

⁴⁷ Brackish-water mangrove soils cannot be managed using salt exclusion (diking) techniques found further up the coast. The soils contain sulphur oxidised by a bacterium (*Thiobacillus thio-oxidans*) as soon as soil moisture levels are reduced to about 50-60% (Grist 1975, p.22). Polderisation results in severe acidification of drying soil.

⁴⁸ One Susu chief on the Great Scarcies had as many as 800 slaves growing mangrove rice, as recalled by one of his sons (in conversation with PR in 1987).

the area was reclaimed and turned into profitable rice plantations, linked to the Freetown market by riverine and coastal shipping routes. The British authorities then opened up the chest of Empire white rices to the planters. A comparative trial of varieties from British Guiana, India and Ceylon and local varieties was organised at Mambolo, on the Little Scarcies, in 1911-12.⁴⁹ The colonial authorities also assisted the planters by delaying emancipation. The old compromise of an abolitionist settlement fed by slave labour became the bedrock of the food supply for the capital of the newly-formed Colony and Protectorate of Sierra Leone through the first three decades of the twentieth century.

The French abolished slavery in their West African colonies in 1905. The British in Sierra Leone had been shaken by an uprising of chiefs in 1898. Officials thought the trouble was triggered by a threat to introduce colony law (and its anti-slavery code) into the newly declared Protectorate. Emancipation was shelved. Thoughts of protecting new flows of mangrove rice into Freetown – an important British naval base – may have played a significant part; these supplies doubled between 1914 and 1916.⁵⁰ When challenged over slavery, the British authorities argued the institution would die a natural death. This was self-serving, since slaves were important in the agrarian economy in many districts. A survey by Captain W. B. Stanley in 1923 showed that slaves accounted for 15 percent of the population of the Protectorate, but that among the Temne, Susu and Mandingo of the North-west this figure rose to between 20 and 35 percent. Nothing was done until the second half of the 1920s. A slave revolt at Karina, a Mandingo town in the Mabole valley, in 1926 stirred attention in Britain. Public opinion was surprised by the discovery that slavery still existed in a colony founded for freed slaves. The Freetown administration was forced to rush through emancipation.⁵¹

Emancipation effectively marked the end of half a century of expansion of mangrove-rice cultivation, and science was introduced to protect against any food crisis. A Rice Research Station was founded in 1934, at Rokupr on the banks of the Great Scarcies. Its mandate was to improve the productivity of the strategically important mangrove rice-farming system. In the first decade very little was achieved. Ill-advised flood-exclusion works undertaken at the end of the Second World War threatened to destroy the mangrove soil.⁵² Large-scale interventions were halted. Some later modest improvements notwithstanding, the capacity of the mangrove zone to meet urban food demands continued to decline. Experiments with mechanisation of rice cultivation in the boliland zone in the 1950s also proved economically unsustainable. Freetown, ever more in need of rice, turned – post-war – to imported supplies. White rice increasingly came in bags from overseas.⁵³

After independence (in 1961) the search for national food security centred on an Asian-style Green Revolution wetland rice-cultivation package for peasant farmers. But attempts foundered on the unsolved problem of labour supply.⁵⁴ A free labour force (in a country with relatively abundant supplies of agricultural land) would not readily work in

⁴⁹ David Moore-Sieray, *The evolution of colonial agricultural policy in Sierra Leone, with special reference to swamp rice cultivation, 1908-1939*, unpublished PhD thesis, School of Oriental and African Studies, University of London, 1988, pp.65-6.

⁵⁰ Moore-Sieray (1988), p.65.

⁵¹ This account is based on Alfred S. Arkley, *Slavery in Sierra Leone*, unpublished MA thesis, Columbia University, 1965, Chapter 5.

⁵² Richards (1986), pp.12-14.

⁵³ From being a modest exporter of rice in 1935, Sierra Leone imported a fifth of its national consumption in 1956, at the height of the alluvial diamond boom.

⁵⁴ Richards (1986), pp.22-5.

swamps at low wages. Faced with the prospect of food riots on the streets of Freetown successive governments repeatedly stepped in with imported supplies of subsidised white rice, undercutting the rise in rural wages necessary to effect the technical transition to which the Green Revolution aspired. Rural land owners tried to use customary law to tie young labourers to the land,⁵⁵ but the emancipated farm-labouring classes increasingly opted out of agriculture. Some went to the cities, and benefited from the government's cheap imported rice. Others went to the diamond mines, where organisers of alluvial mining used their ready access to foreign exchange to import rice for their workers.

Most attempts to modernise rice agriculture in Sierra Leone continued to be, in effect, disguised calls for a return to some kind of forced labour. The only real alternative to be tried was the post-1945 mechanisation scheme.⁵⁶ Suitable machines proved hard to find, and maintenance problems and graft further undermined government-subsidised schemes. The option still has its proponents, but international investors are less interested in cultivating bolilands for rice than for biofuels.

Nevertheless, although they never produced the kinds of cheap food surpluses governments desired, emancipated peasant rice farmers in Sierra Leone did not stagnate. As will now be shown, seed-selection activity by emancipated farmers reshaped many of the rices once associated with the plantation economy, resulting in numerous niche-adapted (if red-skinned) japonica rices as well as farmer-selected hybrids. These local seeds work differently from those provided by global technology for use with chemicals or machines. They have been selected for robustness, and respond well to limited amounts of labour and fertilisation. Scientific support for a farmer-led food-crop revolution is hampered by lack of appreciation of the in situ seed developments wrought by a century of self-emancipation.

Genetic consequences of selection of rice under slavery and emancipation

Segregation of red and white rice required strong controls over seed selection. In the hinterland of Freetown in the late eighteenth century this control was exercised by a handful of slave-owning landlords supplying a tiny group of foreign merchants whose notions of an acceptable rice type were shaped by irrational colour preferences on a distant market.⁵⁷ Emancipation ended large-scale developments based on forced labour, and changed the conditions for rice selection in significant ways. Former slaves now made their own decisions about seeds. From a perspective of population genetics, a steep rise in the numbers of seed-selecting farmers signalled a change from tightly-dictated seed choices by a few to something more like a Darwinian free-for-all, resulting in a large range of adapted rices.

The shift can be roughly calibrated. When Thomson passed through Moria in 1843 he encountered permanent slave estates worked by up to 150 slaves. The Atlantic slave trade was effectively ended, so these will all have been permanent farm slaves. Doubtless, on their own subsistence plots, on which they worked two or three days a week, some slaves would

⁵⁵ Esther Mokuwa et al., 'Peasant grievance and insurgency in Sierra Leone: judicial serfdom as a driver of conflict', *African Affairs* 110 (2011), pp.339-66.

⁵⁶ Charles Jedrej, 'The growth and decline of a mechanical agriculture scheme in West Africa', *African Affairs* 83:329 (1985), pp.541-58.

⁵⁷ Grist (1975, p.409) writes that "modern taste in rice...demands first and foremost appearance, so that flavour and health are sacrificed for the white appearance". He refers here to the polishing process. Polishing to remove pericarp (whether red or white) is preferred by dealers because the rice is less susceptible to pest damage.

make their own seed choices. But they will have had little scope to move from village to village to pick up new types, as happens among experimentally-minded peasant farmers today.⁵⁸ Nor will many slaves, even with three free days for their own work per week, have accumulated seed reserves for planting. Many surely will have consumed all they harvested, and depended on the patronage of landlords for seeds in the following year, something that remains a marked feature of rice farming by the poorer classes in Sierra Leone today.⁵⁹ Thomson's figures imply that those responsible for seed selection in Moria in the 1840s could hardly number more than one in a hundred of the total population.

Circumstances began to change markedly in the later nineteenth century, as increasing numbers of run-aways added to the free peasant groups such as the Limba, farming niches in the back country, away from trade routes and plantations. It makes sense that these self-emancipated agents paid considerable attention to adaptive seed choices, since they were farming at times unfamiliar terrain with strictly limited resources. Seed variation was in effect a near-costless investment good, depending only on adaptive ingenuity and attention to experimentation. A propensity to pay close attention to seeds survives to this day among groups with a free peasant or self-emancipated background. Longley reports a most revealing difference between Susu and Limba rice farmers in and around Kukuna in the early 1990s, with one group showing a lordly disdain for detail, and the other displaying a strong working knowledge of seed variation. She showed her informants seed samples collected from their own farms, and asked them about seed purity. "Without even examining the samples... Susu farmers usually declared them to be pure". Most Limba farmers, by contrast, "knew that samples from their own farms contained off-types and explained how the mixing had occurred as they picked them out".⁶⁰

General emancipation will have further intensified farmer seed-selection activity. Not only were heads of farming households now free to plant seeds of their own choosing, but the right was also demanded by the women and youth of the house, so that they could cultivate private plots of wetland rice for petty income. Different seed choices were needed for these small (and often deeply flooded) wetland sites. The plots were planted only after completion of work on the main family upland farm, and harvested late (in December or January). Unlike the Green Revolution wetland varieties, intended to be planted early and harvested quickly, in fields with good water control, the rices for subsidiary wetland plots were planted late and needed to grow tall and ripen slowly, so that weeding and harvest did not compete with work on the main dryland farm. The varieties are grouped under a specific category name: *yaka* rices.⁶¹ Jusu suggested the word implies "boon" or "charity" (cf. Arabic *zakat*, alms). Many *yaka* rices must be the result of adaptive selection activity by household dependants.⁶²

⁵⁸ Paul Richards, 'Farmers also experiment: a neglected intellectual resource in African science', *Discovery & Innovation* 1:1 (1989), pp.19-25; Malcolm Jusu, *Management of genetic variability in rice (*Oryza sativa* L. and *O. glaberrima* Steud.) by breeders and farmers in Sierra Leone*, PhD Thesis, Wageningen University, 1999; Florent Okry, et al., 'Adaptation of the Informal Seed System to Agrarian Changes: The Emergence of Market Oriented Local Seed Dealers within the Informal Seed Sector of Rice in Guinea', forthcoming.

⁵⁹ Richards (1986); and 'Local strategies for coping with hunger: northern Nigeria and central Sierra Leone compared', *African Affairs*, 89 (1990), pp.265-75.

⁶⁰ Catherine Longley, *A social life of seeds: local management of crop variability in north-western Sierra Leone*, unpublished PhD thesis, University College London, 2000, pp.168-9. Her research design involved study in Kukuna itself, and in an adjacent Limba settlement.

⁶¹ Richards (1986), pp.133-6.

⁶² Jusu, personal communication, October 1987.

Recent research offers two sorts of evidence of a massive increase in selection effort consequent upon emancipation. First there is evidence that japonica rice (including Carolina rice) has been adapted to a range of niches, especially in the coastal plain and boliland region of Sierra Leone; and second there is evidence for the rising importance of farmer-selected inter-specific rice hybrids, especially in the more hilly interior regions.

Molecular evidence confirms that the niche-adapted japonicas rices in Sierra Leone are distinct from other japonicas in the region. Samples of 315 farmer varieties were collected in the West African coastal zone in 2008 and classified morphologically.⁶³ The samples were then subsequently analysed using AFLP markers,⁶⁴ and the material separated into four clusters: African rice, japonica, indica and a fourth cluster of farmer-selected hybrid rices (Figure 2).

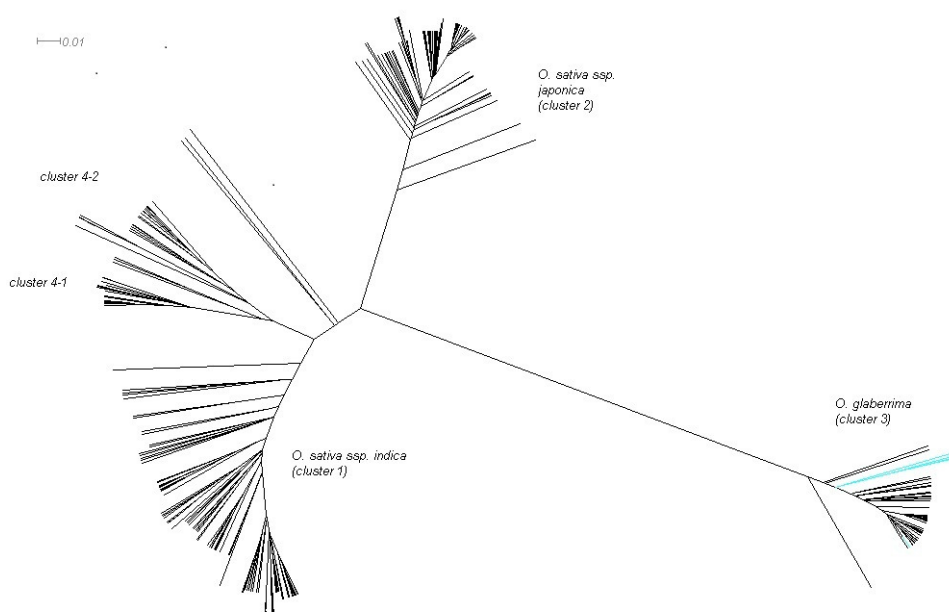


Figure 2: Phylogenetic relationships among 315 West African rice samples using UPGMA cluster analysis based on AFLP markers. Clusters 4-1 and 4-2 are farmer-selected hybrids. For methods see Nuijten et al. (2009)

A close-up of the japonica cluster (Figure 3) shows the following patterns. Many of the Sierra Leone japonicas, including *nduliwa*, *jete* and *jebe-komei*, are found in the lower part of the cluster, where they sit on the stem rather than in a sub-cluster, and are thus genetically unrelated, suggesting that Sierra Leone was the recipient of japonicas from many parts of the

⁶³ Edwin Nuijten, et al., 'Evidence for the emergence of new rice types of interspecific hybrid origin in West African farmers' fields', *PLoS ONE*, 4:10 (2009), e7335.

⁶⁴ Amplified fragment length polymorphism.

tropical world. Two Sierra Leonean japonicas (*nduliwa* and *jete*), genetically closely related, belong to an older stratum of Mende rice varieties than japonica types such as *gbengben*.⁶⁵ *Gbengben* sits in a small, somewhat more related group of mainly Sierra Leonean material, and this might fit the circumstances of the introduction of Carolina rice in the late-eighteenth century, with strong local selection in a grassland niche as described above. This is followed up the stem by a fan of material largely from Ghana and Guinea Bissau, with some degree of internal clustering.

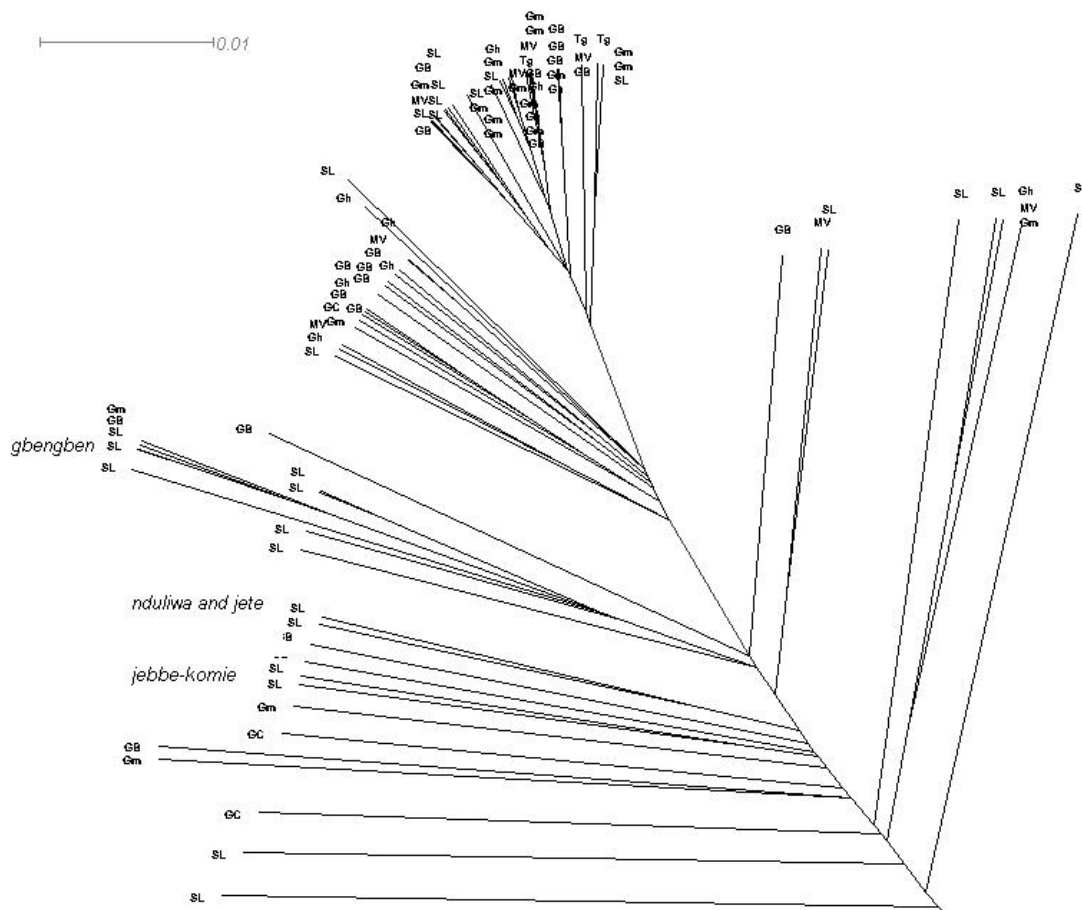


Figure 3: Close up of the phylogenetic relationships of the japonica cluster and its sub-clusters

Based on UPGMA cluster analysis of 315 West African rice samples using AFLP markers, for methods see Nuijten et al. (2009)

The separation between the Sierra Leonean materials sitting along the stem on the one hand and the Ghana-Guinea Bissau material sitting mainly above could be explained by different processes of introduction, with the related Guinea Bissau and Ghana material a product of Portuguese influence mediated through long-established trade settlements at Cacheu (Guinea-Bissau) and Elmina (on the Gold Coast). Conceivably, this mixed sub-cluster contains progeny of japonica rices introduced by Portuguese and Cape Verdean traders

⁶⁵ As reported by farmers in Mogbuama in 1983 (Richards 1986).

during the earliest period of Atlantic trade interaction at Sierra Leone, perhaps including the white rice reported by Donelha (a trader from Cape Verde) in the Orogu Valley of the Sierra Leone peninsula in the latter part of the sixteenth century. Some of the Guinea Bissau and Ghana japonica material is morphologically strikingly similar – for example, Sefa Fingo and Aqua Blue respectively, which share distinctive husk colours during flowering and ripening.

The separation of the two groups can be further explained by different selection processes. In Sierra Leone farmers grow the japonicas up and down a slope, in that way adapting them to both low and upland conditions.⁶⁶ But in Guinea-Bissau and Ghana farmers tend to grow japonicas only under upland conditions and use indicas for lowland cultivation, in that way selecting for different types of japonicas.

From experimental work on plasticity we know that the Sierra Leone japonicas are strongly niche-adapted.⁶⁷ In other words, they flourish in local ecologies, but do much less well if moved outside their niche. This is in contrast to other more broadly-adapted japonica and indica, and in particular African rice types. The information that Sierra Leonean japonicas are niche-adapted is consistent with our historical scenario, in which self-emancipated farmers pioneered new farming sites in the interior grasslands abutting the historical zone of slave-based white rice cultivation.

Some further evidence to link these present-day japonicas with earlier introductions can be found in data on the grain morphology of rices today grown in the lightly populated eastern margins of the boliland zone supplying a large rice market in the town of Bo. Thirteen rice types collected in 2008 from Mogbuama, a village at the junction of the boli grasslands and interior uplands, were assigned to the japonica group according to both grain morphology and molecular markers (Figures 3 and 4). The average grain size in the group was 8.5 x 3.3 mm. This is longer than many Asian japonicas, but consistent with information from Grist that Carolina rice grains were bold and relatively long.⁶⁸ All samples collected in Mogbuama in 2008 had red pericarp with the exception of *nerigayei*, probably a recently introduced rice (possibly Nerica).

Richards reported grain characteristics for a comprehensive collection of rices grown in Mogbuama in 1983. This included forty-one Asian rices.⁶⁹ Using the average grain dimensions of the 2008 sample of japonica rices, twelve rices in this earlier collection can be assigned, retrospectively, to the japonica group (see Annex). This includes *gbEngbEn*, the most widely grown variety in 1983 (by forty-eight out of ninety-eight farm households), and identified in the older sample as japonica solely on the basis of grain size, but confirmed to be a japonica in the 2008 sample on the basis of molecular evidence also (Figure 3). Two japonica varieties in the 1983 older group had white pericarp (*banyalojopoihun* and *felegbakoi*).

A second genetic effect we propose here as an outcome of diversification under emancipation is the emergence of farmer-selected inter-specific hybrid-derived rices.⁷⁰

⁶⁶ See Richards (1986).

⁶⁷ Alfred Mokuwa et al., 'Robustness and strategies of adaptation within farmer varieties of African rice (*Oryza glaberrima*) and Asian rice (*Oryza sativa*) across West Africa', *PLoS One* (forthcoming 2012).

⁶⁸ Grist (1975), p.95.

⁶⁹ Richards (1986), pp.131-3.

⁷⁰ Inter-specific hybrids are the progeny of African x Asian rice. West Africa is the only region where the two species are planted in farmers' fields. See M. Barry, et al., 'Genetic diversity of the two cultivated rice species (*O. sativa* & *O. glaberrima*) in Maritime Guinea: evidence for interspecific recombination', *Euphytica* 154

Molecular data (Figure 2) provide evidence of two somewhat distinct groups of rices of interspecific background (Clusters 4.1 and 4.2). These groups of farmer hybrids are distinct from the recently released science-based Nerica series of inter-specific hybrids, made by crossing African rice with japonica. Documentary evidence for some of the farmer-selected hybrid varieties dates back to the period of emancipation (the second quarter of the twentieth century). Farmer hybrids are particularly common in samples from Sierra Leone and Guinea Bissau. One of the rices in cluster 4-1 (*pa disi*) is attested from Guinea Bissau in the 1940s and north-western Sierra Leone in the 1920s.⁷¹

The suggested process for emergence of inter-specific rice hybrids involves in-field out-crossing and spontaneous back-crossing, from which farmers interested in robust new planting materials are able to select fertile candidates for further testing.⁷² Around Kukuna – the town central to the struggle between slave-holding rice producers and a self-emancipated peasantry in the mid-nineteenth century – some farmers today deliberately mix African and Asian rice in the same plot, actively looking to induce change.⁷³ Elsewhere, the emergence of farmer hybrids may owe more to chance crossing between Asian rice and a weedy African rice known to Mende farmers as *sanganyaa*. Farmers in Mogbuama see the presence of *sanganyaa* in a seed batch as an indicator that the rice was not rogued at harvest, and probably intended for loaning by patrons to poorer farmers facing seed shortages at planting time.⁷⁴ Some recipients of these loans weed out the *sanganyaa*, but others protect it in the field, seeing as a gift from God, and being unwilling to lose even one stand of rice on this account. This makes *sanganyaa* available as a source of in-field gene flow within a field of planted rice (Figure 4). In effect, the selection energy to preserve hybrid material comes (as we presume it did in the days of emancipation) from an underclass of highly-indebted or impoverished cultivators (including widows).⁷⁵

(2007), pp.127-37; Edwin Nuijten & Robert Van Treuren, ‘Spatial and temporal dynamics of genetic diversity in upland rice and late millet (*Pennisetum glaucum* (L.) R.Br.) in The Gambia’, *Genetic Resources & Crop Evolution* 54:5 (2007), pp.989-1005; Nuijten et al. (2009).

⁷¹ Migeod (*A view of Sierra Leone*, London: Kegan Paul, Trench, Trubner & Co., 1926, p.26) encountered “a rice called Pa deecce”, which he supposed to be named in honour of the District Commissioner. ‘Pa’ is in fact the Temne noun classifier for rice and *Digitaria exilis*. The ‘disi’ rice in our sample is a red-skinned farmer hybrid with African rice ancestry, which clearly shows in its panicle shape being similar to African rice.

⁷² The F1 cross will flower, and thus can cross back to a parent. Selection from a back-cross is more likely to be fertile. A strong infertility barrier was a reason breeders hesitated to explore African x Asian rice hybrids until as recently as the 1990s.

⁷³ Catherine Longley & Paul Richards, ‘Farmer innovation and local knowledge in Sierra Leone’, in K. Amanor et al. (eds), *Cultivating knowledge*, London: Intermediate Technology Press, 1993; and Jusu (1999).

⁷⁴ Richards (1986), pp.139-40.

⁷⁵ The small rice farms of widows would be a good place to research in-field mechanisms of hybridity. These plots are sometimes very mixed in terms of varieties, and the owners like it so, having both the interest to select and to experiment with off-types. Additionally, widows have weak land rights, and little ability to command male labour for clearing, so frequently ‘beg’ old rice farms, where weedy off-types thrive, to cultivate a second crop.



Figure 4: An Asian rice (*Oryza sativa*) co-flowering with weedy *sanganyaa* (*Oryza glaberrima*) in a farm on river terrace soils, Mogbuama 2007

Photo: Florent Okry

Seed systems in the ‘Northern Rivers’ today⁷⁶

In the second half of the twentieth century, West African rice-producing countries, hardly noticing the ways in which local rice genetic resources had been shaped and re-shaped by an emancipated peasantry, reverted to top-down systems of seed selection, this time shaped not by merchant-visionaries such as Macaulay, but by the science visionaries of the Green Revolution. Food security was supposed to come from seeds designed by scientists and validated by scientific peer review, not by tests of effectiveness in farmer conditions. In Guinea and Sierra Leone high-yielding exotic rice seeds were promoted first by public seed supply, and later by public-private partnerships. None of these ventures has yet proved effective or sustainable. The peasantry filled the gap. Local seed markets emerged as farmer needs diversified.

In the zone once occupied by the polity of Moria and its satellites, two rather distinct systems of local (farmer-driven) seed supply today share the terrain. A line of division follows the old watershed between rice supplied towards the coast, and the rice supplied into the hills of Futa Jalon. The Benna system, facing towards the interior, is run by established male farmers, who set aside some of their land each year to produce quality seed for sale. A

⁷⁶ This section is based on Okry et al. (forthcoming).

range of contracts is offered, including patrimonial loans-in-kind. These dealers know local demand well. They choose to produce only a small number of varieties. These are the ones intensively selected by farmers to best match local conditions. Research has established that these are often robust seed types with an ability to produce reliably under a range of adverse conditions.⁷⁷ .

On the coastal plain agriculture is often peri-urban, dominated by the demands of two large coastal cities, Freetown and Conakry. The zone also offers a large number of wetland micro-niches. Increasing numbers of farmers are women, driven out of the city by adverse economic conditions. The seed merchants are also mainly women. They produce themselves, but also travel in search of novelties. The male seed merchants at the foot of the Benna Hills deal in long-established robust country rices, and hardly need to offer words of advice about how and where to plant these selections. Clients know their own needs, and the quality of established varieties is high on their list of priorities. The women seed merchants of the coastal plain, by contrast, are a mine of information about their new choices. Advice is part of what they deal in, since many of their wares come from distant localities, or are unknown to their clients, some of whom may be opening up new wetland-farming niches, or are new to farming altogether.

A gendered local pragmatism has thus helped to reshape a seed landscape once associated with the older, paradoxical abolitionist food-security system built on the coerced labour of slaves. Informal seed dealing is perhaps the most cost-effective way to maintain the availability of good local materials, while also providing a conduit for the New Green Revolution for Africa to apply its novel wares. These two sets of local seed agents, between them, provide both red and white rice to those who need it, based not on modernisation dogma but on demand. In a period of rapid environmental change no source of adaptive capacity should be ignored.

Conclusion

Carolina rice, an export commodity produced by slavery in the United States, was introduced into West Africa in the late-eighteenth century, where it was grown by slave labour as a mainstay of the abolitionist settlement at Freetown. White rice at Sierra Leone is, at first sight, an inversion of the heartening story of black rice as an emancipatory element in New World rice cultivation.⁷⁸ It appears to support instead the idea that transfer of American seeds promoted the emergence of the harshest forms of chattel slavery in West Africa. But this would be to make the technological determinist's mistake of assuming that technology governs agency. The conclusion we wish to stress is somewhat different. By tracing the history of rice seeds in the region we have evidenced a process through which increasing levels of selection activity consequent upon emancipation pulled apart white rice as a commodity and rebuilt it as something more useful for local purposes. Locally-adapted japonica rices, some of which may be derived from Carolina rice, are today important in peasant production in many parts of Sierra Leone, especially in higher rainfall districts adjacent to the grassland (boliland) zone of the coastal plain, where they contribute importantly to the food supply of provincial cities such as Bo, Makeni and Kenema. No longer white-skinned, these japonica rices are successful in markets where local consumers

⁷⁷ Mokuwa et al. (2012).

⁷⁸ Littlefield (1981); Judith Carney, *Black rice: the African origins of rice cultivation in the Americas*, Cambridge: Harvard University Press, 2001.

positively welcome redness in rice as a quality guarantee. This is not, therefore, a reversion to subsistence in the absence of slavery, as Governor Ludlum once feared. It is the story of the emergence of an anti-commodity, shaped by the peasant selection energy released by emancipation.⁷⁹ Selection energy ‘from below’ produced niche-adapted japonica rices well-suited to local market demands, at the same time as farmers were also selecting and widely disseminating a number of especially hardy varieties through which they buffered their own consumption needs (robust inter-specific hybrid rices). Emancipated peasants were able to exploit the genetic potential of both Asian white rice and African red rice. African rice was improved at a time when science saw only insurmountable infertility barriers. Furthermore, it was around the products of peasant rice seed selection activity that local cultures of seed commerce emerged where external solutions failed. Those who suppose African food security requires greater efforts to commercialise the supply of quality seeds need to ponder the lessons of an emancipated peasant-enterprise culture of seeds as anti-commodity in the vicinity of Sierra Leone.

⁷⁹ Bray et al. (2012).

Annex: Details of Rice Samples (1983 and 2007)

Name of Rice, 1983 sample	Tones (Innes 1969)	Accession Number	Pericarp Colour	Grain Length (mm)	Grain Width (mm)
banyalojOpOihun		1983/1	white	8.2	3.3
fEI Egbakoi		1983/13	white	8.4	3.4
gbEngbEn	LL	1983/15	non-white	7.6	3.7
gbEngbEn gole		1983/16	non-white	7.4	3.5
gbEngbEn tee		1983/17	non-white	8.3	3.7
gbolokondo		1983/18	non-white	7.6	3.9
gbondobai	LLHL	1983/12	non-white	8.2	3.5
gEtE ⁸⁰	HH	1983/20	non-white	7.6	4.4
helekpo	HHH	1983/21	non-white	7.6	3.6
jumukui		1983/22	non-white	7.6	4.1
puusawe		1983/30	non-white	8.4	3.4
kavunji	LHH	1983/36	non-white	8	4.1

Name of Rice, 2007 sample	Tones (Innes 1969)	Accession Number	Pericarp Colour	Grain Length (mm)	Grain Width (mm)
bologuti		2007/174	non-white	8.6	2.9
gbEngbEn (1)		2007/175	non-white	8	3.4
gbEngbEn (2)		2007/176	non-white	7.8	3.4
jEbEkomi		2007/177	non-white	6.8	3.8
jewule	HHH	2007/178	non-white	9.4	3.1
kOndela		2007/179	non-white	8.7	3.6
konowanjei		2007/180	non-white	8.7	3.8
kOtu gbOngOe	LH LH	2007/181	non-white	7.8	3.4
mabaji		2007/182	non-white	8.5	3.1
musugomei		2007/183	non-white	6.9	3.6
nerigeye		2007/184	white	10.8	2.9
giligOti		2007/185	non-white	8.7	3.2
yabasi		2007/186	non-white	9.8	3
yOni		2007/187	non-white	8.5	2.9

NB Internal capitalisation in rendering Mende rice name indicates open vowels ('oh' and 'eh')

⁸⁰ “A variety of short-grained rice” (Innes 1969).

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The mutually reinforcing relationship between 'commodities' and 'empires' has long been recognised. Over the last six centuries the quest for profits has driven imperial expansion, with the global trade in commodities fuelling the ongoing industrial revolution. These 'commodities of empire', which became transnationally mobilised in ever larger quantities, included foodstuffs (wheat, rice, bananas); industrial crops (cotton, rubber, linseed and palm oils); stimulants (sugar, tea, coffee, cocoa, tobacco and opium); and ores (tin, copper, gold, diamonds). Their expanded production and global movements brought vast spatial, social, economic and cultural changes to both metropolises and colonies.

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- 1) The networks through which commodities were produced and circulated within, between and beyond empires;
- 2) The interlinking 'systems' (political-military, agricultural labour, commercial, maritime, industrial production, social communication, technological knowledge) that were themselves evolving during the colonial period, and through which these commodity networks functioned;
- 3) The impact of agents in the periphery on the establishment and development of commodity networks: as instigators and promoters; through their social, cultural and technological resistance; or through the production of anti-commodities;
- 4) The impact of commodity circulation both on the periphery, and on the economic, social and cultural life of the metropolises;
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