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A DEMOGRAPHIC MODEL OF AFRICAN SLAVERY[1]

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In 1969 and again in 1975, John D. Fage suggested that
the slave trade in West Africa "was part of a sustained
process of economic and political development," and that
the export of slaves did no more than halt the growth of
population in West Africa:

> In the worst affected areas, the effect may have
> been no more than to cream-off surplus population,
> i.e. those whom it was more profitable to sell in
> return for imports than to employ in production
> at home.[2]

Fage has steadily extended his initial quantitative con-
clusion---that West Africa avoided depopulation---in the
direction of a qualitative conclusion that the slave trade
brought about neither social nor demographic transformation
in West Africa. For example, his argument that both slavery
and polygyny were established institutions on the coast of
Africa before the days of slave exports fits into this
general line of argument.[3]

The reasoning which led Fage to these conclusions is based on an aggregate approach to the demographic impact of the slave trade. He drew up estimates of the growth rate of West African population (assuming that the growth rate itself grew at an exponential rate), and projected a total population of 25 million for West Africa in the eighteenth century. He then compared the rate of export of slaves across the Atlantic in the eighteenth century (an average of 40,000 slaves per year from the population of 25 million, or 1.6 per thousand per year) to the assumed growth rate (1.5 per thousand), and concluded that the export of slaves might have cancelled out population growth, but that it did not depopulate West Africa.

The present approach to the demographic impact of slavery upon Africa, in contrast, relies on disaggregation: the impact of slave exports is considered for various age and sex groups, for predators and victims, and for regions fueling the export of slaves to the Christian world and to the Muslim world. The result of this approach is to show that Fage's quantitative conclusion, while it will probably stand, has more serious implications than he realized, and that his qualitative conclusion---social continuity and economic development in the era of the slave trade--- is misleading.[4]

The fundamental hypothesis underlying this disaggregated model is that the export slave trade was the main determinant

of the character and development of African slavery: while slavery predated the slave trade, its quantitative extent in Africa is attributable primarily to external demand.[5] Secondly, I argue that the export slave trade surely limited and may well have reduced population in large areas of Africa, and that it caused transformation in the age, sex and family structure of African populations. For example, it reinforced polygyny throughout the continent, notably in the coastal regions feeding the Atlantic trade. Thirdly, variations in slave prices brought about important demographic and social effects: the great expansion of African slavery in the nineteenth century, in particular, was predicated on the decline in local slave prices which accompanied the steady constriction of the export slave market.

The demographic model itself consists of a set of assumptions about the conduct of the export trade in slaves. It is a cross-sectional model whose assumptions are intended to approximate, in highly simplified fashion, the eighteenth-century conditions of the export of slaves from Africa.[6] Firstly, the slave trade is divided into that on the Coast (i.e. the western coast of Africa), delivering slaves to the New World , and the Interior (i.e. the northern savanna), delivering slaves to the Mid-East and North Africa. Secondly, within each of these regions, we assume that a single slave raid takes place, in order to

investigate its effects. Thirdly, the effects of that raid are considered for the Raided (those who lose population in the slave raid), for the Raiders (those who collect slaves and then retain or sell them---including the retained slaves who now become part of this group), and for the Deportees (those sent across the Atlantic, the Sahara or the Red Sea).

In quantitative terms, the initial populations of both Raided and Raiders are assumed to have an average/of roughly seventeen years, with 50% of the population of ages 0-14, 30% of the population of ages 15-30, and 20% of the population over 30. The raid is assumed to result in the capture of persons of both sexes and all ages, but it is assumed that a disproportionate number of the captives are young men and women, of from 15 to 30 years of age, as these were the most valuable. Specifically, it is assumed that 30% of the captives are of ages 0-14, 50% of the captives are of ages 15-30, and 20% are of ages over 30. In addition, it is assumed that a 10% mortality accompanies capture, and an additional 10% mortality accompanies crossing the Atlantic or the Sahara. These same initial conditions yield quite different results for the Coast and for the Interior, however, because of differing conditions of external demand for slaves.

The Coast: New World demand and prices for male slaves exceeded those for females, as slaves were desired primarily for agricultural labor. In the same market, however, coastal

African demand and prices for female slaves exceeded those for males, as slaves were desired primarily as concubines and domestics. In addition to the assumptions above, therefore, it is assumed that all males and half the females captured in the raid are exported, and that half the females are retained by the Raiders. The total population of the Raided declines as a result of the raid, by the amount of those captured and perhaps killed. Total population among the Raiders, meanwhile, grows as a result of the raid, even after the sale of all male slaves, because half of the female slaves are retained. Most of the women of marrigeable age are brought into polygynous relationships (marriage or concubinage). The Deportees from the Coast are assumed to be in the ratio of 2:1, men to women, with a disproportionate number in the age group from 15 to 30.

The Interior: Female prices are assumed to be higher than male prices on both sides of the desert (since the demand for female concubines and domestics was greater than the demand for male workers), but the differential is assumed to be higher in North Africa and the Mid-East. As a result, it is assumed that 2/3 of the female captives are exported and that 1/3 are retained; and that 1/3 of the males are exported while 2/3 are retained. The results of the slave raid, under these conditions, are the same for the Raided in the Interior as for those who lose on the Coast: an initial fall in population. For the Raiders of the Interior,

total population grows, with the number of males retained
doubling the number of females retained. The slaves exported
across the Sahara, finally, are assumed to be 2:1, females
to males.

To summarize the demographic predictions of the model,
comparing each population before and after the raid, the
directions of the expected effects are as follows:

The Raided (Coast and Interior): Population declines,
age structure becomes younger, a sexual balance is
maintained, and no additional incentive for
polygyny exists.

The Raiders (Coast): Population increases, age
structure becomes slightly older, a surplus of
females develops, polygyny is reinforced heavily,
little male slavery exists, and male slaves may
marry.

The Raiders (Interior): Population increases, age
structure becomes older, a surplus of males develops,
polygyny is reinforced among privileged strata,
male slavery is reinforced, and male slaves do not
marry.

The Deportees (Coast): Population declines, age
structure becomes older, a large surplus of males
develops, a disincentive for polygyny exists,
slaves marry slaves, and the slave-descended
population remains distinct.

The Deportees (Interior): Population declines, age
structure becomes older, a large surplus of females
exists, slave women marry free men, slave men do
not marry, and the slave-descended population is
assimilated.

The model predicts a ratio of initial captives to slaves
exported, and predicts other demographic implications of
slave exports. For the Coast, given the assumptions above,
1.7 persons are captured for every person landed in the
New World; for the Interior, 2.5 persons are captured for
every slave delivered to North Africa or the Mid-East.
Similarly, in order to set a standard for purposes of
comparison with historical data, let us assume that one
percent of each region's total population is exported in
chains in the year of the raid. The export of one percent
of the coastal population then causes a 3.3% decline in the
population of the Raided, and an increase of 0.7% in the
population of the Raiders. For the Interior, export of one
percent of the regional population causes a 4.9% decline
in the population of the Raided, and a 2.2% rise in the
population of the Raiders. The predicted effects of the
export of slaves are thus rather large in comparison to
the number of slaves exported.

The actual annual rates of slave export were less than
one percent per year. For the Coast from Senegal to Angola,
the annual eighteenth-century export of slaves was roughly

0.2% of the population per year. For the Interior, the savanna from Senegal to the Nilotic Sudan and extending to the Horn exported slaves at a rate of roughly 0.05% of the population each year.[7] The effect of successive years of slave raids and exports, however, would be somewhat similar to the effect of a large slave raid followed by a lapse of several years. Crudely, therefore, ten years of Atlantic slave trade changed the Coastal population by twice the percentages calculated above, while ten years of Saharan or Red Sea trade had an impact half that of the percentages calculated above.[8]

The impact of eighteenth-century slave exports on both Coast and Interior populations, compounded over generations, is thus predicted to have been of demographic significance, and traces of its impact should be visible in quantitative and qualitative accounts of eighteenth-century Africa. Projecting the results of the cross-sectional model over a period of a century, and using estimates of population and growth rates similar to those of Fage, I derived rough estimates of regional population change.[9] For the Coast, estimated population declined by some 15% for the region as a whole over the course of a century, with a sharper decline for the Raided. Similar calculations for the Interior imply that the total population of the region was held constant by the export of slaves to the Mid-East and North Africa, and that the population of the Raided declined.

Having approximated the magnitude of the effects, we may now turn to more detailed review of the predictions of the model for fertility, mortality and population growth. Since the model gives emphasis to the reinforcement of polygyny as a result of slave trade, particularly on the Coast, it raises to new importance the question of whether fertility in polygyny was similar, higher or lower than in monogamy: I think it is likely that fertility was lower in polygyny, especially for women in large harems, and that this factor provided an additional restriction on African population growth. Fertility among slaves is a second issue. Among the slave populations of the New World, the exceptionally low fertility, even on an age-specific basis, is well known; slave women in North Africa and the Mid-East also appear to have had a low fertility.[10] It may therefore be suggested that slave women who were retained in Africa also had a reduced livel of fertility as a result of the social dislocation and strenuous life brought about by the condition of slavery. Yet another issue is fertility among the Raided. The model suggests a skeptical approach to the notion that they responded to slave raids by increasing their birth rate: such a strategy, if attempted, could only work in the long run and not in the short run, given that the persons who would be called upon to increase the crude birth rate are precisely those young adults who are most likely to be removed by capture.

The mortality of slaves was surely more complicated than the assumed 10% loss upon capture and an additional 10% loss on crossing the Sahara or the Atlantic. Relatively high rates of mortality were surely suffered by the old and the very young, while young women probably suffered a relatively low rate of mortality. Young men were relatively unlikely to succumb to starvation and disease, but were the prime victims of wars and revolts·accompanying enslavement. Revision of the model to account for this differential mortality can be shown to increase the predicted impact of the export of a given slave on African population.

The structural predictions of the model are confirmed in some measure by the work of John Thornton. In the 1777-8 Portuguese census of Angola, he found that the female population greatly exceeded the males, and he estimated that this heavily female population could give up as much as three percent of its total into export each year and still reproduce itself.[11] He thus demonstrated both the distortion of African population structure under the impact of slave exports and the remarkable ability of such distorted coastal populations to reproduce themselves. I think Thornton may be too optimistic, however, about the ability of the Angolan population to reproduce itself: Angola exported enough female slaves/so that it was probably unable to maintain its population in the eighteenth century.[12] Further, the inverse of this sort of reasoning

must be applied to the Interior, where the preponderance of slave exports was female.

The upshot of the demographic model, in sum, is to suggest that the size of African population would have been much greater without the influence of the export slave trade, and that its distribution (by age, sex and region) would have been significantly different. This suggestion, in turn, raises the question of what other limits there would have been to African population in the absence of slave trade. In the pessimistic view, the absence of slave exports would have increased the frequency of epidemics and famines, thus preventing the population from increasing much, and in any case a larger population would have run into the limits on productive technology. In the optimistic view, the avoidance of slave trade and the accompanying disorder would have reduced the frequency of epidemics and famines, and the increasing pressure of population would have induced technological advances enabling the population to expand still further.

The model suggests the reinterpretation of several aspects of the literature on African slavery. Firstly, it is necessary to give much greater attention to the role of women in slavery: the tendency to view the typical slave as male must be superseded. Secondly, the model appears to demonstrate that the common division of African populations into unchanging Raider and Raided groups is

erroneous, for if the transfer of slaves from Raided to

Raiders continued for a century, many of the Raided

populations would have been virtually annihilated. In fact,

the ethnic map of West Africa appears to have preserved a

remarkable stability. This implies, therefore, that the

roles of Raider and Raided were exchanged from time to time,

or that the Raiders also exported slaves taken from within

their own frontiers. Finally, the relatively plentiful

descriptions of nineteenth-century slavery must be used

with great care in characterizing slavery in earlier

periods.[13] The model suggests, especially through

consideration of the importance of changing slave prices,

that African slavery in the nineteenth century was

substantially different from that in the eighteenth century:

the prices of slaves fell, the Atlantic trade contracted

while the northern and eastern export trade grew for a

time, and both changes had the effect of expanding the

number of cheap male slaves available in Africa, with the

result that the use of male slaves in African production

expanded sharply.

NOTES

1. This paper is a condensation of a more
extensive article, which appears as "The Enslavement
of Africans: A Demographic Model," in the Canadian
Journal of African Studies XV, 3 (1981). I am grateful
to the editors of that journal for permission to
reproduce portions of the article here.

2. Fage, "Slavery and the Slave Trade in the Context of
West African History," Journal of African History 10,
3 (1969), p. 400; Fage, "The Effect of the Export Slave
Trade on African Populations," in R. P. Moss and
R. J. A. Rathbone, eds., The Population Factor in
African Studies (London, 1975), p. 20.

3. Fage, "Slaves and Society in Western Africa, c. 1445 -
c. 1700," Journal of African History 21, 3 (1980),
pp. 289-310.

4. Among other studies which have touched explicitly
on the demographic impact of the slave trade upon
Africa are: Roger Anstey, The Atlantic Slave Trade
and British Abolition, 1760-1810 (Cambridge, 1975),
pp. 79-82; K. David Patterson, The Northern Gabon
Coast to 1875 (Oxford, 1975), pp. 78-80; David
Northrup, Trade Without Rulers: Pre-Colonial Economic
Development in South-Eastern Nigeria (Oxford, 1978),
pp. 65-84; Patrick Manning, Slavery, Colonialism and
Economic Growth in Dahomey, 1640-1960 (Cambridge,
forthcoming); Joseph Inikori, "The Slave Trade and
the Atlantic Economies, 1451-1870," in UNESCO, The
African Slave Trade from the Fifteenth to the
Nineteenth Century (Paris, 1979), pp. 56-87. In
addition, John Thornton has made a stimulating
contribution which also uses a disaggregated approach:
"The Slave Trade in Eighteenth Century Angola: Effects
on Demographic Structures," Canadian Journal of African
Studies XIV, 3 (1980), pp. 417-27.

5. The present study is reliant on the work done by many
scholars in quantifying the export slave trade: the
key breakthroughs in quantification were those of
Philip D. Curtin for the Atlantic trade and of Ralph
A. Austen for the Islamic trade. See Curtin, The
Atlantic Slave Trade: A Census (Madison, 1969);
Austen, "The Islamic Red Sea Slave Trade: An Effort
at Quantification," Proceedings of the Fifth

International Conference on Ethiopian Studies (Chicago, 1979), pp. 443-67; and Austen, "The Trans-Saharan Slave Trade: A Tentative Census," in Henry A. Gemery and Jan S. Hogendorn, eds., The Uncommon Market: Essays in the Economic History of the Atlantic Slave Trade (New York, 1980), pp. 23 - 76.
        For a statement of the view that export demand conditioned the development of African slavery, see Walter Rodney, "African Slavery and Other Forms of Social Oppression on the Upper Guinea Coast in the Context of the Atlantic Slave Trade," Journal of African History 7, 3 (1966), pp. 431-44.

6.   For additional details, see Manning, "Enslavement." In addition, the author has undertaken work in computer simulation of the impact of enslavement on African population.

7.   Manning, "Enslavement."

8.   To state this a bit more precisely, and to include the factor of normal population growth, one should say that the population after normal growth would be adjusted by the calculated percentages.

9.   Manning, "Enslavement."

10.   Curtin, Census, pp. 28-34; Austen, "Trans-Saharan Slave Trade," p. 50.

11.   Thornton, "Slave Trade," pp. 421-4.

12.   For Thornton's further thoughts on depopulation in Angola, see infra.

13.   Two major collections of studies dealing mostly with nineteenth-century African slavery are Claude Meillassoux, ed., L'Esclavage en Afrique précoloniale (Paris, 1975); and Suzanne Miers and Igor Kopytoff, eds., Slavery in Africa: Historical and Anthropological Perspectives (Madison, 1977).

POPULATION CHANGE AMONG THE KWENA OF BOTSWANA

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Demographic history and population change are important elements in understanding the African past. In fact, Wrigley has suggested that perhaps the underlying dynamic or motive force in African history may rest in the quiet, ordinary forces of birth and death, of population change.[1] The size and composition of the population and its distribution and settlement pattern not only reflected and in turn affected the way the society was organized politically, but also determined the mode of production and the economic choices made in the allocation of scarce resources. Previous studies have pointed to the uniqueness of the scale of Sotho-Tswana towns on the southern African landscape, but the assumption has been one of changelessness.

That is largely the result of two factors. First, the nineteenth century large-scale Sotho-Tswana communities of the Transvaal and Kalahari basin are familiar to southern Africanists through the writings of contemporary European missionaries and travellers.[2] That mode of settlement has even been noted as the distinguishing feature of the Sotho-Tswana in contrast, for example, to the Nguni.[3] And second, historians and social scientists have accepted Schapera's definitive studies on the Tswana uncritically. They forget that most of those studies were written in the ethnographic present, and simply transpose those twentieth century descriptions, primarily of the Kgatla, to the more distant past and to the Tswana as a whole.[4]

This uncritical dependence on previous authors has led to fundamental inaccuracies in regards to the Tswana who now live in Botswana.[5] These