

ité à une réfutation déclarative sans analyser en détail l'argumentation de son opposant.¹⁹

En conclusion, on peut dire que "l'Einführung" de H.-A. Rupprecht, bien conçue et bien réalisée, mérite toutes les louanges. Elle sera un instrument de travail indispensable non seulement aux étudiants et non-spécialistes mais rendra des services aux papyrologues et aux historiens du droit antique.

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Roger S. Bagnall and Bruce W. Frier, *The Demography of Roman Egypt*, Cambridge: Cambridge University Press, 1994, pp. xix + 354.

At what age did women marry in the Roman Empire? How many children did they bear? How long did people in the Roman Empire live on average? These questions have for the first time been answered in a satisfactory way by Bagnall and Frier for one province of the Roman Empire, Egypt.

Why did we have to wait so long for this kind of study? The data used in the study, about three hundred census returns that survive on papyri, are not new and have been known for more than 40 years. Their demographic analysis, however, had to await developments in the field of mathematical demography which deal with incomplete data. These developments culminated in the publication of model life tables, model fertility schedules and stable population models in the late sixties and early seventies. One of the major figures behind these developments is Ansley J. Coale, who appropriately has written a foreword to the book.

Bagnall and Frier first describe the census returns and discuss their demographic quality. After a chapter on household structure they present estimates of all the major demographic variables, population structure, mortality, nuptiality, fertility and migration.

Bagnall and Frier estimated that life expectancy at birth among Egyptian women was about 22.5 years. Male life expectancy at birth may have been slightly higher. Women in Roman Egypt who survived to age 50 gave birth to an average of about six children. This implies that in the long run the Egyptian population was increasing at a slow rate of about 0.2 percent per year.

The shape of the estimated fertility curve suggests that Egyptians restrained fertility chiefly through breastfeeding practices and other indirect methods, rather than through contraception and abortion. Another factor which seems to have depressed fertility was the tendency of women not to remarry. Non-marital fertility was not low but was mainly restricted to slave women.

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A. Kasher, "The Civic Status of the Jews in Ptolemaic Egypt", *Ethnicity in Hellenistic Egypt* (Studies in Hellenistic Civilization, III), edd. P. Bilde, J. Engberg-Pedersen, L. Hannestad, J. Zahle, 1992, 119 n. 37: "A complete denial of the existence of the Jewish *politeuma* in Alexandria (as elsewhere in Egypt) has lately been made by Zuckerman (1985/1988, 171-185) but his presentation is an exceptional one, which completely deviates from the general opinion on this subject, not to mention the fact that it does not stand up to the rest of scholarly criticism, because of the clear data at our disposal in this matter"; cf. *ibidem* n. 47.

Marriage among women in Roman Egypt was early and almost universal. Bagnall and Frier estimate that more than three fifths of all women were married by age 20. Average age at first marriage was probably between 19 and 20 years. Marriage among men was somewhat later. About half of all males were married by age 25. Given the very high mortality levels in Roman Egypt, dissolution of marriage by the death of a spouse could occur relatively early. Divorce was an additional reason for the dissolution of marriages.

A comparison of age-specific sex ratios in *metropoleis* with those in villages suggests that approximately 9 percent of males between ages 15 and 24 migrated to metropoleis. Women seem to have been much less mobile.

There is no way of telling how representative the census returns are for the other provinces of the Roman Empire. There is some resemblance with late medieval Tuscany, but Roman Etruria may have been quite different. Bagnall and Frier found the female nuptiality index they estimated for Roman Egypt "comparable to most indices obtaining in Mediterranean Europe in 1870" (p. 116). However, this superficial resemblance is the result of early marriage and relatively high levels of widowhood and divorce in Roman Egypt and of relatively late marriage and lower levels of widowhood and the absence of divorce in Mediterranean Europe.

How accurate are the results? First, it should be noted that most of the analysis is based on only 337 females and 350 males for whom age is known. Second, information in historical census returns is often inaccurate. One problem is the underregistration of young children. This problem is solved by looking only at the population of ages 5 and above. Another problem is the inaccurate reporting of ages. Age overstatement was common. Bagnall and Frier suggest that "especially from about age 60 onward, male ages are exaggerated to a larger extent than female" (p. 107). Therefore, the reconstruction of male mortality is much more uncertain. Sex differentials in age overstatement may also influence observed age gaps between husbands and wives. Bagnall and Frier ignore this problem, however, and conclude that from "age 50 onward, the gap rises to an extraordinary 12.4 years" (p. 120).

A more serious problem is perhaps the unknown ratio of rural to metropolitan population. Bagnall and Frier assumed that the village population outnumbered the total metropolitan population by about two-to-one. How precise is this estimate and how would deviations from the true ratio influence the results of the study? Mortality estimates are especially sensitive to the ratio chosen, because mortality was probably much higher in the more densely populated *metropoleis*. Fortunately the census returns contain at least one clue: sex ratios. These are too low for villages and too high for *metropoleis*. When the village population is assumed to have outnumbered the total metropolitan population by two-to-one, then the sex ratio for the total population in the census returns is close to 100.

The book is written for historians without a background in population mathematics. It explains all the methods used in an elementary way. The original census returns appear in a catalogue in the back of the book, in case anyone has doubts as to the quality of the work performed by Bagnall and Frier, and would like to re-analyse the data himself. It is doubtful, however, whether such a re-analysis would uncover much which has not been dealt with by Bagnall and Frier in an expert way.