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Greco-Roman sex ratios and femicide in comparative perspective

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Abstract: Is it possible to demonstrate that ancient Greeks or Romans disposed of newborn daughters in ways that skewed sex ratios in favor of males? Epigraphic, papyrological, and archaeological evidence fails to provide reliable empirical support for this notion. At the same time, we cannot rule out the possibility that femicide did in fact occur. Drawing on comparative anthropological and historical evidence, this paper briefly develops two models of femicidal practice.

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I take as my starting point the official invitation to attend this conference.¹ It states
“That sex biased infanticide was an issue in Greco-Roman antiquity has long
been established.”

I agree that sex biased infanticide has long been an issue in modern scholarship; it is
however far less clear to what extent it was an issue in antiquity. Different matters are at
stake:

(1) the practice of infanticide as opposed to other forms of what one might somewhat
paradoxically label ‘post-partum birth control’, such as sale, exposure, and fatal neglect,
not all of which necessarily resulted in death;

(2) the practice of sex-biased infanticide (targeting females) as opposed to infanticide in
general;

(3) the question of whether induced sex-biased neonatal mortality resulted in imbalanced
sex ratios at higher ages.

As for the first point, the ancient sources leave little doubt that all of these forms
of intervention were known and therefore presumably occurred, albeit at unknown rates.²
As for the second issue, while a certain degree of femicide was undoubtedly
demographically feasible, the available evidence does not allow us even to guess how
often it was practiced.³

It is the third point that is of particular relevance here because it touches on the
question of the overall sex composition of ancient populations and the likelihood of it
being reflected in skeletal samples. There are no ancient statistics of infanticide per se. Is
there quantifiable documentary evidence of imbalanced sex ratios?

One dataset has repeatedly been used to argue for massive femicide in an ancient
population.⁴ It is the epigraphic record of about 1,000 mercenaries who had been
enfranchised by the Aegean city of Miletus, mostly in the late third century BCE. Some
are listed with their families, in a standardized sequence of husband, wife, male

¹ This paper has been prepared for the international conference *Sex, death and bones: paleodemography and gender differentials in the Mediterranean world*, American School of Classical Studies at Athens, March 15-17, 2010.

² For the Greek world, see La Rue Van Hook 1920; Bolkestein 1922; Cameron 1932; Tolles 1941; Roussel 1943; Germain 1969, 1975, 1984; Eyben 1980/81; Patterson 1985; Huys 1997. For the Roman world, see Bennet 1922/23; Radin 1924/25; Boswell 1988: 51-179; Harris 1994. For a trenchant critique of scholarship up to the 1980s, see Oldenziel 1987.

³ For a discussion of feasibility, see esp. Engels 1980; Golden 1981; Harris 1982, unwittingly replaying a slightly earlier anthropological debate about the demographic feasibility of female infanticide among the Inuit: see below, at n.10. Eyben 1980/81: 16-17 collects references to and scholarship on the targeting of female babies; all the ancient references to outright femicide he cites originate in drama, poetry, or novels. (Patterson 1985: 119-21 adds nothing of substance.) *Papyrus Oxyrhynchus* 4.744 from Egypt in 1 BCE, a husband’s letter to a wife telling her to raise a boy but “cast out” a girl if she gives birth, is the only documentary reference to female infanticide; for parallels, cf. Apuleius, *Metamorphoses* 10.23.3 and the *Gunnlaugs Saga* as quoted by Clover 1988: 153. (For what it is worth, Dionysius of Halicarnassus’ claim that Romulus ordered all (healthy) boys as well as one girl (per couple) to be reared – 2.15.2 – is consistent with discrimination against higher-birth-order daughters in various historical and contemporary societies.) Note that in a sample of 93 preindustrial societies, Whyte 1978: 82 finds evidence for female infanticide in 6 cases, for male infanticide in 1 case, for both or neither in 64 cases, and no information in the remaining 22 cases.

⁴ Data: Rehm 1914; Günther 1988. Discussion: Pomeroy 1983; Petropoulou 1985: 128-30, 177-99; Brulé 1990, 1992 (all of them taking this as evidence of femicide).

child(ren), female child(ren). The sex ratio of these children is heavily biased in favor of males (Table 1).

Table 1 Number of children and sex ratio in immigrant families in Miletus

	Male	Female	Sex Ratio
Pomeroy 1983	168	46	365
Brulé 1992	151	42	360

The inscriptions distinguish between prepubertal and mature sons and daughters. A breakdown by age reveals a decline of the sex ratio over time (Tables 2-4).

Table 2 Number of children and sex ratio in two-parent immigrant families in well-preserved inscriptions in Miletus (Scheidel)

	Male	Female	Sex Ratio
Minors	43	11	391
Mature	5	4	125
Indeterminate	6	-	-

Table 3 Number of children and sex ratio in immigrant families from Crete in Miletus (Brulé 1990)

	Male	Female	Sex Ratio
Minors	47	16	294
Mature	11	7	157
Indeterminate	1	2	50

Table 4 Sex ratios of minors and mature children of select immigrant families in Miletus (based on Tables 2-3)

	Minors	Mature
Brulé 1990	294	157
Scheidel	391	125

Although these differences are at best only moderately significant ($p < 0.072$ for Scheidel and $p < 0.172$ for Brulé), we need to bear in mind that co-resident mature daughters ought to have been relatively scarce because Greek women married at much younger ages than males. If these lists reflected reality, the sex ratio would rise at mature ages. However, the opposite is the case. The most economical explanation is that many younger females were not considered worthy of registration: they only enter the scene when they reach the age of marriage.

This interpretation is consistent with the demographic record of the census returns of Roman Egypt from the first three centuries CE (Table 5).⁵

⁵ Scheidel in press.

Table 5 Sex ratios in the census returns of Roman Egypt

Age	Number	Sex Ratio
0-4	36	350
5-9	47	176
10-19	68	143
20-39	113	98

These data leave little doubt that the appearance of massive femicide is only that, an appearance. As daughters approach the age of marriage, they gradually become visible in the census records until a fully balanced sex ratio is attained in early adulthood. This dataset does not offer any empirical support for the notion of lethal discrimination against female offspring.

Comparable patterns of concealment of females at young ages can be observed in epitaphs. An epigraphic survey of large parts of Roman Italy established the sex ratios of parents and children. For 2,244 parents listed with children, the sex ratio is 133; yet for 3,571 children in epitaphs that mention only children of one sex, the sex ratio is much higher, 251. Another survey of over 13,000 epitaphs reports a sex ratio of 177 for 782 children under the age of 14.⁶ The fact that juvenile sex ratios are quite consistently higher than those for adults can only be explained with reference to biased commemoration practices. At the same time, this habit also makes it impossible to determine the sex ratio of adults: while preference for recording males diminished with age, it may never have fully ceased.

Taken together, these datasets force us to accept that – with a single exception discussed farther below – epigraphic and papyrological evidence cannot be used to establish the existence – let alone measure the extent – of female infanticide or other ways of eliminating female offspring.⁷

At the same time, the ostensibly balanced sex ratio for adults in the Roman Egyptian census returns cannot be taken to suggest that no femicide was practiced in the ancient Mediterranean. After all, in antiquity the Egyptians, together with Germans and Jews, had been singled out for their putative custom of raising all their children regardless of sex, an observation which, however untrue, logically implies discriminatory practices in Greco and/or Roman culture.⁸ A parallel is provided by the observation made by Leo of Rozmítal, a Bohemian traveler of the fifteenth century, who wrote that

⁶ Gallivan and Wilkins 1997: 243, 260, 264; McWilliam 2001: 80. For other epigraphic sex ratios, cf. most recently Hin 2009: 149-53; Scheidel in press.

⁷ For a parallel debate about concealment versus femicide in the Middle Ages, cf. Herlihy 1975; Coleman 1976. This remains a problem even in modern societies: Kanitkar 1991. For possible papyrological evidence of high sex ratios in a privileged population, see below, at n.22. One might argue that strong son preference (as reflected in selective concealment of young daughters) was likely to affect the treatment of daughters in ways that were conducive to skewed sex ratios. However, while this is certainly possible, it cannot be taken for granted: in Vietnam, for instance, anthropometric data show no evidence of discrimination against daughters in terms of nutrition and health care despite strong cultural preference for sons and a significant effect of this preference on fertility (Haughton and Haughton 1995, 1997).

⁸ Eyben 1980/81: 54-5 n.165 gathers ancient claims to that effect. Of course it is manifestly untrue that the Egyptians raised all their children (see Pomeroy 1986; Bingen 1993; Bagnall 1997); nor did the Germans for that matter (Eyben 1980/81: 54 n.165).

“In the country of Portugal there are many strange customs. When girls are born they see to it that the children seldom die.”⁹

By implication, at least, late medieval Bohemians can be expected to have behaved differently.

Demographic simulations indicate that populations may sustain fairly high rates of femicide indefinitely without facing demographic decline: a rate as high as one-third still appears feasible.¹⁰ In which contexts would extensive femicide occur? Let me sketch out very briefly two ideal-typical scenarios, which I call the “high attrition” and “persistent imbalance” models.¹¹

In the “high attrition” scenario, femicide occurs in order to offset male excess mortality at later ages in order to produce a more balanced adult sex ratio that is conducive to (monogynous) family formation. This strategy has been associated with various Inuit and Papua populations. In small Inuit groups, high levels of violence among young males as well as hunting accidents tended to deplete the ranks of young adult men at much higher rates than through death of natural causes alone. Population counts frequently show how as a result of this process, high sex ratios among children – engineered via femicide – were transformed into balanced or even low sex ratios among adults (Table 6).

Table 6 Inuit sex ratios¹²

Group	Children	Adults	Group	Children	Adults
Copper (Eastern)	268	101	Caribou	141	79
Qaernermiut	218	83	Qaernermiut	141	76
Utkuhkikhalingmiut	211	103	Interior Padlimiut	140	81
Netsilingmiut (1923)	211	97	Hauneqtormiut	130	72
Netsilingmiut (1902)	209	97	Sauniktmiut	124	79
Cape Smyth	193	87	Coast Padlimiut	119	79
Avilikmiut	180	76	Copper (Bernard H.)	117	110
Sinamiut	171	100	Cape Prince of Wales	109	103
Harvaqtormiut	153	81	Central	105	93

There is no denying that the underlying evidence is imperfect and marred by various reporting issues: as a result there has been considerable controversy in modern scholarship about the actual scale of Inuit femicide, a debate which cannot be properly referenced here.¹³ Ages were often determined only approximately; most importantly, a younger marriage age for females may have reduced the number of (culturally) sub-adult

⁹ Wilson 1988: 778 n.61.

¹⁰ Chapman 1980, improving on Schrire and Steiger 1974 and Acker and Townsend 1975. Cf. also Schievenhöfel 1989: 180.

¹¹ Cf. Hewlett 1991, who argues that elevated juvenile sex ratios may occur because of violence (equivalent to my “high attrition” scenario) and because of greater economic contributions made by males (consistent with my “persistent imbalance” scenario).

¹² From Irwin 1989 and other sources.

¹³ See esp. Balikci 1967, 1970; Freeman 1971; Riches 1974; Schrire and Steiger 1974; Guting 1987 (valuable source criticism but statistically uninformed and ultimately hyper-critical); Irwin 1989; Smith and Smith 1994.

females relative to those of males.¹⁴ Even so, the sex ratios in at least half of these groups are so high that reporting biases alone are insufficient to account for the observed imbalance. Moreover, the male bias of the reported sex ratios is closely correlated to mean temperature: the harsher the environment, the higher the juvenile sex ratios. A similar correlation obtains between the extent of adult male excess mortality and climate: the harsher the environment, the more men died prematurely. This shows, in Colin Irwin's words, that "Eskimo female infanticide is probably temperature dependent" and "male mortality is the most likely agent in restoring balance to the adult Eskimo sex ratio".¹⁵ In this environment, polygyny, which would have allowed to offset male excess mortality without resorting to femicide, was not generally feasible (a constraint known as "ecologically imposed monogamy").¹⁶

Wulf Schievehöfel's study of the Eipo, a typical remote mountain Papua group in West Irian, likewise shows that sex ratios decreased with age (Table 7).¹⁷

Table 7 Age distribution and sex ratios among the Papua of the Upper Eipomek Valley (New Guinea)

Age	Male	Female	Sex Ratio
0-11	72	40	180
12-19	32	18	178
20-44	111	78	142
45+	36	53	68

For the period of the last four years before a North American fundamentalist mission was set up in 1978, Schievehöfel determined an infanticide rate of 43 per cent (three girls for every boy), which had changed a sex ratio at birth of 96 (24 boys and 25 girls) to 190 (19 boys and 10 girls). Boys and men died of accidents and armed conflict more often than females: 28 per cent of all adult male deaths were violent, compared to 11 per cent of female deaths. As among the Inuit, polygyny was rare. The general preference appears to have been to raise first-born daughters and kill higher-order ones.¹⁸

Similar imbalances have been observed in other high-attrition environments. Among the Yanomamö in the period from 1964 to 1974, first births produced a sex ratio of 143 (n=175) and later births one of 126 (n=506). This suggests that 20-25 per cent of all newborn females were eliminated after birth. As in other cases, these elevated sex ratios even out later on: a juvenile sex ratio of 132 (for ages 0-14) dropped to 108 for all ages 15+. Inter-male violence was extremely high.¹⁹ Among the Tikopia, in 1929 the sex ratio was 138 at ages 0-17, 97 at ages 18-47, and 110 at ages 48+. In this case, hazardous sea voyages of young men restored the balance, the functional equivalent of violent death in other societies.²⁰

¹⁴ E.g., Schrire and Steiger 1974: 168-9; Damas 1975: 412.

¹⁵ Irwin 1989: 240-3.

¹⁶ Irwin 1989: 245-6.

¹⁷ Schievehöfel 1989.

¹⁸ Bulmer 1971: 153.

¹⁹ Chagnon, Flinn and Melancon 1979.

²⁰ Borrie, Firth and Spillius 1957.

Is this “high attrition” scenario relevant for our understanding of ancient societies? As ecological conditions were far less unfavorable in the Mediterranean, socially induced attrition would have had to be extremely strong to encourage a significant degree of ‘prospective’ femicide. This situation may conceivably have occurred in polities with very high military mobilization ratios and casualty rates. Athens at the time of the Peloponnesian War or the Roman Republic during the First and Second Punic Wars come to mind. In these societies, strict socially imposed universal monogamy would have made it difficult to absorb a large surplus of marriageable women, although a combination of frequent male remarriage at higher ages and lower rates of female remarriage might have alleviated the pressure. Unfortunately, we are reduced to mere conjecture: while high male attrition rates and monogamous practices, in conjunction with cultural acceptance of infanticide, may very well have resulted in a significant degree of femicide, it seems impossible to test this assumption.

In my second ideal type, sex ratio imbalances caused by femicide or benign neglect are maintained across the life cycle, leading to high sex ratios overall. An extreme variant of this is represented by the Jhareja Rajputs of Gujarat who in the early nineteenth century killed almost all of their female newborns because hypergamous practices ensured that their sons attracted lower-status brides with substantial dowries but discouraged investment in their own daughters.²¹

Population registers from early Ptolemaic Egypt (third century BCE) are the only body of documentary data from the Greco-Roman period that *may* point to elevated sex ratios. For 337 recorded members of Greek settler families who formed conjugal, extended or multiple families, the sex ratio was 136, compared to a well-balanced sex ratio of 98 for 603 Egyptians living in equivalent types of families. The high sex ratio for Greek families was caused by the preponderance of sons over daughters and the presence of unmarried co-resident brothers, the latter presumably representing excess sons at a later stage of the household life cycle. As Dorothy Thompson and Willy Clarysse note in their discussion of these data, hypergamous practices – with Greek males marrying local Egyptian women who brought in dowries – appear to have developed in response to this imbalance.²² As the Indian example mentioned above indicates, lucrative hypergamy may have served to maintain and reinforce discrimination against daughters within the privileged group (i.e., Greek settlers), thereby encouraging femicide and high sex ratios in the long term. However, it is worth pointing out that much of the scarcity of unmarried daughters relative to unmarried sons can be more innocuously explained with reference to sex differences in the age at first marriage: delayed male marriage would have created a surfeit of (adult) sons who continued to live with their parents, thereby creating the misleading impression of a high sex ratio.²³ For this reason, it is merely possible but not certain that these records reflect femicidal practices.

Persistent sex ratio imbalances also occur in less extraordinary circumstances and in much larger populations, most notably in historical as well as present-day India,

²¹ Pakrasi 1970; Dickemann 1979a. Cf. Dickeman 1979b on femicide in hypergamous dowry systems more generally.

²² Clarysse and Thompson 2006: 307-14, esp. 312-4.

²³ See Manning and Scheidel 2010 for supporting argument. The records list only individuals aged 14+.

Pakistan, Bangladesh, China, and Japan.²⁴ This raises the question whether similarly potent preference for sons translated to comparable practices in the Greco-Roman world.²⁵

How can the study of skeletal remains contribute to an answer? In a “high attrition” environment, we might expect to find a strong male bias among skeletons between late infancy (assuming that most femicide or fatal neglect had occurred by then) and the late teens and an increasingly balanced ratio afterwards (assuming that most war victims were deposited on the spot rather than repatriated for burial). Moreover, we would expect this pattern to be quite narrowly limited to particular locations and periods, characterized by endemic violent attrition.

A “persistent imbalance” scenario, by contrast, would be compatible with elevated sex ratios among skeletons from late infancy all the way into much higher ages, and, possibly though not certainly, also with more widespread or long-term occurrence (assuming that femicide arising from generalized sex preference was a stable cultural practice that did not depend on more flexible environmental incentives such as the intensity of warfare).

Both scenarios predict elevated female mortality either/both immediately after birth (in the case of outright femicide, but only if such babies were properly interred) or/and during the first few years of life (as the result of differential neglect). Whether it is actually possible to track such mortality imbalances at very early ages in the skeletal record is of course another question.

Skeletal sex ratios derived from morphological observation tend to be both high in the aggregate and implausibly distributed if disaggregated according to age.²⁶ This leaves little hope for successful empirical tests of different models of femicide. It is however worth noting that a strong concentration of bodies aged 38-41 weeks at Romano-British sites has been interpreted as circumstantial evidence for a significant degree of infanticide overall.²⁷

DNA analysis is currently the only viable method for investigating ancient femicide. It is still early days: existing studies are extremely rare and operate with very small samples. Two studies of Romano-British specimens and one study of late Roman material from Palestine have produced unexpected results: a surfeit of males among putative victims of infanticide. Of 19 specimens from a deposit of some 100 neonatal skeletons from a sewer underneath a late Roman bathhouse in Ashkelon, 14 were male and only 5 female.²⁸ The researchers seek to account for this imbalance by conjecturing that those were the children of prostitutes working in the bathhouse (doubling as a

²⁴ The literature on the scale and causes of this phenomenon is vast: for historical data, see, e.g., Ping-ti Ho 1959: 58-9; Lee 1981; Lee, Campbell and Tan 1992; Lee, Feng and Campbell 1994; Mungello 2008 (China); Bowles 1953: 4; Eng and Smith 1976; Smith 1977; Formanek 1986 (Japan); for the more recent past and contemporary conditions, e.g., Miller 1981, 1987; Das Gupta 1987; Sathar 1987; Harriss 1989; Hewlett 1991; Johansson and Nygren 1991; Basu 1993; Kishor 1993; Clark 2000; Klasen and Wink 2003; Li, Zhu and Feldman 2004; Fuse and Crenshaw 2006; Bhat and Sharma 2007; Pande and Astone 2007; Srinivasan and Bedi 2008; Attane 2009; Gill and Mitra-Kahn 2009; Oster 2009.

²⁵ For son preference, see, e.g., Williamson 1976; Arnold and Kuo 1984; Johansson 1984; Pande and Astone 2007.

²⁶ See esp. Parkin 1992: 50-8; and cf. also Mays 1995.

²⁷ Mays 1993.

²⁸ Faerman et al. 1998. For the find itself, see Smith and Kahila 1992.

brothel) and that in this specific environment girls were of higher value and worth rearing. Yet this ingenious construct is qualified by similar findings from otherwise unexceptional Romano-British burial sites, which yield a combined split of 12 males to 5 females.²⁹ Larger samples are needed to determine whether these findings are representative.

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²⁹ Mays 2001, with Waldron, Taylor and Rudling 1999.

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