DEMOGRAPHY AND THE EXPOSURE OF GIRLS AT ATHENS

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IT IS NOW GENERALLY AGREED THAT Athenians of the classical period did not raise all their children.[1] Exposure—the nearest equivalent of the Greek words[2]—must often, perhaps even frequently, have been the fate of deformed children or the children of unwed mothers. But two passages in Plato's *Theaetetus* (149a–151c, 160e–161a), where Socrates compares an idea to a newborn baby and proposes to inspect it to decide whether it should be rejected, show that healthy children ostensibly born within marriage could be exposed as well.

It is less clear that girls were regularly exposed, or exposed more often than boys. The subject is important for two reasons. First, it has a place in the debate on the position of women at Athens. We need not believe that fathers (or mothers) who exposed newborn daughters were motivated by actual hostility, conscious or even unconscious, towards them. But a tendency to expose daughters more readily than sons implies that it was more important to raise boys than girls, and that men were valued more highly than women. To quote a standard textbook of demography: "Wherever infanticide is practised, female infanticide is the rule ... supplemented by the elimination of defective and unhealthy offspring and those undesirable by reason of some magical (e.g., multiple births) or social (e.g., illegitimacy) factor. Infanticide is thus associated with the higher valuation of males."[3]

Secondly, it raises broad methodological issues. Our literary evidence is inconclusive. According to a passage in the third-century comic poet Poseidippus, "Everyone raises a son even if he is poor, but exposes (ἐκτίθησι) a daughter even if he is rich" (11E. = Stob. *Flor.* 77.7). But there are indications in other authors that girl babies were as welcome as boys.[4]

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[1]For a good discussion, especially of the literary evidence, with a full bibliography, see L. R. F. Germain, "Aspects du droit d'exposition en Grèce," *Rev. hist. de droit fr. et étr.* 47 (1969) 177–197.

[2]See the endnote for a discussion of the Greek words.

[3]W. Petersen, *Population*[3] (New York 1975) 205.

[4]A few examples: Plato's *Laws* gives no fixed maximum for the number of children, but sets one boy and one girl as the minimum (11.930c.). Aristotle's *Rhetoric* speaks of the blessings of *euteknia* and *polyteknia*, having many good children, both male and female (1.1361a6). Twins, a boy and a girl, are exposed in Menander's *Periciromene*; the old woman who finds them chooses to keep the girl for herself (121–122).

PHOENIX, Vol. 35 (1981) 4.

And in any case it is hazardous to set the extent of any social practice by reference to scattered casual remarks in literary sources. We need a more quantitative method.

Two possible sources of quantitative data, grave epitaphs and skeletons, are too fragmentary and too unreliable to be used with any confidence. But Donald Engels has recently tried a new approach, using an argument from demographic probability to conclude that there was no widespread exposure of girls in the ancient world.[5]

My purpose in the first section of this paper is to show that Engels' argument is unsound. I then proceed in the second to develop a different demographic argument, one that tends to support the contrary view, that exposure of girls was widespread, at least in classical Athens. Note, however, that my own argument is not meant to settle this debate once and for all; I claim only to clarify some demographic data and techniques relevant to discussions of this and related problems in Athenian social history.

Engels argues that "a high rate of female infanticide in antiquity was demographically impossible . . ." (112). He notes that populations before the "demographic transition" of the eighteenth century had a very slow rate of natural increase, and assumes that this was so during antiquity.[6] Birth rate and death rate were very nearly the same. As a result, ". . . the

[5]D. Engels, "The Problem of Female Infanticide in the Greco-Roman World," *CP* 75 (1980) 112–120.

[6]Though population-growth was low until the mid-eighteenth century, isolated spurts did occur. So A. J. Coale, *Scientific American* 231 (Sept. 1974) 47: "Although the arithmetic of growth leaves no room for a rate of increase very different from zero in the long run, short term variations were probably frequent and of considerable extent." (Cf. J. D. Durand, *Population and Development Review* 4 [1978] 287.) There were such spurts in population at Athens (though Engels is skeptical: 115 n. 17 at 116). The dramatic increase in the number of habitation-sites during the eighth century points to a rapid jump—perhaps a doubling or even a trebling—in population (J. N. Coldstream, *Geometric Greece* [London 1977] 109, 367–369); there was "a considerable natural increase of the population between 480 and 430, and between 400 and 320" (A. W. Gomme, *The Population of Athens in the Fifth and Fourth Centuries B.C.* [Oxford 1933] 34, cf. A. H. M. Jones, *Athenian Democracy* [Oxford 1957] 8, 177–180).

This growth in population is not inconsistent with the continued practice of exposure, even at the same levels. Increased prosperity—the most likely cause of the rise in population—probably improved the level of nutrition for most Athenians. And there is some evidence that diet influences the number of times a woman conceives; see R. E. Frisch, J. W. McArthur, "Menstrual cycles: fatness as a determinant of minimum weight for height necessary for their maintenance or onset," *Science* 185 (Sept. 1974) 949–951, W. H. Mosley, ed., *Nutrition in Human Population* (New York 1978) 87–90. The importance of this effect has been doubted; see S. L. Huffman, A. K. M. Alauddin Chowdhury, J. Chakraborty, W. H. Mosley, *Pop. Stud.* 32 (1978) 251–260; S. L. Huffman, A. K. M. Alauddin Chowdhury, Z. M. Sykes, *Pop. Stud.* 34 (1980) 337–347. But it is at least possible that many more children were conceived and born during periods of growth while many were still exposed.

highest average population growth rate in antiquity was probably little more than 1 per 1,000 per year for any long period and for any large population" (116).

Engels invites us to consider the effects of a high rate of female infanticide on such a population. The death rate would immediately climb, and the removal of girls would soon cut the birth rate to such an extent that, without a massive influx of immigrants, the population would decline disastrously. Engels estimates that the killing of 20 percent of all newborn girls in a population with a birth rate and death rate of 40 per 1,000 per year would "reduce the population by half in 57.75 years, by three-quarters in 115.5 years, by seven-eighths in only 173.25 years" (118–119).[7]

Such a situation, he says, is preposterous; no human society could allow it to continue. He concludes: ". . . a rate of 10 per cent of female births killed per year would be highly improbable, and the rate almost certainly never exceeded more than a few per cent of female births in any era" (120).[8]

Engel's article includes a good discussion of the unreliability of the evidence from gravestones and skeletons, and a helpful outline of some demographic principles. But his argument will not do. It amounts to a proof that female infanticide could not have taken place in *any* population with a low rate of natural increase, that is, in virtually any primitive or pre-industrial population. But it is clear that, on the contrary, infanticide, especially female infanticide, is prevalent in such populations. A study of ethnographical reports on 393 widely scattered cultures shows that 179 commonly and 29 occasionally practised infanticide, predominantly of girls.[9] And a recent survey concludes, "Infanticide has been

[7]Engels suggests that ancient birth rates "probably never exceeded 50 per 1,000 per year," and implies that this must have been so for pre-industrial societies in general (117 n. 21). Only about 500 of every 1,000 in any society were women; and of those perhaps 300 in any high-mortality population are in any year sterile, unmarried, or too old or too young to give birth. In effect, then, 200 women must produce 50 children each year; that is, each woman must bear a child every fourth year. If women are fertile for 25 years or so—for example, from 15 to 40—they will bear on the average something over 6 children each. A recent study indicates that several seventeenth- and eighteenth-century populations in Europe and North America, and contemporary populations in the Third World, have reached or exceeded this level (H. Leridon, *Human Fertility. The Basic Components* ([tr. J. F. Hilzner, Chicago 1977] 104–120). We should not reject the possibility that the birth-rate in classical Athens was as high.

[8]For a similar argument about the Inuit, see C. Schrire, W. L. Steiger, "A matter of life and death: an investigation into the practice of female infanticide in the Arctic," *Man* 9 (1974) 161–184. In their computer simulation, however, the hypothetical endogamous group of 408 people actually increased in the first 100 years, even though it "proceeded inexorably toward extinction in the long run" with more than eight percent female infanticide (178), and they found rates of 30 percent to 50 percent in some actual bands. They explain this as "the result of an emergency situation" (179).

[9]W. T. Divale, M. Harris, *American Anthropologist* 78 (1976) 525. The article of which this survey is a part has aroused a spirited debate, including charges that the

practised on every continent and by people on every level of cultural complexity, from hunters and gatherers to high civilizations, including our own ancestors. Rather than being an exception, it has been the rule".[10] Another recent review notes only two examples of preferential male infanticide (from Carthage and East Africa); "female infanticide, on the other hand, is very common."[11] And the rate of female infanticide is often much higher than 10 percent: ". . . preferential female infanticide operates in a variety of human socioeconomic systems as a significant contributor to the maintenance of social structure at rates ranging from 10–100 per cent of female live births per social unit".[12]

How can we reconcile these facts with Engels' demographic demonstration?

Engels seems to assume that all populations seek to grow as quickly and as large as they possibly can. His explanation for the slow rate of population growth in antiquity (and other earlier civilizations) stresses what Malthus called "positive checks," lack of food, disease. He pays too little attention to the "preventive checks" on population growth, social

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authors inadvertently counted some groups more than once; see *ibid.* 80 (1978) 110–115, 379–386, 665–672; 81 (1979) 379–381. But no critic has denied that infanticide is widespread.

[10]L. Williamson, "Infanticide: an Anthropological Analysis," in M. Kohl, ed., *Infanticide and the Value of Life* (Buffalo 1978) 61. Cf. M. Dickeman, "Demographic Consequences of Infanticide in Man," *Annual Review of Ecology and Systematics* 6 (1975) 130: "Evidently, the role of systematic infanticide in birth spacing, family completion, and adjustment of sex ratios can be significant. At rates of 5 to 50 percent of all live-births, it occurs in hunter-gatherers, horticulturalists, and stratified agrarian societies."

[11]Dickeman (above, n. 10) 129.

[12]Dickeman (above, n. 10) 130. Reported rates of female infanticide include: 15 to 20 percent among the Yąnomamö of southern Venezuela and northern Brazil (J. V. Neel, "Lessons from a 'primitive' people," *Science* 170 [Nov. 1970] 815–822); 20 percent in ninth-century St. Germain-des-Prés (E. R. Coleman, "L'infanticide dans le haut moyen âge," *Annales ESC* 29 [1974] 315–335); 10 to 25 percent in late Tokugawa Japan (Dickeman [above n. 10] 128); 10 to 30 percent among the Tikopia of Polynesia (W. D. Borrie, R. Firth, J. Spallius, "The Population of Tikopia, 1929 and 1962," *Pop. Stud.* 10 [1957] 229–252); 15 to 50 percent among some Australian tribes (J. B. Birdsell in R. B. Lee, I. DeVore, eds., *Man the Hunter* [Chicago 1968] 236; 30 to 60 percent among some groups of Arctic Inuit (Schrire, Steiger [above n. 8] 167, 178–179).

Under-reporting of women may inflate some of these estimates. But as Dickeman (above, n. 10, 132) points out, "Ideological disapproval and even shame and secrecy are by no means incompatible with significant rates of infanticide." So reports may also understate the extent of infanticide in some cultures because informants feared investigators' disapproval.

The argument of N. A. Chagnon, M. V. Flinn, T. F. Melancon that the sex ratio among the Yąnomamö, 129 males to 100 females, is largely the result of a remarkably high male-female sex ratio at birth (in N. A. Chagnon, W. Irons, eds., *Evolutionary Biology and Human Social Behavior* [North Scituate, Mass. 1979] 290–320) seems to me unconvincing.

and cultural measures such as abortion, contraception, segregation of women after child-birth, prolonged breast-feeding, polyandry, polygamy and concubinage, postponed marriage—and infanticide.[13] Yet ancient writers on biology and medicine mention a large assortment of theories and practical measures for controlling population.[14] And both Plato and Aristotle were much concerned with the proper size of the state. In short, Engels' mistake is to assume what he set out to prove: the low rate of increase in the ancient population is at least partly a result of conscious efforts in population control, including infanticide.[15] The equilibrium between birth rate and death rate—which Engels argues infanticide would upset with disastrous consequences—is itself partly a product of infanticide.

This is not to say that demography has nothing to contribute to a discussion of female infanticide. But we must be very careful in applying demographic principles, no matter how useful in general, to specific problems in social history; and we must take into account cultural variables in building mathematical modes.[16]

One cultural variable of special importance to population is marriage patterns. The birth rate is not simply a function of the number of men and women of child-bearing age. New citizens are usually recruited through socially recognized sexual unions, marriages. And marriage patterns can greatly influence the citizen birth rate. For example, polygyny or concubinage may involve the monopoly of young women of child-bearing age by an older and less fertile elite, and so cut the birth rate. On the other hand, even in groups that regularly practise preferential female infanticide, men may find wives if they are prepared to wait for them.

[13]For a brief discussion of preventive and positive checks see, e.g., W. S. Thompson, D. T. Lewis, *Population Problems*[5] (New York 1965) 18–20, 385–399.

[14]See, most recently, P. A. Brunt, *Italian Manpower 225 B.C.–A.D. 14* (Oxford 1971) 131–155; E. Nardo, *Procurato aborto nel mondo greco romano* (Milan 1971); W. A. Krenkel, "Der Abortus in der Antike," *WZ Rostock* 20 (1971) 443–452; S. K. Dickison, "Abortion in Antiquity," *Arethusa* 6 (1973) 159–166; A. Preus, "Biomedical Techniques for Influencing Human Reproduction in the Fourth Century B.C.," *Arethusa* 8 [1975] 237–263; R. Etienne, "Ancient Medical Conscience and the Life of Children," *Journal of Psychohistory* 4 (1977) 131–163; E. Eyben, "Geboortenbeperking in de grieks-romeinse oudheid," *Kleio* 7 (1977) 97–127; W. A. Krenkel, "Familieplanung und Familienpolitik in der Antike," *WJb* 4 (1978) 197–203; W. den Boer, *Private Morality in Greece and Rome. Some Historical Aspects* (Leiden 1979) 272–288.

[15]Cf. S. Polgar, *Current Anthropology* 13 (1972) 205: "Why, then, did population grow so slowly during most of pre-agricultural history? . . . Probably most important in keeping reproduction low were infanticide and abortion."

[16]An example: E. Shorter, *The Making of the Modern Family* (New York 1975) 199–204, has argued that, during the eighteenth century, infant mortality declined in western Europe but rose in central Europe. He explains the difference by a social factor, improvement in maternal care and the spread of breast-feeding in the west.

Birdsell has shown that even in bands that kill up to 50 percent of their female newborns every man can marry—provided that girls marry young (between 11 and 14), most men marry at around 40, and some younger men marry widows (364–366).[17]

I shall now show that demography and an examination of Athenian marriage patterns can be used to develop an argument contrary to Engels's, that the Athenians did refuse to rear 10 percent or more of their newborn girls. I shall suppose that all Athenian girls were raised; show that this would have resulted in a "marriage-squeeze," an oversupply of men or (as in this case) of women of marriageable age;[18] and then argue that the consequences, a large number of girls who married late or not at all, would have been unwelcome to the Athenians and are unlikely to have occurred.

The effects of a "marriage-squeeze" have been ignored in earlier discussions of the exposure of girls; for this reason, I explore them here at some length. It is important to note, however, that the marriage-squeeze is only one of a number of relevant demographic factors, and that I have chosen virtually to ignore the others here. For the fifth century at Athens these include cleruchies, the exceptional battle casualties of the 460s and the Peloponnesian War, the famine of the 450s, and, above all, the plague. Any demographic discussion which claims to be conclusive—as this does not—must include a full treatment of these factors. I aim to clarify only one aspect.

I shall base my discussion of the marriage-squeeze on two assumptions about the Athenian marriage pattern. (i) All Athenians wished to marry, and preferred to marry other Athenians if possible.[19] Under Pericles' citizenship-law of 451/0, only the children of Athenian parents could be Athenian citizens.[20] After this law, Athenian men will have wished to

[17]J. B. Birdsell, *Human Evolution* (Chicago 1972) 354–366. Cf. J. Hajnal in D. V. Glass, D. R. C. Eversley, eds., *Population in History* (London 1965) 129: "It is thus seen that changes in the *differences* between the ages of marriage of men and women may compensate for variation in the balance between the numbers of each sex."

[18]The term "marriage squeeze" was first used by P. C. Glick, D. M. Heer, J. C. Beresford in M. B. Sussman, ed., *Sourcebook in Marriage and the Family* (New York 1963) 38. Recent discussions include D. S. Akers, "On measuring the marriage squeeze," *Demography* 4 (1967) 907–924; H. V. Muhsam, "The marriage squeeze," *Demography* 11 (1974) 291–299; Muhsam, "Structural and cyclical causes of marriage squeeze under conditions of high mortality," *Annales de démographie historique* (1978) 295–303.

[19]Note here that Athenian cult, and Greek religion in general, did not normally involve a celibate priesthood. As W. Burkert remarks, "Lebenslangen Coelibat gibt es kaum" (*Griechische Religion der archaischen und klassischen Epoche* [Stuttgart 1977] 157). Unmarried Athenians could not find a niche as priests or nuns.

[20]*Ath. Pol.* 26.3. Under exceptional circumstances, the Athenians could grant non-citizens *epigamia*, the right to marry citizens on the same basis as Athenians; so for the Euboeans (Lys. 34.3).

marry Athenian women to gain legitimate heirs: the *kyrioi* of Athenian women probably preferred them to marry Athenian men. (ii) Athenian men generally married late, women early. The actual ages are more in doubt. But we will probably be close to the truth if we assume that men married at about 30,[21] women at about half that, between 14 and 18.[22]

[21]Hesiod says men should marry around 30 (*WD* 695–697), Solon between 28 and 35 (27.9W.), Plato twice sets the earliest suitable age at 30 (*Leg.* 4.721b, 6.785b), once at 25 (*Resp.* 5.460e), once at between 25 and 35 (*Leg.* 6.772d). Aristotle recommends 37 or a little before (*Pol.* 7.1335a29, cf. *Rhet.* 2.1390b9, where the body is said to be most fully developed from 30 to 35).

Thirty is probably close to the normal age of marriage for Athenian men. There is one suggestive piece of indirect evidence. Thirty was the age at which Athenian men became eligible to serve as jurors (*Ath. Pol.* 63.3, Dem. 24.150) and as *bouleutai* (Xen. *Mem.* 1.2.35, cf. *IG* $1^2$10.9–11, probably from an Athenian model); their last official duty, service as arbitrators, took place in their 60th years (*Ath. Pol.* 53.4). If Athenian men married and had children about 30, their eldest sons would be ready to replace them as active and responsible members of the community on their retirement. (Similarly, among the Sarakatsan shepherds, fathers retire at 60, and their eldest sons marry and take charge of family affairs at 30: J. K. Campbell, *Honour, Family and Patronage* [Oxford 1964] 83–88, 161–164.)

Note, however, that we know of Athenians who married much younger. The speaker of Dem. 40 married at 18. (An unusual case: his father was sick and seems to have taken the initiative in finding his son a bride so he could have grandchildren before he died [12–13]. The result was that people mistook the speaker's daughter for his sister [56].) Dicaeogenes, mentioned in a fragment of Lysias [24 = *Suda* s. *τέως*], also married on coming of age. Critobulus in Xenophon's *Symposium* may be a similar case; he has just married (2.3), but his beard has not yet grown [4.23]. (But Critobulus has also just begun to leave the role of *eromenos* [8.2], a role not normally compatible with marriage; see Pl. *Phdr.* 240a. We should perhaps not take this marriage too seriously. Xenophon seems throughout concerned to emphasize that his banqueters are active and even emotionally involved heterosexuals [4.8, 8.3, 9.7].) Finally, bridegrooms in new comedy sometimes seem to be younger than 30. In Menander's *Samia*, for example, Moschion is a *meirakion* [114–115]. Perhaps men did begin to marry earlier in the later fourth century; or perhaps the word suggests that, unmarried, they acted and were regarded much like adolescents today.

[22]*ἡ δὲ γυνὴ τέτορ' ἡβώοι, πέμπτῳ δὲ γαμοῖτο* says Hesiod (*WD* 698). This probably means that girls should marry in their fifth year after puberty, and so about 18. Arist. *HA* 7.581a14–31, Didymus in Harp. s. *'επὶ δυετὲς ἡβῆσαι*, Schol. Aeschin. 3.122 set *ἥβη* at 14, regarded as a crucial point in the life-cycle by many sources: see A. Schmidt, *Handbuch der gr. Chronologie* (Jena 1888) 315–316; Plato's *Laws* implies puberty took place at 13 (8.833 c–d); D. W. Amundsen, C. J. Diers, "The Age of Menarche in Classical Greece and Rome," *Human Biology* 41 (1969) 125–132, conclude from literary evidence that puberty began at 13 or 14.

Our limited evidence for classical Athens suggests an earlier age of marriage. Xenophon's Ischomachus married a girl of 14 (*Oec.* 7.5); but he may have wanted an especially young—and malleable—bride. Demosthenes' sister, 5 when her father died, was to be married 10 years later (Dem. 27.4, 29.43). The eponymous archon leased out houses of *epikleroi* until they were 14, and presumably of marriageable age (*Ath. Pol.* 56.7).

In the *Republic*, Plato says a woman may begin to bear children in her twentieth year (5.460e); in the *Laws*, he sets the earliest age of marriage at 16 (6.785b: 8.833d is

For convenience in using life tables, I have set the age of marriages for women at 15.

It should at once be obvious that, if Athenian women enjoyed the same mortality rate and life expectancy at birth as Athenian men, many more women than men would survive to their respective ages of marriage. We can arrive at a rough indication of the relative proportion of women and men surviving to the age of marriage under these conditions by using a model life table for modern populations.[23] For the following calculation, and others in this paper, I have used the Coale-Demeny south region model life table, based on population-data from southern Europe in the nineteenth and twentieth centuries.[24]

Most primitive and pre-industrial populations have a life expectancy at birth of between twenty and thirty years; the life expectancy at Athens probably fell within this range.[25] The Coale-Demeny south region tables

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obscure, but does not necessarily contradict this). Aristotle says women should marry at about 18 (*Pol.* 7.1335 a 28). These recommendations may be meant as correctives to contemporary Greek, perhaps including Athenian, custom. Aristotle at least says that in some states men and women marry too young: the women therefore die more often in childbirth and are besides less chaste (*Pol.* 7.1335 a 15–25).

[23]Life-tables are based on demographic data from known historical populations. But we have very little reliable information on pre-industrial civilizations, even less on such populations living in climatic conditions or with social structures like those of classical Athens. And even if such comparative information were more plentiful we would have no guarantee that Athenian demography was just like any one model or synthesis of models. There is therefore a strong argument against the use of modern life-tables for the study of ancient and mediaeval populations. See G. T. Acsádi, J. Nemeskéri, *History of Human Life Span and Mortality* (Budapest 1970) 29, 45–46.

But life-tables do provide a fairly wide range of possible populations—the U.N. tables show 40 different model populations. They cannot be relied upon to supply accurate absolute values. But they do provide guidelines to predict how populations are distributed, and can be used, with caution, in the absence of any other reliable evidence. (Acsádi and Nemeskéri use them themselves: 173). For the value of life-tables for the study of ancient populations see K. Hopkins, "On the Probable Age Structure of the Roman Population," *Population Studies* 20 (1967) 245–264, and, for brief defences of the assumption of their applicability in general, see J. A. Moore, A. C. Swedlund, G. J. Armelargos, "The Use of Life Tables in Paleodemography," in A. C. Swedlund, ed., *Population Studies in Archaeology and Biological Anthropology: A Symposium* (*American Antiquity* 40 no. 2 pt. 2 *memoir* 30, 1975) 57–70; N. Howell, "Toward a Uniformitarian Theory of Human Paleodemography," in K. M. Weiss, ed., *The Demographic Evolution of Human Populations* (London 1976) 25–40 = *Journal of Human Evolution* 5 (1976) 25–40.

[24]A. J. Coale, P. Demeny, *Regional Model Life Tables and Stable Populations* (Princeton 1966). The south region model is derived from 5 tables for Italy, 1876–1910; 8 from Portugal, 1919–1958; 5 from Spain, 1910–1940; 3 from South Italy, 1921–1957; and one from Sicily, 1951.

[25]K. Hopkins suggests that between 20 and 30 years is a "reasonable and demographically probable" life-expectancy for Rome (above, n. 23, 245, cf. 264), and accepts "the rough compatibility of Athenian and Roman mortality" (250 n. 14). Engels agrees

give the following number of female survivors at 15 and 30 for various values of life expectancy at birth between 20 and 30.

life expectancy at birth	20 yrs.	22.5	25	27.5	30
survivors to exact age 15 (of 100,000 born)	38,056	41,940	45,646	49,188	52,579
survivors to 30	29,785	33,575	37,290	40,928	44,487
difference	8,271	8,365	8,356	8,260	8,092
difference expressed as a percentage of those surviving to 15	22%	20%	18%	17%	15%
growth rate[26]	0.00	0.00	0.00	0.00	0.00
gross reproduction rate[27] (mean age of fertility schedule 27 years)	3.170	2.829	2.560	2.344	2.165

These figures are meant for purposes of illustration only. They may produce hypotheses; they cannot provide proofs. We cannot know that rates of mortality at Athens exactly fit any one of the five life-expectancy "levels" in this table; and it is very unlikely that male and female rates would be exactly the same, as I assume here.[28] Nevertheless, the results are suggestive. The great difference in the ages of marriage of men and women might result in as many as one in five or six Athenian girls finding no husband of the preferred age when she reached 15.

These unmarried women would represent an economic drain on the individual *oikos* and a social anomaly for the *polis* as a whole. One recent

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that "average life expectancy at birth in antiquity was low, less than thirty years but above twenty years" (116).

[26]The assumption that the Athenian population showed no natural increase during the mid-fifth century is conservative; it tends to tell against, rather than strengthen, my argument. If on the contrary the citizen population grew rapidly during this period, as is possible (see above, n. 6), young people would make up more of the population and, given relatively constant levels of mortality, the proportion of 15-year olds to 30-year olds would increase. The marriage-squeeze would thus become more serious.

[27]The gross reproduction rate is the average number of *daughters* born to each woman in a cohort of women if they all survive to the end of their reproductive periods and bear children at the prevailing rate. In a society with a stationary population, a gross reproduction rate of about three implies that each woman must bear about six children. This level of fertility is high, but not remarkably so; see above, n. 7.

[28]I have repeated this assumption throughout this section in a crude attempt to correct for the bias of the Coale-Demeny tables, which assume a higher life-expectancy at birth and a lower rate of mortality at most levels for women. All calculations involving men have been made using the Coale-Demeny tables for women. I hope to show that there would have been an oversupply of marriageable girls at Athens if there was no regular exposure of newborns. This oversupply would be greater if male life-expectancy were lower and mortality at any age higher. Again, therefore, my assumption is conservative.

discussion implies that 4 minas was the average yearly cost of raising a girl in Demosthenes' circle, the Athenian elite.[29] But the Athenian's subjective belief about what a daughter cost him was probably more important than any objective calculation, and we have some comic complaints about the cost of raising girls.[30]

The longer a girl stayed at home, the more costly her upkeep—and the less likelihood of her marrying at all.[31] What if she didn't marry? A fragment of Antiphanes suggests that the life of a prostitute was one option (212E. = Ath. 13.572a). To live with a man as a *pallake*, a concubine, was another. Such women were surely at some disadvantage socially (cf. Lys. 1.31); and their children faced restrictions.[32] Few families could welcome this status for their daughters.

It is clear that for a woman to remain unmarried was a personal and family tragedy.[33] The Athenians charged their political opponents with preventing girls from getting married (Lys. 12.21, 13.45, Hyper. 2.12–13 Colin). They took care to provide dowries, without which a girl might not find a husband, for their own daughters and those of their relatives or of other citizens (Lys. 19.59, etc.). The law requiring that poor women be supplied with dowries in certain circumstances (Isaeus 1.39, Dem. 43.54) indicates that the community as a whole felt some urgency to help girls find husbands (cf. Aesch. *Eum.* 959–960). Indeed, the *polis* was supposed to have dowered the daughters of Aristides (Aeschines 3.258, Plut. *Arist.* 27.1).

And yet our demographic projection would lead us to conclude that up to one in five Athenian girls could not be married at the conventional age, might never be married—*if* the Athenians raised all their girl babies. Now, consider briefly the position of the father of a newborn girl at Athens. He was used to making decisions for and about women and children, and was in general encouraged to do so. He was no demographer; but he would be aware of the costs of raising a daughter and of the risk that she might not marry—and our sources mention economic

[29]D. M. Schaps, *Economic Rights of Women in Ancient Greece* (Edinburgh 1979) 78.

[30]Menander 60E. (= Stob. *Flor.* 77.4), Anaxandrides (78E.) or Diphilus (136K.) (= Stob. *Flor.* 68.7).

[31]See Aristophanes *Lys.* 545–547 and cf. Menander 18E. (= Stob. *Flor.* 77.6), Anaxandrides 68E. (= Arist. *Rh.* 3.1411a18).

[32]Bastard children of Athenian parents were excluded from the *ankhisteia* (Ar. *Av.* 1649–1668, Isaeus 6.47, Dem. 43.51) and faced limits in their rights to testamentary bequests (Harp. s. *notheia*, *Suda* s. *epikleros*, Schol. Ar. *Av.* 1655); There is even some doubt as to whether or not they could be citizens—see recently P. J. Rhodes, *CQ* 28 (1978) 89–92.

[33]In tragedy, Sophocles' Electra laments that she has no husband (*El.* 188), Antigone that she will have none but Acheron (Soph. *Ant.* 810–813, cf. 654, Eur. *IT* 369–371, *Med.* 985, *Or.* 1109, *Hec.* 416–418, 612, *IA* 461, *IG* 1^2 1014 = Peek, *GVI* 68).

considerations as a motive for exposure (of both boys and girls).[34] And he would face no legal or customary compulsion to raise all his children. Isn't it reasonable to suppose that under these circumstances the exposure of girls was widespread?

It should be said at once, however, that my demographic argument is less convincing than it may seem. I have assumed that female life-expectancy at birth was equal to that of males. This is, in fact, unlikely to have been so.

We are used to women outliving men, and the standard life-tables show that women outlive men by 4 years in low-mortality populations (life expectancy 60+) and by 2 years in populations with high mortality.[35] But populations are known in which men live longer than women, mainly because the women work harder and get inferior food and care.[36] Athens was probably one of these. The author of the Hippocratic treatise *peri oktamenou* says that women reach puberty, the age of reason, and old age quicker than men because of the weakness of their bodies and their regimen (9.6). Aristotle agrees (*GA* 4.775a13–14, 18–19, cf. *On Length of Life* 466b10–17, 467a31–32). And there is reason to believe that Greek women were generally less well-fed than men.[37] We should therefore probably allow men a longer life-span than women.

[34]For poverty as a motive in exposure see Men. *Epitr.* 254–255, *Peric.* 811–812, Poseidippus 11E. (= Stob. *Flor.* 77.7), and cf. Ter. *Heauton.* 628 (a daughter). But it is often the poor who take in exposed children in Menander: a charcoal burner in *Epitr.*, a poor woman in *Peric.*, a farm bailiff in *Samia.*

Note that greater wealth need not necessarily mean that a family would raise more children. People are as concerned to maintain privileges as to ensure necessities. Mary Douglas reports that the Tikopia restrict their population (by exposing newborns) with regard to the supply of cocoanut cream, a luxury. She concludes, from this and other examples, " . . . it is the demand for oysters and champagne not for the basic bread and butter that triggers off social conventions which hold human populations down" ("Population Control in Primitive Groups," *British Journal of Sociology* 17 [1966] 263–273 at 267).

[35]See N. Howell, "The Feasibility of Demographic Studies in 'Anthropological' Populations," in M. H. Crawford, P. L. Workman, eds., *Methods and Theories of Anthropological Genetics* (Albuquerque 1973) 257–258.

[36]Cf. G. J. Stolnitz, *Population Studies* 10 (1956) 24: "On a world-wide basis the occurrence of higher male longevity has probably not been unusual at any time during the last century and may have been rather frequent before 1900." For example, in the early 1960s men in Pakistan had an average life expectancy 2.7 years higher than women (See A. El-Badry, "Higher Female than Male Mortality in Some Countries of South Asia: a digest," *Journal of the American Statistical Association* 64 [1969] 1234–1244). There is a good survey of the evidence in J. Knodel, S. De Vos, *Journal of Family History* 5 (1980) 149–155.

[37]Xenophon remarks that Greeks other than the Spartans begrudge girls food and drink (*Lac. Pol.* 1.3). Perhaps baby girls were fed less as well: in 489, Ionian mothers in Persepolis were given twice as large rations if they were nursing boys (for the reference see S. B. Pomeroy, *Goddesses, Whores, Wives and Slaves* [New York 1975] 238 n. 24). The *Historia Animalium* provides a justification: women need less food than men (Arist. *HA* 9.608b15).

How much longer? Basing his work on the study of skeletons, J. L. Angel has estimated the average life-span of classical Athenian men and women who reached 15 years as about 45 (men) and 35 (women).[38]

But Angel's figures are problematic, especially for women.[39] They are based on a very small sample: only 78 adult skeletons in all, taken from graveyards at two sites (Athens, Corinth) and distributed over some 300 years (650–350). They are internally inconsistent. Angel's figures for women show erratic peaks and valleys of mortality for adjacent five-year periods: three dead between 15 and 19, 6 between 20 and 24, just 2 between 25 and 29, 5 between 30 and 34. Real populations do not normally behave in this way.[40]

Finally, they show a life-expectancy for adult women that is improbably low. This is of course impossible to prove: but it is made likely by comparing Angel's value with model life-tables for modern populations. Thus, the Coale-Demeny tables include no projection for a population with an expectation of life at birth of less than 20 years. Women who reach 15 in the four regional model tables have a life expectancy of between 31.16 and 34.69 years: that is, they will reach almost 50 on the average. It does not seem likely that girls' life expectancy at birth was very much less than 20, or that the pattern of mortality was so different that those who survived to 15 could expect less than about 30 years of life.

It is possible to point out at least one reason why Angel's figures are so low. His work relies especially on analysis of the pelvis. But research carried out since this work was published indicates that to use the same chronology for female and male pelves—as Angel did—tends to underestimate the ages of older women by about 10 years.[41]

It is clear that here again we can do little better than make a guess. But it seems probable that the difference was rather less than that supposed by Angel. I propose, rather arbitrarily, to assume that men had a life expectancy at birth five years greater than women.[42]

[38]In J. L. Angel, "The Bases of Palaeodemography," *American Journal of Physical Anthropology* 30 [1969] 427–437: 44.1 [men], 35.9 [women]. Two later estimates by Angel are very similar: 44.5 [men], 34.6 [women] (*World Archaeology* 4 [1972] 94); 45.0 [men], 36.2 [women] (personal communication cited by Pomeroy [above n. 37] 66).

[39]Engels rightly notes that present methods for determining the age and even sex of skeletons are somewhat unreliable (112–113).

[40]Compare the remarks of Acsádi, Nemeskéri (above n. 23) 46: "The practical experiences underlying the construction of the U.N. model life tables was that the mortality of two adjoining age groups or cohorts does not differ considerably—apart from demographic catastrophes—whatever the level of mortality may be. In other words, only minor, accidental fluctuations of the mortality curve plotted according to age are to be expected, and no major breaks."

[41]See B. M. Gilbert, T. W. McKern, "A Method for Aging the Female *Os Pubis*," *American Journal of Physical Anthropology* 38 (1973) 31–38; B. M. Gilbert, *ibid.*, 39–40.

[42]It is important to note that this five-year spread is likely to be a year or two high rather than too low. Certainly the differences of life expectancy for the Egyptian men

A glance at the Coale-Demeny tables reveals that if men do live five years, on the average, longer than women, approximately equal numbers of men and women will survive to their projected ages of marriage. Once again, the figures printed below are illustrative only. And it should be noted that I have again used values from the female life tables to represent the mortality of both men and women in a crude attempt to correct for the Coale-Demeny tables' assumption that women outlive men.

male life expectancy at birth	25 yrs.	27.5	30	32.5
female life expectancy at birth	20 yrs.	22.5	25	27.5
number of men surviving to 30 (original number 100,000)	37,290	40,928	44,487	47,908
number of women surviving to 15 (original number 100,000)	35,552	41,940	45,646	49,188

There is no question here of an oversupply of marriageable girls. It appears, then, that this could not have supplied a motive for the regular exposure of girls. In fact, however, the disparity in male and female ages of marriage may cause another social problem, a large number of widows, and this, too, may have had an effect on the chances of girls getting married at the proper time.

We can estimate the number of widows and widowers in a population with the aid of life-tables.[43] There is, I think, no need to repeat the calculation for each step of the Coale-Demeny tables from 20 to 30. One example should be enough. If men have a life-expectancy at birth of 27.5,

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and women studied by M. Hombert, C. Préaux, "Recherches sur le recensement dans l'Egypte romaine," *Papyrologica Lugduno-Batava* 5 (1952), esp. 156–160, is less: their mean ages are 27.23 years (men), 26.38 years (women). If the spread at Athens were in fact less than that assumed here, both the number of girls surviving to the age of marriage and the excess of widows over widowers would increase.

[43]The likelihood of a woman's becoming a widow during any period is given by the product of the probability of her surviving and of her husband's dying within that period. These figures can be derived from life-tables. For example, the Coale-Demeny south-region table for life expectancy 22.5 (female) shows that 94 percent of the women who reach 15 and marry survive five years, to age 20. Of those with a life expectancy at birth of 27.5 years, only 93.1 percent survive from 30 to 35; 6.9 percent die. And if we once again use female life-tables to describe male mortality, and assume that men regularly marry at 30, we may say that 6.9 percent of husbands die during the first five years after marriage. Therefore, the chance of any woman becoming a widow in her first five years of marriage is (.94 × .069) 6.5 percent; expressed differently, 65 women in every 1,000 will become widows within the first five years of their marriage. If this calculation is repeated through an entire life-table, it will produce the percentage of women ever widowed. And a similar calculation will give the number of widowers within each period. Thus, again for the first five years after marriage, 55 (.917 × .060 × 1,000) men in every 1,000 married will become widowers.

I am very grateful to Prof. John Fox of York University for explaining this to me.

and women of five years less, 22.5, then 558 wives in every 1,000 (55.8 percent) will become widows at some time after their marriage. Men will lose their mates as well, but many fewer: 360 husbands in every 1,000 will become widowers at some time. There will, therefore, be a large disproportion in the numbers of widows and widowers; in this example, almost 200 more widows than widowers in every 1,000 marriages.[44]

What would be the social consequences of so large an over-supply of widows?

Athenian custom and law severely restricted a woman's political, legal and economic rights: it was her *kyrios*, her father and then her husband, who represented her in law and in any large-scale economic activity.[45] And the early age at which women married of course helped maintain and justify her dependence. But an Athenian wife had certain responsibilities of her own. Among the elite, she managed the *oikos*, directing the activities of slaves.[46] Among the poorer population, she was herself responsible for domestic production, or worked in the market.[47] No doubt she generally did what her husband told her. But she must have developed some sense of her own capabilities.

If her husband died, she might wish for more independence: a large number of such widows could even endanger the male domination of Athenian society. Or so at least some men may have thought: those famous words at the end of Pericles' funeral oration, urging women to do nothing to excite men's blame, or even praise, are addressed to the widows of the war dead (Thuc. 2.45.2).

The widow's father would probably be dead. A son—if she had one—could hardly exert the same authority as *kyrios* as a husband. We might therefore expect remarriage to be encouraged. And, in fact, what evidence there is does suggest that many widows remarried. We know of eleven Athenians who remarried after their spouses died: 8 were women.[48]

A neat solution to a potential social problem? But it would tend to create another. We have seen that there were many more widows than

[44]Some remarried widows and widowers outlived their new mates, some did not. I have not carried my calculations further to take into account variations in male and female mortality during these second marriages. I do not think this omission affects my argument to any significant degree.

[45]Women were prohibited from acting without their *kyrios*' consent (explicit or implicit) in commercial transactions involving more than the value of a medimnus of barley: see Ar. *Eccl.* 1026 + Schol., Isaeus 10.10, and Dio Chrys. 74.9, and, for a recent and valuable discussion, D. M. Schaps (above, n. 29) 52–58.

[46]See especially the account of a wife's duties outlined by Ischomachus in Xenophon's *Oeconomicus* (7.35–9.19).

[47]For female tradespeople and shopkeepers, see Schaps (above n. 29) 61–63.

[48]See W. E. Thompson, "Athenian Marriage Patterns: Remarriage," *CSCA* 5 (1972) 211–225, especially 219 n. 41.

widowers. And all eight of the remarried widows we know married Athenians. In other words, they removed eligible husbands from the pool available to young, unmarried women. We have returned to our original problem, although perhaps in a less extreme form. The excess of widows, and the desire for widows to remarry and so avoid a social anomaly (and perhaps disruption), will have resulted again in an oversupply of marriageable girls.[49] The easiest way to avoid this problem was to expose girls at birth. And 10 percent, or more, does not seem unlikely.

UNIVERSITY OF BRITISH COLUMBIA
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[49]I should mention one contrary indication. Women in Aristophanes' *Lysistrata* claim there are indeed too few men to marry, and so girls miss their chance (591–597). And a decree reported in later sources (Hieronymus [fr. 44–45 Wehrli] in DL 2.26, Ath. 13.555d–556b, Aul. Gell. *NA* 15.20.6, *Suda* s. *leipandrein*) and dated during the Peloponnesian war allowed an Athenian to marry one citizen woman and get citizen children from another as well. The authenticity of this decree has been doubted: see (for earlier skeptical literature) H. J. Wolff, *Traditio* 2 (1944) 85 n. 196, and, more recently, C. Hignett, *A History of the Athenian Constitution to the End of the Fifth Century B.C.* (Oxford 1952) 344–345, L. E. Woodbury, *Phoenix* 27 (1973) 24–25. But it does not seem improbable to me, and is at least consistent with passages in contemporary plays by Euripides; so J. W. Fitton, " 'That was no lady, that was . . .'," *CQ* 20 (1970) 56–66, P. T. Stevens, *Euripides Andromache* (Oxford 1971) on 464–493; the decree's authenticity is accepted by A. R. W. Harrison, *The Law of Athens* 1 (Oxford 1968) 17, D. M. MacDowell, *The Law in Classical Athens* (London 1978) 90. It sounds, then, as if there was in fact a surplus of marriageable women at Athens, for a time at least—as we should expect if all girls were raised. But I think it is best to regard this as our sources do, as an exceptional situation caused by heavy losses in the war; cf. Pomeroy (above n. 37) 66–67.

ENDNOTE

Greeks of the classical period did not speak of "infanticide" but of "exposure," "abandonment." Refusing to rear a child was described by *ektithemi* (especially), *apotithemi*, *ekballo*, and their cognates; Herodotus (1.116) and Euripides (*Ion* 956) call this act *ekthesis*, Aristotle discusses *apothesis* (*Pol.* 7.1335 a 19). For other examples of *ektithemi* in this sense in classical authors see, e.g., Hdt. 1.112, Eur. *Phoen.* 25, 36, *Ion* 18, 344, 345, 951, 954, 1398, 1413, Ar. *Nub.* 531, Isoc. 5.66, Poseidippus 11E., and, in later Greek, Manetho 4.368, 596 (*ekthesia*), *Act. Ap.* 7.19, Manetho 6.52 (*ekthetos*); for *apotithemi* see Pl. *Tht.* 161a, Arist. *Pol.* 7.1335b23, cf. *Leg. Gort.* 3.46, 4.15, Plut *Lyc.* 16.1 (deformed newborns at Sparta were cast into a chasm called *Apothetai*). The baby Oedipus is called *brephos ekbolon* in a choral passage at Eur. *Phoen.* 804; cf. *Hec.* 1079.

More explicit words such as *paidoktoneo* (Eur. *HF* 1280), *paidoktonos* (Soph. *Ant.* 1305, Eur. *HF* 835), *paidoletor* (Aesch. *Sept.* 726, Eur. *Rhes.* 550, *Med.* 1393), *paidoleteira* (Eur. *Med.* 849), *paidophonos* (*Il.* 24.506, Hdt. 7.190, Eur. *Med.* 1407, *HF* 1201), *teknoktonos* (Eur. *HF* 1155) are reserved for the killing of older children. This is generally so in later Greek as well. The exceptions—exceptionally—prove the rule. Philo, beginning his denunciation of exposure, terms the practice *ekthesis* (*de spec. leg.* 3.110), but later

uses *teknoktonia* (112, 114) for its shock value. He describes Moses' parents setting their infant son out on the river bank—*ektitheasi* (*de vit. Mos.* 1.10)—and then reproaching themselves as child-killers (*teknoktonous*); similarly, Chariton's Callirhoe emphasizes the difficulty of her choice—to expose her child or to rear it as a slave—by using the strong words *teknoktonesai* (2.9.3), *teknoktonia* (2.10.4). Josephus, anxious to stress the Jews' concern for human life, remarks that they consider a woman who purposely aborts a *teknoktonos* (*Ap.* 2.24.202).

In each of these examples, the use of *teknoktoneō* or its cognates is tendentious. So too is "infanticide" in some modern discussions. A striking example: the psychohistorian Lloyd deMause views unwillingness to raise some children—for whatever reason—as a sign of hostility towards children in general. He puts exposure on a level with, and uses it as evidence for, mistreatment—by mutilation, burning, freezing, drowning, shaking, and "sexual abuse" (adolescent homosexuality)—of children who *are* raised, and characterizes the "child-rearing mode" of the ancient world until 500 A.D. as "infanticidal" (L. deMause, ed., *The History of Childhood* [New York 1974] 25–32, 51–54).

It is possible to argue that words like *ekthesis* are not neutral either, but euphemisms. Some support may be found in a few passages that suggest exposure could move the Athenians. Socrates wonders if Theaetetus will be upset if his idea, his "first-born," is rejected (Pl. *Tht.* 161a). Sophocles' Oedipus refers to what he suffered at his parents' hands (*OC* 274); he wronged them unknowing, they knew what they were doing. (Compare Men. *Peric.* 774–776, 801, where grown-up foundlings ask their father why he exposed them. But text and tone are uncertain.) The servant saved Oedipus because he pitied him (Soph. *OT* 1178; cf. Jocesta's use of *dystenos* at 855). In Euripides' *Alexandros*, Hecuba may lament the loss of Paris, exposed by Priam because of a prophecy (fr. 43, 44 N.²). In his *Ion*, the story of the hero's exposure is told five times (10–27, 338–352, 901–918, 949–964, 1473–1498). Ion's origins may be an invention of Euripides: see the edition of A. S. Owen (Oxford 1939) ix–xvii. Has he—a sympathetic observer of both women and children—chosen to tell the story of Athens' ancestor in a way designed to bring attention to a contemporary Athenian custom? A rhetorical flight in Isocrates' *Panathenaicus* includes exposures (*ekbolai*) among the crimes of Athens' enemies in legendary times (12.122). (His evidence is the theatre: he has conveniently overlooked Athens' Ion.)

I do not find this evidence very strong. And in any case, even if we admit that neither term is really neutral, it is surely better to reproduce the bias of the Greeks (and use a euphemism) than to import a different bias of our own. I have therefore avoided the word "infanticide," and refer to "exposure."