Women, Gender, and Pastoralism

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THE TRANSITION FROM FORAGING to farming represents one of the most significance changes in all of human prehistory. The nineteenth-century evolutionary anthropologists used food production, including both agriculture and animal husbandry, to distinguish savagery from barbarism in their schemes of universal social evolution. For V. Gordon Childe (1936) writing in the middle of the twentieth century, plant and animal domestication marked the beginning of the agricultural revolution. Drawing an analogy with the industrial revolution, Childe argued that the agricultural (or first) revolution represented a change in subsistence technology that affected all other aspects of human life, including settlement patterns, social relations, and ideology. Moreover, the agricultural revolution provided the economic basis for the urban (or second) revolution that produced complex, urban societies in Mesopotamia, the Indus Valley, Egypt, and the Mediterranean region (Childe 1950).

In the Eastern Hemisphere, domesticated herd animals, including sheep, goats, and cattle, played a crucial role in both Neolithic and later complex societies. Since the end of World War II, Old World archaeologists have worked diligently to identify the beginnings of animal domestication and to trace the spread of these animal domesticates throughout Eurasia. Less attention has been paid to social context in which early animal domestication took place. This chapter will attempt to examine the roles played by both women and men in early agropastoral societies. It will begin with a definition of pastoralism and a review of the archaeological evidence for the origins and spread of pastoralism in the Middle East and Europe. This chapter will then examine the roles that women and men may have played in early agropastoral societies in Eurasia and the ways that these roles may have changed through time as a result of the use of animals for secondary products, such as milk, wool, and traction (Sherratt 1981, 1983).

Pastoralism

While there is debate in the anthropological literature over the definition of pastoralism, I will follow Chang and Koster (1994:8) and define pastoralists as people "who keep herd animals and who define themselves and are defined by others as pastoralists." This is a very broad definition of pastoralism that includes nomadic pastoralism, transhumant pastoralism, and agropastoralism.

Pastoral nomads are people who practice little or no agriculture and who move their herds from place to place on a seasonal schedule. A classic ethnography of pastoral nomads is Barth's (1961) study of the Basseri in Iran. The Basseri move to high mountain pastures in the Zagros Mountains during the summer and return to the lowlands of southern Persia during the winter. Since pastoral nomads practice little or no agriculture, they are dependent on village farmers for cereals and other necessities. The rise of urbanism in the fourth millennium B.C.E. may have provided new opportunities for specialized pastoralists who could sell their excess meat and other animal products to nonfarming city dwellers (Zeder 1991).

Transhumant pastoralists combine fixed-field agriculture with mobile herding strategies. While part of the community remains in the farming village on a year-round basis, some members of the community move to seasonal pastures with their flocks and herds. Historical and ethnographic records indicate that seasonal transhumance has been practiced in the Swiss Alps since the Middle Ages (Netting 1996). In the Swiss Alps, permanent farming villages are located on the slopes. During the summer, when the high Alpine pastures are free of snow, the flocks from an entire farming village are relocated to these high pastures. The flocks are tended by a small number of men from the village who milk them and make cheeses in bulk (Netting 1996:226). Most of the population remains in the village to carry out hay making and other vital tasks. Historical and archaeological sources suggest that transhumant pastoralism may have a long history in the mountainous parts of southeastern Europe and the Alpine regions of central Europe. Transhumance, known locally as booleying, was also practiced in northwestern Ireland before the potato famine (Shanklin 1994).

Agropastoralists combine both agriculture and animal husbandry in permanent village locations. While those who favor a more restrictive definition of pastoralism may not view agropastoralists as "true" pastoralists,[1] historical evidence suggests that animal husbandry played a critical role in many ancient agropastoral societies in Eurasia. For example, in *De Bello Gallico*, Caesar remarks on the importance of cattle in both Gaul and Germany. In early Christian Ireland (from the fifth to the eighth century C.E.), historic sources indicate that "land was measured

in terms of the cows it could maintain, legal compensation was reckoned in terms of cattle, a man's standing in society was determined by his wealth in cattle, and cattle raiding was a recognized form of warfare and adventure for young nobles" (Ó Curráin 1972:53). Agropastoralism has a long history in Eurasia. Archaeological evidence indicates that agropastoral villages were established about 10,000 years ago in the Middle East and that agropastoralism had spread to southeastern Europe by about 7000 B.C.E.

While pastoral societies are characterized by a wide range of mobility strategies, what all these societies have in common is that their livelihood depends on herd animals and their products. Chang and Koster (1994:9) note that "keeping herd animals requires human beings to shape their lives—socially, culturally, economically, and ideologically—in ways that are structured by an interdependence with their animals." This interdependence distinguishes pastoral societies not only from hunter-gatherer societies but also from communities that combine agriculture with hunting, such as the Mississippians of eastern North America. In order to explore the ways in which animal keeping transforms human lives, we will begin by examining the archaeological evidence for the beginnings of animal domestication in the Near East.

Identifying Animal Domestication in the Archaeological Record

Hunters and herders view animals in very different ways. Hunters are interested in acquiring dead animals and their primary products—meat, hides, sinew, and bone. Herders, on the other hand, are interested in live animals and their offspring. The shift from acquiring dead animals to maintaining flocks of live animals marks the beginning of animal domestication (Meadow 1989:81). While this represents a useful behavioral definition of animal domestication, the problem that has vexed archaeologists for over half a century is how to recognize evidence for early animal domestication in the archaeological record.

Most of our evidence for early animal domestication comes from butchered animal bones that were discarded at archaeological sites. These fragmentary remains represent refuse from meat consumption. They are therefore an indirect reflection of animal production strategies. Zooarchaeologists have used a number of criteria to identify early animal domestication in the archaeological record (for a review, see Crabtree 1993). These criteria include the appearance of an animal outside its natural range, morphological changes in the animal bones themselves, and changes in the demographic profiles or age and sex distribution of the animals

that were selected for slaughter. While all these criteria have been used successfully to identify early animal domestication, each criterion has its limitations.

The appearance of animals outside their natural ranges is an obvious indication that animals are under some form of human control. Since wild goats and wild sheep are not native to Europe, the appearance of sheep and goats in southeastern Europe beginning about 9,000 years ago indicates the beginnings of pastoralism in that region. However, experiments with animal domestication are most likely to have occurred in regions where the wild ancestors of early domestic animals are found, so this criterion cannot be used to identify the earliest attempts to domesticate animals.

Morphological changes that have been used to identify animal domestication include overall body size reduction, changes in the form of the horn cores (the bones that underlie the horns), reduction in the size of the teeth and jaws, and evidence for pathological changes that may be the result of penning or tethering. The most commonly used of these criteria is overall size reduction since measurements can be taken on a wide variety of anatomical elements (Driesch 1976). Tchernov and Horowitz (1991) have suggested that size reduction may have been the result of selection for animals that would mature more quickly and reproduce more rapidly, especially in the anthropogenic environments that surrounded early farming villages. However, recent research by Zeder (2001) has indicated that, at least for goats, the supposed size reduction that accompanied early domestication may be a result changing demographic profiles of the slaughtered herds.

Demographic profiles have been used to identify early animal domestication since the 1960s. Zooarchaeologists suggested that hunting populations, interested in the dead animal and its primary products, would focus their attention on prime adult animals. Those animals would provide the highest-quality meat as well as fat and pelts (Perkins and Daly 1974:80). Herders, on the other hand, would need to maintain a small breeding population of primarily female animals. Most males would be slaughtered in late adolescence, when most of their growth had been completed. A high proportion of immature animals was therefore seen as a signature of early animal domestication.

This criterion was used rather indiscriminately in the 1960s to identify early domestic animals. Perkins (1964), for example, identified possible domestic sheep at Zawi Chemi Shanidar in northern Iraq, dating to the ninth millennium B.C.E., based on a small sample of morphologically wild sheep bones that includes a high percentage of immature specimens. Legge (1972) even suggested that gazelles might have been domesticated in Israel during the Late Pleistocene, based on a high proportion of immature animals at the Natufian site of Nahal Oren. Today, both these claims for early animal domestication are viewed with suspicion. The small sample size and the absence of morphological changes make sheep domestication at Zawi Chemi unlikely (for a critique of the evidence for sheep domestication at Zawi Chemi, see Uerpmann 1987:62–63). Although gazelles can be tamed, they cannot be herded in groups or with dogs, and they are therefore unsuitable for pastoral adaptations (Clutton-Brock 1980:171). The high proportions of young gazelles found at many Late Pleistocene sites in the Near East may be the result of hunting techniques that focused on entire herds of animals (see, e.g., Campana and Crabtree 1990; Henry 1975; Legge and Rowley-Conwy 1987).

Modern studies use demographic profiles to identify animal domestication in far more sophisticated ways. In sexually dimorphic species such as goats, measurement data can be combined with data on aging to construct demographic profiles for each species. Since a focus on live animals and their progeny leads herders to treat male and female animals differently (Meadow 1989), differences in age profiles for male and female animals may reflect the transition from hunting to herding (Hesse 1984; Zeder 2001).

The Archaeological Evidence for Early Animal Domestication in the Near East and Europe

Zooarchaeological data indicate that goats and sheep were first domesticated about 8000 B.C.E. in the Near East. Detailed analyses of the demographic data for early goats from the early eighth-millennium site of Ganj Dareh in western Iran indicates that goats were first domesticated there at about 7900 B.C. (Hesse 1984; Zeder and Hesse 2000). Early domesticated goats appear in the southern Levant at about the same time. Goats from Jericho show changes in the shape of their horn cores that may indicate incipient domestication (Clutton-Brock 1979), while a majority of the goats from the Neolithic site of 'Ain Ghazal in Jordan were killed before they reached adulthood. In addition, some of the goats from 'Ain Ghazal show evidence for arthritis, which may have resulted from poor husbandry conditions (Köhler-Rollefson et al. 1988). It is not entirely clear whether goats were independently domesticated in the southern Levant or whether they were introduced to the region from the Zagros.

Sheep appear to have been domesticated at approximately the same time as goats in the Near East. Early evidence for domestic sheep comes from a number of eighth-millennium B.C.E. sites in Syria and Anatolia. For example, the sheep from the Early Neolithic site of Bouqras in Syria show significant size decrease at a time when their numbers are increasing, leading Clason in Akkermans et al. (1983) to suggest that they were early domesticates. Recent DNA studies

(Hiendleder et al. 2002) suggest that modern domesticated sheep are derived from two different subspecies of wild mouflon (*Ovis orientalis*), indicating that the pattern of sheep domestication may be a complex one involving multiple centers of domestication.

DNA studies have shown that the pattern of cattle domestication in the Old World is quite complex. Both faunal evidence and DNA studies suggest that cattle were independently domesticated in the eastern Sahara between 8,000 and 10,000 years ago (Bradley 2003; Bradley et al. 1998; Gautier 1987). The molecular data also point to an independent domestication of zebu (humped cattle) in South Asia. The DNA evidence points to a third center for the domestication of Near Eastern and European cattle, although the location of this center has not been determined archaeologically. Domesticated cattle appear at a number of sites in the eastern Mediterranean at about 7000 B.C.E.

The cultural context in which early animal domestication took place is equally important. While early scholars such as Childe saw plant and animal domestication as a single process of transformation from foraging to farming, archaeological research conducted over the past twenty-five years has shown clearly that in the Middle East plant cultivation clearly preceded animal domestication (see, e.g., Bar-Yosef and Belfer-Cohen 1991; Moore 1982). In Syria, cereal cultivation may have begun as early as the Late Pleistocene. Hillman et al. (2001) have argued that the residents of Abu Hureyra may have begun to cultivate rye in response to a decline in the availability of wild plants during the Younger Dryas climatic event (around 11,000 B.C.E.). Evidence for early sheep and goat domestication does not appear until Period 2A (about 8000 B.C.E.), millennia after the appearance of cultivated cereal crops. In the southern Levant, plant cultivation was established during the Pre-Pottery Neolithic A (9750–8550 B.C.E.), while early animal domestication does not appear until the Middle Pre-Pottery Neolithic B (8150–7300 B.C.E.).[2] A cluster of Pre-Pottery Neolithic A sites in the lower Jordan Valley, including Gilgal (Noy 1989) and Netiv Hagdud (Bar-Yosef and Kislev 1989; Zohary 1989), has provided evidence for early barley cultivation, but these sites provide no evidence for animal domestication (Tchernov 1994). In short, in the Middle East, animal domestication was adopted by sedentary communities that had already begun to cultivate cereal crops.

The issue of why early cereal cultivators in the Middle East adopted sheep and goat pastoralism remains an important but largely unanswered question. Moore et al. (2000:497) suggest that early agricultural communities in the Middle East experienced significant population increases. As these early farming populations increased, they increased their predation of gazelle herds. As gazelles became less available to these early farming communities, Neolithic farmers

turned to domestic sheep and goats as sources of meat. Using an approach based on evolutionary ecology, Alvard and Kuznar (2001:298) have suggested that animal husbandry is a form of prey conservation and that conservation is most likely to occur when long-term returns from husbandry are "higher than short term returns from hunting." In addition, a number of scholars have suggested that early domestic animals served as "walking larders" (Clutton-Brock 1989) that were used to store agricultural surpluses. Livestock manure may have also served to maintain the fertility of small agricultural plots (Halstead 1996:302).

The Near Eastern sequence of plant and animal domestication is in marked contrast to the pattern that has been established for Africa. Both archaeological evidence and DNA studies suggest that cattle pastoralism was established in eastern Africa just south of the Sahara about 8,000 to 10,000 years ago. However, agriculture was not established in the region until about 4000 B.P. Marshall and Hildebrand (2002:111) have suggested that hunter-gatherers in the eastern Sahara may have begun to domesticate cattle "to ensure their predictable availability as a food source." The highly mobile lifestyles of these early pastoralists, especially in marginal areas, worked against the adoption of cereal cultivation. Since the African pattern of animal domestication is so different from the pattern seen in the Middle East and Europe, the remainder of this chapter will focus on early pastoralists in Eurasia.

Women in Early Agropastoral Societies in the Middle East

What roles did women and men play in early agropastoral societies in the ancient Near East? While many studies of early animal domestication have focused on interpretation of the faunal data and have treated humans who domesticated these animals as "a lot of faceless blobs" (Tringham 1991:94), two early studies, one by Robert Braidwood and a second by Charles Reed, envisioned very different roles for women in early animal domestication.

Robert Braidwood was a pioneer in the study of animal and plant domestication in the Near East. In his studies of early animal and plant domestication in northern Iraq and Anatolia, he was one of the first archaeologists to make use of a multidisciplinary research team including zooarchaeologists, paleoethnobotanists, and geoarchaeologists. While Braidwood is best known for scholarly works (e.g., Braidwood and Howe 1960), he is also the author of the aptly named *Prehistoric Men* (Braidwood 1967), which served as an introductory text for archaeologists in the late 1960s and the early 1970s. The text provides the following description of life in an Early Neolithic village:

> Children and old men could shepherd the animals by day or help with the lighter work in the fields. After the crops had been harvested the younger man might go hunting and some of them would fish, but the food they brought in was only an addition to the food in the village; the villagers wouldn't starve, even if the hunters and fishermen came home empty-handed. (Braidwood 1967:113)

One wonders what Early Neolithic women and girls were doing while the men and boys planted crops, herded livestock, fished, and hunted the occasional wild animal. Presumably, the women were engaged in child care and food preparation. This vision of early agropastoral societies owes more to the world of Ozzie and Harriet in the 1950s than to the archaeological evidence for life in the Early Neolithic period.

While Braidwood's view of early agropastoral societies is an essentially androcentric one, Charles Reed, a founding father of zooarchaeology, suggests that women and girls may have played a more active role in early animal domestication. Reed (1977, 1986) notes that taming is a necessary prerequisite for animal domestication and that it is relatively easy to tame wild animals. In order for pastoralism to develop, however, a critical change in human behavior was necessary. Reed (1986:12) argues that "as long as the successful male hunter was the hero, the human social ideal, there could be no real relationships between humans and animals other than that of hunter and hunted." Reed (1977) suggests that since men were hunters, women—and especially little girls—took the first steps toward animal domestication by taming wild animals. He argues that

> little girls, increasingly as they grow, have estrogens coursing in their bloodstream; little girls play with dolls, have maternal instincts. They are not yet, as their mothers would be, inured to killing and the necessities of killing; a little girl might well adopt, protect, and tend a weaned lamb, kid, or baby pig, thus establishing that one-to-one social relationship necessary for the abolition of the flight reaction. (Reed 1977:563)

While this model allows women to play a more active role in early Near Eastern pastoralism, the model rests on untested assumptions about men's roles as hunters and the nurturing nature of women and little girls.

Reed is not alone in assuming that men were hunters and women were plant collectors in preagricultural societies in the ancient Near East. As noted previously, Henry (1975) and others have argued that preagricultural populations in the Near East hunted entire herds of gazelles. Henry (1989:215) further suggests

that while these hunting strategies "would have required a substantial party of hunters, there would have been little difficulty in mustering the necessary number of adult males in a Natufian village." Henry (1989:217) further suggests that gathered cereals and nuts would have provided the bulk of the Natufian diet. Plant collecting is often assumed to have been women's work in the preagricultural Near East. For example, an illustration of plant gathering that accompanies an article on skeletal remains from the site of Abu Hureyra in Syria depicts a woman collecting plants during the Epipaleolithic, even though the skeletal remains themselves provide no evidence that women collected plants in Late Pleistocene Syria. In the Early Neolithic, men are shown as both plant cultivators and as herders of goats and sheep (Molleson 1994:75).

There is little direct archaeological evidence to suggest that men hunted animals and women gathered plants in the Near East during the Late Pleistocene. The assumption that men hunted and women gathered must be based on ethnographic parallels, especially analogies with the !Kung San as described by Lee (1968). While Lee's carefully documented study of !Kung San foraging practices has colored archaeological interpretation of ancient hunter-gatherers for over a generation, the !Kung are a particularly inappropriate analogue for ancient Near Eastern foragers. Plant remains, especially the staple mongongo nuts, are available on a year-round basis in the Kalahari, while wild wheats and barleys have a short season of availability in the Middle East. !Kung hunters generally form small hunting parties, while Near Eastern hunters stalked entire herds of gazelles. Since !Kung subsistence practices differ significantly from Epipaleolithic practices, it is unlikely that these two populations practiced similar divisions of labor.

In fact, the nature of Epipaleolithic subsistence, which is well documented archaeologically, might indicate that men and women cooperated in both hunting and gathering activities (Crabtree 1991). Hunting entire herds of animals requires substantially more labor than hunting individual animals. The animals must be driven into some kind of net, trap, or surround, and then the entire herd must be killed. Ethnographic data indicate that men and women often cooperate in communal hunting activities (see, e.g., Downs 1966). Similarly, Epipaleolithic plant-collecting activities focused on wild cereals such as wild wheats and barleys. These cereals ripen during a short three- to four-week period in the spring (Harlan 1971) and must be stored for use throughout the year. It is likely that all members of the community—men, women, and children—cooperated to maximize the harvest of these important plant resources. The nature of Late Paleolithic subsistence in the Near East does not support a strict division of labor by sex. If there is no real evidence for a sexual division of labor for preagricultural populations in the ancient Near East, then we should be highly skeptical of models for

the origins of pastoralism that are based on the assumption of male hunting and female gathering.

More recent attempts to identify the sexual division of labor in early agropastoral societies have focused in human skeletal remains since repetitive activities may leave traces on bones (Molleson 1994, 2000). Molleson examined the human bones recovered from the Epipaleolithic and Early Neolithic site of Abu Hureyra in Syria. She identified changes on the articular surface of the first metatarsal that she argued were associated with prolonged use of a saddle quern to grind grain. Since a majority of these pathological changes were seen on smaller (presumably female) metatarsals, she concluded that "most of the food preparation was carried out by women" (Molleson 2000:314). She further concluded that there must have been a sexual division of labor within Early Neolithic households and that "males may have been more involved in hunting and procuring meat" (322), even though there was no specific osteological evidence to support male hunting. Molleson's conclusions have been appropriately criticized by Gilchrist (1999:44), who notes that "other explanations for the bone pathologies are not explored, and the possibility of more flexible, seasonal, or perhaps age-based divisions of labor are not considered." For our purposes, none of the osteological data shed any light on the roles that women and men (and/or boys and girls) may have played in early animal husbandry. The assumption that men played a major role in early animal husbandry (see, e.g., the image in Molleson 1994:74) is simply an assumption.

Molleson's model of the sexual division of labor in the Early Neolithic suggests that women were engaged in tasks inside the household, including not only grinding grain but also basketry and the preparation of hides. Men were engaged in a range of outside activities, including pastoralism, agriculture, and hunting. This scenario bears a striking similarity to Hodder's (1990) model for the Early European Neolithic where he contrasts the *domus*, or interior of the household, with the *agrios*, or exterior world. The model also shows similarities to the early work on the anthropology of gender that suggested that male/female dichotomies and gender hierarchies were grounded in the contrast between the world inside the household (the domestic sphere) and the outside world (the public sphere) (see Moore 1988:21–24 and references therein). Moreover, Molleson (2000:322) argues that women's "role specialization in food preparation at Abu Hureyra can be seen as a natural and inevitable development of nurturing that provided for older children and fathers." Reed used almost the same argument nearly twenty-five years earlier to explain the role of women in early animal domestication.

As an archaeological model of early agropastoral communities, Molleson's model presents several interpretive problems. First, Molleson's assumption that women were engaged primarily in food preparation rests almost entirely on a single line of evidence—that pathologies that appear to be associated with the use of a saddle quern appear more commonly on the foot bones of individuals who appear to be female. Gilchrist (1999:53) has shown that "the most convincing and nuanced readings of gender have been developed from multiple lines of evidence." Second, Molleson fails to address the roles that children might have played in early agropastoral societies. This is a striking omission since the skeletons from Abu Hureyra show that adolescents carried heavy loads, probably on their heads (Molleson 1994:71). Moreover, ethnographic and historical data suggest that children and adolescents often play important economic roles in pastoral and agricultural societies. Third, and most important from our perspective, Molleson fails to address the important question that was first raised by Reed (1977) nearly thirty years ago: how were the male gazelle hunters of the Epipaleolithic transformed into the male shepherds and goatherders of the Early Neolithic? As Reed noted many years ago, this change involves both the development of the technological knowledge involved in animal husbandry and a transformation of the ideology that surrounds animals and human–animal relationships.

The Secondary Products Revolution

The difficulty that archaeologists have had in creating models for women's and men's roles in early agropastoral societies in the Near East and Europe are highlighted when archaeologists attempt to examine the secondary products revolution (SPR) (Sherratt 1996a, 1996b) and its effects on women in early pastoral societies in Eurasia. Sherratt argued that during the mid- to late fourth millennium B.C.E., a series of fundamental changes took place in the ways that Eurasian pastoralists made use of their animals. Domestic animals, including cattle, sheep, and goats, were no longer seen primarily as sources of meat. Instead, they were used for a variety of secondary products, including milk, wool, and traction. Sherratt (1996:160–61) suggests that the SPR "separates two stages in the development of Old World agriculture: an initial stage of hoe cultivation, whose technology and transportation systems were based upon human muscle power, and in which animals were kept purely for meat; and a second stage in which plough agriculture and pastoralism can be recognized, with a technology using animal sources of energy." The use of domesticated animals for a variety of different purposes would also have increased the importance of the pastoral component in ancient economies. Since Sherratt's original model was developed more than twenty years ago, we will begin with a brief review of the archaeological evidence for the SPR (for a concise review of this evidence, see Russell 2004).

The use of animals for traction represents one of the most important technological developments of the later Neolithic (fifth and fourth millennia B.C.E.) in Eurasia. The use of animals, primarily oxen or castrated bulls, to pull light plows or ards[3] allowed farmers to expand the amount of land under cultivation. Evidence for early plowing includes plow marks preserved in buried soil surfaces and images of plowing that appear in Bronze Age rock art. In addition, zooarchaeologists have identified a series of morphological changes on cattle bones that result from traction activities (Bartosiewicz et al. 1997). In Europe, zooarchaeological evidence for traction pathologies suggests that plowing may have been established in eastern Europe as early as 4500 B.C.E. Plowing was established in northwestern Europe by 4000 B.C.E., and pictographic evidence indicates that plowing was widespread by 2500 B.C.E. (Russell 2004). Images of light plows are also well known from mid-third-millennium contexts in the eastern Mediterranean (Sherratt 1996a:165–67). The other main use for draft animals was for transportation. A wide range of archaeological data, including images and models of carts and wheel ruts, indicate that wheeled vehicles first appeared in Europe and the Near East at about 3500 B.C.E.

While the early history of animal-drawn wheeled vehicles in Eurasia is well documented and well dated, the history of early dairying is less well known. Most archaeological evidence for dairying is indirect, including ceramic vessels that may have been used for dairy products and faunal assemblages that include a high percentage of very young animals under six months of age. The faunal argument is based on the assumption that dairy herds will include a high percentage of adult female animals and that excess male calves will be slaughtered at very young ages. Sherratt (1981) initially argued that dairying was part of the SPR on the basis of changes in pottery vessel forms. He suggested that the appearance of vessels such as jugs and cups in the Late Neolithic was associated with the manipulation of liquids, including milk. Bogucki (1984, 1986), however, suggested that dairying might have a much greater antiquity, at least among temperate European pastoralists. Bogucki suggested that ceramic sieves, which are commonly recovered from Early Neolithic (ca. 5500–5000 B.C.E.) Linearbandkeramik sites in central Europe, may have been used for cheese making. While Sherratt (1996b:206) subsequently acknowledged the possibility that some dairying may have occurred in Early Neolithic societies, he argued that the quantities of milk produced must have been quite small. Following McCormick (1992), Sherratt argued that until recent times, calves must have been present in order for a cow to let down her milk. Therefore, McCormick (1992) suggested that prehistoric archaeological sites that have produced evidence for the slaughter of large numbers of very young cattle do not indicate dairying since the absence of the young calves would prevent females from lactating. This argument is problematic for several reasons. First, a cow can be induced to let down her milk by other means, such as stimulating her vagina or presenting her with a surrogate calf (Russell 2004:327). Second, ethnohistoric and archaeological sources do not confirm McCormick's assertion that faunal assemblages that include a high proportion of very young cattle indicate a meat rather than a dairy economy. For example, the archaeological and historical data for medieval Iceland and Greenland, where cattle were kept almost exclusively for dairying from the initial Viking-period settlement, consistently produce large numbers of very young cattle under six months of age (see, e.g., McGovern et al. 1996, 2001). Third, recent studies of organic residues recovered from pottery vessels from the British Isles provide direct evidence for widespread Early Neolithic dairying in northwestern Europe (Copley et al. 2003). The residue evidence indicates that dairying was established, at least in parts of Europe, well before the SPR.

The antiquity of dairying may also have important implications for our understanding of women's roles in early pastoral societies in Europe. Ethnohistoric data indicate that women played a major role in dairy production in many parts of Europe from the early Middle Ages on (see the following discussion). If women also engaged in dairying in prehistoric European societies, then women may have played an active and integral role in pastoral economies beginning in the Early Neolithic.

The final aspect of the SPR is wool production. Wild sheep and early domesticated sheep were hairy rather than woolly; their short undercoats were shed each spring. In order for sheep to be reared for wool production, genetic changes were necessary so that the wooly undercoat grew longer and was maintained throughout the year. Occasional finds of preserved textiles indicate that sheep's wool first appeared in the Middle East about 3000 B.C.E. and in Europe about 2500 B.C.E. (Russell 2004:327).

The Gender Implications of the SPR

The SPR model, as envisioned by Sherratt (1981, 1996a), has important implications for gender roles in later Neolithic agropastoral societies in Europe and the Near East. Sherratt, unlike Molleson, assumes that women would have played a primary role in Early Neolithic horticulture. He argues that "in simple hoe agriculture, the major subsistence contribution comes from female labor in sowing, weeding, and harvesting" (Sherratt 1996a:194). The SPR led to a fundamental change in the sexual division of labor. It "produced an economy dominated by men, who played a dominant role in handling large livestock either as herds or in

plowing. Women became increasingly relegated to the domestic sphere" (Sherratt 1996a:196). Since women were freed from their role as food producers, they could spend more time on activities such as textile production.

The effect of this model is the same as Molleson's and even Braidwood's model for the Early Neolithic—it removes women from primary roles as pastoral producers. This model is problematic for several reasons. First, it assumes that women would have been the primary agricultural producers in Early Neolithic societies in the Middle East and Europe, and there is no clear archaeological evidence to support this assertion. Second, it assumes that men would have taken a major role in both plowing and pastoral production beginning in the Late Neolithic. While medieval historical sources from many parts of Europe indicate that plowing was a male activity, these same sources indicate that women often played a primary role in dairying. Third, it assumes that the introduction of wool sheep would have led to a new role for women as textile producers. It is important to note that while wool sheep may not have been developed until the Late Neolithic or Early Bronze Age, textiles have a much greater antiquity in Eurasia. Neolithic textiles in both the Middle East and Europe were made of flax or linen. At the site of Tybrind Vig in Denmark, Mesolithic textiles made of strings of lime and willow have recently been discovered (Anderson 2004:143), and engravings on Upper Paleolithic figurines suggest that textiles made of plant fibers may have been manufactured in the European Upper Paleolithic (Soffer et al. 2000). Textile production is not a new industry in the Late Neolithic, and the introduction of wool sheep is not likely to have radically changed women's roles. Moreover, early medieval historical sources indicate that women were often engaged in both dairying and textile production (see the following discussion).

Historical Models for Women's Roles in European Pastoral Economies

While no one wants to envision early Eurasian pastoralists as a group of faceless blobs, some alternatives are even worse. The effect of almost all the models reviewed in this chapter is to remove women from a primary role in agropastoral production. In Molleson's model for the Neolithic of the Near East, men are pastoralists and cultivators, while women are engaged in household tasks such as food preparation, basket making, and hide working. Sherratt's model for the SPR envisions men as herders and plowmen, while women are engaged in "spinning, weaving, and textile production" (Sherratt 1996a:195). Unfortunately, there is very little archaeological data to support these gender attributions. These models

reify the domestic sphere/public sphere dichotomy and relegate women to a secondary role in pastoral (and agricultural) production. This need not be the case.

The historical record for medieval Europe provides evidence that women played an active role in pastoral production in many regions of the continent. As noted previously, booleying is a form of transhumance that was practiced in parts of Ireland until the early twentieth century. In the spring or early summer, cattle were moved from their winter pastures in the lowlands to summer pastures or booleys, which were often located in wooded, highland areas. Historical accounts of prefamine Ireland describe young women and men accompanying cattle and sheep to the summer pastures along with dairying vessels, spinning and carding equipment, and cooking pots (Shanklin 1994:109–10). Historical records trace the practice of booleying back to the early medieval period (ca. 400–850 C.E.).[4] The early Irish sources associate the practice of booleying with women and children and often with women of low economic and social status (Boyle 2004:95; see also Brady 1994:131; Patterson 1994:90–91). In Ireland, women and children remained in the booleys with the livestock throughout the summer, while men returned to the lowlands to protect the crops and prepare for warfare (Patterson 1994:136). The Irish sources also identify dairying, spinning, baking, and shepherding as appropriate activities for servile women (Brady 1994:131). The Irish data thus suggest that women and children played an active role in pastoral production in early medieval Ireland.

The historical records from late medieval France identify other possible roles for women in medieval agropastoral societies. In late medieval France, plowing was carried out exclusively by men. However, women were not excluded from a direct role in animal production. While men cared for the plow teams, women were responsible for the smaller livestock, such as sheep and goats as well as poultry.

Conclusion

While it would be a mistake to project models of medieval labor organization onto prehistoric Eurasian pastoral communities, the medieval data do suggest ways in which women may have played more active roles in animal husbandry and pastoral production. At present, we do not have adequate archaeological data to identify the roles played by men and women in early agropastoral communities in Eurasia. Nuanced studies of gender must be based on multiple lines of archaeological evidence, not on assumptions about the nature of women as nurturers. Zooarchaeologists have worked for forty years to develop a suite of criteria that can be used to identify early animal domestication in the archaeological record.

We need to address questions about the social organization of pastoral production with equal vigilance.

Notes

1. Dyson-Hudson and Dyson-Hudson (1980), for example, define pastoralists as individuals who rely heavily on domestic herd animals and who move their animals to pasture.

2. These dates are based on Kuijt and Goring-Morris (2002:366).

3. Light plows or ards simply scratch the surface of the soil. Heavy plows, which include a coulter, plowshare, and moldboard, do not appear in Europe and the Mediterranean until about 2,000 years ago.

4. Historical records first appear in Ireland in the early fifth century, but it is likely that the practice of booleying is even older. Only a few possible booleying sites have been identified archaeologically (Boyle 2004:95).

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