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Spear and digging stick

The origin of gender and its implications for the colonization of new continents

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ABSTRACT

A division of labour between sexes/genders in which, although there is some overlap, men hunt large game and women collect smaller game, shellfish and most plant foods, is a characteristic of all documented hunter-gatherer societies. We argue that there is no biological reason for this behaviour and that it must be a social construct. These gender roles became part of the structure of societies at the same time as other forms of symbolic behaviour associated with anatomically modern humans (*Homo sapiens sapiens*). Established gender roles were important for the first colonizers of a new continent, Australia, because it allowed the colonizers to tackle a completely new environment.

KEYWORDS

colonization of Australia • division of labour • gender origins



■ INTRODUCTION

In this article we discuss the evidence for the origins of the division of labour according to gender, a social construct, in archaeological and ethnographic hunter-gatherer societies, the evidence for this in Europe, and its implications for the colonization of Australia. As Gilchrist (1999: 9) discusses, until recently, archaeologists generally have drawn a distinction between sex and gender as made by some social scientists. That is, 'sex' is defined as a biological category, defined on the basis of genotype and phenotype in the individual and 'gender' is a cultural category that is the structure of social relations. More recently the influence of biology on the construction of gender has been identified. Although we recognize two biological divisions, 'male' and 'female', biology is not straightforward, and there are overlaps in male and female physical characteristics. Laqueur (1990) indeed has argued that Western society recognized only one sex until the Enlightenment (see also Rubin, 1975: 179). Thus the two biological categories 'male' and 'female' can be seen to be in part a social construction (see Connell, 2002: 8; Cranny-Francis et al., 2003: 7). Gender might therefore be defined as 'the structure of social relations that centres on the reproductive arena, and the set of practices (governed by this structure) that bring reproductive distinctions between bodies into social processes' (Connell, 2002: 10) – that is, how human societies deal with human bodies.

Two genders, equivalent to 'men' and 'women', are universal in all known human societies, although some societies have more than two genders (for example the North American berdache [Callender and Kochems, 1983; Roscoe, 1998]). Gender categories, we suggest, are used to provide unambiguous divisions associated with particular expectations and roles within societies. Gender is defined on the basis of such cultural attributes as one's name, dress, social activities (e.g. Shapiro, 1981: 113).

Why were gender categories created and what were the immediate consequences of the creation of these social constructs? We approach this question by arguing that the fundamental hunter-gatherer division of labour is, in fact, a social division (Rubin, 1975: 165, 179), examining evidence for the beginnings of these categories and then discussing how social organization in early humans may have changed to allow human societies to cope with new environments and thus expand into new areas and indeed new continents.

■ THE HUNTER-GATHERER DIVISION OF LABOUR

A division of labour between sexes/genders in which, although there is some overlap, men hunt large game and women collect smaller game,

including shellfish and most plant foods, is a characteristic of all modern hunter-gatherer societies. For example, Murdock and Provost's (1973) analysis of ethnographic sources on 185 societies recorded 144 societies that hunted large land fauna. In these groups this task was done only by males in 139 of the societies and mainly by males in the remaining five (Murdock and Provost, 1973: 207, Table 1). On the other hand, of the 135 societies for which gathering vegetal foods was recorded, the task was done primarily by females in 65 societies and only by females in 42 (Murdock and Provost, 1973: 207, Table 1).

Such activities are commonly carried out in sex/gender-based foraging groups. Although these separate foraging groups may eat some of the food as they are collecting it, and there may be variation in what and with whom it is shared, most is brought back to a central camp where it is shared in various ways between community members (Altman, 1987; Kaplan and Hill, 1985; Lee, 1979; Meehan, 1982; Yellen, 1977).

The propensity to eat meat, the division of labour, particularly between the sexes, and systematic group food sharing have long been argued to be three of the significant characteristics by which we differ from our closest extant relatives, the apes (Isaac, 1978a, 1978b). Although chimpanzees and other apes do occasionally capture and eat animal prey, meat is rare or absent in most ape diets (McGrew et al., 1996). Even chimpanzees, which eat more meat than other apes, obtain 95 percent of their food from plants (Telecki, 1981). It is also true that non-human primates show some differences in predatory behaviour between the sexes (Strum and Mitchell, 1987). For example, Strum (1981) has shown that male olive baboons are more likely to participate in predatory behaviour and McGrew's (1979) and Stanford's (2001) studies of chimpanzees show that mammal predation is primarily an adult male activity. But females also hunt (De Waal and Lanting, 1997). Unlike human societies, however, there is no evidence for a patterned, clear-cut sexual division of labour, and, unlike the human division of labour, differences in sex subsistence behaviour in other apes do not necessarily result in sharing between sexes. There are, however, examples of regular sharing between primates of the same sex. For example, McGrew (1981) reports that female chimpanzees regularly share gathered plants with other females but not males. Boesch and Boesch (1981) have found that female chimpanzees of the Tai National Park, Ivory Coast, use a more efficient technique for cracking coula and panda nuts but the males do not profit from this.

Although sharing of goods between sexes is an important element of the sexual division of labour, it does not necessarily suggest pair bonding as various people such as Lancaster and Lancaster (1987), Lovejoy (1981) and Quiatt and Kelso (1985: 209) have suggested. There are many ways that societies can organize themselves in which it might well be advantageous to individuals if they participate in group sharing. For example, females with offspring could share food and child minding or females might share food



acquisition and child-minding tasks with older offspring; Brown (1970), who emphasizes the importance of child minding in women's lives, provides examples. Hawkes (2003, 2004a, 2004b), Hawkes et al. (1989, 1997) and Hawkes and Blurton Jones (2005) have pointed out the important role of Hazda grandmothers in assisting women burdened with offspring and suggest an evolutionary model emphasizing female foraging and food sharing. Thus we do not infer that the beginnings of a sex or gender-based division of labour are necessarily linked to the beginnings of the nuclear family. Although we have referred to the hunter-gatherer division of labour above as a sex/gender division, we argue that it is, in fact, a division of labour by gender.

Many scholars in the past have suggested or assumed (e.g. papers in Lee and DeVore, 1968; Tanner, 1988; Zihlman, 1981) that the division of labour between sexes can be explained by the biological differences between men and women. Their argument is that hunting requires men's greater strength and speed more than other food-collecting tasks, and gathering plant foods close to the home base is more compatible with constraints imposed by the childcare duties of females. Such biological restrictions, however, seem to be contradicted by Murdock and Provost's (1973) study in which, of the 50 technological tasks associated with hunting and gathering, there is some overlap in all but one (hunting large aquatic fauna).

Although women clearly need to increase the amount or quality of food when caring for offspring, there are, as we have suggested above, other ways of organizing subsistence apart from a division of labour along gender lines. In addition, other primates use other strategies such as increasing feeding time or exploiting higher quality food resources when burdened by offspring (Van Lawick-Goodall, 1975).

There are certainly reasons why individual men or women may not partake in hunting or collecting expeditions. Meehan (1982: 135), for example, has recorded that after giving birth an Anbarra woman of northern Australia dropped out of the gathering routine almost entirely for a few months. Conversely, shell gathering was an activity undertaken by a variety of people including older men who could not hunt (Meehan, 1977). Clearly, however, there are no biological reasons why women cannot hunt and men cannot gather.

If there are no constraints imposed by female reproductive activities on females performing any activity performed by men, then the 'constraints' must, in fact, be social (Mukhopadhyay and Higgens, 1988: 476). Thus a gendered division of labour as a means of production is organized in a social and symbolic way that is neither biologically determined nor purely economic. This does not preclude the suggestion that the human division of labour is an adaptation to the requirements of child rearing but, if it is an adaptation, we suggest it is a social one. Such organization is only possible when there is an idea of 'women' as a distinct category in human

society, or indeed the idea of 'men' and 'women'. Thus, we suggest that one of the defining characteristics of human society, a patterned sexual division of labour as a structuring principle, is organized according to social and symbolic constructs and is, in fact, a division of labour by gender.

There are clearly some advantages to having such an organization. Meat is very high in protein, fats and minerals but unreliable as a resource because it is not easy to catch and is not fixed in one place. So, to include a high proportion of meat in the diet requires more reliable foods being collected at the same time. Hunting in groups is also more successful than hunting alone. A division of labour is a good solution to this problem. There are many ways that labour can be divided. An age division where the young and fit concentrate on hunting and others on collecting foods and the demands of child rearing is one way. If young and fit women are also the main child bearers, rather than having an organization where others do the child minding, it might be easier to do child rearing and food collecting in the way that modern hunter-gatherers do today, that is, along gender lines. A gendered division of labour might therefore be adaptive to living in a society where meat eating is important.

■ SEARCHING FOR EVIDENCE OF THE BEGINNINGS OF A HUMAN DIVISION OF LABOUR

In searching for the earliest evidence of a human division of labour we are not searching for the beginnings of meat eating (e.g. Lee and DeVore, 1968) or even of hunting (e.g. Leibowitz, 1986), neither of which can in themselves be considered distinctly human. Instead we are looking for evidence for the organization of subsistence, where meat provided by large game is an important food resource brought to a camp for shared consumption, and for evidence of symbolic behaviour as a prerequisite for the division of labour. We are looking for evidence that demonstrates that males and females were in separate symbolic categories. At what time in our perception of human history is there evidence for these behaviours?

Evidence for food sharing and hunting

Deciding what constitutes evidence for hunting as opposed to scavenging in the archaeological record is problematic. All researchers would probably now agree that hunting was not important in the subsistence base of the australopithecines or *Homo habilis*. The presence of specialized equipment, such as the wooden spears at Shöningen, dated to about 400,000 years BP (Thieme, 1997), and of points that, on the basis of residue and usewear studies, suggest hafting in Middle Palaeolithic assemblages perhaps as early



as 80,000 years ago (see Lombard, 2005: 280 for summary) and in Middle Stone Age (MSA) assemblages by 50,000 to 60,000 years ago (Lombard, 2005) and possibly earlier (see McBrearty and Brooks, 2000: 496–9), suggests that hunting was part of the associated hominins' subsistence strategy. Although hafted points may indicate the presence of hunting, exactly how important hunting was is difficult to tell from the presence of points.

In Europe, the appearance of anatomically modern humans (AMH, *Homo sapiens sapiens*), in some way supplanting Neanderthals, occurred at about 40,000 years ago, associated with the change from the Middle Palaeolithic to the Upper Palaeolithic cultural phases. Regional studies of subsistence practices over the transition period in Western Europe (Binford, 1989), Central Western Italy (Stiner, 1994) and the Russian Plain (Soffer, 1989) have all concluded that, while there is much variation within both the Middle and Upper Palaeolithic, there are some characteristic differences between the periods. One of these differences emerges from studies of body part representation and cut marks of mammalian prey remains. From this, it appears that while Neanderthals and modern humans hunted and scavenged, hunting was much more important in the Upper Palaeolithic (Binford, 1991; Stiner, 1994).

The other major difference is one of geographic scale, in that Neanderthals appear to have moved within a smaller geographic region than did AMH (see for instance, Stiner, 1994: 327). Soffer (1989: 726, 733) has summarized these changes as a switch from opportunistic exploitation (including hunting and collecting) of whatever was encountered within a limited occupied area to 'mapping-on' strategies that took into account seasonal and longer term fluctuations in resource availability over a larger region. These patterns are supported by studies of raw material procurement that indicate more systematic exploitation of specific distant sources in the Upper Palaeolithic (Geneste, 1988, 1989; Rigaud and Simek, 1991). Also consistent with this are relatively smaller size and unstructured use of space in the Middle Palaeolithic compared to the Upper Palaeolithic (Pettitt, 1997).

Whether these changes were associated with the practice of sharing food is difficult to tell. Food sharing has been argued to be present at some of the early East African hominin sites (e.g. Bunn and Kroll, 1986; Isaac, 1978a, 1978b) but these arguments have been criticized on the grounds that there are alternative explanations for the same evidence. Enloe's (2003) review of the problem points out that in ethnographically recorded societies, food sharing behaviour is highly variable, depending on such factors as who the meat is shared with, where it is shared and how it is transported. A rigid butchering pattern, which many of the arguments for food sharing rely on, is not sufficient to establish the practice. While Enloe is able to argue convincingly that refitting of carcass portions found at different hearths at some French Upper Palaeolithic sites suggests food sharing between

different hearth-based social groups, such evidence is not available from older sites and the technique is only appropriate when the households or hearths can be demonstrated to represent a single occupation.

Evidence for symbolic behaviour

As we have indicated, because gender is a symbolic category, symbolic behaviour is a prerequisite for creating a division of labour by gender. Language and ritual behaviour as shown by deliberate burials, art and ornaments have all been argued as indicating early symbolic behaviour, but the beginnings of each of those criteria are controversial. We agree with Conroy (1993: 154) that language is fundamental to its construction, as symbolic divisions can only be maintained when expected behaviours and deviations from those behaviours can be described. Some researchers have argued that the beginnings of language were associated with early pre-sapient hominids (e.g. Falk, 1983, 1987; Holloway, 1983), but by some, with anatomically modern humans (e.g. Binford, 1989; Davidson and Noble, 1989, 1996). By and large the arguments for the earliest development of language are based on biological evidence and those for a later development are based on cultural evidence.

Recognizing deliberate burial is difficult. Claims for burials of early African *H. sapiens* are controversial although a claim for a 55,000-year-old modern child in Egypt (Vermeersch et al., 1998) may provide evidence for early burials there.

Human remains are relatively abundant in the Middle and Upper Palaeolithic of Eurasia, but again the difficulties in the identification of deliberate burials makes their interpretation problematic. Gargett (1989, 1999) concludes that site formation processes can explain all of the features that have been used to identify Neanderthal burials, although not everyone agrees. Pettitt (2002), for example, suggests that there is evidence for Neanderthal burials after about 60,000 BP. Most archaeologists, however, would agree with Gargett when he points out that the items that have been identified as 'grave goods' associated with the Middle Paleolithic 'burials' consist of artefacts and bone fragments, items that are present in the site anyway, and that their association with the human bones is fortuitous. This is in contrast with the goods associated with Upper Palaeolithic burials, which consist of beads and other items of personal adornment; compare Tables 1 and 2 of Reil-Salvatore and Clark (2001), for example. The age of these burials, referred to by Pettitt (2002: 9) as 'ritualized burials' from about 27,000 years ago, supports the argument that the oldest symbolic burials occurred during the Upper Palaeolithic.

Turning to Asia, only in China is there good evidence spanning the transition to modern humans, albeit not continuously. There is a wealth of archaeological evidence for the presence of *Homo erectus* and archaic



forms of hominid, all of which are older than 100,000 BP. Modern humans appear in contexts much younger than this (see, for example, Bowdler, 1992). It is only in sites younger than 40,000 BP that there is evidence for deliberate burials. In the Upper Cave at Zhoukoudian, for instance, there are deliberate burials associated with personal adornment. The dating is controversial, with estimates spanning a range from over 20,000 to as young as 10,000 BP (Chen and Zhang, 1991).

The oldest direct evidence for human symbolism is in the form of artistic behaviour. The presence of drawing and painting can be difficult to identify because they do not survive in any but the most protected locations. Ochre has been discovered in contexts dating to 100,000 BP in Africa (McBrearty and Brooks, 2000: 527–8), but Wadley (2001: 204) warns that the presence of ochre does not necessarily indicate art as it can be used for other pragmatic purposes such as medicine, hide preparation or, when rubbed on the body, as protection against cold, sun and insects. Thus there are problems of associating ochre with symbolic behaviour without any other supporting evidence.

Beads and pendants are the oldest unambiguous evidence of the human use of decoration. To date, the oldest beads have been recovered from Middle Stone Age (MSA) deposits at Blombos Cave on the southern Cape shoreline of South Africa. This group of 41 perforated estuarine tick shells (*Nassarius kraussianus*) has been dated by optically stimulated luminescence and thermoluminescence to about 76,000 years ago (Henshilwood et al., 2004). There are other claims of MSA beads and pendants but they have been recovered as isolated finds, such as a bone pendant from Grotte Zouhra in Morocco (Debéneth, 1994). A single ostrich eggshell bead, from Mumba Rock shelter in Tanzania, has a direct Amino Acid Racemization assay of 52,000 years old (Hare et al., 1993). The manufacture of ostrich shell beads is widespread in the African LSA (see McBrearty and Brooks, 2000: 521–4) particularly after 40,000 years BP (Ambrose, 1998: 388). They are present in Enkapune ya Muto, Kenya, from about 37–40,000 years (Ambrose, 1998) and are of a similar age at Kisese II rock shelter Tanzania.

In the Levant, ornaments including beads and pendants, almost all made of small mollusc shells, are abundant from about 40,000 years ago at Ksar 'Akil in Lebanon and Üçagizli in Turkey (Kuhn et al., 2001).

In Europe, ornaments are infrequent in Middle Palaeolithic sites and their association with Neanderthals is controversial. Some of the oldest are from Bacho Kiro Cave in Bulgaria, where two pierced animal teeth, dated by radiocarbon to over 43,000 years old, are associated with an early Aurignacian assemblage (Kozłowski, 1982, cited in White, 1992). Similarly aged pierced teeth have been recovered from sites in Spain and the Czech Republic (White, 1992). A number of pierced ornaments are associated with Châtelperronian artefacts and Neanderthal remains at Arcy-sur-Cure in the

Paris basin, France, dated to about 34,000 BP; perhaps the last gasp of the Neanderthals (Farizy, 1990; Hublin et al., 1996). While not found in all Aurignacian sites, beads and pendant ornaments become widespread across Europe after this time (White, 1992).

In China, at the site of Xiaogushan dated to between 40,000 and 20,000 BP, there are perforated teeth presumably for personal adornment (Chen and Olsen, 1990). Sites with similar evidence of similar age include Shuidonggou (Jia and Huang, 1985) and Xiaonanhai (Chen and Olsen, 1990).

In summary, although there is some controversial evidence for symbolic behaviour associated with archaic modern humans in Europe, incontrovertible evidence for symbolic behaviour is associated with anatomically modern humans and not other hominids in all parts of the world.

■ SYMBOLIC EVIDENCE FOR GENDER

Identifying gender in this symbolic record is not easy. From the burials it might be indicated by different treatment of males and females and, in the art, from different ways of representing the two sexes that go beyond the biological, using conventions that suggest that the representations are cultural.

The results of studies of burial practices in Europe have been affected by the researchers' decisions about what constitutes deliberate burial. Harrold's (1980) comparison of Middle and Upper Palaeolithic burials suggests that there are differences between the two. He argues that, while there are no differences in the numbers of males and females buried in the Middle Palaeolithic, there are differences in the numbers of grave goods; none of the females have grave goods associated with them. Reil-Salvatore and Clark's (2001) more recent study is more conservative in their identification of 'deliberate burials' and so their sample is smaller. Their results show that males outnumber females in both time periods and, for the Middle Palaeolithic, only one of the eight females have what they describe as grave goods, and they suggest that these goods (bone fragments) may derive from covering sediment. It is difficult to know what to make of these data. First, there is the difficulty in identifying deliberate burial, especially when many of the materials derive from sites excavated well before the advent of modern excavation and recording methods. Second, there is the problem of sexing the skeletons based on population-specific patterns of dimorphism, particularly when dealing with a small, often fragmented, sample (see, for example, Walker, 1995).

More compelling evidence for the presence of gender derives from different representations of females in non-parietal art, particularly the



so-called 'Venus figurines'. The cultural meaning of these objects has perhaps received more attention than any other Upper Palaeolithic material. Most of them have been identified as female and most archaeological interest has been concentrated on those figurines with apparently exaggerated secondary characteristics and with large bellies. Many of the interpretations have presented single functional interpretations, the most common being that they are ritual objects associated with fertility rites, erotic objects, 'mother goddesses', representations of human morphology, or self portraits (for discussion see Delporte, 1993a; Dobres, 1992; McDermott, 1996; Marshack, 1991).

More recently there has been greater recognition of the fact that Upper Palaeolithic figurines are variable (Conkey, 1997: 184–5; Dobres, 1992; Nelson, 1990). The willingness to interpret the figurines as fertility symbols has been, in part, because most scholars only used a small sample and were selective in their samples choosing particularly those that appear to be pregnant (for example Conkey, 1997; Rice, 1981).

Whatever their function might have been, it is clear that at least in some samples there are conventions displayed in Venus figurines which have been recognized by, for example Conkey (1985), Delporte (1993b) and Gamble (1982). Gvozdozer (1989) convincingly demonstrated some of these conventions in her analysis of a sample of figurines primarily from the Russian Plain. In this analysis she showed that although there is some variation, there are conventions in the way the females are depicted. A standard is imposed on the structural angles of the figurines, the exaggerated anatomical parts are the breasts and abdomen, the type and placement and decoration is standardized and the posture and some body proportions differ from anatomical reality. Delporte (1993b) separates these figurines from those found in Siberian sites, which, although different in form from those from the Russian Plain sites, are homogeneous and use conventions such as unjointed legs ending in a point that differ from anatomical reality. Not all collections of figurines from Western Europe are so homogeneous but the presence of conventions in some collections, we agree with Conroy (1993), suggests that women's bodies are being turned into a cultural construct and that the societies who made such figurines were gendered societies.

On the other hand, there are very few identifiable male figurines from the same period. There are many figurines whose sex is not clear; Conroy (1993: 157) refers to these as 'sex-neutral'. Some have been identified as male but these have been the subject of much controversy (see for example Duhard, 1993: 88; McDermott, 1996: 235–6 and responses by Delporte and Duhard). This is not to suggest that males are not depicted at all in Upper Palaeolithic art or that a wide range of female body types are not represented amongst the figurines (Duhard, 1991). The point that we wish to make is that associated with Gravettian industries there are assemblages of

female figurines which display conventions in the way in which they are depicted.

For our purposes the most interesting evidence from the Upper Palaeolithic figurines is the accentuation of secondary sexual characteristics. The human body shape is a continuum, from those with accentuated 'female' characteristics, such as large breasts and hips, to those with strong 'male' characteristics such as broad shoulders, heavy musculature, facial and body hair as well as prominent penises. Upper Palaeolithic figurine makers did not choose to accentuate male characteristics but often chose to accentuate female characteristics. Conroy (1993) has suggested that the paucity of obvious male figurines or of pre-adolescent females in the Upper Palaeolithic female figurines might suggest that the original cultural categories might be 'female' and 'other', with the latter category including children of both sexes and males.

■ GENDER ROLES

Soffer et al. (2000a) have drawn conclusions about at least one of these gender roles, textile production (weaving and basketry), on the basis of body decoration on many of the Venus figurines. The kinds of clothing represented are clearly not designed for warmth or protection, and it is suggested it is not 'day wear' but more likely ritual wear, which served as social signifiers of varied social categories.

We do not wish to discuss the question of status, and who was responsible for making textiles in the Upper Palaeolithic. It is, however, worth noting that the use of fibre technology, as indicated by the figurines and by impressions on clay, bone and antler, has been shown by Soffer et al. (2000b) to be widespread in the Upper Palaeolithic. This is important to our argument because as Ingold (1986: 84) and others have pointed out 'gathering' is only possible when a technology of carriers and containers is available.

Social divisions between genders have also been identified in the Upper Palaeolithic parietal art from Western Europe. Duhard (1990, 1993) and Rice and Paterson (1988) have both concluded that females are depicted in passive scenes contrasting with males who are shown in active scenes. Rice and Paterson (1988) suggest further that when human groups are shown they are always of the same gender and that the economic role of males is suggested by their association with animals known to be eaten but the economic roles of females are not shown. Duhard (1993) has argued on the basis of a low relief scene on a stick from La Vache that shows a female with a deer and two males, one of whom appears to be holding some weapons, that this woman did take part in the hunt. Because she was



unarmed and accompanied by men, Duhard argues that she did not take part in the 'bloody activities', but there are clearly other conclusions that can be made about this scene.

The fact that AMH had lesser muscle hypertrophy than Neanderthals (Trinkaus, 1987) also suggests a separation of economic roles. On the basis of this evidence Soffer (1994) argues that the sex-based division of labour as it occurs in modern hunter-gatherer societies had its origins in the Middle to Upper Palaeolithic transition. This behavioural change, she suggests (Soffer, 1994: 111), is not so much a revolution as suggested by Cucchiari (1981) but a move to a dependence on a behaviour already present. In addition, Soffer (1994: 112) argues that the sex-based division of labour was AMH's solution to an environment in which food resources were patchy and unpredictable. As a solution to a problem it seems to have been successful, as measured by the lower incidence of stress indicators such as dental hypoplasia (Ogilvie et al., 1989), fewer traumatic injuries (Berger and Trinkaus, 1995) and age at death (Soffer, 1994).

We agree with Soffer's interpretation of evidence from the transition as showing the beginnings of the systematic sexual division of labour. We argue further that, while it may be that the division of labour is an adaptation based on biological difference, it is not a biological division but a systematic *social* organization centred on reproductive distinctions between bodies and that this must be a social process. The division of labour may have had antecedents earlier but gender as a symbolic construct seems to be present in the earliest material evidence of symbolic behaviour. Incontrovertible archaeological evidence for symbolic behaviour seems to be associated with anatomically modern humans. By the mid-Upper Palaeolithic in Eurasia clear conventions in the depictions of females, at least in mobile figurines, suggest that gender as an organizing principle was present.

■ GENDER AND THE COLONIZATION OF AUSTRALIA

If gender is part of the package of changes associated with the emergence of modern humans, what role might it have played in other major events associated with modern humans, such as the colonization of new areas, including new continents?

As Lilley (2006) describes, human occupation of Australia has either a 'long chronology' of about 60,000 years based on luminescence dating techniques (see, for example, Roberts et al., 1994; Thorne et al., 1999) or a 'short chronology' of about 45,000 years based on radiocarbon dating techniques (see, for example, Allen and O'Connell, 2003; O'Connell and Allen, 1998). Those that argue for the 'short chronology' point to the problems

associated with luminescence techniques and the apparent lack of clear association between the materials dated and archaeological occupation [see Allen (1994) and Gillespie (2002) for a discussion of some of these]. More importantly for our argument, it is generally agreed that the first colonization of Australia was by Anatomically Modern Humans (Groves, 1989; Lahr and Foley, 1994; Stringer, 2001).

It has been argued that since Australia must have been colonized by sea, language was a requirement for colonization because the use and construction of boats requires symbolic communication (Davidson and Noble, 1992a, 1992b; Noble and Davidson, 1991). In our view it may not be language per se that ensured a successful colonization of Australia, but the gendered division of labour for which language was a prerequisite.

One of us (Bowdler, 1990) has argued that a structured system of exploitation must be present for successful colonization of a new continent. To colonize new areas, humans needed a subsistence economic system with sufficient flexibility to allow its possessors to adapt to an unknown ecosystem. A new continent, as in the case of Australia, presents perhaps the most extreme example of this. In the Old World, pre-human foraging groups were probably able to slowly move across a landscape that only gradually became less familiar as they expanded. The first colonists of Australia not only had to cross a major water barrier, but then they were obliged to cope abruptly with a new environment. There would, however, have been some familiar resources. First, while the sea is a barrier, it is also a connector: fish and shellfish would have presented familiar and abundant food choices. Second, some plant resources would have been related if not identical species to those previously exploited in Southeast Asia (see, for example, Golson, 1971). Shellfish and plant gathering constitute a mainly female task, and within the colonizing group, women were able to carry on their accustomed economic activities while the men scouted the territory and developed strategies for hunting a new and unfamiliar land fauna. It was argued therefore that such a colonizing economic system 'should be seen as embodying dual strategies or multiple strategies, often connected with a division of labour based on sex, and sometimes age' (Bowdler, 1990: 333). Arguing from this viewpoint, the division of labour based on gender can be seen as one of the essential ingredients for adaptive success in modern humans.

The Australian archaeological record does indeed demonstrate that the earliest colonists had all the archaeological trappings of modern humans that indicate symbolic communication, including formal burials and visual information systems. Personal adornment dates back to the earliest sites in NW Australia, indicating, as elsewhere in the world at this time, the need for social identifiers (Balme, 2000; Morse, 1993). Formal burials at Lake Mungo have been dated to 40,000 BP (Bowler et al., 2003), a date some would see as representing the time of initial colonization. It is possible that



gender differentiation may be seen in these burials, with a female cremation and a male inhumation, but the sample is really too small to bear this assertion.

With respect to the division of labour, there is little direct archaeological evidence. All that can really be said is that dietary evidence from early sites in Australia, those older than ca. 20,000 BP, is no different from that at more recent sites. We certainly see evidence for collecting of shellfish and small animals as well as the hunting of larger macropods, but there is no direct evidence indicating who was doing what.

It is interesting to consider the case of Tasmania. Aboriginal populations here were isolated from mainland Australia, and the rest of the world, some 12,000 years ago. Subsequent to that period the isolated human society there followed its own developmental trajectory and can in no sense be considered a 'fossil society'. However, it can be noted that the ethnographic-ethnohistorical record indicates that in pre-European times the division of labour here was as found elsewhere in Aboriginal Australia: women gathered plant foods and dived for shellfish, men hunted larger game (Hiatt, 1967). With respect to other aspects of life, a general gendered division of society was evident in ritual matters, with some dances being exclusively male and others performed only by women; singing itself seems to have been a female art (Clark, 1987: 53).

Some Australian rock art is considered to be as old as the earliest settlement of Australia, which we will take to have occurred about 40,000 years ago (Morwood, 2002: 145). Some of the oldest art styles are considered to be the stylized but more or less naturalistic styles of Arnhem Land and the Kimberley, known as Dynamic Figure style (or Mimi art), and Bradshaw style, respectively. Both consist of small-scale representations of apparently human figures. It is considered that while the two styles differ, they are nonetheless related. Both styles are notable in that they represent ideas about gender. While in both cases some physical characteristics of sex are indicated, far more significant in interpreting the paintings as to gender representation is the identification of appropriate activities and items of material culture. There is a lack of agreement in the dating of the Bradshaw art in particular. On the one hand, a mudwasp nest partially lying over a late Bradshaw painting was dated to at least 16,400 years by OSL (Morwood, 2002: 135; Roberts et al., 1997). On the other, more recent dating by AMS suggests a date of only about 4000 years for some Bradshaw figures (Watchman et al., 1997). Be that as it may, there is certainly general agreement that that style is older than the more recent Wandjina style in Northwest Australia.

In the case of the Dynamic Figures (Mimi art) of eastern Arnhem Land, Brandl has observed that, in the first instance, men are far more commonly represented than women (Brandl, 1973: 173). This is supported by Chaloupka's study which found in a sample of 1600 paintings that 72

percent were men, while only 5 percent were women (the rest being non-human figures; Chaloupka, 1993). Brandl (1973: 173) also comments that 'as a rule the sex of human beings is not shown' in early Mimi art but implied by their activities. In the case of both Dynamic Figure art and Bradshaw art, Aboriginal people in the historical period have disclaimed responsibility for their production (Flood, 1997: 292). This has suggested to most researchers that they are indeed of considerable antiquity. Aboriginal informants, however, have been ready to identify gender depictions on the basis of their own cultural perceptions. While this might simply indicate a way of categorizing what is in reality unknown, it might on the other hand indicate the basic continuity of Aboriginal society from the far past to the present. In any case, Brandl observed that, according to his informants, men could be painted with or without genitals, but women would always be painted with breasts (Brandl, 1973: 175). This indicates a recent Aboriginal view, which both recognizes defined conventions as indicating gender and is happy to project that onto paintings for which they claim no responsibility. With respect to the paintings themselves, the objects which indicate males include spears and other hunting or fighting weapons, and those which indicate women are digging sticks and dillybags.

The case of the Bradshaw figures in the Kimberley is similar. There is a heavy predominance of male figures and very few females. Males are seldom represented with genitals, while females have stylized breasts. Males are always depicted with spears and boomerangs, women, when they occur, with objects interpreted as digging sticks (Walsh, 2000: 229). In this case, men also often have dillybags, which might be of a ritual nature; they are generally considered to be heavily accoutred with ritual paraphernalia. It is clear that in both these situations men and women are represented as occupying clearly defined gender roles based on their roles in society, not (just) biology.

■ CONCLUSION

Human ancestors can be identified some five million years ago, but the modern human species only emerged within the last 100,000 years. Some time in the remote past, human behaviours diverged from those of their simian relatives in many ways. At some point, the ancestral human society began to divide the subsistence work load among its members. Perhaps for reasons of biological expediency, but not necessity, women tended to concentrate on easily gathered plant foods and sessile resources like shellfish, while men tended to roam further afield and chase after more mobile prey. When the fully fledged modern human species emerged, a range of new behaviours ensured its eventual dominance over the earth. One of the



most significant of these was the ability to communicate symbolically, expressed in art and ornament. Along with symbolic communication came the ability to allocate members of society to specific categories, most significant of these being the concepts of 'male' and 'female', and to allocate to these categories specific tasks. We argue that the ability to define social categories and allocate tasks to them led to the codification of the division of labour by gender, and led to a highly efficient system that allowed humans to explore new environments, ultimately in nearly every corner of the earth.

Australia was occupied for the first time between 50 and 40,000 years ago by anatomically modern humans. Rock art in certain regions is nevertheless considered by some scholars to be amongst the oldest in the continent. Depicted therein we find clear evidence for gender roles, which are represented symbolically rather than only biologically. It seems clear therefore that Australia was colonized by people for whom gender roles were well established in their lives, and probably the ethnographically recorded division of labour by gender. It can be argued that it was this baggage of the first colonists that enabled them to tackle the demands of a completely new environment.

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