

THE CHARACTER OF
KINSHIP

EDITED BY
JACK GOODY

1973

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE

LONDON · NEW YORK · MELBOURNE

Genetrix: Genitor :: Nature: Culture?

J. A. Barnes

We salute Meyer Fortes for his achievements not only in the intensive investigation of the Tallensi and Ashanti of Ghana but also in the comparative analysis of diverse social and cultural systems, notably in his Lewis Henry Morgan lectures published as *Kinship and the Social Order* (1969). Although he has long remained a steadfast defender of the strategy of concentrating anthropological field resources on the study of peoples whose material artefacts are simple (Fortes 1958 *a*), he has always been sensitive to the light these studies shed on patterns of living found in industrial societies. It is therefore appropriate in the present context to discuss some of the issues that arise in kinship studies when we endeavour to compare social and cultural patterns in many different societies including our own. My thesis is that this comparison suggests a reformulation of the relation between kinship and nature. I focus on putative physical relations rather than on relations of social parenthood.

It can be argued that in anthropology and sociology comparative analysis is impossible without including, either explicitly or by implication, the society to which the analyst himself belongs and the culture whose concepts and categories he uses to think with. This view has been expressed by Schneider (1972: 47-8) who, in recent years, has appealed forcefully for the study of kinship as part of a cultural or symbolic system and who has provided the most uncompromising account of such a system in the Western tradition. He says:

The next problem... is the old one of how comparison can be conducted on a cultural level if it is assumed that each and every culture may be uniquely constituted... our own culture... always serves as a base-line for cross-cultural comparison. Without some comprehension, however botched, distorted, biased, and infused with value judgments and wishful thinking, both good and bad, our own culture always remains the base-line for all other questions and comparisons. In part, this is because the experience of our own culture is the only experience which is deep and subtle enough to comprehend in cultural terms, for the cultural aspects of action are particularly subtle, sometimes particularly difficult to comprehend partly because they are symbols not treated usually as symbols but as true facts.

Schneider implies, so it would seem, that even when we are comparing, say, unilineal systems found in different parts of Africa, as in Fortes' classic

paper on 'The structure of unilineal descent groups' (1953 *a*), there is an implicit comparison between the various African notions of unilineal descent and filiation and similar notions current in the Western tradition. In the passage cited however, Schneider is talking about cultural symbols, and it is not clear whether he would argue that in comparing, say, forms of social organization we are similarly forced to begin our analysis with forms prevalent in our own society. Indeed, at other places in his paper he draws a distinction between, on the one hand, 'the scientific facts of biology' and 'biology as a natural process' and, on the other, the cultural symbols that may perhaps (or perhaps not) be derived from these scientific facts. This suggests that he sees science as the study of nature, i.e., as natural rather than social science, and that he makes a distinction between 'science', dealing with facts, and 'culture', dealing with symbols. But if there are facts of nature and biology that can be demonstrated scientifically, as he maintains (he seems to have the processes of human reproduction in mind), then presumably there are other scientifically ascertainable facts about where people live, who they work with, who commands whom, and so on which can provide a framework for a comparative analysis of social organization that is not linked distinctively with any particular society, not even our own.

The distinction Schneider draws is widely used in social science. It is somewhat akin to the contrast between objective and indexial meanings used by the phenomenologists, and to that between 'objective' and 'subjective' social class by students of stratification. The same distinction is presented in another form in what Naroll (1964: 306) calls Goodenough's rule: what we do as ethnographers is, and must be kept, independent of what we do as comparative ethnologists (Goodenough 1956: 37). The closest analogue to Schneider's contrast is found in the distinction between etic and emic categories, labels which some social anthropologists have taken over from linguistics (see Goodenough 1970 *b*: 98-130). In Pike's (1967: 37-72) formulation the etic-emic contrast is unashamedly positivist. The scientific linguist observer, with his objective categories, is contrasted with the speaking actor who uses subjective categories to produce and decipher meaningful utterances. Inter-language comparison is implicit in Pike's scheme. As used in anthropology the cross-cultural and cross-societal emphasis has been retained but the positivist implication of the contrast has been played down. Instead we have the emic categories of thought of the actors contrasted with the etic categories of analysis of the observer, neither set necessarily more real or true than the other.

I have argued that this contrast can be applied without modification only in the 'colonial' or laboratory situation such as Pike had in mind (Barnes 1967 *b*, 1970). If the actors speak only their own language, think only in their own terms, and draw only upon a locally-generated stock of 'knowledge' of their environment, then the flow of information is only one-way.

The observer may well modify his etic analytical categories in the light of what the actors do and say, but they do not alter their ways of thinking and acting because of assertions made about their behaviour by the observer. This is the paradigm situation of inquiry in natural science, the principle of indeterminacy notwithstanding. Until a couple of decades ago anthropological fieldwork in distant colonies approximated to it, though even then there were substantial and critical differences from the typical scientific laboratory. These laboratory-like conditions have not persisted and, following the end of colonialism in its classic form, they are probably now gone for ever. Instead there is two-way communication between actors and observers, so that the actors begin to take over not only the material artefacts brought by the observers and their compatriots but also their languages, concepts and social institutions, changing them in the process. In particular they take over and adapt some of the jargon and some of the content of science. Once this happens the observer in the remotest jungle begins to face the same difficulties as his colleagues working in the metropolis have always faced: the facts that the language of science, and of social science in particular, is also to some extent the language of the people and that the findings of science, and even its techniques of inquiry and verification, are continually seeping into popular consciousness. In general, then, though his reasons are different from mine, I accept Schneider's point that the categories and concepts of the observer's own culture are the starting point for comparative analysis in social science.

If this is so, how does it affect the study of kinship? There are many issues we might take up but I want here to consider just two related matters: how valid is the distinction Schneider draws between culture and natural science; and how does kinship, in contrast to other aspects of social and cultural life, relate to nature? I use the standard triple distinctions between genetic or carnal father, genitor and pater, and between genetic or carnal mother, genetrix and mater, stressing that the statuses of genitor and genetrix are defined, if at all, in terms of local doctrines about the process of human reproduction (Barnes 1961: 297-8; 1964: 294; Goodenough 1970 *b*: 27). Fatherhood and motherhood are used as cover terms.

At first glance Schneider's position seems to be paradoxical. He seeks to establish science as distinct from culture and yet to insist that a comparative science of cultures has to be rooted in a particular culture, the culture of the investigator. He appears to make natural science free of culture but to query the possibility of meta-categories for analysing cultures. But this apparent paradox can be quickly disposed of by referring to his book on American kinship, where he makes a fourfold contrast between (1) what he calls biological facts, (2) formal science, (3) informal ethnoscience and (4) 'certain cultural notions which are put, phrased, expressed, symbolized by cultural notions depicting biological facts, or what purport to be biological

facts' (Schneider 1968: 114-15). I find it confusing to use 'biology', the name of a science, for phenomena that exist independently of efforts to study them, and therefore re-label (1) nature. Category (4), of which 'broken heart' and 'heartache' are examples from American culture, need not detain us. This category contains what in more traditional language might be called extensions of kin usages that are perceived by the actors as being metaphorical, figurative, symbolic; all the parishioners know that the village priest is not 'really' their father. We can concentrate on categories (1) (2) and (3).

Formal science, category (2), is part of American culture as much as categories (3) and (4). Indeed Habermas (1972) argues that the salient diagnostic feature of contemporary culture in industrialized societies is the belief that science is the only authenticated form of knowledge. Though both are part of Western culture it is possible, at least for classical times and since the Renaissance, to draw a fairly clear distinction between professional scientific assertions and lay beliefs that, rightly or wrongly, are perceived as based on formal scientific inquiry (see S. B. Barnes 1969). Informal ethnoscience embraces more than the latter category but it certainly includes it. Weber (1946: 139) notes this distinction, and it is well put by Evans-Pritchard, in a discussion of the views of Lévy-Bruhl.

The fact that we attribute rain to meteorological causes alone while savages believe that Gods or ghosts or magic can influence the rainfall is no evidence that our brains function differently from their brains. . . It is no sign of superior intelligence on my part that I attribute rain to physical causes. I did not come to this conclusion myself by observation and inference and have, in fact, little knowledge of the meteorological processes that lead to rain. I merely accept what everybody else in my society accepts, namely that rain is due to natural causes (Evans-Pritchard 1934: 21).

Our yardstick, then, is our own culture, which contains a vast number of propositions perceived as science. Against it we compare other cultures, noting in what respects they resemble one another and how they differ, and endeavour to discover why this is so. How does a comparison of this kind work in the field of kinship?

It is reasonable to expect that data from category (1) will impinge in special fashion on kinship data from categories (2) and (3). Despite the recent efforts of some ethologists to postulate a pan-primate basis for political order, and for much else as well, kinship remains the aspect of human culture with the closest links to the natural world. Indeed, in American culture, we are told, 'kinship is biology' (Schneider 1968: 116). Apes and monkeys may have dominance hierarchies and territories but, unlike men, they do not have representative government nor, as far as we

know, do they believe in God. Like us, however, they copulate, conceive and give birth, activities with which kinship has a close connexion, however problematic the qualities of the connexion may be. These activities, when performed by humans, are perceived as natural rather than cultural. Part of the basis for a comparison of ideas of kinship has then to be our own cultural notions about the reproductive process, some of which are derived directly from formal science but which include others that belong solely to ethnoscience.

The inevitability of beginning cross-cultural comparison by matching alien cultures against our own is well shown by the discussion in *Man* a few years ago on virgin birth (Leach 1967; Spiro 1968; Douglas 1969 and references therein), and by earlier controversies about the ignorance of physiological paternity. The diverse beliefs about non-miraculous human reproduction found in pre-scientific cultures have been described many times and need not be repeated here (Ashley-Montagu 1937, 1949; Ford 1945; Leach 1961 *b*, 1961 *c*, 1967; Malinowski 1963; Meyer 1939: 1-16; Spencer 1949-50). The point I emphasize is that when these beliefs are compared, the yardstick used is falsely presented, for we tend to assume that for ourselves no distinction between formal science and informal ethnoscience is needed. We present our own view of conception as a single event, in which only one man and one woman are involved, and which triggers the whole sequence of gestation, as scientifically validated. We contrast this view with theories that the foetus forms and grows in the womb by receiving contributions via many acts of coitus not necessarily all performed by the same man, a view held, for example, by the Azande (Evans-Pritchard 1932: 410); or with other theories, found for example in Aboriginal Australia, whereby the process of gestation is neither initiated nor sustained by coitus; or with intermediate theories. These indigenous ideas are recorded in the ethnographic literature, but where do ours come from? From formal science, or informal ethnoscience, or from a cultural heritage in which natural substances like blood and semen serve as symbols in statements that have nothing at all to do with natural science? Even if we prune away metaphorical ideas in Schneider's category (4), a moment's reflection shows that ideas in categories (2) and (3) are not as easy to pin down as may seem at first sight.

At this point we can come to grips with a distinction between fatherhood and motherhood. Consider first fatherhood. Nowadays most educated people in the West have heard of genes and chromosomes and know that the embryo draws its stock of chromosomes equally from its genetic father and mother. I guess that, in the sex-conscious culture of contemporary Britain, almost all adults believe that conception occurs when a spermatozoon penetrates an ovum. But what sort of knowledge is this? Surely most of us know as little about the physiology of human reproduction as Evans-

Pritchard knows about meteorology. We believe these processes to occur because we believe also that at some point in the past long-forgotten scientists discovered that this is what really happens. We assume that though the discovery of genes and chromosomes is post-Darwin, the fact that conception is a unique event and not a prolonged process has been scientifically established for a long time. The view that conception and gestation can follow a single act of coitus is indeed consistent with Aristotle's account of reproduction in *Generation of Animals*, Book 2, and is implied in his statement in the *History of Animals* that 'if the second conception take place at a short interval, then the mother bears that which was later conceived and brings forth the two children like actual twins. . . The following is a striking example: a certain woman, having committed adultery, brought forth the one child resembling her husband and the other resembling the adulterous lover' (585^a). Thus the doctrine of 'one child, one genitor' has been part of the Western tradition for more than two thousand years. Yet although the presence of physical resemblances between some, though not all, children and their mother's husbands calls for an explanation, it does not necessarily demand a theory of universal monopaternity. The dominance of a monopaternal theory cannot have been determined by the weight of evidence, for apart from resemblances there was little material evidence available until the seventeenth century. Spermatozoa were discovered accidentally in 1677 by Ham, though their connexion with fertilization remained unknown. Mammalian ova were discovered, also accidentally, in a pregnant bitch by van Baer in 1828 and in 1853 Newport claimed to observe spermatozoa entering an ovum. Not until 1875 were the male and female pronuclei in spermatozoa and ova identified by Oscar Hertwig, who described how they combine (Meyer 1939: 123, 137-8, 189-192). Thus for most of the historic period in the West, the uniqueness of physical paternity was a cultural construct for which there was very little conclusive evidence.

Even so, this doctrine was modified by a belief in 'maternal influences', the idea that events experienced by a pregnant woman are reflected in the constitution of her child. The belief forms part of several indigenous theories of procreation (e.g. Lévi-Strauss 1966 b: 76) and is certainly still present in contemporary Britain. It is exemplified for animals in the story told in *Genesis*, chapter 30, verses 25-43, about Jacob changing the colour of the lambs borne by Laban's ewes. 'Maternal influences' may always have been restricted to ethnoscience, old wives' tales, but orthodox formal science long entertained the related idea that Weismann (1893: 383) calls 'telegony', the notion that the physical characters inherited by an individual are influenced not only by his (or her) own father but also by other men by whom his mother may previously have had children. Dobzhansky (1970: 420A) attributes this belief to Aristotle and it was supported, for plants and

animals at least if not for humans, by Darwin (1875: 435-7; see Morton 1821; Zirkle 1935: 117 and 1946: 119; Parkes 1960: 242) in conformity with his thesis of pangenesis. Thus whereas most pre-scientific beliefs about multiple physical fatherhood identify as genitors men with whom a woman has had intercourse during a given pregnancy, telegony ascribes physical paternity to her earlier mates as well as to the man who initiates the pregnancy. The doctrine of telegony lives on among animal breeders but has been abandoned by orthodox science, as has a later suggestion of a naturally-occurring polypaternal process called 'somatic fertilization'. According to this hypothesis, substances may be absorbed in the female genital tract after copulation; these evoke the production of factors which may exert an influence on the embryos of subsequent matings (Austin and Walton 1960: 393; Parkes 1960: 242). In the laboratory, however, the fusion of two embryos at the eight-cell stage has been achieved, producing tetraparental mice. Chimeric mice with even more complex constitutions have been bred and studied (Tarkowski 1961; see Wegmann 1970; Mullen and Whitten 1971 and references therein). Indigenous assertions of human polypaternalism in nature have thus been vindicated for some mammals in the laboratory. Indeed there is evidence that double fertilization sometimes occurs naturally in humans (Benirschke 1970: 40-5). Human polypaternalism seems therefore to be compatible with the available scientific evidence.

Tetraparental mice and other chimeras produced in the laboratory receive their diverse constituents before the implantation stage, long before birth. A belief in the post-natal physical transmission of information and attitudes is implied in the expression 'He took that in with his mother's milk.' An earlier belief in a more specific and selective form of located transmission is suggested by Dobzhansky's (1970: 420A) statement, made in the context of an article on heredity, that 'An ancient English law holds a man who seduces the wet nurse of the heir to the throne guilty of polluting the "blood" of the royal family.' I have been unable to trace this law. The closest comparable laws seem to be those listed during the reign of King Æthelberht of Kent about A.D. 600, whereby a man who seduced a maiden of the king's household had to pay fifty shillings in compensation, compared with only twelve shillings for the seduction of a girl occupied on menial tasks (Attenborough 1922: 5; Liebermann 1903: 3 and 1916: 7). These laws give special recognition to the king's entourage but make no reference to suckling or pollution. It may well be that the ultimate source for the alleged ancient law is merely the *Mirror of justices* where it is said that one of the ways in which an adulterer may commit the crime of lese-majesty, 'a horrible sin', is by seducing the nurse suckling the heir of the king (Whittaker 1895: 15). The *Mirror* was at one time regarded as a true account of the laws of England before the Norman conquest but in Maitland's view was largely fabricated by Andrew Horn, fishmonger and Chamberlain of the City of London, in

about 1289; it contains many wilful falsehoods and misstatements of law (Maitland 1895). The Anglo-Saxons may never have held the doctrine that some kind of malign influence can be transmitted from a man by adulterous copulation to a lactating woman and thence through her milk to her royal foster-child. But if the law never existed, at least the doctrine formed part of the imagination of a thirteenth-century fishmonger.

Despite these contrary notions, the main stream of Western popular belief has clearly been 'one child, one genitor'. If there was no compelling scientific evidence for this belief the reasons for its persistence must be sought elsewhere, in the organization of social life and in other parts of Western culture, rather than in nature. As far back as we have knowledge, Western society, like most other human societies, has been organized on the premise of one child, one pater. Likewise the Christian faith of the West stresses the uniqueness of God the Father. The Holy Ghost impregnated Mary through her ear and was manifest in, or symbolized by, a dove at Christ's baptism, but neither act makes the third person of the Trinity co-pater with the first (see Jones 1951; Swete 1909: 28-9, 45, 365-6; Gudeman 1972: 54). If we encountered this constellation of facts in a tribal society, surely we would have no hesitation in saying that the organization of society and the major premisses of religion are reflected in myths about unique physical parenthood.

Motherhood is different. Conception is an internal and microscopic event that we laymen believe scientists have investigated, whereas gestation and birth, and with them the relation of physical motherhood, are macroscopic processes that, in principle, anyone can see for himself. Hence the descriptions of physical motherhood in diverse cultures do not vary as greatly as with fatherhood. The so-called denial of physical maternity is not homologous with the denial of paternity, except when applied to special myths for uninitiates, as for example in our own tale for children about storks bringing babies (cf. Spiro 1968: 260, n. 11). The denial of physical maternity usually means merely that the mother is thought to contribute nothing of importance to the foetus during pregnancy, as for example was believed in ancient Egypt (Needham 1959: 43) and is stated by Apollo in Aeschylus' *Eumenides* (lines 657-61), when defending Orestes against the charge of matricide.

This lack of symmetry between the notions of genitor and genetrix is emphasized by Goodenough (1970a: 392) who says that 'procreation associates children directly with women but only indirectly with men' and that 'Motherhood and fatherhood cannot be defined in the same way for comparative anthropological purposes'. Fathers are not self-evident as mothers are. 'Genitor' is a social status, and societies vary greatly in the rights and duties, privileges and obligations, if any, that they associate with this status. If the status exists, there must be a rule for identifying genitors.

But for the status to exist at all there must be a theory of procreation that calls for one, or for several, and, for all cultures prior to the physiological discoveries of the late nineteenth century, this theory cannot be supported by scientific evidence. Even though Aristotle wrote his *Generation of Animals* in terms of a unique and necessary genitor, who might be the wind rather than an animal, he misunderstood the significance of menstrual blood, which he thought was coagulated by semen just as milk is coagulated by rennet, thus forming the foetus (739^b). It is scarcely surprising that Australian Aborigines and many other pre-scientific peoples should have developed theories of human reproduction which do not require a genitor or which allow for the possibility of several. What calls for explanation is why in the pre-scientific West the dominant folk theory happened to be in one particular, though not in many others, more or less in accord with evidence from nature later to be disclosed. In this light, the debate between Leach, Spiro and others about ignorance of physiological paternity is cast in the wrong mould, for their arguments are all about how to interpret correctly apparent ignorance of a fact that everyone should know. Against the participants in this debate, on both sides, I contend that physical paternity is a fact that, until recently, nobody can have known scientifically. Our proper task is to explain the fabrication of flimsy hypotheses as well as the denial of material evidence.

Schneider (1972: 62, n. 9) queries the assumption that American cultural symbols like blood and shared bio-genetic substance, and perhaps even coitus, derive from the facts of nature. Beliefs centring on these symbols presumably belong to informal ethnosience, where the predominance of cultural rather than natural influence is not surprising. For example, in the fourth century B.C. Anaxagoras stated that sperm coming from the right testis produced males, and from the left testis females, an assertion repeated in the sixteenth century by Melanchthon, Luther's supporter, with the rider that males were born from the right side of the womb. What is more impressive is the effect that cultural influences, usually in the form of adherence to unproved theories, have had on formal science as well as on ethnosience in blotting out the evidence provided by nature. The most striking examples are given at the end of the seventeenth century by the homunculi, minute but fully formed human beings, which Plantade and Hartsoeker separately asserted they had seen through their magnifying lenses inside human spermatozoa (Meyer 1939: 69-70, 133, 152, and Figures 16 and 17). Even Leeuwenhoek, who reported Ham's discovery of spermatozoa to the Royal Society of London, wrote about the 'nerves, arteries, and veins' he saw inside his own spermatozoa: '...I felt convinced that, in no full-grown human body, are there any vessels that may not be found likewise in sound semen' (Cole 1930: 12). The history of popular and professional scientific beliefs about monsters, malformed foetuses, provides further proof of the

difficulty we encounter in recognizing the evidence of nature when this challenges doctrines we cherish (Meyer 1939: 212-7).

Kuhn (1970) and many other writers have drawn attention to the way in which fresh evidence from nature is moulded as much as possible to fit existing scientific theories. Without necessarily accepting Kuhn's notion of a paradigm, we can apply to the scientific quest for physical fatherhood in general Needham's comment on Aristotle's account of human reproduction: 'The whole matter affords an excellent illustration of the way in which an apparently academic theory may have the most intimate connections with social and political behaviour. . . .' (Needham 1959: 14).

From this standpoint we can easily resolve the paradox that Aboriginal Australia, the major locus of so-called ignorance of physiological paternity, is also the home of what Fortes (1969: 101) calls a kinship polity (Barnes 1963: xxiii-xxvii). For if of necessity physical paternity is prescribed or denied culturally without the constraint of the natural order, the way is open for the elaboration of rules of fatherhood for any social or cultural purpose whatever. Aboriginal cultures seem generally to have managed without human genitors, while ascribing a relation of social fatherhood to the mother's husband (see Fortes 1969: 106, n. 10). Indeed, Hiatt (1971) analyses secret pseudo-procreative rituals performed by Aboriginal men in terms of the contrast between the uncertainty of the male contribution to reproduction and the certainty of the contribution made by women. In this perspective we might see all assertions of physical paternity as examples of what is fashionably called male chauvinism.

In some Aboriginal societies where many marriages are unorthodox, and also among the very orthodox Walbiri, the required relations between sections, lines and generations are maintained by applying rules of indirect matrilineation rather than patrilineation. The unorthodox affiliations of an individual's father are ignored and he acquires the category and group memberships he would have had if his mother had made an orthodox marriage. A rule of indirect matrilineation in a 'kinship polity' of Australian type reduces the range of contexts in which an individual needs a specified social father; a dependable prospective mother-in-law may be a more important requirement (see Warner 1958: 119-20; Meggitt 1962 a, 1972: 74; Shapiro 1969, 1971). He needs a single human genitor even less. It is perhaps possible that the lack of interest in nominating a physical father may have been facilitated for Australian Aboriginals by the predominance of marsupials in the fauna. The process of marsupial gestation remained a mystery long after the beginning of White settlement in 1788. Although the unaided passage of a kangaroo embryo from the vagina towards the pouch was recorded in 1830, more than a hundred years later many Australians firmly believed that marsupial young develop on the teats 'like apples on twigs' (Collie 1830: 240; Troughton 1965: 13-21). Only recently has there been a

satisfactory explanation of the phenomenon of embryonic diapause, whereby the interval between copulation and birth may increase up to ten or more times its normal value (Sharman 1955; Sharman and Berger 1969). Thus the evidence available from nature for Aboriginal would-be scientists was confusing. There is no reason why Aboriginals should have based their ethnoscience of human reproduction on the eutherian dingo or bat any more than on the kangaroo or other ubiquitous marsupials. Seligmann (1902: 300-1) mentions that in Papua a community he visited knew little about the reproductive organs of a wallaby he had dissected.

Where the local theory of reproduction does call for one or more genitors, another problem arises. Copulation may be thought to be a necessary prerequisite for conception or foetal growth, but it is a compelling fact of nature that it is not a sufficient condition. We do not need to be scientists to discover this. To be complete, a theory must specify sufficient as well as necessary conditions, and in the absence of clues from nature these must be generated by the culture rather than derived from observation. Even in the scientific West not all the causes of infertility are known. To fit the facts the actors' causal model has to contain a substantial error term, and it is scarcely surprising that this is labelled God or spirit, beyond human control. Thus for example Evans-Pritchard (1932: 400, 402, 408) reports that the Azande believe that conception results from copulation, and that subsequent acts of intercourse are beneficial in that semen assists foetal growth. But they stress that conception cannot occur unless it is the will of the Supreme Being, Mboli. Likewise according to the Talmud, there are three partners in every human birth: God, father and mother (Abrahams 1924: 150, 176). In the exchange of views on virgin birth in *Man*, the contributors seem to have forgotten how recently this tripartite doctrine has ceased to be current in Britain. In the days before our present fertility clinics, the only advice available to barren couples seeking a child was: Prayer and perseverance.

One last point. Whatever may be their ideas about physical parenthood, virtually all cultures attach symbolic value to both fatherhood and motherhood. I suggest that fatherhood is the freer symbol, able to take on a wider range of culturally assigned meanings, because it has a more exiguous link with the natural world. One striking instance of the use of the symbol of fatherhood is in the charters of organization of polysegmentary societies. There are certainly good social reasons why matrilineal societies never achieve segmental hierarchies with as many levels as are found in patrilineal systems of widest span (Schneider 1961). But it can also be argued that the pedigrees that describe the relations between the major components of polysegmentary societies have nothing whatever to do with domestic kinship, whether patrilineal or matrilineal. I have suggested for the Mae Enga that the idiom of agnation is used to describe simply relations of inclusion; that the statement that *A*, the apical ancestor of one group, is father of *X*.

Y and Z, the apical ancestors of other groups, means in the higher levels of the hierarchy merely that the groups associated with X, Y and Z form part of the larger group associated with A. In describing the structure of the United States of America to a Mae Enga I might say that Uncle Sam is father of California who is father of San Francisco; but this statement would imply neither that my mother's brother founded the United States nor that St Francis of Assisi is his grandson (Barnes 1971 a: 8-9). In other words, the kin-like relations postulated between high-level taxa in segmentary hierarchies belong to Schneider's category (4) rather than (3).

But why in these cases are A, X, Y and Z all taken to be men rather than women, so that A is father and not mother of the others? The organizational arguments about the limited possibilities for polysegmentation in matrilineal systems are irrelevant, for at this level explanations of present-day group dispositions in terms of some historically remote differentiation between brothers and between sisters are equally implausible. We can appeal to Fortes' notion of organic societies, in which 'social organization is governed by the same principles at all levels' (Fortes 1949 a: 341; see Gluckman 1963: 73-83), though I would recast this to assert that in these societies social organization is described by the same symbols at all levels. In this case, the Mae Enga organizational plan is written in agnatic symbols at the top because agnatic principles of organization, even if in modified form, are actually at work at the bottom (Barnes 1967 a). Fatherhood is certainly not the only kin term that can be used to indicate relations in set theory; in our own culture we speak sometimes of daughter churches and of sister Oxbridge colleges (consisting originally of celibate male dons), while second and third generations of computers seem to be born asexually. In pre-scientific cultures agnatic idioms appear to be more widely used, and as we move up an agnatic pedigree the symbol of fatherhood is switched imperceptibly from referring to the connexion between individual men and their wives' sons to the connexion between taxa in adjacent levels in a segmentary hierarchy. I suggest that this switching occurs partly because of cultural and social parsimony but also because the symbol is largely a cultural construct, unfettered by evidence from nature.

My argument can now be summarized. The relations of nature to fatherhood and motherhood are different. The difference is expressed in the title of this paper: physical motherhood is to physical fatherhood as nature is to culture. Some writers have argued that kinship is based on the cultural and social recognition of physical relations, while others have stressed that kinship, as a social and cultural system, has nothing directly to do with genetic linkages (Beattie 1964 a; Levy 1965; Schneider 1965 b). I take an intermediate view that will please neither camp (see Gellner 1963; Barnes 1964). I argue that the mother-child relation in nature is plain to see and necessary for individual survival. An infant may be free to form attachments to

mother-surrogates, but most scientists would agree that a woman's response to an infant after she has given birth is at least in some degree innate or genetically determined. Hence a relation of physical as well as social motherhood is always recognized culturally and institutionalized socially. On the other hand the evidence for the human father-child relation in nature has been, until the last hundred years in the West, slight and inconclusive. There seems to be no evidence that a man is programmed genetically to act differentially towards an infant merely because he has sired it. The processes, necessary for collective survival, of socialization, economic and political mobilization, transmission of offices, power and resources, have facilitated, though they may perhaps not have determined, the institutionalization of social fatherhood in some form or other. Combined with the institution of marriage, this role of social father has provided a basis for the possible development of ideas about physical fatherhood.

Thus cultural motherhood is a necessary interpretation in moral terms of a natural relation, whereas the relation of genitor is an optional interpretation, in the idiom of nature, of an essentially moral relation. Speaking more generally we may say that there is a real world we call nature which exists independently of whatever social construction of reality we adopt. The relation between nature and culture is contingent; some aspects of nature impinge more obviously and insistently on the human imagination than others. The constraints on the construction we make of fatherhood arise from our social lives as adolescents and adults; our concept of motherhood is more closely constrained by our lives in the womb and as young children while we are still largely creatures of nature.

ACKNOWLEDGEMENT

I am much indebted to Frances Barnes, Les Hiatt, Mervyn Meggitt, David Schneider, W. Ullmann, W. K. Whitten and D. E. C. Yale for suggestions I have used in this paper.