Title
Discussion and Criticism - On Wilkinson's Model for Man-Animal Relationships in Prehistory

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and determining which of these are best served by the school or by other subsystems of a society; (2) elucidating the implicit curriculum of the school (as opposed to the explicit curriculum), which teaches some children that they are stupid and others that they are bright, and stresses the importance of time, order, neatness, and so forth. What basic goals and values of the society are being destroyed by this curriculum, which are being enhanced, and what other values are being imposed? Curriculum specialists can turn to anthropologists and other social scientists for the evidence they need as to the purposes of education in relation to how a society is changing and how students are changing. Bloom expressed the hope that the Center for the Study of Man may be able to establish relations with workers in curriculum centers in various countries of the world.

Walter Goldschmidt argued that variance in educability is partly to be explained in terms of presocialization to the peculiar and narrow set of cultural phenomena that anthropologists have come to see as the culture of schools. He said that there is a great deal more cultural uniformity in schools in the United States than there is in any home environment. If the home environment is conducive to the kinds of very restricted and constrained modes of interaction that occur in Western-style schools, then the children will do better in school. Gina Holloman further pointed out that four of the five variables outlined are clearly related to the analytic style of thinking, on which schools rely heavily.

This observation led to a discussion of the problem raised by the situation in which the environment found to produce the highest learning ability may be considered the worst environment in terms of its lack of love and affection. Anthropologists must deal with the question, What are the dangers if we socialize our children to learn in the schools as they are? It was decided that what anthropologists might best do is show the impact of a school system on different groups.

It was pointed out that curriculum-makers must take into account major cultural differences, for example, between urban and rural environments, so as to avoid motivating to an achievement that is not relevant to the students involved. Bloom raised questions relating to how centralized a curriculum can be, how much variation there can be, and what a curriculum can and cannot do in terms of national unity, what the best way to teach various subjects is, and so forth. June Nash said that it is important to keep the school from becoming ethnocidal. She cited a study done in Chiapas showing that Indians can more easily be taught to read and write Spanish if they are first taught to read and write in their own language.

It was decided that anthropologists can contribute most by showing what education does. If there is to be curriculum uniformity, anthropologists can show what this does to various groups within the society, how it affects what the goals are going to be, and so forth. Bloom stressed that curriculum has up to now been approached largely in terms of subject matter—how do you teach math, how do you teach science, etc. Questions to be answered are what the curriculum *does,* what school organization does to the whole society over a period of time, to values, and so forth. Tax suggested that anthropologists think of ways in which the research enterprise could be organized on a world scale to try to deal with such questions.

Reported by MARY BETH SHEA and MARY E. EMMONS

DISCUSSION AND CRITICISM

On Wilkinson's Model for Man–Animal Relationships in Prehistory

by J. DESMOND CLARK

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Wilkinson (CA 13:23–44) has provided us with a most stimulating review of man–animal relationships as well as a clear and most interesting account of what emerges as potentially the most important experiment in the domestication of a large mammal being undertaken today; important, that is, for the population that will make use of these domestic herds. Wilkinson's careful use of ethnographic examples to support the models he has constructed to demonstrate the variability possible in the interrelationships between hunters and game herds during the later Pleistocene and after is much to be commended. Something that all prehistorians need to be aware of is the fact, which he has demonstrated, that changes to be expected in the social and economic patterns of the exploiters, arising from changes in the manner of their exploitation, are often not reflected in the technology of the group. This and other work of the same kind now make necessary a restudy and reassessment of the earlier evidence underlying arguments for or against domestication. Nowhere is this more necessary than in the continent of Africa, which, it would seem, contains more potentially domesticable large mammals than does any other continent. The current belief and the available evidence suggest that man succeeded in domesticating none of them except for the cat, the guinea-fowl, and, possibly, the ass, though even this last is now open to doubt, in the light of recent finds from the Middle East.

Clearly, in sub-Saharan Africa, the rich and seemingly inexhaustible Ethiopian fauna and the tropical flora militated in favour of a continuation of the hunting way of life until population densities there built up to the level they had attained in the Middle East and the Mediterranean basin. The importance of hunting as the main source of meat persists in modified form even today among the diverse farming populations south of the Sahara. This perhaps shows that the adoption of domestication there was underlain by a different set of phenomena and a different sequence of events from those operating in the primary regions in more northerly latitudes, where the biomass was much

less and from which most of Wilkinson's examples are taken. If this were so, it is difficult to understand why it would seem that we find no evidence of domestication in the Egyptian section of the Nile Valley until the 5th millennium B.C. The recent archaeological researches in Nubia and Upper Egypt of Wendorf, Smith, and others and the work on the geological and palaeo-climatic history by Butzer, de Heinzelin, and Said now show that most of the circumstances that favoured domestication were present in the Nile Valley by c. 15,000 B.C.—including increasing population density, more rigorous exploitation of the local resources, territoriality, and permanent settlement using the terrestrial, avi-, and aquatic faunas within an ecosystem the boundaries of which were sharply defined by the surrounding desert. It is difficult to accept the current view that the economy of the inhabitants of the Nile remained unchanged for some 10,000 years until universal acceptance of the introduced Asian domesticates came about in the 5th millennium. Wilkinson's discussion of the processes involved in taming and the practices of the Nganasan reindeer-hunters clearly has significance here, as also does his statement of the problems involved in the movement of domesticated species out of their habitat. These suggest that some pre-adaptation on the part of the Egyptian human populations must have taken place for the diffusion of the Asian domesticates, animal and plant, to have been so immediately successful. If these domesticates had been introduced by an influx of Asian peoples, no problem would arise; but since no evidence for movement on such a scale yet exists, the question remains and can be answered only by a systematic investigation of the early Holocene settlements, of which practically nothing is known at this time.

The many representations of animal hunting, capture, and taming from the Predynastic to the Middle Kingdom show that there was no lack of experiment in Egypt using the local fauna. What remains to be seen is how long these experiments had been going on and why they were later abandoned.

The genetic nature or temperament of an animal in its natural setting must have been of the greatest significance in deciding whether it would become an important domesticate or not. Wilkinson has shown that the temperament of the musk ox makes it eminently suitable, but the "impossible" temperament of others—the onager or the zebra, for example—suggests that successful domestication may well rest, even in regions where the other prerequisites for domestication exist, on the coincidence of genetically favourable wild species.

Wilkinson has set out an intriguing hypothesis as to the possible domestication of the musk ox by Upper Palaeolithic man, though I do not find very convincing the inability of the hunter to retrieve the carcase from a musk ox formation. The saving of time rarely has any meaning for hunter-gatherers, and there does not seem to be any likelihood that carnivores would take the kill if it were left until the herd moved off. Perhaps one reason why musk ox is so rare in the faunal remains of later Palaeolithic sites might be that the meat was rated very low in the hunters' preference list. This is certainly the case in Africa in regard to, for example, waterbuck and hartebeeste, and these animals will not generally be killed for food if other game such as eland or reedbuck are to be had. What is the modern Eskimo's opinion of musk ox meat?

This paper is just the kind that is needed to stimulate critical review of established hypotheses of the sequence of events leading to domestication and the "cultural" and faunal evidence on which these hypotheses depend.

Reply

by PAUL F. WILKINSON

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Whilst I agree with Clark that the lack of evidence for early domestication in the Egyptian section of the Nile Valley is surprising and am inclined to view it as more apparent than real, the lack of evidence for extensive domestication in sub-Saharan Africa is less surprising to me. Since I consider this topic elsewhere (Wilkinson 1972), I shall touch on it only briefly here.

Extending the concept of efficiency in man–animal relationships, it seems to me that domestication in the classical sense is likely to occur successfully principally in areas with relatively simple floral and faunal communities. Although this does not necessarily mean areas with a low biomass, the two are in practice sometimes associated. There is in this respect a sharp contrast between the Arctic and the tropics. The Arctic supports only two large herbivores (musk oxen and reindeer/caribou), which can utilise successfully a high proportion of the species forming the relatively simple, and often sparse, arctic vegetation. The tropics and subtropics, on the other hand, are famous even today for the diversity of their fauna and flora. Recent research in areas such as the Serengeti (e.g., Bell 1971) has demonstrated that the feeding activities of one species often create conditions favourable to another species, so that "the grasses and the animals interact in such a way as to give rise to a succession wherein the grazing species follow one another in characteristic sequence during their seasonal movements" (Bell 1971: 86). Under such circumstances, emphasis on a single animal species, with the probable reduction in the number of other species which this would entail, is a self-defeating strategy. A second important difference between the Arctic and the tropics and subtropics is that the large herbivores of the latter regions do not undergo major seasonal fluctuations in weight. Thus there is less pressure on human populations to harvest them at a particular season (which, in the Arctic, may differ for males and females of the same species) and consequently less pressure on human populations to initiate control over these populations.

To some extent I consider the recent trend to game farming in Africa, that is, exercising loose control over several species in contrast to emphasis on a single (generally European) species, to be a validation of this point. Prehistorians frequently cite the necessity for a deep time-perspective, and it is relevant here that detailed histories of man–animal relationships in some areas covering periods of up to 500 years are now available. Jones (1970) has used such data very successfully to elucidate the changing relationship between Tasmanian aborigines and dogs, and I have adopted a similar approach towards the musk ox.

Clark wonders if the absence of musk ox bones from archaeological sites may reflect only the fact that its meat was not greatly favoured. Whilst this remains an obvious possibility, ethnographic data suggests that the Eskimos in general tend to like it.

On a minor point, literary records do show that zebras have been tamed and used as draught animals in Africa, apparently quite successfully.

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