Culture as Protein and Profit, Plus Replies

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Reviewed:
Cannibals and Kings: The Origins of Cultures
by Marvin Harris
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I

In this book of modest size, Marvin Harris explains the origins of war, capitalism, the state, and male supremacy. He reveals the true meaning of the Eucharist, tells why Hindus believe in sacred cows, and discloses the logic behind Jewish dietary laws. He also explains why agriculture was invented, expounds the causes of matrilineal descent, and uncovers the reasons for Aztec sacrifices.

Perhaps the accomplishment was not that difficult, since all these cultural developments, according to Harris's theory, have essentially the same explanation. The theory is that the customs of mankind come and go according to their profitability. In a series of essays ranging in time from the Old Stone Age to nowadays, and in topic from tribal warfare in South America to the population of China, Harris argues that the evolutionary fate of cultural forms is determined by the degree that they contribute to people's well-being.

Especially do customs rise or fall according to the amount of nourishing foods they provide. Every society is thus engaged in the production of these customs that will make effective use of the available resources. And all sorts of institutions, from cannibalism through capitalism, may be explained by a kind of ecological cost accounting: institutions come and go by virtue of the practical benefits, they deliver relative to their material costs. This is the calculus of Harris's "cultural materialism." It is complemented by a theory of cumulative population growth, by the idea that population has a natural tendency to outrun resources, so that the application of the cost/benefit program becomes necessary for cultural survival. The overall view is that culture is business on the scale of history.

Therefore, Americans should readily understand it. For a people who live and die by the market, it is self-evident that human action is motivated by utility and ordered by rationality because no matter how grotesque the customary manner of survival, achieving it requires a prudent managing of one's material means. Even when we act impractically from some larger viewpoint, as by laying waste our national powers in getting and using private automobiles, our behavior tends to be *experienced* individually as a utilitarian project ("buying a car"). And no matter how spiritual or disinterested our ends may be, taken by themselves, our *relation* to them is typically economic. Hence going to a concert, "making a decent life for the children," or taking one's leisure appear as so many "utilities" among which people apportion their pecuniary resources. In the consciousness we have of our own existence, culture *is* businesslike. And where

a society thus makes a fetish of the commodity, its anthropology risks making a commodity out of the fetish.

So we can follow Mr. Harris when he tells us that human sacrifice among the Aztecs had a sound scientific basis in nutrition. True the victim's heart was offered to the Sun, but the Indians often made a feast of the arms and legs, because they kept no large domestic beasts and needed the animal protein. Aztec sacrifice was no disembodied religious idea: it supplied a critical percentage of the US Daily Recommended Allowance of amino acids.[1] Harris writes:

> Aztec cannibalism was not a perfunctory tasting of ceremonial tidbits. All edible parts were used in a manner strictly comparable to the consumption of the flesh of domesticated animals. The Aztec priests can legitimately be described as ritual slaughterers in a state-sponsored system geared to the production and redistribution of substantial amounts of animal protein in the form of human flesh. Of course, the priests had other duties, but none had greater practical significance than their butchery.

This materialist theory of Aztec cannibalism, adapted by Harris from the work of Michael Harner of the New School, has received a lot of attention in the anthropological and popular press. I take it up in detail because it epitomizes the kind of social analysis Harris advocates. Especially it is typical for what it leaves out of account, since the practical function of institutions is never adequate to explain their cultural structure. Not only is the content of what the Aztecs were doing left enigmatic by the idea that its purpose was protein, but such a purpose must appear bizarre when one considers what they were doing.

Sixteenth-century Spanish reports relate that the Aztecs held fixed festivals during each of the eighteen months of their solar calendar; these were interspersed with movable feasts timed to a 260-day ritual cycle. The central rites of each festival were sacrifices to one or more of the hundreds of gods, at one or more of dozens of temples. In connection with various sacrifices, different categories of people would ritually fast, bleed themselves, paint themselves, climb mountains, go into and come out of seclusion,

[1] Thus underneath the Aztecs were our brothers: they were doing what they did for a living. We can accept that claim. It is like the Fijian chiefs of the last century who, though they did not regard the human victim "in the shape of food," since cannibalism was "a custom intimately connected with the whole fabric of their society," nevertheless told the Europeans "that they indulged in eating [human flesh] because their country furnished nothing but pork, being destitute of beef and all other kinds of meat." The point was that the chiefs, exasperated by the foreigners' questions and criticisms, "simply wished to offer some excuse which might satisfy their inquisitors for the moment" (Berthold Seeman, *Viti: An Account of a Government Mission to the Vitian or Fijian Islands, 1860–1861.* Reprinted by Dawsons of Pall Mall, 1973, p. 181). The irony of Seeman's use of "inquisitors" is only surpassed by the fact that in 1536, the chief of Texcoco (one of the cities of the famous Triple Alliance of ancient Mexico) was burned at the stake by the Inquisition for attempting to practice human sacrifice. However, it was not the Aztecs, any more than the Fijians, who needed to be taught that one could engage in large-scale human sacrifice without being meat-hungry.

stage farces, drink pulque, eat earth, offer valuable gifts to the gods, take ceremonial baths, parade in the streets, play games, hold sham fights, practice chastity, hunt deer, sing and dance for days on end, beg alms, erect and adorn idols, prepare and eat special delicacies, and much else. Each sort of ritual required an appropriate costume or costumes, often of costly imported materials. Each ornament of these costumes, as the sixteenth-century scholar Fray Diego Durán says of priestly dress, "had its special meaning and mystery attached to it."

Besides human sacrifices, there were many offerings of quail and other animals. The human sacrifices were begun by putting the victims in fire or by an unequal gladiatorial combat, or else the victims passed directly under the famous obsidian knife, except for those who were drowned or pushed off high platforms. These sacrificial offerings were also of prescribed social categories: men or women, adults or children; they might necessarily be married or unmarried, unblemished youths or virgin maids. Most often they were captives or purchased slaves, more rarely criminals or citizens. At certain festivals the victims were gods, as represented by images made of seed paste, which were ceremoniously killed, carved, and eaten. The limbs of an unknown proportion of an uncertain number of human victims were likewise eaten.

Clearly the cultural content at issue, this stupendous system of sacrifice, is too rich, logically as well as practically, to be explained by the natural need for protein by which Harris proposes to account for it. To accept his view, we have to make some kind of bargain with the ethnographic reality, trading away what we know about it in order to understand it. Or at the least, it takes a heroic act of utilitarian faith to conclude that this sacrificial system was a way the Aztecs had for getting some meat.[2]

Perhaps that is why Mr. Harris makes a point of congratulating Michael Harner for having had the intellectual courage to propose the protein theory.[3] Harner's scientific fortitude, according to Harris, finally rescued Aztec cannibalism from the obscurity to which it was long confined by an idealist scholarship. Not since the early Spanish chronicles—Díaz, Cortés, Sahagún, Durán, Motolinía, etc.—have we even known, according to Harris, how to describe Aztec cannibalism for what it was. Still, one could

[2] The famous descriptions of the Aztec ceremonial cycle are by Fray Bernardino de Sahagún, *Florentine Codex: General History of the Things of New Spain*, translated by Arthur Anderson and Charles Dibble, 12 books in 10 volumes (University of Utah, 1951–1975), especially Book II: and Fray Diego Durán, *Book of the Gods and Rites and the Ancient Calendar*, translated by Fernando Horcasitas and Doris Heyden (University of Oklahoma Press, 1971). A good shorter summary is in Volume 2 of Abbé Clavigero's *History of Mexico*. Other sixteenth-century information cited here may be found in Bernal Díaz del Castillo, *The Discovery and Conquest of Mexico* (Octagon Books, 1970); Hernán Cortés, *Letters from Mexico* (Grossman Publishers, 1971); Fray Diego Durán, *Aztecs: The History of the Indies of New Spain* (Orion Press, 1964); *The Conquistadors*, edited by Patricia de Fuentes (Orion Press, 1963); *Motolinía's History of the Indians of New Spain*, edited by Elizabeth A. Foster (Greenwood Press, 1973).

[3] See Michael Harner, "The Ecological Basis for Aztec Sacrifice," *American Ethnologist*, February 1977. Harris gives Harner credit for having solved the "riddle" of Aztec sacrifice. Harner, however, noted that he formed his hypothesis independently of the Oxford don, Edward John Payne, who published the substance of it in 1899 (*History of the New World called America*, Vol. 2, pp. 550–551).

argue from the same historical sources that "cannibalism" as a cultural category was indeed invented by modern anthropologists, since for the Aztecs the act was typically an aspect of sacrifice, dependent on the prior assimilation of the victim to the god, and thus it was the highest form of communion.

Such disagreement between the Western concept and the native category has recently been the subject of a lot of positivist cant. What is important here is that in a culinary theory of cannibalism the ritual as such is without motivation. Nor could it be of interest to Harris that the logic of Aztec sacrifice conforms to that in the classic texts of French sociology on the subject (notably Hubert's and Mauss's *Sacrifice*). Offered as food to the god, the victim takes on the nature of a god. Consumed then by man, the offering transmits this divine power to man. Death is thus turned into life: what happens to the sacrificial victim may be made to happen in reverse to the one who sacrifices. ("Sacrifier" is the technical term for the party who both provides and benefits from the sacrifice. Among the Aztecs, the sacrifier was usually a warrior or merchant, donors respectively of prisoners and slaves; the sacrificial act itself was performed by priests.) But to achieve these benefits from sacrifice would necessarily require a double identification, which it is the purpose of the rituals to effect: between the sacrifier and the victim, and between the latter and the god.

The entire sacrificial process begins with the union of victim and sacrifier. When a warrior took a prisoner, he said, "He is as my beloved son"; the captive replied, "He is as my beloved father." By reason of this kinship, the sacrifier himself could not eat the captive—"Shall I, then, eat my own flesh?" He had to eat someone else's captive, and distribute the flesh of his own captive to certain notables and relations.[4] Frequently the owner of the prisoner or slave had a nurturing part to play through the rituals preceding the death. The sacrifier's own body might be painted and dressed as a complement to the victim's. The victim in turn passed through several rites of consecration which brought him successively closer to the god.[5]

Fray Diego Durán describes the way certain processions of prisoners were honored as they entered Mexico City. They were greeted with incense by priests, in the way gods are greeted. Other priests offered them special breads from the temples. Formally they were welcomed to a city whose splendors, they were reminded, they would see

[4] Sahagún, Book II, pp. 52–53.

[5] While there can be no question about the horror of Aztec human sacrifice, to state this does not exhaust its description, its function, or its meaning. So it seems superficial to make a point of this cruelty, as Harris does, by alluding to practices, such as dragging slaves up the temple steps by the hair, whose significance may seem self-evident to the Western reader, though in fact the Aztec sense is imperfectly understood. Harris does not mention that dragging by the hair figures rarely in sacrifice and was done primarily in certain rituals of the second month, which many commentators connect to maize farming. Nor does he note that the hair at this time had some special ritual value, since the owners shaved a portion of the victim's hair beforehand and kept it enshrined as a treasured relic. Still less, then, could we expect reference to the widespread use of hair as a generative symbol, subject of a celebrated essay by Edmund Leach ("Magical Hair"), which seems to fit very well into the specific logic of Aztec sacrifice.

only because they would die there—but their death, it seems, would be enshrined in these same splendors: "We salute you and comfort you with these words;... You will die here but your fame will live forever."[6] A group of Huaxtec prisoners were distributed among the wards of the city, where they were treated "as if they had been gods," on the injunction of the victorious Aztec commander:

> *Behold, they are the Children of the Sun!*
> *Feed them well; let them be fat and desirable for sacrifice*
> *On the day of the feast of our god.*
> *Let our god rejoice in them since they belong to him.*[7]

As enemies are thus assimilated to gods, so the high Aztec god Tezcatlipoca had as another name "Enemy" (Yaotl). Durkheim said that "god" is a way men figure to themselves the power of society, but only a slight modification of his theory is needed to take account of the fact that supernatural power is often a power external to society. What is beyond society, escaping its order, is precisely what is greater than it. Hence the widespread ritual value of enemies (and of the appropriation of their heads and bodies). The Spanish would both profit and suffer from this. By the Aztec interpretation the conquistadors were *teotl*, "images," "gods." If this helps to explain the initial ease of the conquest, it also suggests why Spanish descriptions of the subsequent hostilities picture the Aztecs as so bloodthirsty. Not that they weren't, but neither could the Spanish know their own worth as victims.

In traditional sacrifices, the Indian captives or slaves would have to be ritually constituted as godly. Before their ordeal they were often dressed and painted as idols. Some were given "divine wine," probably containing peyote, with effects simulating divine possession. Finally they were killed, usually on the pyramid, their hearts held up to the sun and their blood smeared about the god's sanctuary. But there remained the body, now also sacred matter and capable of useful effects.

Rolled down the western steps of the temple, in a descent that at once paralleled the course of the sun and the Aztec metaphor of birth, the body was received and shared by the owners of the death. The cycle between sacrifier and god was thus closed by the mediation of the victim; the sacred and secular were brought into communication; the interchange of blessings, expiations, requests, favors, and gifts became possible. In the last moment, victims, gods, and communicants become one. The consumption of human flesh was thus deifying, not degrading.[8] Precisely by conceiving sacrifice as an

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[6] Durán, *History*, pp. 101–102.

[7] Durán, *History*, p. 108.

[8] "In most cases, the victim was dressed, painted and ornamented so as to represent the god who was being worshipped; and thus it was the god himself who died before his own image and in his own temple, just as all the gods accepted death in the first days for the salvation of the world. And when ritual cannibalism was practiced on certain occasions, it was the god's own flesh that the faithful ate in their bloody communion" (Jacques Soustelle, *The Daily Life of the Aztecs*, Macmillan, 1962, p. 98).

extension of the physiological functions of digestion, Harner and Harris abandon the possibility of understanding it, either as a ritual or as a necessity.

Human sacrifice was also a cosmological necessity in the Aztec scheme, a condition of the continuation of the world. Although this is widely known, certain aspects of it are worth emphasizing. Reproductive sacrifice, transforming death into life through the offering, was so implicated in social relations, politics, and economics that it ended by becoming true: Aztec culture *was* reproduced by human sacrifice. The main relations of the Aztec universe were renewed by the blood of captives, since the sacrificial act was designed to represent these relations. We begin to understand why for the Aztecs blood was associated with flowers, and the great god of war figured as a Hummingbird—albeit as Huitzilopochtli, "Hummingbird-on-the-left"—who when nourished by the blood of captives restored fertility to the land. When the rains returned, the courtyard and image of the god were decked in floral tributes, and soldiers who had taken captives danced in the temple precincts with the harlots of the city. These valiant soldiers alone were permitted to woo in public; as for prostitutes, the Aztec term for them may be translated as "she who goes about giving pleasure or fragrance."

Yet the warrior who had thus reproduced the city was like a mother; and conversely, the mother in childbirth was engaged in battle. If she died, she shared with fallen warriors the noblest of afterlives, in the House of the Sun (also identified with the Hummingbird). "Certainly [childbirth] is our mortality, we who are women, for it is our battle." If the mother lived and bore a child, the midwife shouted war cries, "which meant that the woman...had taken a captive."[9] Hence the warrior's prisoners, taken from external enemies to nourish the sun, were complemented by children purchased from around the city—in one instance, noble children according to Motolinía—and sacrificed in winter to the god of rain. The tears of the children were signs of the desired end.

The warrior had another counterpart in the person of the merchant who likewise brought wealth into the city from a distance, notably the paraphernalia of sacrifice and of noble consumption.[10] These things the merchants supplied under risks comparable to those of war. Hence they could themselves claim to be "captains and soldiers who, in a disguised fashion, go out to conquer." At the feast of the Hummingbird in the fifteenth solar month the merchants bought many slaves at market and sacrificed them alongside the warriors' captives. The war captives of this feast had been taken mainly from cordial enemies, in formal jousts with nearby cities whom it would not do to subjugate or exterminate, as they supplied the life blood of the state. Politically as well as culturally, the structure of the empire was conditioned by the system of human sacrifice.

[9] Sahagún, Book II, pp. 167, 180.

[10] To the extent that the nobility were also godly, these goods for their comparison are also equivalent to sacrificial paraphernalia.

This system gave sacrifice meaning sufficient not only to sustain its existence but also to encourage its own evolution. The source of its self-propulsion, its dynamic force, lies essentially in the form of its hubris. In Aztec myth as well as ritual men interchange with gods. In sacrifice men function as did those legendary gods whose original self-destruction set the sun in motion, even as the principal recipients of sacrifice, such as the great war god, were once men, deified after death by offerings. The principle of sacrifice is that the flowing of blood is equivalent to the motion of the world; and human sacrifice is specifically based on the principle that like nourishes like, like gives life to like. Where the supernatural power is also human, it must thus devour humanity, for the sake of some other humanity.

The whole system is a formula of potential disaster. The divine legitimacy of any emperor could be calculated by comparing the number of sacrifices he made with the blood shed by his most memorable predecessors. And any kind of external pressure, economic or political, would likely be met by an equal and opposite (or a greater) bloodletting; so that, as may be verified from events of Aztec history, the response to a catastrophe was to stage another catastrophe. There are well-known analogies to the Aztec pattern in the South Pacific where the "cannibalism" the Europeans so detested was greatly stimulated by their own presence in the nineteenth century—though population densities were declining and the fish were still running. But how many exotic examples do we need to be convinced that a people can engage in large-scale extermination of human beings for reasons far removed from material profit?

The idea that Aztec sacrifice was designed to supply human meat has in any case little economic cogency. Indeed, of all peoples of the Hemisphere who practiced intensive agriculture, the Aztecs probably had the greatest natural protein resources: the lakes of the Valley of Mexico, teeming with *animalitos* and algae processed for food, as well as fish, and, in the *winter*, millions of ducks.[11] There was no shortage of meat in the markets described by the Spanish conquerors. As for the costs and benefits of cannibalism, the historical accounts indicate the sacrifice business was running at a loss, owing to the high costs of upkeep of the stock and low yields in arm and thigh cuts. The trunks were considered by-products, fed to the carnivores in Moctezuma's zoo.

Moreover, everything that was fed to the sacrificial victims instead of being consumed directly represented a loss on the order of 80 or 90 percent, because only a fraction of the original nutritive values can be recovered once converted into an intermediary human form. Fray Bernardino de Sahagún, generally regarded as a reliable

[11] The widely respected historian of Hispanic Mexico, Charles Gibson, writes of the Aztec economy: "Indeed, few areas of the whole of America were so richly supplied with non-agricultural food resources as the Valley of Mexico, and the native diet in the colonial period continued to be extremely varied" (*The Aztecs Under Spanish Rule*, Stanford University Press, 1964, p. 337). Gibson goes on to describe and document this wealth in fishing, animal husbandry, salt, and hunting resources. He notes that the Spanish did not share the Aztec liking for most of the lakes' "nutritious foodstuffs" such as water bugs, grubs, and scum cakes (p. 341).

analyst in these matters, reports that the captives were "fattened like pigs": of food and drink, "they gave all to the captives"; and to slaves destined for the sacrifices of the four-year cycle, "very dainty and luxurious foods." In a calculation of costs and benefits, we must also enter on the debit side all of their own blood the Aztecs had to spill, not only to take captives but as offerings from wounds they inflicted on themselves every day. On the debit side also were the fasts of days or weeks preparatory to sacrifice that specifically precluded eating meat.

It is clear from the best books kept on these transactions, Sahagún's records of merchants' feasts of the fifteenth solar month, that the Aztecs were not in the sacrifice business for their health. Each merchant killed one to four slaves, bought at market at a cost of thirty to forty capes apiece—depending on perfection of appearance and how well the slaves could sing. But during the course of the four or five feasts preliminary to the hurried sacrificial meal, the merchants would give away 800–1,200 capes as well as other costly presents. They slaughtered at least eighty to one hundred turkeys and twenty to forty dogs, surely more meat than the limbs of one to four slaves. They built houses for the dances of the victims and supplied rich ceremonial paraphernalia, etc. So great were the expenses, according to Father Motolinía, that some merchants had to sell themselves into slavery, thus proving that business is dog eat dog wherever you go. As for the final return, Sahagún describes it as a little bit of meat per serving:

> They cooked him in an *olla*. Separately, in an *olla*, they cooked the grains of maize. They served [his flesh] on it. They placed only a little on top of it. No chili did they add to it; they only sprinkled salt on it.[12]

As Harris himself tells us in the end—in the last paragraph of his account—there really could be no significant human meat supply per capita. If we estimate a population of one to two millions in the Valley, and an annual slaughter of 15,000 head—with a large wastage in trunks—the meat would come to substantially less than one pound per person per year. It is at this point that Harris decides to recalculate the whole sacrificial enterprise according to its political benefits; he speculates that the protein was being distributed to the important nobility and soldiers during lean periods of the food cycle. This desperate attempt to stave off the bankruptcy of the position has little to recommend it, since it is well documented that the privileged classes of the city had ready access to meat—not to mention the 1,000–2,000 nobility and retainers Moctezuma daily entertained with rich spreads—so these people would have been the last to suffer anyhow.

It is logical that Harris's theory should also deal with the Christian Eucharist. His hypothesis here is not exactly the same, for the people of the Old World had

[12] Sahagún, Book IX, p. 67. Prescott writes of feasts that included human flesh: "This was not the coarse repast of famished cannibals, but a banquet teeming with delicious beverages and delicate viands, prepared with art and attended by both sexes, who conducted themselves with all the decorum of civilized life" (*History of the Conquest of Mexico*, Philadelphia, 1891; Vol. I, p. 96).

domestic animals and could eat actual lambs—they didn't need to become cannibals. The resemblance to the protein theory of Aztec sacrifice consists in the common premise that nothing is present to the mind that does not first appeal to the stomach. So the symbolic consumption of the body and blood of Christ is said to be the historical trace of some real feasts the ancient Israclite chiefs and priests used to throw. These feasts had a pretext of animal sacrifice, but their effective value lay in the political credits the powers-that-be were able to build up by the generous redistribution of the food offerings.

It was easy to assimilate Jesus' death to the sacrificial aspect of such feasts, since the crucifixion occurred during Passover. The "paschal lamb" slain and eaten at Passover could be converted into a symbolic representation of Jesus. However, the early church, after some attempt to maintain tradition in the form of the love feast or *agape*, ultimately had to cancel the actual feasting because of growing population densities and food shortages. Abandoning its unwanted role as a "soup kitchen," the Church made do with the token distributions of wafer and wine in the communion service. It was more economical to offer just the semblance of food, the deprivation of the participants apparently being made up by other stuff they were being fed. Harris writes:

> By spiritualizing the eating of the paschal lamb and by reducing its substance to a nutritionally worthless wafer, Christianity long ago unburdened itself of the responsibility of seeing to it that those who came to the feast did not go home on an empty stomach.... Before we congratulate Christianity for its transcendence of animal sacrifice, we should note that corporeal protein supplies were also being transcended by a rapidly expanding population.

In sum, everything happens as if the Eucharist were a gigantic and historic Pavlovian experiment, in which the tinkling of the communion bell evokes in the faithful the response to good feeds gone by.[13]

II

The previous works of Mr. Harris include some of the liveliest anthropology of the last decade, beginning with *The Rise of Anthropological Theory*, a true history

[13] The Eucharist, of course, evolved from the Judaic *berakah* or blessing over the bread and the blessing of the wine that *ritually* punctuated the Last Supper. For its part, the latter was the customary gathering of a small religious brotherhood within the congregation. In early Christianity the blessings, suitably transposed into one or another sacrificial idiom, were separated from the common meal (*agape*), which for a time was a distinct part of the church service. The meal was abolished in some places because it took on bacchanalian qualities. In any event, the abolition could constitute no savings to the Church, which itself undertook no expense, since the food was brought by the participants to the meal (see, for example, Dom Gregory Dix, *The Shape of the Liturgy*, 1945).

of materialist wisdom and idealist folly in thinking about culture. More recently he wrote the semipopular *Cows, Pigs, Wars and Witches*, an entertaining attempt to make out as really practical some of the famously bizarre customs of mankind. The good sense of these exotic customs was often illustrated by the irrationalities of our own, so that in a world of disguised pragmatists only we seemed mysterious. *Cannibals and Kings* repeats a good part of this material, but it is cast now as part of a prophecy of an impending ecological doom, making the book suitable for even more general consumption.

What is truly at stake in these works is whether human culture is meaningful in its own right. Do people's customs and categories, curious as they seem, essentially contain information and programs about the practical state of the world? Or do people employ customs and categories to organize their lives within local schemes of interpretation, thus giving uses to material circumstances which, cultural comparison will show, are never the only ones possible? No, for Harris such a distinction as the one between clean and unclean animals in Leviticus could not be ecologically arbitrary. The taboos on various species must represent the real costs of getting them for food. "If anything, the whole pattern seems to be one of banning inconvenient or expensive sources of meat." We are reminded that water dwellers without fins or scales are "unlikely to be encountered in significant numbers on the edge of the Sinai Desert or in the Judean hills." (But are we to suppose, then, that water dwellers *with* fins are in the desert?)[14]

Harris's doctrine is that the values men live by are disguised (e.g., spiritualized) forms of natural constraints. They are the names we apply to the objective distinctions set up by natural selection. Culture thus becomes a representation, in the form of talk, of the way we must segment and conceive the world in order to adapt effectively to it. What has been said of Kautsky is applicable to Harris, that for him "human history is an appendage of natural history, its laws of motion merely forms of appearance of biological laws." That there is no evident sense to much of human history or culture poses problems for this viewpoint. To represent Nature in the guise of symbols seems like a wasteful mystification. Certain however that men's categories refer eventually to their "real" experiences, as guided by their zoological interests, Harris can be sure that no working culture is a mistake. It simply offers to Western Science the challenge of finding the secret material wisdom in the outwardly peculiar custom, including the adaptive benefits that must be involved in the very process of symbolic camouflage. Harris calls this naturalistic resolution of meaning "cultural determinism."

By "determinism" Harris means an analysis of culture along the lines of positive and empirical science, as counterposed to the vagaries of free will and moral idealism. Nevertheless, as Harris actually uses it, the idea that social customs represent a hidden economic calculus is a highly sentimental concept. Rather than being empirical, it

[14] There is a growing semiological literature within anthropology on the nature of taboo, including several important analyses of the Leviticus prohibitions by Mary Douglas. See her *Purity and Danger* (Routledge and Kegan Paul, 1966).

demands a heroic disregard of the appearances in favor of a theory of the realities. Gradually the reader becomes aware that Harris will make no actual study of the material costs and benefits for any of the customs he so explains. He does cite evidence. But anthropology is already famous for its evidence of everything—and its opposite. Harris appeals to the evidence for testimony rather than to test his hypotheses. The evidence then falls evenly on all his hypotheses and speculations, the logical and the illogical alike.

Harris argues that the pressure of population on economic resources, resulting from "genetically mandated" heterosexual activity, has up to now (the "Contraceptive era") been the decisive problem of human history. The book relies heavily on this neo-Malthusian proposition. Major human institutions—warfare, male superiority, the state—are said to develop as means for coping with an "irresistible reproductive pressure." The pressure itself may act in some dialectic relation to technological growth, i.e., the increase in population may be set off by more intense production, or vice versa; but the density of population in any event will tend to increase to a point where it threatens livelihood and environment. Economic good sense will then compel some appropriate cultural response. So warfare is alleged to have evolved along with agriculture, say between 10,000 and 8000 BC, in order to keep population density within ecological reason. It did so 1) by forcing communities to put greater distances between themselves; 2) by bestowing uniquely superior values on males and masculinity. The inferior status of women then helped to facilitate female infanticide, which in turn lowers the population's reproductive capacity.

The apparent illogic of holding down the manpower of one's own group while fighting wars does not seem to disturb Harris; he is intent on the higher rationality of his hypothesis, which offers no less than an explanation of the condition of women in human society. Like many other ideas of the book, the theory is notable also for its attempt to account for the origins of a phenomenon by a property that is not characteristic of the phenomenon as we know it. It is as if everything were economically sensible once upon a time, in its origin—dietary taboos, the Eucharist, female inferiority—but then the custom became indifferent or hostile to reason and just went on and on. Perhaps that is why some of Harris's arguments follow a similar course. Complex enough to begin with, his theory of male superiority begins to take on Ptolemaic convolutions as it is forced to account for the absence of any necessary relation in the cultures we know between the intensity of warfare and the inferiority of women, or between female infanticide and population density or population stability, or between various combinations of these.

But there were already problems with the hypothesis in its simplest form. According to Harris, casualties in warfare have no direct effect on a group's reproductive capacity, since the surviving men could easily service the surplus women. (Notice, incidentally, how all these arguments make a point biologically or demographically on the condition that they presuppose the absence of a social system.) On the one hand, then, it is difficult to credit Harris's point that warfare keeps down population density by creating

relatively unused space between warring settlements, and that it is thus a response to demographic increases accompanying the development of agriculture. No-man's-lands between villages may make for good hunting, but agriculture, which is typically more productive, cannot take place within them. At the same time, by Harris's own argument, military losses will not check population growth. Hence warfare in this respect, by reducing the land base, merely increases the ratios of people-to-land, i.e., the population pressure.

On the other hand, since male casualties have no limiting demographic effect, one wonders why women were not allowed to fight and risk their reproduc-capacities directly, instead of being submitted to male chauvinism in order to promote the neglect of female children. It is a reasonable question, Harris allows, since the javelin records of the Women's Olympics indicate that ladies could do real harm. But that's exactly the problem, he says. They might kill some men, which would jeopardize the superiority of males, and therewith the possibility of controlling population growth through female infanticide.

Satisfied with this "cultural" determination of the origins of war, Harris reasons that it is unnecessary to account for social conflict by some "inherent" tendency in human nature. Harris has been an important critic of sociobiology, and this argument is typical of his disagreements with that viewpoint. How can a constant inclination toward aggression, he asks, account for what history shows to be a variable disposition to kill? Perhaps, the sociobiologist might reply, in the same way as a "genetically mandated" heterosexuality, which we all know to be intermittent in expression, is supposed by Harris's theory to account for the origin of institutions. We can, sociobiologists claim, detect the presence of a biological cause by the efforts that are taken to suppress it, even as we know it to be irresistible by its periodic eruptions into social life, despite all these best efforts.

The contradiction in Harris's "cultural determinism" is that sex is considered *a priori* as a biological fact, characterized as an urge of human nature independent of the relations between social persons. There is then no escape from the sociobiological reduction. The conclusion already exists in Harris's premise that sexuality and reproduction are not social facts but considerations of another kind, acting *upon* society from without (or below). The truly anthropological approach is to comprehend heterosexual activity as it uniquely exists among human beings, for whom alone the process of "conception" is always a double entendre, since no satisfaction can occur without the act and the partners as socially defined and contemplated—i.e., according to a symbolic code of persons, practices, and proprieties. (We need not even go into the issue of sublimation.)

Harris, on the contrary, presupposes sex to be an abstract biological drive. This, taken with the generic physiological capacity of women to bear so many children over a lifetime, gives rise to a runaway reproductive pressure. When he then argues against the explanation of war by innate aggressiveness on the grounds that cultures actually vary in belligerence, Harris is recalling for aggression what he forgot about sex: that it

always takes place within a relative cultural scheme, from which follow the observed patterns and intensities of the practices.

Mr. Harris makes a considerable point of the tough-mindedness and scientism of his anthropology. But his theory is really no more deterministic than it is cultural. When he discusses the points in history when population endangers resources, a symptomatic ambiguity appears regarding what kinds of adaptation societies make to such demographic crises. Here his analysis concludes that some people will then intensify production (as by irrigation in pre-Columbian Mesoamerica), while others try to stabilize population (as by female infanticide among tribal agriculturalists). But Harris does not indicate any theoretical curiosity about these or other radically different adaptive strategies. For societies with internally opposed interests, as between antagonistic social classes, he does not make clear whether it is some part or the whole of society that adapts effectively. In India, the lower classes are served by the preservation of sacred cows. Among the Aztecs, the upper classes benefit from the cult of human sacrifice. But when each of a regional set of warring neolithic communities kills its female infants, it is the set as a whole that stands to gain. The problem is not merely that the explanations are ad hoc. It is that in all these conditions, any given material rationality will be, from some other social viewpoint, irrational.

The issue disappears for Harris because he considers "the population" to be a *quantity* rather than a *society*, consisting of organisms with biological requirements rather than people with cultural interests. It is enough to explain a custom if it can be shown that it yields some kind of practical benefits in some way to someone. "Materialism" becomes a kind of academic parlor game, whose appeal perhaps owes something to the simplicity of the rules: any sort of economic value that can plausibly be suggested for any cultural practice scores points—regardless of whether the same custom entails economic penalties or irrationalities in some other sector of the social order.

Harris is well known for his "cultural-materialist" explanation of the Hindu sacred cow, repeated in this book, to the effect that the taboos against maltreating cows permit the masses of impoverished farmers to raise the bullocks they need for farming. Otherwise, if allowed to eat meat, people might be tempted to destroy their breeding stock. Hence the taboo on cows was a spiritualized statement of the hard economic calculations of millions upon millions of poor farmers. But all this looks like the material "maximization" Harris claims for it only if one implicitly acquiesces in taking the Indian property laws for granted. As he indicates in another book, the ratio of people to land in India is such that 43 percent of the cattle are raised by farmers who own 5 percent of the pasture.[15]

One could just as reasonably argue that the taboo on cattle is a way of maximizing the number of poor people. (And just what is the rationality of a system that encourages the multiplication of poor people?) On the other hand, the protein benefits of Aztec sacrifice go exclusively to the privileged classes, denying these indispensable

[15] Marvin Harris, *Cows, Pigs, Wars and Witches* (Random House, 1974), p. 27.

nutrients to the poor. Then again, warring tribesmen in South America and elsewhere are said by Harris to go to some cultural lengths to hold down the regional population by female infanticide. Each group thus deprives itself of the strategic advantage in favor of some politically nonexistent whole that includes its own competitors. Anything goes.

So too, in his chapter on the Yanomamo of Brazil, who engage in intensive warfare although not under evident population pressure, and whose population *increases* where the rate of female infanticide is highest, Harris surmises that the Yanomamo must be responding to (what else?) scarce protein resources. He then takes note of certain studies indicating the absence of clinical symptoms of protein deficiency in the region. But this cannot be negative evidence—it is consistent with the contention that the Yanomamo have adjusted to a scarcity of proteins. As Harris writes in a comparable discussion of the Maya: "On theoretical grounds, the picture of what must have happened seems clear."

"If a ubiquitous statement presented as rational or scientific shows itself unjustified as such," Louis Dumont has recently written, "there is a strong chance that it was imposed by another type of consistency and can be identified as one outcrop, as it were, of the underlying ideological network."[16] For "cultural determinism" we can, as I've said, identify the underlying ideology as the Western business mentality. Applied to the explanation of Aztec cannibalism or Hindu taboos, Harris's utilitarianism incorporates the meanings other people give their lives within the kind of material rationalizations we give to our own.

Sartre appropriately called a similar intellectual procedure "terror," for its inflexible refusal to discriminate, its goal of "total assimilation at the least possible effort." Sartre was referring to the "vulgar Marxism" which could only see in an act of politics or a poem of Valéry's some version of "bourgeois idealism." Everything in the social superstructure could be reduced to its economic function. Similarly, in *Cannibals and Kings*, the social fact is dispensed with as a *mere appearance* whose truth lies elsewhere, in some material value. As Sartre said, it looks like an exercise of getting down to basics—in this instance, to the necessary conditions of protein requirements or the survival of the population. But such determinations are only seemingly basic. In reality they are abstract, and devoid of social content. Once we characterize meaningful human practices in these ideological terms, we shall have to give up all anthropology, because in the translation everything cultural has been allowed to escape.

[16] Louis Dumont, *From Mandeville to Marx* (University of Chicago Press, 1977)—a book that has a lot that is valuable to say about the kind of ideology inscribed in *Cannibals and Kings*.

Marvin Harris's Reply

To the Editors:

According to Marshall Sahlins (*NYR*, November 23), the "overall view" of *Cannibals and Kings* is that "culture is business on the scale of history." He derives this idea from the fact that cultural materialism finds explanations for sociocultural phenomena in the relative costs and benefits of alternative activities. Sahlins's *idée fixe* is that costs and benefits are the same as "profit" and "loss" and that they therefore are applicable only to cultures which economize in conformity with the formal categories of capitalism. However the costs and benefits of cultural materialism refer to the more or less efficacious ways of satisfying the need for food, sex, rest, health, and approbation. Although these costs and benefits cannot be measured with precision, rough approximations can easily be obtained in terms of rising or declining death rates, calorie and protein intake, incidence of disease, ratio of labor input to output, energetic balances, amount of infanticide, casualties in war, and many other "etic" and behavioral indices.

These costs and benefits clearly constitute categories that are epistemologically distinct from price market and econometric notions of profit and loss measured in monetary terms. Moreover, they are relevant to much broader sets of concerns, namely the more or less efficient solution of biological, psychological, and ecological problems experienced by all human beings and all cultures. An interest in efficacious solutions to such universally experienced problems is scarcely a trait that is peculiar to members of the bourgeoisie. But anyone who has a lively concern with the basic material conditions of human welfare including Marx and Engels emerges from Sahlins's analysis as a proponent of "western business mentality." This is one monopoly that businessmen east or west neither merit nor enjoy.

"To Get Some Meat"

Sahlins does not stop at fantasizing the ideological implications of a science of culture rooted in the analysis of material costs and benefits. He renders an inaccurate account of the manner in which cultural materialists actually apply optimizing principles to the explanation of specific puzzles. From Sahlins's account, one would suppose that cultural materialism treats the costs and benefits of alternative innovations as if they were timeless options open to any society at any moment in its history. But the corpus of cultural materialist theory is evolutionistic. In *Cannibals and Kings* I view

specific optimizing alternatives as actionable only at a definite moment in a developmental process.

Neglect of this aspect of cultural materialism leads Sahlins to misrepresent the explanation of Aztec cannibalism (first proposed in Harner 1977). The point of my version of this theory according to Sahlins is that in effect the Aztec ate people "to get some meat." What Sahlins omits is that both Harner and I insist that cannibalism was widely practiced in Mesoamerica before the Aztecs arrived in the Valley of Mexico and that as part of the small-scale ritual sacrifice of prisoners of war it was probably almost universal among chiefdoms in both hemispheres. We contend further that as states developed, they usually reduced or eliminated human sacrifice, substituting animal for human victims, and that they invariably gave up the practice of eating prisoners of war. The explanation for this trend is that it was part of the general tendency for successful expansionist states to adopt ecumenical religions and to incorporate defeated populations into the victor's political economy as peasants, serfs, or slaves.

However, in the Aztec case, and as far as we know only in the Aztec case, the state itself took over the earlier human sacrifice and cannibalism complex and made it the main focus of its ecclesiastical rituals. As the Aztecs became more powerful they did not stop eating their enemies; instead they ate more and more of them. At least 20,000 captives were immolated in four days at the dedication of the main Aztec temple in 1487 and by the beginning of the sixteenth century at least fifteen to twenty thousand people were being eaten per year in Tenochtitlan, the Aztec capital (Harner 1977:119). Since the skulls of the victims in Tenochtitlan were placed on display racks after the brains were taken out and eaten, it was possible for the members of Cortès's expedition to make a precise count of one category of victims. They found that the rack contained 136,000 heads but they were unable to count another group of heads that had been used to make two tall towers consisting entirely of crania and jawbones (ibid.:122).

The scale of this complex bears no resemblance to any other cannibal complex before or since. The Aztec are a unique case and they therefore demand a unique explanation. Sahlins, however, tries to lump the Aztec complex with instances of small-scale pre-state ritual cannibalism in Oceania and elsewhere. He distorts the problem from one of explaining Aztec cannibalism in particular, to one of explaining cannibalism in general. What has to be explained is not why the Aztec sacrificed and ate people but why they sacrificed and ate more people than anyone else.

Why then were the Aztecs unique? Our explanation is that the Aztec did not give up cannibalism because the faunal resources of the Valley of Mexico had become uniquely depleted. As a result of millennia of intensification and population growth the Central Mexican highlands had been stripped of domesticable ruminants and swine and of wild birds, fish, or ungulates in numbers sufficient to supply significant amounts of animal protein per capita per year (Sanders and Santley in press). The few available domesticable species—birds and dogs—could not be raised in sufficient quantities to make up for the absence of cattle, sheep, goats, horses, pigs, guinea pigs, llamas or alpacas. All other populous ancient states, including the Inca of Peru, possessed sev-

eral domesticated herbivores whose meat and blood were substituted for human flesh in state-sponsored sacrificial rituals and feasts. These ecclesiastical redistributions of animal protein were used to reward loyalty to the state, especially loyalty on the battlefield, and to enhance and consolidate the power of the ruling class.

This is not the place for a lengthy discussion of the biochemical and physiological advantages associated with animal versus plant sources of protein. It is sufficient to note that animal sources of protein in the form of milk or meat are universally valued over plant sources of protein and are everywhere given a central place in ecclesiastical redistributions, honorific feasts, and upper-class commissaries. (Hindu India, the world center of vegetarian ideologies, is one of the world's largest consumers of milk and milk products.) The reason for this is that proteins are essential not only for normal body function but for recuperation from infections and wounds.

To make proteins, the human body needs twenty different kinds of amino acids. It can synthesize all but eight or nine of them, the so-called "essential" amino acids. To obtain these essential components from plants, one must eat large amounts of carefully balanced combinations of plant foods *at the same meal*. Meat, eggs, and other animal proteins, however, provide the essential amino acids in balance even when eaten in small quantities. The world-wide preference for animal protein therefore reflects an adaptive cultural and nutritional strategy. Any population which did not seek to maximize its animal protein intake relative to that of neighboring populations, would soon find itself physically smaller, less healthy, and less capable of recuperating from the trauma of disease and the wounds of combat (cf. Scrimshaw, 1977).

The theory advanced by Michael Harner and me is that the uniquely severe depletion of animal protein resources made it uniquely difficult for the Aztec ruling class to prohibit the consumption of human flesh and to refrain from using it as a reward for loyalty and bravery on the battlefield. It was of greater immediate advantage for the Aztec ruling class to sacrifice, redistribute, and eat their prisoners of war than to use them as serfs or slaves. Cannibalism therefore remained for the Aztecs an irresistible sacrament and their state-sponsored ecclesiastical system tipped over to favor an increase rather than a decrease in the ritual butchering of captives and the redistribution of human flesh.[1] The Aztec ruling class, unlike any government before or since, found itself waging war more and more not to expand territory, but to increase the flow of edible captives. All of this bears little resemblance to the economistic fable concocted by Sahlins in which the Aztecs go to war to "get some meat" because it is cheaper for them to cook people than eat beans. The critical optimized costs and benefits are not only those associated with the choice between two sources of protein—but also between

[1] It is true, as Sahlins points out, that the Aztec sometimes fattened up their prisoners before eating them but that scarcely means that they were engaging in some final mismanagement of resources—they had to provide food only for the fattening, not for the rearing of their victims. It is also true that the "trunks" of the victims were fed to animals in the zoo. But no one knows if the flesh was still on the bones; nor is the feeding of carnivores at the zoo at odds with the other amusements of the Aztec ruling class.

alternate modes of justifying ruling-class hegemony in a severely depleted habitat at a definite moment in the evolution of the state in Mesoamerica.

Sahlins's Aztec Arcadia

Our theory of Aztec cannibalism is based on the contention that the Valley of Mexico was a uniquely depleted habitat. Sahlins however rejects this contention. Indeed, he makes the claim that the Valley of Mexico was a veritable protein paradise. He writes that "of all the peoples in the hemisphere who practiced intensive agriculture, the Aztecs probably had the greatest natural protein resources." However, it is an established archaeological, ecological, and plain common sense fact that the hunting, fishing, and collecting of non-maritime natural protein resources cannot provide densely urbanized populations with nutritionally significant amounts of animal protein on a sustained yield basis. Only domesticated protein resources can do that. Even with densities of less than one person per square mile, hunters and collectors need hundreds of square miles of reserve areas in order to sustain per capita animal protein at modest levels (say, thirty grams per capita per day, or less than half of the current US ration). In this perspective, Sahlins's contention that the 1,500,000 people who lived in the Valley of Mexico could have gotten an ample supply of meat from hunting deer is worth about as much as the suggestion that New York City could get its meat from wildlife in the Catskill mountains.

William Sanders and R. Santley (in press) have studied the archaeological evidence for overkill and depletion in the Valley of Mexico for the period 1500 BC to AD 1500. They estimate that at the beginning of this period deer meat contributed 13.5 percent of the calories in the diet. In Aztec times "overkill had become so acute" that only 0.1 percent of calories could come from deer meat. They estimate that "total meat from all wild sources could not have exceeded 0.3 percent of the annual requirement [of calories]."[2] This works out to 0.6 grams of protein per capita per day. (For reference, it is useful to think of the amount of protein in a hen's egg, namely about six grams.)

The idea that the lakes in the Valley of Mexico could have supplied significant amounts of fish protein per capita per year is no less incorrect. These lakes in precontact times averaged less than three feet deep; at the lower elevations in the chain the water was too salty to drink and during the dry season the surface area shrank considerably due to evaporation. After the conquest the Spaniards began to drain the lakes. However, even in Aztec times the surface was covered with algae out of which the Aztecs made their famous "scum cakes." These algaic blooms suggest that the lakes had a low oxygen content and that vertebrate species were not abundant below the surface.

[2] At 2,000 calories per capita; at 2 calories per gram of lean meat; and at 20 percent protein per gram of lean meat.

According to Charles Gibson (1964:340), in the early seventeenth century, the two most productive lakes were yielding over a million fish, none larger than nine inches and most smaller. If we assume that the other lakes yielded an equal amount and that the total surface area had been reduced by one-third since Aztec times, one can estimate that there were in generous round numbers 3 million fish captured each year by the Aztec fishermen. This works out to the equivalent of two herrings per capita per year or about 0.12 grams of protein per day per capita.

Next come the waterfowl. Sahlins says there were "millions of ducks." Gibson (ibid.:343) estimates that about one million ducks were taken annually in the eighteenth century. Since these were hunted with guns when the population of the Valley of Mexico was much smaller than in Aztec times, there is no reason to adjust Gibson's total upward. That gives every Aztec something less than three quarters of a duck per year. Allowing a generous two kilos undressed weight per duck this yields about 1.0 grams of protein per capita per day.

But the real worth of the Aztec arcadia we are told lay in its invertebrates. The place was "teeming" with small "wildlife" writes Sahlins—with "bugs, grubs, and small red worms." Sahlins again accuses me of bourgeois ethnocentrism for my failure to realize that such *animalitos* taste good to non-Westerners. Regardless of how bugs and worms taste (I happen to like some invertebrates myself), the question is whether small, patchy, and trophically subordinate creatures can be harvested on a scale sufficient to provide a dense urbanized population with significant amounts of animal protein on a sustained yield basis.

It is one thing to relish piquant morsels of witchety grubs and snails as a supplement to meat and fish, it is quite another to make such fare one's primary source of animal flesh. In well-endowed habitats, people usually let the fish and the birds eat most of the worms, and then they eat the birds and the fish. The only sensible conclusion to be drawn from the fact that Aztecs ate more worms than anything else is that they had eaten up most of the birds and the fish, and having eaten up most of the birds and the fish, they ate people as well. Sahlins however thinks eating lots of bugs and worms shows that the Aztec were an affluent society.

To further establish the point that the Aztec actually inhabited an environment rich in natural sources of protein, Sahlins declares "there was no shortage of meat in the markets described by the Spanish," neglecting to add that Cortès was convinced that much of it was human meat. (If they can't eat scum cakes, let them eat people.) In places like Calcutta one also finds that for those who can afford it there is no shortage of anything.

Adding up all possible sources, exclusive of human flesh, it is difficult to see how the Aztecs could have gotten more than two or three grams of animal protein per day, or about half an egg.[3]

[3] If we assume that they got as much protein from the bugs and worms as they did from the ducks, then the total is as follows:

Finally, against Sahlins's ducks, bugs, and scum cakes there is hard evidence from the chroniclers concerning devastating crop failures and famines. Between 1500 and 1519, the year of the arrival of Cortès, there were either famines or near famines in 1501, 1505, 1507, and 1515. The worst recorded famine occurred in the fifteenth century. It lasted from 1451 to 1456 and was followed by an intense period of warfare and prisoner sacrifice. (Harner estimates that famines occurred on the average every three or four years.) No scholar has ever questioned the reports of Aztec famines. Their occurrence discredits Sahlins's notions about the abundance of wildlife.

Positivist Cant

From the ardor with which Sahlins argues for abundance on the basis of the evidence for scarcity one might suppose that he wishes to promote his own explanation of the Aztec puzzle. But Sahlins has no alternative explanation. The sole purpose of his unremittingly negative critique is to prove that Aztec "culture is meaningful in its own right," a proposition to which one cannot object but which has no bearing on the question of whether or not Aztec cannibalism can be explained by cultural materialist theories.

According to Sahlins the fascinated contemplation of the richness of human sacrifice as the Aztec priests and their victims understood it alone defines the anthropologist's proper task. Indeed Sahlins warns that if I persist in trying to learn something about the etic and behavioral conditions that create butcher priests skilled at yanking the hearts out of living people, "we shall have to give up all anthropology." I rather think it more likely that we shall have to give up anthropology once the idea gets around that Sahlins's constriction of anthropology to the "emic" and mental aspects of Aztec sacrifice exemplifies the true anthropological calling. No one can doubt that "culture is meaningful in its own right," but many will doubt. Sahlins's authorization for telling us what it meant to be dragged up the pyramid by the hair—even if it was "magical hair," as he proposes in a footnote—to be bent back spread-eagled and cut open.

Sahlins claims that what mattered to the victims whose screams ended 500 years ago was that they were part of a sacrament and not that they were part of a meal. "It is positivist cant," writes Sahlins, to impose Western categories such as cannibalism on these high holy rites. It wasn't cannibalism, he continues, it was the "highest form of communion"—as if communion is not also a Western concept and as if labeling human sacrifice "communion" transubstantiates obsidian knives and human meat into things we can't recognize as being sharp and nutritious respectively. Anthropologists should certainly try to understand why people think they behave the way they do but we cannot stop at that understanding. It is imperative that we reserve the right not to believe some explanations.

Most of all we must reserve the right not to believe ruling-class explanations. A ruling class that says it is eating some people out of concern for the welfare of all is not

telling the whole story. An anthropology that can do no more than make that viewpoint seem plausible serves neither science nor morality. Aztec cannibalism was the "highest form of communion" for the eaters but not the eaten. For the eaten it was not merely cannibalism but the highest form of exploitation. (Even bourgeois businessmen refrain from dining on their workers.) If it be positivist cant to describe human relationships in such terms, long live positivism. If it be anthropology to struggle against the mystification of the causes of inequality and exploitation, long live anthropology.[4]

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Nevin Scrimshaw, "Through a Glass Darkly: Discerning the Practical Implications of Human Dietary Protein-Energy Relationships," *Nutrition Reviews* vol. 35 (1977), pp. 321–337.

[4] Those who are interested in my response to the many other distortions and inaccuracies in Sahlins's review may wish to consult the chapters on structuralism, structural Marxism, and obscurantism in my *Cultural Materialism, The Struggle for a Science of Culture* (Random House, 1979).

Marshall Sahlins's Reply

Nutritional science will not help. It indicates that in normal times the combination of corn and beans, the substance of the Aztecs' main daily meal, would supply them with the full range of amino acids at levels comparable to or surpassing animal protein.[1] On the other hand, human meat could have no redeeming nutritional value. The ritual calendar of human sacrifice had no particular relation to lean periods in the annual agricultural cycle; on the contrary, the greatest of these sacrifices coincided with the harvest.[2] And if food were truly scarce, as in famine, the meat from sacrificial victims would not prevent protein malnutrition, since people cannot synthesize body proteins from it so long as their caloric (energy) requirements are not satisfied.

But then, Aztec cannibalism was not uniquely intensive. The figures adopted in *Cannibals and Kings* are 15,000 human sacrifices annually for a population of 2 million in the Valley of Mexico. This rate of less than one body a year for every hundred subjects would embarrass many self-respecting cannibal chieftains. Even if all the flesh were consumed (which it was not), and even if it were eaten exclusively by privileged parties in the city of Tenochtitlan (say 25 percent of the 300,000 inhabitants), cannibalism would yield protein rations to the elite on the order of one mouthful of hamburger a day.[3]

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[1] The main daily meal of Aztec common people consisted of maize-cakes, beans, pimento or tomato sauce, and tamales, if rarely any game meat or poultry: Jacques Soustelle, *Daily Life of the Azecs* (Stanford University Press, 1961), p. 149. On the dispensability of animal proteins for people whose diet includes the complementary vegetable proteins of beans and corn, notably "many Central American people," see M.G. Wohl and R.S. Goodhart, *Modern Nurition in Health and Disease* (Lea and Febiger, 1964), p. 144. For amino acids in corn, beans, and animal products, see the relevant entries in P.L. Altman and D.S. Dittmer, *Metabolism* (Federation of American Societies for Experimental Biology, 1968), pp. 53–55.

[2] Bernard R. Ortiz de Montellano, "Aztec Cannibalism: An Ecological Necessity?" *Science* 200 (1978), pp. 611–617.

[3] On proteins available from human flesh, see Wohl and Goodhart, op. cit., p. 125; also, S. Garn and W. Block, "The limited nutritional value of cannibalism," *American Anthropologist*, 72 (1970), p. 106. On hamburgers: C.F. Adams, *Nutritive Values of American Foods* (USDA Agricultural Handbook 456, 1975). In my calculations I adopt Ortiz de Montellano's figures of 1,810 grams of protein from the arms and legs (the part of the human body the Aztecs consumed) and 5,180 grams for the whole body. Supposing 15,000 victims were consumed annually by the 75,000 elite of Tenochtitlan, and even if all body flesh were eaten, the yield would be 2.83 grams of protein a day for each consumer; whereas, the legs and arms alone give 0.99 grams per person per day. One *ounce* of cooked hamburger (lean red meat and 21 percent fat) has 6.33 grams of protein. Taking the whole of the supposedly protein-starved

Like many such interdisciplinary excursions, Harris's appeal to nutritional study succeeds merely in multiplying the uncertainties of his own subject matter by the unknowns of some other science. One of the most definite unknowns emerging from recent debates among nutritionists is that "no diet in the world with a concentration of protein below the minimum requirement has been identified."[4] The authors of this conclusion, speaking to the supposed "protein gap" in Third World countries (more likely a caloric deficiency), as well as to our own historical obsession with meat as the only "flesh-forming food" (the word for "food" in English used to be "meat"), call all this "the protein myth." Nor have Mr. Harris's own assertions about protein resources among the Aztecs and others fared well under expert scrutiny.[5]

Speaking of science, I have to make some protest about the way Mr. Harris uses the evidence. Cortès never suggested that the meat in Aztec markets might be human flesh. (Since there is no such suspicion in Cortès's account of the conquest in his *Letters* to Charles V, it is difficult to understand why Harris accuses me of neglecting to notice it.) Similarly, I am taxed by Harris with the notion that the Aztecs got adequate protein from hunting deer, although I do not even mention deer in this connection. The precise mathematical refutation Harris proceeds to make of this imaginary contention seems worthy of its inspiration. The same credence can be accorded to Harris's calculations of grams of protein from seventeenth- and eighteenth-century economic conditions, when the population of the Valley of Mexico had fallen from about 1.5 million to under 100,000, and the lakes' resources had been seriously depleted. Nor do the historical sources warrant such suppositions as that the Aztecs bought and sold human flesh, that all human sacrifices were also eaten, or that merely the bones of the victims but not the trunks were fed to Moctezuma's animals. I know that Harris has long and vigorously argued, as a matter of scientific principle, for the priority of the anthropologist's interpretations over what people actually say. But there comes a point when the exercise of this privilege can no longer do credit to the scientific enterprise in whose name it is invoked.

Of course, it is not really a question, as Mr. Harris believes, of scientific concepts versus native rationalizations. All societies are ordered by meaningful logics of which the people are more or less unaware, such as the historic Anglo-American fascination with meat.[6] But then, anthropologists themselves (like physicists) are not immune to

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Valley of Mexico (population 1.5 million), and a figure of 20,000 victims annually, the protein made available from human legs and arms would be 0.06 grams per person per day.

[4] M.A. Crawford and J.P.W. Rivers, "The protein myth," in *The man/food equation*, F. Steel and A. Bourne, eds. (Academic Press, 1975), p. 238; see also, in the same volume, P.V. Sukhatme, "Human protein needs and the relative role of energy and protein in meeting them," pp. 53–76.

[5] For a thorough ecological critique of the Harner-Harris thesis on the Aztecs, see Ortiz de Montellano, op. cit.; on the Yanomamö, see Napoleon A. Chagnon, "Protein deficiency and tribal warfare in Amazonia: New data," *Science* 203 (1979), pp. 910–913, and Jacques Lizot, "*Economie primitive et subsistance," Libre* 4 (1978), pp. 69–113.

[6] Cattle have long had a marked ritual/prestige status among Indo-European domestic animals, whether as food (Anglo-American), standard of marriage payments (pre-classical Greece), preeminent

the universalization of their own native folklore in the form of scientific categories and measures—thus risking obliteration of the order in the societies they study. Once again, in his own reply, Mr. Harris indicates he is unaware of the "bourgeois" ground of his science, since he repeatedly conflates the *more or less efficacious* ways that people maintain themselves with the *optimizing* or *maximizing* behavior characteristic of capitalist enterprise. And even as he denies such optimizing is a timeless option, but actionable only at certain historical moments, he tells us that "*any* population which did not seek to maximize its animal protein intake relative to that of neighboring populations" would go under.[7] For Harris, doing well enough to get along (adaptation) is the same as the principle of greatest gain. So is living confused with profit-making—the great American problem.

More by Marshall Sahlins

- David Graeber, 1961–2020 (September 5, 2020)
- Montezuma's Zoo (November 8, 1979 issue)

Marshall Sahlins was professor of anthropology at the University of Chicago, and the author of *Stone Age Economics* (1972) and *The Enchanted Universe: An Anthropology of Most of Humanity*. A co-founder and former executive publisher of Prickly Paradigm Press, he also authored under its imprint *The Western Illusion of Human Nature* (2008) and *What the Foucault?* (2018).

sacrificial victim (classical Rome), or sacred and taboo animal (India). The metaphor of increasing the stock is still dominating us, whether as sociobiology or capitalism (a word having common origin with "cattle"). Mr. Harris's defense of the carnivorous basis of cultural forms in *Cultural Materialism* (and elsewhere) includes a denial of all this. His idea is that the American "preference" for beef over pork developed after 1860 as a consequence of the opening of the Western ranges, and of technological developments that made beef more economical.

[7] Of course, it is not even true that "any population" would have to *do better* in proteins than their neighbors, let alone "maximize" their intake, even if the failure to do better left them in poorer health. All of that depends on the type of relations among neighboring societies, including the type and intensity of warfare (if any), as well as their respective sizes, modes of organization, and much else.

Marshall Sahlins
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The New York Review, November 23, 1978 issue:
<nybooks.com/articles/1978/11/23/culture-as-protein-and-profit/> & the June 28, 1979 issue: <nybooks.com/articles/1979/06/28/cannibals-and-kings-an-exchange/>