Anthro Notes

National Museum of Natural History Bulletin for Teachers

Vol. 14 No. 1 Winter 1992

HISTORY, PROGRESS AND THE FACTS OF ANCIENT LIFE

How many of us consciously or unconsciously assume that human history is largely a tale of progress through time? Can anyone dispute that the development of modern medicine, sanitation facilities, and almost universal education have brought us today to an era of great benefits for all? If we look far back into human history, did it not all begin with the "Neolithic Revolution," the domestication of plants and animals that ushered in sedentary farming, earliest cities, trade networks, large scale governments and craft specialization. Did not these, in turn, bring humankind to a new level of well-being from which progress could continue steadily up to today?

Most of our elementary, secondary, and college texts still reflect a deep human belief in the progress wrought by "civilized" life, by the developments growing out of ancient cities. Unfortunately, our sense of human history as steady progress in human well-being does not accord with the actual data at hand. Instead, the facts provide innumerable clues that "civilized" living has been accomplished only at considerable cost to most of the players. We need to revise our thinking, our teaching, and our textbooks to reflect this new research.

RECONSTRUCTING THE PAST

Scientists utilize three main means of reconstructing patterns of health and nutrition in ancient societies. The first method uses small scale groups (hunter gatherers) in the modern world to offer clues about our prehistoric ancestors. The

!Kung San of the Kalahari (sometimes known as the Bushmen) come to mind most readily, but there are dozens of such groups scattered on the various continents (among whom the vaunted "affluent" San actually appear somewhat impoverished).

The second method uses what geologists call "Uniformitarian" reasoning and argues that natural processes--in this case the processes of nutrition and disease--must have operated in the past much as they do today and can therefore be reliably reconstructed. The third and most recently exploited method analyzes the skeletons of prehistoric populations to measure health and disease. Although many skeletons are now being reburied, there were once many thousands available for study. Many prehistoric communities were each represented by several hundred skeletons. There were, for example, 600 representing one Mayan town in my own small college lab--a fairly good sample from which conclusions can be drawn about health and disease in an ancient community.

None of these three methods--looking at modern hunters and gatherers, studying modern disease processes, and analyzing ancient skeletal remains--is wholly satisfactory. Contemporary hunting and gathering populations do live in the modern world, after all, so they are not exact prototypes of prehistoric groups. Disease processes involve living organisms which can evolve; thus they may not adhere as reliably as do rocks to uniformitarian principles. And prehistoric skeletons document only a limited sample of human ills. But the three methods taken together gain strength, often supporting one another in the manner of the legs of a tripod.

In any case, these three types of evidence are the only evidence we have ever had concerning prehistoric health, the only evidence available to Hobbes or Rousseau or any of the more recent philosophers, historians and educators who write the textbooks and the history books we use with our students. Taken together the three types of evidence paint a picture very different from the one we learned as children, and it is important to correct the erroneous old images of progress still found in many of our "authoritative" texts.

EVIDENCE ON NUTRITION

First, the evidence suggests that the quality of human nutrition, the balance of vitamins, fats, minerals and protein, has generally declined through human history except, of course, for the ruling classes. We talk of 20th century improvements in stature (getting taller) as proof of improving nutrition, yet prehistoric hunting and gathering populations were often as tall if not taller than the populations that replaced them, and the predominant trend in human stature since early prehistory has been downward. (The people of Europe of the 17th and 18th centuries to whom we usually compare ourselves with pride are, in fact, among the shortest people who ever lived.) Eclectic diets of fresh vegetable foods with some meat apparently assure hunting and gathering populations a good vitamin and mineral balance, and, in fact, such groups generally have access to relatively large amounts of meat and protein, rivaling consumption in the affluent United States and exceeding modern Third World averages by a large margin.

Modern hunter gatherers rarely display clinical manifestations of protein deficiency, anemia (iron deficiency), or deficiencies of any other vitamin or mineral even when more "sophisticated" farmers nearby are deficient. To the initial surprise of health teams, infantile and childhood malnutrition, marasmus and kwashiorkor are also quite rare among hunter gatherers. These diseases are more common among share-croppers or other modern populations forced by poverty to rely on a single food such as rice or maize. The most poorly nourished people turn out to be the poor or lower classes of historic and modern "civilized" states from which modern trade systems withhold or actively withdraw various nutrients.

The most common shortage among modern hunter gatherers is one of calories. Paradoxically to any American who has ever gone on a diet, modern hunter gatherers tend to be chronically lean while otherwise well nourished, probably as a result of exercising and eating lean animal products and high-roughage vegetable foods. They get no "free" processed calories. In addition, modern hunter gatherers are making a living in some of the poorest environments on earth, the only environments still left to them after the expansion of modern states.

The skeletons of prehistoric hunter gatherers generally confirm this sense of good nutrition. They commonly show fewer signs of porotic hyperostosis (the skeletal manifestation of anemia) than the skeletons of later populations. Rickets (bending of bones), a disease of vitamin D deficiency reflecting poor diet and/or lack of exposure to sunlight, is primarily a disease of modern cities and is extremely rare either in modern hunter gatherers or in ancient skeletons. Teeth of early archaeological populations display relatively few enamel hypoplasias, the scars of infantile illnesses which are permanently recorded in the teeth.

Whether the reliability of human food supplies has improved with time is one of the most controversial and most important issues in assessing the "march of human progress" through time. There are many anecdotes of hunger or starvation among historic and modern hunter gatherers. However, these typically occur in the arctic or in extreme deserts where more advanced civilizations do not even try to compete, or they occur in contexts where modern states restrict the movement of hunters or limit their activities. Judging by the relative efficiency with which different kinds of wild foods can be obtained, prehistoric hunter gatherers would have been particularly well off when they lived in environments of their own choosing and before large game (one of the richest food sources) was depleted, as appears to have occurred on every continent occupied by early people. We like to think that modern transportation and storage capabilities have alleviated hunger, and they can; nevertheless, farmed fields may be inherently less stable than naturally selected wild resources. Being mobile may be safer in the face of famine than being sedentary.

Moreover, storage and transportation can fail; governments can and do refuse to help the needy; and in a world of economic specialists and private property, people may be unable to command the price of food even when food is plentiful. We have to remember that any government, the institution which can protect, is double-edged, since it is almost always in some way protecting a privileged class. Modern trade networks inevitably move food (both calories and quality nutrients) away from some populations in favor of others.

The archaeological record of skeletons reflects no steady record of improvement. In fact, if the clues in our teeth are utilized as the measure, one could argue that the frequency of stressful episodes to which the average individual has been exposed generally increases through time in most parts of the world. The historical record of famine in Europe, Russia or China over the past several centuries also suggests no improvement until perhaps the last 150 years--and, of course, people in the Third World are still not protected from starvation.

DISEASES THROUGH TIME

In addition to the decline in the quality of human nutrition, the second point confirmed by all three types of evidence is that the variety and intensity of human infections and infectious diseases have generally increased through human history. Epidemiological theory predicts that diseases will not be transmitted as readily among small groups of people who change their base camp periodically as they are transmitted when people live in large permanent human settlements.

Diseases transmitted directly from person to person in the air or by touch like the flu are most efficient when population density is high and large crowds are gathered (one reason why schools and other similar institutions commonly help disease to spread). Diseases that spread through human feces (including hookworm as well as cholera and most other diarrhea) will obviously be most dangerous for large permanent populations where feces accumulate. Historic outbreaks of cholera in London were traced to instances in which, amid high density population, latrines were able to contaminate wells. The same is true of diseases like bubonic plague, which are carried by rats or other parasites on accumulations of human garbage. And as the experiences of American Indians after Columbus demonstrate, long distance travel and large scale trade spread diseases with devastating effect (it has been estimated that 90% of the Native population was destroyed by disease). The history of bubonic plague in France, decimating large port cities but leaving villages in the interior unharmed, is a good example of the dangers of urban living and conversely the ability of small size and isolated population patterns to provide protection against infectious diseases.

It is, in fact, a fairly commonplace observation that hunting and gathering bands are relatively infection free and that the rates of many diseases increase when mobile hunters are settled in larger permanent camps. The skeletal record again provides confirmation. Signs of infection in the skeleton become more common as people settle in large-scale cities in essentially every region of the ancient world where the appropriate study has been done. In addition, the low incidence of anemia among ancient hunter gatherers is thought by many scholars to reflect low rates of parasitic infestation as much or more than diet. Tuberculosis, one of the diseases which specifically can be detected in skeletons, is conspicuously absent or quite scarce in the archaeological record until relatively recent times.

Moreover, many "epidemic" diseases appear to require a critical threshold of human population size (either in one place or connected by rapid transport) in order to spread. Measles, mumps, smallpox, influenza, and German measles all appear to need large and rapidly reproducing human populations to survive. The implication is that these diseases did not spread until the recent growth of cities and transportation networks. However, once many Europeans were immunized by constant childhood exposure, these diseases became major vehicles of conquest in the

(continued on p. 14)

THREE METHODS OF RECONSTRUCTING PATTERNS OF HEALTH & NUTRITION

("**HISTORY, PROGRESS, AND THE FACTS OF ANCIENT LIFE**" continued from p. 4)

spread of European hegemony. These diseases not only killed many Indians but also appeared to provide evidence that Europeans were divinely favored.

Many other diseases that plague modern populations are also rare or absent in modern hunter gatherers. High blood pressure is generally not found in hunter gatherers regardless of age, "racial type," or location. Diets naturally low in sodium may be one good reason; another may be the lack of fatty build-up in blood vessels that contributes to widespread high blood pressure, strokes and heart attacks.

Diabetes also generally does not occur among hunter gatherers, although the same individuals may be prone to diabetes when fed a "modern" diet. Bowel and breast cancer are also relatively rare in populations who do not live a "modern" lifestyle. While this is sometimes attributed to a lower life expectancy, in fact, the proportion of adults who are over age sixty in hunting and gathering societies can be comparable to that of our own (see "Anthropological Perspectives on Aging," by Brooks and Draper, *Anthro.Notes*, Fall, 1991).

LIFE EXPECTANCY

Trying to reconstruct the history of human life expectancy is difficult. Life expectancy, the number of years an individual can expect to live, refers to a rough average of age at death in a population, not to how long the oldest individuals live. (A group will have a life expectancy of 40 if half the group lives to 80 and half the group dies at birth). We can observe modern hunter gatherers and measure their individual lifespans, but the deaths we observe mostly result from causes that would not have been part of ancient life, like a tuberculosis epidemic. Most observed deaths are from infectious diseases and most of those from diseases we consider modern. We can determine the ages of skeletal populations, but they may not be complete. Moreover, while children can be aged relatively easily from their teeth and unfused bones, aging adults is difficult and full of controversy. Nevertheless, the combined data suggest life expectancy of about 25 years at birth for our early ancestors, a poor figure but one which again compares favorably to figures from much of urban Europe as late as the 18th or 19th century, and from India well into the 20th.

In particular, hunters and gatherers seem to have been relatively successful in rearing their young. A survey of all of the known modern hunter gatherer populations suggests that they lose an average of 20% of their children as infants and about 45% before adulthood, figures which accord reasonably well with the evidence of ancient skeletons. These figures, terrible as they are, compare favorably with most of Europe prior to about 1850 and with many major American cities as late as the turn of the last century.

CONCLUSION

The point of all this is that our models of history--the models which consciously or unconsciously shape our planning for the future--are misleading, based too much on the experience of the privileged classes which mistake their privilege for progress. In the 17th century, Hobbes characterized primitive life as "nasty, brutish, and short" at a time when life for most of his own compatriots was apparently shorter and was certainly nastier, at least for all those outside the ruling classes.

We do not simply progress. Many aspects of so-called "civilizations"--the adoption of sedentary farming, cities, trade, social class distinctions--are mixed blessings for the participants. It is better to see history as simple population growth and the endless competition between ever larger political units in which some societies lose and some societies win without necessarily generating benefits for all of their citizens.

It is particularly important to be aware of our own biases and our often unconscious desire to believe in progress as well as our tendency to forget the larger frames of reference through which human history develops. The facts of ancient human life can not only inform the understanding of our past, but also help us plan more carefully for the future.

Mark N. Cohen
Department of Anthropology
SUNY/Plattsburgh

*This article is adapted from Mark N. Cohen, *Health and the Rise of Civilization*, Yale University Press (1989) that provides detailed documentation and an extensive bibliography. The paperback edition can be found or ordered through most bookstores.