Culture and the Evolution of Obesity

Peter J. Brown

As a people, Americans rank as one of the fattest societies in history. This epidemiological fact remains despite the tremendous amount of money, effort, and worry that Americans put into diet, exercise, and the quest for the perfect body. For some people, particularly young women, the quest to be thin can become such an obsession that they develop life-threatening eating disorders, like anorexia nervosa. But in other cultures, young women may go to great lengths to try to gain weight to look attractive. There are no universal standards of physical beauty; in fact, there is considerable cross-cultural variation. Culture defines normality.

How do conditions like obesity come to be expressed? Biologists usually say that it is a combination of genes and environment. There is good evidence that genes predispose people toward conditions, but there is seldom evidence that the chain of causation is entirely genetic. A complete explanation must be both biological and cultural. In other words, if a condition like obesity is caused by an interaction of genetic and cultural/behavioral predispositions, then both the genes and culture must be the product of evolutionary processes.

In this selection, Peter Brown provides a cross-cultural and evolutionary analysis of how both biological and cultural factors in obesity evolved. This analysis explains the sociological distribution of obesity today. It also emphasizes that peripheral body fat (characteristic of women) is a small health hazard compared to abdominal fat (characteristic of men).

Dietary patterns are obviously shaped by culture. But human tendencies to value meat, fatty foods, and sweets must be understood in the context of our evolutionary past.

As you read this selection, ask yourself the following questions:

- Have you ever noticed that there are gender differences in the locality of fat storage in the body? Why would this be the case?
- Why are fat people ridiculed and discriminated against in the United States? Are these social reactions worse for men or for women?
- What does the author mean when he says that in a rich society, slenderness can be an individual symbol of conspicuous consumption?
- Given the difference in health risk between peripheral body fat and central body fat, why might weight not be the best way to measure one's risk?
- Why do humans like foods that are "bad" for them?

The following terms discussed in this selection are included in the Glossary at the back of the book:

- adipose tissue
- cultural ideals
- culture
- epidemiology
- food scarcity
- gender dimorphism
- ideal body images
- obesity
- sexual dimorphism

The etiology or cause of obesity can be understood in the context of human cultural and genetic evolution. The cause of human obesity and overweight involves the interaction of genetic traits with culturally patterned behaviors and beliefs. Both these genes and culture traits, remarkably common in human societies, are evolutionary products of similar processes of selection related to past food scarcities. This idea is not new: The notion of "thifty phenotypes rendered detrimental by progress" was introduced more than a quarter-century ago. In recent years, the evidence for the existence of genes that enable individuals to use food energy efficiently and store energy reserves in the form of fat has been increasingly impressive; those individuals with "fat phenotypes" are likely to develop adult obesity (Stunkard et al. 1986, 1990).

It is important to recognize that these “thrifty” genes are, at least in the human context, necessary but not sufficient factors in the causation of obesity. In actuality, the new discoveries in the genetics of obesity highlight our ignorance about the role of non-genetic or cultural factors, which are usually submerged in the term environment in the medical literature. The purpose of this paper is to examine why and how cultures have evolved behaviors and beliefs that appear to predispose individuals to develop obesity. I believe that an anthropological model of culture has significant advantages over the commonly used undifferentiated concept of “environment” for generating hypotheses about behavioral causes of obesity. This cultural approach is particularly useful for improving our understanding of the social epidemiological distribution of obesity.

It is valuable to raise an obvious question at the outset: Why do people find it very difficult to reduce their intake of dietary fat and sugar even when the medical benefits of this behavioral change are well known to them? The answer is not obvious, since neither the physiological nor the cultural attraction of these foods is well understood. The proximate mechanisms for this attraction are linked to brain physiology and biochemistry (Wurtman and Wurtman 1987). The ultimate answers are linked to our evolutionary heritage. Human predispositions to obesity are found in both genetic and cultural traits that may have been adaptive in the context of past food scarcities but are maladaptive today in the context of affluence and constant food surpluses.

THE PROBLEMS OF OBESITY AND OVERWEIGHT

Throughout most of human history, obesity was neither a common health problem nor even a realistic possibility for most people. Today, particularly in affluent societies like the United States, obesity is very common, affecting about 12 percent of adult men and women; overweight is even more common, affecting an additional 20 to 50 percent of adult Americans depending on the definitions used (Bray 1987). Not only are overweight and obesity relatively common conditions in our society, they are also extremely complex and intractable. Obesity is a serious public health problem because of its causal connection to major causes of morbidity and mortality from chronic diseases, including cardiovascular disease, type 2 diabetes mellitus (NIDDM), and hypertension. On the individual level, obesity and overweight bring with them an enormous amount of personal psychological pain. The fact that the obese are subjected to significant social and economic discrimination is well documented.

Fat is extraordinarily difficult to shed because the body guards its fat stores. The evidence concerning the effectiveness over a 5-year period of diet therapies indicates that nearly all of the weight that is lost through diets is eventually regained. The remarkable failure of diet therapies has made some researchers rethink their commonsensical theory of obesity as being caused by overeating; the clinical evidence of the past 40 years simply does not support this simplistic notion.

Even in the absence of scientific data about the effectiveness of diet therapy, the diet and weight-loss industry in the United States is remarkably successful in its ability to capture the hope and money of people who perceive themselves to be overweight. This industry thrives because of a complex of cultural beliefs about the ideal body and sexual attractiveness rather than medical advice and the prevention of chronic diseases per se. The American cultural concern about weight loss and the positive valuation of slenderness for women of the middle and upper classes are difficult to overemphasize. Cherlin (1981) has referred to this cultural theme as an “obsession” and the “tyranny of slenderness.” In this light, it is impossible to claim that obesity is purely a medical issue.

OBESITY AND HUNGER

It is important to remember that for most citizens of the world today, as it has been in the past, the possibility of obesity is remote whereas the possibility of hunger is close to home. There is a palpable irony in the fact of an epidemic of obesity in a world characterized by hunger. For example, in the United States an estimated 20 million people are hungry because they are on a “serious diet,” generally these people are of the middle and upper classes, and most are women. At the same time in the same rich nation, another estimated 20 million Americans are hungry and poorly nourished largely because they lack sufficient money; generally these people are elderly, homeless, or rural inhabitants. This sad symmetry in the estimates of voluntary and involuntary hunger in the United States is a valuable starting point for a discussion of the etiology of obesity. From an evolutionary standpoint, past food shortages have acted as powerful agents of natural selection, shaping both human genetics and behavior.

A theory of the etiology of obesity must not only account for the influences of genes and learned
behaviors but also explain its social distribution. Before the problem of causation is addressed, it is worthwhile to examine the nature of human obesity.

CHANGING DEFINITIONS OF OBESITY

The most basic scientific issues regarding obesity are, in fact, controversial. The definitions of obesity and overweight have been the subject of substantial medical debate, in part because they must be based on inferred definitions of normality or “ideal” body proportions. Although obesity refers to excessive adiposity (fat deposits), the most common measurement is not of fat tissue at all but an indirect inference based on measures of stature and total body weight (Bray 1987).

The social history of height and weight standards in the United States is interesting. Until recently, the task of defining both obesity and ideal weights has been the domain of the life-insurance industry. The most well-known table of desirable weights was developed by the Metropolitan Life Insurance Company using correlation statistics between height/weight and mortality among insurance applicants. Ideal weights were based on data from 25-year-old insurance applicants, despite the nonrepresentative nature of the “sample” pool and the fact that in most human populations, individuals increase in weight until around age 50. Obesity was defined as 120 percent of the Ideal Body Weight (IBW), and overweight was defined as 110 percent IBW. Individual life-insurance applicants outside the recommended weight range were required to pay a surcharge on insurance premiums. In 1959, the concept of “frame size” was introduced, although the resulting categories were never given operational definitions using anthropometric measures. Definitions of obesity have changed throughout history. From 1943 to 1980, definitions of “ideal weights” for women of a particular height were consistently lowered, while those for men remained approximately the same. In 1983, a major debate on the definition of obesity began when Metropolitan Life revised its tables upward, based on new actuarial studies of mortality. Many organizations and experts in the diet industry, including experts in medical fields, rejected these new standards.

In the current medical literature, weight and height tables have been replaced by the Body Mass Index (BMI), defined as body weight (in kilograms) divided by the square of body height (in meters). BMI (W/H²) is strongly correlated with total body fat, and a value greater than 30 is generally considered obese. Current recommendations include slight increases in BMI with age (Bray 1987). Nevertheless, there continues to be little agreement on precise definitions of either overweight or obesity.

An important added dimension to the questions of definition of obesity involves the distribution of fat around the body trunk or on the limbs. Central or trunk body fat distribution is closely correlated with serious chronic diseases, such as cardiovascular disease, whereas peripheral body fat in the hips and limbs does not carry similar medical risks. Because of this clinically important distinction, measures of fat distribution like waist to hips ratio (WHR), wherein lower WHR values indicate lower risk of chronic disease consequences, will be a valuable addition to future definitions of obesity.

FOUR FACTS ABOUT THE SOCIAL DISTRIBUTION OF OBESITY

Humans are among the fattest of all mammals, and the primary function of our fat is to serve as an energy reserve. The nonrandom social distribution of adiposity within and between human populations may provide a key to understanding obesity. Four facts about this social distribution are particularly cogent for an evolutionary reconstruction: (1) the gender difference in the total percent and site distribution of body fat, as well as the prevalence of obesity; (2) the concentration of obesity in certain ethnic groups; (3) the increase in obesity associated with economic modernization; and (4) the powerful and complex relationship between social class and obesity. Any useful theory concerning the etiology of obesity must account for these social epidemiological patterns.

Sexual Dimorphism

Humans show only mild sexual dimorphism in variables like stature. Males are only 5 to 9 percent taller than females. The sample of adults from Tecumseh, Michigan, seen in Figure 1 are typical. Men are larger than women in height and total body mass, but women have more subcutaneous fat as measured by skinfold thicknesses in 16 of 17 sites (the exception is the suprailiac region—so-called “love handles”). The greatest degree of sexual dimorphism is found in the site of distribution of fat tissue; women have much more peripheral fat in the legs and hips (Kissebah et al. 1989). This difference is epidemiologically important because the greater proportion of peripheral fat in females may be associated with reduced morbidity compared to males with identical BMI values.
 Sex differences are also seen in the prevalence of obesity. Despite methodological differences in the categorization of obesity, data from the 14 population surveys shown in Figure 2 indicate that in all of the studies, females have a higher prevalence of obesity than males. A greater risk of obesity for females appears to be a basic fact of human biology.

Economic Modernization

The social distribution of obesity varies among societies, depending on their degree of economic modernization. Studies of traditional hunting and gathering populations report no obesity. In contrast, numerous studies of traditional societies undergoing the process of economic modernization demonstrate rapid increases in the prevalence of obesity. Trowell and Burkitt's (1981) 15 case studies of epidemiological change in modernizing societies conclude that obesity is the first of the "diseases of civilization" to appear. The rapidity with which obesity becomes a common health problem in the context of modernization underscores the critical role of cultural behaviors in the causation of obesity, since there has been insufficient time for changes in gene frequencies.

Figure 2 also suggests that variations in the male-female ratio of obesity prevalence are related to economic modernization. In less industrially developed societies female obesity is much more common than male obesity, but in more affluent societies the ratio is nearly equivalent. Recent World Health Organization data on global obesity also support this observation (Gurney and Gorstein 1988).

Cultural changes with modernization include the seemingly invariable pattern of diet in industrial countries—decreased fiber intake and increased consumption of fat and sugar. Modernization is also associated with decreased energy expenditures related to work, recreation, or daily activities. From the perspective of the populations undergoing economic modernization,
increasing average weight might be seen as a good thing rather than a health problem.

Ethnicity

The idea that particular populations have high rates of a genotype that predisposes individuals to obesity and related diseases is not new but is now supported by a convincing body of adoption and twin data (Stunkard et al. 1986, 1990) and by studies of particular obesity-prone populations like the Pima Indians (Ravussin et al. 1988). In the United States, ethnic groups with elevated rates of obesity include African Americans (particularly in the rural South), Mexican Americans, Puerto Ricans, Gypsies, and Pacific Islanders (Centers for Disease Control 1989).

The fact that certain ethnic groups have high rates of obesity is not easy to interpret because of the entanglement of the effects of genetic heredity, social class, and cultural beliefs. The association of obesity with ethnicity is not evidence for the exclusive role of genetic transmission, since social factors like endogamy (marriage within the group) or group isolation are critical for defining the population structure—that is, the social system through which genes are passed from generation to generation.

Social Class

Social class (socioeconomic status) can be a powerful predictor of the prevalence of obesity in both modernizing and affluent societies, although the direction of the association varies with the type of society. In developing countries, there is a strong and consistent positive association between social class and obesity for men, women, and children; correspondingly, there is an inverse correlation between social class and protein-calorie malnutrition. In heterogeneous and affluent societies, like the United States, there is a strong inverse correlation of social class and obesity for females. The association between obesity and social class among women in affluent societies is not constant through the life cycle. Economically advantaged girls are initially fatter than their low-income counterparts, but the pattern is reversed beginning at puberty. For females, social class remains the strongest social epidemiological predictor of obesity.

OBESITY AND HUMAN EVOLUTION

Human biology and behavior can be understood in the context of two distinct processes of evolution. Biological evolution involves changes through time in the frequency of particular genes, primarily because of the action of natural selection on individuals. Cultural evolution involves historical changes in the configurations of cultural systems, that is, the learned patterns of behavior and belief characteristics of social groups. Cultural evolution includes the striking and rapid transformation of human lifestyles from small food-foraging societies to large and economically complex states in a span of less than 5,000 years.

The Context of Food Scarcities

Food shortages have been very common in human prehistory and history; in fact, they could be considered a virtually inevitable fact of life for most people. As such, they have been a powerful evolutionary force.

A cross-cultural ethnographic survey of 118 nonindustrial societies (with hunting and gathering, pastoral, horticultural, and agricultural economies) found some form of food shortages for all of the societies in the sample (Whiting 1958). Shortages occur annually or even more frequently in roughly half of the societies, and every 2 to 3 years in an additional 24 percent. The shortages are “severe” (i.e., including starvation deaths) in 29 percent of the societies sampled. Seasonal availability of food results in a seasonal cycle of weight loss and weight gain in both hunting and gathering and agricultural societies, although the fluctuation is substantially greater among agriculturalists.

Scarcity and Cultural Evolution

A hunting and gathering economy was characteristic of all human societies for more than 95 percent of our history, yet it is represented by only a handful of societies today. In general, food foragers enjoy high-quality diets, maintain high levels of physical fitness, suffer the risk of periodic food shortages, and are generally healthier than many contemporary populations that rely on agriculture. Without romanticizing these societies, the evidence is persuasive enough to suggest a “paleolithic prescription” of diet and exercise for the prevention of chronic diseases (Eaton et al. 1988). This recommendation refers to the quality of preindustrial diets and not to their dependability or quantity.

Approximately 12,000 years ago, some human groups shifted from a food-foraging economy to one of food production. This economic transformation allowed the evolution of urban civilizations. Many archaeologists believe that people were “forced” to adopt the new agricultural economy because of ecological pressures from population growth and food scarcities or because of military coercion. The archaeological record clearly
shows that agriculture was associated with nutritional stress, poor health, and diminished stature (Cohen and Armelagos 1984). The beginning of agriculture is also linked to the emergence of social stratification, a system of inequality that improved the Darwinian fitness of the ruling class relative to that of the lower classes. Social inequality, particularly differential access to strategic resources, plays a critical role in the distribution of obesity in most societies.

Certain ecological zones appear to be prone to severe food shortages. For example, archaeological analysis of tree rings from the southwestern United States shows that the prehistoric past was characterized by frequent and severe droughts. The impressive agricultural societies of the prehistoric Southwest had expanded during an extended period of uncharacteristically good weather and could not be maintained when the lower and more characteristic rainfall patterns resumed. Ecological conditions leading to severe scarcity may have acted as strong forces of selection for "thrifty" genotypes.

**Scarcity and Genetic Evolution**

Since food shortages were ubiquitous for humans under natural conditions, selection favored individuals who could effectively store calories in times of surplus. For most societies, these fat stores would be called on at least every 2 or 3 years. Malnutrition increases infectious disease mortality, as well as decreasing birth weights and rates of child growth. The evolutionary scenario is this: Females with greater energy reserves in fat would have a selective advantage over their lean counterparts in terms of withstanding the stress of food shortages, not only for themselves but also for their fetuses or nursing children. Humans have evolved the ability to "save up" food energy for inevitable food shortages through the synthesis and storage of fat.

Selection has favored the production of peripheral body fat in females, whose reproductive fitness is influenced by the nutritional demands of pregnancy and lactation. This peripheral fat is usually mobilized after being primed with estrogen during the late stages of pregnancy and during lactation. In addition, a minimal level of fatness increases female reproductive success because of its association with regular cycling and early menarche (Frisch 1987).

In this evolutionary context the usual range of human metabolic variation must have produced many individuals with a predisposition to become obese; yet they would, in all likelihood, never have had the opportunity to do so. Furthermore, in this context there could be little or no natural selection against this tendency. Selection could not provide for the eventualty


of continuous surplus simply because it had never existed before.

**CULTURE AND ADAPTATIONS TO FOOD SCARCITY**

Food scarcities have shaped not only our genes but also, and perhaps more important, human cultures. Because the concept of culture is rarely considered in medical research on obesity, and because I am suggesting that this concept has advantages over the more common and undifferentiated term environment, it is necessary to review some basic aspects of this anthropological term. Culture refers to the learned patterns of behavior and belief characteristic of a social group. As such, culture encompasses *Homo sapiens' primary mechanism of evolutionary adaptation, which has distinct advantages of greater speed and flexibility than genetic evolution. Cultural behaviors and beliefs are usually learned in childhood and they are often deeply held and seldom questioned by adults, who pass this "obvious" knowledge and habits to their offspring. In this regard, cultural beliefs and values are largely unconscious factors in the motivation of individual behaviors. Cultural beliefs define "what is normal" and therefore constrain the choices of behaviors available to an individual.

One useful way of thinking about culture in relation to obesity is a cultural materialist model as seen in Figure 3. This model divides culture into three layers. The material foundation of a cultural system is the economic mode of production, which includes the technology and the population size that the productive economy allows and requires. Population size is maintained by the social system, sometimes called the mode of reproduction. Contingent on the first layer is the system of social organization, which includes kinship patterns, marriage and family practices, politics, and status differentiation. Contingent on the social structure is the ideology or belief system, including ideas, beliefs, and values, both secular and sacred. Most anthropologists believe that the ideology is an extremely important part of culture, in part because it rationalizes and
reinforces the economy and social structure. Ideology enables people to make sense of their world and to share their common world view through symbols. As such, ideology includes sacred concepts from religion as well as secular concepts (with symbolic components) like health or sexual attractiveness.

A culture is an integrated system: A change in one part causes changes in the other layers. The materialist model indicates that the direction of causal change is from the bottom layer upward (the solid arrows in Figure 3). An economic change, like the invention of agriculture or the Industrial Revolution, has drastic implications for population size, social organization, and associated beliefs. On the other hand, most people within a society tend to explain things from the top down. Of course, people can hold contradictory beliefs and values that are not necessarily linked to their actual behavior.

CULTURAL PREDISPOSITIONS TO OBESITY

Obesity is related to culture in all three levels of the materialist model.

Productive Economy and Food Scarcity

Humans have evolved a wide variety of cultural mechanisms to avoid or minimize the effects of food scarcities. The most important adaptation to scarcity is the evolution of systems of food production and storage. As noted previously, the primary weakness of preindustrial systems of food production is a vulnerability to food shortages. The universality of food shortages discussed above is largely because of the technological limitations in food production and storage.

On the other hand, the energy-intensive (and energy-inefficient) system of agriculture in industrialized societies produces large surpluses of food. These agricultural surpluses are seldom used to eliminate hunger; rather they are used to transform and process foods in particular ways—often to add calories, fat, or salt. For example, we feed “extra” grain to beef cattle to increase the proportion of fat in their meat; consumers say that this overfeeding makes the meat “juicy.” Similarly, potatoes are transformed into French fries and potato chips. From a nutritional standpoint the original vegetable is actually reduced to a vehicle for fat and salt. Endemic hunger exists even in the most affluent societies, where it is caused not by poor production but by inequitable distribution.

Technological changes associated with cultural evolution almost exclusively reduce the energy requirements of human labor. In general, cultural evolution has meant the harnessing of greater amounts of energy through technology (one aspect of the mode of production). To prevent obesity, people in developed societies must burn energy through daily workouts rather than daily work.

Reproduction and Energy Expenditure

The concept of the mode of reproduction is also related to predispositions to obesity. Pregnancy and lactation represent serious and continuing energy demands on women in societies that have not undergone the demographic transition. Industrial and nonindustrial societies differ in terms of the historical changes from high to low fertility and the reduction of mortality attributable to infectious disease. Higher numbers of pregnancies and longer periods of breast-feeding place high energy demands on women, especially if they cannot supplement their diet during these critical periods. As a result, women suffer greater risk of protein-energy malnutrition. Conversely, with fewer pregnancies and the reduction of breast-feeding, women in industrial societies have less opportunity to mobilize peripheral fat stores and suffer greater risk of obesity. In contemporary societies like the United States, mothers in lower social classes tend to have more children and do not feed their infants with bottled formula rather than breast milk. Use of infant formulas allows women to retain their fat stores. These different social patterns in reproduction may play a role in the inverse association of obesity and social class for females.

Social Structure and Obesity

Characteristics of social organization may function as predispositions to obesity. In highly stratified and culturally heterogeneous societies, the distribution of obesity is associated with ethnicity and social class. Marriage patterns typically illustrate ethnic or social class endogamy, that is, marriage within the group. In the United States, members of ethnic minorities choose marriage partners from the same group at extremely high rates. This social practice may concentrate the genetic predispositions to conditions like obesity in particular subpopulations. Similarly, data suggest a pattern of “assortative mating” by social class as well as body type (particularly stature), which may be related to the genetic etiology of obesity. Genetic admixture with Native American groups of the Southwest has been suggested as a cause of elevated rates of type 2 diabetes mellitus and obesity among Mexican Americans (Gardner et al. 1984).

The pervasive and complex relationship between obesity and social class, or socioeconomic status (SES),
is important. SES is related to particular behavior patterns that cause obesity. This statement underemphasizes the fact that these learned behaviors are characteristic of particular social groups or classes. In other words, the cultural patterns of social class groups are primary, not the individual behaviors themselves.

From a cross-cultural perspective, the general association between obesity and social position is positive: The groups with greater access to economic resources have higher rates of obesity. This pattern is logical and expected because socially dominant groups with better access to strategic resources should have better nutrition, better health, and consequently greater reproductive success.

As discussed earlier, the remarkable and important exception is women in industrial societies, who exhibit a strong inverse correlation between obesity and social class. The challenge for researchers is to explain why and how upper-class women in industrial societies remain thin. For many women the ideal of thinness requires considerable effort, restrained eating, and often resources invested in exercise. The social origins of the ideal of thinness in American women are associated with historical changes in women's economic roles, marriage patterns, and family size.

Low-income people in industrial societies might be considered well off by worldwide standards, and this access to resources is reflected in obesity prevalences. Yet in the context of perceived relative deprivation and economic stability, many people in societies like the United States live in stressful conditions—just one paycheck away from hunger. In terms of life priorities, economic security may be a higher and more immediate objective than more elusive goals like an "ideal body" or even long-term health. Amid the daily stresses of poverty, food may be the most common avenue of pleasure and psychological relief. Ethnographic studies of low-income urban black communities in the United States show a social emphasis on food sharing as a tool for marking family ties and demonstrating community cohesiveness.

Cultural Beliefs as Predispositions to Obesity

The third and possibly most important level of the model of culture shown in Figure 3 encompasses cultural symbols, beliefs, and values. Aspects of ideology relevant to the etiology of obesity include the symbolic meaning of fatness, ideal body types, and perceived risks of food shortages.

Fatness is symbolically linked to psychological dimensions, such as self-worth and sexuality, in many societies of the world, but the nature of that symbolic association is not constant. In mainstream U.S. culture, obesity is socially stigmatized, but for most cultures of the world, fatness is viewed as a welcome sign of health and prosperity. Given the rarity of obesity in preindustrial societies, it is not surprising that they lack etymological terms for obesity. Much more attention is placed on "thinness" as a symptom of starvation, like among the !Kung San (Lee 1979), or in contemporary Africa as a sign of AIDS (sometimes called "the slim disease"). In the context of the AIDS epidemic, plumpness is indeed a marker of health.

Perhaps it is large body size, rather than obesity per se, that is admired as a symbol of health, prestige, prosperity, or maternity in agricultural societies. The Tiv of Nigeria, for example, distinguish between a very positive category, "too big" (keke), and an unpleasant condition "to grow fat" (eker) (Bohannan and Bohannan 1969). The first is a compliment because it is a sign of prosperity; the second is a rare and undesirable condition.

For women, fatness may also be a symbol of maternity and nurturance. In traditional societies in which women attain status only through motherhood, this symbolic association increases the cultural acceptability of fatness. A fat woman, symbolically, is well taken care of, and in turn she takes good care of her children. Fellahin Arabs in Egypt describe the proper woman as fat because she has more room to bear the child, lactates abundantly, and gives warmth to her children. The cultural ideal of thinness in industrial societies, in contrast, is found where motherhood is not the sole or even primary means of status attainment for woman. The idea that fat babies and children are healthy children is very widespread. Food can be treated as a symbol of love and nurturance; in some cultures it may be impolite for a guest to refuse food that has been offered, but it is taboo to refuse food from one's mother.

In the industrialized United States, ethnic variation in culturally accepted definitions of obesity is significant. Some Mexican Americans have coined a new term, gordura mala (bad fatness), because the original term gordura continues to have positive cultural connotations (Ritenbaugh 1982). For this group cultural identity has a stronger and independent effect on risk of obesity than socioeconomic status. An ethnographic study of the cultural meanings of weight in a Puerto Rican community in Philadelphia (Massara 1989) documents the positive associations and lack of social stigma of obesity. Additional quantitative evidence suggests significant differences in ideal body preferences between this ethnic community and mainstream American culture. Positive evaluations of fatness may also occur among lower-class African Americans and Mexican Americans. These ethnic groups are heterogeneous,
however, and upwardly mobile ethnic groups tend to resemble mainstream American culture in their attitudes about obesity and ideal body shape.

In a low-income housing project in Atlanta, Georgia, a sociological interviewer was asked by a group of obese black women, “Don’t you know how hard it is to keep this weight on?” Their views of the advantages of a large body included being given respect and reduced chances of being bothered by young “toughs” in the neighborhood. For these women, fatness was part of their positive self-identity, and if a friend lost weight she was thought to look sickly. Among lower-income groups, the perceived risk of a food shortage—not for the society as a whole but for the immediate family—may be very important, especially if lack of food was personally experienced in the past. The perception of the risk of future “bad times” and insufficient food is the reality upon which people act.

FATNESS AND CROSS-CULTURAL STANDARDS OF BEAUTY IN WOMEN

Culturally defined standards of beauty vary between societies. In a classic example, Malcolm (1925) describes the custom of “fattening huts” for elite Efik pubescent girls in traditional Nigeria. A girl spent up to 2 years in seclusion and at the end of this rite of passage possessed symbols of womanhood and marriage-ability—a three-tiered hairstyle, clitoridectomy, and fatness. Fatness was a primary criterion of beauty as it was defined by the elite, who alone had the economic resources to participate in this custom. Similarly, fatter brides demand significantly higher bridewealth payments among the Kipsigis of Kenya (Borgerhoff Mulder 1988).

Among the Havasupai of the American Southwest, if a girl is thin at puberty, a fat woman “stands” (places her foot) on the girl’s back so she will become attractively plump. In this society, fat legs and, to a lesser extent, arms are considered essential to beauty. The Tarahumara of northern Mexico consider fat legs a fundamental aspect of the ideal feminine body; an attractive woman is called a “beautiful thigh.” Among the Amhara of Ethiopia in northern East Africa, thin hips are called “dog hips” in a typical insult (Messing 1957).

It is difficult to know how widespread among the world’s cultures is the association of plumpness and beauty. A preliminary indication can be found through a cross-cultural survey based on data from the Human Relations Area Files (a cross-indexed compilation of ethnographic information on more than 300 of the most thoroughly studied societies). The results of this survey are summarized in Table 1. Although conclusions made from these data are weak because of the small number and possibly nonrepresentative nature of the cases, as well as the fact that most ethnographies are difficult to code on this variable, some preliminary generalizations are possible. Cultural standards of beauty do not refer to physical extremes. No society on record has an ideal of extreme obesity. On the other hand, the desirability of “plumpness” or being “filled out” is found in 81 percent of the societies for which this variable can be coded. This standard, which probably includes the clinical categories of overweight and mild obesity, apparently refers to the desirability of fat deposits, particularly on the hips and legs.

Although cross-cultural variation is evident in standards of beauty, this variation falls within a certain range. American ideals of thinness occur in a setting in which it is easy to become fat, and preference for plumpness occurs in settings in which it is easy to remain lean. In context, both standards require the investment of individual effort and economic resources; furthermore, each in its context involves a display of wealth. Cultural beliefs about attractive body shape in mainstream American culture place pressure on females to lose weight and are involved in the etiology of anorexia and bulimia.

TABLE 1 Cross-Cultural Standards of Female Beauty

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IDEAL BODY-TYPE, SIZE, AND SYMBOLIC POWER IN MEN

The ethnographic record concerning body preferences for males is extremely weak, yet preliminary research suggests a universal preference for a muscular physique and for tall or moderately tall stature. In general, members of all human societies appear to admire large
body size as an attribute of attractiveness in men, because it symbolizes health, economic success, political power, and social status. “Big men,” political leaders in tribal New Guinea, are described by their constituents in terms of their size and physical well-being: He is a man “whose skin swells with ‘grease’ [fat] underneath” (Strahern 1971). The spiritual power (mana) and noble breeding of a Polynesian chief is expected to be seen in his large size. In American society vestiges of a similar idea remain; for example, a “fat cat” is a wealthy and powerful man who can “throw his weight around.” The political metaphor of weight and power in American society has been explored by social historians. Most male college students in the U.S., in contrast with women, want to gain weight because it is equivalent to gaining muscle mass and physical power in a process called “bulking up.”

CONCLUSIONS

Two sets of conclusions can be drawn from this discussion of culture and its relationship to obesity—one practical and one theoretical. First, recognition of cultural variation in beliefs and behaviors related to obesity needs to be incorporated into health programs aimed at reducing the prevalence of obesity. The second conclusion regards the need for more research on the role of culture, as it interacts with genes, on the etiology of obesity.

The Importance of Culture in Health Interventions

Existing cultural beliefs must be taken into account in the design and implementation of health promotion projects. In an obesity prevention campaign in a Zulu community outside of Durban, one health education poster depicted an obese woman and an overloaded truck with a flat tire, with a caption “Both carry too much weight.” Another poster showed a slender woman easily sweeping under a table next to an obese woman who was using the table for support; it had the caption “Who do you prefer to look like?” The intended message of these posters was misinterpreted by the community because of a cultural connection between obesity and social status. The woman in the first poster was perceived to be rich and happy, since she was not only fat but had a truck overflowing with her possessions. The second poster was perceived as a scene of an affluent mistress directing her underfed servant.

Health interventions must be culturally acceptable, and we cannot assume that people place the highest priority on their health. The idea of reducing risk factors for chronic diseases that may develop later may not be an effective strategy for populations who do not feel empowered or who live in a fundamentally risky world.

Implications for the Etiology of Obesity

The frequency of past food shortages, the social distribution of obesity, and the cultural meanings of fatness, when taken together, suggest a biocultural hypothesis of the evolution of obesity. Both genetic and cultural predispositions to obesity may be products of the same evolutionary pressures, involving two related processes: first, genetic traits that cause fatness were selected because they improved chances of survival in the face of food scarcities, particularly for pregnant and nursing women; second, in the context of unequal access to food, fatness may have been socially selected because it is a cultural symbol of social prestige and an index of general health. Under Western conditions of abundance, our biological tendency to regulate body weight at levels above our ideal cannot be easily controlled even with a reversal of the widespread cultural ideal of plumpness.

This evolutionary model is obviously congruent with the current etiological theory about obesity, which combines genetic predispositions with “environmental” causes. Recent research both in epidemiology and human laboratory research demonstrates without a doubt the central role of genetic heredity in the etiology of obesity. Similar genetic evidence exists for variables like the distribution of fat on the body and basal metabolic rates. To an anthropologist, these important studies are welcome and expected.

The recent advances in understanding the genetic bases of obesity remind us, however, of our ignorance about the precise role of the “environment.” One problem is that “environment” has been poorly defined and treated as if it were idiosyncratic for every individual or family. Another problem is that “environment” is essentially treated as a residual category—one that cannot be explained by genetic heredity. This paper has attempted to show how the anthropological concept of culture may be useful in conceptualization of the different components of the “environment” and the generation of hypotheses for future research in behavioral medicine.

The most convincing demonstrations of a strong genetic component for obesity have been in populations with relatively high levels of cultural homogeneity. In social contexts like Denmark, Iowa, or among Pima Indians, the influence of culture—including learned behaviors and beliefs—is minimized by the sample selected for study in order to emphasize the importance
of genotypical variation. Essentially, cultural variation has been treated as if it were “noise.” An essential goal in future research must be the identification of specific cultural factors—whether economic, social, or ideological—that predispose people to obesity.

From the standpoint of the prevention of obesity, it is critical to stress that genetic predisposition is not destiny. Genetic predispositions to obesity have apparently been maintained in populations throughout most of our species’ history, yet it has rarely been expressed phenotypically. Culture is adaptive because it can be changed. Habitual patterns of behavior—of an individual or an entire society—can be changed to reduce morbidity and mortality linked to obesity and overweight. These changes must include social and political efforts to reduce the risk of hunger and food scarcity, even in affluent societies.

REFERENCES


