Culture, Disease, and Healing

Studies in Medical Anthropology

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To the memory of six
who pioneered in
medical anthropology

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awareness of history and at times an *historical* (diachronic) approach, and an awareness of the need to understand the dynamic equilibrium achieved by a population and culture under study, that is, a *structural-functional* (synchronic) approach. For despite the apparently undying disputations in some professional anthropological circles, I find that for specified purposes all four approaches—ecological, evolutionary, historical, and structural-functional—are useful, productive, and, for the "whole picture," indispensable. The selections in every section of this book illustrate this statement.

To illustrate some approaches in anthropology to the study of human adaptation to health and disease, we present first a brief overview of the present state of research and thinking in medical anthropology preceded by an even briefer historical sketch of developments leading up to the formation of this field. This is followed by a statement on the concepts of health and disease and some of their biological, cultural, and social determinants from a medical-ecological perspective. Then we find a seminal statement on the place of medical anthropology within general anthropology with a demonstration of how it can serve as a mediating nexus between biological and cultural aspects of anthropology in the study of human adaptation. This is followed by a much-needed analysis of the theoretical orientations of a series of medical anthropologists from Rivers to contemporary ecologically oriented scholars. The section concludes with an approach to the ethnographic study of medicine and medical system in a culture within an ecological framework, but incorporating both an *emic* and *etic* position on the assumption that both an "inside" and an "outside" view are required for the total medical ethnography.

1 The Field of Medical Anthropology

Richard W. Lieban

This first selection by Richard Lieban provides a convenient overview of the field of medical anthropology. It begins with a brief historical perspective. The author then proceeds to discuss four major areas of medical anthropology: ecology and epidemiology, ethnomedicine, medical aspects of social systems, and medicine and culture change. There is a decided emphasis in these discussions upon the applied features of medical anthropology, but the basic scientific problems in these areas are nevertheless brought into sharp focus. Many of the problems and concepts that are summarized in this selection are illustrated in various places throughout the present volume. Lieban states that he is deliberately eschewing some aspects of medical anthropology that are covered elsewhere in the handbook from which this paper is adapted. Even so, my own tendency is to view the scope of medical anthropology rather more extensively than does Lieban, although this in no way detracts from the value of this quite useful review and organization of the literature. Lieban is admittedly selective but the novice will begin to learn, as he reads this and the succeeding selections in this book, that the concerns of medical anthropology articulate with all subdisciplines and topical areas of interest in general anthropology. In fact, one objective of the present anthology is to illustrate, at least partially, that very assumption.

Reprinted with abridgments from Richard W. Lieban, 1974, "Medical Anthropology," Chapter 24 in John J. Honigmann, ed, *Handbook of Social and Cultural Anthropology*, copyright © 1973 by Rand McNally College Publishing Company, with permission of the author and Rand McNally College Publishing Company, Chicago, pp. 1031–1072.

INTRODUCTION

Health and disease are measures of the effectiveness with which human groups, combining biological and cultural resources, adapt to their environments. The fact that health and disease are related to cultural as well as biological factors

underlies the convergence of medical and cultural anthropological interests.

Modern medicine has had a primarily biological orientation (Jaco 1958), but basic concern with social and cultural aspects of the maintenance of health and the etiology of disease is deeply rooted in medical history. Ever since the earliest medical systems of which we have historical knowledge, variations in health have been connected with variations in social circumstances and habit patterns. (For example, see Rosen 1963, Dubos 1965, Veith 1966.) Interest in social and cultural dimensions of illness reached a peak in the West during the nineteenth century, stimulated by public health problems associated with the Industrial Revolution (Dubos 1959). This was the period of an impressive development of social medicine, led by such figures as Villerme in France and Virchow in Germany (Dubos 1959, 1965; Rosen 1963). Virchow and others conceived of medicine as a social science, both in a basic and an applied sense. That is, they not only emphasized the need for scientific investigations of the impact of social and economic conditions on health and disease, but they also stressed that a society had the obligation to assure the health of its members, and they advocated social intervention to promote health and combat disease (Rosen 1963). In that perspective, Virchow referred to politics as "nothing but medicine on a grand scale."

Beginning in the latter part of the nineteenth century, modern medicine came to be increasingly preoccupied with specific microorganic agents as the causes of disease (Galdston 1963, Dubos 1959, Polgar 1968). With attention concentrated so heavily on direct, immediate causes of disease, such as the effect of microbes on body tissue, interest in the social and cultural context of medicine declined (Galdston 1959). In recent years, however, this has changed, and there has been a marked upsurge in research by both medical and social scientists on social and cultural aspects of health and disease.

In anthropology this development has been stimulated by problems connected with Western medical programs in developing areas and by current trends in Western medicine itself (Scotch 1963). Undoubtedly changes that have occurred in the relative importance of certain threats to health have increased the need for medically related research in anthropology and other social sciences. Galdston (1963) discusses the point: "The infectious diseases have been all but 'conquered.' Now there is emergent a new pathodemography. The disorders and diseases now dominant are due not to specific pathogens, but rather to economic, social, political, and cultural factors. The resultant pathology is manifest in physiological, functional, behavioral, and psychological disorders." Under the circumstances, Galdston sees the need for more anthropological knowledge in medicine, which will be "increasingly confronted by pathogenic forces that are ecological, social, and cultural in nature."

Much of the development of medical anthropology has occurred since World War II. The beginnings of major anthropological involvement in medical problems were cogently reviewed by Caudill (1953) in his landmark paper on applied anthropology in medicine. Prior to that time, descriptions of etiological beliefs and medical practices in simpler societies had been important components of certain ethnography (e.g., Evans-Pritchard 1937, Gillin 1948), and Rivers (1924) and Clements (1932) had produced substantial works on the worldwide distribution of etiological concepts. But even in 1945 Ackerknecht could write about the serious neglect of medicine in much of the ethnographic literature available up to that time, and when Caudill (1953) wrote his review, involvement of anthropologists and other social scientists in health programs and medical research and education was still something of a novelty. Since then the situation has changed considerably, and there has been a marked increase in work by anthropologists and other social scientists in medicine and medically related areas. A good idea of the scope and volume of research during what might loosely be considered the first decade of substantial growth in medical anthropology can be gained from excellent review articles by Polgar (1962) and Scotch (1963). A cogent summary and analysis of developments in subsequent years is provided by Fabrega (1972).

The rapid emergence of substantial interest in social and cultural aspects of medicine among anthropologists of diverse training, theoretical and methodological orientations, and particular problem interests has created something of an identity problem for medical anthropology. The field has been viewed from a wide range of perspectives. For example, Weaver (1968) sees it as a branch of applied anthropology; Alland (1966, 1970) emphasizes its potential contribution to basic research on human evolution. One way of approaching a definition could be on a purely operational basis, in terms of what those who consider themselves engaged in medical anthropology do. A spectrum of activities could be spelled out, such as those represented by various

committees of the recently organized Society for Medical Anthropology, including anthropology and epidemiology, community medicine, medical education, nursing, pediatrics, population planning, and traditional medical systems (*Medical Anthropology Newsletter* 1969). But a circular definition of this kind avoids epistemological issues that go beyond the question of what's in a name, and it is these issues that concern us at this point. In considering them, let us return momentarily to the basis for the intersection of medical and anthropological interests.

Physicians and anthropologists have intersecting interests because health and disease are related not only to biological factors, but also to people's cultural resources and the social behavior that utilizes these resources. As Ackerknecht (1947) defines the situation, "disease and its treatment are only in the abstract purely biological processes ... such facts as whether a person gets sick at all, what kinds of disease he acquires and what kind of treatment he receives depend largely on social factors."

In the junction of physicians' interests with those of anthropologists, the physician's primary concern is likely to be with the ways in which human behavior affects the maintenance of health and the occurrence and control of disease (Roemer 1959). Medical anthropologists have a major involvement in research on these problems, primarily in applied anthropology and etiological and epidemiological studies. But there is another side of the picture, in which problems are defined not by the effects of human behavior on the states of health and disease, but by the indications about human behavior that can be discerned in responses to the states of health and disease. Health and disease are fundamentally connected with the reproduction, quality, preservation, and loss of life. In view of the significance of these phenomena for human societies, it is not surprising that an anthropological study of health and the occurrence and means of coping with disease can involve one deeply in the manner in which people perceive their world, in the characteristics of human social systems, and in social values. In this perspective, medical anthropology is not only a way of viewing the states of health and disease in society, but a way of viewing society itself. ...

... Thus the anthropological study of social and cultural influences on health and disease includes not only subjects of immediate therapeutic relevance, but phenomena that have special interest because of their effects on human ecology and the course of human evolution; and it is not only medical personnel that is the subject of medical anthropology, but society at large, as it relates to health and medical problems.

... The same behavior, pivotal from the standpoint of medical anthropology, can be studied as it affects the state of health or disease in a society, and as a response to a medical situation that is revelatory of the attitudes, beliefs, and customary actions of a group.

Indications are that the stressful reactions of individuals who are convinced that they are the victims of sorcery, witchcraft, or axiomatic punishment for violations of taboos can lead to their illness and death (Cannon 1942, Lester 1972). In such cases, culture is pathogenic. And regardless of the causes of an illness, once it is attributed to magical attack, this diagnosis can determine such matters as the kind of practitioner who will be consulted for treatment and the therapy that will be used (Lieban 1967). In these respects, behavior based on certain cultural beliefs can be studied in relation to its effects on the medical situation. But such behavior can also be studied for its wider social implications.

When members of a society regard illness as a sanction, for example, attributions of incidences of illness to the work of enemies or to punishment for deviation from norms reflect strains and conflicts in the social system (Evans-Pritchard 1937; Middleton and Winter, eds., 1963; Marwick 1965). And such attributions can indicate deficiencies in or the absence of other sanctions when strains and conflicts occur (B. Whiting 1950, Swanson 1960, Lieban 1967). Here medical phenomena become the means of understanding social phenomena rather than vice versa.

In such cases, the wider ramifications of medical phenomena may illustrate human behavior under conditions of conflict and inadequate social sanctions. But in cases of this kind the findings of medical anthropology are more than illustrative. For the ways in which medical phenomena are linked to behavior in these social circumstances, and the reasons they are linked as they are, are in themselves significant aspects of such behavior.

Medical anthropology, then, encompasses the study of medical phenomena as they are influenced by social and cultural features, and social and cultural phenomena as they are illuminated by their medical aspects. These distinctions may be seen as two facets of a set of interrelated phenomena. But depending on the nature of the study and the interests of the investigator, one or

the other at times may receive greater emphasis or be the focus of attention.

I shall not try to provide an exhaustive survey of the voluminous literature pertinent to medical anthropology within the limited scope of this chapter (useful bibliographies may be found in Caudill 1953, Rosen and Wellin 1959, Polgar 1962, Pearsall 1963, Simmons 1963, Scotch 1963, Mechanic (1968), and Fabrega (1972). Rather than attempt the very condensed synthesis that such a strategy would require, I shall discuss somewhat selectively four major areas of medical anthropology, ecology and epidemiology, ethnomedicine, medical aspects of social systems, and medicine and culture change—the problems encountered in these areas, approaches to these problems, and relevant research findings. . . .

ECOLOGY AND EPIDEMIOLOGY

In the study of medical aspects of the adaptation and maladaptation of human groups to their environments, cultural factors are of major importance. Consider Jacques May's (1960) experience as an epidemiologist in a village in China before World War II. May observed that some of the villagers were seriously affected by a heavy infestation of hookworm, while others were not. An investigation showed that almost all the hookworm patients were rice growers; there were no rice cultivators among those not ill with the malady. The rice cultivators worked in mud mixed with night soil, which helped explain the infestation of hookworm larvae. The other villagers were engaged in silkworm farming, and spent their working days on ladders tending mulberry leaves. Here disease boundaries and cultural distinctions virtually coincided. In a case such as this, the effects of culture on the prevalence of disease are striking, but it is also apparent that the hookworm infestation was part of a complex ecosystem involving relationships between human and nonhuman organisms and their environments.

The influence of culture on occurrences of disease in ecosystems that include human beings is contingent on a variety of factors with which culturally oriented behavior is linked. An interesting exploration of the intricacies of such linkages is provided by John Whiting's (1964) analysis of the parts that postpartum sexual taboos and late weaning may play in protecting infants against kwashiorkor. Whiting notes that kwashiorkor is largely confined to areas of high temperatures and humidity, conditions conducive to the growing of root and fruit crops low in protein. In societies dependent on such foods, he observes, a lactating mother may help prevent the reduction of the already low protein values of her milk—a reduction that could lead to illness for her nursing child—so long as she avoids another pregnancy.

He also points out that the prevention of pregnancy in such societies, without alternative means of contraception, generally is accomplished by abstinence from sexual intercourse. In essence, as Whiting sees it, in these circumstances prolonged postpartum taboos are cultural practices that could have the effect of reducing the frequency of kwashiorkor both by prolonging the nursing period and by ensuring that the protein content of the lactating mother's milk is not lowered below the danger point. Here cultural practices are seen as prophylactic in an ecological situation produced by the interrelationship of certain cultural, biological, and physical variables.

The ecological approach, characterized by comprehensive attention to the mutual relations between organisms and their environment, brings to medicine and public health a concern with multiple causes (Gregg 1956, Gordon 1958). It also focuses attention on multiple effects of human actions that alter the relationship between people and their environment, often with important medical consequences. This, of course, is a central contemporary issue in industrial societies, where various forms of environmental modification threaten health. It also can be a paramount consideration in assessing the net value of economic growth projects in developing societies. The construction of new irrigation systems in arid areas such as Egypt has augmented food production, but it also has increased the incidence of schistosomiasis (bilharziasis), a disease carried by a waterborne fluke (Read 1966, Dubos 1965, Alland 1966). Schistosomiasis has been endemic in the Nile Valley for centuries, and in view of the opportunity for spread of the disease afforded by the new irrigation works, it has been predicted that the new Aswan High Dam may prove to be a liability rather than an asset (van der Schalie 1969).

Health ramifications are important criteria of the effects of cultural practices on the adaptation of human groups to their environments. The adaptive value of human behavior is not determined simply by assessing the advantages this behavior offers a population in its relationship with its environment,

but also by looking for detrimental consequences of the behavior and weighing gains against losses (Alland 1966, 1967, 1970). Health figures significantly when such an ecological balance sheet is calculated, as the spread of schistosomiasis associated with the spread of irrigation agriculture in certain areas has shown. (For other examples of increases in the prevalence of disease as the results of development, see Hughes and Hunter 1970.)

Changes in the relationship between human populations and disease parasites have been brought about by a combination of cultural and biological processes. Concentrated populations, for example, are more vulnerable to epidemics than dispersed ones (Alland 1969, 1970; Kunstadter 1969). It seems unlikely that parasites capable of producing epidemics could have maintained themselves with man as their sole host before the development of agriculture, since in relatively small, scattered hunting and gathering societies there would be few, if any, potential hosts available once the disease had run its course within a group (Polgar 1964). The development of agricultural communities, accompanied by an increase in trade, greatly enlarged the supply of potential victims. A related example is to be found in unbroken tropical forests, which offer an inhospitable environment for the malaria vector, *Anopheles gambiae*, since the mosquito cannot breed in very shaded water. The introduction of agriculture into West Africa necessitated clearing the tropical forest, and the consequent open swamps afforded breeding places for malarial mosquitoes, with a resulting increase in disease incidence (Livingstone 1958). And cultural developments that led to the concentration of populations in preindustrial cities and intercontinental contacts between peoples also provided the opportunity for widespread epidemics (Polgar 1964, Armelagos 1967).

Through their effects on changes in the relationship between human populations and disease parasites, cultural evolutionary developments such as these can be linked to biological evolutionary changes in both hosts and parasites. A number of observers have pointed out that since parasites require hosts, parasites deleterious enough to threaten elimination of hosts also threaten to eliminate themselves (Dubos 1959, 1965; Polgar 1964; Gordon 1958; Alland 1966). Under these circumstances, when a highly virulent parasite is introduced into a human population, there are selective pressures on the parasitic population to produce a less destructive strain able to live in accommodation with its hosts while serving its own needs (Dubos 1959). As far as evolutionary changes in the host population are concerned, exposure to the parasite will exercise selective pressure in favor of genetic endowments resistant to pathogens. Livingstone (1958) has impressively analyzed a case in point, relating the increase of malaria in West Africa, discussed above, to the spread of the sickle-cell gene among populations of the area, since the heterozygote for this gene is resistant to falciparum malaria. In a later analysis of data from sixty societies in both East and West Africa, Wiesenfeld (1967) found that increased dependence on agriculture, accompanied by increased exposure to malarial parasitism, was associated with rising frequency of the sickle-cell trait.

Some individuals homozygous for the sickle-cell gene die young from sickle-cell anemia, but in malarial areas this pernicious effect of the gene on a population's adaptation to its environment is offset by the immunity to malaria that heterozygous individuals possess (Medawar 1960). When malaria is eradicated, however, the advantage of the gene for the population that possesses it is lost, while for those homozygous for the gene the negative consequence, sickle-cell anemia, remains.

The loss of selective advantage of genes under changed environmental conditions is a problem that has interested the geneticist Neel (1962), who believes it likely that in this respect the gene (or genes) responsible for diabetes mellitus has undergone effects similar to those of the sickle-cell gene. Neel calls the genotype for diabetes "thrifty" because there is evidence that in the early years of life the diabetes genotype is exceptionally efficient in the intake and/or utilization of food. Neel feels that such a genotype would have been advantageous when all human groups consisted of hunters and gatherers whose supply was variable, since in times of temporary abundance of food it would enable individuals who had it to store up extra adipose reserve against periods of acute food shortage. (Recent data on contemporary hunter-gatherers indicate that Neel may have overestimated earlier food supply fluctuations (Dunn 1968).) Neel sees indications that this capability of the diabetic genotype is due to the fact that it is distinguished at the outset by greater than normal availability of effective circulating insulin at some stage in the cycle of responses that follow food intake. He then asks, "How to reconcile this with the relative insufficiency of later years?" His

hypothesis is that the normal metabolism of glucose balances insulin and anti-insulins.

In keeping with the usual mechanisms operative in physiologic balances, we may theorize that in the individual predisposed to diabetes, the postulated increased ability in the early years of life to release insulin provokes in time a relative overproduction of its antagonist. There is initially in those genetically predisposed to diabetes a balance between increased insulin production and an increased production of antagonist. Not until this balance is overcome by excessive antagonist production does clinical diabetes develop.

In Neel's view, civilization has brought an increased frequency of diabetes associated with increased mean caloric intake and/or decreased physical activity, resulting in increased stimulation of insulin and its antagonist. According to this hypothesis, then, cultural evolution has had the effect of transforming a genetic advantage into a serious liability (see Smith 1970).

Social and Cultural Aspects of Epidemiology

... Epidemiology is essentially devoted to selective distributions of disease and their meanings (Francis 1959). Epidemiological units of investigation are populations and samples of populations rather than clinical samples (Mechanic 1968). Epidemiology is both descriptive and analytic (Scotch 1963), and the field has become increasingly concerned with the origin and cause of disease rather than with its distribution alone (Suchman 1968). In this connection, some observers feel that the significant contributions made by epidemiology have stemmed from analytical rather than descriptive studies, and they are critical of the dichotomy made by some between "epidemiological" and "etiological" investigations (Cassel, Patrick, and Jenkins 1960).

Epidemiology has a close relationship to ecology. ... Social and cultural factors, then, may help determine disease etiology and distribution through their influence on the relationship between a human population and its natural environment, or through their direct influence on the health of the population.

Social and cultural distinctions associated with differences in age, sex, occupation, class, ethnicity, and community can have significant effects on epidemiological phenomena.

Age Differences

The incidence of numerous actute infections is highest in childhood, indicating that as people grow older they develop immunities that decrease their vulnerability to these diseases (Francis 1959). Death rates are clearly related to age; they are relatively high in infancy, low between the ages of five and fourteen, begin rising in the age period of fifteen to nineteen, and continue to increase with age after that (Mechanic 1968). Obviously these epidemiological patterns reflect biological variations in vulnerability to sickness and death associated with age differences, but the patterns are also subject to social and cultural influences, as exemplified by significant group contrasts in infant mortality rates (Anderson 1958), depending on such factors as nutrition, sanitation, and medical care.

Sex Differences

Indications are that biological factors play a large part in sexual differences in mortality, with females having longer life expectancy. ...

The picture with respect to morbidity differences between the sexes is complex. ... But if male and female role distinctions can influence differences in response to illness, they can also influence differences in the development of illness as well, particularly if the culture emphasizes such role distinctions. Read (1966), for example, points out that osteomalacia, a disease characterized by softening of the bones and caused by a lack of sunshine, or a deficiency of vitamin D in the diet, occurs with greater frequency in parts of the world where sunshine is abundant. Speaking of the Bedouin area of Niger, she says, "These Bedouins live in black tents made of goat hair. Men, youth and children go freely, but married women spend most of their lives in tents, wearing a white shawl indoors, but outside a heavy black cloak completely covering head and body, leaving a merest slit for the eyes." The diet of the Bedouins is poor in vitamins A and D and in calcium, and osteomalacia is mainly found "among child-bearing women, who are sometimes immobilized by their pains, need a cane for support in walking and cannot mount or ride a donkey."

Occupational Differences

Studies of the effects of occupation on disease have been an important part of the epidemiological literature since the nineteenth century, when studies of social aspects of pathology indicated that susceptibility to disease varied in accordance with means of gaining a livelihood. When Snow (1936) investigated the occurrence of cholera in the area of the Broad Street pump in London in 1854, he

discovered that the incidence of cholera was high among workers in a percussion cap factory where water from the Broad Street pump was drunk, while workers at the Broad Street brewery, where beer was served instead of water, were not similarly affected.

... Occupations that entail a good deal of social psychological stress and relatively little physical activity have been linked in some studies with a relatively high occurrence of coronary heart disease (Morris 1964). Severe occupational stress among tax accountants was shown to be associated with increases in both serum cholesterol and blood clotting time (Friedman, Rosenman, and Carroll 1958; Friedman and Rosenman 1959). Although a number of investigations have shown correlations between emotional factors and cardiovascular diseases (for useful reviews of such studies, see Syme and Reeder 1967), several cautionary notes seem to be in order. First, as King (1963) points out, such diseases probably can be accounted for only by a compound etiology, involving the interaction of diet, stress, exercise, and hereditary factors. Second, while the study of tax accountants apparently indicated that specific increases in stress preceded specific physiological reactions, it is sometimes difficult to disentangle correlations from causal evidence. It has been noted that when attempts are made to establish associations of occupation with coronary artery disease, "both the disease and the occupational choice could logically result from a third variable, e.g., personality type" (Wardwell, Hyman, and Bahnson 1964).

Hughes (1963) points out that although there has been considerable research on occupational hazards to health in the epidemiology of industrial society, similar studies among primitive groups have been relatively rare. ...

Status and Ethnic Differences

A substantial part of epidemiological research has been devoted to the influence of social stratification and ethnic differences on disease prevalence and etiology. This influence can be particularly significant in nutritional maladies and in certain infectious diseases whose spread is affected by the material conditions of life. The following figures on numbers of deaths per million population during an outbreak of plague in India, which reflect caste differences in combination with ethnic differences, graphically illustrate the point: low-caste Hindus, 53.7; Brahmans, 20.7; Moslems, 13.7; Eurasians, 6.1; Jews, 5.2; Parsees, 4.6; Europeans, 0.8 (Sigerist 1961).

As the importance of infectious diseases has decreased, epidemiological interest in the effects of socioeconomic differences on the prevalence and etiology of degenerative diseases has grown. But here the influence of socioeconomic variables is not so readily apparent, and in some cases, such as studies of the relationship between social class and coronary heart disease, research findings have been contradictory (Graham 1963; Wardwell, Hyman, and Bahnson 1964). ...

Differences in disease rates of ethnic groups have been an important problem in epidemiology, and a number of studies have explored possible relationships between ethnic styles of life and degenerative pathologies. Various forms of cancer have been investigated in this light, and intergroup variations in prevalence have been found. In comparing groups in Hawaii, for example, Quisenberry (1960) found the highest frequency of cancer of the stomach among the Japanese, primary cancer of the liver among Filipino men, cancer of the breast among white women, cancer of the intestines among whites, cancer of the nasopharynx among Chinese, and cancer of the uterine cervix among Hawaiian women. But while such differences in prevalence exist, etiological explanations for them must still be speculative. Disease rates for cancer of the cervix are a case in point. They are especially low for Jewish women, and this seems to be uniform in various areas of the world (Wynder *et al.* 1954). The rates are also low among Moslem and Parsee women. Male circumcision is practiced by all these peoples, and much attention has been given to this factor in attempts to account for the low prevalence of the disease among women of these groups. Graham (1963) points out that when hygiene is poor, uncircumcised males may introduce a substance, smegma, into contact with the cervix, and since smegma has been found to be carcinogenic to the cervix of mice, the possible relationship between circumcision, smegma, and prevalence rates for cancer of the human cervix have attracted epidemiological interest. However, as Graham notes, studies investigating the problem have not produced mutually consistent results, and he questions methods employed in the research. Graham also raises the possibility that a genetic factor may be involved in differential group rates for cervix cancer.

Community Differences

Associations of disease frequency with contrasting community settings have formed another focus of epidemiological interest. As part of this interest,

social correlates of rural-urban distinctions and their implications for health have been significant problems for investigation. Scotch (1960, 1963) found that when rural and urban Zulu were compared, high blood pressure was found to occur more frequently among the urbanites, regardless of sex or age. Scotch observes that urban Zulu are subject to greater frequency and severity of social stress than rural Zulu, and he sees this stress as an important factor in the difference in rates of hypertension between the two populations. He points out that while acculturation proceeds slowly in the countryside, a considerable breakdown of traditional Zulu culture has occurred in the city; yet "acculturation to European modes of life is blocked except for piecemeal adoptions of simpler European technologies" (Scotch 1960). In his analysis, Scotch emphasizes that he does not regard urbanization in itself, or even culture change in general, as stressful enough to have a significant effect on hypertension; it is social conditions conducive to behavior that is not adaptive to the demands of urban living that do the damage.

> Thus the urban hypertensive was likely to live in an extended family, have a lower income, resort to bewitchment to explain illness and misfortune, retain traditional religious beliefs, and have a large number of children. In general the reverse was true of the nonhypertensive. In addition, the nonhypertensive was likely to attend the European clinic more frequently, and for women, to belong to the Christian church, both adaptive patterns.

Scotch's analysis is consistent with the view of Cassel, Patrick, and Jenkins (1960) that a culture adapted to rural life may increase rather than decrease stress in an urban situation because of the incongruity between the culture of the migrant and the social situation in which he lives. But there are also indications that the persistence of traditional cultural traits in situations of change need not exacerbate stress and actually may ameliorate it or its effects. For example, Jahoda (1961) found relatively little mental illness in Ghana under the stresses accompanying change there, and attributed this situation to the influence of traditional healers and similar institutions that have adapted to new circumstances. In general, there is substantial evidence that old cultural patterns are not necessarily incompatible with new institutions (see Abegglen 1958, Dore 1958, Geertz 1963, Lloyd 1968). Studies such as those of Scotch (1960) and Jahoda (1961) raise the problem of identifying circumstances when old cultural patterns are adaptive to new conditions and when they are not, and the implications of this difference for health.

ETHNOMEDICINE

Modern vs. Traditional Practices

The domain of ethnomedicine is indigenous medical features, those to which Hughes (1968) refers as "not explicitly derived from the conceptual framework of modern medicine." This does not mean that traditional medical systems are impervious to the influence of modern medicine. In the Philippines, for example, it is not unusual to hear local healers refer to "TB" or "germs." But despite such accretions, distinctive traditional qualities persist in these systems; and even when modern medical features are borrowed, they function in an alien context and can carry different connotations than they do in modern medicine (Lieban 1967; see also Halpern 1963).

In addition to "ethnomedicine," various other terms have been used to refer to the domain under discussion or parts of it: "folk medicine," "popular medicine," "popular health culture," "ethnoiatry" (Scarpa 1967), "ethnoiatrics" (Huard 1969).

Polgar (1962) has distinguished the "professional health culture" of medical practitioners from the "popular health culture" of unspecialized lay practitioners. He would include folk healers among health professionals so long as they are recognized as specialists by others in their society.

Leslie (1967) contrasts professional and popular health cultures on a different basis. He has taken a special interest in highly sophisticated indigenous medical systems that are rooted in ancient civilizations, particularly those of South Asia, and which persist today alongside modern medicine. He uses "professional health culture" to refer to the realms of practitioners in both systems, but would not include the medical sphere of folk specialists:

> A distinction should be made at the outset between *professional health cultures* and *popular health cultures*. The first term refers to the institutions, roles, values, and knowledge of highly trained practitioners of the indigenous medical systems of South Asia, as well as practitioners of cosmopolitan scientific medicine. *Popular health cultures* include the health values and knowledge, roles and practices of laymen, of specialists in folk medicine, and of laymen-specialists such as the avocational practitioners of homeopathic medicine.

Leslie also points out that while these sophisticated indigenous medical systems appeal to ancient texts,

they combine modern institutional forms —hospitals, colleges and schools of medicine, pharmaceutical companies, and so on—as well as certain modern medical concepts with those of traditional civilizations. And in a later paper (1969*b*) Leslie observes that students of the modernization process have neglected indigenous scientific traditions, "apparently assuming that the only scientific knowledge and institutions relevant to modernity are Western."

Leslie's point about the distinction between great and little medical traditions in societies such as India and China, which are the present heirs of major ancient civilizations, is well taken. (Polgar [1963] also notes the significance of this distinction.) But in view of the connections between great and little traditions generally (see, for example, Redfield 1956 and Marriott 1955*b*), it does not seem unreasonable to consider their medical aspects as contrastive but interdependent manifestations of indigenous medicine. My use of the term "modern medicine" is not intended to belittle traditional practices; I use it simply to refer to medical concepts and practices that are based on modern developments in the sciences.

Disease Classifications

Modern medicine classifies diseases in terms of a single taxonomy of universal categories. From the standpoint of this taxonomic system, a recognized disease retains its identity wherever it occurs, regardless of the cultural context. Therefore, as the use of the system has spread, it has increasingly served as a transcultural reference for diagnosis of disease.

In contrast, the disease classifications of indigenous medical systems, much more limited in the reach of their influence, tend to be confined within cultural boundaries, and in ethnomedicine there is often marked variation in disease entities recognized from culture to culture.

To begin with, in some instances phenomena considered to be symptoms of disease by some groups may be regarded as signs of health or without medical significance by others. A classic case in point is *pinta* (dyschromic spirochetosis), which is so common among northern Amazonian Indians that those whose skins are blotched with the disease are regarded as normal; a similar situation obtains with respect to yaws among the Mano of Africa (Ackerknecht 1946). Read (1966) quotes an Egyptian physician to the effect that since Egyptian villagers believe that illness must be associated with pain, bilharziasis and certain other parasitic infections are not considered to be illnesses or to require treatment. Intestinal worms are so endemic among the Thonga of Africa that they consider them necessary for digestion (Ackerknecht 1946). The same is true of Yap islanders (Saunders 1954). Some Mayan Indians in Guatemala regard worm infestation as an unpleasant but fairly normal condition, recognizing it as a problem that requires treatment only when the worms emerge through the esophagus and cause vomiting or choking (Adams 1953).

These examples do not mean that diagnosis in indigenous medical systems in general is less sensitive to or less concerned about signs of morbidity than modern medical diagnosis. It may be more or less, depending on the phenomena perceived and the significance attached to them in a particular cultural context. In his elegant analysis of disease categories among the Subanun of the southern Philippines, Frake (1961) describes a system that in some respects makes finer discriminations between symptoms of skin disease than modern medicine. The Subanun often make significant distinctions between lesions on the hands and feet and those on other parts of the body, and when it comes to certain skin diseases that they regard as extremely disfiguring, lesions hidden by clothing are categorized differently than those visible on a clothed body. . . .

Ethnomedical Therapy

Therapy in ethnomedicine is a vast subject that can be touched on only lightly here. It includes both magico-religious and mechanical and chemical procedures. Laughlin (1963) has made the point that the success of the human species is in no small measure due to the ability to cope with medical problems; and an assessment of indigenous medical systems, including those of nonliterate societies, shows an impressive array of practices that demonstrate empirical therapeutic knowledge, including trephining, bonesetting, removal of ovaries, obstetrics including caesarean section, laparotomy, uvulectomy, comparative anatomy, autopsy, cautery, inoculation, baths, poultices, inhalations, laxatives, enemas, ointments, and cupping (Ackerknecht 1942, Simmons 1955, Laughlin 1963, Huard 1969). . . .

The pharmacopoeia of ethnomedicine is copious and includes such proven drugs as quinine, opium, coca, cinchona, copaiba, curare, chaulmoogra oil, ephedrine, and rauwolfia. Quisumbing (1951) lists more than eight hundred known medicinal plants in the Philippines alone, including flora efficacious

in the treatment of a number of maladies, such as asthma, diarrhea, dysentery, malaria, diabetes, and kidney ailments, to mention only a few.

As the great medical traditions of the Mediterranean, South Asia, and China developed, they became based on secular scientific theories (Sigerist 1961, Leslie 1969*b*, Croizier 1968, Needham and Lu 1969), and simpler indigenous medical systems appear to vary in the extent to which they depend on magic and religion. Laughlin (1963) finds a relative minimization of magic in the pragmatic orientation of Eskimo-Aleut culture, yet in many cultures medical practices and religious practices are often fused (Glick 1967); and even when mechanical or chemical therapy is employed, magico-religious elements may also be an essential part of the prescription, or the treatment may be regarded as incomplete without attention to mystical factors involved in the etiology of the illness. . . .

Preventive Measures

Although preventive medicine has been seen as less important in most traditional medical systems than in modern medicine (e.g., Foster 1962), studies such as that of Colson (1969) indicate how significant preventive measures can be in a traditional medical system, and the literature shows that prophylactic practices are widely prevalent in indigenous medicine. These include both mechanical and magico-religious measures, such as bathing, massage, and rapid rewarming to prevent hypothermia, dietary restrictions, surgery, inoculation, incantations, amulets, and prayers at shrines (Laughlin 1963, Hughes 1963).

In indigenous medical systems as in modern medicine, prophylaxis is geared to etiology. Thus in many areas of the world, including Latin America and South and Southeast Asia, one finds prevalent notions, derived from Hippocratic humoral theory or comparable ideas of Indian medicine, that health depends in part on a proper balance between "hot" and "cold" (Foster 1953, 1967; Jelliffe 1956; Polgar 1962; Nash 1965; Hart 1969). (For interpretations relating this etiology in Mexican communities to the social outlook of peasants, see Foster 1967 and Ingham 1970.) Associated with this theory is the prescription of detailed precautions to maintain the equilibrium of health, such as measures to prevent chilling in a Guatemalan Mayan community: keeping oneself covered, avoiding cold water and foods that are classified as "cool," and not getting caught in the rain (Adams 1953).

Vulnerability to illness may be shielded in many ways. Thus, in some groups the name of a child is changed after someone in the family has suffered a deadly affliction, in the belief that a new name will disguise the soul of the child against attack by spirits who cause disease (Hughes 1963). With the idea that the evil eye is drawn to what is attractive, Turkish villagers protect their children by hanging unattractive objects on their clothing (Oztürk 1964). While the health value of mechanical procedures such as these may be readily apparent on an empirical basis, undoubtedly in many situations magical resources may also be prophylactically effective. In a society where belief in magical attacks may induce severe stress that can lead to illness and death (Cannon 1942), reliance on the protection of an amulet may be psychically hygienic.

Ethnomedical Specialists

When illness occurs, it may be ignored, or treated without the help of a specialist (Polgar 1962). If treatment is sought from a medical practitioner, various types of specialists may be available, including herbalists, diviners, shamans, midwives, and masseurs (e.g., Nurge 1958, Lieban 1962*b*, Maclean 1969). Therapists may specialize in only one type of skill or calling, or they may combine several in their practice (Lieban 1962*b*). While there is considerable material on distinctions among traditional therapists based on variation in specialization, there is relatively little regarding distinctions based on variation in reputation for therapeutic success. Yet this factor, as well as the perceived appropriateness of the specialization for the illness to be treated, plays an important part in determining the choice of therapists. Romano (1965) finds that some folk healers have achieved considerable fame and devoted followings among Mexican-Americans of southern Texas, while other folk healers practice in comparative obscurity. Blum and Blum (1965) describe a comparable situation with respect to folk healers in Greece. In one Philippine city, healers differ significantly in the number of patients they attract, and the most successful among them may treat up to a hundred patients a day (Lieban 1967).

Qualifications for folk medical roles vary considerably. In some cases, no formal training may be required for practitioners (Metzger and Williams 1963); in others, a long apprenticeship may be customary (Maclean 1969). In the great medical traditions of Asian civilizations, with a sophisticated literature going back beyond the beginning of

the Christian era, training was comprehensive. In India the student of Ayurvedic medicine entered into a spiritual relationship with his guru; he learned how to diagnose illness by observing his teacher, and he memorized medical texts that were explicated by the guru (Leslie 1969*a*). In China the teaching of medicine under state supervision goes back at least to the seventh century (Huard and Wong 1968), perhaps to the fifth century (Needham and Lu 1969). Chinese medicine spread to Japan in the early centuries of the Christian era, and by the eighth century a medical program was established by the Japanese. "Seven years of training was required for medicine, five years for pediatrics and surgery, and four years for eye, ear, nose and throat, or dentistry" (Bowers 1965).

Spiritual accreditation is frequently an attribute of indigenous medical roles. But this does not necessarily mean that spiritual backing obviates medical knowledge. They tend to be interrelated, as in the case of Tzeltal practitioners in Chiapas, Mexico (Metzger and Williams 1963). These practitioners are principally distinguished by their ability to "pulse," a skill that comes to the curer only as a "gift of God." Curers as a class are divided into two groups, "master curers" and "junior curers." One of the ways in which the two differ is in extent of knowledge. It is said of the junior curer that "not all is given into his hands by God," of the master curer that "all is given into his hands."

Cultural Aspects of Ethnomedicine

Up to this point we have discussed characteristics of indigenous medical systems, but we have not yet concentrated our attention on ways in which medical beliefs and behavior relate to and illuminate the cultural contexts in which they appear. The relationship between medicine and the rest of culture has been noted by Ackerknecht (1942), who said, "Medicine is nowhere independent and following its own motivations. Its character and dynamism depend on the place it takes in every cultural pattern; they depend on the pattern itself."

Concepts of disease are cultural classifications of adversity. They do not, of course, cover the whole range of misfortune a society may face, but they can reflect its members' view of misfortune in a general sense (Maclean 1969), or their specific outlook on disease and its place in their lives. Thus Frake (1961), in discussing the problem of why finer distinctions are made between certain folk disease categories than others, offers the hypothesis that "the greater the number of distinct social contexts in which a particular phenomenon must be communicated, the greater the number of different levels of contrast into which that phenomenon is classified. . . ."

The reactions of an ill person to his symptoms may express important cultural values of his society. Clark (1959) found that men in a Mexican-American community tend to be especially Spartan in responding to illness. "A man who admits to illness is not *macho* (tough and rugged). . . . Relatives and friends commend him for endurance and sometimes criticize him when he yields to an infirmity before it becomes acute." Although the relationship between responses to pain and cultural factors has been a relatively neglected subject in anthropology, work that has been done on it indicates that ethnic groups do vary in their reactions to pain, and the differences appear to reflect cultural contrasts (Wolff and Langley 1968). The work of Zborowski (1952, 1969) has been of special interest. In a well-known study (1952) he found that Jews, Italians, and "Old Americans" differed in their reactions to pain. . . .

Etiology and Diagnosis of Disease

The etiology of disease is central to any discussion of the connection between medical phenomena and their cultural settings. To begin with, in most indigenous medical systems the primary consideration in the diagnosis of disease is its cause (Glick 1967; see also Adams 1953, Alland 1964). And causality in these systems usually is sought in the relationship between the victim of illness and his surroundings as this relationship is culturally interpreted. While traditional etiologies may attribute illness to mechanical and emotional as well as magical and religious causes (Polgar 1962), and, as I have mentioned previously, the great medical traditions of ancient civilizations underwent secularization, in general magic and religion play important parts in indigenous explanations of the occurrence of disease (Hughes 1968), and in many indigenous medical systems ideas about illness and religious beliefs are all but inseparable (Glick 1967). Numerous etiologies illustrate the significance of magic and religion in traditional medical systems. . . . Since etiology is so inextricable from its sociocultural context, explanations of the occurrences of illness are at the same time representations of the world as it is experienced and comprehended by members of the society.

Thus far, I have been discussing etiologies as emic phenomena; that is, as they are perceived by the members of a group who utilize them to explain why illnesses occur. But etiological interpretations

linking the causes of illness to the culture of the group in which they occur may also be etic, made by observers who see connections between phenomena that are not necessarily perceived by anyone in the group studied. For example, Rubel (1964) has offered a hypothesis concerning the etiology of a syndrome frequently known as *susto*, which occurs among Indians and non-Indians in Latin America and among Spanish-speaking peoples of the United States. ...

MEDICAL ASPECTS OF SOCIAL SYSTEMS

Illness as Sanction

The belief that illness is a punishment for wrongdoing is widespread in human society. Where it occurs, the social order is identified with the moral order of a universe in which health depends on virtue.

The attribution of illness to misconduct may have been a very early form of social control in the development of human society (Hallowell 1963), and in Paul's view perhaps the most important latent purpose of indigenous concepts of etiology and curing is to provide sanction and support for moral and social systems (Paul 1963). The idea of punitive sickness is, of course, no stranger to Western traditions; it has been a feature of Judeo-Christian beliefs concerning the consequences of sin (Polgar 1968, Crombie 1969). And today in many non-Western societies illness is a major social sanction.

Where illness is a sanction, etiology is a stringent guide to social expectations. Hospitality, for example, is an important value in Ojibwa society, and this is underscored by the belief that failure to share generously with guests exposes the host to the threat of illness (Hallowell 1963). Among the Ganda of East Africa there is a belief that a disease called *obuko*, the symptoms of which are swelling of the cheeks, limbs, and genitals and body tremor, is caused by the violation of certain taboos (Bennett and Mugalulu-Mukiibi 1967). In this society, social proscriptions such as those forbidding parents-in-law to share prepared food with their children-in-law, or a boy to touch his female cousin, are linked to the etiology of disease. Among the Irigwe of Nigeria, men who preside over shrine houses have important authority and ritual obligations upon which Irigwe welfare depends. These obligations are also related to the etiology of disease, for it is believed that if the shrinekeepers do not fulfill their obligations, they will provoke the displeasure of ancestors and nature spirits and be subject to illness and untimely death (Sangree 1970). In this case, there are epidemiological data that can be related to etiology. Sangree was told of numerous men who had become shrinekeepers and died shortly afterward, supposedly because they had mishandled one or another ritual and had been killed by spirits. He also had access to an earlier medical survey of sleeping sickness that showed that its prevalence was highest among males in the southern part of the Irigwe territory, where Irigwe lineages that have the major ritual responsibilities are located. The survey report stated that this distribution of the disease was probably due to women's exclusion from sacred groves, which were the main areas of tsetse fly infestation, and in which a large number of southern Irigwe men were obliged to hold rituals. Given this combination of epidemiology and Irigwe etiology, the prevalence of disease would have the effect of showing how dangerously exacting the shrinekeeper's role is, and demonstrating the failings of men.

Since the belief in punitive sickness is a traditional sanction of traditional social roles, it is frequently a force for conservatism when societies are subject to pressures for change (Messing 1958, Lieban 1962*a*, Adams and Rubel 1967). And in situations where etiologies defend the existing social system, they also indicate where there are strains on the system under the impact of change. ...

In discussing punitive sickness, it is well to point out that victim and transgressor need not be one and the same person. Thus Clark's (1959) study of a Mexican-American community describes how a husband who abuses his pregnant wife may be accused of subjecting his unborn child to *susto* by his actions. The individual who violates Ojibwa food taboos endangers not only his own health, but that of his family as well (Hallowell 1963). Among the Ixil of Guatemala, displeased ancestral spirits may cause illness, and Colby and van den Berghe (1969) describe how a young man's cramps were ascribed to the fact that his mother had had an argument with his grandmother ten or more years earlier. Adams and Rubel (1967), discussing diagnosis in some Middle American Indian communities, report that if the patient himself has not been guilty of any social or ritual misdemeanor, the lives of his parents and even grandparents will be explored. An etiology of this kind, which states that others may suffer punishment for one's own transgressions, fosters the value of social interdependence. Beyond that, it widens the range of

incidences of illness that are potentially attributable to proscribed conduct and thereby increases the applicability of this kind of sanction.

The notion that the actions of one individual may result in illness or death for another can function as a sanction on the behavior of both persons in societies that subscribe to belief in sorcery and witchcraft. Kluckhohn (1962) points out that in Navaho society, a troublemaker tends to be talked about as a probable witch. The fact that the individual who "acts mean" may be accused of being a witch acts as a deterrent to hostile acts, as does its corollary: an offended person may use witchcraft to avenge himself. Similarly, Hallowell (1963) has shown how aggression in Ojibwa society is constrained by the prospect of retaliation through sorcery.

Recourse to the risk of illness as a sanction seems to carry with it certain implications about the availability or effectiveness of other means of social control in a society. The problem may be looked at in relation to cross-cultural comparative studies of witchcraft and sorcery. In an analysis of the prevalence of witchcraft in primitive societies, Swanson (1960) sees the frequent use of witchcraft in a society as indicative of a serious lack of legitimate means of social control and moral bonds. He offers the hypothesis that witchcraft will be prevalent in situations where there are intimate but "unlegitimate" social relations, "situations in which people must interact closely with one another for the achievement of common ends" and "in which the relations among people were not developed with the consent, tacit or explicit, of all concerned; or in which persons with conflicting objectives cannot resolve their differences through commonly agreed upon means such as the courts or community councils." Swanson finds strong statistical confirmation of his hypothesis in a sample of forty-nine societies. Consistent with these findings are the results of a cross-cultural study of sorcery in societies with coordinate and superordinate social controls (B. Whiting 1950). Societies with coordinate controls lack special authorities to settle disputes or punish offenders, so that the primary means of social control is retaliation by peers; in societies with superordinate controls, certain individuals possess authority to settle disputes and enforce punishment. Whiting hypothesizes that sorcery as a means of retaliation will be more important in societies with coordinate rather than superordinate social controls, and her hypothesis is statistically confirmed in a comparison of fifty non-Western societies.

These studies provide evidence that the relative prevalence of attributions of illness to magical attacks is an indicator of a society's capacity to avoid disputes and settle them when they arise through legitimate authority. Whiting approaches the problem structurally and provides important evidence that the development of political authority with jurisdiction over disputants is associated with a reduction in the importance of sorcery. But the existence of such institutionalized authority in itself does not necessarily obviate or mitigate reliance on sorcery as an explanation of illness. The effectiveness of the authority must also be considered. . . .

When illness is interpreted as a sanction, medical diagnosis is frequently also a diagnosis of the relationship of patients with those believed to be responsible for attacks against them. And if restoration of health is believed to be contingent on removing the ultimate cause of the illness, medical therapy can consist of social repair. . . .

In situations of this kind, the practitioner plays a key role in the influences of the medical system on social control. For if a medical case reveals that the risk of illness has not been an effective sanction in preventing or ameliorating social difficulties, the intervention of the healer to influence the outcome of the illness can still be a persuasive social sanction.

Illness as Deviance

We have seen that when illness is considered a social sanction, its occurrence is a sign that someone has deviated from social norms. But illness can also be seen as a form of deviance in its own right.

The position that in certain respects illness may be viewed as a type of deviance subject to social control is especially associated with the work of Parsons (1951, 1953, 1958, 1964; Parsons and Fox 1952). He points out that a high incidence of illness is dysfunctional for a social system. Therefore, a society has a functional interest in exercising whatever controls it can to minimize illness. This would be true even if illness were in no sense an expression of motivated behavior. But in fact in various ways motivation is involved in the etiology of numerous illnesses and in receptivity to therapeutic influence. This fact increases the significance of illness for the social system, which requires its members to have the capacity and be motivated to perform social roles that may be necessary for the maintenance or development of the system. Although Parsons (1958) has tended to emphasize mental or psychosomatic illnesses as forms of

deviance, he has also made it clear that his thesis is applicable to other illnesses as well: "As we have already emphasized, illness is very often motivational in origin. Even in those instances where the *etiology* of the disorder is primarily physiochemical, the nature and severity of symptoms and the rate of recuperation are almost invariably influenced by the attitudes of the patient."

Parsons has particularly directed his attention to the "sick role" in the United States, which he sees defined by the following characteristics: (1) The incapacity is interpreted as involuntary; the patient is not held responsible for his condition. (2) The incapacity is regarded as a legitimate basis for exempting the sick individual from normal role obligations. (3) This waiving of obligations is conditional; it depends on recognition by the sick person that to be ill is undesirable and that he has an obligation to try to get well. (4) The sick person and those responsible for his welfare have an obligation to seek competent assistance, principally the assistance of a physician.

Parsons' approach to illness as a form of deviance and to reactions of society to the sick person has been the subject of criticism that will be considered shortly. However, he provides a valuable theoretical framework for the analysis of facets of the relationship between illness and social control, and his thesis appears to be consonant with behavior that occurs in certain kinds of medical situations. . . .

Parsons (1958) sees the complexity of life produced by the development of modern industrial society as making great demands on the capacity of the individual. As a consequence, "the motivation to retreat into ill health has been accentuated and with it the importance of effective mechanisms for coping with those who do retreat."

The favorable reception of Parsons' analysis of the sick role by Western European writers indicates that it makes sense in terms of middle-class European experience (Freidson 1961–1962), and Fox (1968) points out that in at least one respect–the threat posed by dependence and the retreat from obligations and tasks–the concept of the sick role has particular pertinence for the Soviet Union, where maximum effort and productivity are expected at all times to meet the needs of collective industrial and agricultural development, as well as for the United States, with its emphasis on values of responsibility, activity, achievement, and independence. The problem of malingering in the Soviet Union, the severe sanctions that have been enforced against it, and the strategic role of the Soviet physician in legitimating illnesses of persons absent from their jobs are instructive (Field 1957).

Yet although the sick role as conceptualized by Parsons is obviously a useful tool for analyzing medical aspects of social control in certain contexts, its applicability, as Parsons recognizes, is variable. . . .

It is apparent that socioeconomic factors can have an important influence on readiness and opportunity to play the sick role as Parsons defines it. Freidson (1961–1962), who has emphasized the limitations of Parsons' thesis when the broad range of behavior surrounding illness is considered, finds it of little relevance to illnesses such as those not considered serious enough to warrant a significant reduction in activity; those considered incurable and adjusted to as such; those that do not lead the sick person to consult a physician; and those that occur among working-class, peasant, and non-Western populations, among at least some of which being ill in a socially acceptable manner does not require professional legitimation or consultation.

Illness as an Indicator of Social System Performance

In a good part of our discussion so far we have seen how illness and responses to it can be related to the structure and maintenance of a social system, a system of interactions among the members of a society and a system that is linked to its environment. But medical phenomena also can be indicative of the performance of a social system.

The health of its population is one significant test of the effectiveness with which a society functions. Certain philosophers of the ancient world believed that physicians would not be in great demand in a society that was well governed, and Plato considered the need for many hospitals and doctors as a sign of a bad city (Dubos 1959). Soon after the Russian Revolution, when a typhus epidemic severely threatened people weakened by hunger and without soap and fuel, Lenin told the Seventh Congress of the Soviets, "Either the louse defeats socialism or socialism defeats the louse" (Field 1957). Contemporary approaches to the problem of social indicators in the United States, indexes of the state of American society, include health as one of the major areas of pertinent evidence (e.g., Bauer 1966; U.S. Department of Health, Education, and Welfare 1969).

The use of health as a gauge of a society's effectiveness in meeting the needs of its members confronts major conceptual problems. The World

Health Organization (1946) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The highly abstract criteria of this definition are difficult to operationalize. More specific, measurable criteria, such as life expectancy or morbidity, may be used to determine the state of health in a society. But this does not obviate complex questions of value. For, as Bates (1959) points out, health connotes an optimal state, and this may differ in accordance with one's goal. Is the goal length of life, maximum happiness, or maximum productivity? Beyond this there are cognitive problems, as similar mental or physical states can have dissimilar health significance for people of different groups or in different circumstances.

Given these difficultues, adequate utilization of health as a social indicator appears to be a complex, long-range objective. But steps in this direction are needed as part of a general effort to improve the means of evaluating the performance of social systems. Short of that, attention to the problem of such evaluation in its health dimensions can in itself provide a useful cross-cultural perspective for viewing "supernatural" and "natural" etiologies of illness. For when the prevalence of illness is attributed to the action of spirits, sorcerers, witches, or the manifestation of some other extraordinary power, this belief may be seen as a mystical interpretation of a society's shortcomings, the supernatural counterpart of natural interpretations that also perceive the prevalence of illness as reflective of deficiencies of the social system.

MEDICINE AND CULTURE CHANGE

Under the impact of modern technology, and the industrial societies dependent on it, profound cultural changes are taking place throughout the world. In the developing areas, modern health and medical practices have been among the most important changes introduced. Yet despite the increasing utilization of modern medicine in these areas, with consequent reduction in morbidity and mortality, traditional medical systems still persist and exert a significant influence on the state of health and on medical decisions and outcomes in developing societies.

The fact of the matter is that modern medicine generally has been established in these societies not so much by displacing indigenous medicine as by increasing the medical options available to their populations. . . .

In these pluralistic medical situations, one medical system may be influenced by the other. White medical beliefs have been incompletely assimilated into the medical system of the eastern Cherokees, and in some cases the older Cherokee beliefs and modern white disease theory show some fortuitous correspondence, providing reinforcement for Cherokee beliefs (Fogelson 1961). I have previously mentioned other examples of the influence of modern medicine on indigenous medical systems. It has been argued that modern medicine can more effectively serve populations in developing areas by utilizing certain of the resources of indigenous medical systems (e.g., Shiloh 1965, Kiev 1966). Yet for the most part both practitioners and the population at large dichotomize the medical situation in developing societies; competition between local healers and physicians is often intense, invidious distinctions abound, and differences that people perceive in the two kinds of medical systems can have a significant effect on the medical choices they make. Knowledge of the reasons for these choices not only has practical value for efforts to improve local, regional, and world health, but also can contribute to a general understanding of human behavior in relation to culture changes.

Cognitive Influences on Choice of Medical Treatment

Definition of Disease

One cognitive approach to the problem of alternation between modern medicine and indigenous medicine has emphasized the importance of the type of disease as an influence on the choice made. Observers have pointed out that people in developing areas tend to distinguish the kinds of illnesses that can be cured by the physician from those that will respond only to the therapy of local healers (e.g., Erasmus 1952; Simmons 1955; Foster 1958, 1962; Goodenough 1963). . . .

There is ample evidence that people who utilize both modern and indigenous medical systems tend to place illnesses in two broad categories: those more likely to be cured by a physician and those more likely to respond to the ministrations of a healer. But considerable allowance must be made for flexibility in such perceptions. The course of an illness, the outcome of previous treatment for the same condition, and a variety of other factors may cause the patient to redefine it and shift from one medical system to the other (Lieban 1967). While it is true that modern and indigenous disease names are guides to the sort of practitioner a patient will

consult, a label is not necessarily fixed for the duration of an illness. The patient may begin to doubt that he really has whatever it was he thought he had, and the label of the illness may be changed if the practitioner is changed. Thus Erasmus (1952) observes that in poorer districts of Quito, Ecuador, people have more confidence in a physician's treatment of illnesses with modern names, but they do not always classify their symptoms according to those names until a physician is consulted at an advanced stage of the illness.

Gratifications of Treatment

Another cognitive approach to the utilization of modern and indigenous medicine emphasizes the contrastive but complementary gratifications the two types of systems may offer to patients. Gonzalez (1966) distinguishes two categories of healing techniques: medicines and practices. She defines medicine as "any substance applied to or introduced into the body, which is believed by some specialist and/or the sick person to change the existing state of the body in the direction of better health," while a medical practice is "any act undertaken by either the sick one or someone else, which may or may not directly involve the body, but which is believed to have an effect on the health." In Gonzalez' view, people in developing or non-western areas have utilized modern therapy primarily for the effectiveness of its medicines, which are widely recognized as superior to indigenous medicines. But such Western therapeutic practices as rest, exercise, exposure to fresh air or a change of climate, and reduced smoking or drinking seem either inappropriate or unconvincing to people in these areas. At the same time, Gonzalez points out that indigenous medical practices, in which ritual usually plays a key role, still have considerable popular appeal. Gonzalez (1966) finds that in the Guatemalan groups she has studied, people very often seek help for the same illness from both the indigenous curer and the physician.

> It is not so much a question of either/or, as it is *what* shall be sought from each specialist. I strongly believe that the power of scientific medicine in relieving symptoms is what is sought from the doctor, while the practices suggested by the curer for relieving the basic cause of the disease, plus the hope he gives the patient, lead the ill to him.

... Gonzalez' point about the importance of ritual in the persistence of indigenous medicine appears to be well taken, and her ideas are consistent with the widespread observation that people will utilize modern medicine on the basis of its demonstrated successes while still retaining their traditional beliefs about disease causality (Simmons 1955; Erasmus 1952, 1961; Newell 1957; Foster 1958). With its emphasis on the complementary services that modern medicine and indigenous medicine offer patients, Gonzalez' thesis is more applicable to cases of illness that are taken to both kinds of practitioners than to cases of illness that are treated throughout their duration exclusively by physicians or by healers.

The Influence of Tradition

As I have mentioned before, the prevalence of indigenous medical beliefs has not prevented the utilization of modern medicine where its effectiveness has been shown. This fact has been particularly accentuated by Erasmus (1961) as part of his theory of culture change, including its medical facets. Erasmus has stressed that traditions are not blinders that keep individuals from seeing advantages in changing their behavior, and he has been highly critical of the weight that some writers have given to prior cultural conditioning as an impediment to modernization. In his words, "... even uneducated and illiterate people are not simple tradition-bound puppets of their culture. Given adequate opportunity to measure the advantages of a new alternative, they act to maximize their expectations. ..."

Positions similar to Erasmus' have been maintained by public health personnel. Roemer (1954) states that some anthropologists tend to exaggerate the grip of tradition and to underestimate the receptivity of people to change in their medical behavior if they experience new measures that help them. ...

But while demonstrated therapeutic advantages of modern medicine have gained it widespread and growing adherence in developing areas, it is also true that the personal experiences of many people prevent them from perceiving these advantages, and in these circumstances, their traditions may dominate what they see and do. Although Erasmus (1961) emphasizes people's readiness to discard their old customs for new ones if they can readily perceive the benefit of doing so, he also points out that when cognitive situations are not conducive to such perceptions, it is not surprising that people continue their traditional activities, or add new practices while still retaining their old ones. This has perhaps particular relevance for medical situations, in which appearances can so frequently be deceptive, and Foster (1958) notes that convincing demonstration is relatively more difficult in health

programs than in other forms of technical aid. Perception of medical realities can be obfuscated by a number of factors in situations where modern medicine is effective and/or indigenous medicine is not.

1. Most illnesses eventually end in spontaneous recovery (Beck 1961). When this occurs and the patients have been treated by local healers, confidence in indigenous medicine may be bolstered by cures with which it is only fortuitously connected. (For a specific example, see Kiev 1966.)

2. When therapy for an illness is sought from both a physician and a healer, the physician may cure the patient and the healer get the credit. (Again, see Kiev 1966.)

3. Purposes as well as results of modern medicine may be misperceived. Measures that the physician may take to diagnose an illness are often thought to be the treatment; the patient may believe he should expect to see results as soon as a blood sample has been taken (Lebeuf 1955).

When the advantages of modern medicine are not convincingly apparent, traditional medical beliefs provide a ready frame of reference. These beliefs are linked to other ideas and patterns of behavior (Firth 1959). They are particularly interwoven with magic, religion, and traditional social values, and they serve multiple cognitive functions (Hughes 1968). They can also focus multiple cognitive sources of resistance to change in medical behavior. ...

Other Influences on Medical Behavior

Fatalistic Attitudes Toward Illness

Medical efforts may be impeded if an individual believes that the outcome of his illness is inevitable, unalterable by any human action (Foster 1958, Erasmus 1961). However, a distinction should be made here between passive reactions to morbid signs that the sick person does not regard as marks of illness (Read 1966) and reactions to symptoms that are perceived as manifestations of illness but are believed to be beyond human ability to affect. In addition, in some cases fatalistic views may be only *post factum* explanations of the outcomes of illnesses; they may not necessarily persuade the sick person that remedial action would be futile while the illness is in progress (Lieban 1966).

Symbolic Significance of Medical Phenomena

People may respond to medical systems on the basis of what they represent as well as what they do. Different associations may be contradictory in their effects. On the one hand, utilization of modern medicine is often regarded as enlightened or sophisticated behavior, and this fact can be an inducement when social status is a consideration (Foster 1958, 1962; Lieban 1967). On the other hand, when ethnic pride comes into play, traditional medical beliefs and practices can be valued as distinctive resources of the group (Halpern 1963). "Loyalty" may even be shown to certain illnesses considered beyond the competence of modern medicine (Schwartz 1969). In contemporary China and India, considerable intellectual and political support has been given indigenous medical systems, not only because of their therapeutic accomplishments, but also as manifestations of cultural creativity and the national identity of these countries (Crozier 1968; Leslie 1967, 1969*b*).

Therapeutic Styles

The manner of therapy as well as its substance may influence people's choice of practitioners. Marriott (1955*a*) found that in a rural community of northern India, Western medical practice was handicapped by the villagers' perceptions of such things as its emphasis on privacy and individual responsibility, its utilization of written prescriptions, and the democratic nature of its expectation of interpersonal trust—all features incongruent with village experience and attitudes. Marriott argues that a distinction must be made between "Western" and "scientific" medicine, and that medical practices could be divested of many Western cultural accretions to make them more compatible with the local scene without impairing their technical effectiveness. ...

There is ample evidence to show that certain Western medical procedures are not necessarily based on logico-empirical considerations, or may contravene them (e.g., Roth 1956, 1957). Sorting out what is intrinsically therapeutic from what is not and distinguishing features that can be variably modified to make medicine more responsive to views, wants, and needs of patients is a problem in both basic and applied science. Attention to this problem can help balance the tendency of some public health scientists to emphasize consumers rather than providers of health services (see Hochstrasser and Tapp 1970).

Social Factors

The importance of knowledge of social organization to effective intercultural health programs has been stressed by British social anthropologists

(Firth 1957; Freedman 1956, 1957). Freedman (1956) notes that for the health worker this means both "a clear picture of the structure of the community in which he has to carry out his duties and the study of health workers and institutions in relation to the public they set out to serve."

The effects on medical behavior of social relationships within groups being served by health and medical programs are found in such factors as patterns of power and authority, which permit those in dominant positions to facilitate or impede acceptance of medical changes by others (Freedman 1956, Lewis 1955, Foster 1958); class and caste differences, which affect access to and utilization of health and medical facilities (Simmons 1958, Foster 1958, Erasmus 1961, Lieban 1967); factionalism, which can have a differentiating effect on responses of antagonists to health and medical programs (Foster 1958); and family, kinship, and other solidary social factors, which in themselves can influence or link people in medical decisions: for example, Kunstadter (1960) found that the stronger the bond of solidarity between Mescalero Apache parents and their children (twenty years and older), the greater the likelihood of similarity in their use of the Public Health Service clinic. Weaver (1970) describes a general pattern among Spanish-Americans of the southwestern United States: when illness occurs, members of the nuclear family of the afflicted individual are the first to perceive and validate the situation; after that, if the symptoms are severe and/or persistent, the family turns for consultation and minor medication first to the kin group, then to neighbors and important persons of the community, and only after that to an indigenous healer or scientifically trained practitioner.

Much of the literature on social relationships between medical personnel and the groups they serve has emphasized the effects of the social distance that separates modern medical professionals from patients of lower status, both in developing and in industrial societies (Simmons 1958, Foster 1958). Simmons states that mutual trust, respect, and cooperation vary inversely with the social distance between practitioner and patient, and various observers find that difficulties of rapport between the two can hamper utilization of modern medicine (Polson and Pal 1956, Freedman 1956, Clark 1959, R. J. Wolff 1965). Yet professional behavior that may be regarded as intimidating or supercilious and may disaffect patients in some cultural settings can be the expected and approved model in others. . . .

It seems apparent that in social situations in which deference to authority is stressed, maintenance of social distance may enhance rather than diminish confidence in the practitioner.

Socioeconomic and Technical Factors

In developing societies, as in our own, the state of health is pervasively affected by social inequalities and associated privations. The impact of socioeconomic conditions on nutrition and health of underprivileged peoples in Latin America has been emphasized by Bonfil Batalla (1966) in a critique of applied anthropology. He criticizes what he calls the "psychological emphasis" in applied anthropology's concentration on such subjects as ideas and beliefs about health and illness and communication problems due to differences in cultural traditions, with relative neglect of basic causes of public health and malnutrition problems. He states that it is such factors as basic social structure and inadequate technology that underlie health problems in Latin American societies, and that improvement of life conditions depends on their alteration rather than concern with local ideas about health, welfare, and the causes and treatment of illness, which he regards as psychological manifestations of a problem rather than its causes.

Bonfil Batalla's argument is, of course, pertinent to areas other than Latin America, and there is no gainsaying the fundamental importance of the factors he cites. The risk of disease is greater for the poor than for others, and generally good medical care is less accessible to them (Kosa, Antonovsky, and Zola, eds., 1969). Even when they receive effective therapy, their living conditions combined with their limited medical knowledge may defeat the purposes of treatment. Parasitosis, for example, is endemic in the slums of Bogotá, Colombia; according to an outpatient physician, the poor take their medicine with polluted water and pathology persists (Press 1969).

But while poverty is the matrix of many serious health problems, and general improvement in health in developing countries is basically contingent on improvement in the living standard of the majority of the population, in several respects the other factors we have been discussing also play very important roles in both the current and the future health status of these societies. In the first place, improved health and medical practices do exist and do reach the poor. Such efforts are relatively limited in their range and effectiveness under present social and economic conditions, but they have significantly reduced morbidity and mortality

in many areas. Therefore, factors that induce people to utilize the facilities, personnel, and practices of modern medicine now available can and do reduce suffering and save lives. Second, increased understanding of medical realities can motivate as well as result from social change. Growing awareness by the poor of the health implications of their standard of living, and of the advantages of expanding the availability of modern medicine, can increase pressures for social change that would make improvement possible. Taylor and Hall (1967) point out that successful health programs are inclined to produce recognition that change is possible, and improvements in health and other social and economic changes tend to be synergistic. The point is that health can be an aspiration of people, as well as a consequence of social process. Increased awareness of ways to improve it can contribute constructively to social action.

Complexities of Technological Development

We have been concerned here with what is essentially a distributional problem: factors that facilitate or impede utilization of modern medicine. In developing societies the benefits of such utilization are fairly clear-cut: lowered morbidity and mortality rates among groups with substandard health. But in areas where modern medicine is most highly developed, it has become apparent that new technical achievements in medical science make the relationship between the utilization of modern medicine and the welfare of human populations increasingly complex.

This complexity is clearly seen in problems with which physicians increasingly must deal: weighing the prolongation of the life of the aged and ailing or the hopelessly injured against the hardships this may entail for the patient and others (Dubos 1965, Solomon 1969); deciding who among those needing it to stay alive will receive therapy such as renal dialysis when funds, the number of machines, and staff to operate them are limited (Hubble 1969); deciding precisely when death has occurred for potential transplant donors—a situation in which timing is crucial (Solomon 1969).

Dubos (1965:427) finds modern medicine facing a paradox unprecedented in history:

> On the one hand, science can eventually solve the technical aspects of almost any medical problem. On the other hand, the application of medical knowledge to the prevention and treatment of disease will be necessarily limited by economic and other social factors. Choices have to be made among all the possibilities for medical care and disease prevention, but there is no agreement as to the social or ethical bases on which to make choices.

And the situation promises to become even more complicated in the years to come. Prospective developments in curative and preventive medicine through "genetic engineering" presage not only dramatic new medical achievements but also new questions concerning society's response to increasing opportunity for human control of biological processes (Lederberg 1970). It is apparent that medicine, in its social, cultural, and biological dimensions, will continue to share in the central problem of our age: how to use our rapidly expanding knowledge wisely and humanely.

2 Determinants of Health and Disease

René Dubos

This selection by the noted microbiologist René Dubos sets forth in a clear and cogent fashion the social, cultural, and psychological dimensions of the states of health and disease. Dubos even attempts to define these elusive terms. (If the reader has any illusion, let him attempt to invent definitions that will be satisfactory for most medical professionals, anthropologists, and laymen.) Dubos sketches some of the cultural factors—"mechanisms of adaptation"—involved in the medical systems of non-Western, preindustrial peoples, shows how disease patterns change over time in different historical epochs even within the same cultural tradition, and indicates how these patterns are influenced by the types of societies and cultures in which they occur. Finally, Dubos tells us how the same mechanisms of adaptation that man has evolved to combat disease, in turn, provide their own hazards to human societies. Thus, the social arrangements and cultural techniques devised in human societies to maintain health and treat sickness create, for the same populations they were designed to serve, a whole new host of problems and may, in themselves, be implicated in the etiology of diseases in a given medical system. These mechanisms are spelled out in greater detail in the small volume from

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