

*Asian Medical Systems:*  
*A Comparative Study*

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*Edited by*

CHARLES LESLIE

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## Introduction

The health concepts and practices of most people in the world today continue traditions that evolved during antiquity. Ideas about the ways that body processes are thrown off balance by the improper consumption of "hot" or "cold" foods, or the ways that envy, fear, and other strong emotions generate poisonous substances by disturbing the body's equilibrium, are based upon humoral theories that were first elaborated in the classic texts of medical science several thousand years ago. These ideas, and others related to them, are held by the majority of Asians and by large segments of European and African society. Imported to the New World in colonial times, they still play an important role in Latin American communities.

Folk curers throughout the world practice humoral medicine, but in Asia alone educated physicians continue its learned traditions. Most notably in China and India, but also in Japan, Sri Lanka (formerly Ceylon), and other countries, the institutional forms of professional education and practice have been adapted to indigenous medical traditions. Research institutes, colleges, hospitals, professional associations, and pharmaceutical companies for Chinese, Āyurvedic, and Yunānī medicine coexist to a greater or lesser extent with similar institutions for cosmopolitan medicine. Together with folk practitioners, physicians who utilize these institutions provide a major source of medical consultation for all classes of people. Asian medical systems thus provide fascinating opportunities both to observe directly practices that continue ancient scientific modes of thought and to analyze the historical processes that mediate their relationship to modern science and technology.

Three primary traditions of medical science were formulated in what Alfred Louis Kroeber called the *Oikoumenê* of Old World society. The Greeks used the word *Oikoumenê*, the inhabited, to refer to the entire range of mankind, but Kroeber redefined the term to designate the civilizations of Asia, Africa, and Europe that from ancient times to the present day have formed "a great web of cultural growth, areally extensive and rich in content" (Kroeber 1952:392). Ideas and products have been transmitted from one end of this network to the other for thousands of years, and yet stylistically distinctive traditions have continued to exist. The stylistic continuities that distinguish the civilizations of the *Oikoumenê* can be identified in their medical traditions. For example, in the present volume Manfred Porkert and W. T. Jones contrast fundamental styles of thought in Chinese and Western medicine, though they approach the subject from different methodological perspectives. Also, Ganānath Obeyesekere and Alan Beals describe long-enduring South Asian forms of thought, in Obeyesekere's case by analyzing the popular

culture of Āyurvedic physicians and their patients in urban Sri Lanka, and in Beals' essay by describing the habits of mind of peasant villagers in Mysore State, India, as they decide to use different kinds of therapy.

I will call the three main streams of learned medical practice and theory that originated in the Chinese, South Asian, and Mediterranean civilizations "great-tradition" medicine—a term derived from Robert Redfield's work on the comparative study of civilizations. Observing that the development of civilizations was characterized by the differentiation of great from little traditions, Redfield described this process as "the separation of culture into hierarchic and lay traditions, the appearance of an elite with secular and sacred power and including specialized cultivators of the intellectual life, and the conversion of tribal peoples into peasantry" (Redfield 1956:76). Illustrating the interdependency of great and little traditions, Redfield speculated that "the teaching of Galen about the four humors may have been suggested by ideas current in little communities of simple people becoming but not yet civilized; after development by reflective minds they may have been received by peasantry and reinterpreted in local terms" (*ibid*:71).

The first point that I want to make about the great medical traditions is that they maintained their individual characters although they were in contact with each other. The integrity of the separate traditions needs to be emphasized to avoid the assumption that all significant early medical science originated in Greece (or India or China, for that matter). My second point will be that the three traditions nevertheless share general features of social organization and theory that allow us to describe a generic great-tradition medicine which can be contrasted with cosmopolitan medicine.

The Mediterranean tradition was comprehensively formulated by Galen in the second century. It continued in this form through the Middle Ages in Christian and Islamic societies, and was carried by the spread of Islam to Central Asia, India, and Southeast Asia. The system was called *Yunānī Tibbia* in Arabic, meaning Greek medicine, and it is still practiced under that name in Pakistan, India, Sri Lanka, and other South Asian countries. In his essay for the present volume, J. Christoph Bürgel emphasizes the Galenic character of Arabic medicine: it was not significantly influenced by South Asian theories, although Ali al-Tabari was familiar with Indian medical texts as early as the ninth century. Nor, according to Sir Joseph Needham (1970:14–29), did knowledge of Chinese medicine notably effect the Galenic tradition, though a thirteenth-century Persian physician, Rashid al-din al-Hamadani, directed the preparation of an encyclopedia of Chinese medicine.

Knowledge of the South Asian and Chinese medical traditions was carried through the *Oikoumenê* from the nuclear areas of their development, just as the Mediterranean tradition was carried to distant societies. The South Asian system was called *Āyurveda*, meaning knowledge of life, or longevity. It was known in the Mediterranean region long before the translation of



Greek texts into Arabic. Several Hippocratic authors recommended medications that they attributed to India, and Plato's theory of vision—that a fiery element in the eye joined with the corresponding element in things—resembled that of Āyurveda, as did some details of his conceptions of illness and of anatomy (Filliozat 1964:229–237). The diffusion of Buddhism from India to China was certainly accompanied by exchanges of Āyurvedic and Chinese medical knowledge, yet Chinese medicine had no discernible effect on the development of Āyurveda, and Joseph Needham maintains that the overall influence of Indian on Chinese medicine was minor. Evaluating the relation of Chinese medicine to Greek and Arabic tradition, Needham writes: "It is really hard to find in it any Western influences" (1970:18–19). On the other hand, Chinese medicine strongly affected medical institutions in Korea, Japan, and parts of Southeast Asia, and Āyurveda had a marked influence in Tibet, Burma, and Southeast Asia.

Although the three great medical traditions were relatively independent, they evolved in similar ways. They all became professional branches of scientific learning in the millennium between the fifth century B.C. and the fifth century A.D. Professional standards for education and practice were achieved by appeals to the authority of Galen, Caraka, the *Nei Ching*, and other highly respected texts. Since rational theories and therapeutic formulas were elaborated in the texts far beyond the knowledge of laymen and folk curers, the ability to show acquaintance with them validated claims to a superior social position. Claims to high status were symbolically expressed in special modes of dress and deportment recommended by the texts, and they were rationalized by ethical codes that defined a physician's responsibilities.

Women were not educated in medicine, and the perspective of the classic texts was masculine. Practitioners ranged from physicians who had undergone long periods of training to individuals with little education who practiced a simplified version of the great tradition. Other healers coexisted with these practitioners, their arts falling into special categories: bone-setters, surgeons, midwives, snake-bite curers, shamans, and so on. But the complex and redundant system of learned and humble practitioners, of full-time and part-time practitioners, of generalists and specialists, of naturalist and supernaturalist curers, was ideologically simplified by the distinction elaborated in the texts between quacks and legitimate practitioners. The concern the texts show for this distinction indicates that society assigned learned physicians a lower social status than the one that they aspired to, and that their power to dominate the overall system of medical practice was limited.

The Chinese may have led in rationalizing medical services, for they developed an extensive bureaucratic system to instruct and examine physicians, along with what, according to Joseph Needham and Lu Gwei-djen, "can only be described as a national medical service" (1969:268). But in all of these societies, armies required organized medical services, rulers

acted as patrons to medical scholarship, and medical aid was a philanthropic enterprise appropriate to religious institutions and to wealthy individuals. Needham's discussion of Chinese priorities is directed toward correcting the biases that have caused Western writers on the history and philosophy of science to focus on why the Scientific Revolution occurred in Seventeenth-century Europe. The framework in which this question is asked sometimes resembles that of a believer in witchcraft who confronts the death of an old man with the question, "Why did it happen on Tuesday?" The fact that the Scientific Revolution first occurred in Europe is taken by Europeans as *a priori* evidence that the Western tradition possessed a genius for scientific progress lacking in the Chinese and Indian traditions. Thus it is possible to question the orientation—shared by Needham as much as by those he criticizes—that makes temporal priority a predominant issue.

Besides resembling each other in the organization of practice, the great traditions of medicine were formulated from generic physiological and cosmological concepts. All of them were humoral theories: four humors in the Mediterranean tradition (yellow bile, black bile, phlegm, and blood); three humors in the South Asian tradition (*kapha*, *pitta*, and *vayu*, usually translated as phlegm, bile, and wind); and six humors in Chinese medicine (the *chii*, or pneuma, which were held in the sway of *yang* and *yin*). The humors were alignments of opposing qualities: hot-cold, wet-dry, heavy-light, male-female, dark-bright, strong-weak, active-sluggish, and so on. The equilibrium of these qualities maintained health, and their disequilibrium caused illness, whatever the number of humors. Equilibrium was regulated by an individual's age, sex, and temperament in dynamic relationship to climate, season, food consumption, and other activities. Diagnoses required skill in observing and correlating physical symptoms and environment. Therapy utilized physical manipulations, modification of the patient's diet and surroundings, and numerous medications. Some medications required elaborate preparation; others, valuable and esoteric substances such as herbs gathered from distant mountainsides, saffron, gold, precious stones, or parts of rare animals.

Finally, great-tradition medicine conceived human anatomy and physiology to be intimately bound to other physical systems. The arrangement and balance of elements in the human body were microcosmic versions of their arrangement in society at large and throughout the universe. Sir Charles Sherrington's description of the world view of Jean Fernel, a physician in sixteenth-century Paris, applies equally to Chinese or Hindu physicians: "The macrocosm fulfilling its vast circuits and epicycles of meticulous precision, its rising and its settings, its movements within movements, was an immense body fashioned after the likeness of man's body" (1955:61). This conception rationalized the relation of men to their environment by making preventive and curative medicine efforts to maintain or to restore cosmic equilibrium.

# Traditional Asian Medicine and Cosmopolitan Medicine as Adaptive Systems

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FREDERICK L. DUNN

This paper offers a preliminary and tentative assessment of the adaptive significance of three major traditional systems of medicine in Asia. I shall approach this assessment by reviewing the general characteristics of medical systems, and by outlining the problems that intrude in attempts to measure the adaptive value or efficacy of such systems.

## DEFINING A MEDICAL SYSTEM

A generic definition of medical systems, or systems of health-care delivery, may usefully begin with the concept of health. The World Health Organization has defined health as a "state of complete physical, mental, and social well-being, and not merely the absence of disease." This utopian definition has several disadvantages. It implies that the condition of being healthy is static and absolute, and it does not provide for differences in perspective. Such provision is desirable, since conditions may be regarded as healthy in one society and unhealthy in another. Rene Dubos (1965:344-351) considered these issues in discussing "the mirage of health," and despaired of efforts to formulate a satisfactory abstract definition of health. R. N. Wilson (1970:12) also considered the problem and proposed a relativistic definition by outlining the "idea of health as functional competence in enacting social roles."

The approach which I favor conceives of health as a dynamic, constantly varying condition of the individual or the group (Audy 1971: Audy and Dunn, 1974). This approach emphasizes the idea that the "level" of health may change from one point in time to the next, and that the quantity *and* quality of health changes as the level changes. Health is therefore viewed as a scalar quantity, subject to measurement (Audy 1971). Such a scale is illustrated in Figure 1. A middle zone on this scale represents the transition for any individual (or group) between health and ill health. Thus ill health corresponds to a substantial diminution in health. In semi-quantitative or qualitative terms, current health can be measured against such a scale for an individual, group, community, or whole society.

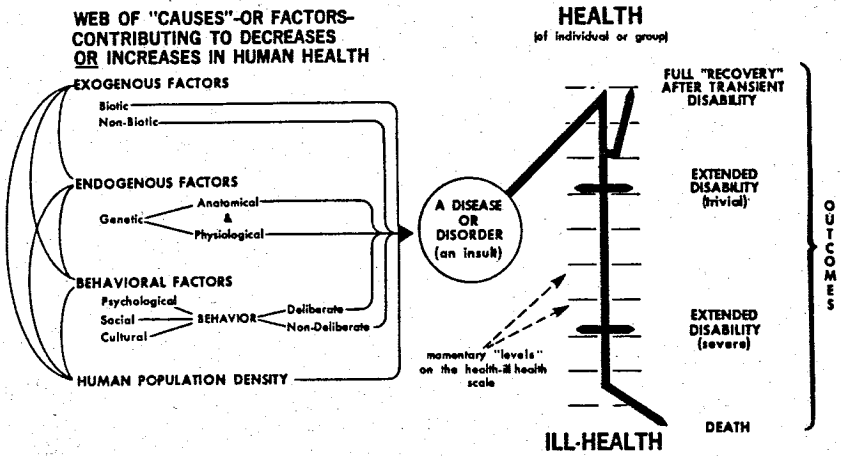


FIGURE 1. Health as a scalar quantity: the intervening insults (diseases and disorders) that influence the level of health, and the causal web that "controls" these insults.

A dynamic, scalar conception of health carries with it the idea of adaptive training as the organism (or group) experiences and responds to successive "insults." Thus, infection by polio virus early in life may be an inapparent or minor insult; but the adaptive result—immunity to reinfection—is a contribution to the long-term health of the host. On the other hand, when initial exposure to the polio virus occurs later in life, the result is often a permanent diminution of health through crippling paralysis. The consequence of infection in infancy is an incremental increase in the level of the host's health, and the same result is achieved through artificial immunization procedures. We may also learn to cope with many forms of psychological and social stress as we experience them and are scarred (and "immunized") by them.

Clearly an insult is *not* the same thing as ill health; it may lower the level of health, permanently or transiently; it may have little effect; it may result in a permanent increase in health. All insults, collectively, constitute the diseases and disorders of human experience. They can be categorized in many ways, and one taxonomy of major determinants of ill health and mortality is summarized in Table 1. This classification is derived from some of the ideas of V. C. Wynne-Edwards (1962) on the factors of social control that influence mammalian population regulation (see also Dunn 1968). A few alternatives in the spectrum of "outcomes" of diseases and disorders are suggested in Figure 1.

Figure 1 also displays a web of causes or factors which can modify diseases and disorders and thus influence the health scale. Changes, however subtle, of relationships within the web are likely to shift the level of health downward or upward. The categories "biotic," "non-biotic," "genetic," and so on, encompass all of the factors that are normally considered to be of epidemiologic importance. The perspective that considers the web as a whole—"web-

TABLE 1

## A Classification of Diseases and Disorders as Determinants of Human Ill Health and Death

## 1. Socially "uncontrollable" and "unacceptable" determinants:

Food deficits

Accidents

Predation

Exogenous agents:      biotic (e.g., parasites)  
   non-biotic (e.g., chemicals)Endogenous factors:    genetic  
   degenerative (aging)

## 2. Socially "controllable" and (sometimes) "acceptable" determinants:

"Stress" disorders; psychological, social, and psychosocial disorders.

Abortion, infanticide, suicide, homicide, geronticide, sacrifice, territoriality, head-hunting, warfare, etc.

NOTE: Diseases and disorders in category 1. are often 2. *independent* of population density, while those in category 2. are often *density-dependent*. However, this distinction is frequently blurred. Predation, for example, is clearly density-independent in certain respects, and contributes to uncontrollable loss; but it is also density-dependent insofar as the prey may "cooperate" in making its surplus members available to predators.

like thinking"—is usually designated "medical ecological." The category of health-related behavior is divided between "deliberate" or "non-deliberate," and in relation to the outcomes this yields four alternatives: deliberate health-enhancing; deliberate ill-health-provoking; non-deliberate health-enhancing; and non-deliberate ill-health-provoking behavior. Using this scheme, I prefer to define a medical system as *the pattern of social institutions and cultural traditions that evolves from deliberate behavior to enhance health, whether or not the outcome of particular items of behavior is ill health.*

## TYPES AND GENERAL CHARACTERISTICS OF MEDICAL SYSTEMS

Medical systems can be conveniently classified by reference to their geographical and cultural settings. Thus there are *local medical systems*, a category which can accommodate most systems of "primitive" or "folk" medicine; *regional medical systems*, such as Ayurvedic, Unani, and Chinese medicine; and the *cosmopolitan medical system* (often referred to as "modern," "scientific," or "Western" medicine). A dictionary definition of "cosmopolitan" conveys the ideas "worldwide rather than limited or provincial in scope or bearing; involving persons in all or many parts of the world." Local and regional systems are almost invariably indigenous and traditional; and they are

normally intracultural, although by no means insulated from exchange with other systems. The traditionalism of the local system tends to be popular and nonscholarly, while that of the regional system tends to be scholarly.

This paper is primarily concerned with regional systems; where the term "traditional" is used it should be understood to mean "scholarly-traditional." The cosmopolitan system is a transplant in most parts of the world, in the sense that it arose in the "West" and retains "traditional" elements which betray its regional origins. Still, with each succeeding decade in the present century, these elements have been transformed, or have become more heavily overlaid by new elements contributed to the system from every part of the world. Obviously, cosmopolitan medicine is subject to considerable regional and local variation—it is not globally homogeneous. Obviously, also, much regional variation exists in the degree to which these three categories of medicine overlap and interpenetrate.

I have abandoned the terms "modern," "scientific," and "Western" in favor of "the cosmopolitan medical system." This system is often termed "scientific medicine," but if we accept a broad definition of science it can be readily demonstrated that scientific elements are present in local and regional medical systems. Many medicinal plants used in systems of "primitive medicine" are now recognized to have specific beneficial pharmacological effects. Indeed, much of the basic armamentarium of pharmacology today has been built up by investigating the properties of traditional herbal remedies. Traditional use of such remedies evolved through countless trials and errors—in short, through human experimentation.

The methods of investigation employed by traditional herbalists are not qualitatively different from those employed in modern clinical chemotherapeutic investigations. The difference lies principally in time. While the clinical investigator today may evaluate a new remedy in the course of a few days by testing it in subjects and giving a placebo or some other remedy to controls, the traditional herbalist, or a line of herbalists through several generations, reaches a decision about a remedy through decades of experience in treating his fellowmen with it, and his "controls" are others of his fellows with similar disorders who are treated with other remedies or not treated at all. A. L. Basham, M. Porkert, and P. U. Unschuld have indicated that, in addition, documentary evidence exists of early experimentation, in the conventional modern sense, in Indian and Chinese traditional chemotherapy. Medicinal plants exemplify the rational scientific element that we scientists and outsiders can detect in someone else's system of medical care. But we must also consider the perspective of the practitioner or client within a traditional system. Acupuncture, for example, is not generally considered "scientific" in cosmopolitan circles—but since it is considered to have a scientific basis within traditional Chinese medicine, it falls within the broad definition of science at the heart of Joseph Needham's (1954) wide-ranging exploration of science and civilization in China.

Whether or not local and regional medical systems are considered to be at least partially scientific, it will be readily accepted that the cosmopolitan system relies on art as well as science. For example, cosmopolitan medical practice is clearly much more scientific than any particular variety of "folk" medicine, but both systems rely heavily on tacit communication between practitioners and clients, and thus on factors that are usually regarded as beyond the fringe of science.

Finally, any traditional medical system in 1971 is as "modern" in its own terms as is the cosmopolitan system in 1971.

I believe that cumulative research findings will show that all medical systems span the spectrum of health-care delivery, although they vary in emphasis. The spectrum of health-care delivery includes the following elements:

1. Health education, broadly conceived, of both practitioners and their clients.
2. Public health sanitation and control.
3. Risk assessment for the individual and the group or community.
4. Prevention for the individual and the group or community.
5. Case-finding in the group or community.
6. Diagnosis.
7. Establishment of prognosis.
8. Therapy: acute, terminal, and supportive, including the very broad field of psychosocial, pastoral, or comfort-supplying care.
9. Rehabilitation.

All elements in this list are represented in the cosmopolitan system, although it is clear that emphasis in terms of numbers of practitioners and allocation of resources is focused on the curative portions of the spectrum, and elements such as risk assessment have been strikingly neglected until very recently (Sadusk and Robbins 1968). In local and regional medical systems, too, emphases seem to center in the curative area, but we are beginning to appreciate that the degree of emphasis has often been exaggerated. Gunnar Myrdal, for example, is surely incorrect in stating that "indigenous medicine is in principle merely curative" (1968:1576). The narrow range of information about traditional systems that has been assembled over the years by scientists and scholars is probably responsible for statements of this kind. Anthropologists have focused almost exclusively on the curative aspects of ethnomedicine. At least 95 percent of the ethnographic literature on health-enhancing behavior and on the values and beliefs that underlie such behavior is concerned with curing. This is partly because much curing activity is dramatic and focused on events that can be observed during the relatively short span of time that the ethnographer is in the community. Other elements of the spectrum—health education, public health, risk assessment, prevention, rehabilitation—have yet to receive much attention from ethnologists and other students of traditional systems.

TABLE 2  
 A Comparison of Some Characteristics of Three Categories of Past and Present-Day Medical Systems,  
 With Emphasis on Actual Practice Rather than Theoretical Ideals

	Local Medical Systems	Regional Medical Systems	The Cosmopolitan Medical System
	(“folk medicine”)	(e.g., Ayurvedic, Unani, Chinese)	(i.e., “modern,” “Western,” or “scientific” medicine)
	<i>indigenous popular-traditional</i>	<i>indigenous scholarly-traditional</i>	<i>transplanted</i> (in most parts of the world)
Geographical emphasis	usually local, rural, or urban	regional, rural or urban	global, largely urban, slowly expanding rural emphasis
Diseases and disorders of concern	limited range of locally distributed + universals	broader range of regionally distributed + universals	all of man’s diseases and disorders
Emphasis on:			
Conventional health education (of clients)	little	little to moderate	moderate
Public health	little	<i>past</i> : strong (parallel development especially urban, and not necessarily linked to other medical institutions) <i>today</i> : little	strong



Preventive medicine	moderate	<i>past</i> : moderate (strong in theory) <i>today</i> : declining <i>past</i> : moderate in China (theory strong), strong in India	moderate
Curative medicine	strong		very strong
Access to care	variable, all adults often have equal access (esp. in small-scale societies), children may have less access ( <i>benefits of care more or less less equally distributed in the population</i> )	<i>today</i> : strong highly variable, usually sharp differentials, in access related to age, birth order, sex, religion, economic status, etc. ( <i>benefits of care usually quite unequally distributed</i> )	<i>past</i> : urban elite had greatest access <i>today</i> : the ideal is <i>equal access for all</i> ; the reality is <i>access proportional to income</i>
Practitioner characteristics	male or female practitioners practitioners not elitist, often part-time	usually male (some females today) <i>past</i> : often close to or members of elitist circles (sometimes social stratification related to specialization) <i>today</i> : often marginal in urban areas (sometimes middle-class); among the elite in rural areas	<i>past</i> : male <i>today</i> : male or female <i>past</i> : secondary elite (before the elaboration of professional and paraprofessional specialties) <i>today</i> : a range from secondary elite to intermediate and low social status

TABLE 2 (Contd.)

	Local Medical Systems	Regional Medical Systems	The Cosmopolitan Medical System
	("folk medicine")	(e.g., Ayurvedic, Unani, Chinese)	(i.e., "modern," "Western," or "scientific" medicine)
	little to moderate specialization	<i>past</i> : considerable specialization <i>today</i> : little specialization	<i>past</i> : little specialization <i>today</i> : very strong specialist fragmentation
Informal training and formal education of practitioners	spirit intermediary often "self-trained following inspiration" herbalist and/or ritual-magic specialist; father-son or master-pupil education	today usually a scholarly master-pupil relationship or scholarly education at a school; self-training uncommon	scholarly education at a school
Mode of entry into "practice"	self-designation as a practitioner or by inheritance	usually informal or formal examinations, often some form of licensing	formal examinations, licensing

Charles C. Hughes (1963) and Joseph Needham and Lu Gwei-djen (1962) are exceptions to the preceding generalization. Hughes' essay, "Public Health in Non-Literate Societies," and Needham and Lu's "Hygiene and Preventive Medicine in Ancient China" are based on historical records and scattered observations by field workers. As Hughes shows, no one up to 1963 had made an intensive field study of a traditional preventive medical system. In 1971 the only comprehensive investigation I know about is a study of prevention in a Malay village by A. C. Colson (1969). Other investigators (e.g., Chen 1970) are beginning to explore the non-curative elements of traditional medical systems, however, and this area of research should expand in the future.

Still other data need to be considered in any comparative analysis of medical systems. Practitioner characteristics are particularly significant, for they differ profoundly even between systems of the same type. Practitioners in a particular system should be described with respect to their age and sex; socioeconomic status; caste, religious, political, and other affiliations; educational experience and method of entry into practice; degree of specialization. We need to learn who, in theory and in fact, can and do become practitioners. Also, the social characteristics of clients or recipients of medical care require analysis. Again, such characteristics as sex, age, birth order, race, religion, and political affiliation need to be ascertained to describe adequately the structure and function of a particular medical system.

This descriptive information bears on this question: Within a particular population, who has greatest access, who has less, and who perhaps lacks access to the available medical care? What are the alternatives for a member of the population who has little or no access to one or all of its systems of medicine? Also, W. J. McNerney has pointed out that "creating access does not necessarily elicit use" (1971:226). Thus a description of access should distinguish the ideal and the actual, or the ideational and the phenomenal (Goodenough 1964).

This discussion of types and general characteristics of medical systems is summarized in Table 2. This tabulation attempts to compare the characteristics of medical systems in terms of actual practice rather than theoretical ideals. Thus, for example, a preventive perspective is strongly evident in classical Ayurvedic literature, but in practice in ancient India preventive medicine was probably slighted in favor of curative medicine. Of course, my definition of a medical system excludes non-deliberate health-related behavior, so that the concern for ritual purity in Hindu religion and caste organization is not considered to be part of the medical system, even though it probably affects the level of health.

#### HEALTH-ENHANCING BEHAVIOR OUTSIDE ANY MEDICAL SYSTEM

Non-deliberate health-enhancing behavior has made an enormous contri-

bution to improvements in health for which professionals within medical systems have been inclined to take credit. An example is the dramatic fall in the death rate for respiratory tuberculosis in England and Wales during the last century and a half. About 1840, the mean annual death rate was nearly 4,000 per million. About 1880, when the tubercle bacillus was identified, the rate had fallen to 2,000, and before 1920 the figure dropped below 1,000. The rate had declined to about 500, and the trend was still strongly downward, when specific chemotherapy finally became available in the late 1940s. T. McKeown and C. R. Lowe conclude "that medical measures made no contribution to the course of tuberculosis before the twentieth century" (1966:9). They assert that no evidence exists for changes in virulence of the organism or resistance of the host during this time, and conclude that the fall in death rate must be ascribed to miscellaneous "environmental influences, with the exception of medical measures."

Rene Dubos (1965:422) has commented: "Comparison of disease patterns in prosperous countries fifty years ago with what they are today brings to light the puzzling fact that several medical problems have all but disappeared without benefit of scientific understanding." In the same vein, W. J. McNerney claims it is a myth that "most health services make a big difference in the health of the population—thus, with enough money, health can be purchased" (1971:225). He points out that "in countries where infectious diseases are no longer among the predominant causes of death, it is often difficult to demonstrate a strong relationship between longevity and the amount spent on health services. The amount spent on health resources can vary as much as 100 percent, and morbidity and mortality rates will vary on the order of 5 percent" (1971:225).

Examples of non-deliberate health-enhancing behavior that affects rates of mortality are given by Carl E. Taylor and M. F. Hall, who claim that: "In some Asian countries child mortality for females is considerably higher than for males, largely because mothers and families take more conscientious care of sons than of daughters. The quality of a mother's care has been shown to be the most important identifiable factor influencing child health" (1967: 651). Taylor and Hall also write: "In Ceylon, after World War I, mortality rates fell approximately equally in the non-malarious third of the island and in the much-publicized malarious area where mosquito control was dramatically effective. In both cases, general economic and nutritional improvement were probably the dominant forces." Assessment of the adaptive efficacy of a medical system is enormously complicated by the difficulty in measuring the impact of these health-improving forces.

#### THE ADAPTIVE EFFICACY OF MEDICAL SYSTEMS

I consider in this section some problems in measuring the efficacy of behavior directed to maintaining and enhancing health. Each medical system evolves

to meet a people's conception of their health needs. It does not follow from this that a system meets their needs very well, either as they see their needs or as an outside scientist might define them. We do have evidence, however, to suggest that a long-standing, indigenous, traditional system may be more efficacious in meeting certain health needs than a recently transplanted system, *and vice versa*.

In discussing adaptive efficacy, a clear distinction is required between health needs that are directly related to Darwinian fitness and those that primarily influence the quality of life. The first category concerns diseases and disorders that lead to manifest ill-health or death. They can be conveniently referred to as biological needs. Their prevalence, incidence, and other epidemiologic characteristics can often be determined with some degree of accuracy. The second category of needs is less readily measurable, and generally related to human ideas of comfort, ease, satisfaction, and joy in life. Mark Field and others refer to the need for pastoral or supportive care, but I shall use the term "psychosocial needs." Ascertainment of a medical system's success in meeting psychosocial needs is difficult, because individual or group perceptions of health are difficult to measure, but I believe that they *can* be measured and that this is a task which behavioral epidemiologists and medical ethnographers should undertake.

The first step toward assessing the adaptive efficacy of a medical system must be an attempt to measure the biological and psychosocial health needs of the society. Then we must measure the degree to which the system successfully responds to each broad category of need, and to each of many subcategories. We have attained some proficiency in measuring biological needs and the success of responses to such needs in living societies, but our measurements for societies of the past are crude and fragmentary. Measurements of psychosocial needs and system responses are impressionistic for modern societies, and our knowledge of this aspect of past systems requires interpretive social and cultural historical research.

At this point I should like to distinguish between adaptability and adaptedness with respect to health-related behavior. "Adaptability" refers to a capacity for response to change, while "adaptedness" refers to a concept of equilibrium or homeostasis. Thus, high adaptability is a great capacity for adjusting to biological or sociocultural change; high adaptedness, on the other hand, implies biological or sociocultural stability. The terms are not polar: at theoretical extremes a population, society, or medical system could be highly adapted and highly adaptable, poorly adapted and non-adaptable, highly adapted but non-adaptable, or poorly adapted but very adaptable.

When, therefore, we say a medical system is effective or has great adaptive efficacy, are we referring to its capacity to sustain biological or psychosocial stability by adjustments of equilibrium? Or are we describing its efficacy in meeting change? Are both concepts involved? These questions must be answered by attempts to clarify an understanding of adaptive efficacy.

Other questions and hypotheses then emerge. For example, is a medical system more likely to be adaptable—capable of responding to new insults—if it is closely associated with other medical systems? Or is it likely to become rigid and unresponsive in such circumstances, to protect its integrity? Again, which medical system is better able to sustain psychosocial equilibrium in a society: a local system which is the only option in a traditional village society, or a traditional system which is oriented to meeting psychosocial needs, but is simply one of an array of medical systems open to members of a more complex society? How, in general, are degrees of cultural homogeneity and heterogeneity related to the biological adaptive value of a medical system, to the capacity of a system to respond to new conditions, and to its ability to maintain psychosocial equilibrium?

I have noted that objective and reliable measurements of adaptive efficacy are available only for a limited range of biological needs. Even in this category, the health statistics for most physically manifest diseases and disorders in most societies are grossly inadequate. Definitive statements about the comparative efficacy of medical systems simply cannot be made at the present time. Fortunately, another approach to the problem allows us to make tentative comparative assessments of the efficacy of medical systems. This indirect approach analyzes the characteristics of medical systems along the lines outlined and summarized in Table 2. In this approach we assess efficacy by estimating which elements in the spectrum of health-care delivery receive special emphasis in different systems, and by the known characteristics of practitioners and clients.

We can at least identify health needs that are probably most adequately met by a particular medical system. Also, we can determine the general character of differential access to the system, and who is most likely to profit or suffer from the differential. Of course, these questions must be asked to ascertain what the system does in theory, and then repeated to ask what it accomplishes in practice. In the final part of this essay I shall use this indirect approach to assess the adaptive efficacy of several traditional Asian medical systems. Before proceeding, however, I must briefly examine the issue of cosmopolitan medicine's adaptive efficacy in modern Asia.

The cosmopolitan medical system appears to have had a profound impact on the health of Asian populations in only a few specialized fields such as mass control of certain infectious diseases. As Figure 1 shows, since any determinant of ill health is linked to a causal web, it is in varying degrees biophysical, psychological, and sociocultural in origin. This is true even when we are accustomed to think of the disease or disorder only in its markedly biological aspect. An example would be smallpox. The medical response to this biophysical-psychological-sociocultural event that we call an episode of ill health due to smallpox should also be a multifaceted biophysical-psychological-sociocultural one if it is to be fully adaptive. While an indigenous and traditional medical system may include responses of this kind

to some health problems, and may therefore be efficacious, the cosmopolitan system may respond only biologically—for example, by the profferal of smallpox vaccine and little else in the face of an epidemic—and thus cannot be considered fully adaptive, even if the epidemic is controlled.

The limited spheres of health touched by cosmopolitan medicine in some regions today seem to be those most closely tied to the specific health problems which provided the original stimulus for introducing the system. For example, the health problems which led in South Asia to the introduction, more than a century ago, of the cosmopolitan system were: demand on the part of expatriate Europeans for health care similar to that in the homeland; demand for similar care on the part of some elements of the local elite; care of plantation or industrial laboring populations to increase labor efficiency and economic productivity; control of diseases of mass epidemic potential associated with high case-fatality rates, such as smallpox, cholera, and plague, because these are diseases that can be readily spread to and kill in any other part of the globe. The cosmopolitan medical system in India and other South Asian countries has provided fairly satisfactory solutions for these well-defined and specialized needs, but it has not yet become fully accessible to most of the people.

#### TRADITIONAL ASIAN MEDICINE IN THE PAST

In this section I shall outline some of the characteristics and adaptive strengths in ancient and medieval times of each of the three great regional medical systems of Asia: Chinese, Ayurvedic, and Arabic-Persian or Unani. This discussion provides the background for a similar assessment in the next section of the three systems today. The general format for the discussion of each system corresponds to that in Table 2.

##### *Chinese Medicine*

The geographical setting of traditional medicine in China is, of course, diverse. Environmental conditions ranging from cool temperate to subtropical, from riverine and coastal to montane and plateau, from wet to arid, from high latitude to low latitude, guarantee an exceptional diversity of diseases and disorders. Some of the principal health problems of the far north must have been substantially different from those in the far south in ancient times, as today. Yet the Chinese medical tradition has apparently maintained considerable homogeneity in beliefs and practices throughout the land and through a long span of time since the late Chou or Han dynasties, when a class of secular physicians emerged distinct from priests and sorcerers (Croizier 1968: 14). Local differences in patterns of disease may have been associated with a great diversity of local or folk medical systems which existed alongside and overlapped with the evolving regional tradition, but descriptions of such systems were not recorded or have not survived, as far as I know.

In ancient Chinese medicine the elements of the spectrum of health-care delivery that received special emphasis appear to have been the education of practitioners, public health (especially sanitary measures), prevention, diagnosis, and curative medicine. Conventional health education, risk assessment, case-finding, and rehabilitation probably received little attention. Prevention was a highly valued concept, and was a concern of the elaborate bureaucracy of medical and health officials attached to the Han imperial staff (Needham and Lu 1962). Han sanitary officials were responsible for water and food hygiene, and for such matters as the condition of latrines in the homes of the elite. The claim that a formal examining and grading system existed for physicians in the Chou dynasty is in doubt (Croizier 1968:28); but such formalities, along with medical schools, were well-established by the Sung dynasty.

The central concern of ancient Chinese medicine was curing. Through its eclecticism, Chinese curative medicine developed, especially from Chou through T'ang times, into a strong and highly complex subsystem with a rich materia medica, considerable specialization, and a wide array of theories and practices based on an elaborate philosophy of disease (Wong and Wu 1932). Many substantial therapeutic achievements have been recorded: for example, substances containing iodine to cure goiter, ergot to hasten difficult labor, ephedrine to lower blood pressure and control asthma, and pomegranate rind to expel tapeworms (Huard and Wong 1968:142). Variolation was in use as a protection against smallpox in the sixteenth century if not the eleventh (Needham 1954:58), and chaulmoogra oil was employed in treating leprosy at least as early as the fourteenth century (Wong and Wu 1932:96). Midwifery was developed as a highly skilled specialty. Although the management of fractures and dislocations was elaborated into an art in itself, the practice of ophthalmology and surgery, together with any systematic study of anatomy, was disdained. Psychological as well as biological disorders were managed through acupuncture, moxibustion, and other measures to restore internal harmony (Croizier 1968:19). It is abundantly clear that ancient Chinese medicine could relieve symptoms and alleviate ill health in many ways.

Access to bureaucratized medical care in ancient China appears to have been relatively open, at least in theory, and the concept of state responsibility for medical welfare existed even in the Chou dynasty (Croizier 1968:28). In the Sung dynasty, state-supported hospitals and dispensaries were well established, and physicians of the State Bureau of Medical Care visited the poor in their homes or in the hospitals (Eberhard 1967:58). Clinics and other facilities for "social relief" during the Sung dynasty are described in some detail by Hsü (1956).

Although it appears that the elite of most dynasties were especially favored, the general population, including the indigent, also had access to state-supported health services. Pediatric, obstetrical, and gynecological specialties had developed by the T'ang dynasty (Wong and Wu 1932), which suggests



that in theory there were at that time no major differentials in access to government medical care for women compared to men or for children compared to adults. One gains an impression of egalitarianism in access to care from reading the descriptions of early Chinese medicine. Even the urban-rural differential in access may have been overcome to some extent, as it continued to be early in the twentieth century, by the evolution of areas of medical care coinciding with the hinterlands of market towns (Yang 1945). Rural people within each market area could consult physicians and purchase medicines in the town, combining these activities with their normal trading rounds.

The practitioners of state-supported medicine in ancient China were men, and at least until Sung times, most of them were among the honored members of the society. During the Sung period four classes of practitioners evolved, according to Paul Unschuld (personal communication). At the top were the Confucian medical theoreticians (*ru-i*), below them certain famous part-time specialists (*ming-i*), then a class of full-time specialists (*chuan-i*), and at the bottom those wandering doctors (*ling-i*) who offered primarily symptomatic and supportive therapy. All classes but the *ru-i* have survived to the present. Specialization probably reached its zenith during the T'ang dynasty (Wong and Wu 1932:48-52), when four categories of full-time specialists—physicians, acupuncturists, masseurs, and exorcists—were recognized. Each category was ranked and each type of specialist could apparently sub-specialize in one of the recognized branches of medicine.

The adaptive strength of Chinese medicine in the past would appear to lie in (1) its eclectic diversity, which provided a wealth of diagnostic and prognostic alternatives, several sanctioned therapeutic options for any health problem, and a coherent philosophical foundation which could be applied to psychological and psychosocial disorders; (2) the strong emphasis on public health measures and preventive approaches; and (3) the centralization and bureaucratization which resulted, at least in theory, in open access to the system for the poor as well as the rich, for females as well as males, for children as well as adults, and perhaps for rural people as well as those of the cities. The greatest weakness of the system appears to have been in the neglect of surgery.

#### *Ayurvedic Medicine*

Traditional medicine in the Indian subcontinent evolved in a somewhat less diverse geographical setting than that of China. The region is largely tropical and subtropical; rainfall differences provide the principal climatic contrasts. The diseases of the subcontinent associated with specific exogenous agents are, and presumably also were in the past, rather uniformly distributed throughout the land. The vector-borne infectious and parasitic diseases are relatively more important than in most of China. Thus the broad pattern of disease and disorder in India differs considerably from that in China;

in this light, one might expect to find that the medical systems in the two regions also differ.

The principal emphasis of ancient Indian medicine seems to have changed several times, first as the Harappans gave way to the Aryans, and later as the Vedic medical literature gave way to the classical literature of Ayurveda. The archaeological record provides evidence of a strong concern with public health in the Indus valley cities of 4500 to 3500 years ago. At both Mohenjodaro and Harappā, excavations of the houses of well-to-do citizens have exposed bathrooms, privies, elaborate drains, sewage soakpits, rubbish chutes, and brick-lined wells that must have minimized contamination of drinking water. Stuart Piggott remarked that "the whole conception shows a remarkable concern for sanitation and public health without parallel in the Orient in the prehistoric past" (1952:168). After the collapse of the Harappan culture, which presumably coincided with the Aryan invasion about 3500 years ago, this preoccupation with public health seems to have diminished. However, a concern with public health does survive in Ayurveda of the classical period (A. L. Basham and C. Leslie, personal communications).

In the Vedic medical literature of 3000 years ago or more, the focus was on curing through magical means. Heinrich Zimmer (1948:2) found in the concern with magical, supernatural, and religious ideas the beginnings of a psychosomatic approach to the task of healing which continued as a strong element of classical Ayurveda, especially in the first major Ayurvedic text, the Caraka Samhita, which dates from the first century in its present form. Religious and magical practices continue to be recommended in Caraka, but a new healing approach is elaborated that is rational, humoral, and centered on drug therapy and diet. Prevention is emphasized in theory, especially through attention to proper diet and household arrangements. However, preventive medical acts other than personal hygiene and diet are not conspicuous in the Ayurvedic classics. The second authoritative text of Ayurveda, the Susruta Samhita, dating from about the fourth century, described surgery in more detail than other texts. Under the influence of the Susruta, surgical practice flourished in India; but in recent centuries this wing of Ayurveda has withered. The third authoritative Ayurvedic text, the Vagbhata Samhita, compiled about the eighth century, continued and strengthened the rational and secular traditions of the system. Throughout the history of Ayurveda until recently, the education of the practitioner was in the hands of a master. As in traditional Chinese medicine, general public health education, risk assessment, case finding, and rehabilitation were apparently not stressed in the classical texts.

Perhaps the greatest contrast with ancient Chinese medicine lies in the matter of access to care. Access to the Chinese system seems to have been more open than to the Ayurvedic system. Greatest access to care was apparently given to the urban adult male of one of the three upper classes of Indian society. Classical Ayurvedic care was to be available first to the king,

second to the army, and third to those of the twice-born castes (Zimmer 1948:86). Although a few references exist to charitable facilities supported by Ayurvedic practitioners (Sastri 1960:7-8), to social medicine (Zimmer 1948:86), and to public medical service (in the seventh century—A. L. Basham, personal communication), there is little in the historical records on Ayurveda resembling the records of a centralized, state-supported, bureaucratized system of medicine in ancient China.

Practitioners of ancient Ayurveda were invariably male, and were drawn from the Brahmin, Ksatriya, and Vaisya varna (Zimmer 1948:76). Entry into Ayurvedic practice was therefore open in theory to members of many different castes. It is known that, in fact as well as theory, Ayurvedic physicians were drawn from many castes in the eighteenth and nineteenth centuries (Leslie 1968:564)—as they are today. Except for very low castes, and physician castes in Bengal and Kerala, caste appears never to have been a major factor governing entry into practice, and it seems also that vaidas have always accepted clients from many different castes (Charles Leslie, personal communication). On the other hand, the barrier to female admission to Ayurvedic practice appears to have survived until quite recent times. (Charles Leslie tells me that some female vaidas are now trained in the Ayurvedic colleges.) As in China, specialization by practitioners reached a peak in the classical period of Ayurveda during the first millennium of the present era.

Ayurvedic medicine in its classical period seems to have provided curative medical care of considerable adaptive significance to a limited range of recipients. The remainder of the Indian population apparently had little access to learned practitioners, and continued to rely on local medical resources. Classical Ayurvedic surgery and internal medicine surely contributed significantly to the health of kings and court leaders, soldiers, and male members of elite castes. Any genetic benefits in terms of fitness resulting from ancient Ayurvedic care must have been unequally distributed, favoring this small segment of the population. Later, after the classical period, the scope and therapeutic significance of Ayurveda apparently diminished, especially with the disappearance of surgery. Whether the therapeutic efficacy of Ayurveda in psychosocial realms was also reduced in later centuries is a moot question. The answer to this question is linked to the following research problems: How have the social characteristics of those receiving Ayurvedic care changed between the classical period and modern times? Has the proportion of the total population receiving Ayurvedic care at any moment in time remained about the same since classical time, or has it steadily increased?

#### *Arabic-Persian (Unani) Medicine*

This ancient medical tradition, with its origins in the Mediterranean world and its development in the Middle East, was brought to India with the spread of Islamic civilization (Leslie 1968:565). Thus in India it was originally

a transplanted medical system, although over the centuries it has become indigenous and traditional. The geographical region of Arabic-Persian medicine's development is more circumscribed and homogeneous than that of Ayurveda, and much more so than that of Chinese medicine. Mainly arid and subtropical to temperate, across a narrow latitudinal span, the region supports a smaller range of tropical—especially vector-borne—diseases than does India or China.

As the geographical setting was circumscribed and ecologically homogeneous in comparison to China, so also the classical Arabic-Persian system of medicine was rather narrow in scope and limited in complexity compared to that in China. Strong emphasis was given to rational internal medicine which, however, followed Galenic humoral doctrines implicitly. Magical and supernatural approaches had little place in this system of medicine. On the other hand, considerable attention was given to mental disorders, and one authority claims that Arab physicians were the first to practice psychotherapy (Menninger 1963:424; Whipple 1967). Innovation in classical Arabic-Persian medicine was limited largely to pharmacology, medical education—especially the introduction of bedside teaching in a teaching hospital—and hospital construction (Whipple 1967). The development of surgery was severely stunted by reliance on Galen's anatomical ideas and by prohibitions against dissection and autopsy (Whipple 1967:77; Robinson 1943:192). Prevention and public health received some limited attention, principally in urban areas.

Practitioners in the classical period were largely established in the cities, and one gains the impression that their clients were principally members of elite circles. The majority of patients who came to the attention of the Arabic-Persian physicians were probably urban and male. Although Avicenna was clearly not a typical physician, his life at least exemplifies the preoccupation of the most competent practitioners of the time. Avicenna began his career by curing a prince, soon received a post with a sultan, and later traveled widely, curing various rulers and other patrons (Krueger 1963). He and men like Rhazes, al-Tabari, and Haly Abbas attended patients of lower status as well, but their first responsibility was always to their patron. Nevertheless, at least in the great cities, facilities for the indigent poor were provided—for example, a twelfth-century hospital for the poor in Baghdad was described by Benjamin of Tudela. This hospital, supported at the Caliph's expense, included a unit for patients requiring psychiatric care (Anonymous 1970).

For the population as a whole, the activities of Arabic-Persian public health workers were of greater adaptive significance, but these activities also appear to have been confined to great cities such as Baghdad. A muhtasib or inspector general was charged with hygienic regulation of city water supplies, foods offered for sale, slaughterhouses, and public baths (Whipple 1967:73).

Viewed as a system, classical Arabic-Persian medicine seems to have pro-

vided sophisticated care in the field of internal medicine, or pharmacotherapeutics, to a limited range of patients, probably primarily male. In principle, medical care must have been available to all, regardless of class, but in fact such care was probably almost nonexistent outside the larger towns and cities. Various folk systems presumably existed throughout the classical period in the Middle East, and would have been the only sources of health care in the villages and towns. Public health sanitation must have provided some benefits for those residing in the larger towns and cities. As in India, and perhaps China, little or no attention was given to village public health work in the ancient Middle East. Although mental disorders attracted some attention, this highly rational medical system cannot have had much to offer toward the alleviation of psychological and psychosocial disorders. For support in this sphere, the society undoubtedly turned to religion and to the local medical systems. J. Christoph Burgel's essay for the present volume asserts that the Islamically-inspired local medical systems of the Middle East in the medieval period were so homogeneous that they comprised a second regional system, which he labels "Prophetic medicine," and which competed with Arabic-Persian or Galenic medicine.

#### TRADITIONAL ASIAN MEDICINE TODAY

The modern descendants of the three regional traditions of Asian medicine are examined in this section as independent entities and as systems interacting with the cosmopolitan medical system. I restrict the discussion to China and India, in the latter case treating Ayurveda and Unani as the Indian representative of the Arabic-Persian tradition. The Arabic-Persian medical tradition also survives in Southeast Asia and in the Near and Middle East, but in more tenuous form than in Pakistan, India, and Sri Lanka. Certainly there has been no conscious movement toward revival of the ancient tradition, as there has been in South Asia and in China. Ralph Croizier has suggested that Arabic-Persian medicine played no great role in modern Arab nationalism, because it is closely related to early European medicine and thus cannot be asserted to have a unique value unknown to the West (1968:7).

The traditional medical system thrives in modern China because the system has real therapeutic or adaptive value, because the professionals and paraprofessionals trained in the cosmopolitan system have never been sufficiently numerous to provide even minimal care for all of China's people, and because a blend of traditionalism and "cultural nationalism" is supported by China's intellectual leaders (Croizier 1968). Ilza Veith has referred to "the dynamic revival of traditional medicine in present-day China" (1966:ix), and Ralph Croizier's essay in the present volume describes its ideology. I shall identify outstanding traits of the modern traditional system and examine briefly its adaptive efficacy.

What survives or has been revived in Chinese medicine is: (1) the formal

education of practitioners; (2) the hardy subsystem of curative medicine; (3) strong central bureaucratic control of the system; and (4) egalitarianism in access to care. The physician, including the paraprofessional practitioner, is a graduate of a standardized course in traditional medicine, as were his predecessors in the Sung dynasty. Curative medicine survives in its traditional and eclectic diversity, offering therapeutic options, apparently with special emphasis on acupuncture and use of herbal remedies, founded on ancient theoretical principles. The encouragement that traditional medicine receives comes from the state, perhaps to an even greater degree than in the Han, T'ang, or Sung dynasties. On the other hand, public health and preventive medical activities have long been separated from traditional medicine. Since the nineteenth century these activities have been increasingly "cosmopolitanized" (Wong and Wu 1932). While the traditional practitioner may be asked to assist in some aspect of a local preventive or public health program, or perhaps in health education (Worth 1963), his direct responsibilities apparently do not include these matters. Most significant, perhaps, from the adaptive point of view is the reinforcement of an egalitarian principle which can be found in medical texts dating back to the Chou dynasty (Croizier 1968:28). At least in the ideal, any citizen of China can consult and receive treatment from a traditional practitioner.

Open access to traditional care is probably the rule, especially in rural areas, partly because other practitioners may be in short supply or nonexistent, and also because in 1958 traditional medicine was granted status equal to or superior to cosmopolitan medicine (Sieh 1967:382). However, the reliance upon and encouragement of traditional practitioners has failed to meet all needs for health care. A category of "middle doctors" has been created to provide assistants to doctors. In country areas such assistants, who have usually received two years of practical training in basic medicine, may set up clinics and function essentially as qualified practitioners (Sieh 1967:383). They probably use a blend of cosmopolitan and traditional skills and remedies. In addition, "barefoot doctors" have been introduced to the countryside in large numbers since 1965. They are chosen by their fellow collective-farm members to receive about three months of formal training, and return to their home communities to divide their time between medical and other work (Sibley 1971). Thus, four categories of state-supported medical practitioners exist in China, and many other local or folk resources persist, overlapping with and supplementing the government-sanctioned systems of care. The blurring of lines between popular-traditional and scholarly-traditional Chinese medicine in Hong Kong is stressed by Marjorie Topley (1970), and may also exist in the rest of China.

That traditional medicine in modern China is perceived to be a valuable health-care resource is demonstrated by its strong state support and by its evident popularity. This does not constitute evidence for its adaptive value in biological terms, but it does indicate that it is adaptive in the supportive

or psychosocial sense. The complexity of the system suggests that it meets many needs in many realms of ill health. It could be argued, however, that its complexity may inhibit adaptive responses to certain needs. Areas of weakness in the tradition such as surgery and ophthalmology provided areas in which the cosmopolitan system was rapidly accepted (Wong and Wu 1932). This division of labor between the traditional and cosmopolitan systems has been fostered by the state in the past two decades, so that today a blend of systems is beginning to emerge (Sieh 1967). The systems are no longer wholly distinct, and in the future a "traditional Chinese-cosmopolitan" hybrid system may indeed evolve, a possibility critically discussed by Ralph Croizier (1968:237-238). Because the blending has already begun, it is even now impossible—or at least I find it so—to estimate the adaptive efficacy of traditional Chinese medicine in modern China.

Both scholarly medical traditions of India's past—Ayurveda and Unani—continue to flourish in India. Much that can be said about the condition of either system today can also be applied to the other; thus I shall examine the two systems together. One important difference exists, however: "With notable exceptions, Vaid, or Ayurvedic physicians, rather than Hakims [Unani practitioners], have been the more persistent and active proponents of professionalization" (Leslie 1968:565).

Although I have suggested that Ayurvedic medicine lost some of its classical therapeutic efficacy by the eighteenth and nineteenth centuries, its total adaptive impact as a system would not have diminished if the proportion of the population with access to Ayurvedic care increased. It is my impression, in fact, that such a broadening of access existed and has continued to the present time. However, access to care still appears to be more restricted than is the case for Chinese traditional medicine today. Although Ayurvedic care is available in rural and urban areas throughout India, and probably cuts across lines of social and economic status as never before, the vaid is still usually a male, and strong governmental support for the system is lacking. Female access to Ayurvedic care, at least for certain disorders, will inevitably be limited as long as the practitioners remain primarily male. The extent to which members of marginal socioeconomic groups meet difficulties in seeking this form of care because of economic and social barriers is an important current research problem. Finally: "Before and after independence, most of the official backing for Ayurveda has come from provincial governments, and this has varied widely" (Croizier 1968:232).

What has been said above about access to Ayurveda holds also for Unani medicine. The practitioner is male, and in Muslim communities especially, a female is unlikely to seek some kinds of medical aid from a male physician. Little centralized support has developed for Unani medicine, and hakims have not united and pushed strongly for professionalization. On the other hand, the Muslim egalitarian tradition in theory opens access to Unani care to persons in any economic condition.

Data are available from the Khanna studies in India on differential access to medical care. These studies in villages of the Ludhiana District, Punjab, have documented differentials in mortality that are clearly linked to differences in sex, age, and caste (used as an index of social and economic status). Higher death rates were discovered in infants, preschool children, females, the elderly, and in persons of lower social and economic status than in other categories of people. An analysis of use of all resources for medical care, including vaidas and hakims, auxiliary health workers, spiritual healers, and physicians in the city of Ludhiana found that categories of the population with excessive death rates received the least attention from and were the least liable to seek assistance from health specialists (Singh et al. 1962; Gordon et al. 1963, 1965). These studies provide one measure of the adaptive value of health care in the study villages, but the findings cannot be used to identify the *relative* value of the local, regional and cosmopolitan components of medical practice. Of course the Khanna studies did not attempt to measure the adaptive efficacy of Ayurvedic and Unani medicine in the domains of their presumed greatest strength, i.e., symptomatic and psychosocial support. Nor are there any studies, to my knowledge, that attempt to quantify the contributions of regional and local systems of medicine to health in Indian villages.

Qualitative assessments have been attempted, and several deserve brief attention. Harold Gould (1957), writing about a village in Uttar Pradesh, did not directly concern himself with scholarly traditional medicine, but he did identify a broad "division of labor" in the community: thus the cosmopolitan system "serves critical and incapacitating dysfunctions" while the local medical systems serve the "chronic non-incapacitating dysfunctions." He also noted, as did the Khanna studies, the importance of socioeconomic status as a factor in choice of type of care. McKim Marriott (1955), Morris Carstairs (1955), and Stephen Fuchs (1964) have all brought out the diversity of indigenous options for medical care that exist in Indian villages, and emphasize the blurring—as did Marjorie Topley (1970) in writing about traditional Chinese medicine in Hong Kong—that exists between the scholarly and popular medical traditions. Marriott's study provides a fine understanding of the functional roles of hakims and vaidas who practice alongside magicians, exorcists, priests, and snakebite curers in the villages of northern India. He demonstrated that vaidas, despite high socioeconomic status in the villages, can be consulted by village members of any status. Fees adjusted to economic status, free clinics for the poor, and charges only for proven results are some of the mechanisms that serve to increase access to this form of medical care. In the present volume, too, the essays by Alan Beals, Edward Montgomery, and Carl Taylor document and analyze the pluralistic structure of the medical system, with Beals particularly addressing the problem of how villagers decide whether they should resort to one or another kind of health specialist.

In modern India, the indigenous systems remain enormously important as



providers of medical care, not only in the villages but also in the cities, and there can be no doubt that Ayurveda and Unani contribute substantially to the cumulative impact of these systems on Indian health and ill health. Cosmopolitan medicine is also at home in India and will no doubt continue to extend its adaptive influence, especially as it becomes more effective in rural areas and as rapid changes occurring in the whole society bridge the cultural gap between villagers and cosmopolitan medical workers. While there can be little doubt that popular traditional medicine will indefinitely survive, whatever the level of development of cosmopolitan health care, the future of scholarly traditional medicine in India is obscure. In China the extinction of the scholarly medical tradition is not an issue. It will survive in independent form or in the sort of traditional Chinese-cosmopolitan hybrid system that Croizier has described. In India, on the other hand, Ayurveda and Unani are not today on a par with cosmopolitan medicine. There are three alternatives for the future rather than the two that face traditional Chinese medicine. The Indian traditions may hybridize with the cosmopolitan transplant, or survive in their present independent forms. They may also wither and disappear as effective adaptive systems, losing their identities in the complex and diverse matrix of popular traditional medicine.

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