

## CHAPTER 1

### BACKGROUND: ISLAMIC MEDICINE IN CONTEXT

This project is primarily concerned with *drug-plant prescription* in present-day Islamic societies, but it is essential to recognize at the outset that patterns of pharmaceutical use do not exist in a vacuum. Ideas regarding which medicinal plants are "good for" a given illness are thoroughly enmeshed in a complex ethnomedical framework of praxis and precedent, with deep roots in history. This chapter will provide the broad context of ethnographic, historical, and geographic setting necessary for evaluating the applicability of numerical taxonomy to patterns of drug-plant prescription in the medical system of the Islamic Middle East. It includes a description of the system as a whole, a discussion of the sources from which it is commonly recognized to derive, and a brief overview of the various historical factors and interactions through which it has been shaped.

#### The "System" of Islamic Medicine

Several medical anthropologists working in the Middle East have observed that the local expressions of health-related beliefs and praxis they have observed "in the field" incorporate elements synthesized from multiple sources (Good 1977, Greenwood 1981, Inhorn 1994, Millar and Lane 1988, Myntti 1985). The main components they note include a humoral system inherited from the Greeks, *hadith*-based "prophetic medicine" derived from the folk cures practiced in the Arabian Peninsula during Muhammad's time, survivals of

indigenous pre-Islamic theory and practice (e.g., pharaonic or Coptic Egyptian, Assyrian, or Syriac), and independently innovated adaptations to the immediate local ecology. Taken together, these various inputs have amalgamated into a *bricolage* (see Levi Strauss 1966:16-36) of useful *ad hoc* tools for confronting illnesses "cook-book style" (Good 1977:30). The historical factors relevant to the development of this "tool kit" are of great import for the present research and will be discussed at greater length later in this chapter. The next pages focus on Islamic medicine in the "ethnographic present."

Byron Good (1977) has described the state of Islamic medicine as he encountered it in the Iranian town of Maragheh. His observations mirror those of other anthropologists working elsewhere in the Middle East. The components of Islamic medical systems are typically drawn from diverse sources, some of which were initially worked out in locales greatly removed from their present environments. Islamic illness and curing constructs integrate and preserve the values of local communities, while integrating them into frameworks stemming from diverse historical periods and high theoretical traditions (Good 1977:33).

Although *bricolage*-type configurations of illness (and concomitantly, of curing) aligning multiple historical streams of theory and practice are community specific, ecology and history have presented peoples throughout the Middle East with many of the same "finite" and "heterogeneous" instruments and means to work from (see Levi-Strauss 1966:17). Consequently, a high degree of commonality is apparent, despite variations in "local color" (Shiloh 1953 and 1968).

No description of Islamic medicine can justly claim to portray *the* system in invariant, overarching terms, but it is possible to paint a generalized portrait of a gestalt Middle Eastern medicine abstracted from the convergence of features widely found throughout the culture area. The system of Islamic medicine described in this section is therefore both "nowhere" and "everywhere" present in the Islamic world. It is a description shaped from the "tools and materials" at hand (see Levi-Strauss 1966:18).

Most of the medical anthropology published on the Middle East has to do with the *symbolic* implications of the philosophy and application of Islamic medicine. These works generally focus on how gender, social class, and other power differentials are manifestly expressed through illness, prevention, and treatment. "Us/them" distinctions are pervasive and commonly dominate the

attribution of meaning to symbols of health, illness, and curing. This presents a unique difficulty for the diachronic study of cognition as it relates to Islamic medicine.

While "the same" symbols (e.g., the heart, tattoos, spirit beings, etc.) are fairly consistent across the Middle East, the meanings ascribed to them differ from social group to social group and village to village. Some of the most important symbols are artifacts of material culture (such as eye-shaped beads or saints' shrines), endowed with a wide range of potential meanings, and "natural symbols" intimately associated with near universals of human "being," such as blood, the heart, or feces (see Douglas 1973). The pervasiveness of these signifiers throughout the region coupled with their extreme heterogeneity of signification make an attempt to examine the finer vicissitudes of historical relationship extremely challenging, if not impossible, using such natural and artifactual symbols.

In the 1980s, medical anthropologists specializing in the Middle East became increasingly aware of deficiencies in the existing ethnomedical studies of the region. One major critique was in regard to a pervasive lack of "long-term historical perspective" and inattention to a broader framework in a region where written records of medical systems go back literally thousands of years (Millar and Lane 1988:651 and Morsy 1981).

Most researchers have since paid closer attention to the broader framework and the importance of the grand sweep of history. But Middle East anthropologists still seem to be caught in a "Catch 22" in which they vacillate between (a) descriptions of area-wide constructs (such as the humoral system) originating in the common inheritance of the "great traditions" of the past or (b) of locally bound ethnomedical symbolisms. All this is done without ever giving more than a nod to mid-level relationships between contemporaneous neighbors of varying proximity and levels of interaction. Their quandary results partly from the highly symbolic and variable nature of the elements of the system they have chosen to focus on. With the constant metamorphosis of an outward signifier's signified meaning constantly varying from one sub-population to another, there is little to quantify relationships apart from the presence or absence of broadly defined cultural features (such as eye-shaped beads or possession by spirits of foreign ethnoreligious or geographic origin).

The description of the philosophy and practice of Islamic medicine that follows is a synthesis derived from works by several anthropologists and

folklorists working in the Middle East. Soheir Morsy has written extensively about social roles, gender, and power as it relates to health and illness in Egypt but also includes many informative details of local practice (1980a, 1980b, 1993). Morsy's writings include more details about curing and prevention than most other students of Middle Eastern ethnomedicine. Others address these issues, but only a few, such as Pamela Constanides (1977), Hani Fakhouri (1968), and L. Lewis Wall (1988), do so adequately. Wall produced a useful ethnography of conceptions of illness and wellbeing among Muslims in West Africa, which includes an important overview of Islamic anatomical ideas (1988). Evelyn Early (1982, 1988, 1993), Bernard Greenwood (1981), Beth Kangas (1994) and Cynthia Myntti (1985) describe the physiological dynamics of Islamic medicine. Frode Jacobsen (1998) and Mary-Jo Good (1980) focus their observations on the role of emotion in physiology and wellbeing. Several authors have addressed issues relating to illness causality, including Ailon Shiloh (1953), Bernard Greenwood (1981), and Hania Sholkamy (1998). All of these researchers neglect to describe intracultural variations or inter-societal interrelationships in any meaningful level of detail. Their portraits tend to revolve around the uniquely local or, more often, the pan-Arabic or pan-Islamic.

### **Philosophical Bases of the System**

Islamic medical practice is founded on a specific, culturally contextualized set of philosophical concepts relating to anatomy and physiology, etiology, and the diagnosis of causation.

Islamic anatomy differentiates the external parts of the body better than the internal parts, although both are thought of as intimately interconnected. Every organ, internal or external, has its divinely appointed purpose as part of the essential structure upon which the body's survival depends.

The heart is conceived of as both the seat of emotion and the prime mover in regard to physiology. Blood derived from the heart (and the pulse, which is considered to be its breathing) gives strength to the other organs through the life force the blood carries. The brain makes the other parts work. Bones exist solely to support the flesh, while muscles allow work. Blood vessels, ligaments, and tendons are all seen as important but otherwise inscrutable string-like things, so similar that they are frequently all lumped together under the same lexical label. The liver, kidney, gall

bladder, womb, spleen, and lungs are all typically differentiated, but nearly everything else internal is systematically linked, collectively conceived of as the belly, or stomach, all associated with the function of digestion as the organ which contains and processes the body's fuel.

Internal body parts are thought of as a complex interlocking system expressing a kind of fluidity among components. The body is a dynamic organism with overlapping parts. These components are all integrally related in ways through which foreign objects, e.g., an IUD (Early 1988:73 and Kangas 1994:2), heat or cold (Greenwood 1981:224), or psychic dispositions (Early 1988:75) may freely travel.

Every individual has their own natural physiological temperament, which is affected by climate, geographic locale, foods, and emotional and environmental influences. Temperament varies by sex, place in the life cycle, and current life situation. The body is thought of as trying to maintain a systemic internal balance or equilibrium, based on good digestion, which is the product of a balanced diet and right relationship with ecological, social, and supernatural elements in the environment. Good nutrition (contributing toward good digestion and therefore healthy equilibrium) is described in terms of quantity of food consumed and appropriateness of the food's qualities for the physiology and circumstances of the individual concerned, by age, weight, gender, and current health state.

Health is defined as physical "well-being, intactness, peace, safety, and security" and social "faultlessness, rightness, correctness, genuineness, truth, and credibility" (Antes 1989:177). Health is not so much the absence of illness as the presence of wholeness. Illnesses and injuries (although under supernatural regulation and ultimately attributed to God) are thought to be caused by outside forces acting with negative purpose. Etiology is not thought of in terms of pathology or symptomology so much as of causation. The cause of any given illness is universally some kind of imbalance, whether it be humoral (heat or cold), social (excessive jealousy or dissatisfaction), or spiritual (contamination or possession). More often than not, illnesses are symbolic expressions of strained social relationships and may be seen as rooted in social relations set off balance by deviation from role expectations through interpersonal conflict or by emotional distress.

Illnesses may be classified as either stemming from natural, physical causes (such as worms, insect or animal bites, bad food or nutrition,

unhygienic water, inclement weather, overindulgence in food or sex, excessive exposure to the sun, humidity, darkness, strong winds, heat, or cold) or from supernatural sources. Supernatural causes may include the envious "evil eye" of another human being or the displeasure of a spirit-being (i.e., a *Jinn*, or 'genie') or the ire of a supernatural relative (Morsy 1993:102). Whatever their etiology or the proximate cause of their symptoms, as Shiloh (1953:278) has noted,

All illnesses or injuries are subjective affairs arising out of personal actions conducted or not conducted, or caused by someone or something possessed with power. Illnesses or injuries do not just occur--they befall a certain victim, at a given time, and in a definite manner because of specific causal actions.

Short-term, self-limiting afflictions are not thought of as sicknesses; only a protracted state of being unwell is considered to indicate true illness. The diagnosis of illnesses is generally a post hoc, retrospective matter, and has more to do with which treatment ultimately proved successful in alleviating the problem than with what the symptoms of the sick person were.

#### **Prevention and Treatment in the System**

Sick persons are referred to particular practitioners based on the best guess as to the cause of their malady. Bone setters and health barbers are consulted for obvious physical injuries to the external body, and herbalists provide botanical and other materials through which home remedies for illnesses may be attempted. If the herbalists' ministrations are successful, then the illness is usually deemed to be one resulting from natural causes.

If home remedies are ineffective, this indicates the illness is likely caused by a non-natural agency, although herbal cures may also be effective in some spiritual matters. If herbs fail and Western biomedicine is unavailable for financial or other reasons, a holy person (a *fikih*, a priest, or a rabbi) may attempt an exorcism. Should exorcism prove ineffective, it becomes clear that the possessing being is a nonremovable *zar* spirit (a kind of *jinn*), who has taken up permanent residence in the individual and can only be negotiated with by means of the life-long repetition of ceremonies conducted to placate it.

Generally, the primary emphasis for illnesses is on prevention, while for injuries, it is on treatment. Illness prevention may involve

ornamentation or other treatments on the outer body as a kind of external medicine. Such practices-as leaving a child a bit dirty to avert envy, tattooing to relieve pressure that may result in clouding of vision, kohl use to prevent eye problems, ear piercing to allow fevers to escape, the wearing of blue beads to avert the evil eye, and cutting a notch in children's ears to disfigure them and make them less subject to envious stares are all common preventative measures. Also, invoking the name of the deity or remaining in physical proximity or contact with a book of Holy Scripture or written charm is considered a wise prophylactic against supernatural insult to the body. Remaining in the presence of strong persons or the tombs of saintly individuals (thereby partaking of their power through contagion) yields a similar effect.

#### **Underreporting of an Important Aspect of the System: Herbs**

The most promising "symbols" for quantifying mid-level relationships *within* the culture area are also the most underreported. Greenwood has observed that the lines between classification of illness by perceived cause and by treatment may not always be as clear-cut as normally expressed in the literature, especially in regard to diet and herbal treatments. He reports two cases where one "conceptual structure" of the diet and herbs considered appropriate for a particular set of symptoms served both the natural and supernatural interpretations of causation (1981:228). Since it is possible for the same drug-plants to be applied to identical symptoms thought to originate from more than one causal circumstance, botanical medicines represent a set of symbols less dramatically in flux than the other treatments and preventions outlined above.

Many researchers have noted the existence of herbal remedies as part of the larger complex of Islamic medicine (see Auerbach 1982:1500, Bakker 1992:822, Constantinides 1985:688, Early 1982:1493, Greenwood 1981:220, Lane and Millar 1987:162-163, Millar and Lane 1988:165, and Myntti 1985:165). However, few (with the exception of Greenwood 1981, Lane and Millar 1987:162-163, and Millar and Lane 1988:165) provide any actual data whatsoever on the use of drug-plants in curing illnesses (and even this is scant). The only thorough reporting of herbal remedies in Islamic societies was undertaken by a team of Japanese pharmacologists affiliated with the Institute for the Study of Languages and Cultures of Africa, who worked in association with native consultants (see Ahmed et al. 1979, Başer et al. 1986, Bellakhdar et

al. 1982, and Ushmanghani et al. 1986). Despite the boon their data provides, the lack of clear ethnographic context for their work (the complete absence of even the most basic descriptions of locales where herbalists operate, simple demographics of the communities, etc.) would frustrate any anthropologist.

## **The Sources of Middle Eastern Medicine**

As already noted above, Islamic medicine, in whatever local expression it takes, is an amalgamated *bricolage* of features drawn from diverse times and places. It is a pluralistic system of fragmented or separate but integrated elements brought together through historical circumstances of commerce, proselytization, and empire (Greenwood 1981:219 and Millar and Lane 1988:656). This subsection of the chapter presents (in broad outline) some of the sources of cultural categories upon which Islamic medicine is based. More specifically, it consists largely of a survey of a deeper level of historical substrata than has typically been examined in prior studies of Islamic medicine (following the recommendation of Millar and Lane 1988). The discussion will cover a wide array of possible theoretical and literary influences, as well as proposed etymological inter-associations between diverse periods and cultures.

The review will be given in a semi-chronological order and includes some details of the ways in which antecedent systems may have passed on some of their elements to their successors. It is not primarily intended as a chronology of the development of Islamic medicine. Rather, it is offered as a collection of portraits of the major inputs that have most likely contributed to the development of the Islamic medical system described in the previous section. Once these primary influences have been described in "broad strokes," it will be appropriate to move on to a brief but more intentionally historical sketch of the external and internal interactions that brought these elements into contact of varying degrees of intensity.

### **Ancient Near Eastern Medicine**

The earliest known recorded medical traditions in the world are those of ancient Egypt and Mesopotamia (present-day Iraq). Mesopotamia, a territory that saw the successive rise and fall of the city-states of Sumer, Akkad, Babylonia, and Assyria (Bates and Rassam 2001:23), boasts the oldest

surviving texts, dating from around 3,000 B.C.E. (Majno 1975:36). However, its medical records (primarily magico-medical treatises, glossaries of drug names, and exceptionally difficult to translate prescriptions) are highly fragmentary in nature, are distributed over a roughly 3,000-year span (with huge time gaps in between sources), and the majority of the cuneiform tablets come from the final days of Assyria's influence on the Near Eastern scene, around 600 B.C.E. (Majno 1975:36). The oldest-known Egyptian medical papyri date from around 1900 B.C.E. A scribe who produced a medical text in the 1550s B.C.E., however, claimed that his prescriptions were originally authored in the time of a pharaoh who ruled over 1,500 years earlier (see Nunn 1996:31). The Egyptian medical system is well attested in relatively lengthy and complete texts (the lengthiest set of prescriptions boasts nearly 900 recipes). These were mostly produced at times separated by only a few hundred years at a stretch (see Manniche 1989:62). It remained relatively consistent, with "no evidence of major changes in . . . format or content" from the earliest known sources, through to 525 B.C.E. (Nunn 1996:206). Since these two ancient civilizations were in long-term commerce with one another (at one point, Egypt was in vassalage to Assyria), it is likely that there was some degree of intercourse in their intellectual traditions.

Much less is known about Mesopotamian medical theory than its practice. Unless otherwise noted, the following description is primarily based on the work of medical historian Guido Majno. In terms of anatomy and physiology, ancient Mesopotamians saw the heart as the site of intelligence, the liver as the place where anger rested, strength was found in the kidneys, and the brain was largely thought to be unimportant. Etiologically, they believed that illness was either the fault of the victim (who must have committed some sin to merit such calamity) or an attack from malicious outside agents (such as an evil spirit or god, cold, dust, or a bad smell).

Treatment for injuries and illnesses was proffered by the *ášhipu* 'sorcerer' and the *asu* 'physician' (a member of the temple clergy), both of whom collaborated together in their practices. They may have also been accompanied by the *bāru* 'omen-reader' who told the others what he saw in regard to (a) all of the persons, creatures, and objects met on the way to the consultation, (b) whether the patient's head was hot, cold, moist, or dry, and (c) what these observations portended (Budge 1996:51). In the earliest cuneiform set of prescriptions (dated to circa 2158-2008 B.C.E.), which is not significantly different in its pharmacy from that presented in

the very latest texts, 80 percent of the remedies are for external use (Majno 1975:46). The use of healing amulets was not unknown and a number of drug-plants were used for particular illnesses simply because their names punned with those of the maladies suffered.

According to at least one author, the "native" Syriac medicine of C.E. 300-800 presently known to us shows that "many of . . . [the prescriptions] were taken from the native medical works of the [ancient] Babylonians and Assyrians" (Budge 1996:74). Levey (1967:29) has argued that, after the decline of the Assyrian Empire, Akkadian medical knowledge was likely passed on orally into Aramaic, Hebrew, and Syriac traditions. From there, it ultimately had enough influence on Islamic medicine that in one Arabic manuscript (produced in C.E. thirteenth century Persia) about 20 percent of the plant names can be traced back to the Babylonian dialect of Mesopotamia (Levey 1967:27). It is less clear whether Mesopotamian medicine had any direct influence on the Greeks. An emphasis on prognosis, the idea of critical days for treatment, and the adoption of over 250 specific drugs have been proposed as plausible evidences for its influence. Diagnostic attention paid to imbalances between "four bodily fluids"—yellow, black, white, or red—may represent a precursor to the four Hippocratic humors of later Greek medicine: yellow bile, black bile, phlegm, and blood (King 2001:7).

The medical papyri of ancient Egypt provide a much clearer picture of the Egyptians' ideas regarding anatomy, physiology, illness causation, and etiology than the Mesopotamian tablets afford us. J. Estes (1989) and John Nunn (1996) have written insightfully on Egyptian medicine and the description of it that follows draws largely on their observations.

Anatomical hieroglyphics reveal that, as in the Islamic medicine that would later prevail in Egypt, a greater emphasis was placed on observation of the externals of the body than on its internal organs. Of the sixty-three human parts listed in the standard student grammar of Middle Egyptian (Gardiner 1957), all are external features. Although the brain's directing function seems to have been unknown, other internal organs were recognized, including the heart (as the seat of the emotions), the stomach or belly (called "the mouth of the heart"), the liver, lungs, spleen, and bladder. Arteries, veins, nerves, tendons, and muscles were all lumped together into a category labeled *metu*, which was perceived as a system of conduits for circulating air, blood, water, and pathogenic or medicinal substances.

Illnesses were usually conceived of as caused by enemies (assumedly through witchcraft), god or spirit attacks and invasion (possession), or overindulgence in food and drink. One of the main pathogens with which the ancient Egyptians were concerned was *wekhedu*, a kind of putrid "pain stuff" initially manifested in the feces as the remains of undigested food. It could pass from one part of the body to another (perhaps through the channels of the *metu* system in a way similar to that provided by the "fluidity" model of later Islamic medical belief).

Because of the focus on *wekhedu* and the *metu*-system, treatment was primarily concerned with diet and the encouragement of excretory processes, frequently assisted by the use of herbal remedies. The preventative maintenance of stability (social, political, and corporal) was the first line of defense against illness. Amulets, incantations, and various drugs, both simple and compounded, were used to heal body and soul.

The legacy of Egyptian medicine may be seen in a few elements of the Greek system (Breasted 1930:16) which was born during the sixth to seventh centuries B.C.E. Greek medicine was further developed on Egyptian soil (at Alexandria) during the Ptolemaic period (305-330 B.C.E., to be discussed in greater detail, below) and after. It may also survive in folk healing beliefs and practices of the Egyptian *fellahin* ('peasants'). The Egyptian concept of decay (*wekhedu*) may have resurfaced in the *perittoma* (pathogenic digestive residues) of the Alexandrine Greeks (Estes 1989:122 and von Staden 1989:122). Other features adopted from the Egyptians by the Greeks are thought to include: "several medicinal plants, the structure of drug prescriptions, the practice of prenatal and gynecological fumigations, the concept of 'defluations,' and the healing value of temple sleep ('incubation')" (Estes 1989:122).

Whether or not Egyptian medicine significantly influenced Greek medicine, the cross-pollination of the two medical cultures is attested in a C.E. third-century papyrus (P. London and Leiden). It was written in Demotic (a late phase of Egyptian that would eventually be superseded by the development of an even later Egyptian dialect, Coptic, written using the Greek alphabet, plus a few extra letters), which Nunn 1996:208 describes as "freely embellished with Greek inserts and glosses" even though its parts "are in the general format of the [old Egyptian] medical papyri" (Nunn 1996:208). According to Nunn, Coptic medicine (which developed primarily in the C.E. third through fifth centuries) "was predominantly Greek, though

containing many Egyptian remedies [and] partly written in a format reminiscent of classical Egyptian medicine" (1996:209).

Regarding the survival of Coptic (and older Egyptian) medicine into the present, Coptologist Walter Crum (1950:185) asserts: "Of Coptic medicine, whether derived directly from Ancient Egyptian or influenced by Greek practice, a great deal remains nowadays in the homes of certain classes of people". In support of this, he contends that a number of Coptic and Demotic Egyptian words have passed into Egyptian Arabic and are in common twentieth-century use. These include illness-related terms (such as those for 'epidemic', 'diarrhea', 'fever', 'chill', 'runny nose', 'nasal voice', 'headache', and 'skin rash') and medicinal plants, minerals and other substances (such as words for 'clover', 'nitre', 'gum', 'acacia', 'sesame', 'pomegranate' and 'lily') (1950:185-188). Outside of Egypt, however, the lexical influence on later Arabic terminology seems to be less profound. Levey found that only 2-3 percent of the names for plant drugs in two Arabic medical texts (C.E. ninth and thirteenth century, from Baghdad and Persia, respectively) could be traced to Egyptian origins (1966:20 and 1967:27).

Crum compared a number of prescriptions and curative procedures of the *fellahin* to those found in the C.E. fifth- through tenth-century Coptic papyri, noticing what he considered to be convincing parallels in their specifics (1950:186-188). Others have also reported analogues between earlier pre-Islamic medical practices in Egypt and those characteristic of twentieth-century *fellahin*, including the use of various kinds of dung for diverse ailments, henna for headache, wormwood for a stomachache, grease and onions for wounds, *khol* for the eyes, and charms burnt as fumigants (Reisner 1905). Others report the continued use of "many of the same drugs . . . [used in the papyri], such as honey, oil, [specific] plant remedies, animal products, and human milk" (Estes 1989:117), and finely detailed similarities in procedures for processing scarab beetles for use as a drug.

### **Greek Humoral Medicine**

Greek medicine entered the Middle East through two primary conduits: the city of Alexandria in Egypt, and the town of Gundishapur in Persia. Under the Ptolemies (305-330 B.C.E.), Greek physicians practicing Hippocratic medicine (based on the teachings of Hippocrates, a native of Kos in Asia Minor who flourished roughly a century earlier) served members of the immigrant Greek ruling class. With the founding of Alexandria (331 B.C.E.)

and its swift development into "the major cultural and scientific centre of the Hellenistic world" (Nunn 1996:206), Greek medicine came to Egypt in earnest. There, it was further refined under the influence of legendary physicians, including Herophilus and Galen. From thence, it was disseminated throughout the Greek (later, Roman, and then Byzantine)-ruled world (i.e., the Mediterranean, parts of northern Africa, and the Middle East, excluding areas east of Syria).

Greek medicine came quite some time later in the Persian-dominated East (the realms of the Parthian, and later Sassanian Empires, including present-day Iran, Iraq, and much of Central Asia). In the C.E. sixth century, Khosrow Anushirvan, Sassanian king of Persia, founded the town of Gundishapur in southwest Iran. It was primarily populated by deportees from Syrian Antioch (prisoners taken in campaigns in what is today southwest Turkey), and Greek settlers (Browne 1962:20 and Ullman 1978:17). By C.E. 555, he had founded the famous school of Gundishapur (Esposito 1999:271). When Syriac-speaking Nestorian Christians of Edessa fled Byzantine persecution in the West and sought refuge in Persia, their medical literature (including Syriac translations of major Greek works) came with some of them to the school at Gundishapur. There, Nestorians taught alongside Greek scholars and continued their own efforts toward translating the Greek medical corpus into Syriac and Pahlavi Persian.

The Arab-Islamic Empire rose to become the dominant power in the Middle East beginning in the late C.E. 630s and early 640s and proceeded to expand throughout the following century. Translations of Greek medical works were commissioned by the new Arab elites who now controlled the former Persian Empire and large portions of the prior holdings of the Byzantine Empire, including Syria, Egypt, and parts of the southern Mediterranean. The first translations were of "Greek and Egyptian books," undertaken under the patronage of Khalid ibn Yazid ibn Mu'awiya (probably in the 680s or 690s) at Alexandria. The major effort to translate *Yūnānī* ('Greek') medical works into Arabic, however, was mainly done through the medium of Syriac and was undertaken at Gundishapur, the primary conduit for the transmission of Greek medicine to the Muslim world (Esposito 1999:271).

Greek medicine, as it came to the Arabs, is based on the Hippocratic theory of the humors as refined and expounded by Galen (who studied at Alexandria between C.E. 147 and 158) and later writers of the Galenic school that followed him. The survey of Islamic Galenism that follows is based on

descriptions by E.G. Browne (1962), J.C. Bürgel (1976), James Esposito (1999), Byron Good (1994), Bernard Greenwood (1981), Marcia Inhorn (1994), Helen King (2001), and Marcia Millar and Sandra Lane (1988).

In the Galenic system, each part of the body exists for a unique purpose. Food is believed to be transformed through a cooking, boiling, or fermenting process in the stomach and the liver that converts it into four humors (blood, mucus or phlegm, yellow bile, and black bile), which are ultimately conceived of as both nutrients for and constituents of the body. The humors combine with the four primary qualities of the basic elements of Aristotelian theory in a relationship where "fire corresponds to yellow bile, which is hot and dry; air corresponds to blood which is hot and wet; water corresponds to phlegm which is cold and wet, and earth corresponds to black bile which is cold and dry" (Ullman 1978:58).

Due to the influence of such factors as climate, age, gender and habitual behavior, each individual's temperament is dominated by one of the four humors. If the humors and qualities are in a state of being well-mixed or ('balanced') relative to an individual's temperament, then that person can be said to be in a state of health. If one or more of the humors and concomitantly, the qualities associated with it becomes uncharacteristically dominant and unbalances the system, illness will result. Additionally, incompletely digested food remaining in the stomach, liver, or veins is thought to rot, putrefy, or stagnate, which then causes the humors to become morbid.

In the Greek tradition, healing is primarily effected through surgery, dietetics (and other life-style changes), or the use of pharmaceutical drugs. As in the other systems described above, surgery is the main treatment for injuries. Illnesses, on the other hand, are generally treated through other means, which revolve around an approach based on the principal of *contraria contrariis* 'opposite cures opposite.'

On the basis of *contraria contrariis*, to effect healing, either (a) hot substances (foods or drugs) must be used to treat cold illnesses and wet and cold substances to treat dry and hot illnesses, or (b) "In a body which deviates from the right proportion [i.e., a "well-balanced" way of life], a way of life must be followed which deviates from the right proportion in the same degree but in the opposite direction" (Ullman 1978:98). These two approaches are not far removed from one another when we consider that the Greek term *diaita* 'diet' refers broadly to peoples' "way of life" and that

the line between foods and medicines is not very clearly drawn, since all such substances have active properties that can affect health. Drugs can be prescribed as simples (a single remedy) or in compound form (of multiple components). Compound remedies are prescribed where the nature of the illness, the state of the organs, or the taste, strength, or some other characteristic of the drug itself merits the combination of herbs.

Most medical ethnographers of the Middle East agree that Greek (Galenic or humoral) medicine and the so-called "Prophetic medicine" (to be described in the next subsection) are the mainstays of the pluralistic system of Islamic medicine. However, they also report that twentieth-century expressions of Greek concepts in Islamic medicine are more concerned with the hot-cold dichotomy than they are with the moist-dry axis, if moisture or dryness is even recognized as medically significant at all.

### **Prophetic Medicine and Popular Movements**

The system of medicine known as *at-Tibb an-Nabi* 'the medicine of the Prophet' or 'Prophetic medicine' consists primarily of collections of teachings of Muhammad in the Koran and, more importantly, health-related sayings attributed to him in the *Hadiths* (Bürgel 1976:34, Greenwood 1981:220, Inhorn 1994:61, and Millar and Lane 1988:652). This system serves as a quasi-religious alternative to the secular, "heathen"-born *Yūnānī* system. While its theoretical and practical aspects are ascribed to Muhammad, prophetic medicine is actually a codification of syncretic principles and practices (see al-Jawziyya 1998 for a typical example), legitimized through association with his authority. The content of Prophetic medicine derives from Jewish medicine, the Persian medicine of Gondeshapur, nomadic Bedouin medicine, and Galenic medicine (Inhorn 1994:61). The following discussion of Prophetic medicine is based on the work of J.C. Bürgel (1976), Dale Eickelman (2002), Peter Gran (1979), Bernard Greenwood (1981), Marcia Millar and Sandra Lane (1988), and H.M. Sa'id (1998).

In the view of adherents to *at-Tibb an-Nabi*, illness and misfortune are all ultimately in the hands of God. However, the immediate agents through which illnesses are contracted are primarily sorcery, the evil eye, and *jnun* (sing. *jinn*) 'genies.' In addition, Bedouin ideas of pathology at the time of the Prophet included a focus on symmetry not very different from that of the Greeks, where illnesses originate from improper nutritional intake, stomach disorders, or indigestion. Spirit, soul, and body are seen as

intimately interconnected in the medicine of the Prophet, and "naturalistic" causes ultimately have spiritual origins.

While sicknesses may be either "of the heart" or "of the body," both are under divine regulation and can only be addressed through wisdom, either religious or medical that originates ultimately with "the Supreme Curer." A balanced diet and lifestyle without excess; the use of honey, bleeding, scarification, and cauterization; the pouring of water to treat fevers, and the prescription of a few simple drugs typify *at-Tibb an-Nabi* in the forms where it is least mixed with Greek scientific medicine. Healing and prevention of illness in prophetic medicine may also involve the use of amulets, the writing and wearing of talismanic charms (*hajib*), the drinking of water into which the ink from words of the Koran has been rinsed from a washable object, and the seeking out of the intervention of holy descendants of the Prophet (*shaikhs*) and *marabouts* ('pious ones') who possess the trait of healing *baraka* ('blessing' or 'blessedness').

Complementary to the literate tradition of *at-Tibb an-Nabi*, popular mystics developed nonliterate *Sufi* medicine beginning in the sixteenth century. *Sufi* fraternities or cults practice a holistic psychological or psychiatric approach, mostly focused on dealing with *jnun* through ceremonies involving ecstatic dance and self-mutilation. Adherents to *Sufi* orders also commonly seek out the *baraka* of *marabouts* for healing, not limiting their entreaties to living healers alone, but frequently resorting to the tombs of deceased "pious ones" to receive from the residual *baraka* that adheres to their mortal remains.

### **Problems with Identifying the "Sources" of Islamic Medicine**

While there surely are historical connections between elements of the systems outlined above and the Islamic medicine described in the first subsection of this chapter, most previously proposed attempts to show relationships are based on purely anecdotal conjectures. The assertion that Greek medicine might have been strongly influenced by Egyptian medical thinking because they both have concepts of pathogenic decay is a highly subjective conclusion. It is based on little more than the notion that a cultural form similar to one found at an earlier period in the same (or a nearby) vicinity (in this case, Alexandria) necessarily implies a direct line of cultural continuity. As anthropologists concerned with the doctrine of

"survivals" have long argued, such anecdotal, individual instances of the occurrence of common features do not necessarily confirm a relationship. Etymological studies, like those of Crum and Levey, are on firmer ground. However, the survival of only a handful of lexical items does not prove continuity of a medical system utilizing the objects those terms signify either. The presence of less than a half-dozen similar recipes (Crum 1950:186-188) does not significantly support the contention that "a great deal [of Coptic medicine] remains nowadays [in use among segments of Egyptian society]" (1950:185).

Only the most meager elemental pieces of systems supposed to contribute to Islamic medicine have so far been put forward as piecemeal evidence of descent or borrowing. None of these assertions have yet addressed any subsystem (such as drug-plant prescription) *holistically*, looking at the overall *patterned structure* of one or more major components of a system in an objective manner. The current study will remedy this problem by treating the subsystem of drug-plant prescription from a holistic perspective, as part of an effort to investigate systematically evidence for relationships between sources from a more objective, numerical affinity-based perspective.

### **Relevant Historical Interactions of Middle Eastern Societies**

Writings on the history of the Middle East, the influences shared by peoples within its bounds, and the interactions of Islamic societies with cultures beyond the borders of today's Middle Eastern states fill untold numbers of volumes (see Figure 1.1 for a map of the culture area under study). The history of the internal and external interactions of Islamic societies is a vast enough topic that this subsection of the chapter only includes those geographic and historical facts that seem most relevant to the development of medicine in the Middle Eastern culture area. The organization of this discussion is more thematic and topical than it is chronological, although certain specific periods of time will be referenced where deemed appropriate.

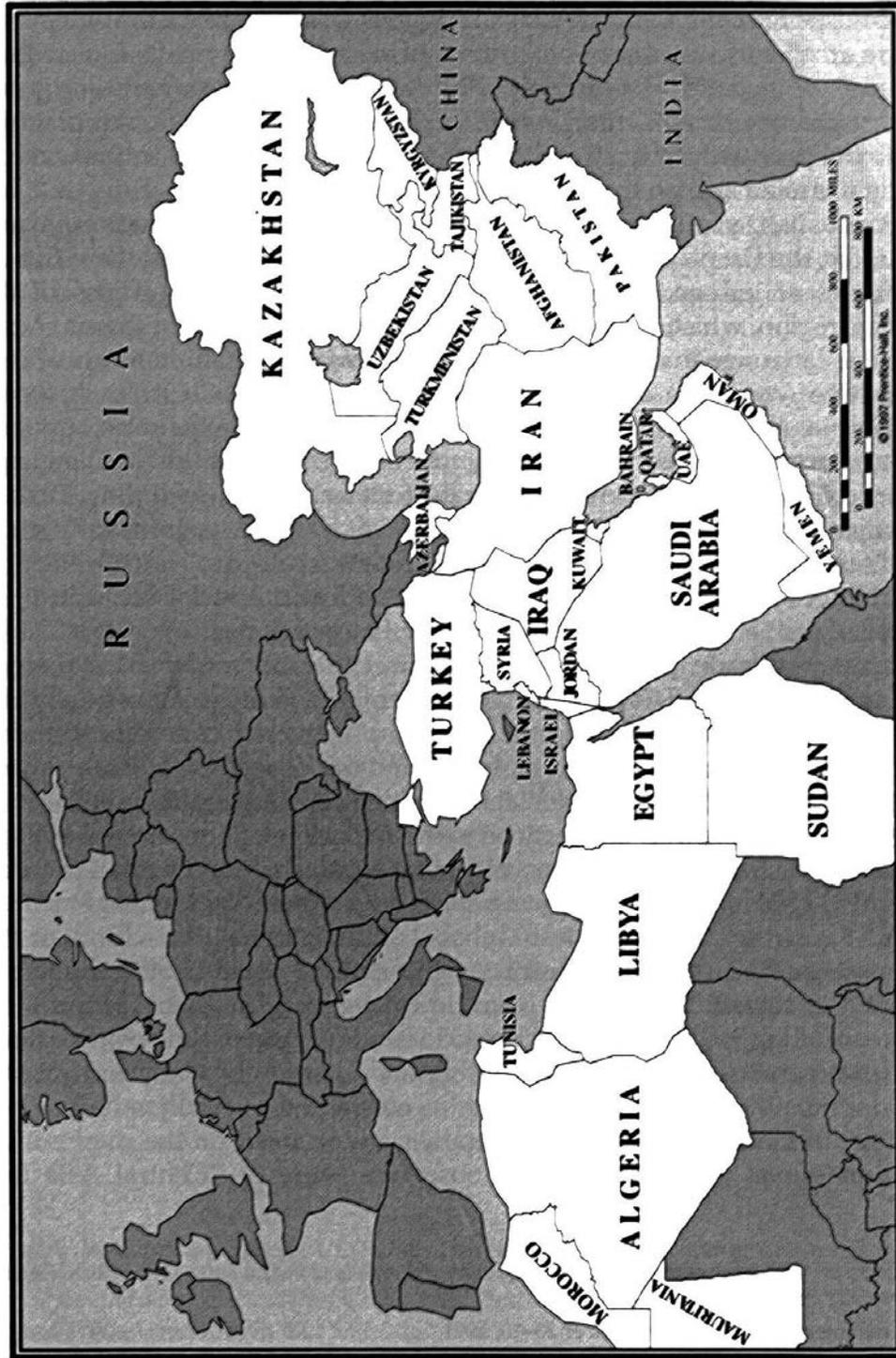


Figure 1.1. The Middle East and Central Asia: Political Boundaries, 1990. Reprinted from Eickelman 2002:3.

The multifarious origins of several streams of medical thought and their ultimate integration into Islamic medicine can be readily related to (a) the pharmaceutical drug trade of ancient and medieval civilizations; (b) the peregrinations of medical scholars (and the texts they produced) in the ancient and Islamic periods; (c) the presence of trade and pilgrimage routes connecting major population centers throughout the region and beyond; (d) sociopolitical and linguistic factors (including movements of slaves, loyalties to legal schools and religious orders, and shifting political and linguistic boundaries); and (e) the history of shifting intellectual centers (and the ways in which they served as *entrepôts* in the transmission of medical traditions from one language or society to another). Each of these will be examined briefly, in turn, in the following pages.

### **The Pharmaceutical Trade**

Trade in medicinal plants (many of which were also used as aromatics and spices) and other *materia medica* linked together the empires of the ancient and medieval worlds that shaped the Islamic medicine of the present. Evidence for such connections can be found in written accounts of drug and spice routes (or narratives about the sources of medicinal drugs) and in the form of archaeological remains (like the heaps of south Arabian myrrh found in Egypt dating to as early as 3000 B.C.E., Majno 1975:215). It is also revealed in borrowed nomenclature (like Arabic names for plants clearly derived from Sanskrit terms through Persian intermediaries, Levey 1967:26). As Majno has noted, "When a drug is imported, it is not only the substance but also the idea that travels" (1975:377). A consideration of some of these drugs and the paths they have followed, both geographically and linguistically, proves enlightening.

Frankincense (*Boswellia carterii*) and myrrh (*Commiphora myrrh*) are two drug-plants which have been important for healing in the Middle East as far back as medical history records. Both come from a very limited geographic area: the southernmost tip of southern Arabia and the Horn of Africa adjacent to it (Majno 1975:211). From there, they were, and continue to be, traded up the Arabian Peninsula and on to points further north and west; across the Arabian Sea to India, Ceylon, and beyond (Majno 1975:211), and in earlier centuries, likely carried across the Sahara as well (see Davidson 1995:74). Two other important drug-plants, cinnamon (*Cinnamomum zeylanicum*) and cassia (*Cinnamomum cassia*), were borne along similar routes (see Figure 1.2), but in

the opposite direction. Cinnamon from India and Malaysia and cassia from northern Vietnam and southern China came to the Gulf of Aden (where the Red Sea meets the Indian Ocean), from whence they were transported along the same paths north and west as frankincense and myrrh (Majno 1975:219).

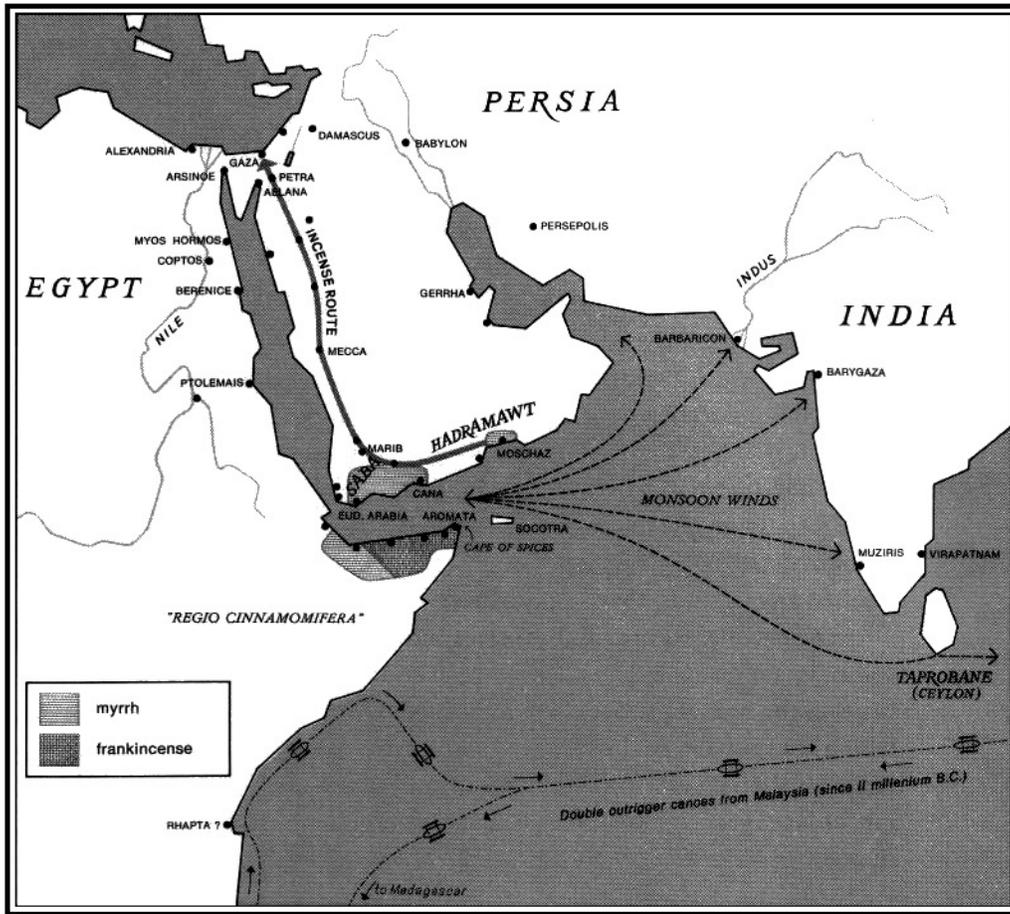


Figure 1.2. The home of myrrh and frankincense. Reprinted from Majno 1975:211.

Key species used as Greek (and later, Islamic) *materia medica* came from Egypt (cumin, *Cuminum cyminum*), from India (cardamom, *Elettaria cardamomum*; nard, *Nardostachys* sp., and sesame, *Sesamum indicum*), and from Persia (coriander, *Coriandrum sativum*) (Levey 1967:24, 25). Up until at least the early days of the twentieth century, clove (*Eugenia carophyllta*) came to the

Middle East from as far away as Molucca and Sumatra (Levey 1967:316). The corpus of texts attributed to Hippocrates makes direct references to Greek borrowing of Indian drugs and medical formulae (Shankardass 2002:279). Theophrastus noted that some of his aromatic plants came from there as well (Levey 1967:25). At times, empires waged battles over access to drug-plants (Majno 1975:211). Hearing about the wound-healing properties of aloe (*Aloe succotrina*) in Egypt, Alexander the Great sent an army to seize both the plant and its native island off the coast of Somalia (Castleman 1995:62).

The names of pharmaceuticals also tell tales of trade and transmission of ideas about plants (at least in terms of what they ought to be called) that have traveled through the centuries. In the C.E. twelfth century, Moses Maimonides, court physician in Cairo, reported at least three Chinese synonyms in his glossary of drug names, as well as dozens of Berber, Persian, Sanskrit and Spanish terms (Rosner 1979). The survival of Coptic plant names in the Egyptian dialect of Arabic has already been noted in the previous section of this chapter. Regarding a C.E. ninth-century Arabic manuscript from Baghdad, Levey (1966:20) states the following:

I find that about 33 percent of the names of the *materia medica* mentioned . . . come originally from ancient Mesopotamia, usually through Syriac, Aramaic, Hebrew, Persian, and other intermediaries. . . . About 23 percent come from Greek sources, 18 percent from Persian, 13 percent from Indian, 5 percent from Arabic, and 3 percent from Egyptian sources.

### **Traveling Physicians, Traveling Texts**

The wide-spread distribution of drug-plants and "ideas" associated with them is an important concept to grasp in consideration of the interactions contributing to the development of Islamic medicine. However, memes (i.e., healing ideas) associated with particular plants do not spread without vehicles to carry them. Fortunately, there is a long history of meme-bearing, wayfaring physicians and medical texts in the Middle East.

Some of the earliest evidence for interactions comes from Egypt. There, in the temple of Amun at Karnak, the artists of Thutmosis III carved pictures of plants (some of them medicinally efficacious) collected during their king's expeditions in Asia Minor (Manniche 1989:13). Herodotus provides one of the more ancient written (as opposed to pictorial) accounts of the interaction of medical traditions. According to his report, when the native Egyptian physicians were unsuccessful at treating Darius I, the

Persian ruler of conquered Egypt, he summoned Democedes of Croton, a captured Greek from southern Italy, whose ministrations ultimately proved successful where others had failed (Nunn 1996:207 and von Staden 1989:31).

Some of the most renowned and influential "Greek" physicians hailed from quarters now considered part of the Middle East. Most of these men traveled extensively to gain wisdom from the diversity of experiences afforded by travel. Hippocrates, the "Father of Greek Medicine," came from Cos in Asia Minor (King 2001:9). One of the best-known Alexandrian physicians, Herophilus, was born in Chalcedon in the same region (King 2001:27). Galen came to Alexandria from Pergamum after working in Smyrna and Corinth, and he also practiced intermittently in the Roman capital as well (King 2001:39, 40). Dioscorides, the most famous pharmacologist of antiquity, traveled widely (Gunther 1959:2) and provided first-hand accounts of the medicinal properties of plants he observed in what were, for his contemporaries, far flung and exotic locales.

The "great names" of Greek and Roman medicine practiced mostly within the confines of the provinces of the empires to which they belonged (however far their borders had been extended). As noted above, "Greek" physicians (many of them from Asia Minor and what is Syria today) were taken as slaves to Persian-occupied lands to the east (as in the case of Democedes). The C.E. fifth century Sassanian king who founded the academy of Gundishapur in Persia relied on medical knowledge from further east as well: he sent an envoy to bring Hindu physicians and medical treatises back to his school from India (Browne 1962:21). Roman doctors served in military outposts on the frontiers of the Empire (as far north as Scotland), where they had opportunity to exchange plants and knowledge with "native" practitioners of the medical traditions they encountered (Majno 1975:383).

After the rise of Islam, the level of geographic mobility of physicians increased in proportion with the expansion of Islamic dominion, and manuscripts of early and late dates circulated freely. Initially, the professors of the school at Gundishapur were largely unaffected by the Arab conquest of the Sassanian Empire (Browne 1962:22). However, in C.E. 765, al-Mansur (the second Abbasid Caliph) sent for the chief physician of Gundishapur (Gergis Bakhtishu) to come to his capital at Baghdad and attempt to heal him of what seemed to his own physicians an incurable illness (Browne 1962:23 and Esposito 1999:271). After Bakhtishu's successful ministrations, his descendants served the Caliphs for at least the next 250 years (Browne

1962:23). They established the first hospital in Baghdad, modeled on the one at Gundishapur (Esposito 1999:271).

The C.E. twelfth century rabbi, philosopher, and physician, Moses Maimonides, was born in Cordova, Spain, spent several years in Fez, Morocco, briefly lived in Acre, Palestine, and spent the remainder of his life serving Saladin's court in Egypt (bar-Sela et al. 1964:4). Ibn al-Baytar (d. 1248), endowed with the title "Chief of Botanists" by Sultan al-Kamil Muhammad of Egypt, collected and studied medicinal plants in a number of lands, including, according to Esposito: "North Africa, Greece, Anatolia, Iran, Iraq, Syria, Arabia, and also Egypt" (1999:212).

Medical books were transported and transmitted in a range at least as broad as the domains traversed by physicians and other medical literates. After the works of Galen, Dioscorides, and other Greek medical writers were translated into Arabic, their words and ideas circulated freely throughout the Islamic world (Ullman 1978:10-13). Intellectuals made copies of translations of ancient works and medieval Islamic syntheses of them, which they passed from one urban center to another. To this day, the Galenically-inspired *Qanun* (Canon of Medicine), composed by Avicenna (a resident of southern Arabia in the tenth century), remains influential in locales as far removed from one another as Tunisia and India. An old Chinese Muslim book of medicine (titled *Hui Hui Yao Fang*), written in Arabic, seems to be "identical in parts to the Canon of Avicenna" (Jing-Feng 1996:197).

While the perambulations of a few particular scholars and the transmission of their works make interesting food for thought, a review of their travels cannot be the sole basis for following directions of influence in Islamic medical thought and practice (such an approach would be as anecdotal, and ultimately, as futile, as some of the efforts of ethnographers of Islamic medicine which were critiqued earlier in this chapter). The main virtue of the examples given above is that they draw our attention to the high degree of transmissibility medical ideas have enjoyed throughout the recorded history of this region.

### **Trade and Pilgrimage Routes**

As already noted, trade in medicinal drugs facilitated the transmission of medical knowledge throughout the Middle East, and, as we have just seen, the mobility of physicians and their medical texts also played their part. Other mass movements of goods and people surely also had their impact. While

physicians might reside in a handful of cities over the course of a lifetime, the process of traveling *between* cities and towns is perhaps as important as being established in a stable locale (in fact, a whole form of literature, the *rihla*, is dedicated to travel, see Dunn 1989). Over the course of religious pilgrimage or while traveling in trade caravans, physicians and other medical scholars and practitioners have historically had the opportunity to interact and exchange ideas with people from all corners of the Arab and Islamic world, sometimes living together on the road for weeks or months at a time (see Dunn 1989 and Wolfe 1997 for examples of travel narratives of such journeys. Also see figure 1.3 for the route followed by one medieval Arab scholar on his return voyage from China).

Baghdad, Cairo, and Damascus were long-time, major nexuses of trade, as well as primary gathering stations for mustering caravans for the pilgrimage to Mecca (Dunn 1989). The expansion and consolidation of the Islamic "Imperium" under the Abbasids (C.E. 750-1258) meant that Arabs controlled commerce between China and India in the East, and Spain, Morocco, and Italy in the West (Levey 1967:23). Sea and land routes to the peripheries of the Islamic world facilitated "the migration of significant numbers of . . . skilled or educated 'pioneers'" (Dunn 1989:76). Lines of trade and pilgrimage internal to the Middle East further enabled the movement of people and ideas from one major Islamic center to another.

It is difficult to narrate the shifting currents of the lanes of commerce and devotion that brought Islamic societies across the Middle East into a network with one another and with peoples on the fringes of and beyond the Islamic world. A strong general impression can be formed by surveying maps of the various routes and how they connect different regions both internal and external to Islamic lands. At least as far back as the rise of the Abbasids, external overland routes across central Asia mirrored sea routes through the Indian Ocean and Arabian Sea (Rahman 2002:24, see Figures 1.4 and 1.5). Sea and land routes had a complementary relationship: when political instability threatened land routes, sea trade increased; when pirates or other hazards restricted commerce by sea, overland traffic compensated (Rahman 2002:24). The central Asian and Indian Ocean routes connected with the Middle East's internal paths of pilgrimage and trade in Iraq and around the Arabian Peninsula. From

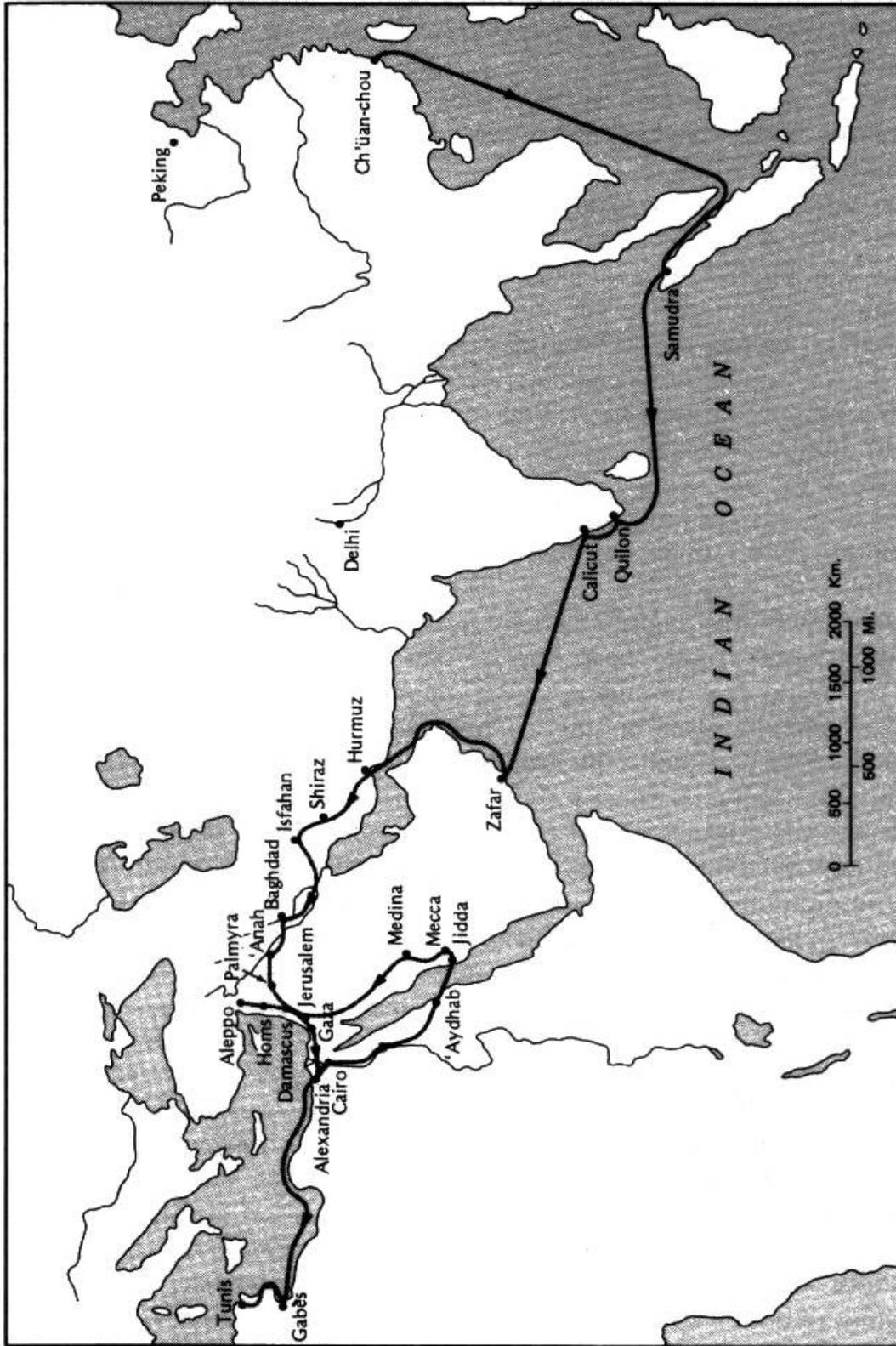


Figure 1.3. Ibn Battuta's Return itinerary from China to North Africa, 1346-1349. Reprinted from Dunn 1989:267.

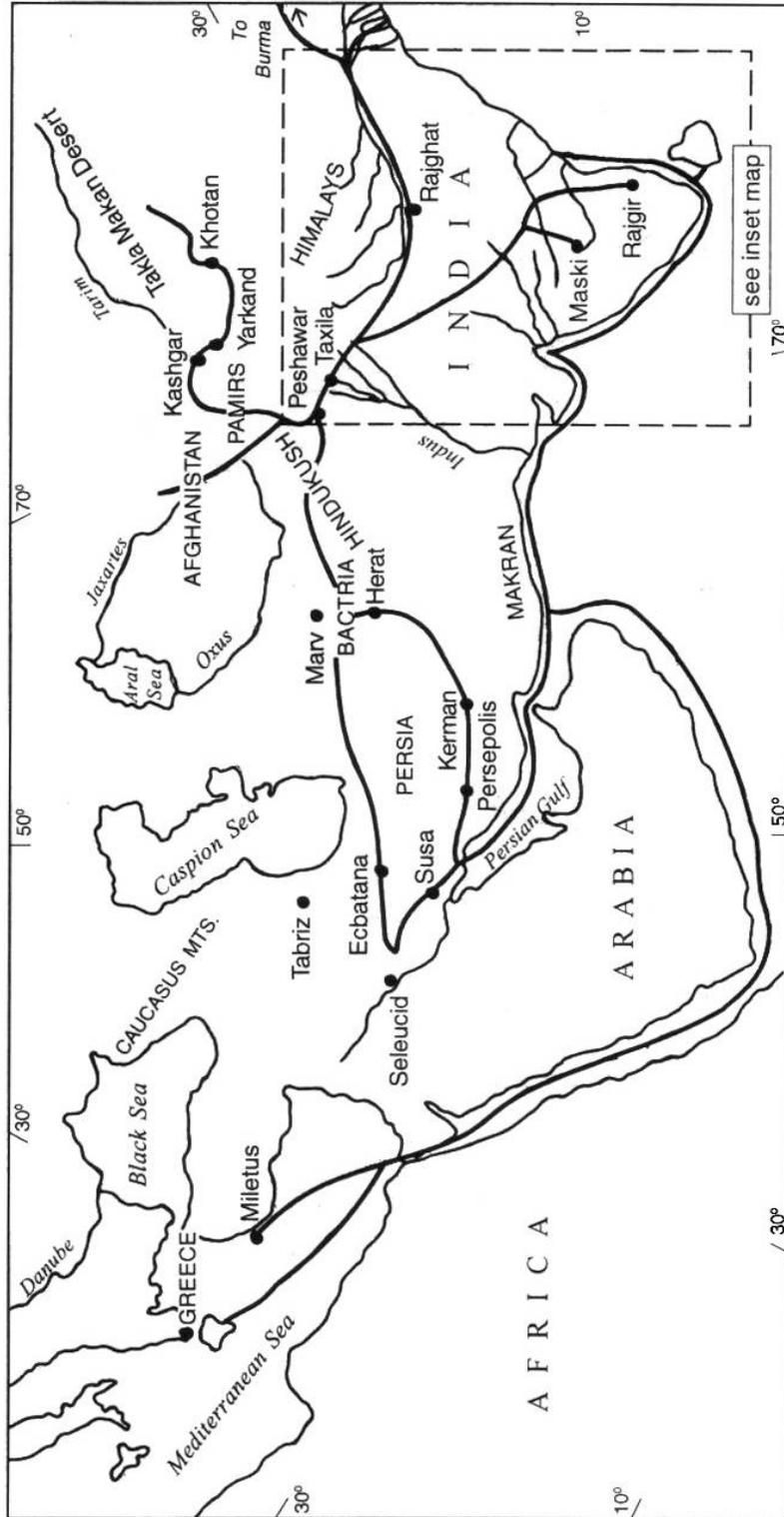


Figure 1.4. External Trade Routes of India. Reprinted from Rahman 2002:41.

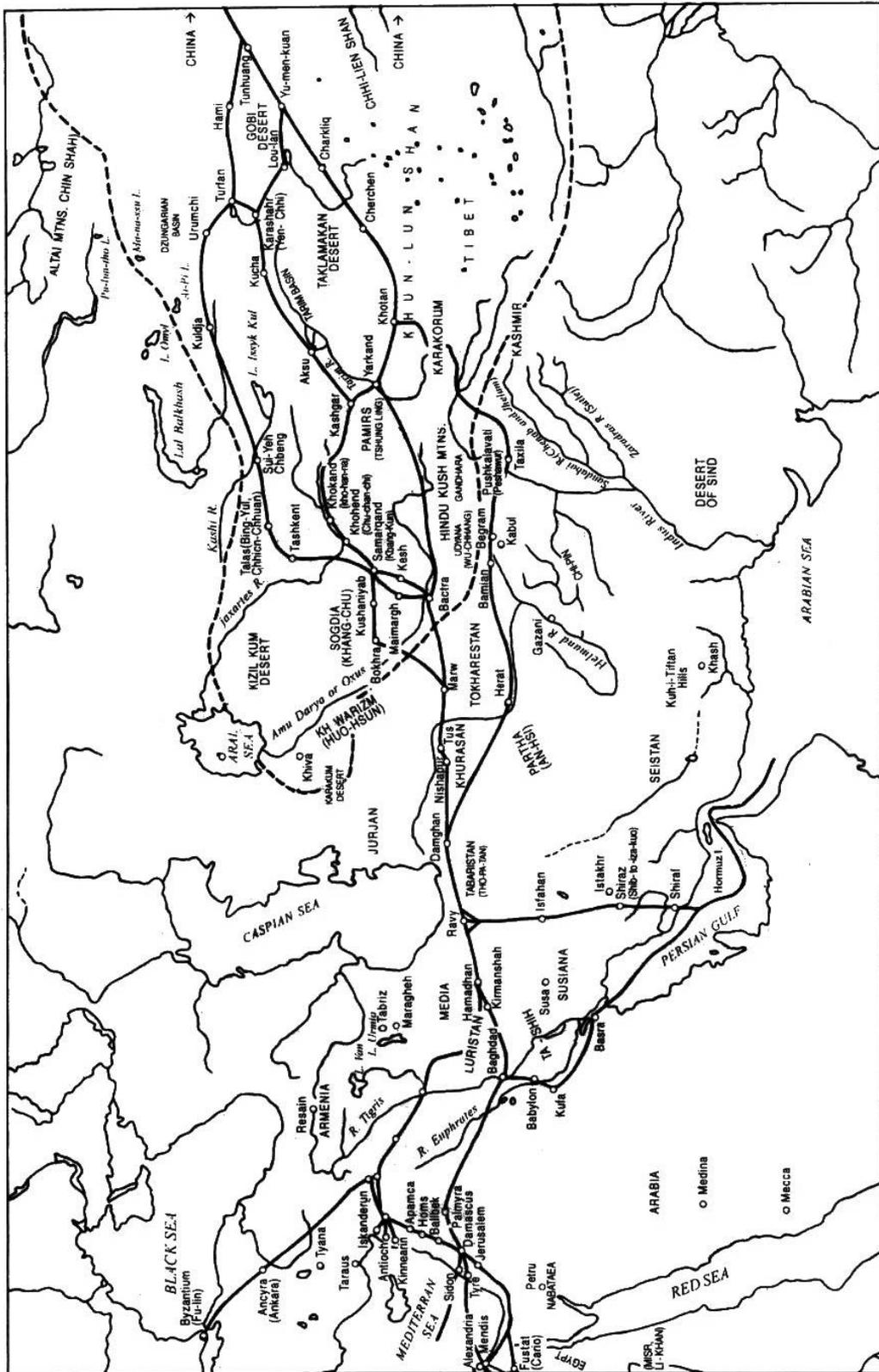


Figure 1.5. Trade Routes connect the Middle East and Asia. Reprinted from Rahman, 2002:43.

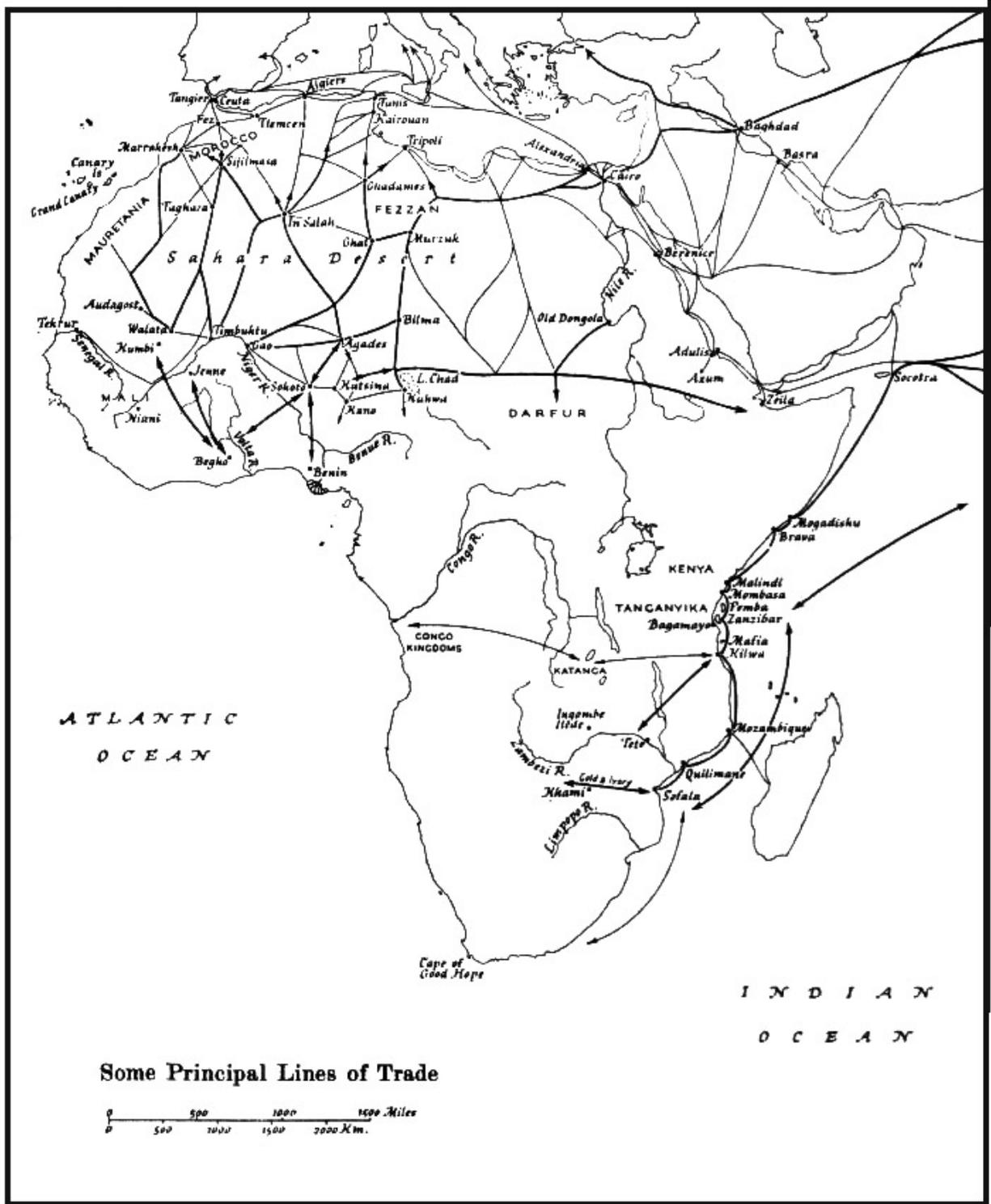


Figure 1.6. Some Principal Lines of Trade in Africa and the Middle East. Davidson 1991:74.



there, they fed into the trade networks of the Levant and Egypt, and then onwards into the *Maghrib* or northern Africa (see Figures 1.4, 1.5, 1.6, and 1.7).

It is evident from a perusal of maps of trade and pilgrimage routes that much of Asia's traffic with the Middle East must have passed through Baghdad (either via the overland route through Persia, or up the Persian Gulf via Basra). Baghdad then connected these eastern routes to Aleppo, Alexandretta, and Damascus (in Syria), from whence they were linked with points still further west. Merchants and pilgrims from India and other parts of Asia also made their way directly to Yemen and the horn of Africa by sea during periods when the overland or Persian Gulf routes were less secure (or lucrative) options.

The Levant (Jordan, Lebanon, Syria, and Palestine) and the southern extremities of the Arabian Peninsula (Yemen, Oman, etc.) were connected by overland routes converging on Mecca. These pathways were in a complementary relationship with the Red Sea trade that connected Yemen with the Sinai Peninsula and the port at Gaza. Egypt and the Levant were connected by both sea and land routes. The major cities of the *Maghrib* articulate to one another, to the central Middle East, and to the Horn of Africa primarily via the trans-Saharan trade networks and pilgrimage routes, shown in Figures 1.6 and 1.7.

### **Socio-Political Factors**

Various socio-political factors also had an impact on the movements of people, products (including drug-plants and medical treatises) and ideas. Slaves and displaced minority peoples brought ideas from their home cultures into the ruling courts of Islamic societies and sometimes exerted a great amount of influence "from below." For example, it is relatively certain that the *zar* possession cult, endemic throughout the Middle East, arrived with Ethiopian slaves in late eighteenth or early nineteenth century Egypt, from whence the cult diffused to the rest of the Muslim world (Fakhouri 1968:49). As already noted, at key points in the history of Islamic societies, the most influential court physicians have come from the ranks of minority peoples (predominantly Jews and Christians), a significant number of whom had arrived as a result of flight from persecution in other, sometimes far removed, territories.

Historically, Muslim physicians were often leading authorities in religious law (Esposito 1999:207). For this reason, it is also important to be aware of the distribution of various schools of Islamic law, which in a very real sense link the worldviews of noncontiguous locales (see Figure 1.8). The tendency of traveling scholars to spend a great deal of time studying a diversity of topics (including medicine and pharmacology) with like-minded co-religionists wherever they can be found may be a factor of influence worth more serious consideration than the matter has previously received.

Similarly, the distribution of political entities (including large regions under the control of various cities or states) also limits or facilitates the commerce of ideas and the movement of people. Times of political instability could make overland trade and pilgrimage so unsafe that alternative sea routes needed to be used (or new overland paths had to be forged to circumvent the trouble spots). During times of stability, new areas could be brought into contact under the aegis of a uniting authority drawing them into the same socio-cultural "orbit." Thus the oscillations of borders as empires rose and fell over the millennia brought new territories into contact or cut them off from one another. The spread of Islam, which united formerly disparate peoples over a huge geographic expanse, is perhaps the best example of this phenomenon (see Figures 1.9 and 1.10). The Arab success in uniting the former Persian Empire with a significant portion of the territory that formerly belonged to the Byzantine Empire created a cultural zone that linked societies together with one another as far west as what is today Libya, as far east as the Hindu Kush mountains, and as far north as the Caucasus, and a significant portion of the Arabian Peninsula by C.E. 690.

### **Linguistic Factors**

Linguistic factors have both facilitated and (alternately) impeded intercourse and the exchange of ideas among Middle Eastern societies. While other languages have also had their periods of dominance, Arabic has, over the long term, exerted a tremendous unifying influence. The region is characterized by three major groups of languages (Bates and Rassam 2001:97-98 and Eickelman 2002:17): Semitic, Indo-European and Altaic (Turkic) families.

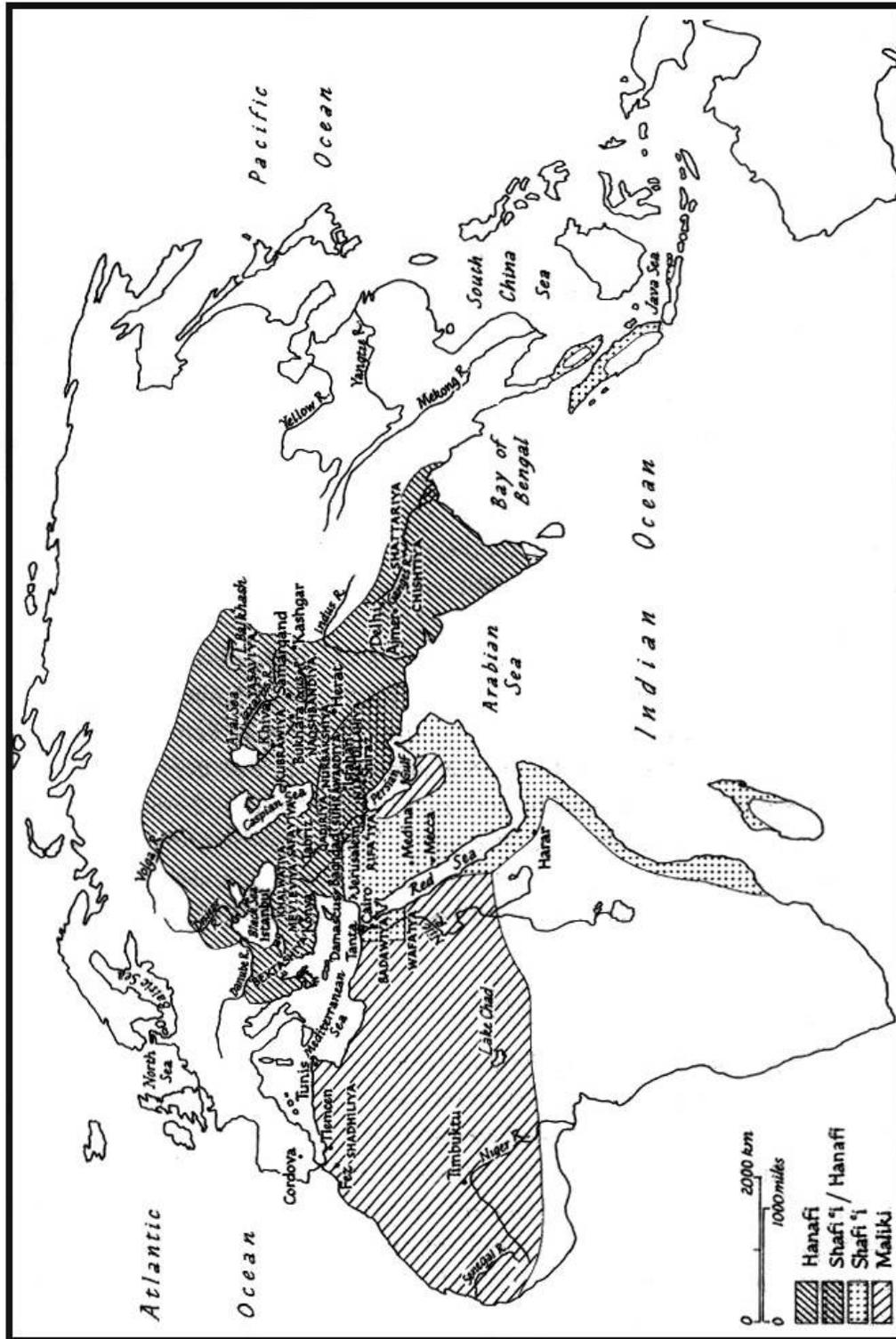


Figure 1.8. Muslim schools of law and Sufi brotherhoods: c. 1500. Reprinted from Lapidus 2002:212.

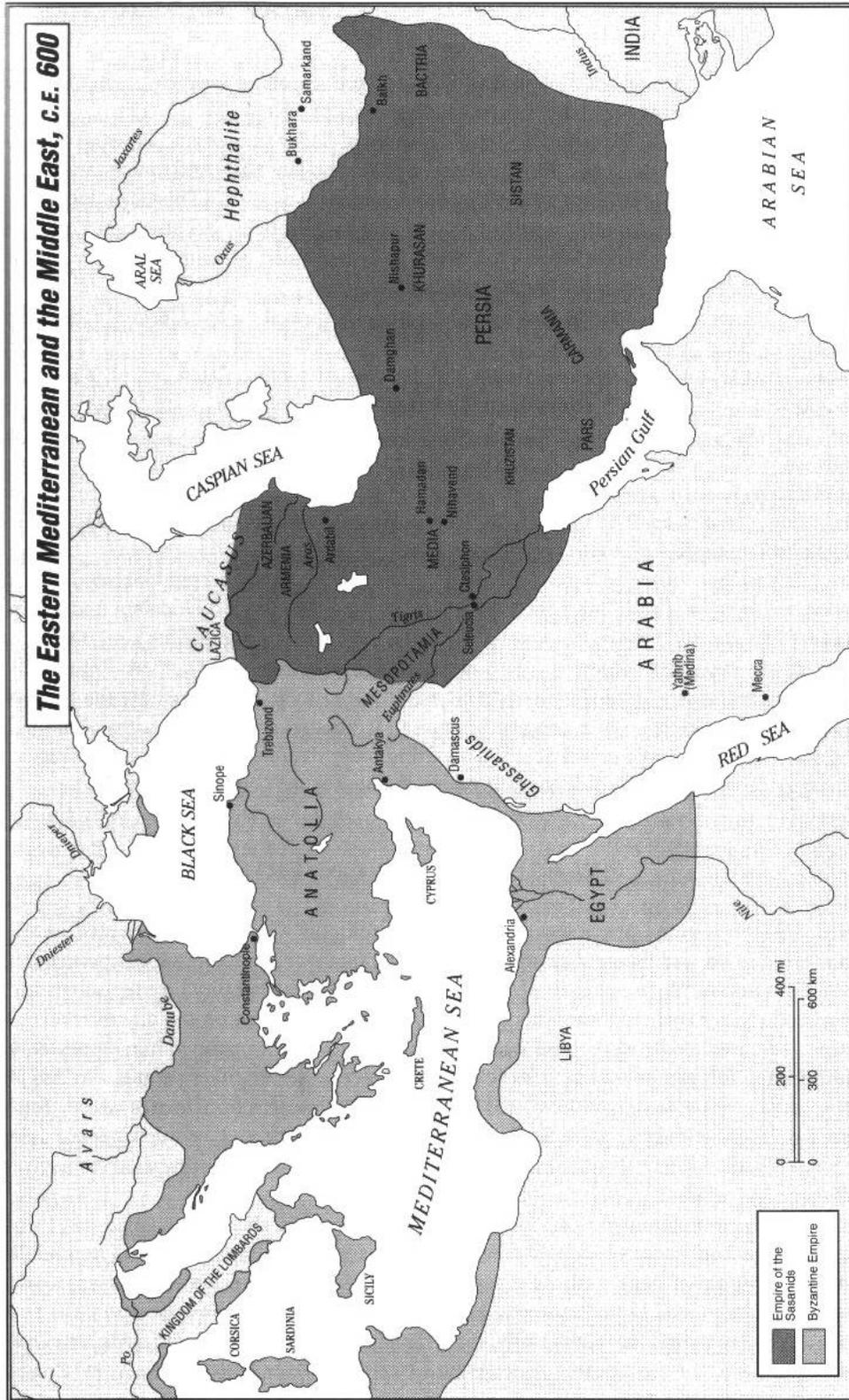


Figure 1.9. The Eastern Mediterranean and the Middle East, C.E. 600. Reprinted from Ochsenwald and Fisher 2004:27.

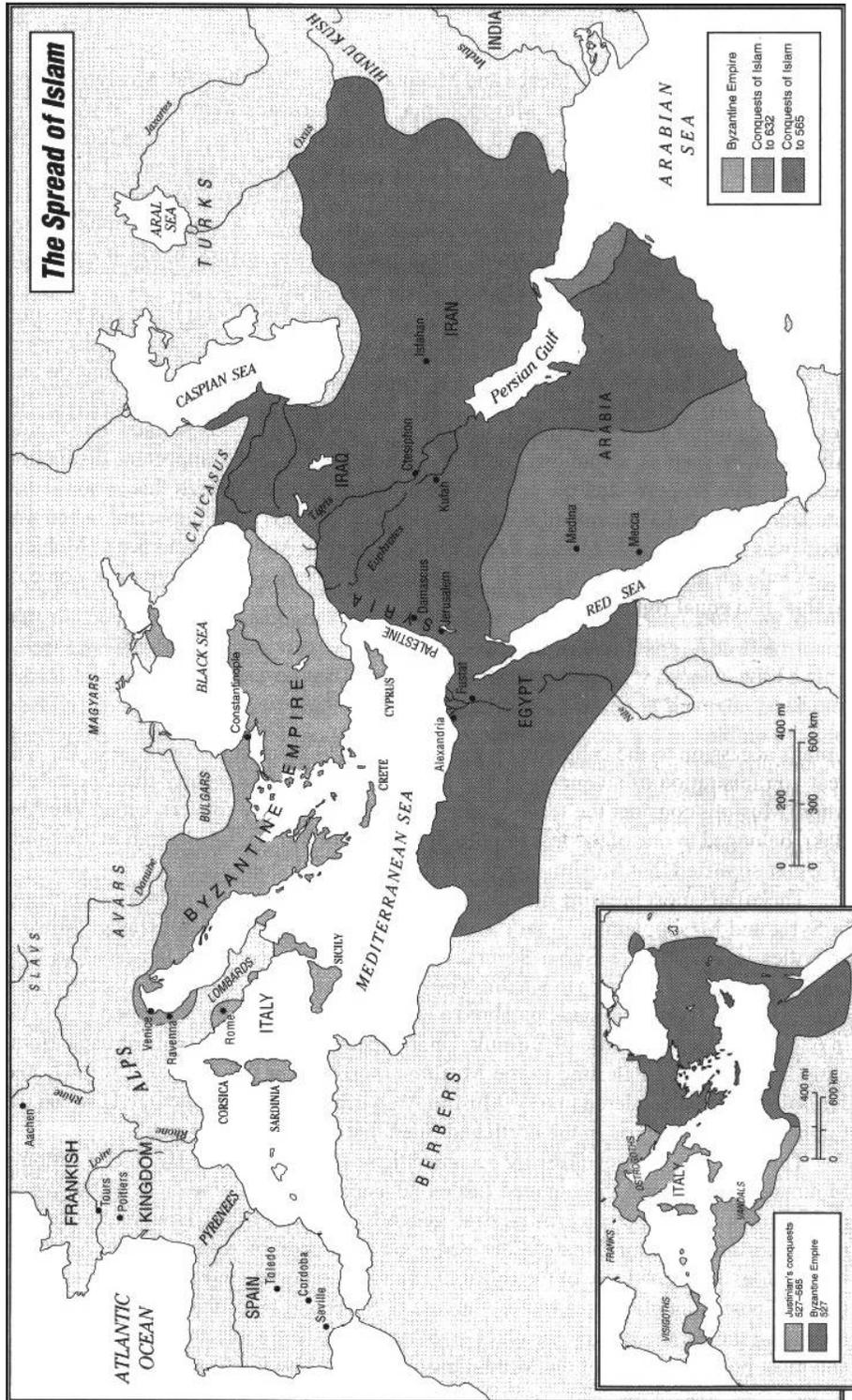


Figure 1.10. The Spread of Islam. Reprinted from Ochsenswald and Fisher 2004:40.

Semitic languages are represented by Arabic throughout the greater area of the Middle East and Northern Africa, Hebrew in Israel, and Neo-Aramaic in pockets of Syria. Indo-European languages include Persian in some areas of Iran and Iraq; Kurdish in Iran, Iraq, and Turkey; Baluchi and Luri in Afghanistan and Pakistan, and Armenian and Greek in minor enclaves). Altaic languages include Azeri in Iran, Turkish in Turkey, and Turkmen in Turkmenistan. Other, more minor languages are in common use among ethnic minorities including Berber in North Africa, Kazak and Tartar in Central Asia, and Circassian and Georgian in Turkey (Eickelman 2002:17). There is a good deal of Arabic-Persian bilingualism in Iran and Iraq, as well as some trilingualism including Kurdish (Eickelman 2002:17). Many speakers of the more minor ethnic languages throughout the culture area are also bilingual in Arabic, and those residing in Turkey generally speak Turkish as a second language (Eickelman 2002:17). See Figure 1.11 for a map of the distribution of the current principal languages in the region.

In the course of the initial expansion of Islam, Arabic was introduced across the growing empire. However, it did not immediately take hold, to any considerable degree, outside of the military encampments and urban centers until some time later (Eickelman 2002:17). It has been posited that the major dialect differences in Arabic result from either the influence of the indigenous languages of areas conquered by the Arabs or from natural divergences from a shared parent stock (a process to which all languages are eventually subjected through the vicissitudes of time). It is uncertain whether the similarities between them result from the initial uniformity of the early Arabic influence (again, dialects are seen as natural developments from a common source) or convergence towards the Classical "standard" form of the language that would ultimately become so influential in religion, science, and law throughout the Islamic world (Bateson 1967:94-95, Versteegh 1984, Versteegh 1997:112).

The major dialect areas of Arabic are divided into Eastern and Western varieties. Western Arabic is spoken in the Maghrib region (Northern Africa) and Eastern Arabic elsewhere. Egypt represents something of a transitional zone, where elements of both are used on opposite sides of the Nile Delta (Versteegh 1997:161). The main Eastern groups are those of the Arabian Peninsula, the Syro-Lebanese dialects, Mesopotamian dialects, and (in some classification schemes) the Egyptian dialects (Versteegh 1997:148-164). Some Peninsular Bedouin varieties are spoken well into the Syrian Desert and

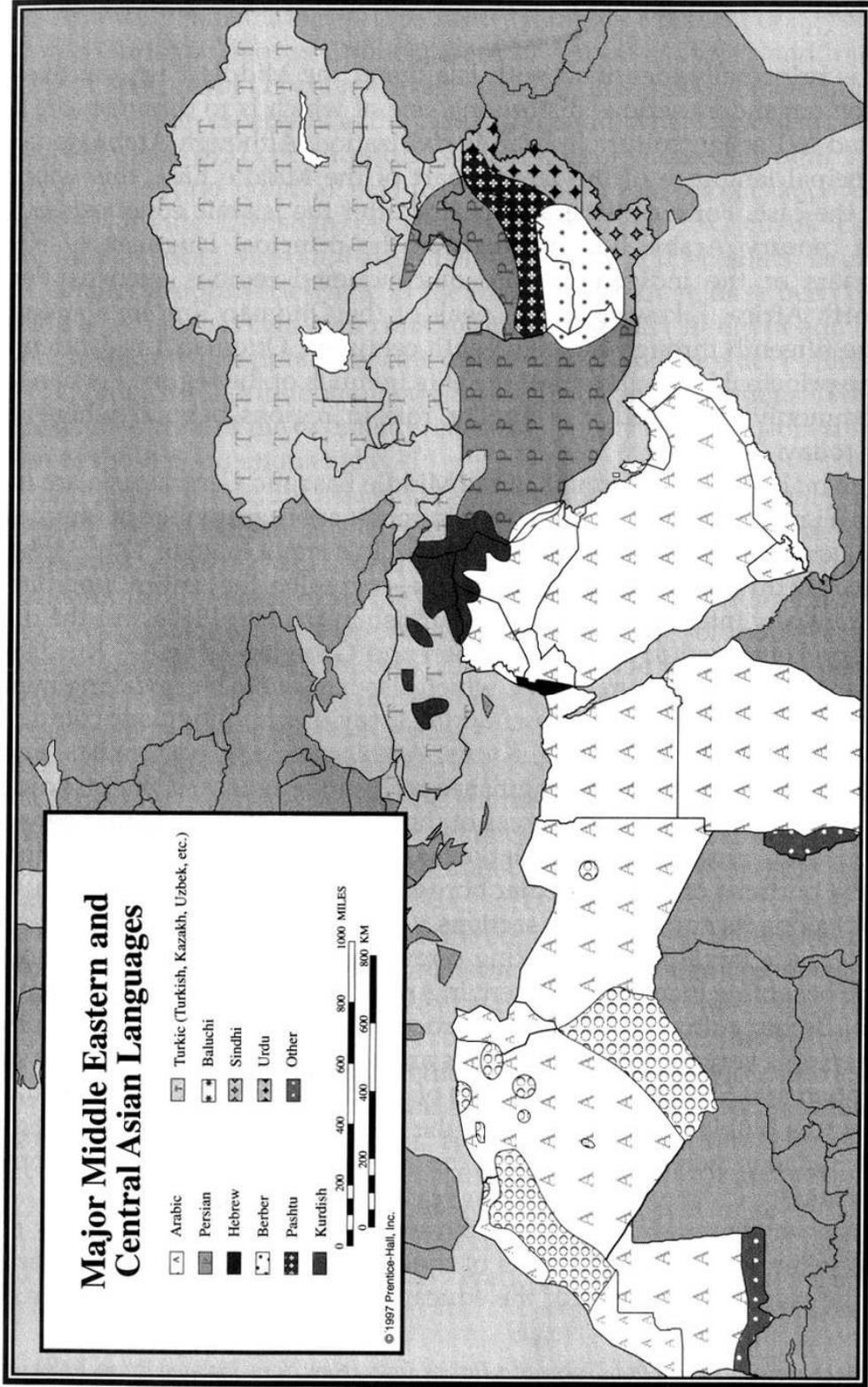


Figure 1.11. Major Middle eastern and Central Asian Languages. Reprinted from Eickelman 2002:18.

Mesopotamia and are considered "Syro-Mesopotamian," while others only continue their range into southern Jordan (Versteegh 1997:148). The Syro-Lebanese dialects developed in the cities of Damascus and Aleppo, the centers where the first varieties of the convergent Arabic koine that would eventually spread throughout the Islamic Empire were first spoken (Versteegh 1997:152). The modern Syro-Lebanese dialects are spoken in Syria, Lebanon, Jordan, and Palestine. Mesopotamian dialects are spoken in Iraq, parts of Iran, and into northeastern Syria as well (Versteegh 1997:153, 158). Numerous Persian loanwords occur in the Mesopotamian dialects closest to (and in) Iran (Versteegh 1997:158, 232). Egyptian Arabic has worked south into Sudan and Chad and is the most likely source for the varieties of Arabic found in West Africa, as far as Nigeria (Versteegh 1997:159).

Arabic has not been the sole unifying language of Islamic civilization throughout the course of its history. The Seljuk expansion in the C.E. eleventh century brought Turkic languages from the Central Asian steppes into Iran, Mesopotamia, and Byzantine Anatolia (Lapidus 2002:119). The Turkic dynasties took Persian for their literary and scientific language and Arabic for their language of religion (Lapidus 2002:234). With the rise of the Ottoman dynasties (1280-1453), Turkish became the official language of the Islamic Imperium, while Arabic and Persian were maintained as the languages of the learned elite (Versteegh 1997:234, 236). In the eleventh century, Islamic dominion stretched as far as the Indus Valley, bringing with it the strongly Arabicized Persian of the Ghaznavid conquerors from Afghanistan (Versteegh 1997:236). In Pakistan, formerly a Muslim-dominated region of India and currently an independent state, a dialect of northern India (called Hindi by Hindus and Urdu by Muslims) is widely spoken. It contains a large number of loans from the Arabicized Persian of the Ghaznavid and later Mughal empires (Versteegh 1997:236).

Throughout the ebb and flow of languages and dialects across the Middle Eastern landscape, expansions of one variety at the expense of others have unified previously disparate societies. Other languages, now no longer spoken, may still exert some posthumous influence on the Arabic that overlaid them and, in most cases, drove them into oblivion (or obscurity, as in the case of languages, like Coptic, that survive today only as "ethno-religious quasilects," see Glinert 1993:249-250). The *media* of communication (languages and scripts) allowed the *messages* of medical theories and practices to pass from one people to another with greater or lesser degrees

of ease, depending on the dynamics of peoples' linguistic "habit" (Dawood 1989:347, 431).

### **Shifting Intellectual Centers**

Trade and pilgrimage routes allowed healers and medical texts to circulate with relative freedom about the Middle East and various linguistic and socio-political factors alternately facilitated or inhibited interactions. However, the main currents of medical theory and practice are characterized by a succession of traditions anchored in geographic realities of population shifts and the rising and falling prestige of centers of learning. After the decline of the great Egyptian and Mesopotamian empires, and before the Islamic expansion, Alexandria in Egypt and Nestorian Christian schools in Antioch (located in Syria) and Edessa (in northern Mesopotamia) were the dominant sources of medical knowledge in the Middle East. As noted above, their medicine was primarily Greek, with some local influences descended from more ancient Near Eastern systems.

In earlier centuries, Alexandria was the greater influence of the two axes, but, with time, Edessa and Antioch became more important (Browne 1962:114). As already noted, many of the greatest minds at Alexandria had come from Asia Minor, or had taken up practice there after their studies were completed in Egypt. So, with time, Antioch and other Syriac-dominated locales influenced and (perhaps more significantly) were influenced by the lore of Alexandria (Esposito 1999:271). With the exodus of Syriac Nestorian Christians from the Byzantine Empire and their relocation to Gundishapur in Persia, the balance began to shift further east. Gundishapur inherited the knowledge of Alexandria through the Nestorians of Syria and northern Iraq (Browne 1962:114) and ultimately became the primary conduit through which Greek medicine passed on to the Arabs (Esposito 1999:271 and Majno 1975:420), sometimes "tempered with [elements of] Hindu medicine" (Majno 1975:400). This line of transmission is illustrated by countless examples, but the translation of an Alexandrian priest's medical handbook into Arabic from Syriac, commissioned by Caliph Umar ibn Abd al-Aziz between C.E. 717 and 720, is one of the earliest and best attested.

When Bakhtishu's descendants replicated the medicine of the hospital of Gundishapur in Baghdad, they paved the way for a further intellectual shift in power. By the end of the tenth century, Gundishapur experienced a medieval "brain drain," as the finest of its physicians were recruited to the

capital of the Caliphate (Majno 1975:421): Baghdad became the new locus of Middle Eastern medical thought (Browne 1962:114 and Esposito 1999:200). Its ascendancy only lasted a few hundred years, however.

Over the course of the ninth and tenth centuries, five hospitals were built in Baghdad (Esposito 1999:208). Shortly thereafter, hospitals on their model began springing up in Damascus, Cairo, Mecca, Medina, and other major centers (Esposito 1999:208).

By the twelfth and thirteenth centuries, another shift was underway. According to Esposito, ". . . physicians from all over the Muslim world sought medical careers in the institutions of Damascus and Cairo" (1999:209). While the hospitals of both Cairo and Damascus were influential, Damascus boasts the first *school* in the Islamic world founded exclusively for the teaching of medicine the Maristan al-Atiq teaching hospital, established in the thirteenth century (Esposito 1999:207 and Sonbol 1991:5). Some of the administrative heads and graduates of this school were prestigious members of society. Their influence ultimately led to a rise in the status of physicians allowed for their uncontested entry into the "social elite" of Islamic culture during this period (Esposito 1999:208). Cairo's first great *maristan*, the Maristan al-Qalawun, was modeled after al-Atiq in Damascus (Sonbol 1991:5). After its inception, Damascus and Cairo quickly became legendary centers of medicine (the collection of stories, *Alf Layla wa Layla*, or 'the Thousand and One Nights,' includes the tale of a Jewish physician who studied at both maristans, see Zipes 1991:358-367) and maintained their reputation as the major medical centers of Islam into the eighteenth century and the introduction of Western (e.g., European) medicine (Sonbol 1991:5).

### **The Significance of Historical Interactions for the Development of Islamic Medicine**

The portrait of historical interactions of members of Islamic and non-Islamic societies presented above makes it clear that numerous factors have been involved in the development of Islamic medicine. The true story is far more complex than the simplistic two- to three-source origins posited in previously published medical ethnographies of the Middle East. Local systems of Islamic medicine are not simply based on only two or three "high" traditions (typically given as Galenic medicine and Prophetic medicine, perhaps with a nod to survivals from a local pre-Islamic system or the intrusion of Western biomedicine).

It is clear that influences on localized expressions of Islamic medicine are highly complex, involving a multiplicity of interactions of varying time-depth, length, and intensity. On one hand, the history of localized systems may involve long periods of relative stability characterized by low-level interactions of low to moderate intensity, primarily with immediate neighbors, resulting in the constant introduction and seeping spread of ideas picked up from others in the vicinity. Carriers might be travelers, refugees, slaves, visiting medical practitioners, or traders. On the other hand, such periods may be punctuated by the shifting of political boundaries (usually by invasion or collapse) or some other extreme situation putting what were previously weakly-linked groups into more intense contact. The results are a flood of borrowings or even complete replacement of the native system. Not only do local expressions of Islamic medicine vary, but it is apparent, from a careful review of Middle Eastern history, that the sources (such as Greek medicine or Prophetic medicine) are likewise anything but monolithic. Indeed, the multiple sources of each local tradition have multiple sources.

This chapter has presented the basic ethnographic, historical, and geographic background that will serve as grounds for an evaluation of the efficacy of the application of a phenetic approach to the cognitive domain of Islamic medicine. The next chapter consists of a review of the most relevant theoretical and methodological literature for approaching this particular problem, focusing on (a) categorization in cognitive anthropology and (b) approaches to taxonomy, diachrony, and the evolution of systems in various scientific pursuits. It will also discuss a discussion of the implications of these models for the present project.