

American languages will use the corresponding terms in their own languages. Oddly, anthropologists have paid little attention to this crucial distinction; with few exceptions, those who have worked in indigenous communities fail to indicate whether Spanish or Indian terms are used. Were modern humoral medicine an indigenous American legacy, we might reasonably expect that native terms would always be used by speakers of Amerindian languages, and that on at least a few occasions Spanish speakers would have adopted the native terms. After all, Mexican Spanish includes hundreds of Aztec words and Andean Spanish hundreds of Quechua words for Native American concepts and objects, including large numbers of herbal and other remedies. Nevertheless, the limited evidence available reveals a different pattern: while speakers of American Indian languages sometimes use Spanish terms, Spanish speakers seem never to use indigenous terms for humoral qualities.

Quechua speakers appear especially prone to substitute Spanish for indigenous terms. Thus, in highland Hualcan, Peru, Quechua terms used in other contexts to denote hot and cold "are replaced by the Spanish concepts *calor* and *fresco* (kalar, fresku) in food classifications and medicine" (Stein 1961:80, fn. 22). Similarly, in the Quechua-speaking town of Nuñoa, Peru, Quechua *ccomi* (hot) is "often preferred over the Spanish equivalent *calido* in speaking of humoral values," but the Quechua *chiri* (cold) is not preferred over *fresco* (Mazess 1968:110). The same pattern is found among the Quechua-speaking Saraguro Indians of southern Ecuador: "Individuals do use *shiri* for cold and *rupari* for hot, but Saraguros appear to make greater use of Spanish equivalents *frío* and *calor*. The term *shiri* is often preferred over *frío*, but *rupari* is rarely used as a humoral reference" (Ruthbeth Finerman, personal communication 1986). In 1950 Alian Holmberg, in reply to questions about Hot and Cold in Peru, wrote to me that

It is significant to note that while the Quechua of Vicos have perfectly good words for "hot" and "cold" . . . these are never employed to [classify] foods, but the Spanish words "fresco" and "calido" are employed. This appears to be true in most of the Callejón [de Huaylas, where Vicos is located] where more Quechua is spoken than Spanish.

And, in reply to my enquiry, Joseph Bastien writes of the Quechua-speaking Qollahuaya of Bolivia:

My informants used Spanish for the qualities: *muy calido* or *caliente* for hot, *calido* for warm, as well as *calido de la primera o segunda clase*. They use *frío* for cold and *muy frío* for very cold, and *fresco* for cordial. I cannot recall any use of Quechua words for these qualities. Somehow, I feel they were using classifications from European herbolarios. [personal communication, 1986]

The Middle American evidence is less complete. Among Quiché Mayan speakers in Santa Lucía Utatlán, Guatemala, Quiché words are used when speaking of Hot and Cold humoral values, but *fresco* is used for the neutral category, since there is no equivalent term in Quiché (Cosminsky 1977:203). Similarly, among the Cakchiquel Maya Hot and Cold are expressed in the local language, but Spanish is used for *fresco*, which has no Cakchiquel equivalent (Michael Logan, personal communication 1986). Logan also reports that Cakchiquel and Tz'utuhil speakers use Spanish *Templado* for the neutral category (Logan 1973b:392).

Sketchy as this evidence is, it is more suggestive of Spanish-to-Indian than of Indian-to-Spanish transmission. It also correlates with other evidence—again more tenuous than one might wish—that humoral concepts are more prevalent among mestizo-creole populations than among speakers of Indian languages. Thus, in reporting "the familiar division of foods into hot and cold categories" among the Totonac Indians of Tajín, Mexico, Kelly and Palerm observe, "the general distribution and the strength of this notion in exclusively mestizo areas suggest that it is of European introduction" (Kelly and Palerm 1952:165). They add, "In Tajín, no one seems particularly preoccupied with this aspect of food." Similarly, I have found the Hot-Cold ideas of the bilingual Tarascan, who live on the outskirts of Tzintzuntzan, to be less well developed than those of most mestizo Tzintzunzeños. And Adams and Rubel in their review of "Sickness and Social Relations" in Middle America write, "In more traditional Indian communities there is limited mention of it [Hot-Cold theory]" (1967:342). They also speak of "The currency of the hot-cold distinction over much of the Ladinized region and its minimal use in many of the less acculturated communities," a distinction they attribute to replacement of "more traditional usages" (1967:343).

The limited data available from South America suggest the same pattern. Again quoting Holmberg's letter about Vicos, "Our data indicate that the concept of 'hot' and 'cold' foods is more strongly developed and more highly elaborated among Mestizos than among Indians in Peru." And in a similar personal communication (1951) from Luis Duque Gómez, then Director of the National Indian Institute of Colombia, one reads, "Among the Indian tribes we know this nomenclature [Hot-Cold] is rarely encountered and almost always it refers to acculturated foods [i.e., introduced], or to beliefs also due to acculturation. It looks as if there does not exist in them [tribes], in those we know—a classification identical to that of the popular mestizo classes."

In contrast, nowhere do I find statements to the effect that humoral ideas are stronger among indigenous groups than among those of greater European ancestry, a reasonable expectation were basic humoral beliefs and practices in Latin America of indigenous rather than European origin.

Flaws in the American-Origin Hypothesis

I now turn to the second requirement that must be fulfilled in making the case for the Old World origin of Latin American humoral medicine: to demonstrate that the arguments of the principal protagonists of the New World hypothesis, Colson and López Austin, are seriously flawed and unsatisfactory as explanations of all the phenomena that must be accounted for.

Audrey Butt Colson

Audrey Butt Colson's belief that the Hot-Cold syndrome is indigenous to the New World is based on research among the Carib-speaking Akawaio Indians of Guyana and the Pemón of Venezuela. In the first of two papers, dealing only with the Akawaio (Colson 1976), she argues that since these people have had significant contact with the outside world only in recent years, their Hot-Cold beliefs must certainly be pre-European. Moreover,

the opposition of hot and cold is found, within my knowledge of the South American areas north of the Amazon, amongst Amerindian tribes which extend from French Guiana through to the Andes, including in the latter settlements of Quechua-speakers in the Ica valley. So embedded is it in the languages, the concepts and practices of all these peoples, that it could scarcely have been borrowed. . . . Incoming [humoral] concepts may have harmonized, modified, and even strengthened the syndrome. Alternatively, the contrary may have occurred and imported concepts, *already weak*, were fortified by the corresponding indigenous Amerindian ones. [Colson 1976:488-490, emphasis added]

In her second article Colson makes this last hypothesis more specific, as the title suggests: "An Amerindian Derivation for Latin American Creole Illnesses and Their Treatment" (Colson and Armellada 1983).¹⁴ In other words, Colson argues, contemporary humoral medicine of Latin American mestizos represents reverse acculturation, a borrowing of an entire medical system from the native peoples of the New World. To support this view she also points to the absence in the Americas of classical humoral medicine's Wet-Dry dimension. This absence, says Colson, and the presence of a bitter-sweet classification in the South American tropical forest area, "are clear indications of a different set of underpinnings to the medical system of indigenous Americans to that which existed in the classical systems of Europe and the Middle East" (Colson and Armellada 1983:1241).

For a variety of reasons Colson's position is untenable. First, her own evidence suggests that the Akawaio-Pemon have not been as isolated as she argues:

Long distance travel whereby a few individuals went to pass several months, occasionally years, outside their homeland is characteristic of both nations [i.e., groups]. They travelled to colonial settlements to trade, to obtain paid employment and out of curiosity. Some settled in the Capuchin missions of the lowlands of Guayana, from the middle of the 18th century until their abandonment in 1817 during the War of Independence. [Colson and Armellada 1983:1231]

It is not unreasonable to expect that these travelers would have been open to medical acculturative influences, since even in the 1950s Colson "found the Akawaio to be extremely broadminded about foreign remedies" (Colson 1976:431). The likelihood of infiltration of European medical ideas seems to me to be stronger than Colson believes.

Comparative lowland South American ethnographic data also bear on the question of Akawaio-Pemon isolation as it relates to their Hot-Cold beliefs. Although a binary opposition characterizes the world view of a number of groups in this region, Hot-Cold beliefs as such appear in large measure to be foreign to them. Colson cites "personal communications" from anthropologists working in lowland South America as evidence of "operative hot/cold oppositions" in the area (Colson and Armellada 1983:1243, fn. 7), but this evidence cannot be evaluated until it is generally available.

Second, more important than the question of isolation is the fact that Akawaio-Pemon humoral medicine is very different from the beliefs and practices described in the rest of Latin America. Akawaio-Pemon medicine is basically shamanistic, incorporating such widespread indigenous American concepts as soul loss, object intrusion, and spirit "masters" of game animals and plants who may send sickness to humans. Soul loss illness is described as "cold," and to cure it

the body must be warmed. Therapy consists of the shaman in seance singing *muriá* songs that draw back the soul and warm the body: "indeed the Pemon assert that these songs 'heat up the people'" (Colson and Armellada 1983:1235). This therapy—the use of songs rather than Hot substances—is a long way from the humoral "principle of opposites," but it conforms beautifully to widespread Native American soul loss treatment patterns, minus the idea of heating.

A principal cause of "hot" illness is "a penetration of the body by an injection of poisonous, heat-inducing forces injected by some malevolent agent," spirit or human, such as a stone. The shaman extracts "the intrusive spirit force" by "cooling down" the body with the aid of *Pitai'ma* mountain spirits (Colson and Armellada 1983:1236). Again, this is hardly main-line humoral medicine. It represents an ancient Amerindian medical belief with a thin Hot-Cold veneer.¹⁵ Turning to home medical treatments, one finds a highly asymmetrical model of humoral therapy that emphasizes heat but largely ignores cold. The Akawaio say that "hot things are used for curing sickness" (Colson 1976:443-444), and that "sickness does not like hot things" (1976:448), but there are no corresponding statements about Cold things. When Hot medicines are used to treat colds, influenza, bronchitis, pneumonia, and whooping cough (illnesses commonly considered in other places to be cold or due to cold), the therapy is humorally consistent. But when the same Hot remedies are also used to treat fever, stomach ache, and diarrhea, which are generally classified as hot conditions, humoral therapy as the explanatory model makes no sense.

Colson's data also raise questions about what she, as well as the Akawaio-Pemon, understand by the terms Hot and Cold. Although "intrinsic qualities" are said to be the basis for some classifications (pepper and ginger are Hot, and river bank clay is Cold [1976:443]), the mode of treating medications is more important. Boiling, roasting, baking, or charring add heat to a remedy, while washing, exposure to cold night air, or leaving it in a raw state may place it in the Cold category. The same remedy may be Hot when boiled and Cold when soaked in cold water. Again, "When required as a hot cure the bark [of *yarrri yarrri*] is scraped into water and drunk hot; when the cold category is needed, then it is drunk in cold water" (1976:445). Such data indicate that thermal temperature, rather than humoral values, underlies curing theories.

Finally, Colson can be faulted for the virtual absence of historical and comparative ethnographic data in her two articles. A complex question like the origin of humoral medicine in the Americas cannot be solved by adducing evidence from a single, relatively isolated example and then jumping to cosmic conclusions. Serious discussion of the topic must include the history of early classical humoral pathology, its Persian-Moorish additions, its place in medical teaching and practice in all Europe, its role in New World medical schools, and the medical roles of priests and members of religious orders. The contemporary ethnographic picture also requires careful scrutiny. Nevertheless, in Colson's first article there is not one historical citation that deals with any of these points, and there is but a single ethnographic citation (to Currier 1966). In the second article the same immunity to the historical record is apparent, while the comparative ethnographic discussion is only slightly more detailed than in the first.

What is one to make of Akawaio-Pemon medicine, as described by Colson?

One possibility is that she has indeed encountered a unique Hot-Cold duality. un-

related to classical humoral pathology, but by the same token this would make it of no value in explaining the origin of the humoral medicine described by other anthropologists. A second, and more plausible, possibility is that Akawaito-Peom medicine, which apart from its aberrant Hot-Cold elements conforms to ancient Amerindian patterns, has accepted bits and pieces of European humoral medicine to produce an unusual syncretism.

Alfred López Austin

López Austin's argument for a New World origin for the Hot-Cold dichotomy is laid out in a series of scholarly papers (1969, 1970, 1971a, 1971b, 1972, 1974a, 1974b, 1975), which culminate in *Cuerpo humano e ideología: las concepciones de las antiguas Nahuas* (1980:1:303-318). His points are detailed and involved, but I believe that the important ones can be reduced to four.

(1) From early in the post-Conquest period, beginning in the mid-16th century, we have superb documents written in Nahuatl and/or Latin that describe certain herbal and other remedies as Hot or Cold, or as Heating or Cooling. These data indicate that the concept must predate the Conquest. The principal source López Austin draws upon is Bernardino de Sahagún's *Historia general de las cosas de Nueva España (Códice florentino)*, the pertinent sections of which he himself has meticulously translated from the original Nahuatl into Spanish. His argument is also buttressed by data from the *Libellus de Medicamentibus Indorum Herbis* (commonly known as the de la Cruz-Badianus Manuscript), Francisco Hernández's *Historia natural de Nueva España*, and the work of Ruíz de Alarcón.

(2) The Hot-Cold polarity in pre-Conquest Mexico was not limited to health, illness, and medicine, but rather embraced all of the cosmos. López Austin writes that even today, "The cold-hot polarity continues governing everything that exists: plants, animals, minerals, heavenly bodies, days of the week, months, supernatural beings—everything fits into the cold-hot classification" (1980:306). The inference is that, since European humoral theory and practice are restricted to medicine, they cannot explain the New World universality.

(3) Caribbean and Philippine occurrences of the Hot-Cold dichotomy, which hardly lend themselves to an Aztec origin explanation, can be accounted for in other ways.

(4) Classical European humoral medicine classifies illnesses and remedies not only along a Hot-Cold axis, but also along a Wet-Dry axis. How, then, if the contemporary Hot-Cold dichotomy is really Old World, can one account for the universal loss of the Wet-Dry dimension in the New World? In this question López Austin, of course, joins Colson.

Before commenting on these points, it is necessary to clarify what is being discussed. López Austin, as his major heading "The Cold-Hot Dichotomy Polemic" indicates, is primarily concerned about showing that the Mexican classification of remedies and illnesses as Hot or Cold is a special case of an Aztec binary world view. Although he cautions that he does not say that contemporary indigenous medicine is "of a pure prehispanic tradition" (López Austin 1980:316), by rejecting all arguments for an immediate Spanish origin he implies that it must be largely so.

Indeed López Austin appears unconcerned with contemporary popular medicine apart from its Hot-Cold characteristics. In contrast, those anthropologists who believe that Hot-Cold medicine is a simplified form of classical humoral theory focus on the total medical system—complex and rich in etiological beliefs, names of illnesses, therapies, preventive measures, and the like—and not just on the origin of the Hot-Cold feature. That is, López Austin discusses the Hot-Cold dichotomy from the point of view of a binary world view, while I (and many other anthropologists) examine it as the unifying characteristic of a single, major cultural domain, the medical system.

To return to the first of López Austin's four major points, we must ask to what extent the sources on which he bases his argument for an indigenous origin of the Hot-Cold dichotomy have been "contaminated" by European influences. Specifically, when we read that an herb is Cold, or has a Cooling effect, does this reflect an indigenous humoral theory of illness, or does it represent the effort of classically trained scholars and scribes to present data in what they feel to be the fashion most comprehensible to their readers?

In the case of Sahagún the possibilities of contamination are legion. Over many years he assembled elderly informants, including Aztec doctors, and quizzed them himself or had them interviewed by others, with and without the aid of formal questionnaires, on a wide variety of subjects including illness, herbal and other remedies, and botanical and zoological subjects. Answers were recorded in Nahuatl, worked and reworked, edited, and translated into Spanish with the aid of Hispanicized Indian scholars trilingual in Nahuatl, Spanish, and Latin, who were trained at the College of Santa Cruz at Tlaltelolco, a suburb of Tenochtitlán. The effect on these young scholars of this classical training is indicated by Arthur J. O. Anderson, who writes,

Here [at the College] some of the best Franciscan minds, in the first decade of the College, at least . . . taught their Indian pupils Spanish, Latin, rhetoric, logic, and philosophy; and they showed them how to write their own Nahuatl. They undoubtedly gave them a classic mold based upon Pliny's *Natural History* for application to natural sciences, results of which are evident in such works as the *Badianus MS* (an Aztec herbal) and in certain parts of Sahagún's *Historia general*—Books VII, X, and XI, for instance [Books X and XI contain the bulk of the medical data]. These would have been impossible achievements without the existence first of the trilingual, partly Hispanicized young men whom the Franciscans had trained. [A. Anderson 1960:33-34]

The extent of Hispanicization in Sahagún's time is evident, says Anderson,

the Nahuatl texts of the Madrid and Florentine MSS. It shows in the command which Sahagún's assistants . . . exhibited in the use of Spanish; in the occasional, matter-of-fact recourse to a Spanish term now and then in the Nahuatl text; in the adoption of some European terminology and perhaps methods in native techniques such as goldcasting, with the acceptance of these additions as if they had always been in Aztec culture; . . . in the use of terms of opprobrium when the ancient gods are referred to (devils, demons), or ancient rites (superstitions, abuses) . . . and so on. [A. Anderson 1960:40, emphasis added]

López Austin also acknowledges that European concepts have been embedded in Sahagún's texts: "The work of Sahagún is of the first order for the study

of the conceptions of the ancient Nahuas about the human body, as well as for almost all aspects of prehisppanic thought, *but it is a colonial work, not exempt from very diverse types of distortions*" (López Austin 1980:49, emphasis added). These "distortions" include such Spanish and Latin words in the original Nahuatl text as *xerencatoca* (*jeringa* = syringe), *trigo* (wheat), *hora* (hour), etc., etcetera, *ut supra*, and perhaps most revealing of all, the admonition not to eat pork or beef when suffering from bloody flux.¹⁶

The same caution must be used in interpreting data in the earliest of all post-Conquest sources of medical information, the 1552 de la Cruz-Badianus Manuscript, the *Libellus de Medicinalibus*. Of this, Aguirre Beltrán has written,

In spite of contrary opinion, Libellus is not a work of pure Indian content and, in our opinion, those who describe it in the context of the colonial epoch have done well. In effect, in the Libellus one already notes in clear form the process of acculturation which its authors were experiencing and which characterize it, properly, as the first work of mestizo medicine. [Aguirre Beltrán 1963:116]

Among the evidence of acculturation is the prescription of *ferro aturito* (iron filings) (del Pozo 1964:218-219).

Del Pozo, in the magnificent edition of the *Libellus* he edited, speaks of the "undoubted marks of contamination" that expressions about Hippocratic doctrines reveal. "It does not appear probable," he writes, "that to bile, black blood, air and heat were attributed the same pathogenic role among Aztecs as was attributed to them in European medicine" (del Pozo 1964:334). Del Pozo praises the Aztecs and their medicine by distancing it from European medicine: "The use by the Aztecs of plants in medicine was based on long observation and experience not falsified by doctrinaire prejudices about 'their cold nature' or 'hot' that corrupted contemporaneous European concepts" (1964:338).

As for Francisco Hernández's monumental work, his descriptions of humoral qualities of plants are patently those of a European scholar of the time. When we read that, for example, the *chillapatli* herb is "of a hot temperament and dry in the third degree," we are listening to a 16th-century European physician and botanist, not an Aztec doctor (Hernández 1943:11:424). López Austin himself recognizes this when he writes of Hernández, "It can immediately be seen that it is the intention of the European scientist to classify the American natural world within his frame of reference, deducing from the qualities [humoral values] that he believes he finds in the plants the properties he judges they must have in the human body" (1975:107).

That Hernández's humoral classifications express his frame of reference, and not those of Indian informants, is revealed by his scathing remarks about their lack of understanding of the humoral system: "They do not understand how to adapt the various kinds of remedies to the various humors that must be evacuated" (Hernández 1946:87). Moreover, he reports that for feverish people with skin eruptions, not only do they sprinkle their bodies with cold water, but they also rub them with hot things, and "audaciously respond" to those who challenge them that "heat is vanquished by heat" (1946:87), a clear violation of humoral theory.¹⁷

Hernández was not alone in his contempt of the Indians for their lack of humoral knowledge. In Peru Father Bernabé Cobo spoke favorably of certain herbal

skills of Indian doctors, especially with respect to wounds, but, like Hernández, he felt that they were ignorant of humoral knowledge.

They did not know [to feel] the pulse nor to examine the urine, and even less did they pay attention in applying [their] medicines to the complexions of the patients or to the causes that led to the illnesses; because except for blood, whose nature and properties they did not investigate, they had no knowledge of the four humors . . . [Moreover,] when they felt consipated they purged themselves indifferently with herbs, without knowing the humor that overflowed and which it was necessary to evacuate, because they intended nothing more than to alleviate the body. [Cobo 1893:200]

Summing up the limitations of the principal medical sources of the 16th century as evidence of pre-Conquest humoral beliefs, Aguirre Beltrán writes:

Sahagún's informants, the authors of the Badianus Codex and the native collaborators of Hernández, without the least doubt, felt the influence of their employers. Among the most significant ideas in Western aulic medicine one finds the Greek theory of the nature of things—dryness, humidity, cold, heat—that Don Francisco Hernández assigned to all of the remedies he studied and described. The indigenous informants formed part of the native medical elite, and we must suppose that there diffused through them the concept of cold and hot that so profoundly impregnated aboriginal thinking. [Aguirre Beltrán 1963:262]

Before leaving these early post-Conquest Hot-Cold sources, I wish to call attention to a characteristic of Sahagún's data that has not received the attention it deserves: from a humoral standpoint, the Aztec medical system was highly asymmetrical. But, in contrast to the Akawaio-Pemon system, which emphasizes Heating remedies, among the Aztecs Cooling remedies predominated. While one does not expect absolute symmetry in a humoral system, substantial representation of both Hot and Cold remedies is assumed.

Yet what does the evidence show? In López Austin's Spanish translations I count 11 *Frio* ("Cold") or *Fresco* ("somewhat Cold") remedies and 10 more that *Enfría* (the verb, "Cool"). No remedy is described as *Caliente* or *Calentando* ("Heating"). In the Dibble-Anderson English translation of Book 11 (1963) I count 12 remedies described as Cold or Cooling, but not one that is Hot or Heating. An additional 75 or so remedies in the *Florentine Codex* are prescribed for fever, with such expressions (in Spanish) as *calma el calor*, *para fiebre*, *para cuerpo caliente*. With a humoral frame of reference, it can be argued that remedies so described must be Cooling, although this is not made explicit.

In contrast to these implicitly Cooling remedies, there are very few implicitly Hot ones. The herb *oquitzipatlil* is an example: "It is required by one whose member has been harmed, and by one whose urine has stopped. . . . When they have given the medicine, he becomes very hot; the sweat exudes" (Dibble and Anderson 1963:185). This suggests a Hot remedy, although there is no indication that the illness itself is felt to be due to cold. Moreover, in contemporary Mexican popular medicine difficulty in urination is attributed to heat and is treated with a Cooling remedy such as corn silk tea. López Austin also lists *oquitzipatlil* and seven additional remedies as treatments for "chills and fever" and "aquatic fever," which he equates. Even if one accepts these eight examples as implicit evidence of Heating remedies, the fact remains that the humoral evidence in Sahagún is incredibly lopsided, quite out of line with any contemporary system.¹⁸

It is also puzzling that the only evidence of humoral values in Sahagún, directly stated or inferred, is in the context of curing. In Book II scores of edible animals, birds, fish, insects, worms, trees, fruits, and edible herbs are named and described, without the slightest indication that Hot-Cold qualities characterize them (Dibble and Anderson 1963). Nor in Book 8, Chapter 13, "The foods which the lords ate," where dozens of items are listed, is there evidence of a Hot-Cold concept (Anderson and Dibble 1954:37-40). Since Hot-Cold values of food are basic to health and illness all over Latin America and are part of classical European humoral medicine, it is hard to explain this total absence of indigenous mention of humoral values of foods in the immediate post-Conquest period, if indeed belief in Hot and Cold was widespread among Native Americans.

Not only does the Aztec evidence for pre-Conquest Hot and Cold herbs seem less convincing than sometimes argued, but the same questions surround the Mayan data. Noting that "Yucatecan Mayan medical history is one of the best documented chapters in native American medicine," Edmonson (1986:1) selects for analysis a representative seven of the twenty sources that give extensive information. He feels that these seven sources fairly represent the span of colonial and modern history. The earliest is the *Ritual of the Bacabs*, probably from the 16th century, of which he says "There is good reason to suppose that it reflects Mayan medical practice shortly after the Spanish conquest, little influenced by European thought" (1986:2). A lexical search of the *Ritual*

reveals a very restricted incidence of the Mayan words for cold, hot, wet, and dry. Furthermore the contexts make it clear that the usages that do occur refer to the objective characteristics of temperature and moisture rather than to the metaphorical extension of these properties manifested in humoral theory. (Edmonson 1986:3)

In other words, in the earliest indigenous Mayan document there is no evidence of humoral theory.

The remaining six texts (numbers II to VII in Edmonson's paper) are drawn from the *Book of Chilam Balam of Chan Kan*. These were written at various times "possibly spanning most of the colonial period," but later than the *Ritual*, as evidenced by their increasing use of Spanish words. In text II, which deals with urinalysis, "there seems to be . . . an incipient focus on hot and cold. . . . Though it suggests it strongly that the temperatures here are metaphorical. . . . Though it would not appear to be humoral medicine, this text clearly uses temperature metaphorically" (Edmonson 1986:7), as the *Ritual* does not.

The later *Chan Kan* texts discuss many remedies that are "temperature specific" but apparently not humoral and, further, "the temperatures seem to relate only to the treatments and not to the diseases" (Edmonson 1986:9). An exception in text IV is snakebite, "a cold affliction," treated with "honeyed wine" and a poultice of "hot cock's blood." "This appears to be a humoral rationalization of earlier practice" (Edmonson 1986:9). Later texts show increasing European influence: illnesses related to the European months and to the signs of the European zodiac, and—in text V—"by its exclusive preoccupation with what appear to be specifically European therapies: purging, bleeding, and surgery" (1986:9). The final text, VII, is significant "since it seems to be the latest of all the texts and to reflect full awareness of humoral theory and of its European source" (1986:11).

Despite its brevity, it is "the only passage found that refers to all four terms of the humoral theory" (1986:12).

Although Edmonson does not commit himself to either a European or New World origin for the concepts of Hot and Cold, it seems to me that his evidence clearly supports the former hypothesis: in the earliest source, no evidence whatsoever of Hot and Cold but rather, with the passage of time, more and more components obviously of European origin. This is exactly what one would expect with Native Americans exposed to Spanish medicine over a period of centuries.

I now turn to López Austin's second principal point, that the Hot-Cold dichotomy is the major organizing principle of the pre-Conquest Aztec world view, a characteristic that sets it entirely apart from European humoral medicine. Such a world view, as we have seen, may very well have encouraged Mexican groups to be receptive to a foreign medical system that embraced similar concepts. But a model that may help explain why humoral medical theories and practices fell on fertile ground in Mexico and Mexican-influenced parts of Mesoamerica (e.g., the Chorotega of Costa Rica) is not a sufficient explanation for the presence of this system on two continents. In view of the wide distribution of contemporary humoral medicine—the southwestern United States to southern South America, to Haiti, Puerto Rico, Trinidad, and the Christian Philippines—must we assume that a world view comparable to that of the Aztecs existed in all these regions? If, following Leach (1967:3), we assume that a binary structure is intrinsic to the processes of human thought in all societies, the argument of a sympathetic, receptive world view becomes so general as to be meaningless.¹⁹

Again, is it accurate to say—as López Austin does (1980:306-307)—that the "cold-hot polarity continues governing everything that exists" (presumably in Mexican Indian cultures)? Although to some extent this may be true among modern Aztecs (cf. W. Madsen 1955), it is far from demonstrated in other parts of the Americas. Certainly nowhere is it true of creoles and mestizos, among whom humoral medical beliefs are at least as widespread (and perhaps more so [cf. Adams and Rubel 1967:343]) as among Indian groups. The many straightforward ethnographic accounts of humoral medicine in the New World (the basis for any comparative and historical analysis) deal with food and diet, maintenance of health, causes of illness, and therapies. But we do not read about heavenly bodies, days of the week, months, supernatural beings, and the like in this context. The remarkable thing about contemporary humoral medicine, whatever the ethnic affiliation of its practitioners, is its naturalistic base and its focus on health and illness.

With respect to López Austin's third point, that the Caribbean and Philippine occurrences of the Hot-Cold dichotomy require neither an Aztec nor a Spanish explanation, he overlooks the obvious in favor of the hypothetical. He writes,

I believe that for the moment, it would be difficult to establish the origin of the hot-cold dichotomy in the popular medicines of Haiti and Puerto Rico; but it is more likely that the creation or acceptance has been from the beginning that of a dual system, and that a degeneration of a system of two pairs of contraries has not existed. (López Austin 1980:316)

It is unlikely, he argues, that such a degeneration (loss of Wet-Dry) would be so similar not only between these islands but also as compared to the mainland. The

colonial histories of the two islands, he contends, are too different from those of continental communities to expect parallel processes of degeneration.

Yet since processes of "degeneration" are found in South Asia parallel to those of Latin America (see below), it seems not too speculative to expect the same thing within a common culture area subjected to very similar historical forces for hundreds of years. Puerto Rico was a Spanish possession for four centuries, until 1898; Trinidad for three centuries, until 1802; and Haiti for two centuries, until 1697. During these years the islands certainly were exposed to the same forms of humoral medicine as mainland Spanish America. And as for Haiti, during its century of French domination (until its independence early in the 19th century), it is reasonable to assume that French humoral ideas also played a role in implanting the Hot-Cold concepts revealed by contemporary anthropological research. Spanish, and to a lesser extent French, colonial medicines are obvious explanations for humoral medicine on these three islands; there is no need to appeal to a hypothetical "dual system" to account for origins.

As for the Philippines, López Austin does not attribute humoral medicine either to "degeneration of the Hippocratic system" or to pre-Hispanic American origin. If we are going to think in terms of diffusion, he says, continental Asiatic influence comes first, with China the obvious source because of its centuries of commerce with the Philippines (López Austin 1980:316). Yet the fact remains, as even the most superficial knowledge of Chinese and Philippine popular medicine makes clear, that the Philippine humoral variant is Latin American and quite distinct from that of China. To illustrate, Fray Fernando de Santa María's famous *Manual de medicinas caseras (Manual of Home Medicines, 1815)*, first published in Manila in 1768, with the subtitle "For the consolation of the poor Indians in the provinces and towns where there are neither doctors nor pharmacies," follows the four-humor, four-grades-of-intensity pattern of Mexican home manuals of the same period.²⁰ Further, the illnesses Fray Fernando recognizes are the same as those of Mexico, including common ones I have found in Tzintzuntzan during the past 40 years: *ahito*, *empacho*, *angurria*, *apostemas*, *bazo*, *dolor del costado*, *corriniento*, *encordios*, *erisipela*, *hético*, and a great many more. A preponderance of the herbal remedies also are those described in Mexican colonial works.

Hart, in his comprehensive study of Philippine and Southeast Asian humoral medicine, also subscribes to a Spanish rather than Asian origin. With respect to possible Chinese influence, Hart concludes, "Although the Chinese probably had some influence on Filipino folk medicine . . . no convincing evidence was found that its humoral characteristics are of Chinese origin" (1969:65). Clearly, an acceptable explanation of the origin of humoral medicine in the Americas must also account for the Philippine data. Common Spanish influence on both areas is much more plausible than Chinese diffusion as the explanation.

Finally, there is the admittedly puzzling absence of a Wet-Dry humoral dimension in Latin American popular medicine, a fact that both Colson and López Austin cite as evidence that humoral pathology could not have diffused from Europe. At the level of formal medicine and professional botany—both of course closely linked—the concept of Wet and Dry values of remedies, foods, and other items was, as we have seen, brought to the New World. Why it should disappear at the popular level is certainly a mystery, for there seem to be no clear-cut contemporary New World occurrences.²¹ Yet the fact that we cannot fully explain a

process of loss does not mean that it has not occurred. Among the explanations advanced is that of Madsen, who suggests that "the European hot-cold complex was meaningful to the Indians because it could be fitted into the familiar Aztec concept of eternal war between heat and cold" (W. Madsen 1955:138). He believes the Wet-Dry dimension was lost because there was no parallel indigenous belief to which it could be referred. This explanation, good as far as it goes, is inadequate to explain the loss in Chile, Peru, Trinidad, Puerto Rico, Haiti, and the Philippines, to mention a few places where Aztec world view presumably had no bearing on the process.

I have suggested literacy as the independent variable: a fully developed humoral system involving four degrees of each of the four qualities for hundreds of items presents the human mind with problems of learning and storing, retrieving, and passing on to others data that can be dealt with only with the aid of writing. But a stripped-down system (minus one set of paired components and with loss of formal degrees of intensity of value) clearly is viable, as the record shows, in nonliterate populations. Since heat and cold are more obvious characteristics of illness than moistness or dryness, it is reasonable that they should be the ones to survive (Foster 1978).

This hypothesis is strengthened by comparative data from Asia, where classical humoral systems, as in the West, are marked by Wet-Dry as well as Hot-Cold dimensions. Many anthropologists who have worked in South and East Asia—perhaps the majority—say nothing about a Wet-Dry dimension. Others report that it is vestigial, unimportant, or not fully developed. For example, in Hong Kong, the few foods Eugene Anderson found to be classified as Wet or Dry are Hot ones only: "No cooling foods seem to be either wet or dry" (E. Anderson 1980:245). In Malaysia, Manderson's Malay informants distinguished certain foods as wet or dry, yet "their use of these terms appeared to relate as much to the obvious physical properties of foods as to humoral medical theory." Thus, powdered milk is dry while coconut milk is wet (Manderson 1981:83).

The case for literacy as essential to the retention of a Wet-Dry dimension is strengthened by evidence from Asia where, unlike Latin America, one still finds both Great and Little medical traditions. That is, there is a sophisticated level with literate doctors, some trained in government schools, as in India, who are acquainted with the classical humoral works of their systems. They know, and sometimes use, the Wet-Dry concept in curing. But at the popular level the Wet-Dry dimension is very rarely apparent.

Penkala's Afghanistan data illustrate this contrast: two levels of traditional medicine, one "family" and the other "professional," the latter practiced by *hakims*. Whereas family medicine is transmitted by oral tradition, the practice of *hakims* often is based on written transmission, such as medical books in Persian, Arabic, or Urdu (Penkala 1980:205–206). She describes an 80-year-old *hakim* who used the Wet-Dry opposition in curing (but not in food classification), and notes that this concept occurs only "quite rarely in popular knowledge, contrary to [the] common conception of the 'hot' and 'cold'" (1980:207). Also in Afghanistan Centlivres speaks of a "secondary opposition" between *sec* and *humide* known to *lettrés* (literate) but scarcely to the common people (Centlivres 1985:38). Further reinforcing the importance of literacy in maintaining a full-blown humoral system, among literates Hot and Cold are marked by from three

to seven degrees of intensity, while among the common people, only two or three degrees are recognized (Centlivres 1985:41).

Although it is customary to say that the Wet-Dry dimension of humoral medicine has disappeared at the popular level, this is perhaps an overstatement. Eugene Anderson, speaking of humoral systems in general, suggests that the Wet-Dry dimension has been "collapsed" into the Hot-Cold pair, since Wet items tend to be Cold, and Dry items to be Hot (E. Anderson 1984:756). A "collapse" model of the process of loss of Wet-Dry humoral values is consistent with the ethnographic record, which reveals a positive (but not absolute) correlation between water and Cold and dryness and Heat. This is true both in Asia and in Latin America. In north Iran, for example, although Cold foods may be either Dry or Humid, Hot foods can be only Dry (Bromberger 1985:22), a state suggesting a partial decay of the classical form. In Hong Kong Lee notes that "the 'dry'-'wet' classification is not as pre-eminent as the 'hot'-'cold' distinction, and its use by ordinary people (though not professional practitioners of Chinese medicine) is often mixed up with the 'hot'-'cold' dimension" (1980:353, emphasis added). Among the Rājapūts of Khalapur, India, we read that "Dryness accentuates the hot quality of a food while wetness accentuates its cool quality" (Minturn and Hitchcock 1966:73). This state is also reflected in Gould-Martin's comment that in Hong Kong Wet and Dry are characteristics "that usually oppose one another and rarely need to be invoked since cold foods, like watermelon, are often wet, and hot foods, like bread or dried pork, are usually dry" (Gould-Martin 1978:40). Again, in Sri Lanka, "The process of drying seems to give a heavy property to food" (Wandel et al. 1984:97), while "Foods classified as cooling tend to include liquids such as water from the young coconut and the King coconut, orange juice, and cow's milk, bland vegetables with a high water content, and green, leafy vegetables" (Wandel et al. 1984:98). Similarly, in northern Afghanistan moist is associated with Cold and dryness with Heat (Centlivres 1985:44).

The same correlation has been widely noted in Latin America. In Peru "foods which come from under the surface of ground . . . tend to be cold because of their association with wetness, while foods derived from parts of the plants which grow above ground tend to be hot because they are exposed to the heat of the sun" (Brown 1976:85). For Guatemala we read, "Aquatic products, like most subterranean animals and low-lying plants, are cold, whereas organisms more exposed to the direct heat of sunlight are generally hot" (Logan 1973b:390). And in the Valley of Mexico "The quality of coldness comes from water (cold) and the quality of heat comes from the sun or from energy by an animal or plant within itself" (W. Madsen 1955:125). Similar correlations are reported by, among others, Cosminsky (1977), Ingham (1970), Messer (1981), and Molony (1975). This is also true for Tzintzuntzan.

From the comparative data it is clear that *all* classical humoral medical systems—Gracco-Persian, Ayurvedic, and Chinese alike—have followed a common pattern of simplification from a complex literature to a less complex nonliterary cultural domain that has largely and usually entirely eliminated the Wet-Dry dichotomy. Anderson states the principle in general terms: "When cognitively complex systematization is widely adopted, it gets simplified. The folk, borrowing the humoral system, left out what complexity and qualification and tentativeness and

difficulty they found therein, and reduced it to its most salient dimension or dimensions" (E. Anderson 1980:258).

Conclusion

I believe that the evidence adduced in this paper overwhelmingly supports an Old World origin for Latin American humoral pathology. This medical system is directly descended from classical Hippocratic-Galenic-Arab medicine, and it represents Spanish "establishment" medicine at the time of and subsequent to the Conquest. Indigenous New World herbal and other remedies have, of course, been incorporated into the humoral framework and continue to be widely used. But it is essential to distinguish *theory* from *content*. The Native American contributions to contemporary medical practices lie largely in the second category: specific remedies. Surviving pre-Conquest theories are not humoral. They concern soul loss (e.g., *sisfo*) or sibling rivalry (*chipil*). Neither Colson's nor López Austin's arguments in favor of New World origin can, in my opinion, stand the test of the evidence.

NOTES

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¹As in earlier papers, and following Orso (1970), I capitalize the first letter of words indicating humoral values and use lower-case letters when thermal temperature is indicated. When quoting other authors, of course, I follow their format. Lower-case initial letters are also used when I am referring to the thermal hot-cold characteristics of illness, as contrasted to metaphoric humoral values.

²E.g., U.S. Southwest (Ford 1976; W. Madsen 1964:70-71; Ortiz 1969:178-179); Mexico (Currier 1966; Foster 1984, 1985; W. Madsen 1955); Guatemala (Cosminsky 1975; Logan 1973a); El Salvador (author's 1951 fieldnotes); Honduras (Adams 1957:601); Costa Rica (Orso 1970); Panama (Adams 1957:105); Colombia (Reichel-Dolmatoff and Reichel-Dolmatoff 1959; Velásquez 1958); Ecuador (Muñoz-Bernard 1979); Peru (Mazzess 1968; Stein 1961:80-86); Bolivia (Bastien 1983:89); Chile (Grebe et al. 1971; Simmons 1955); Paraguay (Service and Service 1954:256-260, 306-307); Brazil (Queiroz 1984); Venezuela (Suárez 1973:382; 1974:46-47); Haiti (Wiese 1976); Puerto Rico (Hartwood 1971); Trinidad (Aho and Minott 1977); Philippines (Hart 1969).

³Since this citation does not appear in contemporary humoral literature, it seems worthwhile to reproduce it in full.

The *Limerios* had formerly many queer conceits and maxims about diet and medicine, which have greatly given way under foreign contact, but which still lurk among the masses. As among the Chinese everything resolves itself into *yin* and *yang*, positive and negative, white and black, male and female, so in Lima all food is held to be *frío ó caliente* (hot or cold), *craxas que se aponeen* (things hostile), and which, if introduced into the stomach at the same time, would be dangerous, if not deadly. It will never do to take chocolate and rice at the same meal, because *se aponeen*, "they are opposite"; and a dram of *india*, or brandy, on a banana would inevitably produce an *em-pacho*. Chickens are *frío*, but beef is *caliente*, and *agua de pollo* (chicken-tea), instead of beef-tea, is the proper thing to give a patient suffering under acute or inflammatory disease. You must not take cold water after a fit of anger, nor wash yourself after a

hard ride, or when you have a fever. [Squier 1877:58-59]

⁴E.g., for coastal Peru, Giljin 1947:53-54; for the Zapotec of Oaxaca, Mexico, de la Fuente 1949:313-314.

⁵For example, Adams and Rubel 1967:342; Aguirre Beltrán 1963:17-25; Aho and Minott 1977:350; Currier 1966:251; Grebe et al. 1971:208; Harwood 1971:1153; Ingham 1970:76; Kiev 1968:92; C. Madsen 1965:97; W. Madsen 1955:123; Mak 1959:126; Mazess 1968:109; Molony 1975:67; Muñoz-Bernard 1979:420; Orso 1970:27-29; Scheffler 1977:92; Suárez 1974:51; Wiese 1976:195.

⁶See also the following: Ryesky, writing about the Otomí and noting the Aztec concept of a universe in equilibrium, including a hot-cold balance, suggests a "structural opening" through which Hippocratic medicine accommodated itself to Aztec beliefs (Ryesky 1976:33). Ortiz de Montellano notes that "the idea of a balance of Hippocratic humors parallels the native philosophy of moderation and a middle way" (Ortiz de Montellano 1976:27), and Logan believes that a binary component in "many highly developed cultures in the Americas" facilitated the adoption of Spanish humoral medicine (Logan 1977:93). Writing about the mestizo inhabitants of the island of Chirra, Costa Rica, Orso points out that the original inhabitants of this area were "Nahuatlized" Chorotegan Indians who, she assumes, shared the Aztec world view of a universe of balanced opposites. "Thus the present day Chiritanian Hot-Cold System may be considered a syncretism of the Spanish introduced Hippocratic complex with an aboriginal philosophical world view" (Orso 1970:28-29).

⁷Holly Mathews (1983), for example, does not say, and I find no internal evidence in her data to suggest whether the Oaxaca population she studied is Indian or mestizo.

⁸More recently Anderson writes, "the full humoral system first appears, as far as I know, in the writings of the great pharmacologist and scientist Tao Hung-ching in the 6th century. I suspect the system was introduced by Buddhist monks acting as 'medical missionaries' in the 4th and 5th centuries. When it got to China it fit perfectly with the yang/yin idea, which of course is extremely ancient" (personal communication, 1986).

⁹"It remains true that the bulk of the Latin texts used in the Middle Ages and represented in the incunabula had been Latinized from Arabic MSS, not from Greek ones. The establishment of the Greek text and the editing of better Latin translations was gradually accomplished during the sixteenth century" (Sarton 1954:89).

¹⁰At a popular level humoral theory remained influential much longer, until well into the 19th century. See, for example, the 1840 edition of Nicholas Culppepper's famous home remedy book, issued under various *Herbal* and *English Physician* titles from the mid-17th century onward. This edition melds astrology and humoral values in an incredible mish-mash (Culppepper 1840). Temkin described Culppepper's work as "an English paraphrase of Galen" (Temkin 1973:166).

¹¹The only evidence I have of humoral principles in popular medicine in the Iberian peninsula is a letter dated September 12, 1950, from the late Jorge Dias, Portugal's most distinguished anthropologist: "In modern Portugal there still exists a belief that some foods are 'hot' (*quentes*) and others 'cold' (*frescos*)."¹² The extent of these beliefs in Portugal and their failure to appear in ethnographical accounts is another problem.

¹²All translations from Spanish- and French-titled works cited have been made by the author.

¹³In Mexico the same term often is applied to many different plants. I have not translated all of the words in this list since I am not sure of the plants to which they apply. In the present context the important thing is not the precise identification of the remedy, but rather the fact that pharmaceutical medicine in colonial Peru and popular medicine in contemporary Tzintzuntzan share many of the same remedies.

¹⁴Colson credits Father Armellada with coauthorship of this paper, because "the ethnographic data on the Pemón Indians derive from our periods of combined research."

However, "The line of argument presented in this article is entirely on my own responsibility" (Colson and Armellada 1983:1242).

¹⁵Clements found disease-object intrusion as a cause of illness to be "almost universal in the New World" (1932:209).

¹⁶Munro Edmonson's *Sixteenth-Century Mexico: The Work of Sahagún* (Edmonson 1974) provides the essential perspective for understanding the *General History of the Things of New Spain*. In his introduction Edmonson suggests that the *General History* "took shape" between 1547 and 1562, while the approximate period 1562-1575 was devoted primarily to analysis, organization, and revision of earlier working drafts. Sahagún's principal humoral data are found in Books 10 and 11 (Dibble and Anderson 1961, 1963).

¹⁷In contrast to this, one must note the enigmatic and deprecatory 1579 comment of Martín de Palomar and Gaspar Antonio Chis, with respect to the Indians of Yucatan who, when asked about the properties of their medicinal herbs, "can say no more than that they are cold or hot" (Relaciones 1898:62).

¹⁸In the Badianus Manuscript I find no remedy described either as Hot or Cold. The closest indications of such thinking are, "If eye trouble comes from cold" (Emmiart 1940:218), a list of herbs that "cool off the heat of the throat" (1940:233), remedies for "heat of the heart" (1940:252), and a good many remedies for fever, none of which is described as Cool or Cooling (1940:283). Ortiz de Montellano writes, "The *Badianus Codex* . . . should be the most authentic source of all, since it was both written and translated by natives, but it, too, presents some problems. There is internal evidence that the author had access to European herbals, and the vocabulary which Badiano was forced to use in Latin might not be the exact equivalent of the Nahuatl vocabulary" (Ortiz de Montellano 1975:216).

¹⁹I think there is a more obvious explanation of why Old World humoral medicine was so readily accepted at the popular level in Latin America. Speaking of the impact of Spain on New World cultures in the 16th century, I have written:

It was a period of great shock and turmoil for indigenous peoples, marked by extreme depopulation. It was also a period of wholesale acceptance of Spanish culture. . . . With the forcible implantation of a new religion, the imposition of grid-plan towns and villages with the Spanish system of government, and with the acceptance of new crops, domestic animals, items of dress, folklore, and music, it is not surprising that Spanish medical beliefs and practices also gained entry to the cultures of surviving and newly-forming mestizo communities. [Foster 1978:14-15]

Wherever we find humoral popular medicine, in Mesoamerica, South America, the West Indies, and the Philippines, we find that indigenous cultures were badly battered, and in some cases exterminated by Iberian invaders. Surviving and newly forming cultures were "open" to new beliefs and practices, including medicine, as they reconstituted themselves following the Conquest.

The picture was quite different in the Iberian peninsula. There the 8th-10th-century period of shock and turmoil that had favored acceptance of many Moslem culture elements by indigenous Catholic populations was long since past. By the time humoral theory was available in Spanish translations, and had become known to the elite (a precondition for downward transmission) Spanish and Portuguese cultures were again tightly integrated, and the structural opening that favored the entry of humoral beliefs and practices in the New World simply was lacking.

²⁰I have seen the 1815, 1863, and 1888 editions of this work. The 1815 edition recognizes a first edition in Manila in 1768, while the Library of Congress catalogue card for the 1856 edition carries the notation "Born 1704?" The 1856 edition also notes that the author spent 38 years in the Philippines. That most of the herbal remedies are Mexican, and that the *receptorio* format is so similar to those of that country, suggest immediate Mex-