FOSTER

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Title: Hippocrates' Latin American Legacy
(Humoral medicine in the New World)
Gordon + Breach, 1994

Note: Although this reading is based on Tzintuntzan, a village in central Mexico (Michoacán), the author says that the same principles of the "Hot-Cold" medical system are found throughout Latin America.

P.S. Please ignore underlinings & comments in margins, which were left there by a previous reader of this library book. (I'll never understand or condone people who mark up a library book with a pen.)

BASIC PRINCIPLES OF TZINTZUNTZAN HUMORAL BELIEFS:

In speaking of basic principles, it must be emphasized that, although for reasons of convenience I speak in the present tense, this is in considerable measure a reconstruction of the system as it functioned from 25 to 50 years ago. An anthropologist entering the community today would find a significantly truncated system, and some of the illustrations given (for example, the dangers of eating Cold foods immediately after sleeping), appear not to hold true today. With this caveat, and in broad outline, the system is based on the following propositions:

(1) There are *two* domains of temperature constantly interacting with each other that affect the human system: a *thermal* domain that can be sensed and measured, and a *metaphoric* domain characterizing all foods, medicinal herbs and other remedies, and a number of other substances such as pottery glaze

(greta), and iron. Humoral "qualities," or *calidades,* of Heat and Cold are assigned to all such items.

(2) The healthy body is marked by an evenly distributed warmth, an optimal equilibrium point on the temperature continuum that is a little closer to the hot pole than to the cold pole. *Body temperature, it must be emphasized, including the heat and/or cold associated with illness falls in the thermal and not the metaphoric domain* (see following). That is, body temperature which, unlike a metaphoric *calidad*, fluctuates widely, does not have a humoral value.

(3) This equilibrium is upset when the temperature of the body (or a part of the body, such as the stomach or the chest and head) is raised to an "above-normal" (or "optimal") level by exposure to either thermal or metaphoric heat, or a combination of both. Activities and experiences that are considered to be heating include digestion of food, sleeping, physical exercise, emotional experiences, pregnancy, exposure to radiant thermal heat, ingestion of metaphorically Hot food and drink, and external exposure to metaphorically Hot substances.

(4) The equilibrium is also upset when the temperature of the body (or a part of the body, such as the spleen) is lowered to a "below-normal" (or "optimal") level by exposure to either thermal or metaphoric cold, or to a combination of both, or when heat is removed from the body. Activities and experiences that are considered to be cooling include loss of warm blood because of menstruation, childbirth, surgical operations or accidents, external thermal chills from exposure to cold air or to water, ingestion of metaphorically or thermally cold food and drink, and exposure to external metaphorically Cold substances.

(5) Heating experiences and activities sometimes lead directly to illness. In former years, for example, before smallpox had been conquered by immunization, children were admonished, *No andes en el sol porque te van a agarrar las viruelas* ("Don't wander about in the sun because smallpox will grab you"). More often, however, a raised temperature simply heightens the vulnerability of the body; it is placed "at risk" from additional hot and cold insults that *will* cause illness. To illustrate, while sleeping always warms the body, it never leads directly to illness. But should a recent sleeper bathe, drink cold water, or be struck by *aire* (all cooling experiences) before allowing his body to return to its normal equilibrium, he can expect any one of a variety of illnesses such as bronquitis, tonsillitis, or pains in the ears, eyes, or teeth. In other words, *metaphoric and thermal heat insults are most likely to cause illness when the body has already been exposed to such insults, when it has been placed "at risk" by its above-normal temperature.*

(6) Cooling activities and experiences also sometimes lead directly to illness: when a diner eats immoderately of foods considered to be Very Cold, such as lamb, he can expect to suffer *cólico* (stomach ache). More often, however, a lowered temperature simply places the body "at risk" from additional cooling experiences, insults that *will* cause illness. A new mother's body is considered to be cold because of loss of blood during childbirth, and expulsion of the hot foetus. Should she be so unwise as to eat Very Cold foods during the 40-day period of *la cuarentena,* or not to keep herself well bundled up, she will suffer intense post-partum pains. While the full *cuarentena* has not been observed for a good many years, the proscription of Very Cold foods for some days continues to be the rule.

Some kinds of cooling experiences may also heighten the body's vulnerability to heat insults. Thus, a bath, usually considered to be cooling, is thought to threaten health only if the bather immediately is exposed to strong sunlight. Almost all "breaking out" illnesses, whether on the skin or in the mouth and throat, such as hives, warts, erysipelas, sties, fever sores and tonsillitis are attributed to exposure to the sun after bathing.

These basic principles will now be discussed in greater detail.

THE TWO DOMAINS OF TEMPERATURE:

The basic distinction between thermal temperatures and metaphoric values is that, whereas the former continually fluctuate, the latter are (with rare exceptions) fixed and unchanging. Thermal temperatures also characterize a wider range of phenomena than do humoral values: the world about one, including air, the sun's rays, the ground under one's feet, a stream's water, foods, herbs and other remedies, *and* the human body. Metaphoric temperatures, in contrast, apply only to material items, principally foods, herbs, and other remedies: there are no ambient forms such as air and sun.

It is particularly important to note that the temperature of the human body is thermal. At first thought this appears to contradict classical thought as to the "temperament" or "complexion" of every individual, and to some extent it does. It will be remembered (chapter 1) that complexions were believed determined by a person's predominant humors: hot and moist for the sanguine type, cold and moist for the phlegmatic, hot and dry for the choleric, and cold and dry for the melancholic. This sounds very much as if the human body was viewed in classical times as having humoral qualities of the same order as foods and medicinal herbs.

Yet this was not the case, as we clearly see in the *Canon of Medicine* of Avicenna, who writes that "when we say that a drug is hot or cold, we do not

mean an absolute heat or coldness of substance, or that it is hotter or colder in substance than is the human body. *Otherwise it would imply that the drug has a temperament like that of man — equable.* What we mean by the statement is that *through the drug hotness or coldness comes to the body,* in a degree over and above that degree of heat or cold which is in the body already" (Gruner 1970:63. Emphasis added). Obviously, Avicenna believed that the human temperament, with its balance of hot, cold, moist and dry characteristics, represented a thermal temperature quite distinct from the metaphoric qualities of drugs.

The difference between the thermal and metaphoric domains is further apparent in Avicenna's belief that cold water warms the body "because it closes the pores of the skin and hence the heat is retained," while hot water cools the body "because it opens the pores and liberates the heat" (Gruner 1970:175), an assumption today accepted by most Tzintzuntzeños.

Galen also distinguishes between thermal and metaphoric temperatures. Juveniles, he writes, are marked by a great deal of "innate heat" that derives from their father's sperm, "which is very 'hot'" (Gruner 1970:70). As to whether sperm has a humoral value in today's sense of the word is not clear, but "innate heat" must be thermal, since it fluctuates throughout one's lifetime: "This innate heat is being steadily used up, but the loss is made up by the progressive growth....But during the period of youth there is nothing to make good such loss of innate heat" (*Ibid.:* 70).

However one may want to interpret the classical authors on the relationship between the thermal and metaphoric domains, in Tzintzuntzan thermal temperatures play just as important a role in the humoral system as do metaphoric qualities. In fact, insofar as illness causality concepts are concerned, *thermal heating and cooling factors are cited by informants far more frequently than are metaphoric values as explanations for specific illness episodes.* Thermally hot beverages have one effect on the body, and thermally cold beverages another. A hot shower temporarily heats the body, even as it metaphorically cools it; in thermal terms a cold bath cools the body, while simultaneously subjecting it to metaphoric heat; and a cold drink of water or a frozen popsickle can even bring death. Environmental thermal temperatures also affect the human body in the form of the rays of the sun on a hot day, the radiation from a cooking fire or a hot pottery kiln, and the heat of a truck engine that filters into the cab, warming driver and passengers. Night air cools the body, as does *el sereno*, believed to be an icy mist that falls at night, manifesting itself in the form of morning dew. The basic fact to bear in mind, then, with respect to the thermal temperatures of objects, including the human body, is that, depending on how they are handled or treated, they fluctuate. Foodstuffs, whatever their metaphoric values, normally are cold

until they are cooked, when they become hot. If not eaten immediately they again become cold. And herbal remedies, whether stored in the cool of a bedroom or plucked at the moment of use, normally are cool. If used as a tea or a hot plaster, their temperature changes accordingly, but they may again cool.

In addition to their thermal temperatures all foods, beverages, medicinal remedies both herbal and mineral, and many other things are – as previously noted – marked by a humoral value, or *calidad* or "quality" of Heat or Cold, conceptually quite distinct from thermal temperature. Metaphoric values differ from thermal temperature in two important respects. First, they apply *only* to material items. Second, and more important, and in direct contrast to thermal temperatures of material objects, with rare exceptions *humoral values do not change.* For example, whatever their thermal state at a given moment, most Tzintzuntzeños would agree that garlic, chocolate and coffee are always metaphorically Hot, while barley, broad beans and vinager are always Cold. Although a person may not know the humoral value of an item, or two people may disagree, few doubt that it has a metaphoric quality.

Although the two domains of temperature are conceptually quite distinct, they do not maintain their integrity as they affect the human body; there is a continual interdigitation of the two systems, crossings over from one to the other. Thus, a person who has been heated by exposure to a hot pottery kiln will (at least formerly, did) if judicious, avoid metaphorically Cold foods until his body regains its normal equilibrium. And a newly baptised infant, heated by the holy oil (Very Hot), is bundled up to protect it from a cold breeze as it is carried home.

Further, it is apparent that, since foods and other items may have opposing thermal and metaphorical values, people can select either one to rationalize a bit of preventive advice or a diagnostic conclusion. I once had a headache diagnosed as due to emerging from a hot shower and being struck by cold air while crossing the patio en route to my room. Although hot water is metaphorically cooling, it was decided in this instance that its thermal heat was the precipitating factor; my hot body had been placed "at risk" from a cold insult. On another occasion, a slight fever was attributed to the same injudicious behavior. My body, this time judged to have been metaphorically cooled by the hot water, had not been able to resist the heat of the noon day sun as I went to my room. *More often than not I find that the thermal value of ice, and hot and cold water override their underlying humoral values, when the cause of an illness is given, or the rationale for preventive advice is requested.* In therapy, too, thermal temperatures may override humoral values as when, for example, ice (humorally Very Hot) is applied to cool a fever sore, which is explained as heat breaking out of the body.

The interdigitation of the two systems is further illustrated by the fact that thermal heat – usually in the form of sun – drying or toasting – can convert a few foods from a Cold or Neutral (or Temperate) humoral value to a metaphorically Hot state. Thus, sardine-size *charrales*, Cold when taken from the lake, become Hot after sun-drying. And, while a majority of informants classify fresh beef as Cold, three fourths believe that sun-drying, to make jerky *(cecina)* changes the *calidad* to Hot. Similarly, squash is considered to be Cold, but the seeds – eaten only in toasted form – are Hot because of exposure to heat. Sometimes thermal and metaphoric temperatures combine to change the humoral value of a food item. *Pinole* is dry ground maize toasted and sweetened with *piloncillo* (crude brown sugar), rated by most people as Very Hot. The combination of toasting and the addition of Hot *piloncillo* changes the quality of the maize from Cold or Temperate (opinions differ widely as to the quality of dry maize as it comes from the cob) to Hot.

Limited as are the cases of Cold items being turned Hot, a change in the other direction is even less common. In fact, I have recorded only one such case. In cooking, and for medicinal use, lard *(manteca)*, which is Cold, sometimes is "washed," that is beaten with water, which makes it Very Cold. The first washing is done with *nejayo* (Cold, the water in which maize has been soaked and brought to a boil to make *nixtamal,* the dough used for tortillas and tamales); this is said to remove the grease from the lard. The second washing is done with ordinary cold water, whose thermal cold overrides its metaphoric Heat further to cool the lard. All such changes, whether from Cold to Hot or Cold to Very Cold, travel a one-way street; once the humoral value of an item has been transformed, it can never revert to its original value. Shades of variation in humoral values exist. Cinnamon and nutmeg, for example, are both classed as Hot, but most informants feel cinnamon is the Hotter of the two, while cloves are Hotter than either. The system, or course, could not function if this infinite scale of variation had to be maintained, so the differences (in all humoral systems, from classical times onward), have been collapsed into relatively few degrees of intensity. In Tzintzuntzan these are Very Hot, Hot, Temperate, Cold and Very Cold. The common words used in Tzintzuntzan to express thermal and metaphorical values are shown in Table 1.

If in the classical literature, and in a number of ethnographic accounts, the distinction between metapahoric quality and thermal temperature is not clear, how can we be sure in Tzintzuntzan when it is one and when the other? Admittedly at times it is difficult to be absolutely sure, and the ethnologist must use his or her own judgement in assigning category. There are, however, two cues which, singly or together, usually make clear what the speaker has

Table 1. Thermal and Humoral Temperature Terms in Tzintzuntzan

	Very Hot	Hot	Temperate (Neutral)	Cold	Very Cold
Adj.	*Muy Caliente* **Irritante*	*Caliente* *#Cálido*	**Cordial* *Templado* *#Tíbio*	**Fresco* *#Frío*	**Muy Fresco* *#Muy Frío*
Verb	**Irritar*	*Calentar*	—	*Enfriar*	—
Noun	—	*#El Calor*	—	*#El Frío*	—
Nom. Adj.	**Lo Irritante*	**Lo Caliente*	—	**Lo Fresco*	—

Note: * Indicates predominantly humoral sense.
# Indicates predominantly thermal sense.
Unmarked indicates both humoral and thermal sense.

in mind: The form of the verb "to be" used by the speaker, and the choice of the qualifying word itself.

In Spanish there are two verbs for the English "to be." *Ser* is used when one is speaking of a permanent or unchanging quality, characteristic or condition. *Estar* is used when one is speaking of a temporary or impermanent condition, one that can and probably does change frequently. Thus, *Soy enfermo* ("I am [chronically] ill") stands in contradistinction to *Estoy enfermo* ("I am [at the moment] ill"). In the first case the speaker does not anticipate recovery from a chronic condition, whereas in the second, she looks forward to not being ill. With a high degree of frequency metaphoric quality can be distinguished from thermal temperature in Tzintzuntzan by the choice of verb. This is because metaphoric qualities, or humoral values, are, as we have seen, viewed as permanent states, not subject to fluctuation. For example, for most Tzintzuntzeños coffee, garlic and honey, whatever their thermal state at a given moment, are metaphorically Hot, while most leafy vegetables, broad beans, and goat meat are Cold. In contrast, thermal temperatures change constantly: coffee, garlic, honey, leafy vegetables, broad beans and goat meat can be either hot or cold at any particular moment, and they can change back from one temperature to another.

To illustrate, when speaking of *calidad* in Tzintzuntzan one says *El café es caliente* ("Coffee is [metaphorically] Hot"), while when speaking of temperature one says either *La tasa de café está caliente* ("The cup of coffee is [thermally] hot") or *La tasa de café está fría* (thermally cold). Further to

illustrate, *Los frijoles son calientes* ("Beans are [metaphorically] Hot") stands in contrast to *Estos frijoles están calientes* ("These beans are [thermally] hot"). Sometimes I have recorded both usages in the same sentence: *Por su calidad las habas son muy frías aunque estén calientes* ("With respect to their quality broad beans are Very Cold, even though they may [at the moment] be hot"). And as for ice and cold water, *Son calientes. Aunque están fríos, tienen su calidad también* ("They are Hot. Although they are cold they also have their *calidad*").

Turning to a speaker's choice of words as evidence as to whether thermal or metaphoric values are in his mind, the clue is less determinative. Most of the words in Table 1 can be used either for thermal temperatures or humoral values. Some, however, tend to be used in conjunction with humoral values, while others are more apt to denote thermal temperature. For example the adjectives *Irritante, Cordial, Fresco,* and *Muy Fresco,* the verb *Irritar,* and the nominal adjectives *Lo Irritante, Lo Caliente,* and *Lo Fresco* usually but not invariably apply to metaphoric qualities. In contrast, the adjectives *cálido, frío,* and *muy frío,* and the nouns *el calor* and *el frío,* most frequently are used in a thermal sense, as is the adjective *tibio,* the latter largely limited to qualifying water temperature. The terms *muy caliente, caliente,* and *templado,* and the verbs *calentar* and *enfriar* commonly are used in both senses.

It must be emphasized that these are *tendencies,* not hard and fast rules. *Fresco* and *Muy Fresco*, for example, although most frequently used in a metaphoric sense sometimes are used thermally as, in *un día muy fresco,* a cool (or fresh) day. They normally are not used, however, to convey the idea that food items or beverages are thermally cold. For this *frío* and *muy frío* are used; occasionally, however, I have heard these words used to emphasize the metaphoric Cold quality of an item, over and beyond the degree conveyed by *Muy Fresco.* In Table 1 terms usually used in a metaphoric sense are marked by an asterisk, those in a thermal sense by an #, while unmarked terms are used in both senses.

These, it must be emphasized, are the commonly used terms, the terms that, interpreted with the verbs *ser and estar,* further clarify whether the speaker is referring to the thermal or metaphoric domain. Other terms, especially in the temperate range, are also occasionally used. In a humoral sense I have recorded *Calidad Media* ("in-between quality"), *Mediada* (conveying the sense of in-between), *Normal, Natural, Regular,* and even *Término Medio,* the adjective used by Spanish-speaking diners to tell the waiter they want their meat "medium" rather than rare or well-done. All of these terms normally are used in non-humoral discourse. In contrast to the temperate category, where informants display considerable ingenuity in describing

what they have in mind, words used to indicate thermal and metaphoric hot and cold categories are largely limited to the basic words here given. I have recorded *Fresquísimo* for very Cold, the "intensified" form of *Fresco,* and *Muy Irritante,* to describe an item at the absolute Hot pole of the humoral continuum. The apparent reason for the proliferation of temperate category terms is discussed in Chapter 6, which deals with the concept of Temperate or Neutral in humoral systems.

THE HEALTHY BODY:

The healthy body, as pointed out above, is marked by an evenly distributed thermal warmth, an equilibrium state somewhat closer to the hot pole than the cold pole. This equilibrium can be upset by metaphoric or thermal hot or cold insults which, if sufficiently pronounced, may lead to illness. It is important to note, however, that such insults usually do not threaten the entire body. Rather, they are directed at specific organs or specific parts of the body. Thus, metaphorically Cold foods and thermally cold beverages cause illness by attacking the spleen *(bazo)* or stomach but they offer no threat to the eyes, ears, teeth or the feet. In contrast, metaphorically Hot foods have no impact on the spleen, but they may overheat the stomach and lead to diarrhea. Consequently, in order to understand the rules for avoiding illnesss, the questions to ask in diagnosing symptoms, and the steps to take to restore health, it is helpful to know traditional beliefs pertaining to the principal body organs and their functions.

Knowledge about the inner organs is based on a variety of sources, including oral transmission of colonial beliefs from one generation to the next, analogies to the entrails of slaughtered animals and fowl, and the witnessing of surgical operations such as apendectomies, looking at X-rays, and consulting physicians. In recent years, of course, school children have learned about anatomy from text books. But, however accurate their anatomical knowledge may be, the traditional ideas of their parents and grandparents are even today what largely underlie popular beliefs about illness and its prevention.

From the throat, say older informants, the *tongollo* (esophagus) descends to the *boca del estómago* (pit of the stomach), to which it is attached. Adjoining the esophagus to the right is the *hígado* (liver), in which nestles the *pajarilla* (pancreas). Some, but not all, informants say that the *vesícula* (gall bladder) is also attached to the liver. Behind this complex, and just beneath the shoulder blades, lie the *pulmones* (lungs). On the left side, symmetrically balanced with the liver, is the *corazón* (heart), and below it,

at the point the elbow touches the side, the *bazo* (spleen). Some informants believe the *bejiga* (bladder) lies beneath the spleen. Others say that *bazo* and *bejiga* are words for the same organ, the former used for humans, the latter for animals. The stomach is described as an oval, horizontally placed container lying somewhat above the navel. Some informants say it has two outlets: the *tripas* (large intestines), through which solid wastes pass, and a duct leading to the *bazo* into which all liquids flow, prior to urination. Other informants insist that all liquids flow directly into the *bazo* entirely bypassing the stomach. The *riñones* (kidneys) lie near the back, below the waist line.

Most, but not all, internal organs are subject to humoral and thermal insults; some parts of the body are vulnerable to other kinds of attacks. Particularly important in this context is *la mollera* (fontanelle) which is believed to "fall" when a child's head receives a jolt from, for example, falling down. *Caída de la mollera* ("fallen fontanelle") is one of the most common Mexican culture-bound illnesses of children, and in Tzintzuntzan it can also afflict adults. It lies outside our sphere of interest, however, since therapy does not involve humoral principles, but rather massage of the head and manipulation of the hard palate. The *tripas* occupy an anomalous place in disease etiology in Tzintzuntzan in that while threatened by both humoral and thermal insults, they are also subject to mechanical attacks as when bread becomes lodged in the intestinal tract causing another well-known Mexican childhood culture-bound illness, *empacho.* As in the case of *caída de la mollera,* therapy does not subscribe to humoral principles.

The critical organs, in the sense of being intimately related to health, and most affected by thermal and metaphoric temperature, are the stomach, the spleen, the lungs, and the liver-gall bladder complex. All food passes to the stomach where (as in classical humoral theory) it is "cooked," the term used to describe the process of digestion. Opinions differ as to the source of heat in the stomach. Some say that it comes from *la sustancia,* the "substance" of the food itself. Others say it is the great Heat of bile *(hiel),* formed in the gall bladder or the liver and, under normal conditions, falling drop by drop into the stomach, that "cooks" the food. That it is the digestion, and not the mastication, of food that heats the body is shown by the fact that the chewing of gum has no heating effect. In a healthy body food solids give up most of their *nutrimiento* or *sustancia,* their nourishing qualities, while "cooking" in the stomach, and then pass into the *tripas,* where the last bit of nourishment is extracted, leaving—as one informant put it — *bagazo* or "pressed pulp," i.e. excrement. The digestive process for liquids is given little thought. Soup and broth are recognized as having nourishing qualities, and many people say they pass through the stomach on their way to the *bazo.* Others say their nourishment is extracted directly in the *bazo.*

The function of the lungs is believed to be to produce a nursing mother's milk, and to give bodily strength to men; they suffer when exposed to cold air through the upper back, or to an excess of cold beverages and Cold food via the stomach. The kidneys have no known function other than to cause pain. All of the "suffering" from a long life of hard work is believed to collect there, making them vulnerable to attacks of cold air. *Me duelen los riñones* ("My kidneys hurt") is the customary way to complain of lower back pains. The function of the womb *(la matríz)* is, of course, known, but only recently have people heard of ovaries, about which most know nothing. Sterility popularly is attributed to *frialdad en la matríz* ("cold in the womb") which may result if (among other actions) a woman in an above-normal state of heat, from whatever activity, sits on a cold seat. Post parturients who are not kept warm and fed the prescribed metaphorically Hot foods also risk a cold womb. Popular remedies include massage with alcohol and Hot ungents, as well as Hot teas. There is little faith in such remedies, however, and *frialdad en la matríz* is generally viewed as a permanent state. Traditional anatomical beliefs have no explanation for the function of the heart, although today one hears that "it makes the blood work," i.e. circulate.

The stomach, gall bladder-liver complex, lungs and the spleen are delicately balanced organs, easily upset, and much illness is explained in terms of excess heat in the stomach and excess cold in the spleen and lungs. When a person experiences an emotional shock such as fright, envy or anger, *se derrame la hiel,* there is a great overflow of Hot bile from the gall bladder (or liver) which, by flooding the stomach with heat, produces that most common of Mexican culture-bound illnesses, *bilis,* as well as diarrhea. In contrast, *bazo resfriado* (chilled spleen) results from eating excessively of Cold food, such as broad bean soup, or drinking too much cold water, or eating ice cream or popsicles when the body is heated. The result is *cólico* (stomach ache) or diarrhea (some illnesses, it may be noted in passing, can be caused both by cold and hot insults). These same cold insults may also attack the lungs, causing grippe or bronchitis or, at worst, pneumonia. In other words, both hot and cold insults, depending on their nature or source, may raise or lower the temperature either of the entire body or of specific organs only.

The thermal warmth of the healthy human body, the desired equilibrium that spells health, derives from the natural heat of the blood. Here we are faced with a question: is the heat of blood thermal or metaphoric? About half of the people to whom I have put the question say that it has a *calidad* (i.e., its heat is metaphoric), while others, including my medically most knowledgeable informants, say that it does not have a *calidad* (hence its heat must be thermal). Whatever their views about the nature of the heat of blood,

informants agree that body temperatures, including the degree of heat or cold in specific organs, are thermal. *Calidades,* it will be recalled, are constant and unfluctuating. In contrast, body temperatures fluctuate almost constantly, in response to various heating and cooling experiences.

Body temperatures are also judged to be thermal on a second count. Living animals, like humans, have thermal heat, which comes from their blood. The flesh of all those eaten also has a *calidad* of Hot, Temperate or Cold, as the case may be. The ethnologist finds out by asking, "What is the *calidad* of turkey?" (or hen or lamb or beef or pork). The answer is based on a variety of factors, including the perceived effect on the body of the diner. But since human flesh is not eaten, it can have no effect on the body, hence it can have no *calidad.* The question, "What is the *calidad* of the human body?" strikes informants as ridiculous.

Although all healthy human bodies are slightly warm, their individual "normal" temperatures are not identical. Men are believed to have more heat than women, and the young more heat than the elderly. Newborn infants are the hottest of all. Women are thought to lose a little heat with each succeeding birth, so that by menopause the bodies of mothers of many children are thought to be colder than those of their age-mates who have had few or no children. In spite of these age and sex differences, the metaphoric and thermal hot-cold forces that govern health and illness work in the same way for everyone: it is simply that the baselines vary. Hence, everyone has what may be considered an optimal body temperature, a personal hot cold equilibrium representing health.

THE "AT RISK" STATE:

As has been pointed out, the humoral model of the healthy body is an equilibrium state of evenly distributed warmth. Most ethnographic accounts of illness causality presuppose the body is at this equilibrium point when hot or cold insults strike. The insults are what upset the body's balance, raising or lowering its temperature until illness results. Yet in examining my accounts of specific illness episodes in Tzintzuntzan, I find that almost always the precipitating hot or cold insult has acted upon a body that is *not* in a state of equilibrium. Rather, most of the time the patient's body temperature has been above or below its optimal equilibrium point. A modest degree of physical exercise or exposure to the sun, or consumption of metaphorically Hot food or drink, insufficient to threaten health — and certainly not to be considered a hot insult — may have raised the temperature of all or a part of his body to an above-normal level. Or, an equally modest exposure to cold, from a

soaking in a rainstorm, from drinking a thermally cold glass of water or eating a bowl of broad bean soup (Very Cold) — again insufficient to be considered a cold insult — may have placed all or a part of the body at a below-normal temperature level. In either case the patient was placed "at risk" in the sense of being more likely to be adversely affected by either additional heat or cold, than if his body were at the ideal mid-point between heat and cold.

In other words, *while hot and cold insults can produce illness in a person whose body is at a temperature equilibrium, they are believed most likely to do so when that individual already has lost equilibrium.* At first thought it seems odd that a body in an above-normal heat state, while threatened primarily by cold, is also threatened in significant degree by more heat. More surprising is the fact that a cool body, one in a below-normal heat state, is threatened more by additional cold than by the opposite, heat, which the principle of opposites model would lead us to expect. The answer to this apparent paradox — at least insofar as the hot "at risk" state is concerned — lies in the concept of what may be called "temperature differential." The body, as we have just seen, can absorb modest heat and cold increments without harm; what it cannot absorb are *major* heat and cold insults that create a substantial temperature deviation from the basic bodily equilibrium (however rare that balance in fact may be), or from an "at risk" temperature level, which can be viewed as a temporary, if unstable, equilibrium. A differential of threatening magnitude can occur in either of two ways.

(1) With the body in basic equilibrium, either a single massive hot or cold insult, or smaller incremental insults that build up to the same critical point, create the differential.

(2) With the body at either above-normal or below-normal "at risk" points, modest hot insults for the former or cold for the latter, insults that would not threaten a body in equilibrium, produce the critical differential.

To illustrate, prolonged exposure to the sun on a hot day can in itself cause sunstroke. Similarly, to step barefoot on a cold tile floor is a sufficient shock to the system to compress the normal warmth of the body into the upper half of the torso, to produce the condition known as *calor subido* ("risen heat"). This compressed heat may manifest itself as a fever sore, an abcessed tooth, as tonsillitis, or something of the sort. Smaller consecutive increments of heat or cold also add up to the equivalent of a single massive exposure. Thus, a man who fires his kiln becomes moderately hot from proximity to the fire. An inebriated man, or a man with a hangover, is also moderately hot from the effect of the Hot alcohol. Both conditions place a man at risk from additional heat but neither in itself leads to illness. If, however, a man with a hangover fires his kiln, he thereby exposes himself to *two* moderately heating experiences which, taken together, add up to a major heat exposure.

Tapiado de los orines (inability to urinate) is one of several possible consequences of his indiscretion. Similarly, when a person is *fogueado* (i.e., moderately hot and sweaty from working in the sun), she is likely to suffer diarrhea if she eats Very Hot food such as turkey in mole sauce. Neither moderate exposure to the sun nor eating mole in moderation harms a person who starts out at the basic equilibrium. It is the cumulative effect of two moderately heating experiences in sequence that does the damage.

Two moderately cooling experiences work in the same way. As a woman begins to menstruate, her body temperature is believed to fall, because of loss of warm blood. She remains in this cool state, "at risk" but not ill, until she ceases to menstruate. If, while menstruating, she drinks cold water or eats Very Cold food, such as broad bean soup, she is believed likely to suffer menstrual cramps known as *dolor de ijada*. The combined effects of blood loss and cold water or Cold food, neither of which in moderate quantity threatens a woman at equilibrium, producess the critical temperature differential that leads to pain.

An equally threatening temperature differential can also be created by a swing from a hot to a cold "at risk" point. To return to the man with a hangover, not only is he vulnerable to more heat, but also to cold: he must not bathe because of the cooling effect of the water, an effect which, were his body at equilibrium, would place him at risk, but not harm him. Yet because the temperature differential between hot and cold "at risk" points is equivalent to that between equilibrium and a very cold point, he is likely to come down with a bad cold or pneumonia. Similarly, heat threatens a person whose body is at a cold "at risk" point. For example, a child moderately cold in body from bathing who is allowed by a careless mother to go out into the hot sun, or to go near a hot pottery kiln — acts that would place a child at equilibrium temperature at risk, but not cause illness — can expect to come down with *alfombrilla* (German measles). A moderate cooling followed by a moderate heating experience add up to a major temperature differential sufficient to cause skin erruptions. However, while hot insults may produce illness in a person whose body temperature is below normal, additional cold is the greater threat.

From these data we can draw a generalization of considerable magnitude: of the two types of temperature threats recognized in Tzintzuntzan, *cold is viewed as more dangerous than heat.* This conclusion is further supported by the fact that of the traditional remedies most commonly used in curing, approximately twice as many are judged to be Hot as Cold. With some form of cold the greater threat, a preponderance of Hot remedies is obviously desirable.

(This just lends more written, scientific support to the importance of heat – in coffee, for example.)

Tierney, John, "Heart-Warming News on Hot Coffee"

http://tierneylab.blogs.nytimes.com/2008/10/23/heart-warming-news-on-coffee/?_r=0
October 23, 2008 2:10 pm October 23, 2008 2:10 pm

At long last, we have scientific guidance regarding that great question of social lubrication: Should you ask someone to meet for a drink or a cup of coffee? We may also have cause to update Ogden Nash's famously short poem, "Reflections on Ice-Breaking" — and there's a prize for the Lab reader who can do it in style.

Psychologists report in Science that you're more likely to think warmly of someone else if you're holding something warm in your hand like a mug of coffee or tea. The experimenters, Lawrence Williams of the University of Colorado and John Bargh of Yale, gave cups of either hot or iced coffee to people and asked them to rate someone's personality based on a packet of information. The ones who held the hot cup rated that individual significantly higher for "warmth" than did the subjects holding the iced coffee.

The psychologists, unfortunately, did not try the same test with a cold beer, or with something hot and alcoholic like Irish coffee — clearly, further research is needed to compare the exact social effects of liquor and coffee. (Volunteers?) But the psychologists did confirm the effects of heat in another experiment by offering people a gift certificate that they could keep for themselves or give to a friend. The subjects given a heated therapeutic pad to hold were more likely to give the certificate to a friend than were the ones holding a frozen pad.

The researchers suggest that the connection between heat and emotion — indeed, the fact that we call someone a "warm person" or speak of "breaking the ice" — seems to be the result of early associations in childhood. "Maintaining closeness to caretakers during infancy, a period of relative helplessness, is critical for the survival of many animals," they write, so "a close mental association should develop between the concepts of physical warmth and psychological warmth."

"Experiences of physical temperature per se affect one's impressions of and pro-social behavior toward other people, without one's awareness of such influences," Dr. Williams said. "At a board meeting, for instance, being willing to reach out and touch another human being, to shake their hand, those experiences do matter although we may not always be aware of them. In a restaurant, it's been shown that wait staff who touch customers usually get a better tip. It's a nice gesture, but it also has a warming effect."

Dr. Bargh points to recent brain imaging studies showing that the experience of hot or cold stimulus triggers activity in the insular cortex, the same area of the brain associated with a personality disorder that makes people uncooperative and distrustful.

"It appears that the effect of physical temperature is not just on how we see others, it affects our own behavior as well," Dr. Bargh said. "Physical warmth can make us see others as warmer people, but also cause us to be warmer – more generous and trusting – as well."