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Social Science & Medicine 61 (2005) 785–795

SOCIAL SCIENCE & MEDICINE

www.elsevier.com/locate/socscimed

Vital warmth and well-being: steambathing as household therapy among the Tzeltal and Tzotzil Maya of highland Chiapas, Mexico

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Available online 28 January 2005

Abstract

Among the Maya, the cultural history of steambathing spans more than two millennia. Although it has largely disappeared from the lowlands, household-level steambathing persists in several highland Maya communities in Chiapas, Mexico. In this article, I present an overview of therapeutic steambathing among the Tzeltal and Tzotzil Maya. Through an extended discussion of the beliefs and practices surrounding steambathing, I develop several features of highland Maya thinking about physical health and "well-being". In particular, I examine a set of ethnophysiological representations relating to the "thermal" nature of functional bodies, and the relationship of these models to the maintenance and restoration of health. The highland Maya have articulated an elaborate understanding of physical health and well-being coded in an idiom of "vital warmth", and directed toward the preservation and augmentation of the endogenous heat necessary for vitality and vigor. These models simultaneously reflect empirical understandings of bodily states in health and illness, as well as metaphorical assumptions about the thermal nature of functional psychosocial identities. Steambathing draws on and reinforces these models, constituting a core cultural technology for radically altering the thermal state of the patient, an experience which the highland Maya regard as deeply beneficial. The paper closes with a discussion of recent biomedical research into the physiological effects of hyperthermal therapies.

Keywords: Steambath; Sweatbath; Humoral theory; Ethnomedicine; Highland Maya; Tzeltal, Tzotzil; Mexico; Chiapas

Introduction

In this article, I present an overview of the contemporary ethnomedical significance of the steambath *(pus)* in the Tzeltal Maya community of Santo Tomás Oxchuc and the Tzotzil community of San Juan Chamula.[1] In both Oxchuc and Chamula, many common health conditions are treated at the family level inside the steambath, usually in combination with a wide array of medicinal herbs and animals. Conditions

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[1]Principle data collection was conducted by the author in Santo Tomás Oxchuc (February–May 1992), with additional comparative data collected in San Juan Chamula (April–May 1993, July–September 1996). Data collection and interviewing

(*footnote continued*)
were conducted in the local dialect of Tzeltal, Tzotzil, or Spanish, according to the preference of the consultant. All native language terms occurring in this paper are presented in the standardized phonetic orthography currently in use by the Government of the State of Chiapas and *Sna Jtz'ibajom* (a group of Tzeltal and Tzotzil writers based in San Cristóbal de las Casas promoting indigenous literacy and the establishment of a published indigenous literature).

0277-9536/$ - see front matter © 2004 Published by Elsevier Ltd.
doi:10.1016/j.socscimed.2004.08.044

treated range from mild cases of stomachache and diarrhea to such severe conditions as chronic rheumatism, generalized edema, and madness. The most important use of the steambath, however, is in the treatment of obstetric and gynecological disorders, and for the restoration of fertility following childbirth.[2]

Central to therapeutic steambathing is a set of ideas systematically linking warmth and warming substances to physical health, fertility, and vigorous well-being. Steambathing draws upon and reinforces these widely shared models, constituting a singular therapeutic tool for radically altering the thermal state of the patient—an experience which the highland Maya regard as profoundly beneficial. Moreover, it forms a therapeutic nexus in which hygienic, preventative, and curative practices merge, united by lay ethnomedical theories stressing the maintenance and restoration of endogenous warmth as key factors in the production of physical, emotional, and social health.

The traditional steambath *(pus)* is a small, rectangular, thick-walled wattle and daub structure with a beehive-shaped rock and mud oven protruding from the back wall. Like the Finnish *sauna*, it is a classic water vapor sweat bath in which clouds of steam are produced by throwing water onto heated rocks. In Oxchuc, this inconspicuous mud structure is the first line of defense in the constant struggle against "pathogenic cold," constituting a central therapeutic tool in household-level preventative and curative medicine.

Several times a week—most often in the late afternoon or evening—bathers enter the steambath and relax in the wet heat of the bath for up to an hour. They submit to the steam and intense heat (which can reach temperatures of 170–195 °F) in order to cleanse, cure, and fortify themselves. The primary function of steambath therapy is to "warm the flesh and the blood," to expel dangerous "cold winds" from the body, and to restore the "vital heat" or "warmth" that is necessary for a long and healthy life.

Conceptualizing Tzeltal–Tzotzil notions of "health

In everyday talk about health and illness, speakers of both Tzeltal and Tzotzil usually refer to the general state of "health" or of "feeling okay" with the simple term *lek* ("good") or *lek -a'i* ("to feel good"). When describing oneself in a state of illness, the descriptor usually involves the generic adjective for "sick" *('ip)*, or more often, a precise description of the particular sort of pain or ailment being experienced. As documented by Berlin and Berlin (1996) and Maffi (1994), both languages are characterized by a highly elaborated language for talking about the subtleties of the signs and symptoms of ill health. Similar expressive complexities characterize the language of emotional and bodily experience in general—both positive and negative (Groark, 2003).

Despite this richly detailed vocabulary for describing negatively valued physical states, it bears emphasizing that assessments of "health" and ascriptions of "sickness" do not center solely on the presence or absence of physical symptoms, for a symptom-free state is rarely achieved. Rather, the ability to work and engage in normal productive, economic, and social routines is the hallmark of a "healthy" person (Adams & Rubel, 1967; Berlin & Berlin, 1996).

Historically, the tendency among anthropologists has been to focus on complex ailments whose origins lie in social transgression, supernatural punishment, or interpersonal spiritual aggression—after all, it is precisely these "culturally conditioned" illnesses that most clearly reveal the role of the social in the production of illheath. What has been lost, however, is a focus on quotidian illness experiences and the preventative, therapeutic, and health maintenance functions of lay healing. While it is true that serious supernatural/social (or "personalistic") illnesses occur with some frequency—and generate a tremendous amount of anxiety and fear—they do not represent the day-to-day illness experiences of most highland Maya. Detailed ethnoepidemiological data demonstrate that the vast majority of reported health conditions are relatively simple symptom-based complaints usually understood to have a "natural" etiology (Berlin & Berlin, 1996). More importantly, an exclusive focus on "personalistic" conditions obscures the complex and dynamic empirical tradition of household or domestic medicine that forms the bedrock of modern Tzeltal and Tzotzil therapeutic practices.

A comprehensive accounting of highland Maya conceptualizations of "health" must account for the full range of experiences impinging on the individual's assessment of well-being. Far from being comprehensive, this paper will focus only on a particular set of ethnophysiological representations relating to the "thermal" nature of functional bodies, and the relationship of these models to steambath therapy and the maintenance and restoration of physical health. Building on Maffi's (1994) description of the warmth bias in Tzeltal ethnomedicine, I suggest that highland Maya steambath therapy is based on an elaborate understanding of health and well-being coded in an idiom of "vital warmth". This model incorporates both physiological and metaphorical understandings of the thermal nature of the

[2]The steambath has existed in Mesoamerica for at least two millennia and is widely distributed in both the highlands and the lowlands. For detailed data on archaeological steambath usage, see Alcina Franch, 1981 and Groark, 1997, pp. 6–14. For comparative ethnographic information from contemporary Mesoamerican communities, see Groark, 1997, pp. 14–27; Alcina Franch, 2000; Huber and Sandstrom, 2001: *passim*.

body under varying physical and social conditions, and is directed toward the preservation and augmentation of the endogenous warmth necessary for vitality and vigorous health. This conceptualization is of particular interest for the ways in which it represents both empirical understandings of changing bodily states, as well as metaphorical assumptions about the thermal nature of "working" psychosocial identities.

Warm blood and cold wind: thermal concepts in highland Maya ethnophysiology

The highland Maya ethnomedical system is based on a "humoral theory" of the body—a system of correspondences in which physical and mental health are seen to result from a dynamic balance between hot and cold fluctuations, with illness stemming from either an excess or deficiency of cold or heat (for overviews, see Currier, 1966; Foster, 1953, 1978, 1979, 1994; López Austin, 1988). In the Americas, "traditional" humoral theory holds that a healthy body is characterized by a slight dynamic bias toward warmth. Exposure to certain thermal insults often precipitates an imbalance, which may develop into a pathological condition if equilibrium is not restored through therapies based on a principle of "humoral opposition" (which states that a "cold" illness requires a "hot" treatment, and vice versa). Many organic products, materials, foods, illnesses, and remedies are integrated into this system, and considered either "hot" or "cold".[3]

While this characterization is generally accurate, highland Maya conceptions differ in at least two significant regards. First, as Maffi (1994, pp. 202–211) has pointed out, the Tzeltal-Tzotzil model is almost exclusively centered on the maintenance of warmth—a pervasive quality that infuses blood, flesh, and soul. This physiological "warmth bias" appears to be much stronger than that described for other New World "humoral" systems, and therapeutic measures focus on the *complete* expulsion of cold, with no attempt to balance the two.[4] Second, as documented by Gossen (1974 a, b) and Stross (1977), "humoral" idioms of heat and coldness are also used to characterize a wide range of non-physiological traits, including: personality attributes, emotional states, gender roles, life-cycle stages, as well as degrees of social authority, power, and prestige.

Most discussions of highland Maya "hot–cold models" fail to distinguish between these distinct uses of the thermo-humoral idiom, conflating empirical-physical understandings of blood and body with metaphorical representations of social order, authority, and power. Considered as distinct yet complementary models, these two ways of representing the thermal natures of individuals provide a unified conceptual framework that emphasizes the central importance of warmth to physical and social functioning. In this paper, I focus primarily on the first of the two models (the empirical-physical model), for it is this set of understandings which directly informs and provides the rationale for steambath therapy.

Blood, flesh, and vital warmth

The Central Chiapas Plateau ranges in elevation from 1100 to 2500 m, with rugged limestone escarpments often cloaked in misty fog or soaked by chilling rains. In this environment, "warmth" *(k'ixin)* and "coldness" *(sikil)* exist as highly charged symbolic polarities—the former connoting health, power, fertility, and life; the latter suggesting weakness, barrenness, illness and death.

As Maffi (1994) documents in her work among the Tenejapa Tzeltal, physical health is strongly associated with warmth. She argues that this quality represents the intrinsic state of the body, and is identified not only with health, but also with life itself. Physical health is related to the quality of the blood, which is phrased in terms of this idiom of warmth and cold (as well as other diagnostic indicators centering on the direction and perceptual quality of the bloodflow, which "speaks" and is "listened to" through pulsing by a curer). The heart is conceived of as the primary source of heat in the body, which manifests in the blood. This relationship between the heating quality of the heart and the strong circulation of the blood forms the basis of highland Maya notions of good health and physical well-being.

The normal temperature of blood is warm *(k'ixin)*, and this same term is used to describe the body in a state of good health. The degree of warmth in the blood is directly correlated with its "strength" *('ip)*—the energy with which it courses through the body. This physical warmth is attributed to the heating action of the sun, the ingestion of "warm" substances, physical exertion, and regular steambathing. In Tzeltal, this warm, flowing blood is referred to as "living" or "lively blood" *(kuxul ch'ich')*, which contrasts with "cold blood" *(sikil ch'ich')*, or "blood with no strength" *(ma'yuk yip te ch'ich'ele)* (Maffi, 1994, p. 213). "Cold" or "weak" blood is variously thought of as a cause or a symptom of illness. While "warm" blood is desirable, an excessively "hot" *(k'ajk'al)* state is not—overheated blood can

[3]Following a convention established by Maffi (1994), when referring to humoral or metaphorical qualities, "hot" and "cold" occur in quotes. When referring to actual temperature states, they occur without quotes.

[4]Similar observations on this "warmth bias" in Maya ethnophysiology can be found in Gossen, 1974 a, b; Neuenswander and Souder, 1977; Stross, 1977; White, 1979; Tedlock, 1987; and Groark, 1997. For cognate Mesoamerican beliefs about body heat, blood, and disease etiology, see Sandstrom, 1991; and Chevalier and Sanchez Bain, 2003.

result in "hot" illnesses, as well as a wide variety of extreme emotional states, such as anger, envy, resentment, or madness—many of which may precipitate a "hot" illness (Collier, Farias Campero, Perez, & White, 2000, p. 29).

Like many New World "humoral systems," the Tzeltal–Tzotzil hot–cold paradigm appears to derive from careful observation of the body and the natural temperature cycles that characterize health and illness. The strong association between warmth and health found in most New World systems is directly perceptible, deriving from lived experience and observation of the qualities that characterize healthy, vigorous individuals (see McKeever Furst, 1995; Kay, 1987; Kay & Yoder, 1987 on similar points).[5]

Social heat: metaphorical understandings of vital warmth

The centrality of warmth also predominates on a metaphorical-ideological level, where it is intimately linked to ontological assumptions about the nature of power, social authority, and gender difference (Stross, 1977; Gossen, 1974a, b). Social "heat" constitutes a unifying concept that describes power in any hierarchically ordered domain within the cultural order (Stross 1977, p. 285). In the natural domain, this power is conceptualized as energy, strength, and generativity. In the social realm, however, heat is conceptually associated with order, authority, power, maturity, ripeness, and durability. Individuals, especially older people who have participated extensively in the civil-religious hierarchy or who have become ritual specialists, are thought to be characterized by potent social heat (or power).

According to Gossen (1974b), the Tzotzil of Chamula conceive of the life cycle of the individual, from baptism to death, as a process of gradually increasing heat, terminating in death and coldness. According to my data from both Oxchuc and Chamula, while old people are thought to be *metaphorically* very warm, the process of aging and the approach of death results in gradually diminishing *physical* warmth (and therefore, increased vulnerability to illness). This distinction is important, as it highlights the subtle differences that can emerge between the thermal qualities attributed to physical bodies (in this case, an elderly body) versus those attributed to personal-social identities (such as the social status of "elder").

As will be explored in a later section, this idiom of heat—synonymous with power and strength—is also used to naturalize the pronounced gender inequality of contemporary highland Maya society. Since power, strength, and authority are asymmetrically distributed both within and between the sexes, it is assumed that this metaphorical heat must also be asymmetrical in its distribution.

Illness, pathogenic cold, and steambathing

Given the overwhelming literal and metaphorical association between warmth, health, vigor, and power—it comes as small surprise to find illness closely associated with the loss of warmth, or the intrusion of "cold" into the body. Berlin and Berlin (1996, pp. 60–61) have proposed that the highland Maya universally consider illness to be "cold," except in cases where there is a generalized or localized elevation in body temperature (such as fevers, dermatological conditions, and pregnancy). Arguing along similar lines, Maffi (1994) has suggested that cold is considered to be the only exogenous "natural" source of illness—heat has no comparable exogenous pathogenic role. Therefore, when health conditions are classified as "hot" (as in the case of bone breaks, bruises, sprains, and other injuries), this usually reflects empirical properties of the health condition itself and not an etiologic judgment. In keeping with these observations, my data from Oxchuc suggest an almost total bias toward cold in the domain of illness. Cold thermal influences are thought to pose a much greater risk to health than hot influences. As a result, most illnesses are classified as "cold," reflecting their presumed etiology.

In the Tzotzil municipality of Chamula, "cold" illness are "found" or "encountered" *(-ta)*, usually while walking at night along cold or wet trails. Most "cold" conditions are caused by exposing the body to cold water/rain *(sikil vo')*, cold earth *(sikil banamil)*, or cold air/wind *(ik')*, all considered to be sources of intrusive "pathogenic cold." The cold "air/wind" *(ik')* issuing from these elements is believed to "enter" *(-och)* into the body, usually through body orifices, joints, pores, or the soles of the feet. If sufficiently serious, these thermo-humoral fluctuations can manifest throughout the body as a wide range of pathological conditions.

In addition to directly causing illness, exposure to cold can place one in an "at risk state" (Foster, 1994, pp. 33–39). While these thermal insults are usually not serious enough to result in pathology, the loss of warmth they engender weakens the body, rendering it highly vulnerable to even mild subsequent exposures to cold.

[5]For years, a debate has raged over whether New World "humoral systems" are indigenous or introduced (for overviews of the issues involved, see: Anderson, 1987; Colson & de Armellada (1987); Manderson, 1987; Foster, 1994; and Chevalier & Sanchez Bain, 2003). Without revisiting this argument, the widespread occurrence of pre-Columbian practices designed to manipulate body temperature for therapeutic ends suggests that well-developed thermo-humoral notions of warmth and cold (and their respective roles in health and illness) were in place long before the arrival of the Spaniards.

Similar "at risk states" can result when the body shifts rapidly from a state of heightened warmth (such as outdoor labor) to one of coolness (such as rest). Accordingly, Oxchuqueros are careful not to lie down after physical exertion, not to allow sweat to evaporate off the body, and not to ingest "cold" food or drink after physical exertion. In such cases, augmentation of heat becomes the primary concern. Steambathing, usually in conjunction with "warm" herbal or animal-based remedies, is considered the most effective prophylaxis.

Steambath therapy must be understood in terms of this set of social and health-related beliefs. For analytic purposes, the therapeutic action of the steambath can be divided into two complementary treatment modalities: *restorative-augmentative* and *expulsive-depurational*. Restorative-augmentative therapies attempt to eliminate the deficit of warmth within the body by modifying the immediate environment, or by supplementing the body with foods and/or medicines that possess the needed quality. By bringing warmth to the body, symptoms are alleviated and the body is fortified, thereby removing it from an "at risk" state and preventing the onset of "cold" illness. Expulsive-depurational therapies, on the other hand, attempt to cure illness at the level of ultimate etiology by forcing or flushing out the intrusive pathological "cold" responsible for the condition (through such means as bloodletting or forced sweating).

Steambathing derives its potent efficacy from the fact that it incorporates both restorative and expulsive strategies simultaneously. By ingesting "warm" medicines inside the steambath, the patient's body is heated internally and externally, augmenting endogenous warmth and expelling the "cold winds" responsible for the illness. As we will see below, all forms of steambathing (hygienic, preventative, and curative) have the therapeutic effect of restoring the blood and body to the natural state of "warmth" characterizing vigorous health and well-being.

Steambathing, personal hygiene, and preventative medicine

The most common use of the steambath is for general bathing. Typically, the bathers are household members, although it is not uncommon to invite close neighbors or parents to join in. Everyone derives great pleasure from the physical intimacy created by the steambath, and the event often takes on a distinctly social tone.

Bathers crawl in through the low doorway on hands and knees, then lie down on the raised plank floor with their feet to the coals. After relaxing in the dry heat for a short while, the first cupful of water is tossed onto the glowing cobbles. With a sudden hiss, a cloud of vapor bellows out of the small oven, engulfing everyone in the hot, wet steam. The bather takes a bathing scourge *(mes)* made of bunched zacate blades or a leafy tree branch (usually Laurel; *Liquidamber styraciflua*), dips it in a pot of hot water, and begins to beat his body with it. This "whipping" action lies at the very core of both hygienic and therapeutic steambathing. The rapid beating motion creates a thin layer of vaporized water just above the surface of the skin, increasing the surface temperature of the body far beyond that generated by the bath alone. Localized "whipping" is also used to focus the warming effect on a particular part of the body, driving out tenacious cold influences and providing intense hyperthermal therapy.

During all of this, the bather grunts and sweats profusely. The whipping causes the heart to pump quickly, which the bathers recognize as the physiological basis for the "heating" and "strengthening" of the blood. At the same time, the pores open to allow sweat to pass out of the body (carrying with it any pathogenic "cold"), simultaneously allowing the ambient heat of the bath to penetrate the flesh and further warm the blood. After an hour, the bathers exit. Being particularly vulnerable to "cold" influences at this time, they cover their heads with blankets to maintain warmth and limit exposure to the cold night air.

Because of the inherently therapeutic effects of steambathing, distinctions between hygienic, preventative, and curative bathing are necessarily artificial. In Oxchuc, the steambath constitutes a therapeutic nexus in which all three practices merge, united by their common goal of preserving warmth and expelling "cold." Since the flesh needs warmth to stay healthy, regular steambathing acts as a constant prophylactic measure, rewarming the blood, thereby preventing pathogenic "cold" from gaining a foothold in the body. When the highland Maya bathe in the steambath, they are doing so as much to maintain health as to restore it.

Steambathing and women's health care

In both Oxchuc and Chamula, the steambath is intimately associated with the maintenance of women's health and the treatment of female health conditions. It is indispensable during the post-partum recovery period, and is a central component in the treatment of various obstetric and gynecological disorders, including: irregular, absent, excessive, or painful menstruation, infertility, lack of breast milk, and difficult delivery (all of which are considered illnesses). Indeed, most normal female life events (especially menstruation, childbirth, and the period immediately following childbirth) have been pathologized, since they are felt to place the woman at risk for serious "cold" illnesses.

According to both Chamulas and Oxchuqueros, a dynamic fluctuation in warmth is characteristic of all

living things. Women, however, are biologically predisposed to suffer far more significant and threatening thermal fluctuations than men. Ideological reflections of this notion of female vulnerability can be found in mythically-based gender distinctions which metaphorically link men to the Sun, and women to the Moon. The sun and moon provide natural models for highland Maya understandings of human sex-based physiological differences, and serve to naturalize the pronounced gender inequality typical of traditional Tzeltal and Tzotzil communities.

The Moon (often assimilated to the Virgin Mary) is considered to be "cold," and is viewed as the archetypal female. She is variously thought of as the wife or mother of the Sun (Jesus Christ), who is identified with males and is considered to be the source of all light and heat in the world (Gossen, 1974b). Throughout the highlands, the Moon is intimately associated with female menstruation, fertility and reproduction. Unlike the sun, the moon passes through regular, monthly phases during which her brightness (heat) waxes and wanes. These lunar cycles are seen as analogous to female physiological cycles, which similarly distinguish women from men. Menstruation is thought to take place at the time of the new moon, when the moon is dark and at its coldest. Conversely, women are thought to be warmest and most fertile at the time of the full moon, when lunar brightness—hence, heat—is at its maximum. Several consultants reported that sexual intercourse is often scheduled around this lunar/reproductive cycle—the likelihood of conception is thought to increase significantly if intercourse occurs when the woman is at her warmest (during the full moon), especially if it takes place in the warmth of the steambath. Men, on the other hand, are considered to be "like the sun." They are characterized by a constant baseline of physical warmth (except in cases of illness), and suffer none of the recurrent physiologically based thermal fluctuations characterizing women.

Given women's inherent tendency to experience fluctuations in vital warmth, the steambath has come to play a critical role in preventative therapy. In Oxchuc, women regularly bathe in the steambath whenever they experience any form of blood loss. Given the overwhelming physical and metaphorical importance of blood as a regulatory force in the maintenance of vital warmth, any significant loss is taken seriously, and is viewed as a precipitating factor leading to illness or death. For this reason, menstrual disorders, such as excessive menstruation *(schamel antz)* and chronic amenorrhea *(mak u)*, are often treated in the steambath. The warm, moist environment fortifies the woman's cold and weakened body, preventing these "cold" states from developing into pathological conditions.

In addition to monthly, lunar-based cycles of fluctuating warmth, women experience dramatic and often dangerous changes in endogenous warmth during pregnancy and childbirth. From conception until delivery, the woman's body undergoes a gradual but dramatic increase in heat (due, it is said, to the menstrual blood that is retained in her body, which solidifies to form the flesh of the growing fetus). This thermal increase culminates in a dangerously "hot" state before birth. During this period the woman either avoids steambathing altogether, or else takes mildly warm baths, but avoids heating her belly with the zacate bathing scourge. A midwife *(jtam alal)* often accompanies the woman in the steambath, administering stomach and back massages to ensure that the fetus is properly positioned.

This extreme warmth is maintained until parturition, when the woman is plunged into a dangerously "cold" state. During birth, intrusive "cold winds" enter the body, causing a condition called 'cold stomach' *(sik ch'ujt'ubel)* in which residual birth blood cools and thickens inside the body, chilling the womb. If this chilled blood is not flushed out through steambathing and the administration of special warming medicines, the woman will become lethargic, her belly will swell, and she may suffer a variety of gynecological disorders, including: uterine hemorrhage, irregular menstruation, lack of breast milk, and in extreme cases, an extended period of reversible infertility.

In order to restore her fertility and physical strength, the new mother follows a rigorous post-partum regimen of steambathing. This regimen can last up to 21 days, the first three or four of which are spent in the seclusion of the steambath. After this initial period of seclusion, she may safely leave the bath, taking care to avoid all "cold" dietary and environmental influences. She continues to bathe every evening (or every other evening) for the next 14 to 21 days, often passing the cold nights in the warm steambath. During this period the woman drinks a number of special herbal decoctions known as "warm medicines" *(k'ixin pox)*, and refrains from usual household duties (see Groark, 1997, for a complete listing of plant and animal species used as "warm medicines"). This steambathing regimen restores and purifies the blood, promotes a copious supply of breast milk, hardens the skeleton (which is believed to have softened during gestation), calms the pains that follow birth, and rewarms the flesh, blood, and womb, thereby restoring an appropriate amount of heat to the woman's body.

Steambathing and curative medicine

In Oxchuc, steambathing is a central component in the treatment of "natural" illnesses that have their origin in "cold" influences—etiologically "hot" conditions are never treated in the steambath. All aspects of treatment, from initial diagnosis to the preparation and

administration of remedies, are carried out within the family unit. The treatment begins at night, usually just after sunset. The patient enters with another family member, herbal or animal remedies are administered, then bathing proceeds as usual.

If the condition is localized (e.g., swelling of legs, rheumatic joints, or "cold air" in the stomach), the patient uses the zacate brush to whip the "cold" out of the affected area, and massages are often administered. The length of time spent in the bath varies depending on the condition—the treatment for a simple case of stomachache might consist of an herbal tea and an hour-long steambath, while the post-partum regimen can last from one week to one month. The most common treatment schedule consists of a series of three evening steambaths combined with the ingestion of herbal or animal remedies. In many cases, the patient will choose to spend the night inside the bath, exiting only under the warmth of the morning sun.

Health conditions treated in the steambath

In all, I recorded 32 health conditions as amenable to treatment in the steambath.[6] Most of these "illnesses" are relatively simple symptomatologically-based conditions generated by life events, accidents, or physiological dysfunction. At the most general level, the highland Maya consider the following classes of illness to respond favorably to the heat of the steambath: gastrointestinal (encompassing diarrheas, abdominal pains and distensions, and cholecystitis), urinary/genital (impotence, retention of ejaculate, painful urination), gynecological/obstetric (post-partum healing, menstrual irregularities, reversal of infertility), arthralgias and myalgias (rheumatism, corporeal/musculo-skeletal pains), bites and accidents (wounds, bone fractures, sprains, snakebites), edemas (swelling of limbs due to intrusive cold), weakness and wasting (chronic lethargy), and a form of aggressive madness known as *chawoj*.[7]

[6]Systematic data on health conditions and steambath-associated medicinal plants was collected by the author through formal interviewing of 15 Oxchuqueros (11 males/4 females) using PROCOMITH's "traveling herbarium" (a set of 204 mounted herbarium voucher specimens representing the most commonly used medicinal plants in highland Chiapas) as well as questionnaire-based and semi-structured interviews conducted in Oxchuc Tzeltal or Spanish (according to the preference of the individual). Unless otherwise stated, all consultants self-identified as traditional Catholics, and claimed no specialist status as healers, midwifes, etc.

[7]Aggressive madness *(chawoj)* is the only psychological disorder treated by Oxchuqueros in the steambath, usually in conjunction with herbal medicines and shamanic therapies. However, there was little consensus among my informants as to whether steambathing is an appropriate treatment for *chawoj,* with some recognizing only post-treatment bathing.

All conditions are diagnosed and treated (at least initially) within the household, and all are thought to benefit from steambath therapy. Furthermore, in the case of all health conditions mentioned above (with the exception of bites, accidents, and aggressive madness), the etiology is assumed to be intrusive "cold"—steambath therapy is therefore indicated in order to sweat out the illness and restore warmth.

A diverse group of medicinal plants and animals are used in conjunction with the steambath. In Oxchuc alone, I recorded 111 remedies used in the treatment of 32 discrete health conditions. Of these, 97 remedies are herbal (derived from 63 species in 33 botanical families), and 14 are animal-based (for full taxonomic identifications and preparation details see Groark, 1997). Most remedies are administered as decoctions, baths, or poultices, depending on the condition being treated and the nature of the remedy. All are classified as humorally "warm" *(k'ixin)* in relation to the target illness. Since most adults know a wide variety of herbal remedies, there is usually no need to consult a specialist in the treatment of these "simple" conditions.

The steambath as guardian

Although it is often used in conjunction with plant and animal remedies, many people consider the steambath to be imbued with curative properties existing independently from any medicines that may be used inside of it. The use of herbal and animal remedies is directed primarily toward symptom relief, while steambathing is thought to act at the level of ultimate etiology by expelling *(-lok'es)* the intrusive cold responsible for illness. When viewed in this light, therapeutic steambathing and the use of associated remedies should be seen as a complex of separate treatment modalities that co-occur in the treatment of many conditions. This point is important, as it emphasizes steambathing as a therapeutic strategy separate from, but often coextensive with, lay herbal treatment.

In the Tzotzil township of Chamula, some individuals assert that the strength of the bath alone is enough to cure even the most tenacious illnesses. Steam *(sobal)* is regarded as the primary therapeutic element in the steambath—baths that are unable to produce thick vapor clouds are considered ineffective. The steam enters the body through the nose and mouth, warms the blood in the lungs, and is then carried by the blood to all parts of the body. The induction of copious sweating is the primary goal. The steam is "given" *(-ak')* to certain parts of the body (through flagellation with the bathing scourge) until the flesh is "baked" *(-ta'aj)*, thereby generating a heavy sweat which drives out the illness through the pores. If one does not sweat sufficiently, the illness will remain in the body. When

speaking of this process, it is said that the blood is "drying up" *(ta xk'a li ch'ich'e)*.

In Chamula, the steambath is sometimes described as a "guardian" *(jk'elvanej)* that "looks after" or "attends" to *(-k'elvan)* the bathers. One man explained that the steambath is "like a shaman" *(ja' k'u cha'al j'ilol)*, and that it "cures shamanically" *(ta x-ilolaj)*. These terms carry heavy connotations of human-like agency, in particular, a quasi-supernatural curative power. This curative power comes from Our Father in Heaven *(jtotik ta vinajel)* the Christ-Sun deity who gave His "strength and goodness" to the steambath in the form of the fire. In the treatment of certain health conditions, the eldest person in the steambath will sometimes pray to the firebox before bathing begins, asking the Sun-Christ deity to "release" the sufferer and make the illness pass (for additional details on these religious associations, as well as the full text of one such therapeutic prayer, see Groark 1997, pp. 17–27, 55–56).[8]

After the prayer has concluded, water is thrown on the hot rocks and bathing begins. While the individual is bathing, the steam "begins to close, begins to mend the flesh" *(ta xlik smak, ta xlik spak' taj jbek'tale)*, which is described as being "loosely woven together" *(chajal)*, much like an open-weave basket or a burlap bag. This loosely knitted flesh has lost heat and "become cold" *(ta sikub)*, so the steambath "heats the blood and thoroughly warms the entire body" *(ta xk'ixinaj sch'ich'el, ta xk'ixinaj ta sjunul jbek'tal)*, causing it to "become strong" *(ta stzatzub)*, and ultimately to "escape" or "recover" *(-kol)* from the illness. In this way the steambath "fixes up the body" *(ta smeltzan li bek'tale)*, and proves itself to be efficacious *(ta sbalin)*. The power of the steambath causes the illness to pass from the bathers flesh, "unbinding them" and releasing them from their suffering.

[8]It is usually only curers or old people who address the steambath in prayer: "Old people, well, they're not ashamed [to pray]. A young girl or boy, they become ashamed and don't want to speak, or they don't know what to say [to the *pus*]. But if you know what you want to say, you just pray…" As a manifestation of the Sun-Christ deity, the fire is sometimes called *iskrivano* ("scribe") in such prayers. This refers to the belief that *jtotik ta vinajel* ("Our Father in Heaven, the Sun-Christ deity") possesses a large book in which he records our transgressions (see Nash [1970, pp. 200–201] for similar data from Amatenango). It also refers to the ability of fire to "write on" or burn whatever it touches. For this reason, in ritual speech fire is also referred to as "holy writer, holy embroiderer" *(ch'ul jtz'ibajom, ch'ul jluchajom)*. For strikingly similar Totonac beliefs regarding a male deity residing in the firebox of the steambath, see Ichon, 1973.

Biomedical assessments of steambath therapy

My principal concern in this paper has been to describe highland Maya thermal models of the body in health and illness, and to explore the strong positive associations of heat, health, and steambathing. The ubiquity of steambathing throughout Mesoamerica—as well as its two thousand year cultural history among the Maya—suggests interesting questions concerning both the empirical bases for these thermal models of the body, as well as the efficacy of the steambath as a treatment modality.

While a full examination of the empirical bases of highland Maya ethnophysiology and phytotherapy is beyond the scope of this paper, a number of studies on the biomedical efficacy of hyperthermal therapies (mainly short and long-term Finnish sauna exposure) lend support to claims of the beneficial therapeutic effects of steambathing. Unfortunately, studies of the psychological effects of sauna bathing on subjective assessments of mood, well-being, and relaxation have rarely been carried out (Kauppinen & Vuori, 1986; Kuusinen & Heinonen, 1972). Accordingly, I will limit my discussion to its physical effects.

Although this research is still in its infancy, recent studies have found the thermally induced vasodilation effects of repeated sauna therapy to improve endothelial and cardiac functions in patients with chronic heart failure and coronary risk factors such as atherosclerosis, hypercholesterolemia, hypertension, diabetes mellitus and smoking (Imamura et al., 2001; Tei, 2001; Tei et al., 1995). Transitory improvements in pulmonary function appear to provide some relief to patients with asthma and chronic bronchitis (Hannuksela & Ellahham, 2001; Eisalo & Luurila, 1988), and the pain and limited mobility associated with rheumatic disease is alleviated (Hannuksela & Ellahham, 2001; Isomäki, 1988). It also appears that the sauna may be able to cleanse the bloodstream of certain toxic chemicals through copious sweating (Krop, 1998).

Extensive research has also focused on the safety of sauna bathing for "vulnerable" groups such as children, the elderly, and pregnant women, finding it to be well-tolerated by all groups (Hannuksela & Ellahham, 2001; Jokinen, Gregory & Välimäki 1988; Wähä-Eskeli & Erkkola 1988; Kauppinen, 1997). In this respect, the universal association between steambathing and post-partum care merits further study. It appears that these pre- and post-partum steambathing regimens are adaptations to the fluctuating body temperatures of new mothers and neonates. As McKeever Furst (1995, pp. 98–99) has described, soon after parturition both mothers and infants experience a dramatic drop in body temperature. Within three hours of birth, the neonate's temperature may drop by as much as 4.5 degrees, leading to mild hypothermia, malaise, and

lethargy. Much of the mother's warmth is also lost during childbirth, and she may experience chills and uncontrollable shivering soon after delivery. In communities where most women give birth at home, the tradition of post-partum steambathing would appear to decrease the risk of hypothermia-induced neonate mortality.

As mentioned, another universal attribute of Mesoamerican steambath therapy is the administration of herbal and/or animal-derived remedies (either before, during, or immediately following bathing). Interestingly, two recent studies have found that the absorption and plasma concentrations of transdermally delivered drugs (such as nicotine) may be increased during sauna exposure (Vanakoski, Seppälä, Sievi, & Lunell, 1996; Vanakoski & Seppälä, 1995). In this regard it is worth noting that 10% of all recorded steambath treatments used by the highland Maya are tobacco-containing poultices applied to sprains, bruises, open wounds, and bone fractures (Groark, 1997, p. 68).[9] Future attention to the synergistic effects of heat stress and pharmacokinetics may provide an empirical validation of the strong cross-cultural and historical connection between steambathing and phytotherapy.

As these results indicate, systematically induced heat stress generates empirically demonstrable beneficial effects against a variety of health conditions and appears to potentiate the therapeutic effect of certain classes of drugs. Although these studies have not been informed by an awareness of indigenous Mesoamerican uses of hyperthermal therapy, the results strongly suggest that steambathing is an empirically based therapeutic tradition that effectively treats many conditions—both simple and complex—and serves to promote general health and well-being. Moreover, steambathing appears to play important preventative and health maintenance functions, particularly during the post post-partum period. A heightened awareness of the therapeutic uses of the Mesoamerican steambath may serve to frame future investigations into the connections between hyperthermal therapies and physical-emotional well-being.

Summary and conclusions

In this article, I have traced the outlines of highland Maya thinking about the thermal nature of physical bodies and social identities, the relationship of these understandings to the maintenance and restoration of physical health, and the ways in which steambathing functions as a core cultural technology for manipulating thermal states in the ongoing quest for health. A detailed study of steambath therapy and the rationales underpinning its use provides a concrete illustration of the ways in which both physical and metaphorical warmth (e.g., the physical warmth of the bath and the metaphorical warmth of certain medicines) can be mobilized to drive "pathogenic cold" from the body, thereby restoring the patient to a state of health.

For expository purposes, I have highlighted two interrelated conceptualizations of warmth: vital warmth and social heat. Vital warmth forms the basis of a complex ethnophysiological model equating physical warmth with strength, vigor, health, and generativity. Social heat, on the other hand, is a metaphorical quality denoting order, authority, and power. While steambath therapy is based on the principle of maintaining and restoring physically-based "vital warmth," it is conceptually inseparable from—and connotatively linked to—these more metaphorical attributes of social heat.

While the maintenance of vital warmth is central to steambathing, the expulsion of intrusive cold is more often mentioned when discussing its therapeutic action. Accordingly, most "cold" health conditions are treated through a combined strategy of steambathing and phytotherapy. In all, I recorded more than 100 plant and animal remedies used in the treatment of 32 distinct health conditions.

An overview of recent biomedical research into the effects of induced heat stress indicates that highland Maya steambathing practices may have significant therapeutic value against a wide array of health conditions. Additional data suggest that a synergistic relationship may exist between steambathing and the pharmacokinetics of certain phytochemicals.

The empirical basis of therapeutic steambathing should not come as a surprise—at the time of the Spanish Conquest, the practice was ubiquitous throughout much of the Americas, and has persisted among the Maya for at least two thousand years. In part, the continuing importance of therapeutic steambathing can be understood in terms of its tight integration with cultural models emphasizing the "thermal" natures of functional bodies and "working" psychosocial identities. Taken together, these models of vital warmth and well-being—of blood, body, and person—provide a unified conceptual and therapeutic framework for maintaining and restoring health. The strategic and systematic alteration of a patient's thermal states (through the focused application of warmth) is considered profoundly therapeutic among the highland Maya, contributing to a felt sense of personal vitality and well-being which operates on both physical and psychosocial levels simultaneously.

[9]Despite these provocative results, a similar study on tetracycline pharmacokinetics found no statistical difference in plasma concentrations after short term sauna bathing (Vanakoski & Seppälä, 1997).

Acknowledgements

Thanks to Brent and Elois Ann Berlin, Luisa Maffi, Robert Laughlin, and Carol Karasik. Financial support for this research was provided by: The Joint UC Berkeley/Stanford Centers for Latin American Studies; UC-MEXUS; National Science Foundation (Grants #BNS 87-03838 and #BNS 90-44523; P.I.: Brent Berlin); UC Berkeley Heller Research Grant; the Government of the State of Chiapas; and the Chiapan Institute of Culture. This paper is dedicated to the memory of my father, Frank M. Groark.

References

Adams, R. N., & Rubel, A. J. (1967). Sickness and social relations. In M. Nash (Ed.), *Handbook of Middle American Indians: social anthropology*, Vol. 6 (pp. 333–356). Austin: University of Texas Press.

Alcina Franch, J. (1981). El baño de vapor entre los mayas prehispánicos. *Scripta Ethnologica (Buenos Aires)*, *6*, 41–47.

Alcina Franch, J. (2000). *Temazcalli: hygiene, terapéutica, obstetricia y ritual en el nuevo mundo*. Seville: Escuela de Estudios Hispano-americanos de Sevilla/Consejo Superior de Investigaciones Científicas.

Anderson, E. N., Jr. (1987). Why Is Humoral Medicine So Popular? *Social Science and Medicine*, *25*(4), 331–337.

Berlin, E. A., & Berlin, B. (1996). *Medical ethnobiology of the highland Maya of Chiapas, Mexico: the gastrointestinal diseases*. Princeton, NJ: Princeton University Press.

Chevalier, J. M., & Sanchez Bain, A. (2003). *The Hot and the Cold: Ills of Humans and Maize in Native Mexico*. Toronto: University of Toronto Press.

Collier, G. A., Farias Campero, P. J., Perez, J. E., & White, V. P. (2000). Socio-economic change and emotional illness among the highland Maya of Chiapas, Mexico. *Ethos*, *28*(1), 20–53.

Colson, A. B., & de Armellada, C. (1987). An Amerindian Derivation for Latin American Creole Illnesses and their Treatment. *Social Science and Medicine*, *17*(17), 1229–1248.

Currier, R. L. (1966). The hot-cold syndrome and symbolic balance in Mexican and Spanish American folk medicine. *Ethnology*, *5*(3), 251–263.

Eisalo, A., & Luurila, O. J. (1988). The Finnish sauna and cardiovascular diseases. *Annals of Clinical Research*, *20*(4), 267–270.

Foster, G. M. (1953). Relationships between Spanish and Spanish–American folk medicine. *Journal of American Folklore*, *66*, 201–217.

Foster, G. M. (1978). Hippocrates' Latin American legacy: "hot" and "cold" in contemporary folk medicine. In R. K. Wetherington (Ed.), *Colloquia in anthropology,* (pp. 3–19). Dallas: Southern Methodist University, Fort Burgwin Research Center.

Foster, G. M. (1979). Methodological problems in the study of intracultural variation: the hot/cold dichotomy in Tzintzuntzan. *Human Organization*, *38*(2), 179–183.

Foster, G. M. (1994). *Hippocrates' Latin American legacy: humoral medicine in the New World*. Langhorne, Penn: Gordon and Breach.

Gossen, G. H. (1974a). *Chamulas in the world of the sun: time and space in a Maya oral tradition*. Prospect Heights, Ill: Waveland Press.

Gossen, G. H. (1974b). To speak with a heated heart: Chamula canons of style and good performance. In R. Bauman, & J. Sherzer (Eds.), *Explorations in the ethnography of speaking,* (pp. 389–413). London: Cambridge University Press.

Groark, K. P. (1997). To warm the blood, to warm the flesh: the role of the steambath in highland Maya (Tzeltal–Tzotzil) ethnomedicine. *Journal of Latin American Lore*, *20*(1), 3–96.

Groark, K.P. (2003). Pathogenic emotions among the Tzotzil Maya of San Juan Chamula: Anger, shame, fear, sadness and depression. Unpublished manuscript.

Hannuksela, M. L., & Ellahham, S. (2001). Benefits and risks of sauna bathing. *American Journal of Medicine*, *110*(2), 118–126.

Huber, B., & Sandstrom, A. (Eds.). (2001). *Mesoamerican healers*. Austin: University of Texas Press.

Ichon, A. (1973). *La religión de los totonacas de la sierra*. México, D.F.: Instituto Nacional Indigenista/Secretaría de Educación Pública.

Imamura, M., Biro, S., Kihara, T., Yoshifuku, S., Takasaki, K., Otsuji, Y., Minagoe, S., Toyama, Y., & Tei, C. (2001). Repeated thermal therapy improves impaired vascular endothelial function in patients with coronary risk factors. *Journal of the American College of Cardiology*, *38*(4), 1083–1088.

Isomäki, H. (1988). The sauna and rheumatic diseases. *Annals of Clinical Research*, *20*(4), 271–275.

Jokinen, E., Gregory, E. L., & Välimäki, I. (1988). The sauna and children. *Annals of Clinical Research*, *20*(4), 283–286.

Kauppinen, K. (1997). Facts and fables about sauna. *Annals of the New York Academy of Sciences*, *813*, 654–662.

Kauppinen, K., & Vuori, I. (1986). Man in the sauna. *Annals of Clinical Research*, *18*(4), 173–185.

Kay, M. (1987). Lay theory of healing in northwestern New Spain. *Social Science and Medicine*, *24*(12), 1051–1060.

Kay, M., & Yoder, M. (1987). Hot and cold in women's ethnotherapeutics: the American–Mexican West. *Social Science and Medicine*, *25*(4), 347–355.

Krop, J. (1998). Chemical sensitivity after intoxication at work with solvents: response to sauna therapy. *Journal of Alternative and Complementary Medicine*, *4*(1), 77–86.

Kuusinen, J., & Heinonen, M. (1972). Immediate aftereffects of the Finnish sauna on psychomotor performance and mood. *Journal of Applied Psychology*, *56*(4), 336–340.

López Austin, A. (1988). *The human body and cosmology: concepts of the ancient nahuas. Translated by Thelma Ortiz de Montellano and Bernard Ortiz de Montellano*. Salt Lake City: University of Utah Press.

Maffi, L. (1994). *A linguistic analysis of Tzeltal Maya ethnosymptomatology*. Ph.D Dissertation, University of California, Berkeley: University Microfilms, Inc (#9504901).

Manderson, L. (1987). Hot–cold food and medical theories: overview and introduction. *Social Science and Medicine*, *25*(4), 329–330.

McKeever Furst, J. L. (1995). *The natural history of the soul in ancient Mexico*. New Haven: Yale University Press.

Nash, J. (1970). *In the eyes of the ancestors: belief and behavior in a Maya community*. New Haven and London: Yale University Press.

Neuenswander, H. L., & Souder, S. D. (1977). The hot–cold wet–dry syndrome among the Quiche of Joyabaj: two alternative cognitive models. In H. L. Neuenswander, & D. E. Arnold (Eds.), *Cognitive studies of southern Mesoamerica,* (pp. 96–124). Dallas: SIL Museum of Anthropology.

Sandstrom, A. (1991). *Corn is our blood: culture and ethnic identity in a contemporary Aztec Indian village*. Norman: University of Oklahoma Press.

Stross, B. (1977). Tzeltal conceptions of power. In R. D. Fogelson, & R. N. Adams (Eds.), *The anthropology of power,* (pp. 271–285). New York: Academic Press.

Tedlock, B. (1987). An interpretive solution to the problem of humoral medicine in Latin America. *Social Science and Medicine*, *24*(12), 1069–1083.

Tei, C. (2001). Thermal therapy for congestive heart failure: estimation by TEI index. *Journal of Cardiology*, *37*(Suppl. 1), 155–159.

Tei, C., Horikiri, Y., Park, J. C., Jeong, J. W., Chang, K. S., Toyama, Y., & Tanaka, N. (1995). Acute hemodynamic improvement by thermal vasodilation in congestive heart failure. *Circulation*, *91*(10), 2582–2590.

Vanakoski, J., & Seppälä, T. (1997). Renal excretion of tetracycline is transiently decreased during short-term heat exposure. *International Journal of Clinical Pharmacology and Therapeutics*, *35*(5), 204–207.

Vanakoski, J., & Seppälä, T. (1995). Effects of a Finnish sauna on the pharmacokinetics and haemodynamic actions of propranolol and captopril in healthy volunteers. *European Journal of Clinical Pharmacology*, *48*(2), 133–137.

Vanakoski, J., Seppälä, T., Sievi, E., & Lunell, E. (1996). Exposure to high ambient temperature increases absorption and plasma concentrations of transdermal nicotine. *Clinical Pharmacology and Therapeutics*, *60*(3), 308–315.

Wähä-Eskeli, K., & Erkkola, R. (1988). The sauna and pregnancy. *Annals of Clinical Research*, *20*(4), 279–282.

White, J. S. (1979). Hot and cold and just right in Tojolobal. In L. Martin (Ed.), *Papers in Mayan linguistics,* (pp. 63–76). United States: Lucas Brothers.