

FROM NORTHEAST ASIA TO TIERRA DEL FUEGO – HISTORY AND SPREADING ROUTES OF NATIVE AMERICAN STEAM BATHS AND OTHER BATH THERAPIES

by

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Summary

In spite of a lack of direct archaeological evidence of the existence of Native American sweat and herbal steam baths more than 3,000 – 4,000 years ago, as well as of shower and hip baths it is possible to reconstruct, with a high degree of probability, their age, provenience, and spreading history:

A starting point for dating the early herbal steam baths is the fact proved by archaeology that it took the Native Americans a long time - 12,000 years - following their immigration to North America to change over from the circumpolar plant genera known to them from their original home in Northeast Asia to plants with purely American dissemination. To this day, the percentage of circumpolar plant species and genera used for steam baths is by far higher than their normal share, which can only have historical reasons and proves that the herbal steam bath dates from the sub arctic zone of the late Pleistocene. The herbal steam bath was spread via Beringia as far as Chile and Paraguay, the simple sweating cure by the fire, as far as Tierra del Fuego – a dissemination covering 20,000 kilometres! For a spread of the herbal steam bed (where the patients lie on the herbal material instead of sitting in the steam room), which is limited to Pacific North America, only the sea route from Northeast Asia to North America is possible.

Archaeological data about the spread of pottery from Amazonia (ca. 7,600 BP) via Mesoamerica (ca. 5,000 BP) to North America (3,700 –2,000 BP) and also to Peru (after 4,000 BP) offer a possibility to date the shower and hip baths. While only relatively little water or plant preparation for sprinkling on hot stones are needed for sweat and herbal steam baths, baths require by far higher quantities of water. Pottery is the technical precondition for supplying them.

Indeed, the shower and hip baths (with emulsifiable and water-soluble agents; with variable temperature) have almost entirely replaced the steam baths (only with volatile agents; always hot) in tropical America, whereas in North America, which they reached last along with pottery, the herbal steam bath remained dominant; Mesoamerica and the Central Andes are halfway between. So, the ratio of baths to steam baths clearly depends on the respective age

of pottery, which makes a dating of the shower and hip bath possible. Facts which indicate an invention of the baths made twice – in Amazonia and the Maya area - are discussed.

In advanced civilizations (Mesoamerica, Central Andes, Chibcha area), balneotherapy is used on an especially large scale; but some peoples in Lower Amazonia and Southeast Guyana also show some characteristics of an advanced civilization in this respect (probably coming from the Mount Builder cultures, 400 – 1,400 AD). In contrast, besides some acculturation as to the Andean advanced civilization, medicine and balneotherapy of the famous Andean Kallawaya healers show clear characteristics which prove an immigration from Southwest Amazonia.

1. Introduction

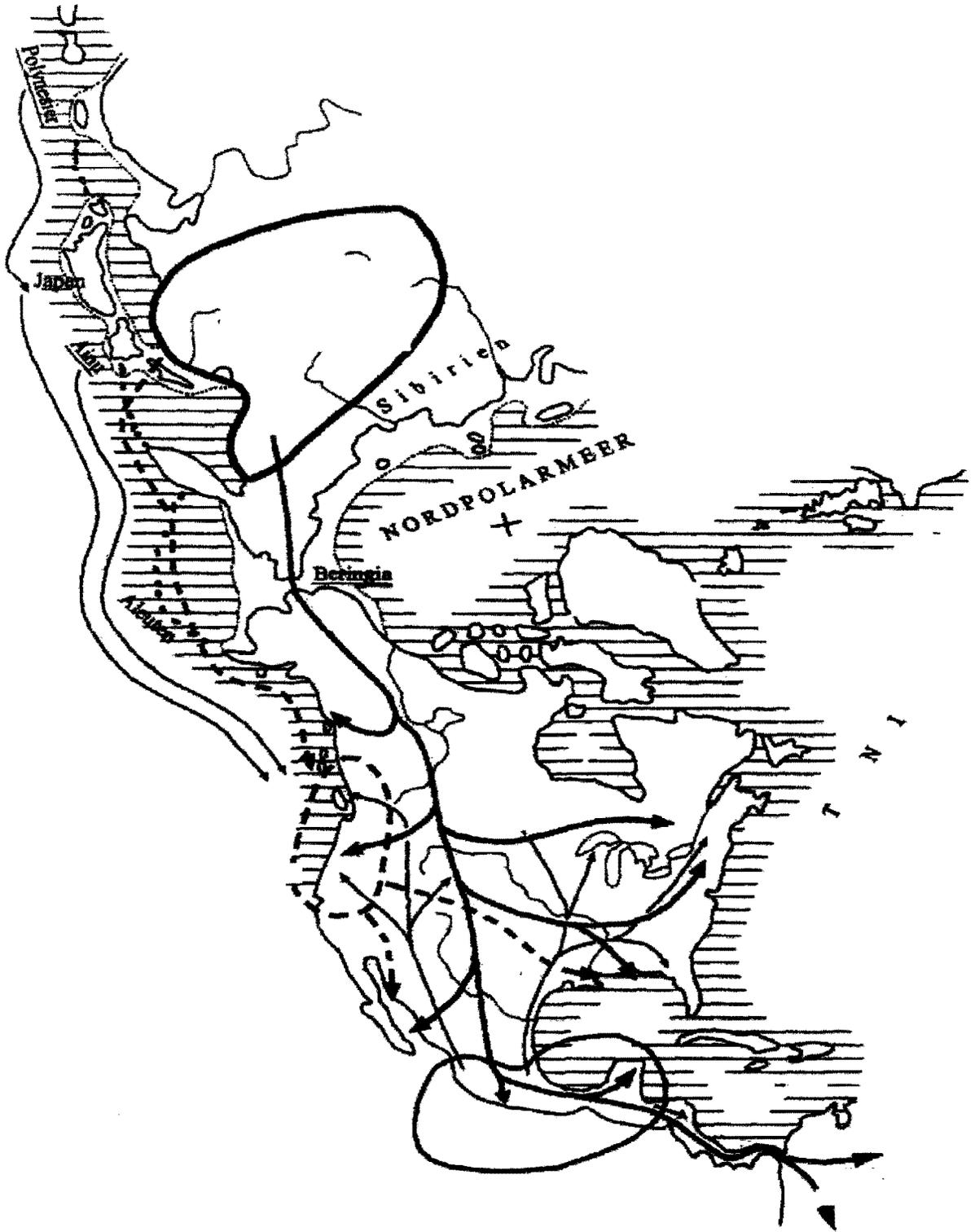
The original home of the Native Americans is Northeast Asia (FAGAN, 1991; DILLEHAY, 2003; NEVES and HUBBLE, 2004), from where they set out to America during the late Pleistocene (FAGAN, 1991); by land via Beringia as well as on sea routes along the Aleutian Islands; as proved by the finding of the Kennewick Man on the Columbia River, with the participation of Caucasoid groups of the Polynesians and Ainu (see map from WOLTERS, 2003 a in appendix).

It was certainly not the first colonization of America. The archaeological findings by DILLEHAY (1989, 1997) near Monte Verde in Central Chile, the discovery of “Luzia” in Brazil (by A. LAMMING-EMPERAIRE; see NEVES and HUBBLE, 2004) and findings by GONZÁLEZ-JOSÉ et al. (2003) on skulls in Baja California prove an immigration which is older than the undoubtedly Native American Clovis heads in North America during the late Pleistocene (DILLEHAY, 2003). The skulls from Brazil and Baja California prove the provenience of a part of the “very first” Americans from Southeast Asia, with characteristics of Melanesians. Yet this first colonization of America can only have been very thin, for otherwise the Native North Americans would not have needed 12,000 years to fully develop the use of the flora of North America for medicinal ends, as is shown in the slow decrease in terms of percentage of the circumpolar part of their medicinal plants. An exchange of information between the immigrating Native

Americans and the earliest population would have accelerated the development of the use of the vegetable kingdom. There is no evidence of a use of balneotherapy among the first settlers, not even in the special lodge in Monte Verde discovered by DILLEHAY (1997), which obviously served for medical treatments.

THE COLONIZATION of America by the bulk of the Native Americans during the late Pleistocene very probably did not take place on a completely voluntary basis, for the rise of the sea level by 130 metres since the climax of the last Pleistocene (LIEDTKE, 1986) as a consequence of the melting of the ice shields put millions of square kilometres of land under water, even in East and North Asia (see map). Since with the warming the vegetation zones also shifted towards the north, the Native Americans suffered an immigration pressure through the Mongoloid peoples of woman gatherers and hunters of East Asia, who had lost their homes because of the floodings (WOLTERS, 2003 a; the denomination “woman gatherers and hunters” instead of “hunters and gatherers” is more adequate since the women often secured the food supply better by collecting plants than the men did by hunting; see WOLTERS, 2003 b, and also NIEMITZ, 2004).

There seems to be a direct tradition of a legend from the time of the Native Americans’ immigration to America in the Brazilian part of Guyana: MARK J.



Map (from WOLTERS, 2003 a)

Origin and spreading routes of the three types of Native American balneotherapy (actual herbal steam bath, herbal steam bed, bath in herbal extracts).

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-  - Coastal line in Asia and Beringia during the last Pleistocene (not drawn in for North America because the spread of the bath and herbal steam bed did not occur there until after the Pleistocene).
 -  = Original home of the Native Americans during the Pleistocene
 -  = Immigration by land with spread of the sweat and steam bath with use of plants during the late Pleistocene
 -  - Immigration on sea routes with introduction of the herbal steam bed in Pacific North America during the late Pleistocene and limited further spread
 -  = Mesoamerika as original home region of the bathing with and in plant extracts after the Pleistocene
 -  = Spread of the bathing after the Pleistocene until today

PLOTKIN (1994) mentions a story that an old man of the Tiriyo had told a missionary. According to this story, in the remote past the Tiriyo had passed through a land which was so cold that they had to cover themselves

with animals' skins – a sort of clothing that the Native Americans of Brazil never knew. Numerous legends of a Deluge told all over the world are probably also based on memories of the extensive rise of the sea level as a consequence of the melting of the

glacial ice shields. It is true that this rise took place only gradually within a greater territory, but on a regional scale it was undoubtedly also felt through sudden storm tides, as happened in historical times in the area of the southern part of the North Sea through a subsiding of the coasts.

THE FACT that a number of basic ideas of North American shamanism correspond with some basic ideas of North Asian shamanism (WOLTERS, 1999/2000, 2000; HULTKRANTZ et al., 2002) also indicates an extremely long-lived Native American tradition which goes back as far as the last Pleistocene, e.g. the mythology of the fly agaric (WASSON, 1986).

Medicinal traditions, too, have a corresponding age, as shown by the archaeological plant findings of Monte Verde in southern Central Chile dating back 13,000 – 12,000 years (DILLEHAY, 1989, 1997): Chewed leaves of the boldo tree (*Peumus boldus*) prove a medicinal use of these leathery leaves, and 33 additional plants in Monte Verde are also medicinal plants. It is remarkable that four of the possible main uses of the medicinal plants of Monte Verde are also among the main indications with the Mapuche currently living in Chile (ROSSEN and DILLEHAY, 1997) – apparently a tradition over a period of 13,000 – 12,000 years through an early tradition of information (as different from North America, see above).

Evidence of a medicinal tradition taken to North America from Northeast Asia during the late Pleistocene can be found in the extreme correspondences in the medicinal and ritual use of a number of plant species or genera common in the circumpolar area in Russian-Siberian and North American popular medicine especially in their traditional uses (WOLTERS, 1999/2000, 2000, 2003 a).

There can be no doubt as to the existence of an oral tradition from the late Pleistocene to this day with Native Americans; this probably also applies to peoples of other continents.

Very probably the sweat and herbal steam bath was also already in use with the Native Americans in Northeast Asia during the late Pleistocene and was then spread over the whole of America during the immigration (see below; WOLTERS, 2003 a, 2004; see map in appendix).

The fact that direct archaeological evidence does not yet exist for such a high age of this institution is due to the short durability of the vegetable building material of sweat lodges and the medicinal plants in the ground over thousands of years. Monte Verde was a lucky coincidence for archaeology because the remains of the settlement and plants were overgrown by a peat bog after the site had been left (DILLEHAY, 1989, 1997). But a sweat bath was yet unknown to the first settlers of America.

2. Age, provenience and spread of the sweat and herbal steam bath

THERE ARE three varieties of this type of baths:

- 1) The pure sweat bath for ritual and ceremonial purposes, for relaxing, for regular hygiene or for a pure sweating cure; without phytotherapeutic treatment, even though fragrant plants are often used in the process for ritual reasons. As a rule, the steam is produced in a sweathouse or sweat lodge by sprinkling water on hot stones (KRUMBACH and KRÜGER, 1988; KRÜGER, 1996).
- 2) The herbal steam bath for therapeutic purposes. Here, sick persons, women around the time of a birth and small children are treated not only with hot steam, but at the same time with volatile

agents (especially essential oils) from boiled or otherwise heated medicinal plants. Particularly in South America, but partly also in Meso- and North America, the herbal steam bath takes place without a sweathouse, simply over a boiling pot containing the plant parts.

- 3) The herbal steam bed, where the patients lie on the plant parts, which are steamed from beneath so that besides emulsifiable agents also water-soluble ones (flavonoids, tannins, saponins and others) have an effect. This method is almost exclusively practised in Pacific North America.

The main medicinal indications for herbal steam baths are pains, rheumatic and respiratory diseases (these with inhalation of the herbal steam), but also often gynaecology and culture-specific diseases (WOLTERS, 2003 a, 2004). In North America, at least 183, in Mesoamerica and Central America, 158, and in South America (here almost exclusively in the cooler areas, rarely in the tropics), at least 116 plant species are in use for these purposes (WOLTERS, 2004).

WHAT EVIDENCE is there of a high age of the sweat and herbal steam bath and of their provenience from the sub arctic zone? The most noticeable evidence is the highly excessive percentage of circumpolar plant species and genera among the plants used for steam baths, which are common in northern Eurasia as well as in North America and which the Native Americans probably already knew in their original home, the north-eastern Asia of the late Pleistocene, where their medicine has its origins altogether (WOLTERS, 1999, 1999/2000, 2000).

The percentage of plants used for steam baths in North America (183 out of 2063 medicinal plant species) is 8.5%. Yet out of the 82 circumpolar species, 16 are used for herbal steam baths, which amounts to 19.5%; this

portion is more than twice as large. The following picture results for the genera: The 128 genera, species of which have been used for herbal steam baths since pre-Columbian time, amount to 24% of all North American medicinal plant genera; among these, there are 55 genera with circumpolar species, though (= 43%), and among these genera there is a total of 91 out of 172 species (not including those that were imported), i.e., 52.9%. Here, too, the portion is twice as high.

SINCE THE SUB arctic and arctic zones are the home of circumpolar plants, the herbal steam bath of the Native Americans must come from the sub arctic zone, for the predominance can only have historical causes (WOLTERS, 2000, 2003 a). Yet the question is whether the Native Americans already possessed the sweat and herbal steam bath in the sub arctic zone of north eastern Asia or whether they did not develop them until after their immigration to the sub arctic zone of North America.

An additional piece of evidence of the Native Americans' already bringing their knowledge of circumpolar plants with them from north eastern Asia is the percentage of circumpolar food and medicinal plants, which decreased only gradually in the course of 12,000 years. From the data given by FAGAN (1991) and GREMILLION (1997) about archaeological plant findings at settlement sites in North America it follows that during the late Pleistocene until 10,000 years ago, a 75% of circumpolar plant genera were still used, during the early Holocene, 10,000 – 5,000 years ago, still a 50%, during the late Holocene, 5,000 – 2,000 years ago, only as much as 33%, and in the 20th century only as much as 24%. Accordingly, the proportional increase of the knowledge of purely American plant genera amounted to 25, 50, 67 and 76% (WOLTERS, 1999/2000, 2000, 2003 a).

THIS CHRONOLOGICAL gradation enables us to find the age of the herbal steam bath:

The percentages of 43 or 52.9%, respectively of circumpolar genera or species of such genera among the plants used for steam baths to this day signify that the herbal steam bath must have already been established on the whole continent by the early Holocene. Since the spread over the whole continent required thousands of years, it must have been invented before – during the late Pleistocene (WOLTERS, 2003 a). This much can be said about the age of the steam bath.

If the herbal steam bath was invented in the sub arctic zone of North America, a gradient as to the distribution of the number of plants used for steam baths starting from this area should be recognizable, the same as there is one recognizable in the opposite direction after the invention of the shower and hip baths in Mesoamerica reaching as far as the sub arctic zone of North America (see below; compare Map 3 in WOLTERS, 2003 a). Yet the highest number of plants used for the steam bath can be found in the cultural areas “California” (35) and “Northeast” (45), except for the area of the advanced civilizations of Mesoamerica (147; balneotherapy is used in an especially intensive way in Native American advanced civilizations), which means that they are dispersed, and not in the cultural area “Sub arctic zone” (here, only 22).

Furthermore, with plant genera exclusively limited to America, the fact can be established that common features in their steam bath indications are nearly always – with only two exceptions – limited to one geographic area. If several peoples use the same plant species or genus for the same ends in the herbal steam bath, they are neighbours as a rule, or at least they are peoples living in neighbouring cultural areas, as it is the case, for instance, with the creosote bush (*Larrea tridentata*): several peoples of southern California, the Kawaiisu and Southern Paiute in the neighbouring part

of the Great Basin and the Seri in Sonora (for references, see WOLTERS, 2003 a; there, Map 4). Here we have a picture which shows the way medical information can be expected to be passed on from one people to the neighbouring ones.

However, peoples who were neighbours in former times while still living in northeast Asia, dispersed when they immigrated into America and at the same time obtained new neighbours with a different phytotherapeutic tradition. If knowledge about circumpolar plants already existed in northeast Asia and was passed on to neighbouring peoples of that time, it is to be expected that identical uses of such plants can accordingly be found in scattered places after the immigration into America, while the new neighbours hold on to their own traditions.

INDEED, an identical use with the same indications for steam baths scattered over a vast territory is given in the case of eight circumpolar plant genera, with gaps of thousands of kilometres in between: With pine (*Pinus*) and cherry/plum tree (*Prunus*), for instance in the area of the Great Lakes, California and the Maya region (Map 7 in WOLTERS, 2003 a); with the pearly everlasting (*Anaphalis margaritacea*, an Amphiberian species), yarrow (*Achillea*), angelica (*Angelica*) and fir (*Picea*) in the eastern woodland and, on the other hand, in Pacific North America, in the area between these without an identical use; with elder (*Sambucus*) and willow (*Salix*) in the Great Basin and in the Maya region (Map 8 in WOLTERS, 2003 a).

TWO MORE PLANT genera, sagebrush (*Artemisia*) and juniper (*Juniperus*), have five indications of the same kind in the herbal steam bath over vast distances of the North American continent, and two of them in Mesoamerica (Map 9 in WOLTERS, 2003 a), which gives reason to assume that their use

was already identical to a large extent in northeast Asia, for with purely American plant genera this phenomenon does not exist at all.

On the other hand, there are mostly profound differences as to the indications of circumpolar plants for steam baths between neighbouring peoples and cultural areas. So it is true that there are some plants with the neighbouring Cree and Ojibwa which are used in the steam bath by both peoples, but there is no common indication for them (with the exception of *Achillea millefolium*, which was not introduced until later by white settlers). Common features between the neighbouring cultural areas "Sub arctic zone" and "Plateau" only exist for wild mint (*Mentha arvensis* ssp. *canadensis*); between "Sub arctic zone" and "Prairie/Plains", they only exist for juniper (*Juniperus communis*).

This overall picture only matches the assumption that the herbal steam bath was already invented in northeast Asia, and the knowledge of its phytotherapeutical uses was dispersed at the same time as the peoples themselves along with their immigration into America. It does not match the assumption that it was not invented until after the colonization of North America in the Canadian sub arctic zone (WOLTERS, 2003 a).

The spread of the herbal steam bath as far as southern South America (southern Central Chile, Paraguay) and of the simple sweating cure by the fire as far as Tierra del Fuego also indicates a spread along with the immigration during the late Pleistocene. Who should have passed on the common features of the main indications of the herbal steam bath, which cannot be overlooked, (pains, rheumatism, inhaling with respiratory diseases) from North America to the Quichua and Shuar in eastern Ecuador, to the Quechua and Aymará in southern Peru and the Guaraní in Paraguay (see WOLTERS, 2004) right through the damp and hot tropics, where it

has hardly been used for thousands of years because of the competing shower and hip baths (see below)?

I do not see an explanation of these common features reaching all over the American double continent other than that of an early spread of the sweat and herbal steam bath along with the immigration from northeast Asia via North and Central America as far as South America (see map) covering a distance of up to 20,000 kilometres.

THE HERBAL steam bed, where the patients lie on the plant material, which is steamed from underneath, represents a special case. This method involving great quantities of plants and fuel is common only in Pacific North America (see map), with isolated radiation as far as the Natchez in Louisiana and the Seri in Mexico (WOLTERS, 2003 a) and possibly as far as the Maya region (WOLTERS, 2004). Yet the cause of its limited spread cannot be a late invention in western North America, since the percentage of circumpolar plant species and genera with this specific steam bath method is exactly as high as with the herbal steam bath in general, from which fact it might be concluded that it comes from the sub arctic zone and has the same age dating from the late Pleistocene. The limitation, to a large extent, to Pacific North America gives reason to assume that it was introduced on sea routes from northeast Asia (see map). If it had arrived overland via Beringia, the herbal steam bed would have to occur in scattered parts of North America and Mexico.

The Caucasoid (not = European!) Polynesians and Ainu were among those who took part in the immigration on sea routes by "island hopping" via the Kurile Islands and the Aleutian Islands, as the form of the skull of the Kennewick Man proves (see map). This immigration of Polynesians besides Native Americans should also explain similarities in wood-carving between Polynesia and the cultural area "Northwest

Coast". The home of the Polynesians was Taiwan, as the spread of the Lapita ceramics from Taiwan (3000 BC) via Melanesia as far as Polynesia (900 BC) proves (RADEMACHER, 2003).

ALL EARLY ART has its roots in the iconography of shamanism, and the basic ideas of north Asian shamanism (HOPPAL, 1994) reach as far as Lapland, Tibet, China, Japan and North America, - a culture area going back as far as the late Pleistocene which later experienced numerous regional changes and overlappings, the significance of which should be taken into account when considering cultural similarities between Asia and America. Cultural parallels such as the one between Polynesia and the northwest of North America do not always have their origin in late transoceanic contacts; it is absolutely possible that they have a very ancient common root in Asia, where Native Americans, Chinese, Ainu and also Polynesians were settling in neighbouring territories towards the end of the last Pleistocene.

3. Age, provenience and spread of the shower and hip baths

Shower and hip baths with medicinal plant preparations require the possibility of heating an appropriate quantity of water, whereas herbal steam baths can make do with the sprinkling of relatively small quantities of plant infusions on hot stones and were therefore already practicable during the late Pleistocene. Instructions from Mexico indicate quantities of up to 18 litres (INI, 1994); the plant decoctions or infusions can then be cooled down to the desired temperature and filled up to the desired volume by adding cold water. Tepid or cold baths are popular particularly in the tropics. Such quantities of water are boiled in appropriately large earthenware vessels, and today, often in modern pots or kettles. Without any doubt, pottery was the technical prerequisite for this kind of balneotherapy.

Not only the domestication of useful plants with the beginning of horticulture and agriculture, the perfection of the working of stone, the further development of house building, pottery and weaving were parts of the "Neolithic revolution", but also the invention of the phytotherapeutic shower and hip baths.

The most ancient pottery in the whole of America existed in Lower Amazonia, 8,000 – 7,000 years ago (7600 BP as a mean), found by ANNA ROOSEVELT near Santarém and Monte Alegre (ROOSEVELT et al., 1991 a). Pottery then first spread in northern South America, as documented, among others, for Altomayo (6600 BP) and Valdivia (6100 BP) in western Ecuador, Puerto Hormiga (5900 BP) in northern Columbia and Monagrillo (5600 BP) in Panama (data partly taken from HABERLAND, 1991; for an additional bibliography, see WOLTERS, 2004; there, Map 4).

STARTING FROM 5150 BP, it reached Mexico and also already Georgia in the southeast of North America (Stallings Island 5250 BP), whereas this invention did not intrude into the interior of North America until later (3700 BP Poverty Point in Louisiana, 3,000 BP Adena Culture in Ohio, around 2000 BP Hohokam in the southwest). Towards the south, pottery was not taken over in Peru until 3800 BP (if no further, more ancient findings are made).

Shower and hip baths (including topical baths of individual organs) have some advantages over the herbal steam bath: The essential oils, which are mainly active in the herbal steam bath, and also other volatile agents are mostly emulsifiable in water and are also effective in baths. But additionally, further emulsifiable, and above all, water-soluble agents are active here (flavonoids, tannins, saponins etc.), which results in a considerably wider spectrum of medicinal plants as well as medicinal indications. And baths can be

tempered, which is more agreeable for sick persons and children, especially in the tropics, which are damp and hot anyway, than the steam baths, which are always hot. Only the possibility to inhale with respiratory diseases is a permanent advantage of the steam baths. So there are plausible reasons for the pre-Columbian replacement of the herbal steam bath by shower and hip baths in extensive parts of South America.

There is clear evidence of the fact that shower and hip baths practically spread at the same time as pottery: The baths, which are advantageous in several respects, have completely, or with the exception of small relics at best, replaced the herbal steam bath in northern South America – where pottery has already existed for 5 ½ to 8 millenia! – in Amazonia as well as in Guyana and in the Chibcha area. In Mesoamerica, the Central Andes and the southeast of North America, where pottery was introduced 3,800 – 5,250 years ago, the plants used for baths and mostly also their indications have outnumbered the herbal steam bath, but has let it remain to a certain degree; only in some “traditional islands” (among the Quichua and Shuar in eastern Ecuador and among the Miskito in Nicaragua), the steam baths have prevailed to this day (WOLTERS, 2004).

IN THOSE PLACES where pottery was introduced last in the north and the baths had less time to become accepted (3700 – 2000 BP in the largest part of North America), the herbal steam bath has dominated to this day; it is true that shower and hip baths have a similar number of indications there, but they are lower in the number of plants used for the bath. The northern border of the baths passes through the northern cultural areas of North America; in the largest part of the sub arctic region, only the herbal steam bath exists. In South America, the situation is different, however: Here, too, pottery was adopted late (1800 – 1100 BP in central Chile), but among

the Mapuche, the baths dominate just the same, not the steam baths (WOLTERS, 2004).

SO, THE DATES of the introduction of the shower and hip baths can be more or less equated with those for pottery, the displacement of the steam baths taking thousands of years; Native American traditions are tenacious. The spreading paths of the baths are probably identical with those of pottery.

Yet it seems as though the shower and hip baths were invented for a second time in the Maya region, not only in South America, even though – according to the data we have so far – pottery seems to have come from Panama. The early formative cultures and the advanced culture developed in Mexico/Guatemala independently of South America, and shamanism in Mesoamerica with the ideas of a world tree and the fly agaric mythology still clearly shows northeast Asian tradition, whereas South American shamanism has entirely left this tradition; there is a borderline between the north and the south of America (HULTKRANTZ et al., 2002). The same seems to apply to balneotherapy: In the south, there are herbal steam baths, but no sweathouses.

Between Amazonia and Guyana on the one hand, the Chibcha area in the northwest of South America and also the Central Andes on the other hand, certain similarities as to the importance attributed to the medicinal indications for baths by the majority of the peoples are recognizable, which is an indication of a direct adoption from the original Amazon region. Similar correspondences are also recognizable between Mesoamerica (especially the Maya highlands) and North America, and additionally, also a very clear gradient in the number of plants used for baths into North America (see Map 3 in WOLTERS, 2003, a); the dating according to the portion of

circumpolar plant genera in the Maya highlands (4500 BP) and North America (2500 BP as a mean) confirms the way the bath therapy took from Mesoamerica to North America (arrows in the map in the appendix).

Yet comparable indications cannot be found in comparing northwest South America (the Chibcha area) and the Maya area in Mesoamerica (Central America has been culturally influenced by both sides in other respects, too). A gradient as to the number of plants used for the bath is not recognizable, for as far as we know, both regions have over 370 – 400 medicinal plants used for baths, respectively, and with peoples investigated carefully, they have 64 – 150 in the Maya area and 72 – 155 in the Chibcha area, respectively.

IT IS TRUE that the comparison of medicinal indications for baths shows correspondences as to the importance attributed to them with fever, but this is an important indication in the tropics and subtropics at any rate, and there is often also a need of ritual treatments among Native Americans. But the importance attributed to the indications even differs with pains and skin diseases; gynecology and pediatrics as well as injuries rarely play a role for shower and hip baths among the Chibcha peoples, as different from the Maya; snake bites and weakness/indisposition rarely occur as indications for baths among the Maya peoples and are by far more important to the Chibcha (WOLTERS, 2004).

Furthermore, circumpolar plant genera have more than proportional importance for the therapy with baths among the highland Maya (in the mountains, a partly holarctic flora grows), so that with respect to the shower and hip baths, there is a northern tradition corresponding with North America, not a South American one.

THE CULTURAL division of America into two parts, which is not only to be found in the independent development of the early formative cultures nor in the later, advanced cultures of Mexico and Peru, is also given in the shamanism of North and South America (HULTKRANTZ et al., 2002) and also in balneotherapy, which has shamanistic roots without any doubt. In North and Mesoamerica, sweat and herbal steam baths generally (with exceptions) take place in a sweathouse or sweat lodge, which they do not in South America, if they take place at all. And as to the shower and hip baths, there also seems to be a southern tradition and a northern one, the latter covering the distance from the Maya area to Canada.

4. Balneotherapy in Native American cultural history

The transition from the woman gatherers' and hunters' cultures to horticulture and agriculture in the Neolithic period resulted in a change in the importance attributed to particular medicinal indications: In North America, it can be seen in the archeological plant finds that the percentage of medicinal plants used against respiratory diseases and fever clearly rose 5000 – 2000 years ago (WOLTERS, 1999/2000, 2000), doubtlessly owing to the higher risk of infection as a result of an increasing population density, which itself was a consequence of the cultivation of crops such as pumpkin, sunflower and other food plants, which began 4000 years ago (GREMILLION, 1997).

At the moment of transition to an advanced culture with the construction of towns or cities, these health problems increased further. In advanced cultures, a noticeably high number of medicinal plants is used (on a lower cultural level, mostly only 100 – 200): In the old Maya manuscripts of the colonial era, for example, 649 medicinal plant species are registered (ROYS, 1931), among the Teenek (Huastecs) in Mexico, 552 (ALCORN, 1984), in southern Peru, 509

(ROERSCH, 1994). While the number of plant species used for steam baths among thoroughly investigated peoples in North America only seldom exceeds 8 – 15, there are 18 – 46 of them among different peoples in advanced cultures in Mexico, and in the area of the Central Andes including the level of the mountain forests, there are up to 44 or 48. The number of species used for shower and hip baths including topical organ baths amounts to a minimum of 47 per people among advanced culture peoples, 172 in the Maya manuscripts, 150 among the Teenak, 130 in southern Peru (WOLTERS, 2004); among peoples on a lower cultural level, there are, as stated above, by far fewer of them in general.

HIGH NUMBERS of medicinal plants in general and plants used for baths particularly can also be found among the Chibcha peoples (Kuna, Coaiquer, Cayapa and Colorados with 72 – 155 for baths each) and in the area of Lower Amazonia/southeast Guyana (Wayampi, Palikur and Tiriyo with a total of 200 – 328 medicinal plants each; Tiriyo with 105 species for baths; for literature, see WOLTERS, 2004). In the area of Lower Amazonia / southeast Guyana, obviously traditions are still in effect which can only come from the Moundbuilder cultures of Lower Amazonia on their way to become an advanced culture (400 – 1400 AD; ROOSEVELT, 1991 b, 1994). These peoples only became “jungle Indians” as a result of their radical decimation through diseases brought in by the white people and the slave hunts by the Portuguese.

Parallel to the above statements about the development of phytotherapy and balneotherapy, STECKEL and ROSE (2002) have stated, on the base of the investigation of 5000 skeletons from archeological finding sites in the whole of America, that the medical findings made by means of the skeletons also became more frequent with the

transition from the existence as woman gatherers and hunters to agriculture and to an advanced culture; the health index sank from about 84% around 8000 BP to 67% around 1500 AD, in the advanced cultures also clearly dependent on the social standing in society. The need for medicinal plants and balneotherapy rose inevitably. The growing number of inhabitants was not only ensured by the cultivation of food crops, but also by a relatively successful traditional medicine.

The shower and hip baths developed in the culture area of Mesoamerica were passed on to North America from one people to the other, as far as the Canadian sub arctic zone (Wood Cree), an indirect cultural influence (see map). However, a special method for the treatment of venereal diseases, especially syphilis, was obviously spread directly, possibly through trading along the “turquoise road” to the southwest of North America, by Ecuadorian sea merchants to western Ecuador (WOLTERS, 2001, 2003 a, b, 2004) and furthermore to the Arawak on the Great Antilles. The treatment was made through a sweating cure plus by taking plants containing saponins; saponins often have an immunostimulant effect.

IN MEXICO, the combined method consisted of taking guaiac (a decoction of wood or of the bark of *Guaiacum officinale* or *G. sanctum*) and accompanying sweat baths in the sweathouse during several weeks. A sweathouse for the selective steaming of the genitals existed as early as 800 AD in a palace of the Maya city of Palenque; the syphilis germs are sensitive to heat (KRUMBACH, 1984). The same cure existed on the Antilles among the Arawak and in Ecuador with sarsaparilla (*Smilax* sp.) instead of guaiac (MONARDES, 1574), sarsaparilla having a sudorific effect itself after taking; there were no sweathouses in Ecuador. There is also an equivalent treatment in the sweathouse among the Navajo and with sweating through a long-distance run with the Pueblo Indians. Here,

the plants used internally are herbs which also contain saponins (WOLTERS, 2003 a; for further literature, see there).

There is no evidence of an equivalent cure for the treatment of venereal diseases in other parts of America outside the Mesoamerican area of cultural influence, so that the spread of this cure can only have originated in Mesoamerica (see Map 10 in WOLTERS, 2003 a; Map 6, 2004).

The migration of a people from southwest Amazonia into the Central Andes can also be proved by means of phytotherapy and balneotherapy: The Kallawaya in the Andes of northern Bolivia did not speak Quechua yet at the time of the conquest of the Inca Empire, but they were Pukina with a language remotely related to Aruak, as the analysis of the present "secret language" of the Kallawaya has proved (STARK, 1972, quoted according to SAIGNES, 1983).

COMPARISONS of the indication lists of the Kallawaya migrant healers with those of the Quechua and Aymará in southern Peru on the one hand, with Tikuna and Takana speaking a related Pukina and the Pano-speaking Chácobo in southwest Amazonia on the other hand, result in clear correspondences in the indication lists for the whole phytotherapy with southwest Amazonia, the same as with the shower and hip baths, but not in correspondences with those of the Quechua and Aymará of southern Peru. Only the herbal steam bath, the "hot-cold system" of

diseases and plants and the high number of medicinal plants are characteristics taken over from the Andean advanced culture by the Kallawaya (WOLTERS, 2004; 2005 being prepared).

EVEN A REGIONAL migration of this kind can be proved without direct archeological evidence by means of characteristics of phytotherapy, together with the linguistic finding about the origin of the "secret language" of the Kallawaya, for the home of the peoples speaking Aruak and probably also of those speaking a language related to theirs is upper Amazonia.

This is as much as we can say about some more regional findings about the passing on or taking of balneotherapeutic and phytotherapeutic traditions in America.

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Zusammenfassung

Trotz Fehlens direkter archäologischer Belege für indianische Schwitz- und Kräuterdampfbäder vor mehr als 3.000 – 4.000 Jahren und für Dusch- und Sitzbäder lassen sich deren Alter, Herkunft und Verbreitungsgeschichte mit hoher Wahrscheinlichkeit rekonstruieren:

Ausgangspunkt für eine Datierung der frühen Kräuterdampfbäder ist die archäologisch belegte Tatsache, dass die Indianer sich nach ihrer Einwanderung in Nordamerika nur langsam während 12.000 Jahren von den ihnen aus ihrer Heimat Nordostasien bekannten zirkumpolaren Pflanzengattungen auf Pflanzen mit rein amerikanischer Verbreitung umgestellt haben. Der Prozentsatz zirkumpolarer Pflanzenarten und -gattungen für Dampfbäder liegt bis heute erheblich über deren Normalanteil, was nur historische Gründe haben kann und eine Herkunft des Kräuterdampfbades aus der späteiszeitlichen Subarktis belegt. Das Kräuterdampfbad wurde über Beringia bis Chile und Paraguay verbreitet, das einfache Heil Schwitzen am Feuer bis Feuerland – eine Verbreitung über 20.000 Kilometer! Für eine Verbreitung des auf das pazifische Nordamerika beschränkten Kräuterdampfbetts (bei dem die Patienten auf dem Pflanzenmaterial liegen und nicht im Dampfraum sitzen) kommt der Seeweg von Nordostasien nach Nordamerika in Frage.

Für eine Datierung der Dusch- und Sitzbäder bieten sich die archäologischen Daten über die Ausbreitung der Töpferei von Amazonien (ca. 7600 BP) über Mesoamerika (gegen 5000 BP) nach Nordamerika (3700 – 2000 BP) an sowie nach Peru (nach 4000 BP). Während für Schwitz- und Kräuterdampfbäder nur relativ wenig Wasser bzw. Pflanz Zubereitung zum Verspritzen auf heiße Steine erforderlich ist, beanspruchen Bäder viel größere Wassermengen. Die Töpferei ist technische Voraussetzung für deren Bereitstellung.

Tatsächlich haben die Dusch- und Sitzbäder (mit emulgierbaren und wasserlöslichen Wirkstoffen; temperierbar) die Dampfbäder (nur mit flüchtigen Wirkstoffen; stets heiß) im tropischen Amerika fast ganz verdrängt, während in Nordamerika, das sie mit der Töpferei erst zuletzt erreichten, das Kräuterdampfbad dominant blieb; Mesoamerika und die Zentralanden nehmen eine Mittelstellung ein. Das Verhältnis von Bädern zu Dampfbädern hängt also deutlich mit dem jeweiligen Alter der Töpferei zusammen, was eine Datierung des Dusch- und Sitzbades ermöglicht. Indizien für eine zweimalige Erfindung der Bäder – in Amazonien und dem Maya-Gebiet – werden erörtert.

In Hochkulturen (Mesoamerika, Zentralanden, Chibcha-Gebiet) wird Balneotherapie in besonderem Umfang betrieben; aber auch einige Völker in Unteramazonien und Südost-Guayana zeigen in dieser Hinsicht Hochkultur-Merkmale (wohl von den Moundbuilder-Kulturen her, 400 – 1400 n. Chr.). Dagegen zeigen Medizin und Balneotherapie der berühmten andinen Kallawaya-Heiler neben einigen Anpassungen an die andine Hochkultur deutliche Merkmale, die eine Zuwanderung aus Südwest-Amazonien belegen.