



'Plumerias the Color of Roseate Spoonbills' - Continuity and transition in the symbolism of *Plumeria* L. in Mesoamerica

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Research

Abstract

This study explores the complex symbolism which the genus *Plumeria* L. engendered from around the beginning of the common era to the present time in Mesoamerica. In much of this cultural area an intense interest in sensory pleasures can be traced to great antiquity, and, consequently, flowers became a central metaphor in the Mesoamerican cosmological discourse. In the Maya pantheon, plumeria was associated with deities representing life force and fertility and therefore plumeria flowers became strongly connected with a wide range of expressions of female sexuality. Among Nahuatl speaking people of central Mexico, especially during the height of the Aztec empire, the most prominent association of plumeria was to signify elite status, with plumeria trees planted in the gardens of the nobility, the blooms exchanged at feasts, or the stylized image of plumeria flowers inscribed on ceramics and codices. This high appreciation for plumerias was also reflected in the number of different varieties that were distinguished by name. Ethnomedical applications, especially of the lactiferous sap of plumeria, show continuity from pre-conquest times to the present. In the context of the hybridized religious systems that developed in response to the introduction of Christianity across Mesoamerica, plumerias developed new meanings, e.g., as elaborate decorations for the worship of the Virgin Mary. When in the sixteenth century plumeria was dispersed beyond the Americas into Southeast Asia, likely through Spanish hands and by way of the Philippines, it gained a widespread association with grave yards as a plant promoting contact with the deceased.

1. Translation of Cantares Mexicanos f (= folio) 1r after Bierhorst 1985a:135, see also Sautron-Chompré (2004:423, 441). In the absence of page numbers in the original work or for facsimile editions, I have included information on the sheet number in the format f(folio)1r, f1v, etc.

Introduction

On the tiny Marquesan island of Hiva Oa in the Pacific Ocean, the grave of Paul Gauguin (1848-1903) is famously shaded by a large plumeria tree. Plumerias are the national flower of Laos, and one of the most fragrant cultivars is named after Singapore. Particularly though, the flowers are associated with the Hawaiian islands where they are celebrated through their use in Hawaiian lei. It is no wonder then that plumerias represent to many the exotic and tropical flower par excellence and are thought to originate from Asia or Polynesia. It will therefore perhaps come as a surprise that plumeria is by no means native to Laos or Singapore nor was it introduced to Hawai'i or Tahiti until the late nineteenth century (Criley 2005:10).

Instead the following lines¹ from a sixteenth century song direct our attention to central Mexico:

'Let me wander through this flower grove
of plumerias the color of Roseate Spoonbills.

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That's where they're bending with sunstruck dew.
That's where they blossom in beauty.'

Before the members of the genus *Plumeria* L. were dispersed by human intervention to tropical and subtropical regions around the globe, they were geographically confined to a limited part of the Americas. Much in the same way that we are now fascinated by the synaesthetic experience of the sight and smell of plumeria flowers, the same occurred long ago in Mesoamerica, the area from central Mexico to northern Costa Rica which is associated with the flourishing of a number of cultures during the pre-conquest period. While sensory experiences themselves left no material trace for the archaeologist to access, graphic devices from the ancient Maya and other Mesoamerican people provide compelling representational evidence of a deliberate interest in invoking the senses (e.g., Houston & Taube 2000). One of the means of engaging their senses was through the enjoyment of the scent, sight and feel of flowers. The Mesoamerican world of flowers, elaborated in writing and ornamentation, became an essential element in evoking a cascade of associations intimately tied to the people's cosmivision (e.g., Hays-Gilpin & Hill 1999, Heyden 1985, Hill 1992). In fact, it is hard to overstate the importance of the flower in the construction of the Mesoamerican world, where it has been described, e.g., as the metaphor for all life forms in the Nahuatl mind (León-Portilla 1963:175,183). Recent work has shown renewed interest in different aspects of the floral motif and its expressions in Mesoamerica (e.g., Houston & Taube 2000, Sautron-Chompré 2004, Sigal 2011). While these studies are indispensable points of departure for further research, they have either been focussed on specific time periods or have broadly covered the collective symbolism that flowers conveyed in different aspects of Mesoamerican cultures, while paying relatively less or no attention at all to the significance of individual taxa.²

Since Mesoamerica boasts one the most complex floras on the planet and its people have long had a keen eye for distinguishing many different flowering plants, one would expect the floral motif to have been inspired by specific plants with individual characteristics. The floral appeal of plumeria held a special place in the Mesoamerican imagination; so much so that at times it was considered, linguistically and otherwise, the quintessential flower; in fact, for Yucatecan Maya 'flower' and 'plumeria' often became synonymous (see below). For this study I have therefore chosen plumerias as a model to explore the complex network of signs and ideas that was constructed in Meso-

america around flowering plants, primarily in response to the sensory experience of their sight and smell.

I will present here a comprehensive and up-to-date study of the cultural history of the genus *Plumeria* in Mesoamerica. In this pursuit I am aiming to answer a number of pertinent questions, such as, what the time depth of the fascination with this fragrant flower in Mesoamerica has been. My attention will predominantly focus on the uses and symbolism of plumerias in the 'floral discourse' among Maya and Nahuatl,³ which represent well-documented culture areas in pre-conquest Mesoamerica. I will specifically explore how the significance of plumeria evolved in response to the cultural tensions brought about by the conquest and in what ways present day uses reflect the long cultural legacy of these plants. Finally, I will briefly address the issue of the dispersal of plumerias and their symbolism beyond Mesoamerica.

Methods

The thematic scope and the objectives of the present study required the use of a wide range of sources, from pre-Hispanic to early colonial and the present date. To the extent possible I have relied on primary materials both in native languages as well as in Spanish, that contained written and/or pictorial content pertaining to historical, scientific, religious or poetic matters. Secondary sources also played an important role, e.g., to access the recent progress in Mayan iconography and hieroglyphs as well as to incorporate updated translations and interpretations of relevant indigenous works. More recent anthropological and ethnobotanical studies from the Mesoamerican region aided the understanding of current concepts surrounding plumeria, as did discussions with participants and observers in local events during which plumeria play a role.

Results

Botanical background

Plumeria is a genus of tropical flowering plants belonging to the family Apocynaceae (the Greek equivalent of 'Dogbane'). Joseph Pitton de Tournefort (1656-1708) named the genus after his student Charles Plumier (1646-1703) who had pioneered the exploration of tropical New World flora as royal botanist to Louis XIV of France.⁴ The name *Plumeria* was retained by Carl Linnaeus, who listed three different species (*P. rubra* L., *P. alba* L. and *P. obtusa* L.) (Linnaeus 1753:(I)209-210).

2. For an exception, see the work on Maya iconography of Bombacoideae by Zidar & Elisens 2009.

3. I use the term 'Nahuatl' for the Nahuatl speaking indigenous peoples of central Mexico and the alternative term 'Aztec' when a more specific reference to the Aztec empire is intended.

4. Tournefort provided the following rationale for his nomenclature: '**Plumeria, ab inventore Clariss. [issimo] Plumerio, Botanico Regio, qui tot tantisque plantis Botanicem locupletavit.**' ('*Plumeria*, [named] after the most shining explorer Plumier, Royal Botanist, who enriched botany with so many and such remarkable plants', Tournefort 1700:(I)59). In the older literature one occasionally encounters the spellings Plumiera or Plumieria, but *Plumeria* has priority and is the correct latinisation of Plumier's name.

Members of *Plumeria* are shrubs or small trees with thick branches and alternate leaves, characterized by copious milky sap which is a skin irritant. Broad inflorescences with waxy petals and a regular calyx of five lobes are identifying features. The showy, night scented flowers and a tendency to have a multitude of blossoms open at one time, lie at the root of their popularity. They are native to a region in the Americas roughly from Panama northward as far as the tip of peninsular Florida and Baja California, with a concentration in Central America, as well as the Caribbean islands. The closely related genus *Himatantus* Willd., which occurs south of this regions, has now absorbed many species previous included in *Plumeria* (Woodson 1938).

The nomenclature and natural distribution of *Plumeria* has been particularly difficult to untangle due to the fact that the plants are relatively easily propagated through stem cuttings and can be readily transplanted as well as cross-pollinated. Consequently, a great number of different forms exist, both naturally occurring and from horticultural efforts, which have been widely dispersed. In their new locales these forms were frequently described as a separate species, but current botanical nomenclature has reduced most of them to a small number of species (Standley 1920-1926:1149-1150, Tropicos.org 2013, Woodson 1938:202-221).

Plumeria rubra (Figure 1) is the only species whose corolla naturally occurs in a wide range of colors other than white and it is perhaps also the only species indigenous to Central America. The remarkable variety in the color of its flowers had prompted numerous segregations in the eighteenth and nineteenth centuries, which have generally been reversed. Consequently, there are no less than 56 synonyms for *P. rubra* with *Plumeria acutifolia* Poir. as the one most commonly used (Tropicos.org). *Plumeria rubra* is native to the semi-dry regions of Central America, but plants are tolerant of much wetter climates as long as good drainage is provided, and thus this species has long been cultivated well beyond its native range.

The natural distribution of all other species, which characteristically have white petals with a yellow center, is focussed on northern South America and the Caribbean. Examples are *Plumeria pudica* Jacq., natively growing in the Caribbean and from Venezuela to Panama, with unusual spoon-shaped leaves, *P. obtusa*, an evergreen tree that appears to have originated from hot, dry coastal areas of the Caribbean, and *P. alba*, recognizable by its corrugated leaves (Rauch & Weissich 2009:97-103, Tropicos.org).

These observations are relevant for this study, since folk nomenclature often used the color of the flower as a dis-



Figure 1. This early and remarkably accurate image of *Plumeria rubra* L. (Merian 1719:plate 8) was captured in 1699 in Suriname. It also shows the butterfly and possibly the pupa of *Hamadryas amphinone* L., 1767 as well as a larva belonging to an unidentified species of *Brasolididae* on and around *P. rubra*. Merian noted in her legend to this image of the 'West Indian Jasminetree' that it was the same as Hernández' **quauhtlepatli**. However, the 'fire plant' (**quauhtlepatli**) of Hernández (1615:24r-24v(l)cap. 2.33) is *Euphorbia calyculata* Kunth. Merian, as others had done before (Varey 2000:123), conflated *Plumeria* and *Euphorbia* based on their similarity in appearance and lactescence.

tinguishing characteristic, and because early studies attempted to assign plants to a specific species based on historical descriptions. For example, when Mayan sources spoke of **sak nikte**,⁵ the 'white flower' (Craine & Reindorp 1979:109, Edmonson 1982a:93, Tozzer 1907:93) in reference to *Plumeria* sp., this might or might not imply *P. alba*, which apparently had made its way to Yucatán from the Caribbean relatively early (Standley 1920-1926:1149). In light of the uncertainty regarding the ex-

5. **Nikte** occurs in the literature in a number of spelling variations, and I have used standardized orthography throughout, except in direct quotes or when referring to dictionaries. Otherwise I am quoting plant names as found in the sources without updating their spelling (e.g., to indicate vowel length which is a contrasting feature of Nahuatl, see Karttunen 1983).

act species of *Plumeria* one is dealing with, and to avoid perpetuating potential misidentifications, I have generally chosen to use 'plumeria' as a common name in this study.

Plumeria in the Mayan world

In early Franciscan dictionaries of Yucatecan Maya references to plumeria turn out to be somewhat ambiguous. For example Ciudad Real (1995:3, 1965:f328r)⁶ has an entry for **nictē** that reads 'rose, or a flower, not indicating from what tree, bush or herb'. The slightly earlier (ca. 1570) Acuña (1993:352, f106r) reversely renders 'flowers and rose, from herbs and small trees' as **nic** or **nictē** (.). **Nictē**, 'flower-tree' (**nic**, 'flower; -te', 'tree') was a specific reference to plumeria, concealed in the Spanish term **rosa** in the dictionaries, but would also cover other flowers, especially if they structurally resembled plumeria (Thompson 1939:138).

This first description of the plumeria tree in the Yucatán peninsula is owed to the Franciscan Diego de Landa (1524–1579). Landa (1959) provided a detailed account of Mayan culture around the time of the conquest.

'There is also a kind of tree, which they call **nictē**. They bear many white flowers and others yellow and other almost purple. They are very fresh and fragrant and they make fine bouquets from them, and those who want make **confit**.' (Landa 1959:127)

Landa's observations that plumeria flowers were used for personal adornment and sometimes even consumed, were accurate,⁷ but fell short of recognizing the broad significance plumeria had taken on in Mayan culture over the centuries.

Plumeria and vital force

Perhaps as early as 400 B.C.E., but certainly during the Classic Maya period, from around 100 C.E. well into the Late Post-classic period (1200-1521 C.E.),⁸ twisted celestial/umbilical cords became cosmologically associated with the transmission of sustenance from the world of spirits to that of humans. These cords of heaven would be glyphically identified as **sak nik**, 'white flower'. The astronomical analogs of the cords were the pathways on which gods, viewed as planets, were born and died. The sun on the ecliptic, as the most important celestial body in this

analogy, was conventionally represented as a four-petalled flower, sometimes explicitly labelled with a 'flower' glyph **nik** (Looper & Kappelman 2001:4-14).⁹ It has been suggested that the five-petalled plumeria was depicted here with four petals, since four is the number over which the sun rules (Thompson 1950:142).

In Mayan cosmology floral symbolism not only represented the ecliptic, but also the living breath, in the sense that the celestial umbilicus/flower [stem] was a conduit to convey vivifying energy in the form of breath. In fact, in classic Maya texts death was specifically described as the termination of one's 'white flower spirit'. When perfume was no longer emitted from a florally expressed face as breath (**ik'**), the foul stench of death would set in instead (Houston & Taube 2000:267). In Mayan thought **ik'**, the breath or wind, was also the medium that carried the scent of flowers.

While many of these associations apply to flowers in general, some evidence points more specifically to plumeria. **Sak niktē'** in Yucatecan Maya is the designation of white flowered plumeria (Barrera Vásquez 1980:712), and there is also a link between **ik'** ('wind') as the name of a day in the calendar and plumeria (Thompson 1950:73). The floral metaphor for the generative and sustaining energy of the celestial cords and planets continues to resonate in contemporary Mayan languages by drawing on the visual similarity between umbilicus and stem as well as corolla and placenta: In Ch'orti', a Cholant-Tzeltalan Mayan language spoken around Guatemala's eastern border with Honduras, the placenta is expressed as **nichte'**, a term otherwise reserved for plumeria (Wisdom 1950:541).¹⁰

Plumeria and the flower god

Iconography presented in Mayan codices¹¹ points to a connection between a group of gods in the Maya pantheon and the realm of flowers (the latter depicted directly or metaphorically substituted by jewel ornaments, see Vail 2000:136, Table 3). In particular god H, as identified in the Madrid codex, is expressed by a glyph, which can be read as **nik ajaw**, 'flower lord' and in which the jewel cluster attached to the portrait in the parietal region represents a flower (Taube 1992:59, Vail 2000:131). The Dresden codex provides more details on god H, and here he carries the appellative **sak nik** ('white flower'), perhaps amplified by cross-references of **ik'** signs which can mean 'breath'

6. For details on early Franciscan Maya vocabularies, see Bolles 2003.

7. For reasons of space, I will not discuss here the consumption of plumeria blossoms in various forms which has continued to the present day.

8. The association between celestial cords and floral imagery can already be traced in the Late Formative period (ca. 400 B.C.E. - 100 C.E.) from the Guatemalan highlands to the the Maya lowlands where Looper & Kappelman have argued, e.g., that the 'white flower' (see below) symbolically asserted the ruler's ability to communicate with the supernatural realm (2001:25-35).

9. For the logographic identification of the **ahau** glyph as **nik**, see Looper & Kappelman (2001:14, footnote 6) and Stone (1995).

10. Plumeria in turn is referenced in Ch'orti' as **sak poj**, literally 'white sedge' or as **u-nichir mayo**, 'May flower' (Metz *et al.* 2009:202, Wisdom 1950:541, 624).

11. Of the many Mayan bark cloth manuscripts in existence at the time of the conquest, very few escaped destruction. The Dresden, Madrid and Paris Codices are the most important and undoubtedly authentic remaining codices (Vail 2000:123).

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and 'fragrance'. The use of a glyph reading **nikte'** (Stone 1995) in conjunction with god H intimates a more direct link to plumeria (though **nikte'** can also just refer to flowers in general). Overall, the evidence suggests that for Post-classic Maya, god H stood at the center of a deity complex that represented flowers and, by extension, fertility and life force (Vail 2000:142).

A passage in the Chilam Balam books¹² further affirms the association of plumeria with the Maya pantheon and, indirectly, with the Aztec pantheon, too. A 'flower lord', **nikte' ajaw**, transforms himself into a hummingbird, seen as the manifestation of Ppizlimtec, the god of dance and music (corresponding to the Nahua deity Xochipilli, 'flower prince'; Thompson 1970:313). The hummingbird proceeds to penetrate and inseminate the 'five petalled flower' **nikte'** (also referred to as Macuil-Xochitl, a Nahua goddess embodying the attraction of a nubile woman). Thereupon the blossom becomes a woman which the god proceeds to marry.¹³ As recorded in the 19th century, to Lacandon Mayas of Chiapas **sak nikte'**, white plumeria, was the mother and **chak nikte'**, red plumeria, was the father of Nohochakyum, who stood at the head of the Lacandon pantheon. Accordingly, a red and white plumeria flower were placed in front of the idol of Nohochakyum to honor him (Tozzer 1907:93).

In a more recent study of Lacandon Mayas a slightly different sequence of cosmological events was told, which nonetheless confirms a belief in the generative power of plumeria: The god K'akoch first created the earth, sun and moon, and then proceeded to create the **bak nikte'** (*P. rubra*) flower of which initially three other gods were born. One of them, Hachakyum (=Nohochakyum), left the flower of which he was born and, out of curiosity, went to see the earth. He then made it liveable and ultimately created the Lacandon people (Roeling 2007:156-160). In a different myth, Lacandones note the deep red color and good smell of **bak nikte'**. It was therefore compared to the blood of righteous people, once again providing a positive association with vitality (Roeling 2007:160).

Plumeria and female eroticism

Many of the associations previously discussed coalesce when considering the role of plumerias as a symbol of the erotic. An important piece of evidence is given in the C'alepino Maya de Motul in a second entry for **nikte'** and a series of subsequent composites:

12. These books are compilation volumes from the 18th century that summarise the traditional knowledge of the time, but also contain material from pre-Columbian versions of the books, perhaps in part transcribed from hieroglyphic script. They are named after the Yucatecan town in which they used to be kept.

13. Craine & Reindorp 1979:120, Roys 1933:104-105. In a slightly different interpretation of this episode, Thompson saw a specific association of plumeria with the moon goddess, and it was the sun who turned herself into a hummingbird, sucking on the plumeria flower to be taken into the house of the moon goddess (Thompson 1939:138).

14. Roys tried to connect the pejorative sexual aspects of **nikte'**, plumeria, with certain erotic religious practices introduced in the course of the Toltec occupation of Yucatán in 987 C.E. (Roys 1933:270). However, the historicity of such a Toltec invasion can be called into question as can be the emergence of the 'amoral' associations of plumeria from a single historical event.

nicte	unchastity, carnal vice, mischief of women
nicteil be	lascivious deed
nicteil than	lascivious word
nictel uinic	lascivious woman
nicte kay	unchaste, amorous songs and those that sing them

(Ciudad Real 1995:3, 1965: f328r)

Flowers, and especially the flower of plumeria, were here linked with female sexuality and sexual desire. The decidedly negative overtone in these glosses can perhaps in part be attributed to Franciscan notions of indigenous sexuality, but in certain contexts **nikte'**, indeed, appears to have carried negative connotations in Mayan cosmology, where the effects of unchecked sexuality on society would be seen with distrust (Bierhorst 1974:227).¹⁴ This is exemplified in the Paris Codex which contains prophecies relating to the Maya calendar and discusses the nature of each different **katun**, the chronological measure of 7,200 days. It describes the thirteenth **katun** as a '**nikte' katun**' which is 'a very erotic and evil **katun** whose ending will be very difficult' (Craine & Reindorp 1979:68). Furthermore, throughout the Chilam Balam books' scattered references with foreboding connotations are made to the '**katun** of the plumeria flower' (Roys 1933: 122-123).

This is not to say that in certain contexts **nikte'** could not have negative connotations in Mayan cosmology, where the effects of unchecked sexuality on society would be seen with distrust (Bierhorst 1974:227). This is exemplified in the Codex Peresianus which contains prophecies relating to the Maya calendar and discusses the nature of each different **k'atun**, the chronological measure of 7,200 days. It describes the thirteenth **k'atun** as a '**nikte' k'atun**' which is 'a very erotic and evil **k'atun** whose ending will be very difficult' (Craine & Reindorp 1979:68). Indeed, throughout the Chilam Balam books scattered references with foreboding connotations are made to the '**k'atun** of the plumeria flower' (Roys 1967:122-123).

'The plumeria is its bread, the plumeria is its water, the burden [of the **katun**]. Then begins the lewdness of the wise men, the beckoning of carnal sin, the beckoning of the **katun**.' (Roys 1967:151)

Freely rendered, 'Carnal sin is its destiny, sin brings on drought' (Bierhorst 1974:231, 237), the passage prognosticated the coming of the Spaniards with all its terrible consequences. Plumeria flowers were also invoked in relating the events that led to the fall of Chichen Itza and the emergence of Mayapan as the new capital under Hunac Ceel, the founder of the Cocom dynasty, in the early thirteenth century:

'Discord arose among them, and thus they knew that the time had come in which the thirteenth Flower would sprout, because Hunac Ceel [...] began to use the fragrance of [plumeria] flowers for the women he desired.' (Craine & Reindorp 1979:127)

The details of this historical episode remain somewhat cryptic, but here plumeria might stand metaphorically for a woman in the context of a marriage alliance that ultimately caused Hunac Ceel's rise in power; alternatively, it was perhaps the smell of plumeria that was used in an act of witchcraft.¹⁵

Such use of flowers in sorcery was noted by Pedro Sánchez de Aguilar who wrote about the superstitions of the people in Yucatán in 1613. Indigenous sorceresses in Mérida were known to cause a 'rose' to open before its time which they would then give to the man whose sexual favours they desired (Sanchez de Aguilar 1892:84). While the botanical nature of the 'rose' (perhaps *rosa* = *nikte*'?) in this love magic is hard to determine, direct references to plumerias occur in a curing chant for an erotic affliction in the work 'Rituals of the Bacabs'. The actual manuscript dates to the late eighteenth century, but its content, informed by notions from Classic Maya, points to a significantly earlier period (despite occasional and obviously later Christian interpolations, such as the 'amen' concluding most texts).

The source of *nikte*' *tankas*, 'erotic seizures', was explained in the following lines:

'when there occurred the birth of the *on* ['avocado'] and the *nikte* ['plumeria flower'];
when there occurred the birth of the *dzunun nikte* ['hummingbird *nikte*].' (Roys 1965:11)

In analogy with the association of avocado with male sexuality,¹⁶ *nikte*' can be understood as a metaphor for female sexual behavior, or perhaps both *on* and *nikte*' were a direct reference to male and female genitals (Arzapa-

lo Marín 1984:278, Sigal 2000:196, 288-289). The 'hummingbird plumeria' alludes to the frequently encountered motif of the hummingbird as a mediator of love magic (see above). In fact, in a contemporary Yucatecan Maya tale from Izamal one of three brothers in search of love encounters the same triad of avocado - plumeria flowers - hummingbird, and here, too, his quest ultimately gives rise to diseases (Montoliú Villar 1990). In the 'Rituals of the Bacabs' part of the treatment of *nikte*' *tancas* consisted of a form of sympathetic magic: *Sak nikté*, white flowered plumeria, and *sabak nikté*, dark-flowered plumeria, were called upon to 'contribute their essence' to cure the condition (Arzapalo Marín 1984:279, Roys 1965:12).

Related to these occurrences of plumeria in erotic contexts, were rituals of female initiation that are the subject of a number of songs in the Cantares de Dzitbalché ('Songs of Dzitbalché'), the most significant collection of Mayan lyric poetry dating in parts back to fifteenth century.¹⁷ The fourth song associates the ceremony of 'receiving *nicté*' (*kam nicté*) not so much with marriage in a literal meaning,¹⁸ but with the discourse of the loss of female virginity in a wider sense: Receiving the flowers was portrayed as an act that symbolized fertility and thus was a prelude to reproduction (Barrera Vásquez 1965:38-39, Edmonson 1982b:179-181, Nájera-Coronado 2007:54-57).

The seventh, so-called 'flower song' (*kay nicté*) alludes to a more involved ritual, undertaken by women in a forest clearing, the 'womb of the forest':

The most alluring moon
has risen over the forest; [...]

We have arrived inside the woods
where no one will see
what we have
come here to do.

We have brought plumeria flowers,¹⁹

The picture of the rising moon invokes, without naming her, the moon goddess Ix Chel who was intimately tied to female sexual behavior and procreation (Duch Colell 1998:(3)437, Sigal 2000). This provides the first connection to plumeria which was traditionally offered by Yucatecan Maya to the altars and statues of Ix Chel (Duch Colell 1998:(3)51).

15. On the association of plumeria with marriage, see also below. The historical implications of the term *nikte*' in this instance and elsewhere, e.g., relating to a geographical location *zacnikteil*, 'field of white flowers' (Edmonson 1982a:93), are discussed in Gubler (1990:10-11, 2000/2001:246-248).

16. Compare Nahuatl *āhuacatl*, 'avocado, testicle' (Karttunen 1983:7).

17. While the existing copy dates to the eighteenth century, certain parts appear to be significantly older. The title page ascribes the whole work to the year 1440. Sigal (2000:111), in dissent, assigns the work to a considerably later time period.

18. Note that *kamnichte* is glossed as 'marriage' in the Calepino de Motul (Ciudad Real 1995:(3)1819, f237v).

19. Translation by Curl (2005:71) and see Sigal (2000:116, 275) for comments on the translation.

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In this erotically charged space, women gathered and immersed themselves in water suffused with, first and foremost, the flowers of plumeria, but also those other plants, as they were surrounded by other accoutrements related to femininity. Further details of the rite can be gleaned from parallel descriptions in the early twentieth century, such as a ritual called **kaik' micté** performed in Quintana Roo to make a lover faithful. It involved the bathing of the female supplicant submersed up to her breasts in a natural pool of water which was covered in flowers. Her friends danced around the pool in circles of alternating directions, singing and saying Maya prayers, regularly interrupted by throwing moistened flowers on to the breasts of the woman. At the end of the ceremony the supplicant would take some of the water home as a 'love potion' and prepare her lover's food with it.²⁰

Yet a different version recorded in Chetumal (Quintana Roo) had the love magic performed exclusively with flowers of **x ddurunhuy** (Rejón García 1905:48) which points to *P. pudica*.²¹ These flowers were steeped in **agua ser-enada**, water that had been kept outside in the open overnight, and the dance and incantations were performed naked around a clay pot containing the plumeria water (Rejón García 1905:48-51). Whether executed as a rite of passage to 'rebirth' into full womanhood or as a love ritual to take control of a sexual relationship, plumeria was a key element in the process that transformed the water by imbuing its female sexual essence.

Plumeria and the world directions

Another piece of evidence that plumeria was intimately intertwined with the key concepts of Maya cosmovision is provided by its integration into the intricate system that served to relate the Mayan calendar to world directions, colors, deities as well as prognostications for those born on a certain day (Bolles n.d.:V). The Maya color scheme for the world directions, beginning with the East in counter-clockwise direction, was as follows: East - Red, North - White, West - Black (Purple), South - Yellow.

It has been suggested that this system was based on differently colored varieties of corn, though plausibly **nikte'** with its variously colored flowers could have equally inspired it. Regardless of the unresolved origin of the col-

or scheme, the association of plumeria trees with world directions was mirrored in the placement of these trees according to the color of their flowers. Correct alignment along the perimeter was thought to protect against evil spirits, winds or other negative influences. The knowledge of this practice has survived to date in Yucatán, even though it is no longer applied so that plumeria trees tend to be planted in random patterns (Bolles n.d.:1-2, 15).

Plumeria trees also appear in the associations and prognostications linked to the named days which make up the **uinal**, the 20 day month of the Mayan calendar. The day **imix** of the North was described as follows:

Imix; windy is his prognostication,
plumeria is his tree, corn tortilla plumeria is his prognostication,
in-utero plumeria person, lustful, a very crazy person.
(Bolles n.d.:22).

Another day, **ik'** ('wind') of the West, also had plumeria as its signature tree. For both **imix** and **ik'** their correlation with lustfulness, which, as we have already learned, is also intimately connected to plumeria, is noted (Bolles n.d.:17-22).

Plumeria in the Nahua world**Diversity and medical utility**

The first extant written reference to plumeria from the Nahuatl speaking region of central Mexico occurs in the *Libellus de medicinalibus Indorum herbis* ('Little book of Indian medicinal herbs'). This New World pharmacopoeia was commissioned in 1552 by Francisco de Mendoza, son of the first viceroy of New Spain, and was composed by the native convert Martín de la Cruz, who worked as a physician at the Colegio Imperial de Santa Cruz de Tlatelolco (located in today's Cuauhtémoc borough of Mexico City). The subsequent translation into Latin was done by Juan Badiano (1484-1560), himself a native student at the Colegio where de la Cruz worked.²² This sophisticated work from the hand of indigenous scholars systematically described the treatments of a variety of ailments, accompanied by images of 184 different plants.

20. A very similar full moon ceremony to the one described for Quintana Roo by Basauri (1930:25) is outlined in the Yucatecan legend **ixcit cheel** (Cornyn 1932:50). Also compare the 'Great Flower' ceremony performed by Zinacantán Tzotzil speakers, involving the flowers and leaves of ten species of aromatic plants (not including Plumeria) which were placed in water for a ritual bath (Vogt 1976:61-83).

21. This identification is based on the following forms recorded for *P. pudica* in Yucatecan Maya: **t'ulunhuy**, **xt'uhuy**, **xt'uhuynikte'**, **xt'uluhuy** (Barrera Marín *et al.* 1976:275). If derived from Yucatecan Maya **zuhuy**, 'virgin', it would make **xt'uhuynikte'** 'virgin plumeria' with a sexual overtone.

22. Hence the work became known as the Codex Cruz-Badianus. It was presented in 1626 to Cardinal Francesco Barberini and eventually ended up with the Cardinal's library in the Vatican Library. To date it exists as the original, now in the Instituto Nacional de Antropología e Historia, Mexico City, and as an early copy housed in the Royal Library at Windsor Castle (Clayton *et al.* 2009:20-21).

The flowers of **cacaloxochitl** (plumeria) featured in a ointment for 'scaly skin disease', one of the many skin conditions that were known to occur at the time.²³ Plumeria flowers were also used in a 'remedy for fear or faint-heartedness', serving as a reminder of the importance of endurance of pain and fearlessness in Aztec society (Clayton *et al.* 2009:196-198, Cruz 1940:307-308, f52r-53r).

Furthermore, plumeria was an ingredient in a complex formula applied to convey fortifying qualities:

'Indeed, these medicaments bestow the bodily strength of a gladiator, drive weariness far away and, finally, drive out fear and fortify the human heart.'
(Clayton *et al.* 2009:158-160, Cruz 1940:276-280, f39v-41r)

This prescription was not meant for commoners, as it sought to address 'fatigue in those administering the government and holding public office', nor was it merely a tonic, since the ingredients included precious flowers, rare stones and numerous animal parts. Thus plumeria was part of an expensive formula used to anoint nobility, reminiscent of a herb bath, that was perhaps inspired by or derived from a ceremony as part of an initiation into office.

Thlacuilos, indigenous draftsmen, who worked on the Codex Cruz-Badianus, prepared the earliest transmitted depiction of the whole plumeria plant when they included with one of the prescriptions side-by-side two images, which primarily differed in the color of the flowers (Clayton *et al.* 2009:199, Cruz 1940:181, f53r). A red flowered plumeria is labelled **cacaloxochitl**, a compound folk name, literally translating as 'raven flower' (**cacalotl**, 'raven'; **xochitl**, 'flower').²⁴ A pinkish flowered variety of plumeria, is presented with a name not otherwise mentioned in the text, namely **necouhxochoitl** or 'honey flower' (**necutli**, 'honey'; Molina 1571:(2)65v), which references its sweet smell.²⁵

The Colegio Imperial de Santa Cruz is also linked to a source on local botanical knowledge and practices that is much broader in scope. Over a period of twenty years Bernardino de Sahagún (1499-1590; León-Portilla 1999), at times a teacher at the college, authored Sahagún (1950-1982) in Nahuatl and Spanish. This monumental work, re-

discovered as the Códice Florentino, added in its chapter of 'Earthly things' much detail about plumeria from a Nahuatl perspective. The plant was described as follows:

'It has leaves, foliage. Its leaves are a little wide, a little broad, straight and fuzzy. They have an exudation. Its exudation is white, sticky, adhering, like a resin. It is an adhesive, a filler. The name of its blossoms is **cacaloxochitl**. They are black, dark brown - a dusky brown. It is said that the blossom of the **cacalotl** is of pleasing odor, perfumed, sweet.' (Sahagún 1950-1982:(11)205-206, see also Figure 2)

Sahagún's surprising description of the flowers as 'black, dusky brown' was perhaps an attempt to establish a connection with the name 'raven flower'. But even if some darker varieties of plumeria perhaps existed then as they exist now, they would have hardly been 'black' (Figure 3). Elsewhere Sahagún (1950-1982) left no doubt about the very dark color of ravens (*Corvus corax* L., 1758), pointedly describing them as 'really black, really charcoal colored, a well-textured black: very black' (Sahagún 1950-1982:(11)43). If, indeed, the designation 'raven flower' was descriptive, we are left to speculate on the nature of the connection.

Sahagún named a number of different varieties, e.g., **chalcaltzontli**,²⁶ a coveted variety with a dark red, striped blossom as if splattered with blood, **necuxochitl**, 'honey flower', smelling very sweet and honey-like, as well as **uitzitzilientli**, 'hummingbird beak flower' (**uitzitzilin**, 'hummingbird', **tentli**, 'bill' (Sahagún 1950-1982:(11)58) of chilli-red color with pleasing fragrance and thus a plant 'to be proud of'.²⁷ Other kinds, such as **cocoyac**, were growing everywhere, scattering filth and were considered lowly. Even if some of his ascriptions of names remain doubtful, Sahagún's account points to a remarkable diversity of plumeria varieties, of which some were naturally occurring versus other that were precious cultivars, which one 'should keep to himself'.

In the 1570's Francisco Hernández, court physician to King Philip II of Spain, set out on a scientific expedition to the Valley of Mexico with the objective of compiling a 'Pliny of the New World', and in the resulting monumental work more details about **cacaloxochitl** emerged.²⁸

23. Badianus translates the Nahuatl term for the disease as '**mentagra**', which does not appear to fit the condition described (Clayton *et al.* 2009:172-174, Cruz 1940:292-293, f44v-45r. See also Roys 1931:159).

24. This according to Molina (1571:(2)10v, 160r), which otherwise does not contain any direct references to plumeria. Molina was one of the first missionary experts of Nahuatl who learned the language as a child after coming to America early in life (Buschmann & Humboldt 2000:XXV-XXVI). For more on **cacaloxochitl**, see below.

25. On **necouhxochoitl** also see below. Attempts to assign either of these plants to a specific variety based on appearance, are not convincing, e.g., Cruz (1940:309).

26. **Chacalin**, 'large shrimp, lobster' (Molina 1571:(2) f18v, Sahagún 1950-1982:(8)37, (11)59); **tzontli**, 'hair, stamen' (Molina 1571:(2) f153v, Sahagún 1950-1982:(11)287); presumably referencing the bright red color of the stamens or the pattern on the blossom.

27. Hernández (1651:75; liber 2, cap. 1.6) notes **hoitzitzilientli** as a synonym of **chilpantlazolli**. This suggests *Lobelia laxiflora* Kunth, which fits well with the name 'hummingbird beak flower'.

28. The textual history of Hernández's work is highly complicated, since it exists as a series of manuscripts which have been published over the last 400 years in various degrees of completeness and emendation. See Varey (2000:3-39) for an in-depth analysis. I have consulted Hernández (1615, 1651, 1959).

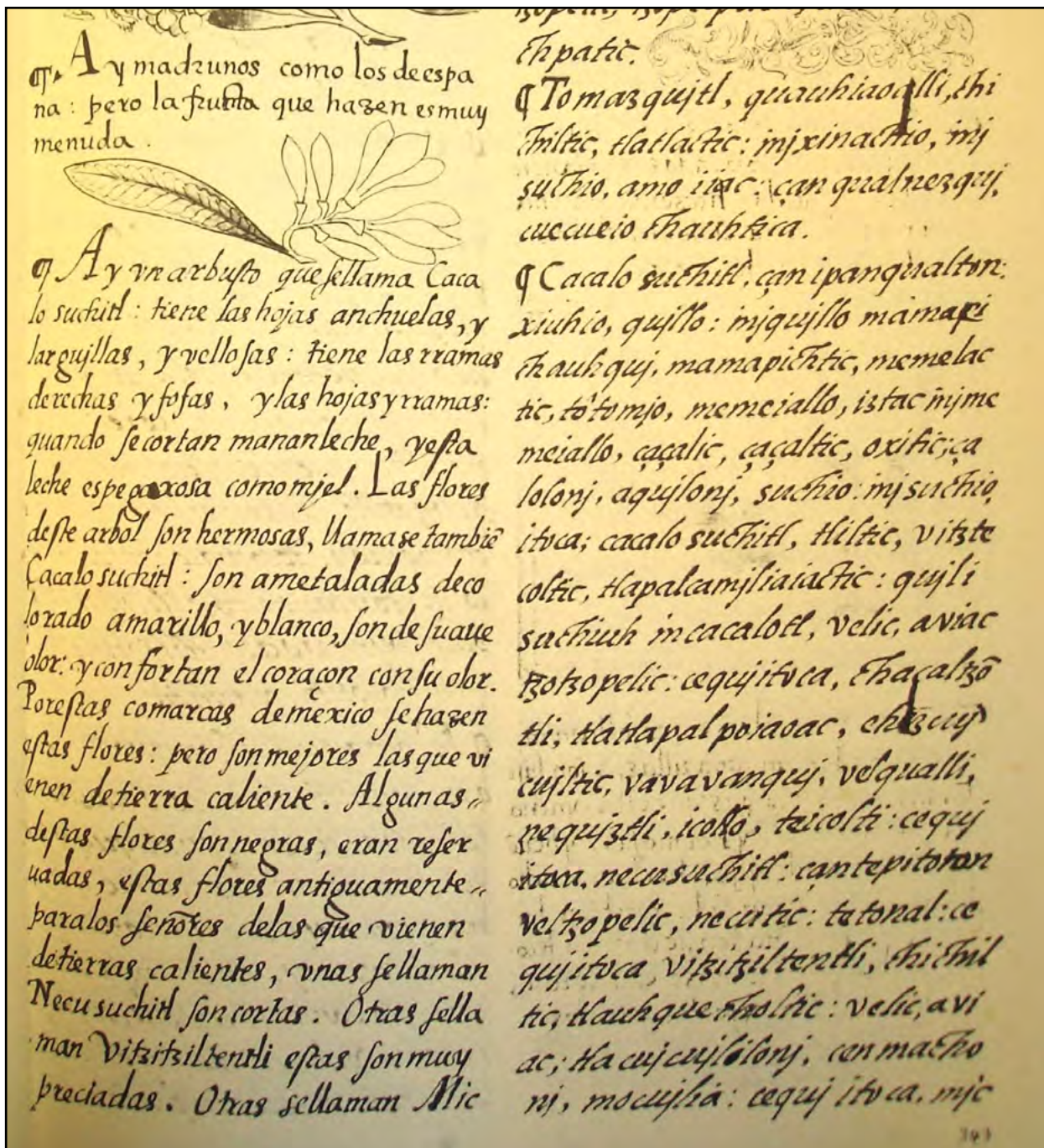


Figure 2. This page (f191r) from the Códice Florentino (translated in Sahagún 1950-1982:(11)205-206), shows most of the entry for **cacaloxochitl**, below a line drawing of a leaf and blossoms on the upper left. The drawing depicts an interesting botanical detail with the pattern of veins in the leaf. This was echoed by Hernández in his description: 'The **cacaloxochitl** is a tree of medium size with leaves that resembled those of the citron, but with many veins running from the middle to the edges.' (Hernández 1615:f45r; liber I, cap. 2.70).

Hernández, too, recognized the wide range of different 'raven flower' plants²⁹ that came in named varieties which only differed in the colors of their flowers, from crimson (**tlapalticacaloxochitl**, **tlapaltic**, 'deep red' (Sahagún

29. In the Quatros libros of 1615 **cacaloxochitl** was translated as 'popcorn [= roasted corn] flower' (Hernández 1615, 45r) which is the proper translation of **izquioxochitl** (*Bouyeria huanita* (Lex.) Hemsl.) whose seeds pop out like toasted corn. In later editions of Hernández's work this erroneous translation is corrected.



Figure 3. Even if spectacularly dark varieties of plumeria exist, such as the one named 'Black Widow' depicted here, most early descriptions hint at brighter colors, leaving the origin of the name 'raven flower' in question (Source: Kasie Colling, Anaheim, California).

1950-1982:(7)81) to white (*iztaccacaloxochitl*, *iztac*, 'white' (Molina 1571:f49r). In fact, there were so many that Hernández would not dare mention them all, so as not to bore the reader (Hernández 1615:45r-45v, Varey 2000:125-126). One particularly interesting plumeria variety received a separate entry: *tlahquecholtic* was named for its similarity to the roseate spoonbill (*Platalea ajaja* L., 1758), an attractive wading bird with coloring from white through pink to magenta on its body (Figure 4, Hernández 1959:(3)146).³⁰ Finally, there was also a wild occurring yellow-flowered form of plumeria, the 'mountain raven flower' (*tepecacaloxochitl*, *tepetl* 'mountain' (Hernández 1959:(3)197-198, Molina 1571:102v).³¹

Hernández also remarked on the marvellous medicinal virtues of different parts of the tree, a topic on which Sahagún had been silent. A reduced decoction or sugary syrup of plumeria bark was said to be particularly effective in convalescence from serious illness, besides addressing a list of other ailments. The juice of the flower was able to combat chest pain, whereas the pulp of the fruit could

30. *Tlahquecholtic* or *tlahquechocacaloxochitl* thus combined two bird names to describe this plumeria variety. *Tlahquechollitl* literally means the 'red ochre bird with the neck in movement' (Sautron-Chompré 2004:429). Notably, Sahagún had also used *tlahquecholtic* to describe the appearance of a variety of plumeria (Sahagún 1950-1982:(11)205).

31. However, *tlacacaloxochitl* (*tlalli*, 'earth'; Molina 1571:124r) a low growing plant with unscented, scarlet flowers which Sahagún compares to plumeria and commentators have identified as such, would not seem to belong to the genus *Plumeria* (Hernández 1959:(2)269-270, Sahagún 1950-1982:(11)198-199).

32. *Nanezin* (= *nanche*) was *nanzinxcotl*, *Byrsonima crassifolia* (L.) Kunth, literally 'mother's womb', and, indeed, the tannin-rich bark had uses in the context of child birth (Bye & Linares 1990:158-159, Standley 1920-1926:564).

clean out the stomach and intestines (Hernández 1615:f45r-45v). Later editions added to the list the usefulness of plumeria bark in combination with the bark of *nanezin*³² in post-partum recovery as another 'surprising' quality (Hernández 1651:95, (3)cap. 30).

Thus, seventeenth century European sources agreed on two important aspects of plumeria: The long-standing European tradition of using herbal simples had sparked an interest in using New World plants for therapeutic purposes, and consequently the medicinal qualities of plumeria attracted attention, but plumeria equally stood

out for the astonishing number of named varieties distinguished 'in many regions of New Spain' (Hernández 1651:95).

Plumeria and élite power

In his explorations of New World plants Hernández was able to draw on a network of royal gardens in and around the capital Tenochtitlan, where for some time after the conquest a diverse assortment of medicinal, aromatic and ornamental plants continued to thrive. Similarly, temple grounds and the gardens of the élite bore testimony of the skills of *quilchihuiqui*, horticulturalists, in pre-Hispanic Mexico. Huaxtepec, in the tropical valley of Morelos, was home to the most fabulous of all royal gardens, where specimens of plumeria were thriving among numerous other plants (Clavigero 1787:(1)379).

According to the account of the Dominican friar Diego Durán (c. 1537-1588), towards the end of the reign of Motecuhzoma I (1440-1469) his brother Tlacacl pointed out

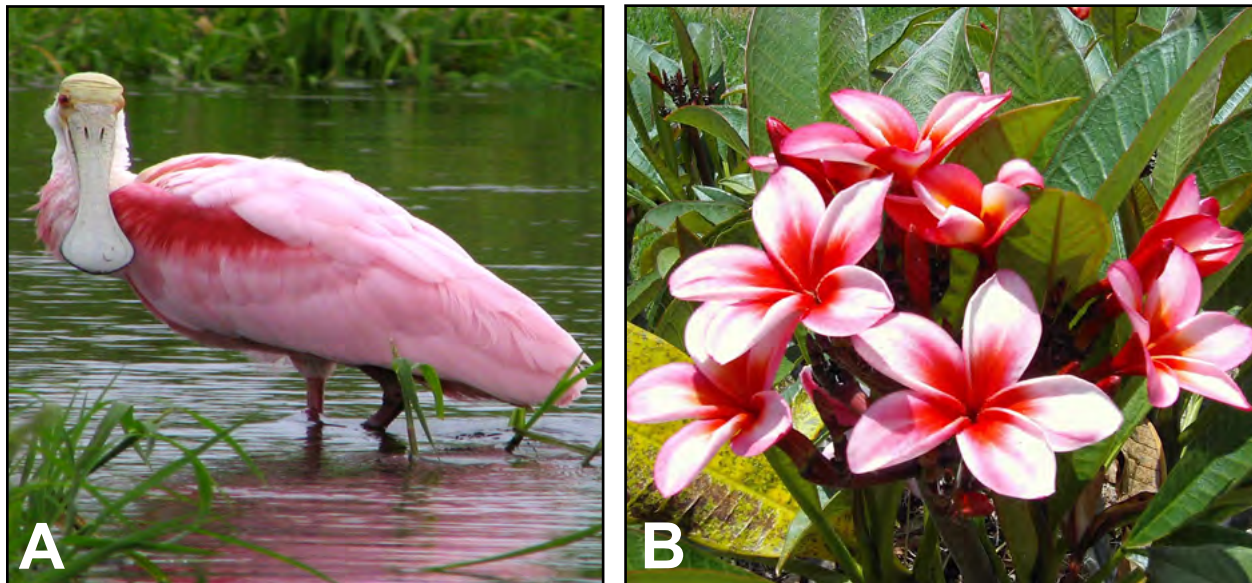


Figure 4. A roseate spoonbill (A), Myakka River State Park, Florida, juxtaposed with that of the modern *Plumeria rubra* L. 'Hurricane' (B) Florida illustrates how the sight of a plumeria cultivar could have evoked the image of **tlauhquecholli**, the roseate spoonbill, among Nahuatl speakers. Used by permission: (A) Wikimedia Commons, (B) Richard Criley.

the fertile soil and springs of Huaxtepec. He suggested to the king that it would make an excellent place to build a garden as a memorial to Motecuhzoma and his successors. Motecuhzoma agreed and sent messengers to his vassal, the Lord of Cuertlaxtla (Cotaxtla, Veracruz), demanding that plants were to be sent from the 'hot country' near the coast. Accordingly, large quantities of these plants with native soil wrapped around the roots were taken to Huaxtepec and replanted with great care by gardeners from Veracruz. Among the transplants were cacao (*Theobroma cacao* L.), **hualcaxochitl** ('basket flower', *Philodendron* sp.? (Clayton *et al.* 2009:98), **tlilxochitl**³³ ('black flower', *Vanilla planifolia* Andrews, Clayton *et al.* 2009:208) and, indeed, **cacaloxochitl**. The success of the project was demonstrated by the abundant flowering of the plants in due course (Durán 1993:244-245).³⁴

Plumeria plants were collected for the royal garden of Huaxtepec not just for their medicinal qualities and ornamental value, but because their presence affirmed the élite status of the leadership to whom the garden was dedicated. Besides being 'exotic' and luxurious, the plumerias' abundant fragrance and beauty were gifts of the gods and provided a connection to the realm of the supernatural and divine leadership. This symbolic association between fragrant flowers and social rank has already been alluded to above by the floral ingredients in

the fortifying prescription for government officials in the Codex Cruz-Badianus; in fact, a number of other plants transplanted to the royal garden in Huaxtepec also appeared in that very recipe, namely **xochinacaztli** ('ear flower', *Cymbopetalum penduliflorum* (Dunal) Baill. (Clayton *et al.* 2009:208), **izquixochitl** ('popcorn flower', *Bourreria huanita* (Lex.) Hemsl., (Clayton *et al.* 2009:157), and **hualcaxochitl** ('basket flower'). If in Huaxtepec the effigies of the line of ancestors of Motecuhzoma, carved into the rocks of the garden (Alvarado Tezozómoc 1878:370), came to be framed by plumeria trees, it was as much an aesthetic as a political statement: The plants were part of the 'political iconography' of a landscape that was being constructed to glorify Motecuhzoma I and his successors.

Plumeria was also represented in the rich repertoire of élite apparel and insignia of rank that became so characteristic of the Aztec ruling class. A **cacaloxuchio tilmatlil**, 'cape with the plumeria flower design', was one of the many options of privileged attire of rulers and noblemen (Olko 2005:84). There was also a female equivalent of élite clothing, the 'shift of plumeria flower design (**cacaloxuchio vipili**) with the skirt like a bed covering'.³⁵

Just like the enjoyment of gardens overflowing with flowers was a special privilege of the élite, so it was obligatory

33. 'Black flower', in reference to the seed pod of *V. planifolia* (Clayton *et al.* 2009:98).

34. Fernando Alvarado Tezozómoc has a similar version in his *Crónica Mexicana* of 1598 from an Aztec aristocrat's perspective. In his account of the founding of the gardens, plumeria was not specifically listed, though elsewhere he included **cacaloxochitl** among the treasured plants that had been transplanted and transported by Aztecs (1878:253, 370-371).

35. These pieces of clothing were first described in Sahagún (1997:205, f56r), an illustrated Nahuatl manuscript summarizing the results of his early research conducted between 1558-1561 in Tepepolco (near present day Hidalgo). The information on plumeria was included again later (Sahagún 1950-1982:(8)47).

to present guests of higher rank or participants in courtly ceremonies with select flowers:

'[plumerias] are often used in bouquets and in the collars and garlands that the Indians usually use, for they hold these things in such esteem that they never dare to visit a person of any rank without first offering him some things of this sort.' (Hernández 1615:45, translation after Varey 2000:125)

During such a presentation of flowers as part of a festival the nobles would remain 'reclining upon their seats, surrounded by flowers, picking up one and laying it down' with an expression of great dignity and sense of status (Durán 1971:435). The symbolic role of plumeria flowers in the context of ritual feasts is affirmed through the iconography of so-called polychrome 'codex-style' serving vessels of the Late Post-classic Period from central and southern Mexico, which can show plumeria decorations (Hernández Sánchez 2008:293).

Flower attributes held by royals and rulers as a direct expression of their nobility can also be traced iconographically in the *Códice de Huamantla*, a sixteenth century pictographic document from Tlaxcala,³⁶ where almost all nobles are depicted with flowers in their hands. In the manuscript three different types of flower have been identified, and these three might indicate different clans or lineages: **xiloxochitl**, 'corn silk flower' (*Bombax* sp. or *Pseudobombax* sp.) (Bierhorst 1985:389), **yolloxochitl**, 'heart flower' (*Talauma mexicana* (DC.) G. Don) (Bierhorst 1985b:418) and **cacaloxochitl** (Figure 5, Aguilera García 1984:21-22). Most importantly this codex tells us that the role of plumeria in the iconography of power reached well into the periphery of the Aztec empire (Olko 2005:316-318).

Given its esoteric and elite significance, it is hardly surprising that plumeria also played a role in the contexts of religious rituals. During the ninth month of the Aztec year, the feast of **tlaxochimaco** was celebrated in honor of god Huitzilopochtli. In preparation everybody set out to the fields and forests to collect certain flowers, among them **cacaloxochitl**. These offerings were presented to Huitzilopochtli as garlands at

36. Through the rise of the Aztec empire, Tlaxcala remained an independent enclave, encircled and cut off from external trade. It was perpetually engaged in battles with the Aztecs, known as **xochiyaoyotl**, 'flower wars'.

37. A device commonly used in Mesoamerican languages in which two nouns are paired to form a single metaphoric unit.

38. Both manuscripts have been transcribed and translated by Bierhorst (1985a; 2009). His translations are, however, tainted by his interpretation of the songs as ritual performances to summon 'ghost warriors', a view that is not shared by the majority of scholars and will not be discussed here.

temples and house altars followed by feasting and drinking (Sahagún 1950-1982:(2)101-103). Similarly, as part of the celebration of the calendar sign **tecpatl**, 'flint stone', which was dedicated to Huitzilopochtli, Motecuhzoma II offered all kinds of precious flowers, including plumeria flowers, to the image of the god in his temple (Sahagún 1950-1982:(4)77-78).

'In xochitl in cuicatl' - Nahua song-poetry

The expression 'flower and song', in **xochitl** in **cuicatl**, signified the artistic activity of producing and reciting poetry, which was closely allied to elite social groups. This **difrasismo**³⁷ points to the importance of nature, and specifically flowers, but also birds, as an inspirations for Nahua lyrical songs, which were typically performed to the accompaniment of music. It directs our attention to the role of plumeria in a poetic genre, which we know from two early colonial collections of songs (Bierhorst 1985a, 2009).³⁸



Figure 5. In the center of this fragment from the *Códice de Huamantla* (Aguilera García 1984) a local ruler dressed in a red loincloth is seen seated. His low stool arranged in front of his 'noble house' and the flower in this hand, identified as a two-colored **cacaloxochitl**, are marks of his nobility. To his left another noble (facing upwards) holds what appears to be **yolloxochitl** (Source: Biblioteca Nacional de Antropología de Historia, Mexico).

The following lines exemplify how Nahua poetry employed the associations of flowers and birds on multiple levels:

'From the plumerias colored like a roseate spoonbill,
the buds of the flowers,
the pine flowers in the color of the trogon bird,
he would braid his garlands.' (Bierhorst 1985a:f56v,
translation after Sautron-Chompré 2004:88).

Not only did the Nahuatl word **cacaloxochitl** ('raven flower') for plumeria itself bridge the realms of botany and ornithology, but structurally these lines also established a symmetrical figure between flowers and birds. Flowers with their brightly colored, scented blossoms and birds with their sensuous, iridescent feathers had a connection on a sensory level. Further, the blossoms of **cacaloxochitl** and a fan of the feathers of **tlahquechol**, the roseate spoonbill, shared their role as prestige gifts and elite attributes (Olko 2005:315, Sahagún 1950-1982:(9)7).

The poetic metaphors involving plumeria were manifold: A recited sequence of plant names, including **cacaloxochitl**, could mimic the instruments, especially drums, played to accompany the performance of these songs, much like a 'floral orchestration' (Sautron-Chompré 2004:166). Floral abundance - 'Let there be flowers, plumeria flowers!' - in a palace filled with dance and song was portrayed as a source of royal happiness which extended to friends and the gods (Bierhorst 1985a:183, Sautron-Chompré 2004:181).

At other times the connotations of plumeria turned to the erotic:

'My little breasts are popcorn flowers,
we link [have been entwined] with plumerias,
O little man Ahuítzotl!' (Bierhorst 1985a:265, Sautron-Chompré 2007:259)

The two plants **izquioxochitl** and **cacaloxochitl** were also paired elsewhere with more explicit sexual overtones. The following example is from a song chronicling the seduction of the Mexica leader Axayacatl by the women of Chalco in 1497, in a sign of their submission.

'I will put you inside of me.
Your chin lies there.
I will rock you in my arms.

Like a precious [**quetzal**] popcorn flower,
a roseate spoonbill colored plumeria,
you lie there on your flower-strewn mat.
It lies there inside [...] no longer.' (translation after
Sautron-Chompré 2004:187, Sigal 2011:257)

Again, the poet elevated both flowers with ornithological similes. Quetzal references the resplendent quetzal bird (*Pharomachrus mocinno* la Llave, 1832) with its extraordinary green tail coverts, synonymous with preciousness and beauty (Bierhorst 1985b:283). *Izquioxochitl* (popcorn flower) often served as an adornment of the goddess Xochiquetzal ('Flower Quetzal', the husband of Xochipilli, see above), associated with fertility, beauty, but also with **ahuianime**, harlots. The lubricious flavor that **izquioxochitl** added to the scene was enhanced by the fact that it was known as a treatment for venereal diseases (Díaz Cántora 1990:18-23). The 'pink colored raven flower' further augmented the sexual charge of the scene, contrasting the sensuality of its pink look and scent with the blackness of the raven bird which evoked an obscurity often associated with the feminine side (Sautron-Chompré 2004:188-189).

Continuity and change

Medicinal uses of *Plumeria* spp. have continued to this date in many indigenous communities. The application of the milky sap of **nikté** (*Plumeria* sp.) to burns was documented in Mayan sources of the colonial period, likely reflecting an older tradition (Roys 1931:68).³⁹ Contemporary Huastecan Maya of San Luís Potosí still treat burns with the latex or a leaf wash of **ukul-huich** ('clam flower'; *P. rubra*, Alcorn 1984:755-756). Similarly, the ethnobotanical knowledge of contemporary Itza Maya of North central Guatemala relates back perhaps as far as the Lowland Classic period, and this apparent continuity is reflected in the uses of plumeria. Here, too, **chäk nikte** ('red plumeria', *P. rubra*) is considered a useful treatment for burns (Atran 1993:648). Yucatecan Maya employ the sap of **nikte' ch'om** ('vulture flower', *P. obtusa*)⁴⁰ among other things as a topical pain reliever, a use that was similarly documented in earlier Maya sources (Appel Kunow 2003:131, Roys 1931:270). Elsewhere, Nahuatl speakers of Amatlán in northern Veracruz still use plumeria in a dermatological application, as was described in the *Libellus de medicinalibus* (see above). However, **tlatokxochitl**, as *P. rubra* is called now, is not being applied for a skin condition, but for discolorations on the skin due to sun exposure (Smith-Oka 2007:27). This survey suggests for plumeria a degree of stability in traditional medicinal uses over a long period of time, mirroring what has been found more generally in the wider region (e.g., Appel Kunow 2003:76, Smith-Oka 2007:27). The survival of such traditional knowledge can in part be explained by the fact that ethnomedical practices based on herbal simples were generally not in ideological conflict with Christian doctrines and consequently not facing Spanish censorship.

In this context it is perhaps more surprising to what degree the connections between plumeria and sexuality, from signifying excessive sexual drive to promoting fertil-

39. While Roys listed his sources summarily, he did not indicate the specific sources for individual data sets.

40. This Mayan name is likely derived from Nahuatl **cacaloxochitl** with the Black Vulture (**ch'om**, *Coragyps atratus* Bechstein, 1793) replacing the raven. Consequently the Spanish designation became **flor de zopilote**.

ity, are still detectable across Mesoamerica. Earlier I have pointed out that fertility rites and love magic involving flower baths with plumeria had survived into the twentieth century among the Mayas of Quintana Roo. The Totonacs of Veracruz believe, if they plant a red plumeria close to their house, their daughters will 'go astray' (Heyden 1985:107). Women in the state of Guerrero rub the sap of the plumeria tree on their hips in order to conceive. Some Maya girls wear plumeria flowers in their hair when they want to attract a new boyfriend (Aguilera García 1985:113), others apply plumeria sap to their breasts to increase lactation after child birth (Appel Kunow 2003:131).

Mixtec speaking people of Santiago Tilantongo in Oaxaca believe that three visits to a **ñihin (temazcal, sweat bath)** are essential for a woman's post-partum recovery (and healthy for others in weakened states). These visits to the bath house are frequently accompanied by chants, in which plumeria flower (**ita cha nuni**), is addressed as **comadre** and invoked with deep affection. During the final of the three visits the steam bath will be festively decorated with handmade flowers (Vriese 2006:28-230). In the Sierra Sur of Oaxaca, among the Zapotec people of San Juan Gbëë, plumeria blossoms (**guièe-yâl**) are sewn into a ring of citrus leaves (**blàg-lîm, Citrus aurantiifolia** (Christm.) Swingle) to make a wedding corsage (**guièe-niè**, 'hand flower', Hunn 2008:213).

The foregoing discussion might leave the impression that ancient associations of plumeria survived, at least locally, untouched after the conquest. However, to the contrary, Catholic clerics with the aid of literate and converted indigenous interpreters, appropriated certain aspects of the Mesoamerican 'floral discourse'. This was on the one hand inspired by the missionaries' perceived correspondence between the Christian heaven, a paradisiacal garden, and various indigenous places of origin and afterworlds. On the other hand Spanish clerics apparently well understood the indigenous aesthetic response to the imagery of flowers, metaphorically representing transformative and animating powers (Burkhart 1992:89-90).

A rhetorical mode of engaging flower terminology to make Christianity meaningful to the indigenous population was employed by Sahagún (1583). This collection of chants for Church festivals through the year was composed in Nahuatl with the assistance of Nahua scholars in the late 1550s. Undoubtedly aided by his interest in natural history, Sahagún repeatedly conjured up an imagery of a sacred garden.

For Pentecost, first and foremost a profusion of plumeria blossoms accompanied the coming of the Holy Spirit:

'Let there be pleasure. Let our plumeria flowers be spread out in masses!

Let our plumerias burgeon - [and] our popcorn flowers!

Let them grow, let them burst out into bloom

The Holy spirit wrought a mighty wonder here on earth.' (Sahagún 1583:f92v-93r, translation after Sahagún 1993:160-161)

Not only did the timing of Pentecost, anywhere from May 10th to June 13th, roughly coincide with the typical peak flowering period of plumeria, but the opening flowers of (red) plumeria also evoked the flames emerging from the heads of the apostles and the Virgin Mary. This image was amplified by **izquixochitl**, the popcorn flower, whose seeds, as Hernández would later note, 'burst into stars when heated' (Varey 2000:197). Similarly accompanied by a profusion of plumeria and other flowers glowing with life and spreading fragrance was John the Baptist on the day of his festival.⁴¹

The longest garden song of Sahagún (1583) celebrated Christmas by providing a vibrant vision of Bethlehem:

'Various precious stones lie collected there, there in Bethlehem. Alleluia! [...]

The Castilian flowers,⁴² the plumerias lie dawning. Alleluia! Alleluia!

The jade flowers⁴³ spread about sparking, the red bone flowers lie extended over all the land. Alleluia! Alleluia!' (Sahagún 1583:f236r, translation after Burkhart 1992:97)

The Holy Land was turned into a lavish landscape replete with abundant plants and gem stones, in other words, conjuring up the equivalent of an Aztec royal garden fit to receive a king (Figure 6).

Sahagún (1583) documents early evidence for the connection between plumeria and Christian ritual, but similar rhetoric involving plumerias can still be found as late as the middle of the nineteenth century in a Nahuatl prayer to the 'Mother of God'.

'Let us behold the sacred flowery mountains. Let us marvel at the flowery plains.

The precious plumerias, the precious colored 'basket flowers',

the colored 'bone flowers', colored 'popcorn flowers', the precious 'heart flowers'

spread about sparking and bursting precious into bloom.' (Sell *et al.* 2006:207)

In this piece, which was written with an eye on 'Indianizing' Our Lady of Guadalupe, the earlier style of invoking

41. Sahagún 1583:f107r-107v; 1993:182-183. In her translation of this passage Burkhart (1992:96) omitted plumeria in error.

42. **Castilan suchil**, the 'Castilian flower,' likely refers to the rose (Burkhart 1992:91).

43. **Chalchihyexochitl**, the 'flower scented like tobacco and green jade' remains unidentified (Sautron-Chompré 2004:420).



Figure 6. The Psalmodia volume (Sahagún 1583) contained a number of illustrations to accompany the songs. These images, meant for the eyes of the friars during services in indigenous communities and not for the native population, adhered to conventional European Christian iconography, which belied the exotic floral paradise evoked in the song texts. Shown here are the illustrations for Pentecost (A) and Christmas (B), Sahagún 1583:f92v, 229v).

flowers still reverberates strongly down to details such as the canon of species called upon (Sell *et al.* 2006:190).

If Nahuatl floral images filtered through a Christian imagination to inspire indigenous devotion, a parallel development was the integration of pre-Hispanic nature worship into Christian devotional practices. For example, the feast of the Holy Cross on the third of May became widely associated with the annual petition for rain and fertility. In Citlala, Acatlan and other villages in this Nahuatl speaking region of Guerrero, the *fiesta de la Santa Cruz* involves adorning crosses with garlands of **cacaloxochitl** and **cempoaxochitl** (*Tagetes erecta* L.), so much so that the crosses almost become invisible (Broda 2009). Another feast during which decorations with plumeria continue to be wide-spread is Domingo de Corpus in late May or early June.⁴⁴

In Acaxochitlan in the heart of Hidalgo decorations with plumeria are a centerpiece of the worship of a statue of crucified Jesus known as Señor del Colateral, which is celebrated with a festival over 11 days in early May. Collecting the necessary plumeria blossoms in the wild is done in a highly ritualized fashion with the collectors asking the trees' permission to collect the blooms with the

words '...permítame llevarte para la fiesta de mi Señor, de mi santito' ('allow me to take you to the celebration of my Lord, of my beloved saint'; Ponce Riveros 2011:385). After carefully transporting the blossoms to Acaxochitlan, they are then strung into garlands, again with considerable caution as if to avoid pain to the blooms. When finally these 'rosaries' of plumeria flowers are presented to the venerated image by family members, it becomes one of the most emotional moments of the whole festival. By being offered to the statue of Christ and spending time in its vicinity, the flowers will take on therapeutic properties for various ailments which can be elicited by smelling them (Ponce Riveros 2011:385-387).

The ritual has many elements strongly reminiscent of beliefs that predate the introduction of Christianity. First, we are reminded of the celebration of **tlaxochimaco**, especially in the process of collecting the flowers. Flowers are considered animate and as such can be communicated with. Here the plumerias by virtue of their beauty and aroma become an ideal intermediary for communicating with the divine, in the words of a participant: '¿Quién más parecido a Dios que esta flor?' ('What is more similar to God than this flower?', Ponce Riveros 2011:384). Therefore, they can express the response of the deity who, e.g.,

44. Documented in Cuernavaca (Morelos) or Zongolica (Veracruz) (Rivera Cambas 1880-1883(3):247, Hülsewiede 1997:291-293).

might show his displeasure by having them wilt prematurely (Ponce Riveros 2011:383-385).

In colonial Catholicism, especially in Yucatán and the wider Mayan speaking region, a close association developed between the emerging cult of the Virgen Maria and **sak nikte** ('white flowered plumeria'). Not only was the Virgen Mary as a nourisher of life readily associated with nature symbolism, but among Maya she specifically assimilated and evolved many of the characteristics that had previously been in the domain of a powerful sexual deity, the moon goddess.⁴⁵ Plumeria with its erotic overtones had previously been presented to the moon goddess (see above); since plumerias entered full bloom in the month of May which was dedicated to the Virgen Mary they could now be offered to her. The white color of plumeria, sometimes mirrored in the presentation of the flowers by children dressed in white, further enhanced the allure of plumeria to the Virgen Mary cult (Duch Collet 1998(3):51). In this association it became known in Spanish as **flor de Mayo**, a reference to the flower that left behind some of the sexual resonances of **nikte**.⁴⁶

Since time immemorial, according to participants, plumeria decorations have been central to the celebration of El Mes de Maria ('Month of Maria'), by Itzaj Maya on the Isla la Flores in Lake Petén Itzá (Guatemala). For Los Días de las Enhiladeras de Flores ('The days of threading the flowers'), as this celebration is also known, women gather to make countless plumeria 'trees'. This is done by threading five plumeria blossoms each (**sak nikte** or **ix-matuhuáa**)⁴⁷ onto the midrib of the leaf of a coconut palm and then inserting the resulting 'branch' into a section of the pseudostem of a banana or plantain. In the past preparing the decorations and delivering finished pieces to the church in an elaborate parade was accompanied by live marimba music and traditional foods, though nowadays the festivities are more restrained (Figure 7, Tulio Pinelo 2010, Tulio Pinelo 2012, personal communication).

The use of plumeria garlands has also enjoyed a long tradition in Zoque speaking communities in Chiapas. In Tuxtla Gutiérrez, some 200 miles east of Petén, during the celebration of the patron saint San Marcos in late April the stringing of garlands (e.g., **nopinjoyó**, 'blood colored plumeria', **cacajoyó**, 'pink colored plumeria', or **putzijoyó**, 'yellow colored plumeria') is also a very communal activity that is followed by presenting the garlands in a church (Rivadeneira 2007). Although somewhat under threat from lack of younger participants and the high cost of pre-

paring these decorative items, the collective use of **flor de ensarta** ('garland flower') for religious ornaments has survived as a tradition that is ultimately informed by the symbolism of plumeria dating back hundreds of years, if not longer.

Beyond Mesoamerica: Covering the 'smell of death' in Southeast Asia

The sixteenth century Spanish documents discussed earlier provide ample evidence that early on Spaniards themselves recognized plumeria as a highly attractive, medicinally useful, and ritually important plant. It was apparently through Spanish hands that plumeria soon began its wide dispersal through the tropics. After Spain laid claim to the Philippines in the 1560's, plumeria found its way to these islands, where its Nahuatl name **cacaloxochitl** became Tagalog **kalachuchi**. By the late 1600's there was scarcely a town in the Spanish possessions in the Philippines without a plumeria tree.⁴⁸ Rumphius later noted that **flor convolutus**, the 'curled up flower', might have arrived in Ternate from Manila. The Ternatense name he quoted as **bonga culong tsjutsju**, 'curled up **tsjutsju** flower', indeed, appears to reflect the Tagalog form (Clifford & Swettenham 1894:294, 505, Rumphius 1743-1750:(4)85-86). Since Spain, operating from their base in Manila, occupied Ternate between 1606 and 1663, there had obviously been ample opportunity to transport plumeria plants to the Moluccas before Rumphius' time. Further west in Southeast Asia linguistic evidence fails to help in tracing the path of plumerias. Malay and Indonesian names for plumeria fall into two broad categories: Some are derivatives of **campaka**, otherwise reserved for the highly fragrant *Michelia alba* DC., while other names are referring to plumerias' foreign origin. In the latter case, plumeria became **būnga kambōja**, the 'flower of Cambodia', although there is no hint that it actually came by way of Cambodia (Burkill 1935:(2)1777-1778).

While local interpretations vary, there is a surprisingly wide-spread association of plumerias with the spirit world, the dead and cemeteries in Southeast Asia and beyond. This is, for example, poetically expressed in an old Malay **pantun** from Sumatra:

'If you precede me in walking, seek for me a leaf of the **kambōja** flower;
if you should die before me, await my coming at the gate of heaven.'
(Marsden 1812:132)

45. Granziera (2004, 2012) discusses the worship of Mary in the Nahua world, whereas Sigal (2000) elaborates on the post-colonial 'Virgen Mary Moon Goddess' among Yucatecan Maya.

46. Locally plumeria could play a role in both shamanic and Christian rituals when they were complimentary forms of public worship, as demonstrated in the classic 1930's study of Chan Kom, the Mayan village in Yucatán. During shamanic introduction the man and his wife would wear crowns made of vines that were decorated with **nikte** flowers (Redfield & Rojas 1934:77). In other ritual contexts plumerias were considered part of the Catholic realm, whether as altar decorations or as offerings for the santos (Redfield & Rojas 1934:187-188, 207).

47. For the nomenclature of plumeria in Itzaj Maya, see Atran (1993) and Hofling & Tesucún (2000).

48. Merrill (1937:130-131) quoting the 17th century Augustinian priest and botanist Ignacio de Mercado (n.d.).



Figure 7. During Los días de las Enhiladeras de Flores the threading of plumeria blossoms becomes a social activity among the participating women in the community of Isla la Flores (A, B; Petén, Guatemala). Some of the completed plumeria 'trees' eventually surround the statue of Virgen Maria in church (C; source: M. Tulio Pinelo; May 2010).

In Lombok's graveyards, plumeria trees were said to 'have always been there'. To this date Sasak of central Lombok believe that plumerias planted around a grave will on the one hand facilitate propitious contact with invisible spirits and carry prayers upwards with their fragrance, on the other hand the plants will deter the attacks of witches by masking the scent of the corpse (Telle 2003:95-97, 101). A similar rationale is at work in Muslim communities in Ternate (Moluccas) where the sweet smell of *būnga kambōja* (plumeria blossoms) growing around ancestral grave sites, which are also covered with fine-cut leaves of fragrant *pondok* (*Pandanus* sp.), thwart the assault of witches and promote contact with the ancestors (Bubandt 1998, Bubandt 2012 personal communication).

Was this association between plumeria and the supernatural related to its Mesoamerican symbolic content, perhaps propagated by Spanish clergy who might have transported the plants on their travel? While this is possible, I have found no specific evidence to support this hypothesis, and we may assume for now that, rooted in uniquely Southeast Asia ideologies, plumeria acquired its reputation as *būnga kubūran*, 'grave flower' (Marsden 1812:243), after it was introduced to the region.

Conclusions

Studying a specific taxon, here *Plumeria*, over an extended historical time period has yielded insights into the role of plants in the dynamic cosmivision of Mesoamerica. Its peoples' fundamental interest with engaging their senses informed a fascination with the showy and fragrant flowers of different *Plumeria* spp. If Mayan glyphs reading *sak nikte* are correctly identified as signifying plumeria, the flowers played a role as a symbol of cosmic generative energy from at least the early part of the common era. An extension of these beliefs connected plumeria flowers to certain Gods of the Maya pantheon that represented fertility and, ultimately, associated the flowers with female eroticism. When relating to illicit sexuality, plumerias did not signify the creative force, but its antithesis, destruction and war, brought on by excessive sexual expression. Similarly sexual overtones were also elicited when images of plumeria flowers were evoked in Nahuatl poetry. This association of plumeria with fertility in a wider sense is still detectable in the folk beliefs and ethno-medicinal uses of present day communities across Mesoamerica.

From the core of the Aztec empire to its periphery, and extending into post-conquest times, plumeria became appropriated as an important symbol of elite power. This was expressed by prominently displaying the plants in gardens and using their blossoms as gifts, by iconographic representations in elite contexts

or by weaving plumerias into the courtly art of song-poetry. This diverse usage of plumeria by the noble class was founded on the belief that plumeria could convey divine power. On a horticultural level the esteem for plumeria as a luxury item was reflected in long-standing efforts to improve and diversify their appearance, whether by collecting unusual specimens or by attempts of breeding and selection; the broader population had access to plumeria flowers through collecting from natural stands of the plant.

With the advent of Christianity certain meanings of plumeria began to be reframed when missionaries integrated these flowers into their discourse of Christian beliefs; simultaneously elements of indigenous nature and fertility worship began to infuse Christian celebrations. What emerged in this syncretic belief system was an equally hybridised symbolism of plumeria, now **flor de Mayo**, which played a role in the emerging cult of the Virgen Maria.

After the conquest the allure of plumeria, whether for its medicinal, aesthetic or ritual values, led to its dispersal beyond Mesoamerica by way of the Spanish occupied Philippines. One of the most notable uses of plumeria in Southeast Asia and Polynesia was as a scented decoration for grave sites, so as to facilitate contact with positive spirits and avert evil influences from one's ancestors. Further work along these lines to understand the wide-spread dispersal of plumeria, promises to provide deeper insights into the 'anthropology of scent' in Southeast Asia and the Pacific region.

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Literature cited

Acuña, R. 1993. Editor of *Bocabulario de Maya than: Codex Vindobonensis N. S. 3833*. Instituto Nacional Autónoma de México, México D.F.

Aguilera García, M. del C. 1984. *Códice de Huamantla: Manuscrito de los siglos XVI y XVII, que se conserva en la sala de testimonios pictográficos de la Biblioteca Nacional de Antropología e Historia y en la Biblioteca Estatal de Berlín*. Estudio iconográfico, cartográfico e histórico de Carmen Aguilera. Instituto Tlaxcalteca de la Cultura, Tlaxcala, México.

Aguilera García, M. del C. 1985. *Flora y Fauna Mexicana: Mitología y tradiciones*. Everest Mexicana, Barrio San Miguel, México D.F.

Alcorn, J.B. 1984. *Huastec Mayan Ethnobotany*. University of Texas Press, Austin, Texas.

Alvarado Tezozómoc, F. 1878. *Cronica Mexicana escrita por D. Hernando Alvarado Tezozomoc hácia el año de MDXCVIII*. Anotada por el Sr. Lic. D. Manuel Orozco y Berra y prededid del Codice Ramirez, Manuscrito del siglo XVI intitulado: Relacion del origen de los Indios que habitan esta Nueva España segun sus historias, y de un examen de ambas obras, al cual va anexo un estudio de chronologia Mexicana por el mismo. Bibliotheca Mexicana. Ireneo Paz, Mexico.

Appel Kunow, M. 2003. *Maya Medicine: Traditional healing in Yucatan*. University of New Mexico Press, Albuquerque, New Mexico.

Arzápalo Marín, R. 1984. Der Text für erotische Trancen: Methodologische Überlegungen zur Interpretation eines yukatekischen Textes. Gedenkschrift Gerdt Kutscher Teil I. *Indiana* 9:273-281.

Atran, S. 1993. Itza Maya tropical agroforestry. *Current Anthropology* 34(1):633-689.

Barrera Marín, A., A. Barrera Vásquez & R.M. López Franco. 1976. *Nomenclatura Etnobotánica Maya: Una interpretación taxonómica*. Colección científica (Instituto Nacional de Antropología e Historia (México), 36. Instituto Nacional de Antropología e Historia, México D.F.

Barrera Vásquez, A. 1965. *El Libro de los Cantares de Dzitbalché: Una traducción con notas y una introducción*. Serie Investigaciones (Instituto Nacional de Antropología e Historia, México) 9. Instituto Nacional de Antropología e Historia, México D.F.

- Barrera Vásquez, A. 1980. Editor of *Diccionario Maya Cordemex: Maya-Español, Español-Maya*. Ediciones Cordemex, Mérida, México.
- Basauri, C. 1930. Los indios mayas de Quintana Roo. *Quetzalcóatl* 1(3):20-29.
- Bierhorst, J. 1974. Editor and translator of *Four Masterworks of American Indian Literature: Quetzalcoatl/The ritual of condolence/Cuceb/The night chant*. Farrar, Straus & Giroux, New York, New York.
- Bierhorst, J. 1985a. Translator of *Cantares Mexicanos: Songs of the Aztecs*. Stanford University Press.
- Bierhorst, J. 1985b. *A Nahuatl-English Dictionary and Concordance to the Cantares Mexicanos with an Analytical Transcription and Grammatical Notes*. Stanford University Press, Stanford, California.
- Bierhorst, J. 2009. Translator of *Ballads of the Lords of New Spain: The codex romances de los señores de la Nueva España*. University of Texas Press, Austin, Texas.
- Bolles, D. n.d. Ti Can Titzil Caan, Ti Can Titzil Luum: To the four corners of the sky, to the four corners of the world. A look at the world directions, their colors and their attributes. Pp. 1-94 in *Ti Can Titzil Caan, Ti Can Titzil Luum: A collection of papers about the relationships between the world directions, the calendar, prognostications and the Mayan deities*. Edited by D. Bolles. <http://alejandras-books.org/www/Maya/WorldDirections.pdf> (accessed June 2012)
- Bolles, D. 2003. *The Mayan Franciscan Vocabularies: A preliminary survey*. www.famsi.org/research/bolles/franciscan/FranciscanVocab.pdf (accessed 11/2012)
- Broda, J. 2009. La fiesta de la Santa Cruz y el culto de los cerros. Chapter 13 in *Estado del Desarrollo Económico y Social de los Pueblos Indígenas de Guerrero (EDESPIG)*. Edited by J. del Val, C. Zolla & S. Sanchez García. Universidad Nacional Autónoma de México, Programa Universitario México Nación Multicultural, México D.F.
- Bubandt, N. 1998. The odour of things: Smell and the cultural elaboration of disgust in Eastern Indonesia. *Ethnos* 63(1):48-80.
- Burkhart, L.M. 1992. Flowery heaven: The aesthetic of paradise in Nahuatl devotional Literature. *RES: Anthropology and Aesthetics* 21:88-102.
- Burkill, I.H. 1935. *A Dictionary of the Economic Products of the Malay Peninsula*. 2 volumes. Crown Agents for the Colonies, London.
- Buschmann, E. & W. von Humboldt. 2000. *Wörterbuch der Mexikanischen Sprache*. Edited by Manfred Ringmacher. Wilhelm von Humboldt, Schriften zur Sprachwissenschaft, 3rd section: Amerikanische Sprachen. Volume 3. Ferdinand Schöningh, Paderborn, Germany.
- Bye, R.A. & E. Linares. 1990. Mexican market plants of 16th century. I. Plants recorded in Historia natural de nueva España. *Journal of Ethnobiology* 10(2):151-168.
- Ciudad Real, A. de. 1995. *Calepino de Motul: Diccionario Maya-Español*. 3 volumes. Edited by R. Arzápalo Marín. Universidad Nacional Autónoma de México, Instituto de Investigaciones Antropológicas, México D.F.
- Clavigero, F.S. 1787. *The History of Mexico: Collected from Spanish and Mexican historians from manuscripts, and ancient paintings of the Indians*. Translated by Charles Cullen. 2 volumes. Robinson, London.
- Clayton, M., A. de Ávila & L. Guerrini. 2009. *Flora: The Aztec herbal*. Natural History, part 8. The Royal Collection in association with H. Miller, London.
- Clifford H.C. & F.A. Swettenham. 1894. *A Dictionary of the Malay Language: Malay – English*. Taiping, Perak: Government Printing Office.
- Cornyn, J.H. 1932. Ixcit Cheel. *Maya Society Quarterly* 1:47-55.
- Craine, E.R. & R.C. Reindorp. 1979. editors and translators of *The Codex Pérez and the Book of Chilam Balam of Maní*. University of Oklahoma Press, Norman, Oklahoma.
- Criley, R.A. 2005. *Plumeria in Hawai'i*. College of Tropical Agriculture and Human Resources, University of Hawai'i at Mānoa, Honolulu, Hawai'i. www.ctahr.hawaii.edu/oc/freepubs/pdf/OF-31.pdf (accessed July 2012)
- Cruz, M. de la. 1940. *The Badianus Manuscript (Codex Barberini, Latin 241) Vatican Library: An Aztec herbal of 1552*. Introduction, translation and annotations by E.W. Emmart. The Johns Hopkins Press, Baltimore, Maryland.
- Curl, J. 2005. *Translator of Ancient American Poets: The flowers songs of Nezahualcoyotl. The songs of Dzitbalche. The sacred hymns of Pachacuti*. Bilingual Press, Tempe, Arizona.
- de Mercado, I. n.d. *Libro de Medicinales de esta Tierra, y Declaraciones de las Virtudes de los Arboles y Plantas que están en estas Islas Filipinas*. Unpublished manuscript in San Augustin Monastery, Manila.
- Díaz Cántora, S. 1990. *Xochiquétzal: Estudio de mitología náhuatl*. Seminario de Estudios Prehispánicos

- para la Descolonización de México, Universidad Nacional Autónoma de México, México D.F.
- Duch Colell, J. 1998. Editor of *Yucatán en el Tiempo: Enciclopedia alfabética*. 3 volumes. Inversiones Cares, Mérida, México.
- Durán, D. 1971. *Book of the Gods and Rites and the Ancient Calendar*. Translated and edited by F. Horcasitas & D. Heyden. Civilization of the American Indian Series 102. University of Oklahoma Press, Norman, Oklahoma.
- Durán, D. 1993. *The History of the Indies of New Spain*. Translated, annotated, and with introduction by D. Heyden. Civilization of the American Indian Series 210. University of Oklahoma Press, Norman, Oklahoma.
- Edmonson, M.S. 1982a. *The ancient future of the Itza: The book of Chilam Balam of Tizimin*. University of Texas Press, Austin, Texas.
- Edmonson, M.S. 1982b. The songs of Dzitbalche: A literary commentary. *Tlalocan* 9:173–208
- Emmart, E.W. 1940. *The Badianus Manuscript (Codex Barberini, Latin 241) Vatican Library: An Aztec herbal of 1552*. The Johns Hopkins Press, Baltimore, Maryland.
- Granziera, P. 2004. From Coatlicue to Guadalupe: The image of the Great Mother in Mexico. *Studies in World Christianity* 10(2):250-273.
- Granziera, P. 2012. The worship of Mary in Mexico: Sacred trees, Christian crosses and the body of the God-dess. *Toronto Journal of Theology* 28(1):43-60.
- Gubler, R. 1990. The Nictē: As metaphor, as historical fact, or both? Pp. 9-12 in *LAIL Speaks: Selected Papers from the VII. International Symposium on Latin American Indian Literatures*. Edited by M.H. Preuss. Labyrinth Press, Culver City, California.
- Gubler, R. 2000/2001. Primus inter pares: The ruling house of Cocom. *Indiana* 17/18:239-267.
- Hays-Gilpin, K. & J.H. Hill. 1999. The flower world in material culture: An iconographic complex in the Southwest and Mesoamerica. *Journal of Anthropological Research* 55(1):1-37.
- Hernández, F. 1615. *Quatros Libros de la Naturaleza, y Virtudes de las Plantas, y Animales que estan Receuidos en el vso de Medicina en la Nueva España, y la Methodo, y Correccion, y Preparacion, que para Administrallas se Requiere con lo que el Doctor Francisco Hernandez Escriuio en Lengua Latina*. Casa de la viuda de Diego Lopez Daulos, México.
- Hernández, F. 1651. *Rerum Medicarum Novae Hispaniae Thesaurus, Seu, Plantarum, Animalium, Mineralium Mexicanorum Historia ex Francisci Hernandez*. Ex typographeio Vitalis Mascardi, Rome.
- Hernández, F. 1959. *Obras Completas*. Edited by G.S. d'Ardois. 5 volumes. Universidad Nacional de México, México D.F.
- Hernández Sánchez, G. 2008. Feasting, community, and codex style ceramics. Pp. 287-303 in *Mixtec Writing and Society: Escritura de Nuu Dzauí. Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen. Afdeling Letterkunde, N.S. 191*. Edited by M.E.R.G.N. Jansen & L.N.K. van Broekhoven. Koninklijke Nederlandse Akademie van Wetenschappen, Amsterdam.
- Heyden, D. 1985. *Mitología y Simbolismo de la Flora en el México Prehispánico*. Second edition. Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México, México D.F.
- Hill, J.H. 1992. The flower world of old Uto-Aztecan. *Journal of Anthropological Research* 48(2):117-144.
- Hofling, C.A. & F.F. Tesucún. 2000. *Tojt'an Maya' Itzaj: Diccionario Maya Itzaj - Castellano*. Cholsamaj Fundacion, Guatemala City.
- Houston, S. & K. Taube. 2000. An archaeology of the senses: Perception and cultural expression in ancient Mesoamerica. *Cambridge Archaeological Journal* 10(2):261-294.
- Hülsewiede, B. 1997. *Die Mayordomías in Tequila: Das religiöse Amtersystem heutiger Nahuá in Mexiko*. Lit Verlag, Münster, Germany.
- Hunn, E.S. 2008. *A Zapotec Natural History: Trees, herbs, and flowers, birds, beasts, and bugs in the life of San Juan Gbëé*. University of Arizona Press, Tucson, Arizona.
- Karttunen, F.E. 1983. *An analytical dictionary of Nahuatl*. Austin: University of Texas Press, México.
- Landa, D. de. 1959. *Relación de las cosas de Yucatán*. Eighth edition. Editorial Porrúa.
- León-Portilla, M. 1963. *Aztec Thought and Culture: A study of the ancient Nahuatl mind*. Translated by J.E. Davis. University of Oklahoma Press, Norman, Oklahoma.
- León-Portilla, M. 1999. *Bernardino de Sahagún: Pionero de la antropología*. Instituto de Investigaciones Históricas, Universidad Nacional Autónoma de México, México D.F.
- Linné, C. von. 1753. *Species Plantarum: Exhibentes plantas rite cognitās ad genera relatas, cum differentiis speci-*

- ficis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas*. 2 volumes. Impensis Laurentii Salvii, Stockholm.
- Looper, M.G. & J.G. Kappelman. 2001. The cosmic umbilicus in Mesoamerica: A floral metaphor for the source of life. *Journal of Latin American Lore* 21(1):3-54.
- Marsden, W. 1812. *A Dictionary of the Malayan Language; To which is prefixed a grammar with an introduction and praxis*. Cox & Baylis, London.
- Merian, M.S. 1719. *Over de Voortteeling en Wonderbaerlyke Veranderingen der Surinaemsche Insecten*. Joannes Oosterwyk, Amsterdam.
- Merrill, E.D. 1937. On the significance of certain oriental plant names in relation to introduced species. *Proceedings of the American Philosophical Society* 78(1):111-146.
- Metz, B.E., C.L. McNeil & K.M. Hull. 2009. *The Ch'orti' Maya Area: Past and present*. University of Florida Press, Gainesville, Florida.
- Molina, A. de. 1571. *Vocabulario en Lengua Castellana y Mexicana*. 2 volumes in 1. Casa de Antonio de Spinosa, México.
- Montolú Villar, M. 1990. Un mito maya del origen de las enfermedades en Izamal, Yucatan: Análisis social de sus símbolos y contenido social. Pp. 81-88 in *Historia de la Religión en Mesoamérica y Áreas Afines: Il coloquio*. Edited by B.D. de Jordán. Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México, México D.F.
- Nájera-Coronado, M.I. 2007. *Los Cantares de Dzitbalché en la Tradición Religiosa Mesoamericana*. Universidad Nacional Autónoma de México, México D.F.
- Olko, J. 2005. *Turquoise Diadems and Staffs of Office: Elite costume and insignia of power in Aztec and early colonial Mexico*. Polish Society for Latin American Studies, Center for Studies on the Classical Tradition, University of Warsaw, Warsaw.
- Ponce Riveros, R.F. 2011. *Estructuras Sociales, Religión y Poder. Estudio comparativo entre México y España*. Ph. D. thesis. Universidad de Salamanca, Salamanca, Spain.
- Rauch, F.D. & P.R. Weissich. 2009. *Small Trees for the Tropical Landscape*. University of Hawaii Press, Honolulu, Hawaii.
- Redfield, R. & A. Villa Rojas. 1934. *Chan Kom: A Maya village*. Carnegie Institution of Washington Publications, 488. Carnegie Institution of Washington, Washington, D.C.
- Rejón Garcia, M. 1905. *Supersticiones y Leyendas Mayas*. La Revista de Mérida, Mérida, México.
- Rivadeneira, F. 2007. *Ensarta de Flor de Mayo*. www.revistatuchtlan.com/index.php?option=com_content&task=view&id=21&Itemid=27 (accessed July 2012)
- Rivera Cambas, M. 1880-1883. *México Pintoresco, Artístico y Monumental. Vistas, descripción, anécdotas y episodios de los lugares más notables de la capital y de los estados, aun de las poblaciones cortas, pero de importancia geográfica ó histórica*. 3 volumes. Imprenta de la reforma, México.
- Roeling, S. 2007. *Een Uitgebreide Etnografie van de Lacandon Maya's van Chiapas, Mexico*. Roeling, Rotterdam, The Netherlands.
- Roys, R.L. 1931. *The Ethno-botany of the Maya*. Tulane University of Louisiana, New Orleans, Louisiana.
- Roys, R.L. 1933. Translator of *The book of Chilam Balam of Chumayel*. Carnegie Institution of Washington Publications, 438. Carnegie Institution of Washington, Washington, D.C.
- Roys, R.L. 1965. *The Ritual of the Bacabs*. Translated and edited by R.L. Roys. University of Oklahoma Press, Norman, Oklahoma.
- Roys, R.L. 1967. *The Book of Chilam Balam of Chumayel*. University of Oklahoma Press, Norman, Oklahoma.
- Rumphius, G.E. 1741-1750. *Herbarium Amboinense: plurimas complectens arbores, frutices, herbas, plantas terrestres & aquaticas, quae in Amboina et adjacentibus reperiuntur insulis adcuratissime descriptas iuxta earum formas, cum diuersis denominationibus cultura, usu, ac virtutibus, quod & insuper exhibet varia insectorum animaliumque genera, plurima cum naturalibus eorum figuris depicta /omnia magno labore ac studio multos per annos conlegit, & duodecim libris belgice conscripsit Georg. Everhard Rumphius; nunc primum in lucem edidit, & in latinum sermonem vertit Joannes Burmannus qui varia adjecit synonyma, suasque observationes pars prima [-sexta]*. 6 volumes. Franciscus Changuion, Joannes Catuffe, Hermannus Uytwerf, Amsterdam.
- Sahagún, B. de. 1583. *Psalmodia Christiana, y Sermonario de los Sanctos del Año, en Lengua Mexicana*. Con licencia, en casa de Pedro Ocharte, México.
- Sahagún, B. de. 1950-1982. *General History of the Things of New Spain: Florentine codex*. Translated and edited by A.J.O. Anderson & C.E. Dibble. 12 books in 13 volumes. University of Utah, Salt Lake City, Utah.

- Sahagún, B. de. 1993. *Bernardino de Sahagún's psalmodia Christiana (Christian psalmody)*. Translated by A.J.O. Anderson. University of Utah Press, Salt Lake City, Utah.
- Sahagún, B. de. 1997. Primeros memoriales. Part 2: Paleography of Nahuatl text and English translation by T.D. Sullivan & H.B. Nicholson. *Civilization of the American Indian Series 200*, 2. University of Oklahoma Press, Norman, Oklahoma.
- Sánchez de Aguilar, P. 1892. Informe contra idolorum cultores del obispado de Yucatan. Reimpreso por el Museo Nacional de México. *Anales del Museo Nacional de México* 6:13-122.
- Sautron-Chompré, M. 2004. *Le Chant Lyrique en Langue Nahuatl des Anciens Mexicains: La symbolique de la fleur et de l'oiseau*. L'Harmattan, Paris.
- Sautron-Chompré, M. 2007. In izquioxochitl in cacahuaxochitl: Presencia y significación de un binomio floral en el discurso poético náhuatl prehispánico durante la conquista de México. *Estudios de Cultura Náhuatl* 38:243-264.
- Sell, B.D., L.M. Burkhart & S. Poole. 2006. Editors of *Nahuatl Theater*. Volume 2. Our Lady of Guadalupe. University of Oklahoma Press, Norman, Oklahoma.
- Sigal, P.H. 2000. *From Moon Goddesses to Virgins: The colonization of Yucatecan Maya sexual desire*. University of Texas Press, Austin, Texas.
- Sigal, P.H. 2011. *The Flower and the Scorpion: Sexuality and ritual in early Nahua culture*. Duke University Press, Durham, North Carolina.
- Smith-Oka, V. 2007. *Traditional Medicine Among the Nahua: Contemporary and ancient medicinal plants*. Foundation for the Advancement of Mesoamerican Studies. Research report. www.famsi.org/reports/05063/05063SmithOka01.pdf (accessed July 2012)
- Standley, P.C. 1920-1926. Trees and Shrubs of Mexico. *Contributions from the United States National Herbarium*, 23. Government Printing Office, Washington, D.C.
- Stone, A. 1995. *The NIK Name of the Codical God H*. Paper prepared for the 94th American Anthropological Association meeting, November 15-19, 1995, Washington D.C.
- Taube, K. 1992. *The Major Gods of Ancient Yucatan*. Studies in Pre-Columbian Art and Archaeology, 32. Dumbarton Oaks, Washington, D.C.
- Telle, K. 2003. The smell of death: Theft, disgust and ritual practice in Central Lombok, Indonesia. Pp. 75-104 in *Beyond Rationalism: Rethinking magic, witchcraft and sorcery*. Edited by B. Kapferer. Berghahn Books, New York, New York.
- Thompson, J.E.S. 1939. *The moon goddess in middle America; with notes on related deities*. Carnegie Institution of Washington Publications, 509. Carnegie Institution of Washington, Washington, D.C.
- Thompson, J.E.S. 1950. *Maya Hieroglyphic Writing: Introduction*. Carnegie Institution of Washington Publications, 589. Carnegie Institution of Washington, Washington, D.C.
- Thompson, J.E.S. 1970. *Maya History and Religion*. University of Oklahoma Press, Norman, Oklahoma.
- Tournefort, J.P. 1700. *Institutiones rei Herbariae*. 3 volumes. Typographia Regia, Paris.
- Tozzer, A.M. 1907. *A Comparative Study of the Mayas and the Lacandonnes*. Report of the Fellow in American Archaeology 1902-1905. Published for the Archaeological Institute of America by MacMillan Press, New York, New York.
- Tropicos.org. 2012. Missouri Botanical Garden. www.tropicos.org (accessed July 2012)
- Tulio Pinelo, M. 2010. *El Cericote y la Flor de Mayo en el Mes de la Virgen María. El portal de Petén*. Part 1: www.elportaldepeten.com/nuevo/content/view/368/58/; Part 2: www.elportaldepeten.com/v2/index.php/noticias/culturales/378 (accessed July 2012)
- Vail, G. 2000. Pre-hispanic Maya religion: Conceptions of divinity in the postclassical Maya codices. *Ancient Mesoamerica* 11:123-147.
- Varey, S. 2000. Editor of *The Mexican Treasury: The writings of Dr. Francisco Hernández*. Translated by R. Chabrán, C.L. Chamberlin & S. Varey. Stanford University Press, Stanford, California.
- Vogt, E.Z. 1976. *Tortillas for the Gods: A symbolic analysis of Zinacanteco rituals*. Harvard University Press, Cambridge, Massachusetts.
- Vriese, J. de. 2006. The temazcal and the concept of secularization: A discursive analysis. Pp. 221-253 in *The Social and Linguistic Heritage of Native Peoples in the Americas: The struggle to maintain cultural particularity*. Edited by L.N.K. van Broekhoven. Edwin Mellen Press, Lewiston, New York.
- Wisdom, C. 1950. Materials on the Chorti language. Microfilm collection of manuscripts on Middle American cultural anthropology 28. University of Chicago Library, Chicago, Illinois.

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Woodson, R.E. 1938. Studies in the Apocynaceae. VII. An evaluation of the genera *Plumeria* L. and *Himatanthus* Willd. *Annals of the Missouri Botanical Garden* 25(1):189-224.

Zidar, C. & W. Elisens. 2009. Sacred Giants: Depiction of Bombacoideae on Maya ceramics in Mexico, Guatemala, and Belize. *Economic Botany* 63(2):119-129.

