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THE VENUS-RAIN-MAIZE COMPLEX IN THE MESOAMERICAN WORLD VIEW: PART II

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In Part I of this paper[1] it was demonstrated that the conceptual relationship of the planet Venus with rain and maize is attested, in its diverse manifestations, all over Mesoamerica in different periods. Some previously unnoticed characteristics of the apparent motion of Venus were described and shown to be relevant in archaeoastronomical research. In the following sections I will explore the origin and the development of the so-called Venus-rain-maize complex, examining the modifications it underwent in their sociohistorical context, and inquiring into its possible observational bases.

1. THE VENUS-RAIN-MAIZE COMPLEX IN A DIACHRONIC PERSPECTIVE

The greater part of the evidence presented in Part I reveals that the Venus-rain-maize complex was associated primarily with the evening aspect of the planet. This prominent place of the evening star was maintained almost throughout the detectable history of the complex; it was obscured only in the very late phases of Mesoamerican cultural evolution, but these changes, it will be argued, probably have an historical explanation.

The Middle Preclassic Chalcatzingo Monument 4 (*c.* 800 B.C.) may represent the earliest manifestation of the Venus-rain-maize complex known so far. The upper jaguar represented on this relief was interpreted, on iconographic grounds, as pertaining to a group of Olmec deities associated with earth, water, maize and fertility.[2] If the "Venus ear" of this jaguar is indeed a symbol for Venus, comparative evidence from later periods suggests that its most probable referent was the evening star.[3] It may also be added that, according to the famous Covarrubias's hypothesis, which was partly corroborated by Pasztory, the Olmec jaguar was the common ancestor of later Mesoamerican rain gods[4] which, as the evidence available for at least some of them indicates, were associated with Venus as evening star (*infra*).

If the evidence for the presence of the Venus-rain-maize complex in the Preclassic is tenuous, it is much more abundant for the Classic period. The cross that frequently appears on the representations of the Teotihuacan rain and fertility deities ("Tlaloc", "Great Goddess") was interpreted by Armillas and previously by Seler as a Venus symbol.[5] It is similar to the Maya Kan cross, but it also strongly resembles the Lamat glyph (T510), a Maya sign for Venus, in many instances such as in the murals of Tetitla, Tepantitla and Atetelco and in the head-dress of the god on a Teotihuacan-period roof ornament (*almena*) from Cinteopa.[6] Both the latter and the so-called "Jade Tlaloc" of Tetitla wear five crosses,[7] which may be a further indication that Venus is implied.

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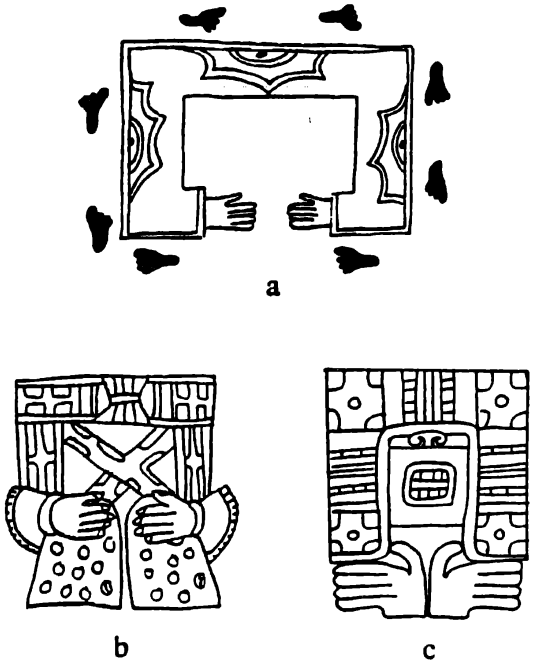

FIG. 1. Five-pointed stars and Kan crosses in star enclosures from (a) Cacaxtla, Building A, (b) Teotihuacan, Tetitla Portico 1, and (c) Xochicalco, Stela 1 (from Berlo, *op. cit.* (ref. 8), Fig. 8).

The Venus identity of the Teotihuacan cross is sustained by some iconographic (and/or glyphic) compounds in which it is substituted by the five-pointed star, namely in the so-called star enclosures and in the Tlaloc *bigotera* emblems (Figure 1).[8] Ellen Baird and John Carlson have recently shown that both full forms and half variants of the five-pointed eyed star, ubiquitous in Teotihuacan iconography and appearing also in Cacaxtla and

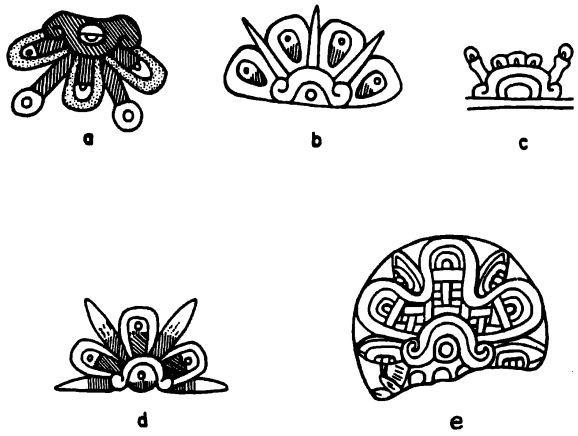

FIG. 2. Examples of the Highland/Oaxaca style Venus glyph from (a) Codex Fejérváry-Mayer 25, (b) Mitla, Palace IV, (c) Chichén Itzá, Temple of the Jaguars, (d) Codex Vindobonensis 13, and (e) an Aztec stone disc (from Baus C., *op. cit.* (ref. 13), Figs 3 and 6; drawing by M. Urdapilleta).

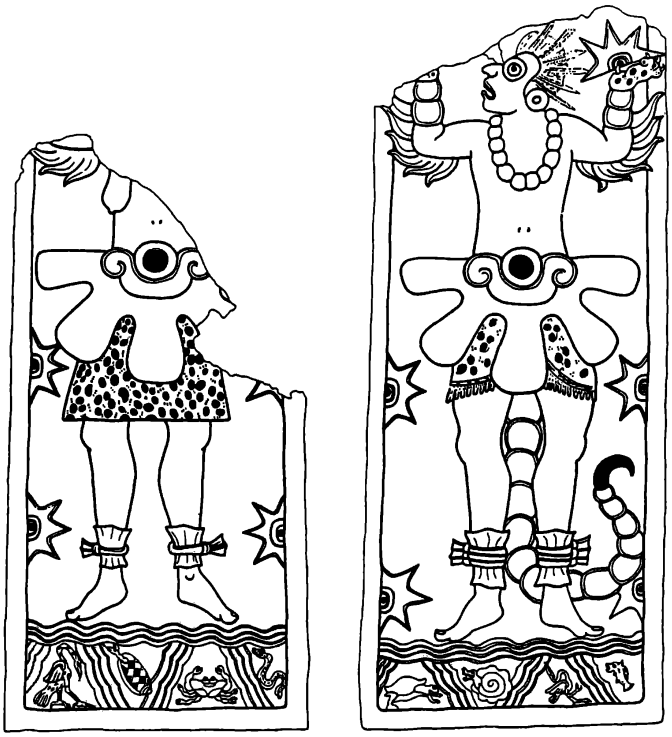

FIG. 3. Figures on the south and north piers in Substructure III of the Cacaxtla Palace (from Baus C., *op. cit.* (ref. 13), Figs 1 and 2; drawing by M. Urdapilleta).

in the Maya area, at least in certain contexts represent Venus.[9] The half form of the five-pointed eyed star must have been generically related to the later Highland/Oaxaca style Venus glyph (Figure 2). The latter frequently occurs in the Postclassic iconography in central Mexico, Oaxaca and also Yucatán, but appears already on a Late Classic carved boulder from Maltrata, Veracruz, where it is attached to the underside of a feathered serpent's body,[10] and also on the Epiclassic murals recently discovered in Substructure III of the Palace at Cacaxtla, Tlaxcala:[11] two painted piers represent a male and a female personage, each with a jaguar-skin kilt to which an outsized five-lobed Venus sign is attached; both figures stand within blue borders adorned with eyed half-stars (Figure 3).

The contexts in which the five-pointed stars are depicted in Teotihuacan iconography are related to water and earth fertility on the one hand, and war and sacrifice on the other.[12] Sacrificial symbolism involving Venus is particularly transparent at Cacaxtla, but in spite of the gruesome imagery these murals also reveal the planet's association with water and fertility. The male personage mentioned above, who wears a big five-lobed Venus apron and has attributes that identify him as a sacrificial victim, has a "goggled" Tlaloc eye and a scorpion tail (Figure 3). In Maya iconography the scorpion tail is associated both with Venus and with rain and fertility deities.[13] A relief panel of the carved bench throne recently excavated in the 8N-11 Group at

Copán, Honduras, represents a young man having a scorpion tail and emerging from the half-variant Lamat (Venus) glyph; the same personage, identified by K. Taube with the young maize god, is depicted, also with a scorpion tail, on a Classic Maya plate, but in this case his body is a full variant of the Lamat glyph.[14] The analogies from the Maya area are certainly relevant for the interpretation of the Cacaxtla murals, considering their overtly "mayanized" iconography.[15]

It seems that the scorpion with his rain-associations was one of the evening manifestations of Venus. A glyph in the second column of the deity names on page 46 of the Dresden Codex probably reads *sinan*, meaning "scorpion" in Yucatec; the column of the Venus table in which this glyph appears corresponds to the *evening star phenomena*.[16] It may not be a coincidence that the Scorpion Man of Cacaxtla stands in the *western part* of the enclosure in which the mural is placed; furthermore, the precinct itself is situated in the *western* section of the Palace, which may be significant if, as Carlson suggests,[17] this was the actual place for Venus-related human sacrifices, a real "Venus enclosure", such as the one represented in a stylized way on the Cacaxtla Building A (Figure 1(a)). A similar enclosure is depicted behind the captain of the defeated warriors on the battle mural of Structure B, again on the *western talud*. In Teotihuacan iconography the five-pointed star is sometimes associated with skulls with prominent teeth; in Maya texts a similar skull is an alternative glyph for Venus, particularly for the evening star.[18]

The foregoing evidence, revealing the association of both fertility and sacrificial symbolism with Venus, particularly with its evening manifestation, is in accordance with what we know about the Maya and their concepts concerning warfare and sacrifice: military exploits, often scheduled to concur with significant Venus phenomena, among which the first appearances of the evening star prevail, appear surrounded by a complex symbolism which is iconographically expressed by a series of Tlaloc-related motifs. This "Tlaloc-Venus" warfare style was introduced among the Maya at some time during the early Classic, evidently inspired by Teotihuacan.[19]

Such a prominent role for Venus in warfare cult and symbolism is not contradictory (as it might appear in view of its association with rain, maize and fertility), but in total agreement with some well-known characteristics of the ancient Mesoamerican world view. Human sacrifices were considered a debt that had to be paid to the gods, an inescapable act for securing rain, agricultural fertility, and the proper functioning of the universe in general. Since the captives obtained in battles were the most common sacrificial victims, the war acquired sacred dimensions and, consequently, the Venus-rain-maize associations became involved in sacrificial symbolism and warfare ritual. We can assume, of course, that the concepts relating fertility with warfare gradually evolved and transformed in their social function, becoming more a justification for raids and conquests than their immediate motive; such religious ideas may well have been fostered by the rulers who exploited them in order to achieve some very secular goals and satisfy their personal

ambitions. To support this assumption, it can be mentioned that death-war-sacrifice connotations of the Teotihuacan five-pointed star seem to become especially pronounced only in late Classic iconography, although its water and fertility associations are retained.[20] I would therefore suggest that the connections of Venus with war and sacrifice are of a later origin than its rain and maize associations; the latter can be accounted for by some easily observable natural phenomena (see Section 2), whereas the former, having no readily apparent observational base, may be better understood in terms of their sociopolitical context and ideological constraints.

There is some further evidence disclosing a predominant importance of the evening star in the Venus-rain-maize complex among the Classic Maya. The reptilian deity, represented in Mesoamerican art from the Preclassic on, developed in at least two clearly discernible directions: one resulted in the feathered serpent, whose personification became Quetzalcoatl (*v. infra*), and the other in the Maya bicephalic dragon,[21] a very common representation of the Yucatec god Itzamna.[22] Itzamna's association with Venus, discussed in Part I, Section 3, K, has been recently supported on iconographic and epigraphic grounds.[23] I have argued that the evening star was more important in this association, because Venus glyphs appear regularly on the western part of the Classic Maya two-headed celestial dragons.[24] It may be added that Venus glyphs also appear on the *western* façade of the so-called Chenes temple of the House of the Magician at Uxmal. Zoomorphic façades of this type were identified by Thompson with Itzamna; Seler preferred to call them "Quetzalcoatl façades", but in the light of the close relationship between the two gods this was not exactly a blunder.[25]

Quetzalcoatl, Itzamna's analogue, was one of the most important and complex Mesoamerican deities. He is known in many different aspects, which probably had independent origins and which, as Pedro Armillas suggested, should be examined separately in order to establish their antiquity and to determine when and how they integrated to compose the complex figure of the sixteenth century. Their association might be a manifestation of a late religious syncretism, although each of them in isolation may be very ancient.[26]

Even if various scholars have offered very diverging interpretations, they do agree on certain important points: many characteristic traits of the deity known in later times as Quetzalcoatl originated in the Gulf Coast area; the feathered serpent symbolized water, clouds, vegetation and fertility; the complex god does not appear until the Late Classic; the peoples from the southern Gulf Coast had an important role in the propagation of the cult; the warrior-hunting aspect of the morning star, personified by Tlahuizcalpantecuhtli, was adopted in relatively late periods.[27]

Indeed, the Gulf Coast area, covering the strip of land from Veracruz to the western part of Campeche, seems to have been the focus of development and dispersion of new ideas in various periods. Representations of the feathered serpent are common in the Olmec horizon,[28] and some early colonial sources mention the province of Xicalango as the homeland of a particular

FIG. 4. A late Classic urn from Tlacochahuaya, Oaxaca, representing a deity with a mask and with the "stellar eye" motif in his headdress (from Caso and Bernal, *op. cit.* (ref. 35), Fig. 284).

serpent species, which has feathers on its head.[29] However, it is not until the Classic period that the feathered serpent appears associated with Venus symbols: on Teotihuacan murals it is frequently adorned with five-pointed stars or with Kan crosses;[30] the Late Classic carved boulder from Maltrata, Veracruz, shows this creature with a Highland/Oaxaca style Venus glyph as a pendant;[31] and the same variants of the symbol are associated with feathered rattlesnakes in the Classic and Epiclassic representations at Acanceh and Chichén Itzá in Yucatán.[32]

The Gulf Coast is also a probable place of origin of the wind god, since Ehecatl of later times is normally represented with Huaxtec attributes and worshipped in round temples, which are particularly common along the Veracruz coast.[33] A considerable antiquity of the wind deity may be indicated by some Preclassic figurines found, for example, at Chalcatzingo and Tlapacoya and having Ehecatl-like beaks.[34] A god with a similar mask appears in Oaxaca during the period Monte Albán I, i.e. before the end of the Preclassic. The same god is represented later, e.g. on a Monte Albán-III-

B urn, decorated with "stellar eyes" (Figure 4) which resemble both the Maya half-variant of the Lamat (Venus) glyph and the symbols on some Postclassic Huaxtec sculptures presumably representing Quetzalcoatl and Xolotl.[35]

It seems, then, that both the wind god, a prototype of Quetzalcoatl-Ehecatl, and the feathered serpent were associated with Venus by the Classic, although at that time the two aspects of the later Quetzalcoatl had not yet merged.

An important period in the development of Mesoamerican cultures is the so-called Epiclassic or Terminal Classic (A.D. 700–900), characterized by a strong interaction between central Mexico and the Maya area. During this period, again, the Gulf Coast had a fundamental role. The enigmatic Olmeca-Xicallanca, who at this time appear as a dominating force in central Mexican highlands, probably played an important role in the Teotihuacan culture, but they were undoubtedly of a coastal origin.[36] Recalling Quetzalcoatl's culture hero aspect, it might be significant that various chroniclers mention the Olmeca-Xicallanca as the first civilized nation.[37] Quetzalcoatl is associated primarily with the Toltecs, but also with the Olmeca-Xicallanca who are occasionally identified with the former.[38] Sahagún mentions that the Olmeca, Uixtotin and Mixteca were great craftsmen and merchants, deriving from the east, and that they were considered children of Quetzalcoatl.[39] It is evident, then, that the people explicitly associated with Quetzalcoatl had strong connections with the Gulf Coast. Chadwick's opinion that the predecessors of *pochteca* merchants in the Postclassic central Mexican society were actually the Olmeca-Xicallanca agrees with the hypothesis of Acosta Saignes, who argued for their non-Aztec ethnic origin; indeed, many cultural peculiarities relate this group with the Coast, among them the worship of Quetzalcoatl.[40] Recall that the cult was very popular in Cholula, a merchant city *par excellence*. A famous trade route led through Tochtepec to Xicalango and Acallan in the Gulf area, i.e. to the big ports of trade at which luxury articles from many parts of Mesoamerica accumulated. The names of the groups involved need not concern us here, but it is a matter of fact that the Mexica incorporated into their political and economic system the existent commercial organization, in which the civilized peoples, with roots in the Mesoamerican Classic, had a distinguished place. They must have been composed of diverse ethnic groups, but they all heavily gravitated toward the Gulf Coast. Most of early colonial sources identify the splendid pre-Aztec civilization with the Toltecs, but it should not be overlooked that the founders of the Tollan Xicocotitlan empire were not ethnically homogeneous: the so-called Tolteca-Chichimeca came from the Northwest, but the authentic Toltecs, the real *Kulturvolk*, as Davies says, were those arriving from the opposite direction — the Nonoalca.[41] That is, the Toltec state, as well, incorporated the heirs of the former civilization, benefiting from their arts, knowledge and commercial contacts with the regions of abundance, natural riches and prized products. The cult of the "Toltec" god Quetzalcoatl can be associated precisely with the Nonoalca; since they probably passed

FIG. 5. Column 40 of Temple of the Warriors at Chichén Itzá; note the Venus skirt of the second warrior and the "Tlahuizcalpantecuhtli" figures in the lower portions (from Schele and Freidel, *op. cit.* (ref. 19), Fig. 9:18b).

along the Huaxteca, it is there that the fusion with Ehecatl may have taken place. Late central Mexican myths in which Quetzalcoatl as a civilizing hero comes from the East may reflect these Epiclassic migrations, as well as oriental provenance of the goods which symbolized civilized life.[42]

Two central Mexican Epiclassic sites with very clearly discernible "mayanized" iconographic features are Xochicalco and Cacaxtla. Sáenz identified the personages on Stelae 1 and 3 of Xochicalco with Tlahuizcalpantecuhtli, Venus as morning star, on the grounds of their resemblance to the representations at Tula and Chichén Itzá (Figure 5).[43] According to C. Klein, however, the *en face* representations of the Venus god (like those on the Xochicalco stelae) refer exclusively to the evening aspect of Venus. Furthermore, Stela 3 of Xochicalco contains a date 4 Ollin, which may[44] refer to the sun or to Xolotl, Venus as evening star.[45] Davies contends that Quetzalcoatl appears on the stelae of Xochicalco as Tlahuizcalpantecuhtli and not as Ehecatl,[46] but it should be noted that the date 1 Acatl, so characteristic of Tlahuizcalpantecuhtli, does not appear at all on Xochicalco monuments, whereas we do find several examples of the date 9 Ehecatl, which in later times is known to have been a common designation of Quetzalcoatl as Ehecatl.[47] The dates 9 Ehecatl appear clearly associated with the feathered

serpent. The same date, as well as the plumed serpent, is also found on the Cacaxtla murals, where the date 1 Acatl is, again, absent. These circumstances indicate that Ehecatl and the feathered serpent had probably merged by the Epiclassic. As already discussed in the context of Teotihuacan iconography, Venus signs depicted at Cacaxtla most probably relate to the evening star, and it will be shown that the same association can be suggested for Ehecatl.

While the intrusion of Mayan cultural elements characterizes the Epiclassic in central Mexico, the contemporaneous Maya culture exhibits evident traits of "mexicanization", which has been attributed, again, to the expansion of ideas and people from the zone between the Xicalango region, in southwestern Campeche, and southern Veracruz, but in this context the bearers of the new style and "spirit" of time have been named the Putun or Maya-Chontal.[48]

At the Epiclassic Chichén Itzá there are several representations of warriors with the Highland/Oaxaca style Venus glyphs attached to their heads or skirts. Their non-Maya facial features, hair-style and nose ornaments strongly resemble those of the intrusive foreigners represented on late stelae at Seibal and generally recognized as the mexicanized Chontal Maya of the Gulf Coast (Figure 5).[49] The "star warriors" of this kind are — as has been argued in relation with the Cacaxtla pair of figures wearing "Venus skirts" (Figure 3) — a manifestation of a complex sacrificial, warfare and fertility symbolism associated with Venus as evening star. It may be significant that the warriors with Venus skirts represented in the reliefs at Chichén Itzá appear almost exclusively on the *west-facing* carved panels.[50]

Regarding Quetzalcoatl's association with Venus, Pollock, citing a study by Thompson, pointed out that in central Mexico various contexts associate this god with the east, but Quetzalcoatl-Ehecatl as sky-bearer is related with the west.[51] The apparent anomaly can be accounted for by the fact that there were two concepts embodied in the figure of Quetzalcoatl at the time of the Conquest: the one of creator god and the other of culture hero.

> In his second aspect the god retained many of his old attributes, but acquired new ones, one of these being his association with the morning star. The Codex Chimalpopoca clearly tells of his apotheosis, or metamorphosis to Tlauizcalpantecutli ... he bears the name Ce Acatl.... Ce Acatl is also the sign of Tlauizcalpantecutli, the morning star, and there is no doubt that the later conception of Quetzalcoatl identified him with that deity and with the east.[52]

Some sources clearly distinguish between the two aspects, mentioning the wind god and creator named Quetzalcoatl or Ehecatl on the one hand, and the culture hero personified by the Toltec ruler Ce Acatl, Topiltzin or Nacxit on the other.[53] It is the latter that is transformed into the Morning Star. The deity worshipped in round temples, however, must have been Quetzalcoatl-Ehecatl, considering that some sources explicitly relate the circular form of these buildings to the characteristics of air or wind.[54] Some of these temples

are oriented to the extremes of Venus as evening star,[55] which confirms the above-mentioned links of Quetzalcoatl-Ehecatl with Venus and agrees with the association of this deity with the west.

Pollock presented much evidence indicating that round temples dedicated to Quetzalcoatl must have been of a coastal origin:[56] Quetzalcoatl-Ehecatl is normally represented with Huaxtec attires; the cult of this god was probably very important among the Totonac; round temples may have been inspired by the circular form of houses, which seems to have been common on the Veracruz coast;[57] in central Mexico there are no prototypes of round temples (with the exception of Cuicuilco, but the gap of various centuries, separating it from the Quetzalcoatl temples, makes the continuity improbable); in the Maya area round temples do not appear until the first "Mexican" influences. Also relevant is the following observation: the myths in central Mexico say that Quetzalcoatl came from the east and departed toward the east, whereas according to the reports from Yucatán he arrived from the west and also departed in that direction; these legends, which probably reflect migrations from the Gulf regions, are corroborated by the disposition of round temples, since in the Yucatán peninsula they all have stairways on the western side, while in central Mexico and in the Totonac area they face east.[58] It may be added that the Gulf Coast origin of Ehecatl is confirmed by his representation on the Epiclassic Stela 19 at Seibal, one of the sites that most clearly display intrusions from that area; among many foreign cultural features dated to the Terminal Classic there is also a circular temple.[59]

The lower platform of the Caracol at Chichén Itzá, oriented to the maximum northerly extreme of Venus as evening star, was built during the Terminal Classic, probably in the mid-ninth century.[60] It belongs to the period when iconographic elements of non-Maya origin begin to appear at various Maya sites.[61] In the northwestern part of the Yucatán peninsula this is the time of the florescent Puuc architectural style, of which the Governor's Palace at Uxmal is one of the most splendid specimens; it is not much later than the early phase of the Caracol of Chichén, and is also oriented to the maximum northerly extreme of the evening star. Various traits found at the Puuc sites suggest a foreign impact coming from the Gulf area. The phallic cult, attested at this time, is known to have been popular in the Veracruz regions; according to the books of Chilam Balam, erotic practices and "shameful things" were introduced by the Itzá, whom Thompson identified with the Putun-Maya.[62] Also known are phallic attributes of Quetzalcoatl-Kukulcan,[63] whose worship must have been propagated at the same time. Feathered serpents represented at Uxmal are another foreign element, probably reflecting the newly introduced cult, otherwise indicated by the round temples; the association of the Uxmal feathered serpents with Venus is suggested by the fact that many of them appear in groups of eight (on the Governor's Palace and on the East Wing of Nunnery).[64]

The orientations to the evening star extremes, which delimit the rainy season and agricultural cycle, represent a new manifestation of the Venus-rain-maize complex, embedded in the novel version of the cult of

Quetzalcoatl, who now integrated both feathered serpent and wind god aspects. The peoples from the Gulf Coast area (the Putun-Olmeca-Xicallanca), where the new religion, not present until the Terminal Classic, must have originated, were responsible for its propagation in many parts of Mesoamerica. Round temples, coming into vogue at this time, continued to be constructed during the Postclassic, and some of them were oriented to Venus extremes (the tower of the Chichén Caracol, El Circular-sub of Huexotla and probably the Castillo of Paalmul).[65] Beside the circular structures and the Governor's Palace at Uxmal, some other Epiclassic buildings in the Chenes area of the Yucatán peninsula may have been oriented to Venus extremes (Santa Rosa Xtampak, Nocuchich).[66] Temple 22 at Copán, Honduras, which also possesses alignments relative to Venus as evening star, is not only roughly contemporaneous but also stylistically similar, since its doorway represents the open jaws of a monster, which is a characteristic trait of the Chenes buildings.[67]

Before considering the changes during the Postclassic, let us briefly examine some facts about the ritual ballgame, since the promulgation of the Quetzalcoatl cult appears to be accompanied by the diffusion of ball courts.[68]

The Mesoamerican ballgame originates in the Preclassic, probably in the Gulf Coast area, where the rubber is available. The popularity and dissemination of the practice culminates in the Classic period, especially during its late phases. It is in the Gulf area where the vestiges of the ballgame, as a ceremonial activity involved in vegetation and fertility rites, are particularly abundant. The inhabitants of the region were merchants *par excellence*, and the ballgame cult must have spread as an accompanying feature of the cacao trade, together with militaristic traits which in the Maya area are normally described as "mexicanized" or originating from the Gulf Coast.[69] The frescoes recently discovered in the *Templo Rojo* at Cacaxtla seem to support these affirmations: on the east wall of the stairway leading to the temple, the Maya God L or his impersonator is depicted as an armed merchant framed by a feathered serpent and standing in front of a cacao tree; one of the objects tied to his *cacaxtli* or backpack has been interpreted as a newly-prepared egg-shaped rubber ball.[70]

In view of the observed parallelisms in the evolution and expansion of the ritual ballgame and the Quetzalcoatl cult, it seems that we are dealing with two aspects or parts of a single religious complex, whose bearers were the traders from the Gulf Coast. It is known that the ballgame involved a complex symbolism related with the agricultural cycle and fertility, on the one hand, and with Venus (and other celestial bodies), on the other.[71] Quetzalcoatl had very similar connotations; his connections with trade may have been secondary, explicable by the most characteristic activity of those who were diffusers of his worship. Quetzalcoatl is mentioned in the ballgame context in the Atamalcualiztli hymn and in other myths, and is probably represented in the Chichén Itzá and El Tajín ball courts.[72] More explicitly, the patron of the ballgame was Xolotl, i.e. the evening star variant of Quetzalcoatl.[73] Consequently, if the ballgame, as a ceremonial activity associ-

ated with the Quetzalcoatl cult, was also governed by the evening star, this confirms the above-mentioned priority of the evening manifestation of the planet in the Venus-rain-maize complex.

At this point it seems fair to call attention to the fact that the idea of relating both Quetzalcoatl and Itzamna with Venus as evening star is not entirely new; Walter Lehmann reached the same conclusion many years ago, though on different grounds. He argued that Quetzalcoatl is manifested in two basic forms corresponding to two different Toltec cultures: the earlier one is referred to in myths that stress the absence of human sacrifices, while the later Quetzalcoatl appears as a victorious warrior associated with Venus as morning star and equivalent to Kukulcan, who introduces the practice of human sacrifices in Yucatán. The earlier version of Quetzalcoatl is related with the crescent moon and with Venus as evening star, in accordance with the importance of the west in cosmological systems of lunar type, whereas the later association with the morning star is a characteristic of a lunisolar system. As Itzamna was associated with the west and his worship in Yucatán was replaced by the cult of Kukulcan as morning star, Lehmann concludes that Itzamna was also linked to the moon and Venus as evening star.[74]

It is obvious that many details of Lehmann's argument, not fully presented here, can no longer be sustained. Even if the legends may, indeed, reflect the escalation of violence and militarism during the Epiclassic and Postclassic, they are nonetheless much idealized: war and human sacrifice were common in Mesoamerica since remote times. These comments notwithstanding, the importance of the moon may have, indeed, contributed to the prominence of the evening aspect of Venus. In effect, the lunar count, only vaguely connected with the tropical year, in terms of general evolution antedates the calendars which try to establish a more accurate correspondence with the solar year.[75] Specifically, the complex Mesoamerican calendric system may have been preceded by a calendar of a lunar type, consisting of 12 or 13 lunar months accommodated in the tropical year.[76] In strictly lunar calendars the beginning of each month is determined by the first visibility of the crescent moon after conjunction, which normally results in that the days begin at sunset,[77] and it is interesting that some indigenous groups in Guatemala still begin each new day at sunset, which may be a survival from prehispanic times.[78] If so, the origin of this practice must be very ancient indeed, as the lunisolar rather than lunar calendars were used in Mesoamerica as early as the Preclassic. Nevertheless, even in later periods the moon definitely had an enormous importance, particularly among the Maya;[79] in view of their evident attempts at correlating Venus and moon cycles,[80] and considering that the most natural starting point of the lunar cycle is the first visibility of the crescent moon in the west,[81] it is possible that the Venus calendar, such as the one in the Dresden Codex, originally began with the first appearance of the evening star, as Lehmann suggested.[82]

Even if this argument has no direct relevance for the discussion on the Venus identity of Quetzalcoatl and Itzamna, it does seem significant that Lehmann, as early as half a century ago, recognized the importance of the

evening star. Until quite recently it was generally believed that the ancient Mesoamericans paid almost no attention to the evening manifestation of Venus; this common assumption was largely based on a few early colonial reports, which mostly refer only to the Conquest-period central Mexican cultures, but admittedly seem quite explicit in emphasizing the significance of Venus as morning star, particularly in relation with Quetzalcoatl. The evidence examined so far, however, clearly reveals the primacy of the evening aspect of the planet: both the Venus-rain-maize complex and the related sacrificial and warfare symbolism, as well as the deities involved, were associated primarily with the evening star.[83] Since this holds true also for Quetzalcoatl, why do so many sources relate him to the morning aspect of Venus?[84] If a shift really occurred, as Lehmann supposed, how can we explain it?

Various scholars have observed that the characteristics of Tlahuizcalpantecuhtli, Lord of the Dawn, who is iconographically identical to Mixcoatl, god of war and hunting, notably differ from those of Quetzalcoatl-Ehecatl.[85] Defining his Mixcoatl-Tlahuizcalpantecuhtli complex of deities, Nicholson says they shared a number of features with Huitzilopochtli and "symbolized the earlier hunting-gathering, 'Chichimec' life way".[86] According to Jiménez Moreno, celestial deities like Mixcoatl and Huitzilopochtli characterized the religion of the nomads who invaded central Mexico after the fall of Tula and whose gods became a superstructure in the newly formed religious syncretism.[87]

Indeed, the representations of the so-called Tlahuizcalpantecuhtli at Tula probably do not refer to the God of the Morning Star. A human head frequently appears in the jaws of the front head of the Maya celestial monsters; Kelley suggests that this motif may have been the prototype of the Toltec figure identified by Sáenz with Tlahuizcalpantecuhtli.[88] If so, the morning star association cannot be sustained, since the celestial monsters' front heads relate to the west.[89] Furthermore, it has been argued that the deities of Venus as morning star are never represented *en face*, and thus the so-called Tlahuizcalpantecuhtli figures of Tula and Chichén Itzá may only refer to the evening star or to some other chthonic deity (Figure 5).[90]

This evidence supports the opinion that Tlahuizcalpantecuhtli-type deities, with the emphasis on the worship of Venus as morning star, had not come into vogue until after the fall of Tula, when the invasions of the northern Chichimec tribes of the Uto-Aztecan linguistic stock provoked not only political realignments in central Mexico but also important changes in religion and world view.

David Kelley showed, on linguistic and ethnographic grounds, that the ancient Uto-Aztecan peoples had two principal and interrelated deities: a savage canid, probably a coyote, and a god of hunting. Both were associated with Venus as morning star, fire and, occasionally, with agriculture. In Uto-Aztecan mythology the coyote is the erotic trickster and culture hero. According to Kelley, the Uto-Aztecan association of coyote + elder brother + creator + trickster + culture hero + morning star blended with the

Mesoamerican concept of creator + giant serpent + rain.[91] But the fusion had not resulted in a coherent deity, as the distinction between Tlahuizcalpantecuhtli and Quetzalcoatl is normally quite clear.[92]

When Quetzalcoatl acquired new attributes, we can imagine that Venus as morning star became dominant also in the beliefs concerning rain and maize. Likewise, the transference of the emphasis on the morning aspect of the planet probably affected other deities connected with Venus, rain and maize, e.g. Cinteotl.[93] However, even if the morning star has a dominant position in various manifestations of the Venus-rain-maize complex,[94] the evidence of its relationship with rain and maize is not so decisive. Xulab, the morning star god of the Kekchi and Mopan Maya, is patron of agriculture, hunting and fishing, but "particularly the last two".[95] Mixcoatl and gods of hunting among the Cora and Huichol are also identified with Venus as morning star.[96] It may also be significant that Quetzalcoatl neither creates the maize nor provides it for mankind; he only *discovers* it. It is Nanahuatl, the evening star, who opens the mountain.[97] The relationship between Xulab and Yaluk in the Kekchi myths is comparable. In Cora mythology the Morning Star kills the water serpent to prevent the flood, and similar stories were found among the Lacandones and other groups;[98] it seems that Venus as morning star features as a deity who *controls* the rain, but does not produce it.[99]

Granted that the importance of Venus as morning star in the beliefs about rain and maize derives from the population movements at the beginning of the Late Postclassic, another problem remains to be solved. Since the evidence presented in Part I suggests that these concepts were relatively common at the time of the Conquest, it must be postulated that in a few centuries they spread into various parts of Mesoamerica. Indeed, the Late Postclassic is characterized by movements of people and ideas on a large scale. Some late murals of Tulum and Santa Rita, on the Caribbean Coast of the Yucatán peninsula, belong to this period: having few Maya traits, they rather resemble central Mexican and Oaxaca styles. This International Style of the Late Postclassic, as Robertson called it, is also exhibited in the murals of Iximche in Guatemala.[100] The presence of strangers in the Late Postclassic Tulum is reflected in mural painting, architecture and ceramics; even the settlement pattern of the latest phase of Tulum is not Mayan, but rather of a central Mexican type.[101]

The ultimate origin of these influences, which may have included the worship of Venus as morning star, is to be sought in central Mexico. Miller identifies the foreigners, whose presence is attested at Tulum after A.D. 1400, with the nahuatized Putun-Maya, probably connected with the Aztec trade system and involved in their expansionist policy: the diffusion of central Mexican cultural traits, based on the *pochteca* commercial system, may have been a prelude to an actual takeover.[102] The same conclusion was reached by Navarrete: discussing the Late Postclassic Mexican influences in the southern Maya area, he places their focus at Tenochtitlan, centre of the empire which possessed the military control of trade and communication routes as far as the Soconusco area in southern Chiapas:[103]

> ... it seems we are facing a phenomenon of the mexicanization of the Maya people, as a preparatory preamble to a more violent intervention ... attempts at what in our days is termed cultural colonization on the part of someone who exports economic ambitions, and along with them imposes his way of life, his gods, his myths and his philosophy.[104]

In view of this evidence the relationship of Venus as morning star with rain and maize should be considered secondary: it was a consequence of a relatively late fusion of two religious traditions. The new concepts spread to various parts of Mesoamerica, but they could not totally obscure the superiority of the evening star in the Venus-rain-maize complex.

2. POSSIBLE OBSERVATIONAL BASES OF THE VENUS-RAIN-MAIZE COMPLEX

It is more than probable that the pan-Mesoamerican beliefs relating Venus with rain, maize and fertility have some real observational basis. To the modern man of the urban twentieth-century civilization, diverse conceptual associations found in other cultures may appear, at a first glance, incomprehensible and illogical, since in many cases they do not establish correct relations of cause and effect in terms of modern scientific reasoning. However, the possibility that they do reflect the observation of natural phenomena should never be discarded. Cyclic changes in the nature are manifested in innumerable observable phenomena coinciding in time and space. The perception of these coincidences, many of which are peculiar to a particular habitat and far from obvious to a stranger, is reflected in specific mental constructs which compose a particular world view.

> Understanding the symbolism of a culture often begins by bearing witness to the complex behavior of the things and phenomena of that segment of the world view we call "natural". For Maya symbolism specifically, this means we are obligated to know the life cycle of the toad, the stingless bee, and the maize plant, to name but a few of the entities that we, in our unfortunate wisdom, separate from the rest of nature and relegate to the zoological and botanical realms. We must also be able to follow the course of the sun, the stars, and the intricate movement of Venus, matters that we choose to label astronomy.[105]

The following arguments show that the apparent motion of Venus does have some characteristics that may account for the outstanding place of the planet in the beliefs concerning rain and maize.

(1) As suggested by Dütting and Graulich, Venus, during its disappearance period around inferior conjunction and before the morning star's heliacal rise, may have been associated with the sown maize seed which remains invisible for a comparable lapse of time before the new plant is born.[106] The canonical period of Venus visibility around inferior conjunction in the Venus table of the Dresden Codex is 8 days, which is, in effect, the average disap-

pearance interval in Mesoamerican latitudes.[107] This may be significant, as the Maya maize god was patron of the numeral 8;[108] but on the other hand, this association may have been derived from the 8-year cycle equivalent to 5 synodic periods of Venus.[109]

(2) Venus as both morning or evening star is visible, on the average, for 263 days.[110] Since the agricultural cycle in various parts of Mesoamerica also encompasses some 260 days, this correspondence may have motivated the association of Venus with maize and, by extension, with rain.[111]

(3) Iwaniszewski has suggested that the concepts concerning death and rebirth, reinforced by the development of agriculture, became correlated with Venus's setting.[112] This correlation, however, refers rather to both aspects of the planet: Venus "dies" in the west, but is "reborn" in the east.

(4) Venus's attributes may represent an extension of lunar symbolism. All over the world, including Mesoamerica, the moon is associated with water, vegetation and fertility.[113] Among the Mixe-Popoluca and Cora the moon has its house in the West, probably because after conjunction it is first visible in the western sky.[114] Lunar symbolism may thus have been transferred or extended both to western side of the universe and to Venus as evening star. It is known that Mesoamerican deities associated with the west were linked to water and maize,[115] and that the crescent moon and Venus as evening star were related concepts, as well as the waning moon and the morning star.[116]

(5) As already shown in Part I, Section 1, the extremes of Venus exhibit a permanent concomitance with seasons of the year. Particularly interesting are the evening star extremes: occurring between April and June (northerly extremes) and between October and December (southerly extremes), they approximately coincide with the onset and the end of the rainy season in Mesoamerica. Some quite explicit data indicate that these coincidences were, indeed, perceived.[117] Accurate observations must have revealed that one northerly/southerly extreme in each 8-year cycle is greater than others; the importance of these maximum extremes, attested in architectural alignments,[118] can be accounted for by the fact that they always occur around 3 May/November and thus delimit the rainy season more exactly than other extremes (Figure 6). In some regions of Mesoamerica, e.g. in the Maya Lowlands, the maximum extremes also approximately coincide with the planting and harvesting season.[119]

The associations of Venus with rain and maize may have been motivated by a combination of observational facts set out above, and perhaps by some that have not been recognized. Yet the decisive factors must have been the Venus-moon conceptual relationship (4) and Venus extremes (5). The following argument supports this conclusion:

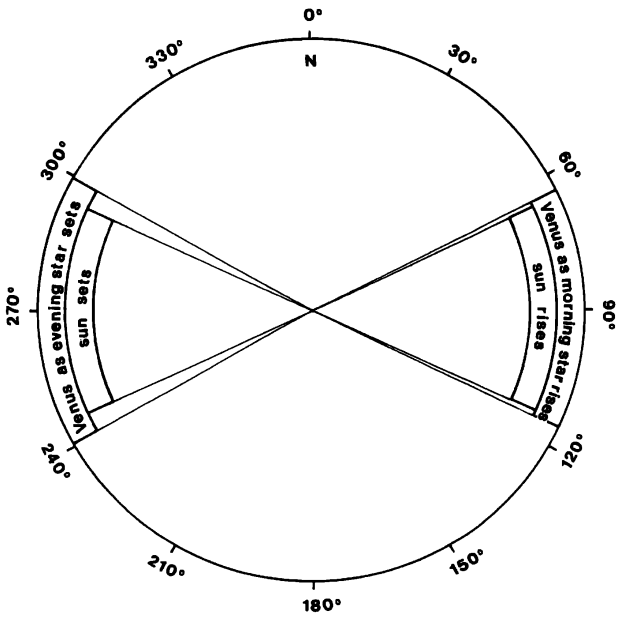

FIG. 6. Zones of the horizon where Venus visible as morning/evening star rises/sets, compared to the sunrise and sunset zones in Mesoamerican latitudes; note the asymmetry in magnitude of the maximum extremes visible in the east and west. The view is from the sky upon an imaginary observer at the centre. While all Venus extremes are seasonally fixed, those of the evening star are particularly interesting, because they approximately delimit the rainy season in Mesoamerica (drawing by Snežana Hvala-Tecco).

(a) the fusion or mutual transference of the concepts related with the moon and Venus, as well as the observation of the extremes and/or of the movement of Venus as evening star along the horizon, are documented by the evidence presented in Part I, Section 3 (units B, G, I and N);

(b) the rainy season, conditioning the agricultural cycle, is a seasonal phenomenon, while the only Venus phenomena maintaining the concordance with the seasons seem to be the extremes;

(c) the moon's association with water, vegetation and fertility is universal; the fact that Venus as evening star is also associated with fertility in many cultures of the world might be accounted for by the extension of lunar symbolism to the evening manifestation of the planet, because both the moon and the evening star "rise" in the west;

(d) the evening star extremes concur with important annual climatic changes in various parts of the world, where the association of Venus as evening star with fertility was documented;[120]

(e) circumstances (1), (2) and (3) may have contributed to or reinforced the Venus-rain-maize association, but they do not explain the importance of the evening star in these concepts.

CONCLUDING REMARKS

The Venus-rain-maize complex, like any other cultural trait, was a phenomenon intimately related with other aspects of Mesoamerican cultures. The comprehension of its characteristics can therefore contribute to a general understanding of the societies involved. Since the modifications detected in the development of the Venus-rain-maize complex reflect certain sociocultural changes, this research may have some general implications for the understanding of historical and evolutionary processes in Mesoamerica.

The formation and the basic characteristics of the Venus-rain-maize complex can be explained in terms of the observation of nature. The apparently invariable and perfect celestial order is universally considered as superior to the human order; hence the notions about the sky events determining terrestrial affairs. It has been shown that Venus extremes are seasonally fixed phenomena; especially interesting are the evening star extremes, not only because they are greater than those visible on the eastern horizon, but particularly because they herald the onset and the end of the rainy season in Mesoamerica. The perception of these coincidences probably resulted in Venus as evening star coming to be conceived as one of the agents responsible for the timely occurrences of two crucial annual climatic changes, which conditioned, as they still do, a proper development of the agricultural cycle. Another fact motivating the rain and maize symbolism of Venus as evening star must have been the association of the west side of the universe with the moon, whose relationship with water and fertility is worldwide.

The association of Venus as evening star with fertility symbolism seems to be common in agricultural societies on quite different levels of complexity. It is therefore probable that the Venus-rain-maize complex in Mesoamerica began to develop already at an early stage of the evolution of agriculture. Some archaeological data, though not unambiguous, indicate that these concepts may have been incorporated into the Mesoamerican world view by the Middle Preclassic, but it is from the Classic onwards that their presence can be considered as firmly established. At some time the Venus-rain-maize complex became closely connected with sacrificial and warfare symbolism, probably as a consequence of certain ideological substantiations, commonly effected by the ruling class in stratified societies. The evidence examined suggests that the evening star had a leading importance in the Venus-rain-maize complex and that the morning star ascended in rank only in the Late Postclassic, when the population movements brought to central Mexico new religious ideas (many of them characteristic of hunting and gathering societies) that had their ultimate origin to the north.

In Aztec society Venus was associated with numerous deities. Similar gods represented different aspects of the same symbolism. Some of them may have originated within different historical traditions, occupying comparable positions, but with time they were incorporated in a single religious complex in which each was attributed a specific function.[121] In some cases it is evident that a coherent union of ancient and recently arrived deities and concepts

had not been achieved by the time of the Conquest.[122] Nevertheless, the overlap of the characteristics of various gods in a religious complex is not always and not only a consequence of converging historical traditions. Since various phenomena observable in nature coincide in time and/or space, or apparently condition each other, it is natural that the deities related to them reflect the observed correlations. For example, the setting sun, the crescent moon and Venus as evening star share the same side of the sky, and thus it is understandable that they were conceptually fused. On the other hand, different gods associated with Venus may have represented distinct segments of the planet's synodic period which symbolized the concomitant natural phenomena (e.g. the autumnal appearances of the evening star toward the south may have been linked to the end of the rainy season and the harvest).[123]

According to Thompson, the practitioners of the Venus cult were the upper social classes.[124] However, ethnographic evidence presented in Part I suggests that the beliefs and rites involved in the Venus-rain-maize complex could not have been an exclusive domain of the élite, since they persist in present-day rural communities. For the perception of the phenomena that probably motivated these concepts no sophisticated methods or tools are required: the apparent motion of the moon and its phases are well known to the modern peasants;[125] also easily observable is the parallelism between the movement of Venus with regard to the horizon and the periodic climatic changes. On the other hand, to establish the exact magnitude and dates of the extremes, their periodicity, the exact length of the synodic period and of the visibility and invisibility intervals, much more accurate and time-consuming observations are necessary, as well as recording devices that permit the storage and accumulation of data (writing, calendar, etc.). This knowledge was undoubtedly a privilege of the ruling class and was, indeed, lost soon after the Conquest, when the indigenous social system was decapitated.

The basic ideas of the Venus-rain-maize complex could, then, have originated in egalitarian societies, but been developed later and complemented with more advanced knowledge achieved by specialists within complex social systems. Astronomical knowledge about Venus does not offer an adaptive advantage to societies that possess it, since the prediction of natural changes that coincide with Venus phenomena is much easier on the basis of observations of the sun and stars. How, then, can we explain the presence of this sophisticated but apparently useless knowledge in Mesoamerica?

The Venus-rain-maize complex was part of the world view. In complex societies such beliefs are incorporated into the ideology of the governing class which pretends to be responsible of the proper functioning of the universe; the natural order is conditioned by the cult and orderly ritual performances.[126] Possibly the role of Venus in the beliefs about rain and maize dictated certain ceremonial acts that served as instruments of domination. The prediction of astronomical events and the astrological services contributed to the legitimation of power. But on the other hand, the attention that the ancient Mesoamericans dedicated to the planet Venus can be attributed to some additional, quite different motives:

> ... agrarian states also often develop esoteric knowledge which has no direct social relevance for the masses or for the management of the social system, but the possession of which is defined as a criteria for high rank: for example, the requirement of Confucian knowledge for those seeking bureaucratic posts in Imperial China, the Latin requirement in English boys' public schools in the nineteenth century, the privileges of the mantric knowledge of the Brahmins of India, and the need for the Aztec elites to inform their offspring of the celestial wanderings of the morning star.... These people neither produced food, nor served directly to make the social system run smoothly. Often, history tells us, they worked in their own devious paths simply to satisfy their own hunger for knowledge for knowledge's sake.[127]

REFERENCES

1. Ivan Šprajc, "The Venus-rain-maize complex in the Mesoamerican world view: Part I", *Journal for the history of astronomy*, xxiv (1993), 17–70.
2. Peter David Joralemon, *A study of Olmec iconography* (Studies in Pre-Columbian Art and Archaeology, no. 7; Washington, 1971), 13, 82, 90; *idem*, "The Olmec dragon: A study in pre-Columbian iconography", in *Origins of religious art and iconography in Preclassic Mesoamerica*, ed. by H. B. Nicholson (UCLA Latin American Studies Series, 31; Los Angeles, 1976), 27–71, pp. 33, 37. Also in the Preclassic art of Izapa the jaguar seems to be related with mountains and rain: Virginia G. Smith, *Izapa relief carving: Form, content, rules for design, and role in Mesoamerican art history and archaeology* (Studies in Pre-Columbian Art and Technology, no. 27; Washington, 1984), 28.
3. See the whole argument in Šprajc, *op. cit.* (ref. 1), 43–45, Figs 4–7.
4. Esther Pasztory, *The iconography of the Teotihuacan Tlaloc* (Studies in Pre-Columbian Art and Technology, no. 15; Washington, 1974), 15f.
5. Pedro Armillas, *Los dioses de Teotihuacán* (Mendoza, 1945; orig. publ. in *Anales del Instituto de Etnología Americana*, vi (1945), 35–61), 17f.; Eduard Seler, *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Altertumskunde* (5 vols, Graz, 1960–61; orig.: Berlin, 1902–23), v, 440.
6. Laurette Séjourné, "Teotihuacán, la ciudad sagrada de Quetzalcóatl", *Cuadernos americanos*, lxxv (1954), no. 3, 177–205, p. 200, Fig. 15; Arthur G. Miller, *The mural painting of Teotihuacán* (Washington, 1973), 94f., 164f.; Šprajc, *op. cit.* (ref. 1), Fig. 9b.
7. Miller, *op. cit.* (ref. 6), 146f.
8. John B. Carlson, *Venus-regulated warfare and ritual sacrifice in Mesoamerica: Teotihuacan and the Cacaxtla "star wars" connection* (Center for Archaeoastronomy Technical Publication, no. 7; College Park, Maryland, 1991), Figs 7 c and d, 13 g and h; Janet Catherine Berlo, "Early writing in central Mexico: *In tlilli, in tlapalli* before A.D. 1000", in *Mesoamerica after the decline of Teotihuacan: A.D. 700–900*, ed. by R. A. Diehl and J. C. Berlo (Washington, D.C., 1989), 19–47, p. 26, Fig. 8.
9. Ellen T. Baird, "Stars and war at Cacaxtla", in *Mesoamerica after the decline of Teotihuacan*, ed. by Diehl and Berlo (ref. 8), 105–22; Carlson, *op. cit.* (ref. 8).
10. Šprajc, *op. cit.* (ref. 1), Fig. 3.
11. Andrés Santana Sandoval, Sergio de la L. Vergara Verdejo and Rosalba Delgadillo Torres, "Cacaxtla, su arquitectura y pintura mural: Nuevos elementos para análisis", in *La época clásica: Nuevos hallazgos, nuevas ideas*, ed. by A. Cardós de Méndez (Mexico City, 1990), 329–50, p. 334.
12. Baird, *op. cit.* (ref. 9).
13. Carolyn Baus Czitrom, "El culto a Venus en Cacaxtla", in *La época clásica*, ed. by Cardós (ref. 11), 351–69, pp. 354ff. The modern Tzotzil in the Magdalenas region of Chiapas believe that the scorpion provokes lightning and rain: *ibid.*, 355. The exhaustive argument offered by C. Baus in the cited article removes the last doubt concerning the Venus identity of the five-lobed sign appearing at Cacaxtla and, in later derived versions, all over central Mexico, in Oaxaca and Yucatán; see also the supportive argu-

ment of Virginia E. Miller, "Star warriors at Chichen Itza", in *Word and image in Maya culture: Explorations in language, writing, and representation*, ed. by W. F. Hanks and D. S. Rice (Salt Lake City, 1989), 287–305, pp. 290ff. Additional evidence confirming the Venus-rain-war-sacrifice associations of the Cacaxtla Scorpion Man can be found in Carlson, *op. cit.* (ref. 8), 19ff.

14. Carlson, *op. cit.* (ref. 8), 19ff., Figs 8 j and k.
15. *Cf.* Donald McVicker, "The 'Mayanized' Mexicans", *American antiquity*, l (1985), 82–101.
16. Carlson, *op. cit.* (ref. 8), 25f.
17. *Ibid.*, 38ff.
18. Baird, *op. cit.* (ref. 9), 115; Floyd G. Lounsbury, "Astronomical knowledge and its uses at Bonampak, Mexico", in *Archaeoastronomy in the New World*, ed. by A. F. Aveni (Cambridge, 1982), 143–68, p. 153; John B. Carlson, "The Grolier Codex: A preliminary report on the content and authenticity of a 13th-century Maya Venus almanac", in *Calendars in Mesoamerica and Peru: Native American computations of time*, ed. by A. F. Aveni and G. Brotherston (BAR International Series, 174; Oxford, 1983), 27–57, pp. 45ff.
19. Linda Schele and David Freidel, *A forest of kings: The untold story of the ancient Maya* (New York, 1990), 130f., 147 and *passim*; Carlson, *op. cit.* (ref. 8). Even if other planets were probably also involved in the timing of war events, Venus phenomena predominate; furthermore, the dates that can be related with the first evening star appearances seem to be the most accurate observational records: Anthony F. Aveni and Lorren D. Hotaling, "Monumental inscriptions and the observational basis of Mayan planetary astronomy", paper presented at the 8th Mesa Redonda de Palenque (June 1993).
20. Baird, *op. cit.* (ref. 9), 111, 118.
21. Joralemon, "Olmec dragon" (ref. 2), 61.
22. Various similarities between Quetzalcoatl and Itzamna attest their generic relationship: both were creators, incorporating the aspect of culture hero (inventor of arts, calendar and writing) and presiding over water and fertility, they both had a special connection with rulers, etc.; *cf.* Alfredo López Austin, *Hombre-dios: Religión y política en el mundo náhuatl* (Mexico City, 1973); J. Eric S. Thompson, *Maya history and religion* (Norman, 1970), 209–33.
23. Charles A. Hofling, "Venus and the miscellaneous almanacs in the Dresden Codex", *Journal of Mayan linguistics*, vi (1988), 79–102.
24. Šprajc, *op. cit.* (ref. 1), 38f.
25. J. E. S. Thompson, "Las llamadas 'fachadas de Quetzalcouatl' ", in *Vigesimoséptimo Congreso Internacional de Americanistas* (Mexico City, 1943), i, 391–400, p. 398; Eduard Seler, *Die Quetzalcouatl-Fassaden yukatekischer Bauten* (Berlin, 1916). Schele and Freidel, *op. cit.* (ref. 19), 71f., 427, have recently argued that these façades represent the *witz* monster; the concept of the mountain (*witz*) is known to have been intimately related to water, and thus the former identification of the long-nosed images and zoomorphic façades with the rain god Chac and Itzamna is, again, not too mistaken, particularly if we consider that Itzamna "came near to incorporating most of the other major gods in his person as various of his aspects" (Thompson, *Maya history* (ref. 22), 210; see also Jorge Angulo V., "Origen mítico de las fachadas zoomorphas de Río Bec", *Cuadernos de arquitectura mesoamericana*, no. 12 (1991), 23–33).
26. Pedro Armillas, "La serpiente emplumada, Quetzalcoatl y Tlaloc", *Cuadernos americanos*, xxxi (1947), no. 1, 161–78, p. 163.
27. *Ibid.*; Román Piña Chan, *Quetzalcóatl: Serpiente emplumada* (Mexico City, 1977); Henry B. Nicholson, "Religion in pre-Hispanic Central Mexico", in *Handbook of Middle American Indians*, x, ed. by G. F. Ekholm and I. Bernal (Austin, 1971), 395–446; *idem*, "Ehecatl Quetzalcoatl vs. Topiltzin Quetzalcoatl of Tollan: A problem in Mesoamerican religion and history", in *Actes du XLIIe Congrès International des Américanistes: Paris, 2–9 Septembre 1976* (Paris, 1979), vi, 35–47; Burr Cartwright Brundage, *The fifth sun: Aztec gods, Aztec world* (Austin, 1979), 102–28; *idem*, *The phoenix of the western world: Quetzalcoatl and the sky religion* (Norman, 1982); Nigel Davies, *The Toltecs: Until the fall of Tula* (Norman, 1977).
28. Joralemon, *Olmec iconography* (ref. 2), 82ff.
29. Bartolomé de Las Casas, *Apologética historia sumaria...* (2 vols, Mexico City, 1967), i, 646 — B. 3, ch. 122; Bernardino de Sahagún, *Historia general de las cosas de Nueva España*, 6th edn (Mexico City, 1985), 654f — B. 11, ch. 6. These descriptions of a serpent with feathers on its head agree with some Preclassic Olmec style representations — see Joralemon, *Olmec iconography* (ref. 2), 82f., Figs 245, 247, 248.

30. Carlson, *op. cit.* (ref. 8), Fig. 11a; A. Miller, *Teotihuacán* (ref. 6), 165 — Figs 346, 349.
31. Šprajc, *op. cit.* (ref. 1), Fig. 3.
32. Carlson, *op. cit.* (ref. 8), 30f., Fig. 11 d and e; V. Miller, *op. cit.* (ref. 13), 294.
33. Brundage, *The fifth sun* (ref. 27), 108; *idem*, *The phoenix* (ref. 27), 72; Lorenzo Ochoa, *Historia prehispánica de la Huaxteca*, 2nd edn (Mexico City, 1984), 144.
34. Jorge Angulo V., "Los relieves del grupo 'IA' en la montaña sagrada de Chalcatzingo", in *Homenaje a Román Piña Chan* (Mexico City, 1987), 191–228, p. 204, Fig. 9; Alfredo López Austin, *Los mitos del tlacuache: Caminos de la mitología mesoamericana* (Mexico City, 1990), 333.
35. *Cf.* Alfonso Caso and Ignacio Bernal, *Urnas de Oaxaca* (Mexico City, 1952), 365, Figs 93, 284; Ochoa, *op. cit.* (ref. 33), pls. XLV: A, C, and XLVI: a; Brundage, *The phoenix* (ref. 27), 230, Fig. 31, and 266, Fig. 35. Also similar are the signs, possibly representing Venus, in the El Tajín reliefs: Jean-Claude Delhalle and Albert Luykx, "The nahuatl myth of the creation of humankind: A coastal connection?", *American antiquity*, li (1986), 117–21, p. 118. The identification of these motifs on the Oaxaca urns as Venus symbols is suggested not only by their formal similarity to the Maya Lamat glyphs. Justeson *et al.* showed that the Lamat day name is probably of Zapotec origin, having been diffused to Mayan languages during the Late Preclassic. Lexical diffusion, however, does not necessarily imply that the Lamat glyph came to the Maya area directly from the Zapotecs; iconographic evidence rather suggests a divergent development of Mayan and Zapotec signs from common earlier prototypes: John S. Justeson, William M. Norman, Lyle Campbell and Terrence Kaufman, *The foreign impact on Lowland Mayan language and script* (Middle American Research Institute, Publ. 53; New Orleans, 1985), 21, 50, 52, 66.
36. R. E. L. Chadwick, "The 'Olmeca-Xicallanca' of Teotihuacan: A preliminary study", *Mesoamerican notes*, vii–viii (1966), 1–24; Marta Foncerrada de Molina, "Mural painting in Cacaxtla and Teotihuacán cosmopolitism" in *Third Palenque Round Table, 1978: Part 2*, ed. by M. Greene Robertson (Austin and London, 1980), 183–98, p. 186; Davies, *op. cit.* (ref. 27), 122; H. E. D. Pollock, *Round structures of aboriginal Middle America* (Carnegie Institution of Washington, Publ. 471; Washington, 1936), 164.
37. Chadwick, *op. cit.* (ref. 36), 1.
38. Pollock, *op. cit.* (ref. 36), 163f.
39. Sahagún, *op. cit.* (ref. 29), 608f., 614 — B. 10, ch. 29.
40. Chadwick, *op. cit.* (ref. 36), 17; Miguel Acosta Saignes, "Los pochteca: Ubicación de los mercaderes en la estructura social tenochca", in *El comercio en el México prehispánico*, ed. by M. Acosta Saignes (Mexico City, 1975), 15–61 (orig. publ. in *Acta anthropologica*, i (1945), no.7).
41. Davies, *op. cit.* (ref. 27), 52.
42. *Ibid.*, 158, 177; Pollock, *op. cit.* (ref. 36), 163. There is plenty of archaeological evidence supporting this general picture of central Mexican Epiclassic. Teotihuacan was well connected with the Atlantic coast, particularly with southern Veracruz; copious sea shells and other coastal symbols in iconography also indicate that Teotihuacan was, in a way, "Gulf-oriented". Foreign ceramics found in certain Teotihuacan *barrios* is, especially in later periods, predominantly of the Gulf Coast origin, probably attesting the presence of merchants. Davies, *op. cit.* (ref. 27), 97; Evelyn Childs Rattray, "Los barrios foráneos de Teotihuacan", in *Teotihuacan: Nuevos datos, nuevas síntesis, nuevos problemas*, ed. by E. McClung de Tapia and E. C. Rattray (Mexico City, 1987), 243–73, p. 261; *eadem*, "Nuevas interpretaciones en torno al Barrio de los Comerciantes", *Anales de antropología*, xxv (1988), 165–80. It is also indicative that the most probable linguistic affiliation of the Teotihuacanos is Totonacan, and that the Postclassic Totonacs believed that their ancestors had built the Pyramids of the Sun and the Moon, before arriving at the Gulf Coast; even the Aztecs, according to Torquemada, attributed the construction of Teotihuacan to the Totonacs: Justeson *et al.*, *op. cit.* (ref. 35), 68, 72 n. 5. Considering that Teotihuacan's links with the Gulf area are suggested by such a variety of data, it seems natural to suppose that after the city's fall a considerable part of the population migrated toward the southeast, where the bearers of the "Mexican" culture met and to a certain extent intermingled with the western Maya: Davies, *op. cit.* (ref. 27), 122, 220f.; Pollock, *op. cit.* (ref. 36), 164. Other migrations at a later date probably took the opposite course, bringing to central Mexico "Mayoid" traits exhibited at sites such as Xochicalco and Cacaxtla. Some archaeological evidence from the Huaxtec region indicates contacts with the Maya area during the Late Classic; some central Mexican sources mention the arrival of the peoples from the Pánuco region, and it might be that they were coming from the zone between Tabasco and Campeche: Ochoa, *op. cit.* (ref. 33), 33ff., 112ff., 115.

43. César A. Sáenz, "Las estelas de Xochicalco", in *XXXV Congreso Internacional de Americanistas: México, 1962* (Mexico City, 1964), 69–100, pp. 71f., 77. Seler, *Gesammelte Abhandlungen* (ref. 5), i, 692f., seems to have been the first to relate the images at Chichén Itzá, representing a human face protruding from the serpent's mouth, with Kukulcan – morning star.
44. Cecelia F. Klein, *The face of the earth: Frontality in two-dimensional Mesoamerican art* (New York and London, 1976), 85ff., 97.
45. *Cf.* Šprajc, *op. cit.* (ref. 1), 29f. Pasztory rejected Sáenz's identification and interpreted the personages of Stelae 1 and 3 as earth deities, connected with fertility and the night sun: Esther Pasztory, "The Xochicalco stelae and a Middle Classic deity triad in Mesoamerica", in *Actas del XXIII Congreso Internacional de Historia del Arte* (Granada, 1973), i, 185–215, pp. 187ff. As it has been shown, the concept of the night sun often merged with Venus as evening star: Šprajc, *op. cit.* (ref. 1), 38.
46. Davies, *op. cit.* (ref. 27), 67.
47. Alfonso Caso, *Los calendarios prehispánicos* (Mexico City, 1967), 191. The glyph appearing at Xochicalco is, in fact, the so-called Reptile's Eye, but this was identified with the Mexica sign Ehecatl by Caso, *ibid.*, 161, 164f. Prem's analysis of the dates carved on the Pyramid of the Feathered Serpent at Xochicalco supports this identification: Hanns J. Prem, "Überlegungen zu den chronologischen Angaben auf der Pyramide der gefiederten Schlangen, Xochicalco, Morelos, México", *Ethnologische Zeitschrift*, i (1974) (*Festschrift Otto Zerries*), 351–64, p. 358. The same author shows that the Venus cycle may be implicated by some of the dates on this structure, one of them being 9 Reptile's Eye: *ibid.*, 359.
48. Sylvanus G. Morley and George W. Brainerd, revised by Robert J. Sharer, *The ancient Maya*, 4th edn (Stanford, 1983), 157; Thompson, *Maya history* (ref. 22), 3–47. Linguistic and epigraphic evidence suggests a significant Terminal Classic and Early Postclassic cultural diffusion from the Gulf Coast to the Maya area, involving speakers of Nahua, Zoque, Chontal and Yucatec languages: Justeson *et al.*, *op. cit.* (ref. 35), 24f., 66, 68–70.
49. V. Miller, *op. cit.* (ref. 13), 288f.; some examples of these star warriors have, indeed, been found in the Gulf area: *ibid.*, 299, Figs 20–31, 20–32. On specific relations between Seibal and Chichén Itzá, attested in iconographic details and epigraphic evidence, see Jeff Karl Kowalski, "Who am I among the Itza?: Links between northern Yucatan and the western Maya lowlands and highlands", in *Mesoamerica after the decline of Teotihuacan*, ed. by Diehl and Berlo (ref. 8), 173–85.
50. V. Miller, *op. cit.* (ref. 13), 297.
51. Pollock, *op. cit.* (ref. 36), 163; J. E. S. Thompson, "Sky bearers, colors and directions in Maya and Mexican religion", *Contributions to American archaeology*, no. 10 (Carnegie Institution of Washington, Publ. 436; Washington, 1934).
52. Pollock, *op. cit.* (ref. 36), 163.
53. A clear distinction between the two figures is found, for example, in Fr. Diego Durán, *Historia de las Indias de Nueva España e islas de la tierra firme* (2 vols, Mexico City, 1967), i, 9–15, 61–69, in *Historia de los mexicanos por sus pinturas, Histoyre du Mechique and Popol Vuh*; K. Angel Ma. Garibay, *Teogonía e historia de los mexicanos: Tres opúsculos del siglo VI*, 3rd edn (Mexico City, 1979); Adrián Recinos, *Popol Vuh: Las antiguas historias del Quiché* (San José, 1976).
54. Pollock, *op. cit.* (ref. 36), 161.
55. Šprajc, *op. cit.* (ref. 1), 45–50.
56. Pollock, *op. cit.* (ref. 36), 136–73.
57. *Cf.* Ochoa, *op. cit.* (ref. 33), 56.
58. Pollock, *op. cit.* (ref. 36), 160. If these myths have, indeed, an historical background, referring to the bearers of the Quetzalcoatl cult rather than to the god himself, they may also support the opinion that Quetzalcoatl was a royal title or name adopted by the god's impersonators; *cf.* López A., *Hombre-dios* (ref. 22); Davies, *op. cit.* (ref. 27), 224f. It is indicative, for example, that Cukulchan (=Kukulcan/Quetzalcoatl) is mentioned as the deity of the ruler of Itzamkanac, the capital of Acalan, and that the members of the Cocom dynasty of Mayapán and Sotuta considered themselves to be descendants of Quetzalcoatl: France V. Scholes and Ralph L. Roys, *The Maya Chontal Indians of Acalan-Tixchel: A contribution to the history and ethnography of the Yucatan peninsula*, 2nd edn (Norman, 1968), 56f. Davies, *op. cit.* (ref. 27), 107, mentions, citing Krickeberg, that Gucumatz was considered among the Quiché as a god of the Gulf Coast, because one of his titles was Ah h'ol, "Lord of Rubber".
59. A. Ledyard Smith, "Major architecture and caches", in *Excavations at Seibal*, ed. by G. R.

Willey (Memoirs of the Peabody Museum of Archaeology and Ethnology, xv, no. 1; Cambridge, Mass., 1982), 1–263, pp. 164ff., 239; Kowalski, *op. cit.* (ref. 49), 176f., 182.

60. Anthony F. Aveni, Sharon L. Gibbs and Horst Hartung, "The Caracol tower at Chichen Itza: An ancient astronomical observatory?", *Science*, clxxxviii (1975), 977–85, p. 979.
61. Pollock, *op. cit.* (ref. 36), 171; Davies, *op. cit.* (ref. 27), 204ff.; Tatiana Proskouriakoff, "Sculpture and major arts of the Maya lowlands", in *Handbook of Middle American Indians*, ii, ed. by G. R. Willey (*Archaeology of southern Mesoamerica: Part one*; Austin, 1965), 469–97, p. 488.
62. Thompson, *Maya history* (ref. 22), 10, 20f., 319; Davies, *op. cit.* (ref. 27), 208. Some sources report on sodomy in the Xicalango region: Thompson, *ibid.*, 21; Lorenzo Ochoa and Ernesto Vargas, "Xicalango, puerto chontal de intercambio: Mito y realidad", *Anales de antropología*, xxiv (1987), 95–114, p. 109.
63. W. J. Folan, "Kukulkán y un culto fálico en Chichén Itzá, Yucatán, México", *Estudios de cultura maya*, viii (1972), 77–82. Possible phallic associations of Venus among the Maya were discussed by Michael P. Closs, "The penis-headed manikin glyph", *American antiquity*, liii (1988), 804–11.
64. Venus also seems to be implied in the numbers of architectonic and decorative elements of the Nunnery Quadrangle: Weldon Lamb, "The sun, moon and Venus at Uxmal", *American antiquity*, xlv (1980), 79–86. A phallic aspect of the feathered serpent has been ethnographically documented in the Mixteca region: John Monaghan, "The feathered serpent in Oaxaca: An approach to the study of the Mixtec codices", *Expedition*, xxxi (1989), no. 1, 12–18, pp. 17f.
65. Šprajc, *op. cit.* (ref. 1), 45–50.
66. *Ibid.*, 45–50.
67. *Ibid.*, 50–53.
68. Brundage, *The phoenix* (ref. 27), 49f., 63.
69. Eric Taladoire, *Les terrains de jeu de balle (Mésoamérique et Sud-ouest des Etats-Unis)* (Études Mésoaméricaines, série II, 4; Mexico City, 1981), 387f., 532f., 552f.; Esther Pasztory, "The historical and religious significance of the Middle Classic ball game", in *Religión en Mesoamérica*, ed. by J. Litvak K. and N. Castillo T. (Sociedad Mexicana de Antropología, XII Mesa Redonda; Mexico City, 1972), 441–55, pp. 441, 446f.
70. Carlson, *op. cit.* (ref. 8), 48ff., Figs 15 a, c, g, h and i. In fact, the ballgame may have played an important role in the Maya Tlaloc-Venus warfare ritual already in the Classic period: Carlson, *ibid.*, 31ff.; Mary Ellen Gutierrez, "The Maya ballgame as a metaphor for warfare", *Mexicon*, xii (1990), 105–8. Later, however, the Gulf Coast people further elaborated this ceremonial complex and carried it to other parts of Mesoamerica.
71. Šprajc, *op. cit.* (ref. 1), 24; Taladoire, *op. cit.* (ref. 69), 545; Pasztory, "Middle Classic ball game" (ref. 69), 445; Jeff Karl Kowalski, "Las deidades astrales y la fertilidad agrícola: Temas fundamentales en el simbolismo del juego de pelota mesoamericano en Copán, Chichén Itzá y Tenochtitlan", in *El juego de pelota en Mesoamérica: Raíces y supervivencia*, ed. by M. T. Uriarte (Mexico City, 1992), 305–33. A certain role of Venus in the ballgame is sustained by iconographic evidence. In the ballgame scene represented on the Hieroglyphic Stairway 2 of Yaxchilan there are two figures with Venus glyphs on their bodies: Ian Graham, *Corpus of Maya hieroglyphic inscriptions*, iii, Part 3: *Yaxchilan* (Cambridge, Mass., 1982), 160f. The same variant of the glyph is found on the inner doorway lintel of Temple A of the Great Ball Court at Chichén Itzá, in a scene representing the sun and the feathered serpent: A. P. Maudslay, *Biologia Centrali-Americana: Archaeology* (5 vols, London, 1889–1902), iii, pl. 35. Some symbols appearing on the El Tajín ball court reliefs were also interpreted as Venus glyphs: S. Jeffrey K. Wilkerson, "In search of the Mountain of Foam: Human sacrifice in eastern Mesoamerica", in *Ritual human sacrifice in Mesoamerica*, ed. by E. H. Boone (Washington, 1984), 101–32, pp. 120ff.; Delhalle and Luykx, *op. cit.* (ref. 35). The iconography of the Vase of the Seven Gods refers to both Venus and the ballgame: Michael P. Closs, "Venus in the Maya world: Glyphs, gods and associated astronomical phenomena", in *Tercera Mesa Redonda de Palenque* (iv), ed. by M. Greene Robertson and D. Call Jeffers (Monterey, Calif., 1979), 147–65; Gutierrez, *op. cit.* (ref. 70).
72. Sahagún, *op. cit.* (ref. 29), 900f. — B. 2, App. 6; Taladoire, *op. cit.* (ref. 69), 73; Piña Chan, *op. cit.* (ref. 27), 43f., 46, Figs 41, 46, 48.
73. Šprajc, *op. cit.* (ref. 1), 29f.; Brundage, *The phoenix* (ref. 27), 63; Pasztory, "Middle Classic ballgame" (ref. 69), 445; *Códice Magliabechiano*, p. 33v. A deformed deity, comparable to Xolotl or Nanahuatl of later times, is associated with the ballgame in the Teotihuacan mural painting: Pasztory, *ibid.*, 449; Séjourné, *op. cit.* (ref. 6), 201, Fig. 16;

cf. also Marvin Cohodas, "Ballgame imagery of the Maya lowlands: History and iconography", in *The Mesoamerican ballgame*, ed. by V. L. Scarborough and D. R. Wilcox (Tucson, 1991), 251–88, particularly pp. 275ff.

74. Walter Lehmann, "Ergebnisse einer mit Unterstützung der Notgemeinschaft der Deutschen Wissenschaft in den Jahren 1925/1926 ausgeführten Forschungsreise nach Mexiko und Guatemala: 1. Mixe-Mythen", *Anthropos*, xxiii (1928), 749–91, pp. 775ff.
75. *Cf.* Mircea Eliade, *Tratado de historia de las religiones* (Mexico City, 1972; transl. by T. Segovia; orig.: *Traité d'histoire des religions* (Paris, 1964)), 150; Alexander Marshack, "The Chamula calendar board: An internal and comparative analysis", in *Mesoamerican archaeology: New approaches*, ed. by N. Hammond (Austin, 1974), 255–70, p. 268; Joe D. Stewart, "Structural evidence of a luni-solar calendar in ancient Mesoamerica", *Estudios de cultura náhuatl*, xvii (1984), 171–91, p. 186.
76. Caso, *op. cit.* (ref. 47), 85; Herbert J. Spinden, *The reduction of Mayan dates* (Papers of the Peabody Museum of American Archaeology and Ethnology, vi, no. 4; Cambridge, Mass., 1924), 158; Michael D. Coe, "Early steps in the evolution of Maya writing", in *Origins of religious art and iconography in Preclassic Mesoamerica*, ed. by H. B. Nicholson (UCLA Latin American Studies Series, 31; Los Angeles, 1976), 107–22, p. 111; Stewart, *op. cit.* (ref. 75).
77. Otto Neugebauer, *A history of ancient mathematical astronomy* (New York, Heidelberg and Berlin, 1975), 1067.
78. J. Eric S. Thompson, *Maya hieroglyphic writing: An introduction*, 3rd edn (Norman, 1971), 102; Oliver La Farge, "Post-Columbian dates and the Mayan correlation problem", *Maya research*, i, no. 2 (1934), 109–24, p. 115; Alfonso Villa Rojas, "Los conceptos de espacio y tiempo entre los grupos mayances contemporáneos", in *Tiempo y realidad en el pensamiento maya: Ensayo de acercamiento*, ed. by M. León-Portilla (Mexico City, 1968), 119–67, pp. 147ff.
79. *Cf.* Michael D. Coe, *The Maya scribe and his world* (New York, 1973), 8.
80. Anthony F. Aveni, "The moon and the Venus table: An example of commensuration in the Maya calendar", in *The sky in Mayan literature*, ed. by A. F. Aveni (New York and Oxford, 1992), 87–101; Michael P. Closs, "Cognitive aspects of ancient Maya eclipse theory", in *World archaeoastronomy*, ed. by A. F. Aveni (Cambridge, 1989), 389–415.
81. *Cf.* Ulrich Köhler, "Conceptos acerca del ciclo lunar y su impacto en la vida diaria de indígenas mesoamericanos", in *Arqueoastronomía y etnoastronomía en Mesoamérica*, ed. by J. Broda, S. Iwaniszewski and L. Maupomé (Mexico City, 1991), 235–48, p. 235.
82. Lehmann, *op. cit.* (ref. 74), 773f., 777. Since each synodic period of the Venus table in the Dresden Codex ends with Venus's heliacal rise in the east, the morning star may have been considered "old", as among the present-day Mixe-Popoluca; see Šprajc, *op. cit.* (ref. 1), 35–38. Interestingly, Thompson, *Maya hieroglyphic writing* (ref. 78), 227, mentioned that originally each cycle may have begun with the heliacal setting in the west.
83. See also the data presented in Šprajc, *op. cit.* (ref. 1), particularly Summary, pp. 53f.
84. It should be recalled, however, that even Quetzalcoatl's association with the morning star is neither exclusive nor unambiguous; see Šprajc, *op. cit.* (ref. 1), 28f.
85. Nicholson, "Religion" (ref. 27), 426f.; *idem*, "Ehecatl Quetzalcoatl" (ref. 27), 42; Brundage, *The fifth sun* (ref. 27), 133f.; Davies, *op. cit.* (ref. 27), 64, 126.
86. Nicholson, "Religion" (ref. 27), 426.
87. Wigberto Jiménez Moreno, "Estratigrafía y tipología religiosas", in *Religión en Mesoamérica*, ed. by Litvak and Castillo (ref. 69), 31–36, p. 33. Since the ultimate origin of the newcomers is to be searched for towards the north, the following analogies found among North American Indians may not be fortuitous. In a Mandan ceremony described by George Catlin in the nineteenth century, two men painted with red and white stripes, like Tlahuizcalpantecuhtli in codices, were called "the morning rays": Robert L. Hall, "A Plains Indian perspective on Mexican cosmovision", in *Arqueoastronomía y etnoastronomía*, ed. by Broda *et al.* (ref. 81), 557–74, p. 558. The Pawnee identify their god of war with Venus as morning star: Von Del Chamberlain, *When stars came down to Earth: Cosmology of the Skidi Pawnee Indians of North America* (Los Altos and College Park, 1982), 55ff.; Patricia J. O'Brien, "Prehistoric evidence for Pawnee cosmology", *American anthropologist*, lxxxviii (1986), 939–46, p. 943. Parallelisms between the Pawnee and Mesoamerican cultures were also mentioned by J. Eric S. Thompson, "The moon goddess in Middle America: With notes on related deities", *Contributions to American anthropology and history*, no. 29 (Carnegie Institution of Washington, Publ. 509; Washington, 1939), 149.

88. David H. Kelley, *Deciphering the Maya script* (Austin and London, 1976), 96, Fig. 33; Sáenz, *op. cit.* (ref. 43), 71. Kelley's hypothesis is supported by the now widely accepted opinion, first proposed by George Kubler, that the impact of Chichén Itzá and the Epiclassic Maya culture on Tula was much stronger than in the reverse direction: V. Miller, *op. cit.* (ref. 13), 287, 301. In fact, the focus of influences must have been, again, the Gulf Coast area, where examples of the motif of human head in serpent jaws have, indeed, been found: *ibid.*, 301, Fig. 20–31; Carlos Alvarez A. and Luis Casasola, *Las figurillas de Jonuta, Tabasco* (Mexico City, 1985), pl. 36; Kowalski, "Who am I among the Itza?" (ref. 49), 179.
89. Šprajc, *op. cit.* (ref. 1), 39.
90. Klein, *op. cit.* (ref. 44), 85ff., 97; Pasztory, "The Xochicalco stelae" (ref. 45).
91. David H. Kelley, "Quetzalcoatl and his coyote origins", *El México antiguo*, viii (1955), 397–416.
92. Brundage, *The fifth sun* (ref. 27), 112, observed: "... it is evident that the two forms of Quetzalcoatl, Ce Acatl and Chiucnahui Ehecatl, were originally unconnected." Significantly, the year 1 Acatl seems to have been of foremost importance for the Chichimecs: López A., *Los mitos del tlacuache* (ref. 34), 440, n. 47.
93. Perhaps the ancient concepts are reflected in the gods' connections with sides of the universe: both Quetzalcoatl and Cinteotl were associated with the West: Thompson, "Sky bearers" (ref. 51). Some confusions may have been due to the fact that, after all, only one celestial body is involved. Even if Tlahuizcalpantecuhtli's name and the contexts in which he appears indicate his primary association with Venus as morning star, he is occasionally related with both manifestations of the planet: Šprajc, *op. cit.* (ref. 1), 29.
94. *Cf.* Šprajc, *op. cit.* (ref. 1), 54.
95. J. Eric S. Thompson, *Ethnology of the Mayas of southern and central British Honduras* (Field Museum of Natural History, Publ. 274, Anthropological Series, xvii, no. 2; Chicago, 1930), 63.
96. Eduard Seler, *Codex Fejérváry-Mayer: Eine altmexikanische Bilderhandschrift der Free Public Museums in Liverpool, auf Kosten Seiner Excellenz des Herzogs von Loubat herausgegeben* (Berlin, 1901), 71. These associations may be explained by the appropriateness of the early morning time for hunting: Thompson, *Maya history* (ref. 22), 250.
97. Brundage, *The phoenix* (ref. 27), 94f.
98. Šprajc, *op. cit.* (ref. 1), 28.
99. Comparative evidence from other cultures shows that similar functions of the morning star, as opposed to those of the evening star, are common all over the world. Venus as morning star is normally associated with hunting, war, light, fire and technological innovations, whereas the evening star has attributes related with fertility, rain and agriculture. The symbolisms characteristic of the evening star probably originated in agricultural societies, since among hunters and gatherers the evening star has little importance: Stanislaw Iwaniszewski, "Venus in the East and West", paper presented in the First International Conference on Ethnoastronomy: Indigenous Astronomical and Cosmological Traditions of the World, Washington, 1983.
100. Donald Robertson, "The Tulum murals: The international style of the late post-classic", in *Verhandlungen des XXXVIII. Internationalen Amerikanistenkongresses: Stuttgart–München, 12. bis 18. August 1968*, ii (Munich, 1970), 77–88.
101. Arthur G. Miller, *On the edge of the sea: Mural painting at Tancah-Tulum, Quintana Roo, Mexico* (Washington, 1982), 71ff.; Robertson, *op. cit.* (ref. 100), 86, n. 22.
102. Miller, *On the edge of the sea* (ref. 101), 71ff.
103. Carlos Navarrete, "Algunas influencias mexicanas en el área maya meridional durante el Postclásico Tardío", *Estudios de cultura náhuatl*, xii (1976), 345–82, p. 373.
104. Navarrete, *op. cit.* (ref. 103), 376 (my translation).
105. Anthony Aveni, "The real Venus-Kukulcan in the Maya inscriptions and alignments", in *Sixth Palenque Round Table, 1986*, ed. by V. M. Fields (Norman and London, 1991), 309–21, p. 309.
106. Dieter Dütting, "Aspects of Classic Maya religion and world view", *Tribus*, xxix (1980), 107–67, pp. 156f.; Michel Graulich, "Mythes et rites des vingtaines du Mexique central préhispanique", unpublished Ph.D. dissertation, Bruxelles, 1979–80, 410; *idem*, "Ochpaniztli, la fête des semailles des anciens Mexicains", *Anales de antropología*, xviii, part 2 (1981), 59–100, p. 83.
107. Aveni, "The moon and the Venus table" (ref. 80), 89, 97.

108. Thompson, *Maya hieroglyphic writing* (ref. 78), 134f., 137.
109. The awareness of this commensurability is attested in the Dresden Venus table, and probably also in the 8-year intervals at which the Aztec Atamalcualiztli festival of the rejuvenation of maize was celebrated; see Šprajc, *op. cit.* (ref. 1), 24 and ref. 136.
110. Sharon L. Gibbs, "Mesoamerican calendrics as evidence of astronomical activity", in *Native American astronomy*, ed. by A. F. Aveni (Austin, 1977), 21–35, p. 33.
111. Both the periods of Venus visibility and the length of the agricultural cycle may have a causal relationship with the Mesoamerican sacred cycle of 260 days: Motolinia attributes the origin of this almanac to Venus visibility periods; on the other hand, the 260-day count is still used for scheduling agricultural works in some Guatemalan communities: Fray Toribio de Motolinia, *Memoriales, Manuscritos de la colección del Sr. Don J. García Icazbalceta* (Mexico, Paris and Madrid, 1903), 54; Barbara Tedlock, "Earth rites and moon cycles: Mayan synodic and sidereal lunar reckoning", paper presented in the First International Conference on Ethnoastronomy: Indigenous Astronomical and Cosmological Traditions of the World, Washington, 1983.
112. Iwaniszewski, *op. cit.* (ref. 99).
113. Eliade, *op. cit.* (ref. 75), 150–77; Seler, *Gesammelte Abhandlungen* (ref. 5), iii, 336; Thompson, "The moon goddess" (ref. 87); Köhler, *op. cit.* (ref. 81).
114. Lehmann, *op. cit.* (ref. 74), 772; Konrad Theodor Preuss, *Die Nayarit-Expedition*, i: *Die Religion der Cora-Indianer* (Leipzig, 1912), LVII. The Maya must have had similar concepts, as the moon glyphs are normally placed in the western part of celestial bands; see Šprajc, *op. cit.* (ref. 1), 39.
115. Thompson, "Sky bearers" (ref. 51), 225f.; Preuss, *op. cit.* (ref. 114), XXXVII.
116. See Šprajc, *op. cit.* (ref. 1), 38.
117. E.g. iconography of the Governor's Palace at Uxmal, and ethnographic evidence: Šprajc, *op. cit.* (ref. 1), 26f., 33–35, 37, 47.
118. See Šprajc, *op. cit.* (ref. 1), 45–50.
119. Charles Wisdom, *The Chorti Indians of Guatemala* (Chicago, 1940), 437ff.; *Enciclopedia Yucatanense*, 2nd edn (Mexico City, 1977), vi, 203. Another phenomenon that may have called attention is that Venus, moving along the western horizon, is always ahead of the sun: the evening star attains its extremes before the sun does, i.e. before the solstices. In a way, it anticipates the annual movement of the sun along the western horizon (on the eastern horizon the reverse is true: Venus as morning star follows the sun in its annual movement). The phenomenon may be alluded to in Motolinia, *op. cit.* (ref. 111), 53f. (quoted in Šprajc, *op. cit.* (ref. 1), 34f.). Was it for that, too, that the evening star was considered particularly powerful?
120. In the Peruvian Andes the evening star extremes also delimit the rainy season, which starts in October and ends in April: R. T. Zuidema, "The Inca calendar", in *Native American astronomy*, ed. by A. F. Aveni (Austin and London, 1977), 219–59, pp. 228ff.; Alejandro Camino D. C., "Tiempo y espacio en la estrategia de subsistencia andina: Un caso en las vertientes orientales sudperuanas", *SENRI Ethnological studies*, x (1982), 11–38. Interestingly, the ceremonies for the Thunder God, identified with Venus, were performed in April: Tom Zuidema, pers. com., 1988. In Mesopotamia, where the fertility goddess Ishtar was related with Venus as evening star (Iwaniszewski, *op. cit.* (ref. 99)), the period of rising rivers and floods lasts from November to May. More comparative research would be required, however.
121. The differentiation of ancient Roman deities probably underwent similar processes; *cf.* James George Frazer, *The golden bough: A study in magic and religion* (London, 1922), chap. 16.
122. Jiménez Moreno, *op. cit.* (ref. 87), 33.
123. *Cf.* Šprajc, *op. cit.* (ref. 1), 30–35. On diverse manifestations and functional polyvalence of Mesoamerican gods see López A., *Los mitos del tlacuache* (ref. 34), 207ff.
124. Thompson, *Maya history* (ref. 22), 250.
125. *Cf.* Köhler, *op. cit.* (ref. 81).
126. Johanna Broda, "Astronomy, *cosmovisión*, and ideology in pre-Hispanic Mesoamerica", in *Ethnoastronomy and archaeoastronomy in the American tropics*, ed. by A. F. Aveni and G. Urton (Annals of the New York Academy of Sciences, ccclxxxv (1982)), 81–110, p. 105.
127. Eva Hunt, *The transformation of the hummingbird: Cultural roots of a Zinacantecan mythical poem* (Ithaca and London, 1977), 269.