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DECIPHERING TEOTIHUACAN WRITING

Teotihuacán ha sido considerado, hasta ahora, como una cultura "sin escritura". De un examen detenido de grafemas sistemáticamente ordenados resultó que se presentan — dentro de la iconografía — "textos" legítimos. Se revelan reglas de composición y una "sintaxis". El desciframiento del grafema *to* habla en favor de la hipótesis de que se trata de una base lingüística en proto-nahua. La escritura teotihuacana existía, por lo menos, desde el siglo cuatro al siglo siete de nuestra era.

The investigation of Teotihuacan iconography has made considerable progress. Both in substance and in methodology a degree of maturity has been reached which is beginning to lead to a detailed synthesis. Less satisfactory is research on the problem of whether the Teotihuacanos did possess a writing system of its own. Vague arguments for and against seem to counterbalance each other; serious studies remain deplorably sporadic. What Clara Millon wrote about "the state of our ignorance about Teotihuacan writing" still holds true, namely that "the Teotihuacan writing system never has received the decades of expert study devoted to Maya writing" (Millon 1973: 306). This thoughtprovoking essay, however, had already recognized a spectrum of substantial and essential questions in need of solution.

First of all one has to find out whether there are any configurations among the iconographic wealth of welldefined signs which might be considered to represent true "texts". Contemporary writing systems in Meso-

america built up their texts according to the rule of vertical arrangement and by linkage with calendarical statements. Furthermore the early writing of the Zapotecs and Maya is characterized by a preference for combining "text" and picture, i. e. fusing information borne by different media. To the extent that true "readings" have been accomplished — and one can only speak in that case of a successful decipherment as distinguished from mere interpretation — there always rules as general principle the uniform linking with one and the same language. Although the iconographic analysis is useful for understanding the history of forms and for developing thematic and functional hypotheses, in a way such understanding remains limited, as long as we cannot fully evaluate the originally intended message. To take it still further: The impasse for iconographic studies consists in a desire to interpret the given wealth of signs merely as an assemblage of ideograms. A wholly "visual approach" tempts one to conceive of the graphemes as interculturally understandable signals. Clearly the next step leads to the postulate that the signs of the Teotihuacanos formed a corpus of signals intelligible to all Mesoamericans — "airport pictograms", as it were, or "religious propaganda" for arriving pilgrims in a multi-ethnic metropolis.

In contradistinction to this, I take the view that the total stock of signs (as used by the "senders" and as understood by the "receivers") by necessity was firmly rooted into the lingua franca of Teotihuacan. Which historical language prevailed can be tested in the course of investigation with the help of specific combinatory methods. Once you have decided in favour of a putative lingua franca as working-hypothesis, you have to experiment with its suitability for building up an early writing system. One should examine both the semantic properties (i. e. use of metaphors) and the phonetic qualities (i. e. possible use of homophones or homoiphones). Seen under such a perspective one might predict that the graphemes of the Teotihuacanos could deliver meanings on different layers. In this case it would depend from the context of the message what exactly was meant by the "sender". Within such a frame of reference one might assume that homogeneous signs could convey quite varying contents. Terms in a sacred language of priests might modify and transform the basic meaning of a sign whose naturalistic form seems obvious. Word-plays following a rebus-principle are potentially capable to extend a message far beyond the possibilities for realization by a mere "visual approach". So far my preliminary remarks.

By using the criteria applicable to middle-classic Mesoamerica I started looking for "texts" of the Teotihuacanos. Two criteria have guided my search: First, assemblages of graphemes forming a vertical continuum. Second, interlinking such assemblages with pictorial representations. My

results (earlier announced with the documentary evidence, cf. Barthel 1982) can be summarized as follows:

The main actions of priests and deities in Teotihuacan consist in vocal utterings and in manual offerings. A rich set of iconographic forms is used for displaying such themes. Simple speech scrolls, which usually have knobs attached, may be modified by adding certain graphemes (such as blossoms) or ribbonlike enlargements. Likewise, the gifts pouring from open hands are represented by signs of various kinds.

More interesting than signs which occur repeatedly is a wealth of supplementary and differentiating signs. Such constructions above all merit attention in as much as they include an ample repertory of orderly graphemes. The main actions can be amplified by adding specific graphemes according to clear rules. The differentiating signs may be attached outside or placed inside the configuration, or both in rare cases. A reduplication of the action may be achieved by using sets of different supplementary graphemes. The *affixing* or *infixing* is purposeful and intended to broaden the information that is conveyed by the images. Comparable extension of meanings, by clustering differentiating attributes, occurs also in other contexts, as for instance on conch shell trumpets, or at the base of idols, and as designations for localities. Further types of infixed differentiating attributes could be added for other contexts. Apparently this method of varying or extending a message was common knowledge among the priests of Teotihuacan. The use of qualifying attributes to designate action or place strictly follows a prescribed order: *affixed* graphemes adhere to the principal contours, *infixed* graphemes are within an enclosure, sometimes broadening into two columns.

A detailed study of these graphemic occurrences has, to my knowledge, not been published. Some of the attributes in priestly offerings have been described without further elaboration. Conceivably in certain cases only an enrichment of attributes may have been intended, a kind of enumeration of cognate qualities. However, one should not stop at general descriptions, a more precise investigation is needed. I suggest that the clustering of graphemes may indeed indicate veritable *"texts"*. By "text" is meant a combination of signs comprising at least two different graphemes, either inside a frame or affixed on the outside, that convey a message. A "text" presupposes the existence of a valid code which uses conventional signs to transmit information between the "writer" and the "reader". A cursory review of the publications indicates that there occur about twenty texts on mural paintings and pottery. An estimate of the components involved (without taking into account variables due to colour variations), amount probably to three dozen, with conspicuous differences in the frequency of the individual components. "Texts" in speech scrolls usually contain four

to five graphemes. "Texts" in offerings pouring from charismatic hands tend to contain six to eight graphemes. Both types of "texts" indicate a partial sharing of components.

"Texts" of speakers and "texts" of offerers never occur in isolation; they are always combined with the actors and embedded in a specific pictorial situation. Interdependencies of text and picture offer good chances for starting decipherments, as is well-known among scholars of early writing-systems. This holds good firstly for structural understanding (i. e. discerning rules for positions of graphemes, assuming a minimal textual syntax). Second, for becoming aware of the subject-matter (i. e. evaluating parallels between picture and text or checking a mutual supplementation of informational bits). An example might help to explain how a working-hypothesis could be developed with respect to a possible textual syntax. Certain offertory "texts" do not only include graphemes of precious objects but also the sign of a "hand". If the hand grapheme indicates the action "to hand", who, then, is the protagonist? In two offertory texts from Tetitla (Villagra 1971; fig. 14) occurs a facial ornament in the form of "buccal plaque B" (von Winning 1981). Said ornament characterizes the donor, a complex fertility deity image. Both "texts" contain seven graphemes each, arranged in two columns of four and three signs respectively. As the "text" on the left (of the deity) suggests, the arrangement is apparently not in horizontal grapheme pairs but in vertical sequence. This circumstance leads to the tentative conclusion that one might experiment with a vertical "text" progression, either in parallel or in opposite sequence. The latter would be a vertical boustrophedon. If one considers the uppermost "text" grapheme, the one closest to the offering hand, as the beginning of the "text", we find the hand grapheme on the inside, the buccal plaque grapheme on the outside. Thereby one might obtain a tentative continuing "text" in the following order:

(1) . hand . (3) . (4) . buccal plaque . (6) . (7)

This is confronted on the right side by

(1) . hand . (3) . (4) . (5) . buccal plaque . (7)

This circumferential reading method of both sides — the descending order of signs inside changes into an ascending order outside — reveals that the "action" (offering hand) and the "protagonist" (buccal plaque as name or title) occur in text sequence in corresponding positions. One suspects that the distribution of signs derives from a linguistic "text syntax". Action and protagonist are in agreement but the deliberate text differentiation with different graphemes is obvious. The text differentiation seems to be

based on a right-left contrast of the deity. The graphemes between the "action" and the "protagonist" probably refer to different objectives or circumstances. A perforated greenstone occurs next to the buccal plaque. Such roundels designate ear disks and may therefore be taken for qualifying attributes of the protagonist. If this interpretation is acceptable, a sequence between both vertical columns is established by the horizontal connection between these two signs. The supposition of a vertical circumferential boustrophedon looks attractive.

Let us compare the two offertory "texts" of the adjacent deity. Here other peculiarities attract our attention. Both offertory "texts" correspond to a large extent. Right and left demonstrate a mirror symmetry for the inner columns and for the outer columns. A parallel "text" reading can be obtained once we follow the rule of vertical circumferential boustrophedon. The alternative of reading columnar sequences from above to below raises difficulties. Concerning the "text syntax", hand-graphemes again do appear. In the third position of vertical circumferential boustrophedons they serve to indicate analogous actions. These offertory "texts" lack, however, the buccal plaque; no cross-connection with an attribute of the actor (in his pictorial representation) can be discerned. Several explanations for this situation are conceivable: Another title or name of the protagonist was in use; the "text" referred to a third actor; the protagonist was understood by implication and the "text" dealt only with various objectives. Be that as it may, the variability of "offertory texts" can be more easily understood as a modification of linguistic statements instead of a mere conglomerate of plain objects.

Furthermore, we can learn from this example that even minute variations of signs do deserve careful attention. Let me point out the inversion of the frontal mask or the addition of details to the contours or within the interior of graphemes. Such well-planned modifications of graphemes give the impression that we are dealing with variable information stemming from a well-devised code. Inverting signs as well as elaborating signs call to one's mind the well-known rules of the coeval Maya script. Insofar the components of Teotihuacan "texts" fit into the practices of Mesoamerican writers of that period. In addition one should note the degree of parallelism in "offertory texts" produced by distinct protagonists. One is tempted to conclude that strings of neighbouring graphemes might serve to build up a new entity of linguistic nature. A perusal of "texts" shows that the Teotihuacanos seem to have been fond of using blocks of two signs as linguistic equivalences. Apart from such "closed bigrams" other sign pairs follow the rule a/b, a/c, a/d, a structure which points more likely to a linguistic pattern, instead of a purely artistic design.

In the case of speech (or song) scrolls the sequence must be determined: whether it progresses from the inside to the outside or vice versa. Proceeding in analogous manner to the giving hand, where the text beginning is to be expected close to the hand, one might assume that the text starts at the beginning of the scroll, close to the speaker's mouth. One might ask if two-part volutes express a question and answer dialogue, or if two verses of a song are intended.

So far we are dealing with preliminaries towards a decipherment. The task for the future comprises a detailed accomplishment of the following procedures:

1. Compilation of a "Corpus Inscriptionum", i. e. collecting all occurrences of "texts" in the defined sense. We are dealing with rather small graphemes which are sometimes reproduced in different ways. Therefore, a careful checking and definitive editing of all Teotihuacan "texts" should be done by our Mexican colleagues in their own country.

2. Compilation of a catalogue of the signs that occur in the "texts", including their iconographic use in so-called "heraldic compositions". The Teotihuacan graphemes should be defined as minutely as possible. The stock of signs should be encoded within a numerical classification along principles developed in catalogueing other early writing-systems.

3. An investigation of the frequency of sign-occurrences. Already by this time it has become evident that the frequencies of certain signs differ markedly. Top positions as well as very rare occurrences can be observed. Such a curve of frequencies does not seem to be random and ought to be analyzed from a linguistic point of view.

4. An investigation of associations of signs. Applying a distributional analysis brings to light preferred grapheme pairs and helps to break up longer "texts" into structural segments. The search for partial text parallels is helpful in order to detext interchangeable substitutions. A tentative grouping of graphemes into sign-classes might follow from such insights.

The future elucidation of Teotihuacan "texts" by Mesoamericanists within a relatively short time-span ought to be able to accomplish these four necessary steps. Thus the indispensable base for proper decipherment should be firmly established.

A decipherer might start from preliminary "interpretations" of graphemes by studying the reciprocal relationships between "texts" and pictures. In order to reach actual "readings", however, he cannot help to develop and to test a working-hypothesis for the language encoded in Teotihuacan "texts". One school of Mesoamerican scholars, to my knowledge, reckon with a use of early Nahua in the metropolis. Other Mesoamericanists, predominantly linguists, prefer a dominant rôle of other languages. I for my part felt compelled to decide in favour of Nahua, for the following reason:

Teotihuacan "texts" occur not only in the metropolis, but have also left traces in Guatemala. One incensario lid from Escuintla provides two analogous "offertory texts" (Hellmuth 1978: fig. 4). These "texts" on two plaques are built up in three columns, with repetition of certain graphemes. If this is an "incorporated text", another example on a tripod vase shows that the type of an "attached text" was likewise customary (Hellmuth 1978: fig. 16). There we find, close to the Raingod pentad, the speech volute of a priest with a column of separate graphemes. This vertical "vocal text" starts immediately at the rim of the volute and occupies the space between the priestly speaker of the message and the divine recipient. A sacred communication is clearly manifested. Graphemes 2, 3 and 4 (?) correspond to the Teotihuacan signs "greenstone pearl", "Strombus" and "Pecten (?)". I interpret this sequence as a petition to the raingods for valuable gifts. It is interesting to note that the combination of graphemes resembles the components in the speech volute of the Maguey-priest mural at Teotihuacan (Miller 1973: fig. 366). I suspect that in this case, instead of the pictorial raingod pentad on the Escuintla vessel, the *recipient* of the petition is designated by the graphemes attached to the *outside* of the volute.

It is to be assumed that the Escuintla "texts" were understandable to the contemporary priests in Guatemala, on the level of readable messages, which raises the question of their linguistic affiliation. It is unlikely that there existed any palaeolinguistic link between Central Mexico and Central Guatemala other than an early version of the Nahua language, introduced by a first wave of Pipíl immigrants from the north. Any other language taken in consideration for Teotihuacan, such as Totonac, Popoloca, or Otomí, will not fit our newly discovered text horizon.

My tentative decipherment started from this observation. I used Classical Aztec (from Molina, Olmos and Sahagun), supplemented by data from Pipíl (Schultze-Jena 1935) and Cora (Preuss 1912). There exists an interval of 800 - 1000 years between the Nahuatl language of the 16th century and an earlier Proto-Nahua in the Middle Classic. Taking the risk of spanning this time-gap corresponds more or less to an attempt to read Roman inscriptions of the Late Classical period with the help of the Italian of Dante. In view of a considerable degree of historical continuity in Central Mexico, in view of a marked conservatism of a priesthood engaged in ritual performances, such a linguistic experiment by a decipherer falls within the boundaries of a plausible hypothesis. The comparison with Classical Aztec is instrumental in testing a retroprojective approach for handling Teotihuacan "texts". Whenever I postulate a link between Aztec words and Teotihuacan graphemes, such equivalences are marked provisionally with an asterisk. It should be emphasized that a mere approxima-

tion is intended: A form from Classical Aztec marked with an asterisk serves as a means to approximate roughly the linguistic proto-form actually used by the Teotihuacanos with respect to their notational system. It stands to reason that historical Nahua philology will have to solve special tasks of reconstruction. All my provisional decipherments marked with an asterisk need a future specification.

In contradistinction to the above mentioned "vertical approach in time" I have used the coeval relationships between Teotihuacan and Middle Classic Maya as sort of a "horizontal approach in time". It is well known that Teotihuacan graphemes were diffused across ethnic boundaries; examples from the Petén are have been discussed repeatedly. One of the most fertile links, Altar 1 from Naranjo, has been studied but recently from this point of view (Grube 1982). The willingness to integrate selected graphemes from Teotihuacan into the Maya hieroglyphic writing argues in favour of an actual *compatibility* of the systems involved. Of special value for breaking up Teotihuacan "texts" are those graphemes used abroad in contexts, which may be evaluated from the pint of view of the receiving culture. Let me give one example:

Tikal Stela 31 demonstrates an armed Teotihuacano who bears on his shield the image of the "Raingod in a political rôle", a formal variant of Tlaloc B. Among his many iconographic attributes his ear-ornament, combining a greenstone-disk with a Pecten-pendant, is of special interest for our discussion. This *iconographic ensemble* of two components again occurs within a *vocal text* at Tepantitla (Miller 1973: fig. 176, cf. second and third inscribed grapheme starting at the base of the volute). This parallel raises the suspicion that we are dealing with a piece of information constructed as a bigram. Such a statement concerning their "Political Raingod" must have been of importance for the Teotihuacanos which arrived at Tikal, possibly signalling the rôle of their divine protector in a foreign country. Were the Maya readers of Stela 31 able to understand such an intrusive message? We are not sure whether the large Pecten — an important graphem among Teotihuacanos — occurs among Maya glyphs. The greenstone-disk, however, was clearly understood by the hosts as an equivalence to main-sign T 511. For main-sign T 511 two readings are available: Firstly "Mulu(c)", as occuring at Yaxchilan and in the codices (Thompson 1950: fig. 8, 9, 12 - 16). Second "Toh", deciphered independently by both Thompson and Barthel, using the evidence of Codex Dresden 10b - 12b. The reading "toh" not only conveys an intricate rainsymbolism in Highland-Maya languages, but also supplies us with a coeval solution for the phonetic value of the greenstone-disk used by the Teotihuacanos. Assuming an inter-ethnic intelligibility within the syncretism on Tikal Stela 31, I started to experiment with an equation:

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phonetical value (Maya) *toh* corresponds to phonetical value (Teotihuacan) *to*. The greenstone-disk, which, by the way, is the most frequent graphem in Teotihuacan "texts", then would be suited, apart from its primary designation for a precious ornament, to express for Nahua-speakers their possessive pronoun of first person plural, i. e. **to-* (Classical Nahuatl, cf. Pipil *tu-*). Among the frequent Teotihuacan bigrams constructed according to the rule a/b, a/c, a/d, then **to-* regularly takes first place. In other words a beginning with **to-*, "our", qualifies the following graphemes, often belonging to rank-indicating ornaments. Composite names of the type "our b/c/d", however, are wellknown titles for divinities or highranking individuals among the Aztecs as well as among the Coras and the Huicholes.

Starting from this *coeval approach* (a method that should be emphasized!), I succeeded in provisional readings for a number of *titles*. Thus I obtained e. g. for the "Political Raingod" the title **To-Tepeuh* ("Our Lord, Our Conqueror"), for the "Female Benefactress" the title **To-Nan* ("Our Mother"), for the "Young Man" the title **To-Pil* ("Our Prince, Our Child"). At the present state of decipherment, extended to a tentative Nahuatization of many iconographic components, several dozen contextual readings can be considered plausible. An equal number is still in a trial stage. It will take some time to elaborate and to publish our results. However, I deem it advisable to start an exchange of ideas with scholars interested in the world-view of the Teotihuacano scribes.

In conclusion let me summarize my interim-report with the following points:

1. In the time-period from the 4th to the 7th century A. D. the Teotihuacanos made use of a writing-system of their own.

2. This writing-system functioned on the basis of a Proto-Nahua.

3. The writing-system of Teotihuacan seems to have been the prototype for the later notational systems in Central Mexico.

4. Morphemic writing is the rule, but sometimes syllables (e. g. as grammatical components) are in use for composite constructions.

5. Ideographic polyvalencies seem to be as likely as the use of rebus principles. Metaphors and textual condensations are important.

6. The Teotihuacanos conveyed language-based messages with the help of both "texts" (bound to orderly rules) and "heraldic compositions" embedded in an iconographic layout.

7. The subjects deciphered sofar promise to contribute essentially towards the history of religion in Mesoamerica. It is to be hoped that further decipherments should help to clarify the sociopolitical character of Teotihuacan civilization.

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