527-4072

## International Journal of American Linguistics

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Volume 49

1983

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PUBLISHED JANUARY, APRIL, JULY, AND OCTOBER 1983

PUBLISHED BY THE UNIVERSITY OF CHICAGO PRESS CHICAGO, ILLINOIS, U.S.A.

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elementary distinction between an account that captures a subset of possible generalizations and one that makes generalizations that are false. The interested reader can verify the accuracy of my original statements. Once again W has mislead his readers about the goals and aims of SGALI, enabling him to apply totally inappropriate evaluative criteria.

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W has also claimed that the paradigms falsify my statements in cases where there merely exist alternative dialectal forms (given in SGALI) to the inflections accurately predicted by my generalizations. The existence of an alternative form does not falsify a generalization.

The justification for devoting lengthy discussion to these matters in an important learned journal was W's concern that students of LI would be led to false conclusions. Significantly, of the students who have used SGALI, not even those without linguistic training have suffered from the confusions that W anticipates and exhibits throughout the review.

7. W's review misrepresents the stated aims of SGALI, characterizes the Labrador dialect incorrectly, contains numerous careless errors, and is based on an inadequate reading of the available literature on LI. I hope that my comments will encourage interested readers to consult and evaluate SGALI for themselves, even if W's review might tend to discourage this. I am confident that those sympathetic to the plight of dying native languages will see the need for making accurate grammatical sketches quickly available, even if they are modest pieces of work when compared to comprehensive grammars.

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FIVE STUDIES INSPIRED BY NAHUATL VERBS IN -oa. By Una Canger. Travaux du Cercle Linguistique de Copenhague, vol. 19. Copenhagen: The Linguistic Circle of Copenhagen, 1980. Pp. 255.

Although a title referring to Nahuatl may be unexpected to find as the nineteenth volume of the TCLC, Una Canger's collection of essays reveals the historical and comparative foundations of the Danish tradition. The studies are inspired, as the author expresses it, by the class of derived Nahuatl verbs that end in -oa, but they are concerned with Nahuatl structure and history in general. The book is an extremely important contribution to the study of Nahuatl, Uto-Aztecan, and Mesoamerican linguistics. Canger's meticulous research and analysis are done with the most careful methodology and precise thinking.

Half of the book is composed of an introduction and the five interrelated studies: (1) "oa versus owa and ia versus iya"; (2) "The Formation of the Perfect,

with Historical and Dialectal Perspectives"; (3) "Verbs in -oa"; (4) "The Formation of the Applicative"; and (5) "Semantic Correlates to WA, NI, and YA." The other half is formed by the "Appendix," a morphological classification of all simple verbs, verbs derived from simple verbs, and participial forms that appear in Molina's 1571 Vocabulario of Classical Nahuatl. An "Index" to the "Appendix" is provided, ordered by the phonemic transcription of the verbs, but including the form in Molina's orthography and one of his translations. Vowel length and glottal stop are marked in the verbs and participials that are also found in Carochi's (1645) grammar. As should be apparent, the appendix and index by themselves are an externely useful tool for work on Nahuatl linguistic structure. Also useful is the extensive "Bibliography," covering all the sources on Classical and modern Nahuatl dialects with which the author is familiar and keyed to her classification. A summary in Spanish and four maps showing tentative dialect divisions and the distribution of principal isoglosses are included at the end of the volume.

Before examining the contents in more detail, it seems appropriate to emphasize that, at least for me, perhaps the greatest insight underlying the various essays concerns the role of Classical Nahuatl in Nahuatl dialect grouping. Historical and, at times, dialectological studies of Nahuatl have tended to view Classical Nahuatl as the closest form to Proto-Aztec. In most discussions, modern and even colonial dialect divergences from the Tenochtitlan dialect are explained as innovations. Canger expresses this problem in her "Introduction": "Most of the known Nahuatl material from the 16th century is in the Tenochtitlan dialect or in dialects closely related to the Tenochtitlan dialect, generally known as Classical Nahuatl. This has given rise to the unfortunate misconception that in the 16th century there was a uniform kind of Nahuatl, and that the many distinct modern dialects have developed from or are corruptions of Classical Nahuatl" (p. 14).

What Canger makes exceedingly clear for the first time in print is that Classical Nahuatl was an influential innovating dialect in features such as the formation of the perfect and the applicative. Her arguments for this position will be brought out in the description of the essays in the remainder of this review. Let it suffice here to note one of the stated aims of the volume is "... to demonstrate that any one Nahuatl dialect is best understood and described in the perspective of other Nahuatl dialects" (p. 18). Canger notes also that she finds "that in the study of Nahuatl we desperately lack explicitness in our statements and substantiated argumentation" (p. 19). To overcome these weaknesses, in each of her essays, Canger presents step-by-step arguments for her positions, notes where she feels that definite conclusions cannot be drawn, and evaluates other material and analyses where pertinent in terms of her own procedures.

In her "Introduction," besides a discussion of sources (including Canger's personal field notes from thirteen localities), the author makes a tentative

<sup>10</sup> It is true that one form, -nnagik 'imperative-optative negative, 3-3 dual', does in fact contradict the broad generalization given on page 59 (number of 3d-person subjects is not specified for the transitive suffixes).

<sup>&</sup>lt;sup>1</sup> Canger presented a later version of her subgrouping in which she discussed the role of Classical Nahuatl at the Sixth Annual Friends of Uto-Aztecan Working Conference in Reno, Nevada, 1978.

subgrouping of dialects for which she has data. In agreement with Campbell and Langacker (1978), she sets up two major branches: Pochutec and General Aztec. She divides General Aztec into Central and Peripheral areas. The Central one includes La Huasteca, a number of central dialects, and central Guerrero. The Peripheral dialects are separated into two groups, Western and Eastern. In proposing her classification, Canger is consistent in giving the greatest weight to grammatical isoglosses. One of the major problems in Nahuatl dialectology is that of distinguishing the important ones in the many patterns of isoglosses that represent the history of changing influences.

The first essay, "oa versus owa and ia versus iya," is a systematic examination of a synchronic problem: the representation of the two pairs of sequences has been a point of controversy in Nahuatl grammar. Canger argues that differences in the sequences can be set up only in abstract underlying forms based on morphophonemic alternations, since she provides evidence from a number of dialects that the two sequences do not contrast phonetically. She finds the decisions in cases where no alternations exist are arbitrary, but chooses to write w and y in such words as siyawi 'he is tired' kowa: \( \lambda \) 'snake' because -oa and -ia are found only in specific verb classes. It should be noted that outside evidence supports her solution, specifically the CVCV canonical forms in Uto-Aztecan. A large part of the essay is criticism of varying interpretations of the sequences in other sources. Canger's point, to be well taken, is that "the analysis which is valid in a series of dialects must be preferred also for the dialects in which it appears as only one of several possible analyses" (p. 45). She does add, "But according to the purpose of the description, a competing analysis may in some cases be preferred" (p. 45).

The second essay, "The Formation of the Perfect, with Historical and Dialectal Perspectives," treats one of the first problems that both linguists and students of Nahuatl, whether of Classical or other dialects, confront: the apparent irregularity in the formation of the perfect (or preterit, as it is referred to in many descriptions). Canger first sets up six surface classes of verbs in Classical Nahuatl according to the way they form the perfect. Then she presents arguments that the perfect formation in Proto-Aztec was formed more simply by suffixing \*ka: to the verb stem. She also postulates, on the basis of various kinds of evidence, that the pluperfect derived from \*ka:-(ya). Canger then argues that the vowel loss in verbs that end in -oa and -ia can be reconstructed for Proto-Aztecan because of its distribution. She shows, however, that the stem-vowel loss in other verbs (those that do not end in -CCV, -ka, or - $\lambda a$ ) is an innovation of the Central area, since it is not found in the Periphery except sporadically and under differing conditions. She demonstrates also that the Central stem-final vowel loss is not as widespread as the vowel losses in the participial and compound verb formations, indicating that they must represent different stages. Her arguments are convincing and undercut the previous reconstructions for Proto-Aztecan of the stem-final vowel loss for verbs other than derived ones in -oa and -ia (cf. Bartholomew 1980, Campbell and Langacker 1978, and Dakin 1979).

In her discussion of the perfect, Canger suggests that \*a was raised to i finally (and then lost in some cases) in the singular and raised to e in the plural. She states that the rule "is not productive at the time of Classical Nahuatl, and a great many cases of final a have not been affected by it." Among the "survivals" she notes those in verbs such as ki:sa 'go out' and  $-no:\acute{e}a$  'call'. She offers the explanation that these were spared because they occur mostly in nonfinal position, that is, protected by some suffix, and also possibly by analogy to preserve the transitive/intransitive distinction in the present tense. Although hers is a defendable position, alternative analyses seem possible. One would be that the raising or loss only affects inflectional suffixes, probably in relation to stress patterns. Another, along the lines of Tuggy's (1980) analysis of the problems in Tetelcingo Nahuatl, would be that the \*a was not raised to i, but rather lost and replaced by an epenthetic i when stem-final vowels were lost and an inadmissible final consonant cluster would have resulted. However, the alternatives should be argued with the same rigor that Canger employs.

One other question that arises with respect to her analysis is Canger's identification of the perfect \*ka: with the participial/agentive \*ka:. She does this in her arguments for the reconstruction of the perfect suffix with \*a. Considering Nahuatl only, the arguments for the identity of the two suffixes seem valid, and such may be the case for Proto-Aztec. However, Heath (1978:216) notes some of the problems in the reconstruction of the suffixes in Proto-Uto-Aztecan. It may be that the difference noted by Canger (pp. 78-83) that vowels are dropped more often in nominals than in perfects may reflect distinct origins for the two morphemes. In any case, comparative evidence from the rest of Uto-Aztecan supports the reconstruction of the \*a in the perfect suffix.

The third study, "Verbs in -oa," develops the hypothesis that verbs that end in -oa historically derive from the sequence of V-wa. Sapir (1913:424-25) noted that some verbs in -oa probably derived from -a-wa and -i-wa, but he did not carry his observation any further. Canger constructs a case for her position using internal evidence, principally the existence of pairs of transitive and intransitive verbs derived from stems that end in long and short vowels. She considers also the distinct forms -o? and -o: that the verbs have in Classical Nahuatl in the perfect and the compounds with -ti- and -ka: and in the future, imperative, and formations with directionals, respectively. The contrast is attributed to a difference in juncture, perhaps representing two stages of development.

The fourth essay, "The Formation of the Applicative," is based on an important observation that Canger makes, that all applicatives are formed by the addition of the suffix -lia, and that applicatives of verbs in \* $\tilde{V}$ -wa have undergone a metathesis of w and l in Classical Nahuatl. She details the stages of the change in the Classical dialect and then presents comparative material from other areas in which the metathesis did not take place. Canger concludes: "The exact boundaries of this area cannot be established for lack of data; however, its location and its narrow limits seem to show that the innovative metathesis originated in Tenochtitlan shortly before the conquest" (p. 131). The formation of the applicative, like that of the perfect stem-vowel loss, is an important

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isogloss in Canger's arguments for the role of Classical (Tenochtitlan) Nahuatl as an innovating dialect.

In the last, more impressionistic essay, "Semantic Correlates to WA, NI, and YA," Canger examines the different semantic categorization of the morphological classes of verbs derived with those suffixes in Classical Nahuatl. She suggests, although inconclusively, that -WA verbs reflect features of surface, shape, and size; -NI those of action spreading from a center; and -YA those of tastes, smells, and other sensations. A comparison of the Nahuatl groups with the categorization of Mam positional roots leads her to suggest that the classification may be an areal trait of Mesoamerica. If further research does support the existence of the categorization as an areal feature in Mesoamerica, its extension includes more northern Uto-Aztecan languages also, as can be noted in Heath (1978).

An interesting phonological aside in the semantic analysis is about the role of vowel harmony in the derivation of verbs in -NI. Canger points out that in nearly two-thirds of them, the second vowel is the same as the first. Comparative evidence from other derivations and from other Uto-Aztecan languages supports her hypothesis that the second vowel has harmonized with the first in these verbs.

To conclude, for the more general linguistic audience, reading these five essays provides excellent examples of the way that synchronic and historical research should be done. For the linguist interested more specifically in Uto-Aztecan and Nahuatl, they are a stimulus to investigate the problems and analyses described in more detail, but perhaps more important, to do so with the same care and clarity of argumentation that Canger has used.

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SOUTHWESTERN MEDICAL DICTIONARY. By Margarita Artschwager Kay, with John D. Meredith, Wendy Redlinger, and Alica Quiroz Raymond. Tucson: University of Arizona Press, 1977. Pp. xvii + 217.

A Navajo, Hopi, Zuni, or other Indian attracted to this work by its title would be disappointed. The *Dictionary* has about 1,300 Spanish-English entries (pp. 1-157) and an index of about 1,200 English-Spanish entries (pp. 159-200). Appendixes contain lists of foods, kinsmen, and sources of regional Spanish medical data. A strength is inclusion of folk medical concepts, herbal lore, and colloquial vocabulary which health workers should know but not use (e.g., *teta* 'breast', *tis* 'tuberculosis', *piocha* 'chin', *juntarse* 'have intercourse'). A weakness is that the typical Spanish-English entry gives a term which a health worker would have to look up in a traditional medical dictionary or a medical textbook. Each entry has a sentence which may or may not include medical information, a sentence designed to show how the term is used in Spanish.

Navajo standards of medical education for health workers are higher than those embodied in Kay's *Dictionary*. In a handbook published by the Navajo Tribal Council (Loughlin et al. 1960), vocabulary is presented in the context of instruction, with drawings that have bilingual labels and a 38-page glossary "prepared as an aid to persons who are bilingual and are teaching medical and health concepts to their own people, the Navajo" (p. D-1). In this glossary (p. D-36), 'typhoid fever' is defined as follows:

typhoid fever An infectious disease characterized by gastrointestinal inflammation and ulceration. Tsá hodiniih tsoh naalniihii.

In comparison, Kay (p. 69) has:

fiebre tifoidea typhoid fever. La calentura llega a ser muy alta en la fiebre tifoidea. The temperature becomes very high during typhoid fever.

In the Navajo handbook spinal taps are explained (p. 189): "Spinal taps are done when there is a question of an infection of the spinal cord or brain. These are done by the doctor who inserts a large needle into the spinal cord and draws off a small amount of liquid. This is then examined under the microscope and cultured to find out if any disease germs are present." Kay has no entry for 'spinal tap'; many other terms which Navajo health workers are expected to know are not found in Kay's *Dictionary*, for example, 'iodine', 'cornea', 'Caesarean section'.

In the Navajo handbook drawings show the skeletal system, the muscular system, the circulatory system, the nervous system, the respiratory system, the digestive system, the reproductive system, and various areas of the body. Each drawing has labels for body parts in English and Navajo. The drawing of the skeletal system, for example, includes these parts with bilingual labels: 'skull'