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Anna Maria Hari, An Investigation of the Tones of Lhasa Tibetan, Language Data, Asian-Pacific Series No 13, SIL, Huntington Beach, California, 1979 ("published 1980"), x+232p. Reviewed by M. Mazaudon (CNRS, Paris).

Anna Maria Hari's book, An Investigation of the Tones of Lhasa Tibetan, is the result of 5 months of field work with a Tibetan informant in Kathmandu, but rests on a much longer familiarity (8 years) with related languages in Nepal. These are Tamang and Thakali, belonging to a subgroup of Tibeto-Burman closely related to Tibetan (Shafer's Gurung Branch), and Kagate, a Tibetan dialect (Shafer's Central Bodish Unit, Bodish Branch). The main interest of the book lies in two claims which will be discussed in detail further on: first, that Lhasa Tibetan has more tonal contrasts than had hitherto been recognized, and second that the domain of tonal contrast is wider than the syllable.

The book is composed of three chapters and two appendices. Chapter 1 gives an overview of the segmental phonology of Lhasa Tibetan as a basis for the tonal study in chapters 2 and 3. Chapter 2 presents the phonetic data, and chapter 3 the proposed interpretation. The first appendix deals with the phenomenon of "vowel height approximation", and the second is a phonemically transcribed vocabulary. Notes, a bibliography, and a short index of subjects, authors and languages end the volume.

The description of the consonant system is not significantly different from that of Chang and Shefts 1964. The main point to be noted is the interpretation of the feature of final glottality as a consonantal phoneme transcribed /ʔ/. Word-finally, this feature alternates with or is accompanied by a falling pitch pattern. While Hari has retained the segmental variant of the feature as basic, Chang and Shefts have retained its melodic realization and interpreted the feature as a falling tone occurring on the end of the word. Phonetic [ʔ] (with its associated pitch fall) is also an occasional realization of final /k/, /p/ and /m/, but Hari distinguishes a phonemic /ʔ/ from /k/, /p/, and /m/ on morphophonemic grounds. Word-medially, /ʔ/ is realized as glottal constriction according to Hari, while Chang and Shefts do not record it in that context. After a nasal consonant or a nasalized vowel Hari does not record /ʔ/, while Chang and Shefts do record the falling tone.

Hari retains eight vowels as phonemic against Chang and Shefts' twelve. On distributional grounds she separates them into five "primary vowels" /i, e, a, o, u/ and three "secondary vowels" /ɛ, ɔ, y/. Phonetic shades are accounted for by the process of vowel height approximation. The secondary vowels can only occur in the first syllable of a tonal morpheme. They carry no length contrast and do not occur in closed syllables except in front of /ʔ/ and /n/ (realized as vowel nasality in most contexts), which is in line with their historical origin in old \*CVC syllables with final dentals. Their absence from toneless affixes is also consistent with the CV structure of these affixes in other modern

Bodish languages. In view of a tonal analysis, the most important point to consider is the treatment of length, since this feature, like final glottality, has variously been considered as segmental or tonal by different authors. Hari notes that it is an elusive feature, for which a contrast is well established only in open monosyllables. In that context long vowels contrast both with short vowels and with glottalized vowels (no length contrast exists on glottalized vowels). In first syllables of disyllabic morphemes (pp. 17 and 44), and of compounds (p.116) the contrast is established between short vowels on one side and long or glottalized vowels taken together on the other. But the contrast between long vowels and glottalized vowels seems to be restricted to the vowels /a/ and /o/ (and maybe /u/) followed by a continuant as the initial of the second syllable. Before a stop, length is replaced by glottalization for all vowels : e.g. /'maah/ 'butter' [ma:], but /'maah-pa?/ 'butter and flour' [ma?pa?] (p.117). For *i* and *e* the neutralization between long vowel and glottalized vowel seems general in first syllables. For "assimilating suffixes" and second syllables of morphemes (p.45) the contrast is illustrated only by one or two uncertain examples, and only on the vowel /a/. On second members of compound words the contrast exists, but as we will see below, this may be just one more argument against the interpretation of these entities as single words. Nasal vowels and vowels in closed syllables do not carry the length contrast (p. 48).

The number of suprasegmental contrasts.

In order to compare and evaluate descriptions of the suprasegmental system of Central Tibetan we must consider together 4 features : height and voice quality constituting one feature which we may call 'register', pitch pattern or melody constituting the second, final glottality the third, and vowel length the fourth. The first, register, is the only one which all authors agree in considering as tonal or suprasegmental; the others have been variously drawn into the suprasegmental system or pushed back into the segmental system. Hu Tan 1982 gives a clear comparative summary of pre-Hari scientific studies. All authors, including Hari, agree on a register feature with two terms, high-clear vs low-breathy. All authors agree on the existence of a two-term vowel length contrast on open syllables and on its absence preceding final glottality. On the interpretation, they disagree. Some authors like Chao or Sprigg retain only the first feature, register, as tonal. The majority take the glottal feature as suprasegmental, yielding a four-tone system (two glottal tones and two open tones). According to Chang and Shefts, who take the glottal syllables as long, this system is fully manifested on syllables with long vowels, and is reduced to a two-tone system on short vowels. The Central Institute for National Minorities of Peking takes the glottal-ending syllables as short, and thus has a four-tone system on syllables with short vowels, reduced to a two-tone system on long vowels. Phonetically, syllables with final glottality seem sufficiently intermediate in length to allow both interpretations. Other authors (e.g. the Chinese Academy of Social Sciences) take the glottal feature out of the tonal system and into the consonant

system, and consider length as a tonal feature. This again yields a four-tone system (two short tones and two long tones), but one which is fully manifested on open syllables, and is reduced to two tones on glottal-ended syllables. If we consider the possible combinations of features 1, 3 and 4 globally, as Hu Tan does, we find six possible suprasegmental patterns on syllables which do not end in an oral or a nasal stop: high short, high long, high glottalized, low short, low long, low glottalized. Simultaneous melodic features are associated with each pattern: high short is falling, high glottalized falls more, high long is level, low short rises slightly, low long rises more, low glottalized rises and falls. Syllables ending in an oral stop have neither the length contrast nor the glottalization contrast. Syllables ending in a nasal do not have the length contrast.

Note that in all the preceding analyses, we have not yet used the second feature, melody, as an independent feature. This is Hari's contribution. She adds a binary feature, "moving contour" vs "basically level contour", which multiplies by two the number of possible suprasegmental patterns on all syllable types except nasal-ended. So on CV syllables we get twelve possible combinations of the four features mentioned above instead of Hu Tan's six, and on CVC syllables we get four instead of two. In the high register the moving contour is falling, and in the low register rising. This contrast, which has not been noted by any previous author, is exemplified by sets of minimal or quasi-minimal pairs of words listed on pp. 72-84 for monosyllabic morphemes. For instance, in the low register, the words 'tea' (WT ja), 'head' (WT mgo), and 'arrow' (WT mda'), and the words 'bird' (WT bya), 'door' (WT sgo), and 'message' (WT brda), which are considered as homophonous two by two by other authors, are classified by Hari as respectively low, short, non-glottalized and "basically level" (i.e. rising slightly) for the first three, and low, short, non-glottalized and "rising" for the other three. Nasal-ending syllables are the only ones where the number of suprasegmental classes in Hari is the same as in previous authors. On CVN syllables, Chang and Shefts or Hu Tan note four tones (produced by the intersection of the two-term register contrast and the two-term final glottality contrast), and Hari notes her four contours but has no final glottals on these syllables. Thus the interpretation is different, but the phonetic observation should coincide. Indeed Hari claims that the lexical correspondence between her recording and Chang and Shefts is good for the high register (her contour 3 = C&S's high-falling tone, and her contour 4 = their high-high tone), but for the low register she notes a low rate of agreement (p.144). Hari transcribes the moving contour by an apostrophe in front of the word, e.g. /'koh/ 'door', and leaves the basically level contour unmarked, e.g. /koh/ 'head'. In the lexicon she wisely used a redundant transcription: first the combination of an -h following the vowel for low register vs no -h for high register, with an apostrophe preceding the syllable for moving contour vs no apostrophe for level contour, and secondly a number from 1 to 4 in front of the morpheme indicating each combination of the two features.

The data.

The provision in the book of a sizeable vocabulary where this contrast is transcribed gives the reader the possibility of rechecking the data for himself. The need for checking the data arises from the fact that Hari worked for a relatively short period of time mostly with a single informant whose life story, as related by Hari in footnote 1, might cast doubt on her reliability as a source of detailed information on her language.

The informant was born in Eastern Tibet (Amdo-Khamba district). During her childhood and adolescence, she moved to Lhasa, India, and Sweden, always in company of other Tibetans. She then married the son of a Lhasa business family and settled in a joint family arrangement with her in-laws in Kathmandu. She had lived there for seven years when the study began. It is this last period of her life which Hari trusts to have insured the authenticity of her Lhasa dialect. Since the dialect of Amdo is generally considered to be devoid of tones, the family origin of the informant is unfortunate for a tonal study. She obviously has had the opportunity to live with Tibetans from all over Tibet and to use the Central Tibetan koine based on Lhasa Tibetan, and she may have learned the Lhasa dialect perfectly, but a fine point of phonology would be better established with the typical monolingual (mono-dialectal) native informant. Such criticism should be tempered by the observation that, with the political upheavals of the area for the past forty years, an unspoilt informant of any Tibetan dialect is very hard to come by. This can be compensated for by using several informants. Hari's book is, in this respect, the first step of a study which should be continued.

Checking the data will not be a trivial matter. Hari says that the contour contrast is difficult to hear and that "native speakers of the present day language admittedly also have some difficulties in identifying" it. This observation will come as no surprise for anyone having some experience of the tones of Himalayan languages. Tones in this area are melodic and phonetically rather close together. Their spreading over the several syllables of a morpheme or a word, as we will see later, does not help either. For Lhasa Tibetan previous authors have already pointed out that the melodic realization of final glottality is not always clear. With Hari's description, if we take into account the melodic effect of the abstract feature "glottality" we have to distinguish between three falling tones and a level tone on the high register, and two rising-falling tones, a slightly rising tone and a rising tone on the low register. Given this phonetic closeness, we could have expected the author to report the use of some instrumental help, as help or as proof, and to relate the results of discrimination tests with her informant on the few existing minimal pairs.

The interpretation.

In her analysis of the data, Hari has chosen the same line as the earliest study, by Chao : to consider both vowel length and final glottality as elements respectively of the vowel and

the consonant system of the language. Chang and Shefts' decision to consider glottality as a tonal feature is closer to the synchronic reality of the language, where a falling melody is its most frequent realization. But from a historical and comparative point of view its segmental origin as a deleted final stop or fricative is both clear and recent. Hari's presentation of Tibetan brings it into line with the Bodish languages of Nepal described to date : a four-tone system based on the intersection of two features : 1) a height (or register) feature associated with voice quality, which originated in an old voicing opposition in word initial stops still reflected in Tibetan orthography, and 2) a melody feature of unknown origin.

The implications.

From a historical point of view, Hari tries to correlate her contour contrast with the Tibetan orthography, and claims partial success with the prefixes. She finds that nasal prefixes with unaspirated stops seem to correlate with contour 2, but then, once the correlation was identified, she apparently used prenalization of the initial stop as a phonetic clue in the identification of the pitch pattern (p.24). Correlation with other prefixes (see table p.162) is only partial, and phonetically unexplained, and Hari concludes that "initial clustering of WT does not provide much unambiguous indication for the contours". She believes that the contour contrast preexisted the tonal split which led to the development of the high and low registers. In that case, as Hari remarks, I would have to revise my statement that Tibetan is one of the rare examples of the development of tone due to a consonantal mutation in a previously non-tonal language (Mazaudon 1977), since the language, like the languages of the Gurung Branch, would have had a preexisting melodic contrast. Tibetan was my only example in the Tibeto-Burman family, and its removal would thus have an obvious typological significance. For the reconstruction of Proto-Sino-Tibetan Hari's discovery, if confirmed, would be fundamental. If her two contours correlate with the two tones reconstructed for Proto-Tamang-Gurung-Thakali-Manangba (Mazaudon 1978), and unless some segmental origin is discovered for them in Bodish, it would give strong support to Paul Benedict's hypothesis of two tones in Proto-Sino-Tibetan.

Morpheme-tone.

The other point of interest in Hari's study is the claim that Tibetan tone is attached to the morpheme. Hari rejects both the traditional description of Tibetan as a syllable-tone language, and the word-tone description exemplified by Sprigg or Chao. She rightly points out that most authors have simply assumed that Tibetan is a syllable-tone language. "The only reason why this hypothesis has been able to survive so long," she believes, "is that the overwhelming majority of morphemes in LT are monosyllabic." (p.70) This would be a reasonable reason, but I personally believe that the reason is simply that until 10 or 15 years ago the official view of tone was that it was a syllabic phenomenon, whatever the language, and few people challenged that

view, except in the Firthian school where the whole phonemic view of phonology was challenged.

Hari shows that a morpheme cannot contain more than one tone. Most of the tonal features are realized on the first syllable, and the second syllable has a "basically level profile at a medium pitch level", higher in high toned morphemes, and lower in low toned ones (p.86). From a systemic point of view this fact has to be accounted for in one way or another. Hari concedes that "a syllable tone description which states that some syllables are tonally neutral may reach observational adequacy" (p.140). But she points out that the tonal reduction of non-initial syllables remains unexplained (I would prefer "unmotivated") in such a theory, and thus proposes to consider that tone is a functional property of the morpheme. Positive arguments to support her position might be drawn from the fact that there is no strong initial stress in LT to justify a neutralization of tones on unstressed syllables, and from the phonetic spreading of some of the tonal features over the whole morpheme (or over the whole word from my point of view).

To "word-tone" Hari prefers the weaker hypothesis of "morpheme-tone", not only for Tibetan, but for the whole group of Bodish languages spoken in Nepal. The word-tone hypothesis (Mazaudon 1977) implies that each word has only one tone, whatever the number of morphemes it contains. The morpheme-tone hypothesis should imply that a word contains a succession of tones corresponding to its compounding morphemes. Hari and her SIL colleague Doreen Taylor adopted the morpheme tone idea when they worked on Thakali and Tamang, two Bodish languages of Nepal. For these two languages they admit that the large majority of words have only one tone, because most affixes are toneless or what Hari calls "assimilating" in her study of Tibetan. So the tone of the lexeme spreads over all the following affixes. Some affixes, for Tamang-Thakali as well as for Tibetan, Hari describes as having their own tone. And she takes this as a basic argument against a word-tone analysis, which, she says, would fail to account for some existing tones. This begs the question of what is an affix, and what is an independent word. Being a grammatical morpheme is surely not enough to disqualify a morpheme as a word. The weakness of Hari's argument is that she does not give a definition either phonological or grammatical of the word in Tibetan. For Tamang and Thakali I am ready to argue that all the so-called "non-assimilating" suffixes are actually independent words, in which case a word-tone analysis does account for all the existing tones.

In Tibetan the situation is more complex because of the existence of assimilative processes on the segmental level (vowel height approximation and deaspiration and voicing of medial stops) between the lexeme and the following "non-assimilating suffix" (including what would be described syntactically as modals in verb phrases, or as conjunctions). This is exactly paralleled in noun-compounds: the same segmental assimilative processes are found there, and the phonetic realization of tonal

features on sequences of lexeme + grammatical morpheme of the "non-assimilating" category (section 2.5.2) and on compounds (section 2.4.1) are identical : the pitch range on the second syllable is narrowed, but all distinctions are kept. Since compounds are very frequent in LT (while they are rare in the languages of the Gurung Branch), Hari considers them as a second major argument against word-tone. She does raise the question of whether compounds should be considered as single words, but she decides in favour of it : "On the evidence of prominence features and tonal features (...) compounds might be considered to be two separate words phonologically. However the extensive assimilation processes which take place on the segmental level clearly mark them as phonological units." Hari is certainly right about this, but are these units words or phrases? Hari gives only one page to sequences of more than two syllables (which she considers the probable maximum length for the word), and she shows there that longer noun phrases do not exhibit segmental assimilation. We miss a description of what happens in two-syllable noun phrases which are not "words" for Hari. A glimpse of the tonal behaviour of such sequences is afforded by noun + numeral constructions on p.97. The pitch range on the second word is there shown to be reduced in the same way as in compounds (the reduction is explained as an effect of the intonational pattern of the LT sentence : the phonetic distance between tones is maximum in the nucleus and becomes progressively smaller towards the onset or the coda), but nothing is said about segmental assimilation. This last point is not directly part of Hari's subject, and is raised here only because it turns out to be the essential criterion in the delimitation of words.

To account in a simple way for Hari's Tibetan data, we need more than the three terms traditionally used in the segmentation of the spoken chain : morpheme, word and phrase. We need at least four : 1) morpheme (defined as the smallest meaningful element, but having no phonological properties), 2) morpheme + assimilating suffix (the domain of a single tone, and smallest phonologically defined unit), 3) morpheme + non-assimilating suffix or compound (the domain of segmental assimilation, containing several tone units), 4) phrase (a unit marked only by intonation). Leaving aside the possibility of a syntactic definition of the word, we can choose to call no. 2 a word (in which case Tibetan has word-tone), and no. 3 a phrase, no. 4 being simply what Hari called a "longer string", with very little phonological unity. Conversely we can choose to call no. 3 a word, and invent an intermediate unit name for no. 2 (something like Martinet's "syntheme" for instance -- and then Tibetan has "syntheme tone"). Actually there is no principled reason to expect that the boundaries of the different phonological processes should all coincide and we may have a more squishy reality (possibly depending on the tempo of utterance) than that suggested by the adoption of a fixed number of frames, whether three or four or a little more.

So much for interpretation. But when Hari says that the register contrast "seems to have been largely overlooked" in



second components (p.104) she refers to a disagreement between herself and other authors on the notation of particular items. Examples include: 'bread' Hari /1'cch-1'phahk/, Sprigg /˘ce:ba/ (fast tempo), Goldstein /šeeɸaà/; 'hair' Hari /4uʔ-4ʦa/, Sprigg /ʔudɸə/ (fast tempo), Goldstein /ūʦə/; 'gun' Hari /1'meh-2tah/, Sprigg /˘mendə/, Goldstein /mēta/, where Hari hears two tones while Sprigg and Goldstein note one integrated pattern. Hari's informant might have given a reading pronunciation, which artificially decomposes compounds, but a whole range of pronunciations going from fully independent words to total assimilation according to style and tempo is also possible. We need to know more about the corpus to decide. Hari describes a pronunciation style where the pitch height component of the tone has disappeared on second syllables, but where she claims that the voice quality and melody exponents remain, keeping the four tones distinct.

To conclude on the morpheme-tone question, it seems to me that the typological difference between syllable-tone and larger-unit-tone is much more significant than that between morpheme-tone and word-tone. Hari has shown that the domain of tone is nothing smaller than the morpheme. If the existence in Tibetan of a large number of compounds, where segmental integration is not paralleled by tonal integration, does not make it a perfect "word-tone" language, the frequency of assimilating suffixes makes it a very imperfect "morpheme-tone" language as well. Tibetan seems on this point to be an intermediate type, much more so than the Bodish languages of the Gurung Branch, where compounding remains rare, and where segmental assimilations and tonal reductions go hand in hand, allowing a more straightforward definition of the phonological word.

Another point of difference between Tibetan and the Bodish languages of Nepal is stress. Hari did not study stress per se, but she touches on the question in passing. The phonetic realization of tone in "noun-compounds" (section 2.4.1) and in "stem + assimilating suffix" (section 2.5.2) is identical except for "pitch contour 4 suffixes" (high basically level tone), which are "less prominent than the other suffixes", and which "have a special effect on preceding stems in that they allow a fuller development of the vowel length and pitch profile characteristics of these stems" (p.124). These suffixes also tend to lose their vowel. In her analysis Hari treats them as carrying one of the tones of the system, but phonetically they behave like toneless unstressed enclitics, hitched on to the preceding word, but not part of it (this is different from "assimilating suffixes" which carry the end part of the tonal pattern set by the lexeme for the word they belong to). They correspond to what Goldstein (p.xv) calls unstressed syllables or to Chang and Shefts's (1978 p.xxxi) syllables with tertiary stress (e.g. the past participle suffix -pa/-ba). Such weak syllables are not found in Tamang, Thakali or Manangba, although they may have been the source of some strange final consonants in Gurung (e.g. final -d, a very un-Tibeto-Burman ending).

In conclusion, An Investigation of the Tones of Lhasa Tibetan is not a simple reworking of old data. It presents significant new claims about the tone system of Lhasa Tibetan, and its findings, if confirmed, will be of great importance for the reconstruction of Sino-Tibetan. A simple examination of the book cannot answer the main question: is the description accurate? The work is serious and copious data is presented in a well ordered way, but the phonetic differentiation of the suprasegmental patterns is obviously very delicate, and it is imperative that the experiment should be duplicated by another researcher and with another informant to confirm Maria Hari's discovery. Her book will be of great help in this verification, which is itself another point in its favour.

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