NOTES AND REVIEWS

Toward a Typology of Vowel Harmony[1]

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The term 'vowel harmony' has been used to cover multitudes of phenomena. Besides the classical Altaic and Finno-Ugric instances, Chiri calls certain constraints in the additional vowels in the possessed forms of nouns in Ainu, a language isolate in northeastern Japan, a result of boin cyoowa (vowel harmony),[2] and Robins reports that in Yurok, an Algonkian (or Algic) language of northwestern California, there is vowel harmony and as a result certain pronominal prefixes have the same vowel as that of the nonprefixed noun.[3] The purpose of this note is to examine the possibility of arriving at a tentative framework for typological classification of vowel harmony. I will proceed by collecting some of the phenomena labeled as vowel harmony rather than by defining what vowel harmony should be.

The first possible criterion is the DISTINCTIVE FEATURES which are in harmony or identically specified within certain boundaries. Some of the classificatory frames are already available, an example being the distinction of TOTAL (or COMPLETE) and PARTIAL harmony.[4]

TOTAL harmony refers to the situation in which vowels of certain morphemes are not specified in the lexicon except as plus vocalic and minus consonantal, and the phonological rules give specifications similar to those of vowels in another morpheme in the same word. Examples are the illative singular suffix in Finnish,[5] separative singular suffix in Yurak,[6] perfective suffix of Kwanyama,[7] certain 1st and 2nd person pronominal prefixes in Moru (Miza) and Madi (Pandikeri),[8] the present tense suffix for 2nd person plural in Maasai,[9] past tense (ra-form) suffix in Igbo,[10] pronominal prefix of Yurok,[11] and dubitative prefix in Acoma.[12] Traditionally, a similar phenomenon has been called reduplication. It is noteworthy that it is often an h or a glottal stop that intervenes between the conditioning vowel and the vowel in total harmony, perhaps indicating that features specifying vocalic segments penetrate better through an h or a glottal stop.

PARTIAL harmony indicates that certain vowels are only partly specified in the lexicon and the unspecified features are provided by the phonological rules, be they of the assimilation type or of the root marker type.

Partial harmony may be further divided into those in which a grouping into grades[13] of natural classes is possible and those in which it is not. The former has been classified

[1] I wish to thank Wallace L. Chafe, William S-Y. Wang, and Karl E. Zimmer for their valuable comments on an earlier draft of this paper.

[2] Mashiho Chiri, Ainugo ni okeru boin cyoowa (Vowel Harmony in Ainu), Hokkaidô Daigaku Bungakubu Kiyô 1.101–18 (1952).

[3] R. H. Robins, The Yurok Language, University of California Publications in Linguistics 15.26 (1958).

[4] Björn Collinder, Comparative Grammar of the Uralic Languages (Stockholm, 1960), 208. L. Homburger, The Negro-African Languages (London, 1949), 75.

[5] Collinder 1960, 208. Robert T. Harms, Finnish Structural Sketch (1964), 58f.

[6] Collinder 1960, 208.

[7] Homburger 1949, 75.

[8] A. N. Tucker, The Eastern Sudanic Languages (Oxford, 1940), 93.

[9] A. N. Tucker and J. Tompo Ole Mpaayei, A Maasai Grammar (London, 1955), 55.

[10] I. C. Ward, An Introduction to the Ibo Language (Cambridge, 1936), 88. J. Carnochan, Vowel Harmony in Igbo, African Language Studies 1.155–63 (1960), esp. 157.

[11] Robins 1958, 26.

[12] Wick R. Miller, Acoma Grammar and Texts, University of California Publications in Linguistics 40 (1965), 79.

[13] Cf. Joseph H. Greenberg, Vowel Harmony in African Languages, Actes du second colloque international de linguistique négro-africaine, Dakar 12–16 avril 1962 (Dakar, 1963) 33–37, esp. 33.

into PALATAL, HORIZONTAL, and LABIAL harmony.

PALATAL harmony (or GRAVITY harmony) indicates that certain morphemes have vowels unspecified in respect to the feature backness. Examples are Finnish, Hungarian, Altaic languages, Korean,[14] and Kanembu.[15]

HORIZONTAL harmony is a term used by Roman Jakobson,[16] and involves harmonization in height, tenseness, or position of tongue root. Examples are found in some Paleo-Siberian languages such as Koryak and Gilyak,[17] Lhasa dialect of Tibetan,[18] some languages of the Kwa subfamily of the Niger-Congo family such as Igbo, Twi, Igbirro,[19] and the Moru-Madi group of languages in eastern Sudan.[20]

LABIAL harmony refers to the assimilation in respect to the feature rounding. Examples are in Turkish,[21] and certain other Altaic languages including Azeri, Tuvinian, Kumyk,[22] in Fanti,[23] and Igbo.[24]

It is to be noted that labial harmony frequently occurs secondarily with another type of harmony, for example, in Turkish the harmony is both palatal and labial, and in Fanti it is both horizontal and labial.

An example of languages in which harmonizing groups cannot be easily characterized by a feature is Nez Perce, an eastern Sahaptian language, in which i æ ɯ form one grade and i a o the other.[25]

Aside from the number and variety of distinctive features, we may consider the parameter of SYMMETRY. In some harmonic systems the harmonizing series are symmetric in that they are of equal power. In a SYMMETRIC system, any vowel in a certain position can determine the series of vowels for the word. Examples are Finnish, Hungarian, Altaic languages, Twi, and Igbo. On the other hand, an ASYMMETRIC system has one series dominating the other. In such systems, the presence of a dominant vowel in a word changes the vowels of the nondominant series. An example is Koryak. Jakobson describes the situation as follows: "in the Luorawetlan languages, if a member of a 'complex' contains low vowels, the high vowels of its other members change into corresponding low phonemes."[26] In the case of Koryak, the 'low phonemes' are the dominant vowels. In the Lhasa dialect of Tibetan, while there is horizontal harmonizing as in Koryak, the dominant series appears to be the 'high' vowels, at least in verbs. According to Chang and Shefts,[27] i e ü ʌ ó u are 'high' vowels and e ɛ ö a ɔ o are corresponding 'nonhigh' vowels. When the verb base has a high vowel and the suffix has a nonhigh vowel, except when the suffix has geminated a, the nonhigh vowel in the suffix is raised to high. Similarly, when the base vowel is nonhigh and the suffix vowel is high, except when the suffix is stressed, the base vowel is raised. What is noteworthy in Lhasa verbs is that the change is only in the direction of raising, possibly indicating that the high vowels are dominant. Even when no single feature characterizes one series against the other, the system may be asymmetric; e.g. Nez Perce.

In an asymmetric system, the dominant

[14] One of the recent discussions can be found in Wanjin Kim, Kugŏ moŭn ch'egye ŭi sin koch'al, Chindan Hakpo 24.63-99 (1963).

[15] Homburger 1949, 75.

[16] Roman Jakobson, The Paleosiberian Languages, AA 44.610 (1942).

[17] Jakobson, 1942.

[18] Kun Chang and Betty Shefts, A Manual of Spoken Tibetan (Lhasa Dialect) (Seattle, 1964), 46.

[19] P. Ladefoged, La base phonétique des langues de l'afrique occidentale (1), Actes du second colloque international de linguistique négro-africaine, Dakar, 12-16 avril 1962 (Dakar, 1963), 3-21, esp. 19.

[20] Tucker 1940, 89.

[21] Karl E. Zimmer, A Note on Vowel Harmony, IJAL 33.166-71 (1967), esp. 170.

[22] Nicholas Poppe, An Introduction to Altaic Linguistics (Wiesbaden, 1966).

[23] Victoria Fromkin, personal communication.

[24] Carnochan 1960, 157.

[25] Haruo Aoki, Nez Perce Vowel Harmony and Proto-Sahaptian Vowels, Lg. 42.579-767 (1966).

[26] Jakobson 1942, 610.

[27] Chang and Shefts 1964, 46.

series appears to be the less marked of the two series, since the dominant series is the one that all vowels change into with ease. The relative sums of complexities of the vowels in each series seem to bear this out. For example, in Nez Perce there are five vowels, whose distinctive feature matrix in terms of marking conventions is shown below.

	i	æ	a	o	ɯ
low	u	m	u	u	u
high	u	u	u	m	u
back	−	m	u	+	+
round	u	u	u	u	m
complexity	1	2	0	2	2

The total complexity of the dominant series (i a o) is 3 and that of the non-dominant series (i æ ɯ) is 5. There seems to be an important difference between a symmetric system and an asymmetric system in that the difference in the sum of complexities of constituent vowels is obliterated in the former. When one looks at the Turkish vowel system, which is symmetric, it is obvious that the front series is more complex than the back series because of the existence of costly front rounded vowels. However, the imbalance of the complexity in the two series does not offset the symmetry of the system. This may serve as a support for the condition that "a marking convention applies either to all or to none of the segments affected by a rule."[28]

The third criterion is whether or not there are alternating forms. The ALTERNATING systems may have two or more alternating forms depending on the number of features left unspecified in the lexicon. For example, in a language with only palatal harmony two alternating forms are found, namely front and back forms. On the other hand, in a language with two kinds of harmony four alternating forms are found; for example, the third person possessive suffix in Turkish has i ∼ ɯ ∼ u ∼ ü, and the third person singular Tense 2 suffix in Igbo has ɛ ∼ a ∼ o ∼ ɔ.[29]

The NON-ALTERNATING systems are those found in Old Japanese of the 8th century, and Ainu, where a certain constraint in the occurrence of vowels is observable. What is commonly known as 'internal harmony' in Turkish may also be considered an example.

So far I have presented three possible ways of classifying vowel harmony. One further possible criterion is neutral vowels. It appears that in none of the known cases are the neutral vowels really neutral on a higher level of abstraction. For example, in Mongolian, in which i is a neutral vowel, every native stem morpheme which now has the neutral vowel takes only one form of suffix. There are no cases in which a stem morpheme may occur with either front or back series. In short, neutral vowels seem to be products of a low level phonological rule. The same is true for Nez Perce. Then the presence or absence of neutral vowels appears to be unimportant as a criterion. In Mongolian and Nez Perce, two corresponding vowels in the two series are neutralized. There is another type of neutralization. When there are alternating layers of different harmonic series as in cases of horizontal harmony, it is not difficult to imagine that a high (or tense) vowel may be in the same position as the non-high (or lax) vowel of the next group up. This is a case of neutralization between two non-correspondent vowels in the two series. Twi has just such an example in ɛ.[30] There are nine vowels i ɪ e ɛ a ɔ o ʊ u. When a tense counterpart is called for, ɪ ɛ ɔ ʊ change to i e o u. When a tense counterpart of a is called for, a changes to ɛ. The changed ɛ maintains its status and never undergoes a further change to e. Informally, ɛ is a neutralization of lax ɛ and

[28] From Morris Halle's handout for a phonology seminar, University of California, Berkeley, August 1967.

[29] Carnochan 1960, 157.

[30] Victoria Fromkin, On System-Structure Phonology, Lg. 41.601–9 (1965), esp. 606.

tense a. Here again, the same argument for disregarding the neutralized vowels seems to be valid. The very fact that the ɛ which is a changed version of a undergoes no further change indicates that the ɛ has two separate representations on a more abstract level.

One interesting fact about the neutral vowels is that they are often i (sometimes also e) in palatal harmony, as in the Altaic and Finno-Ugric languages, or a in horizontal harmony, as in Igbirra[31] and Maasai.[32] When we consider that historical changes are from the marked to the unmarked, it is easy to see why the neutral vowels are among the least marked. This also explains that there are languages such as Proto-Bantu[33] and certain Dravidian languages[34] where i a u, constituting the least marked three-vowel system, are neutralized and only the mid vowels have the harmonic contrast of e/ɛ and o/ɔ.

Another possible criterion is that of DIRECTIONALITY. The directionality can be stated phonologically as progressive or regressive, or syntactically as stemdetermined or affix-determined. The decision of which actually is the case does not seem to be always simple. As Zimmer pointed out, in an Altaic language where there are no prefixes, the situation may be interpreted either as stem-determined or progressive.[35] Similarly, at least on the basis of a few examples cited, Kanembu harmony may be either suffix-determined or regressive.[36] A useful decision to make in this connection is perhaps in regard to the predictability or unpredictability of direction, which is closely related to the symmetry noted above. When a harmonic system is symmetric, either one of the series may dictate the harmony. Whatever vowel occupies a certain phonological or syntactic position determines the harmony; hence the direction of harmonization is predictable. On the other hand, in an asymmetric system, a dominant vowel, whether initial, final, stem, or affix, dictates the harmony; hence there is no predictability in direction. It appears that the symmetry criteria is sufficient to take care of directionality.

In summary, I have proposed three criteria for classifying vowel harmony: (1) feature, (2) symmetry, (3) alternation; and rejected two: neutral vowels and directionality.

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[31] Ladefoged 1963, 19.
[32] Tucker and Mpaayei 1955, 52.
[33] Greenberg 1963, 36.
[34] William Bright, Dravidian Metaphony, Lg. 42.311–22 (1966). The term 'vowel harmony' was used, for example, in Suniti Kumar Chatterji, Bengali Self-Taught (London, 1927), 112.
[35] Zimmer 1967, 166–71.
[36] Homburger 1949, 75.

OUTLINE OF STRATIFICATIONAL GRAMMAR. By Sydney M. Lamb. With an Appendix [Stratificational Analysis of an English Text] by Leonard E. Newell. Pp. vi, 109. Washington, D. C.: Georgetown University Press, 1966.

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This is a revised version of a booklet of the same title published, in multilithed form, in Berkeley in 1962. The changes are extensive, but the new version is still not definitive, as the author himself warns us in the Preface (iii). Stratificational theory is actively growing and changing. The outsider who wants to learn what the theory is all about will not find a full explication in this booklet, but he will do well to start with it anyway, consulting for further clarification the various articles to which Lamb refers.

There is a sharp difference in flavor between the work of the stratificationalists and that of the transformationalists. The latter tend to adopt what has been called the 'eclipsing stance': none of the labors of earlier generations of linguists (at least, from Grimm to Bloomfield, inclusive) really accomplished anything; everything worthwhile starts with Chomsky. Lamb, on the other hand, finds much positive merit in the