

Vowel Harmony

Vowel harmony is a well-known but not yet well understood phenomenon found in many languages native to Eurasia, Africa, and to a lesser extent other places. Hungarian, Finnish and Turkish number among the best known cases of harmony. The Uralic and Altaic language families, spoken across a vast geographic area of Eurasia from Korea to Turkey, exhibit vowel harmony to varying degrees in most of their member languages (Hungarian, Finnish, Turkish, Mongolian, Manchu, etc.). Harmony is not found in any familiar Indo-European languages (e.g., Greek, French, English).

Simply stated, harmony is when vowels within a word are required to resemble each other in terms of some property. For example in the Tuvan word *tooruksug* meaning ‘smelling like a pine cone’ all vowels are ‘labial’ (pronounced with rounded lips). Tuvan has an ample supply of vowels that do not employ lip-rounding, yet the vowels here—taking their cue from the first vowel—all are rounded.

Several basic types of harmony exist, each named for the speech organs involved. These include (1) palatal/velar (also called ‘backness’) harmony, (2) labial (also called ‘rounding’) harmony, and (3) tongue root (also called ATR) harmony. Palatal harmony requires vowels to be alike in terms of whether they are pronounced with the tongue body towards the front of the oral cavity (close to the palate) or towards the back (close to the velum). Labial harmony requires vowels to be alike in having lip rounding. Tongue root harmony requires vowels to be alike in whether the tongue body is pushed towards the front of the mouth or pulled towards the back.

A language may have more than one harmony system. Turkish has palatal and labial harmony, while Classical Manchu had tongue root and labial harmony. Two separate harmony systems, when present, may operate in a semi-independent manner.

Not all vowels equally participate in harmony. Typically, some restrictions are placed on which vowels cause harmony and which ones obey it. Such restrictions usually refer to some feature other than the harmonic one. In Tuvan, for example, any labial vowel can trigger labial harmony (forcing adjacent vowels to also be labial), but only high vowels undergo labial harmony (vowels that obey harmony are underlined below):

Tuvan

Low vowels do not obey labial harmony:

xol-da ‘in (the) hand’
xöl-de ‘in (the) lake’

High vowels must obey labial harmony:

xol-u ‘his hand’
xöl-ü ‘his lake’

Vowel harmony may be thought of as a restriction on which vowels may occur together within the same word. In Turkic languages, all vowels can be divided into two natural classes: those pronounced with the tongue in the back part of the oral cavity, and those pronounced with the tongue towards the front. In a Turkic language with eight vowels, four of them will belong to the front (palatal) class and four to the back (velar) class.

A typical Turkic vowel inventory

	front (palatal)	back (velar)
high	i ü	ı u
low	e ö	a o

(labial vowels are ü, u, ö, o)

Within any single word (including any affixes added to that word) vowels from the front and back classes do not mix:

Tuvan

is ‘footprint’
is-ter-ivis-te ‘in our footprints’

aas ‘mouth’
aas-tar-ivis-ta ‘in our mouths’

Harmony applies only within a word. No harmony system allows harmony to carry across a longer span, say, two distinct words or an entire sentence. At the level of word-structure, harmony systems may be divided into two basic types, depending on what element controls harmony. In ‘root-controlled’ harmony, vowels in a word root determine the quality of vowels appearing in affixes. In ‘dominant-recessive’ harmony, neither root nor affixes take precedence. Instead, if any vowel belonging to the ‘dominant’ class appears anywhere in the root or a suffix, it forces all other vowels in the word to shift over to that class. A word may contain weak (‘recessive’) vowels only if no strong vowels are present.

No harmony system is exceptionless: typically, a language will have some non-harmonic native words or affixes. A language that has been in long-term contact with a non-harmony language (e.g. Russian or Persian) may have a large supply of non-harmonic loanwords.

Nonetheless, these disharmonic lexemes may participate productively in harmony. Usually, the final vowel of a non-harmonic word determines the harmony of following suffix vowels:

Classical Manchu (disharmonic words)

age ‘prince’
age-sq ‘princes’

dahema ‘uncle’
dahema-sq ‘uncles’

How is Harmony related to the mechanics of speaking? Vowel harmony makes some sense when viewed in terms of natural movements of the speech organs. For example, when you round your lips to pronounce ‘oo’, this gesture may carry over onto the next vowel. This tendency might account for common slips of the tongue in English; for example, saying ‘kangaroo moot’ when you meant to say ‘kangaroo meat.’ Physical speech mechanisms provide a natural foundation for harmony. But they do not explain why certain languages (and not others) adopt harmony as a fundamental organizing principle of their sound systems. Harmony likely traces its origins to natural speech mechanics, but it has evolved into a more abstract way of organizing the sounds of particular languages. Thus, harmony can work at cross purposes with the mechanics of speech—it may impose conditions that do not obviously facilitate either speech production or perception.

Besides ease of pronunciation for the speaker, what other advantage might harmony offer in language design? Some linguists have argued that harmony helps to make clear to the hearer the boundary between one word and the next. But this can only be true if two adjacent words belong to different harmony classes. It has also been suggested that harmony increases the likelihood the hearer will correctly identify certain vowels. If a speaker notices that the vowel of the first syllable is palatal, she can be fairly certain that each following vowel also belongs to the palatal set. This reduces by one-half the range of potential vowels she must listen for in succeeding syllables, and may lessen the cognitive processing required.

Many harmony languages have vowels that fail to participate fully or at all. Instead, they may either obstruct the harmony pattern or remain invisible to it. So-called opaque vowels block the current harmony pattern and start a new pattern. The Turkish suffix *-gen* (corresponding to English 'gon' as in *octagon*) contains a front (palatal) vowel that never alternates to obey harmony. Vowels following 'gen' must be palatal, even when the prevailing pattern in the word is velar:

Turkish

- alti* 'eight'
- alti-gen* 'octagon'
- alti-gen-ler* 'octagons'

So-called 'transparent' or 'neutral' vowels allow harmony to pass through them, without being affected and without blocking it. In Karelian (a Uralic language) backness harmony dictates that if the first syllable contains a front vowel, all following syllables contain front vowels. Likewise, if it contains a back vowel, following syllables have back vowels. Exceptions are front vowels [e], [i], which remain indifferent to harmony and may appear anywhere.

Most harmony languages tolerate some disharmony, which can result from internal processes or from borrowing foreign words. Internally, consonants may interfere with harmony system, imposing their own conditions on that override it. Syllable structures may also impose limitations on harmony: in Turkmen, for example, labial harmony does not affect vowels in word-final open syllables. In Turkish, the presence of a velar consonant [g] may force an adjacent vowel to be velar, even though the other vowels in the word are palatal. Modern Turkish also has a high percentage of non-harmonic loanwords in its lexicon: *taksi* 'taxi', *kitap* 'book'. Some harmony languages alter borrowed words to render them more harmonic.

The Turkic languages, a sub-family of Altaic, range from almost perfectly harmonic to hardly harmonic at all. These languages illustrate the possibilities of change and evolution in harmony. The plural suffixes in Old Turkic and two of its daughter languages, Turkish (highly harmonic) and Uzbek (barely harmonic), show two possible paths along which harmony can proceed.

	<i>back suffix</i>	<i>front suffix</i>
<i>old Turkic (harmonic)</i>	-lar	-ler
<i>Turkish (harmonic)</i>	-lar	-ler
<i>Uzbek (not harmonic)</i>	-lar	-lar

Harmony as a pattern can best be understood by considering those cases where it fails to apply as well as those where it applies.

Many unanswered questions remain in understanding vowel harmony. Dozens of languages known to have harmony remain largely undocumented, and new types will certainly be discovered.

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Further reading

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