

# Epenthetic Processes

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Rules of epenthesis are used to introduce consonants, semi-vowels, and vowels either as phonological markers of syntactic information or as purely phonological phenomena. In this note we will examine several properties of purely phonological epenthesis.

## 1 Consonantal Epenthesis

Current theories permit a wide variety of consonantal epentheses in terms of both the kinds of segments which might be inserted, and the contexts in which insertion might occur. In languages, however, these segments and contexts are highly restricted; there are two types.

### 1.1 A consonant is inserted between two consonants.

Examples of this type include:

\*tem-lo-m > templum (Latin 'temple')  
 \*eks-em-lo-m > exemplum (Latin 'example')  
 \*anr-os > andros (Greek 'man')

In these cases, the epenthetic "consonant" is homorganic with the preceding nasal, and occurs at a syllable boundary. There are no examples of such hypothetical forms as:

\*omlo > omklo  
 \*omlo > okmlo

This type of epenthetic "consonant" is an artifact of co-articulatory readjustments [1]. It should be regarded as a phonetic result of resegmentation.

## 1.2 A consonant is inserted between a boundary and a vowel.

There are several examples of this type. In Zuñi, a glottal stop appears before a morpheme initial vowel if that morpheme is word initial or follows a morpheme ending in a vowel [2], so that:

iy-anna > ?iyanna 'to come-(he) will'  
 we-anna > we?anna 'to become sick-(he) will'

but:

t-iy-anna > tiyanna 'they-to come-will'

In these cases, the epenthetic "consonant" is a glottal stop [3] and always appears at a syllable boundary.

In Maru, the stops [t] and [k] are inserted following words ending in a high front vowel or high back vowel respectively[4]. The only final stops are [p t k ?]. In these cases the epenthetic consonants are limited to stops produced with the tongue (i.e., the bilabial and glottal stops are excluded); the stops are homorganic with the preceding vowel.

There are no instances in either case of such hypothetical forms as:

ae > k<sup>w</sup>ae  
ae > aek<sup>w</sup>  
ae > ak<sup>w</sup>e

The epenthetic “consonant” from cases of this type should be regarded as a phonetic result of syllable preservation or retention of syllable shape.

In both types of consonantal epenthesis, a phonetically predictable segment is inserted. Although in theory many phonetically unpredictable segments are also possible, none of these occurs in natural languages. These facts indicate that rules of epenthesis do not introduce new consonantal segments directly. Further, they suggest that there are no purely phonological rules of consonant epenthesis.

One prediction which follows from this hypothesis is that metathetic processes never involve an intermediate step, such as:

art-kos > arktkos > arktos (Greek ‘bear’)

In this derivation, the first step involves epenthesis of a consonant. If metathesis is a phonological process, this derivation is excluded in principle. If metathesis were a phonetic process, this derivation would violate the condition on homorganicity. Thus, such derivations cannot be an account of a metathetic process.

In conjunction with our general hypothesis, it is interesting to note that:

In general, it is easier to reconstruct a written passage that has consonants but no vowels, than it is to reconstruct a passage that has vowels but no consonants.

Languages may have writing systems which preserve only consonants (i.e., the reader supplies the proper vowels), but no language has a writing system which preserves only vowels (i.e., the reader would supply the proper consonants).

## 2 Glide (Semi-vowel) Epenthesis

Languages may allow "epenthesis" (more probably, formation) of glides. In such languages, the glide is generally inserted between two vowels. For example, in Cashinahua [5] a glide is inserted between two unlike vowels so that if the first vowel is:

/i/, the glide is [y].

/u/, the glide is [w].

/ʌ/, the glide is [ɣ].

The vowels of Cashinahua are /i u ʌ a/; /ʌ/ is normally pronounced as [iʷ].

The epenthetic glide always occurs at a syllable boundary, and is "homorganic" with the preceding vowel.[6] It should be regarded as a phonetic result of syllable retention.

The restrictions on epenthetic glides are analogous to the restrictions on epenthetic consonants. In both glide and consonant epenthesis, the segment inserted is phonetically predictable; moreover, the epenthetic segment preserves the existing syllable structure. These facts suggest that there is no purely phonological epenthesis of either glides or consonants.

### **3 Vowel Epenthesis**

Languages allow epenthesis of segments which are not completely phonetically predictable. These segments are introduced for syllabification, and may undergo certain phonological rules; they are always vowels.

The phonetic properties of these epenthetic vowels are at least partially determined by the base of articulation of the particular language. The "base of articulation" is the neutral position (for a speaker) of a language. It is determined by the positioning of the major articulators (i.e., the specific position of the velum, base of the tongue, jaw, and lips), and may vary for different languages.

The neutral or lessmarked vowel(s) of a language reflect the base of articulation. Thus, the vowel will tend to be high if the base of the tongue is high, fronted if the base of the tongue is fronted, round if the lips are rounded, and so forth.

An epenthetic vowel is generally unmarked or less-marked. That is, no language has such segments as /ĩ/, /ā/, or a voiceless vowel as its only epenthetic segment; nor does any language have epenthetic diphthongs.

There are two types of apparent exceptions to this claim; both result from locally marked contexts.

### 3.1 Languages with vowel harmony.

Some languages have a series of vowels which is distinguished either by rounding or by both rounding and front-back. The characteristics of particular vowels are prescribed by rules of vowel harmony. In languages with vowel harmony, it is often the case that a normally unmarked vowel, if epentheticized, would produce a marked sequence of vowels. Under these conditions we would expect to find unusual epenthetic vowels, but only those vowels which are in accord with the specific vowel harmony rules.

In Turkish [8], for example, foreign loan words with underlying initial consonant clusters often resyllabify, so that:

priz > piriz	(‘prize’)
tramvay > tiramvay	(‘tramway’)
klub > kulub > (or less commonly) kilub	(‘club’)
trafik > tirafik > (or less commonly) tirafik	(‘traffic’)

In cases with an unusual epenthetic vowel, the segment results from the application of the vowel harmony rules.

### 3.2 Languages with marked series of consonants.

Some languages have series of consonants which are marked in terms of either primary or secondary articulations. Russian, for example, has both a palatal and a palatalized series of consonants. Such series of consonants correlate with the base of articulation characteristic of the language,

In contexts such as these, an otherwise unmarked vowel would be considered more highly marked than some otherwise non-neutral vowels. This suggests that:

1. A language may have an epenthetic /*i̯*/ if and only if that language has a palatal or a palatalized series of consonants. (e.g., Turkish)
2. A language may have an epenthetic /*ã*/ if and only if that language has a pharyngeal or pharyngealized (perhaps a glottal or a glottalized) series of consonants. (e.g., Mohawk, Klamath)
3. A language may have an epenthetic /*i*/ if and only if that language has a labio-velar or (labio) velarized series of consonants. (e.g., Alaskan Eskimo [9])

Languages with unusual epenthetic vowels and marked series of consonants thus provide additional support for our account of vowel epenthesis.

## 4 Conclusions

Languages have a number of processes available to satisfy language-specific constraints on syllable structure (or syllabification). These processes include vowel or consonant deletion, vowel or consonant gemination, and vowel epenthesis.

Phonological rules of epenthesis reform consonant clusters by syllabification. The particular phonetic characteristics of epenthetic vowels reflect the language-specific base of articulation, and may result from “locally marked contexts”.

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## References

- [1] Harms, R. T. (1971). Some Non-rules of English. University of Texas manuscript.
- [2] Read, G. (personal communication).
- [3] Marking theory treats glottal stop as a highly marked segment. If /ʔ/ is a segment, marking theory should be revised to accommodate these considerations.
- [4] Burling, R. (1966). The Addition of Final Stops in the History of Maru. *Language*, 42 (pp. 581–586).



- [5] Kensinger, K. M. (1963). The Phonological Hierarchy of Cashinahua. In B. F. Nelson (ed.), *Studies in Peruvian Indian Languages* 1, (pp. 207–217).
- [6] In the spelling of “Cashinahua”, the sh is an English artifact, and the hu is a Spanish artifact.
- [7] Another possible vowel harmony type is based on a tense-lax distinction. There are several constraints on vowel-harmony types.

R. T Harms (personal communication) has suggested

A language may have a front-back vowel harmony if and only if that language also has a roundness harmony.

A second constraint is that no language may have a vowel harmony that operates only over vowel height. That is, there can be no high:non-high, high:low, or non-high:low rules of vowel harmony.

Glides introduced by glide formation are similarly constrained. No language has a height distinction in glides unless that language also has a front-back distinction for glides.

- [8] Granoff, I. (personal communication).
- [9] Our claim seems weakened by the restrictions on this third ‘universal. Despite the fact that a majority of languages have velar consonant series, no language that we know has epenthetic /u<sup>Y</sup>/. This observation may further clarify the restrictions on the base of articulation.
- A. Cearley (personal communication) noted that in Greenland Eskimo a word may have a voiceless epenthetic vowel, just in case all of the other vowels in the word are voiceless. This observation provides additional support for the notion of locally marked contexts.