

## Vowel Harmony – Allomorphic alternations require ‘variable’ elements (A synopsis)

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[All references to my own work can be going to the #number next to the references which refer to items under ‘Publications: <https://harry-van-der-hulst.uconn.edu/>’. Other references cited here are provided in the text below. Many other relevant references, among others to related work by others, can be found in my publications.]

The most frequently discussed topics in the analysis of vowel harmony are no doubt the matter of *transparency* and *opacity*, and the role of *locality*. There have been many accounts of why it is, and under which circumstances, that certain vowels ‘do not play ball’. From the viewpoint of locality considerations, assuming that locality is a desirable property of linguistic operations, transparency presents a bigger challenge than opacity, because it looks as if vowels are being ‘skipped’.

The optimal situation would be that we can predict the behavior of reluctant vowels from the inherent properties that these vowels have, i.e. how they are specified for the harmonic element. An attempt to do just that was made in **van der Hulst and Smith (1986 [#29])**. The basic idea was that only vowels that are inherently specified with the harmonic element *can* be transparent (although they do not have to be), whereas vowels that are inherently incompatible with the harmonic element *must* be opaque. In my **2018 book** I take this idea to be essentially correct (‘still being [not so] crazy after all these years’; for articles following this book, see: **van der Hulst 2018 [#163]**, **2021 [#170]**). However, there are problematic cases and for these I had to develop an auxiliary hypothesis which recognizes the notion of *parasitic harmony* that had already been around since a proposal by Donca Steriade. We need a three-way distinction in how segments can be specified with respect to the harmonic element, which is the cornerstone of my approach to VH. However, the need for a three-way specification and how this is done within RCVP occurs in almost all cases of allomorphy.

In the RCVP model there is thus a three-way distinction in how vowels in the lexicon are represented with respect to a given element:

(1)            a.        |ε|        b.        –        c.        (ε)  
                  X                                    X                                    X

a = invariant ε

b = invariant non-ε

c = alternating vowel, element must be licensed to get interpreted

In vowel harmony systems, vowels can show three types of behavior with respect to a certain harmonic feature. Some vowels always have the harmonic element, some always lack it (both acting disharmonically) and some, the harmonic ones, have it or do not have it depending on context. As shown in (1), I formally represent the first two cases as being specified for the element or being unspecified with the element. The harmonic ones have the element as a ‘variable’ (represented as ‘(ε)’). If a variable element is locally licensed it becomes invariable; if it is not so licensed it remains silent (i.e. is not phonetically interpreted); I discuss licensing below.

Why are alternating vowels not simply represented as lacking the harmonic element? I have argued that unless we distinguish (1b) and (1c), we cannot make a principled representational difference between alternating vowels and vowels that fail to alternate, in particular, when such disharmonic vowels are vowels that surface *without* the harmonic element which, as we will see below, typically behave opaquely.

In addition to accounting for a harmonic alternation, variable specification plays a key role in explaining why certain types of neutral vowels (i.e. vowels that lack a harmonic counterpart in the vowel system) behave transparently. I have proposed that all so-called *neutral vowels* (i.e., in which the contrast for the harmonic feature has been neutralized) contain the harmonic element as a variable. This plays a crucial role in accounting for transparency. The so-called transparent vowels de facto participate in the harmony, meaning that they are not really transparent or ‘skipped’. These vowels are just ambiguous. A consequence of this proposal is that variable elements occur in precisely two circumstances, both involving *dual behavior* of vowels:

- (2) Variable elements occur only when:
  - a. There is positive evidence for ambiguous behavior
  - b. There is positive evidence for alternation

To use variable specification for alternations and for neutral vowels covers precisely the two cases in which, in a binary model, underspecification would be invoked, namely contextual predictability and redundancy. Indeed, as noted earlier, the variable notation is the formal parallel of underspecification in a binary feature system. In both cases, we are saying that the representation can go two ways, i.e. with or without the element in a unary system or with a plus or minus value in the binary system. A caveat (of ‘weakness’) of representing neutral vowels with a variable element is this element is not only pronounced when licensed (i.e., when occurring together with non-neutral front vowels), but also when it is not licensed. In this case, we must say that the variable element is ‘lexically licensed’, which thus accounts for ‘absolute neutralization’.

The proposal in (1) does not undermine the unary nature of the elements. Contrast *in the vowel system* is only expressed through presence or absence of an element. The variable notation encodes the fact that certain vowels *as part of specific morphemes* have a dual character in displaying an alternation between presence and absence of the element. The notation ‘(ε)’ simply means that for the relevant vowel it is undecided *in the lexicon* whether it will surface with or without the element in question.

In the RCVP approach, harmony is analyzed in terms of a *licensing* requirement, which results in ‘agreement’, both intra-morphemically and inter-morphemically, i.e., within the domain of the word. The idea of licensing is, in general terms, shared by many approaches in Government Phonology (and several other approaches as well). However, the *source* of the licensed element, if not due to some notion of spreading or copying, remains somewhat unclear in these GP proposals. RCVP views harmony as the licensing of an element, *which is already specified in the target vowel as ‘variable’*, by another locally present, *non-variable* instance of that same element. A variable element is phonetically interpreted if it is licensed by a preceding or following non-variable local occurrence of the same element. This is called *lateral licensing*. The variable element is left uninterpreted (or ‘disappears’) if no such licensing is available.

Variable elements are posited for vowels that alternate due to harmony. In addition, the use of variable elements can be naturally extended to an account of neutral transparent vowels that display ‘dual behavior’ in occurring with vowels from both harmonic classes. That this is in fact a

necessary extension will be shown when we discuss how transparent vowels are handled in RCVP. Variable elements thus represent the *neutralization* of the contrast between presence and absence of an element in a certain context (syntagmatic neutralization) or in all contexts (paradigmatic or absolute neutralization). In a binary feature system, absence of contrast would typically be expressed by saying that the harmonic feature is *underspecified*, but in the RCVP model it is expressed in terms of a variable element “(ε),” which means “ε or nothing”.

The occurrence of variable elements automatically triggers a licensing relation; i.e., variable elements are necessarily sensitive to the local presence of a potential licenser. To be fully explicit, the effect of licensing, as relevant for vowel harmony, can be stated as resulting from the following general convention:

- (3) For ‘(ε)’, select ε in the context of ε

The licensing of variable elements is local. Locality is a central theme in the discussion of vowel harmony (if not of all linguistic relations). However, the notion of locality has been used in several different ways, even within the study of vowel harmony. While virtually all accounts of vowel harmony appeal to some notion of locality, frameworks differ in important details in defining this relationship or in dealing with apparent violations of locality. RCVP adheres to a *strict* interpretation of locality (modulo the invisibility of consonants), which avoids mechanisms such as ‘discontinuous association’ or ‘feature/element insertion’ to account for apparent violations. This means that locality does *not* mean ‘establishing a relation between two entities that are as close as possible’ (as proposed under the heading ‘Search-and-Replace’ approaches), but rather (and more conventionally) between elements that are adjacent with reference to a specific ‘projection’, usually the nuclear tier (*nuclear locality*) which contain syllable heads. To account for some cases of *unexpected transparency*, the model admits so-called *bridge locality*, in which case the locality requirement for licensing is satisfied on an element tier that differs from the ‘nuclear or vowel tier’ (such cases are a subclass of ‘parasitic harmony’, as first proposed in work by Donca Steriade 1981), to which we turn now.

Van der Hulst and Smith (1986 [#29]) proposed that non-participating vowels display predictable behavior with respect to ‘transparency’ and opacity:

- (4) ‘Transparency’ and opacity
- a. A vowel that is *compatible* with the harmonic element is *transparent*
  - b. A vowel that is *incompatible* with the harmonic element is *opaque*

The predictions in (4) have not gone unchallenged. There are cases of both *unexpected opacity* and *unexpected transparency* (some of which were already identified in van der Hulst 1988 [#40]). Unexpected opacity is not a problem for locality. Neutral vowels that are compatible with the harmonic element can, instead of having the element as a variable, have it as invariable and thus act as opaque. This is captured by replacing the second ‘is’ by ‘can be’ in (4a). Unexpected transparency is more worrisome. An example is labial harmony in Khalkha where the high non-labial vowel /i/ acts transparently to labial harmony.

I have suggested that the key to understanding the unexpected behavior of the high vowels lies in the fact that labial harmony in Khalkha is restricted to non-high vowels. Only vowels that already agree in being non-high agree in labiality. Donca Steriade has insightfully referred to harmony that is dependent on agreement for some other feature as *parasitic harmony*. Whatever the functional basis of parasiticity, I will argue that the dependence of one agreement relation on

another agreement relation opens the possibility for saying that locality for the former is defined with reference to the latter, which I will refer to as *bridge locality*. Hence, with respect to (3b), we have to reckon with cases in which incompatible vowels can be ignored because of bridge locality. Bridge locality is based on harmony being dependent on another tier, although it is not the case that all cases of dependent (or parasitic) harmony involve bridge locality as we see in labial harmony being parasitic on palatal harmony in certain Turkic languages. A related approach to the dependency of harmony on ‘agreement’ on another tier is the ABC (Agreement-by-Correspondence) approach.