Manner as a skeletal relation

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In feature theory there is a palpable tendency for extracting features from feature matrices, i.e., segments. Changes in the status of features are effected in two completely different ways. Some features are done away with completely, their effects delegated to prosodic structures, like the skeleton, syllabic constituents, or foot structure — this has happened to features like [long], [syllabic], or [stress] —, or to segment-internal structure, like feature geometry or dependency relations. Other features remain as primitives, but their segmental exclusiveness is dissolved: they are treated as autosegments, which may simultaneously belong to more than one segments. This has happened to most features, e.g., [voice], [palatal], etc.

It is obvious that in an autosegmental model of phonetic features there must be good reasons for denying certain features the status of being autosegments. The features that still often suffer this fate are the "manner" features ([vocalic], [consonantal], [sonorant], [strident], [continuant]). In many instantiations of the feature geometric representation of segments they constitute — or are directly associated with — the root node (cf. Walli-Sagey 1986, Schein & Steriade 1986, McCarthy 1988).

In this paper my aim is to unify two sets of proposals, those charging the skeleton with the function of phonetic properties previously represented by phonetic primitives and those that refrain from making manner features autosegments. Let it be mentioned right at the outset that the aim will not be fully accomplished, it still seems a worthwhile enterprise to explore such a possibility. I will first raise and give answers to two questions: (i) why it is manner primes that deserve special attention and (ii) why it is the skeleton that their functions should be transferred on (§1). Next comes a brief overview of proposals with similar goals made recently by other researchers (§2). This is followed by a fairly comprehensive account of consonant lenition, according to which there are two separate trajectories with different causes and different results (§3). After a discussion of different flavours of the sonority hierarchy (§4), comes an introduction to syllable structure as represented by VC phonology — a version of CV phonology, itself a continuation of the heritage of government phonology (§5). The next section (§6) shows how the two types of lenition follow from the type of relations assumed in the framework. I then continue with discussion the consequences of burdening the skeleton with the representation of manner properties of sound (§§7, 8). The central claim of the theory, that noncontinuancy is part and parcel of being a consonant, is made in §9. The next section (§10) explores the possibility of getting rid of another manner prime, the noise category. Finally, I look at some repercussions of the proposals to the representation of vowels (§11), and conclude the paper (§12).

1 Why manner, why the skeleton

A question that may immediately be raised upon checking the title of this paper is why manner features should be singled out to be reduceable to skeletal relations. Phonetic primes may be classified in three groups: features responsible for the place of articulation, for laryngeal characteristics and for manner of articulation — as is standard practice in feature geometries (e.g., Clements 1985). Of the three, place and laryngeal features pattern together in many respects to the exclusion of manner. In consonant clusters, place of articulation and laryngeal (voicing) assimilation is a well-documented process, while the same can hardly be claimed of manner properties: it is rare, if it exists at all (cf., e.g., Schein & Steriade 1986 : 694, McCarthy 1988 : 91f, Harris 1996 : 310, Hume & Odden 1996 on [consonantal], Cser 1999 on [continuant]); hence the idea of grouping them directly under/in the root node. Place features are easily associated with both consonants and vowels (e.g., the palatal/velar opposition holds for both types of sound). There is also some tradition of applying laryngeal features in the same way, identifying voicing with low tone and aspiration with high tone (cf. Harris 1994 : 134 and references there). In the case of manner features no such equivalences can be posited. The same discrepancy may be noted if one examines the lenition of consonants: lenition involving place and laryngeal quality point in the direction of the unmarked values (like alveolar/dental, velar, glottal, or voiceless unaspirated). On the contrary, lenition affecting manner typically heads towards the more marked consonantal state, an increase in sonority (e.g., flapping, spirantization); a point we will return to in §3. Finally, it must be mentioned that it is manner of articulation that is most intimately connected to consonantalness and vocalicness (*pace* Hulst 1994, who claims that all phonetic properties are such), which are clearly prosodic properties in frameworks that apply syllabic constituency or a categorially separated skeleton (like Clements & Keyser's (1983) CV model, or the one assumed in this paper, which is to be detailed in §5).

Another obvious question — partly answered above — is why the role of manner primitives should be played by the skeleton. One reason is that lenition affecting the manner of articulation of consonants is dependent on syllabic position, that is, on the skeletal relations affecting the host of the consonant. In addition, fortition, which, as viewed here, is always a change in manner, is also effected by the relations between skeletal positions.

Therefore, ample cause appears to have accumulated to justify treating manner properties of sounds specially and to make the skeleton responsible for these distinctions. The hunch is further corroborated by previous work, which is briefly introduced in the next section. It is impossible to fully discuss all the proposals, my aim is to demonstrate that the claims I am to make are by no means unparallelled.

2 Previous proposals

Couched in a minimalist dependency phonological framework, Hulst (1994, 1995) proposes that all phonetic properties — including manner, but also place of articulation and laryngeal properties — could be modelled by two primes, C and V, entering in various dependency relations. The original insight comes from the standard DP (Anderson & Ewen 1987) view of the sonority hierarchy, in which the two extremes, voiceless stop and vowel, are represented by C and V, respectively, while the intermediate levels (voiced stops, fricatives, nasals, liquids) are the derivates of C-dominated, V-dominated or undominated CV pairs and these constructs dominating and dominated by further Cs and Vs. While the standard model applies Cs and Vs only for deriving manner primes, Hulst extends the idea to all properties of sound. Although the move is appealing, I will not follow it here, since it eliminates the manner vs. place/laryngeal distinction advocated in this paper.

Rennison (1997) proposes that the consonantalness of onsets and the vocalicness of nuclei could be channelled “into segments” by the empty element. In a later continuation Neubarth & Rennison (1998) propose a so-called functional element (F), which makes a segment linked to a C slot a stop if head, or a fricative if operator, and a segment linked to a V slot nonhigh if head, or ATR if operator. A number of phonological primes are thus expelled of the theory, their function (partly) taken over by the prosodic structure, the onset or nucleus node that the particular segment is ultimately linked to. Jensen (1994) proposes that stops and glides be distinguished by positing a virtual coda position before the former but not the latter, even when there is no such coda pronounced. This also reduces manner contrasts to differences in syllable structrue.

Ségéral & Scheer (2001) argue that in Cologne German intervocalic g and in Somali t and k are best analysed as phonological geminates, that is, a doubly linked structure, which, nevertheless, is interpreted as a phonetically short consonant. In these languages then the manner properties of these stops is encode structurally, instead of by some melodic prime. Lowenstamm (1991) formalizes a similar claim about vowels in certain Afro-Asiatic languages, where superficially short peripheral vowels (ɑ i u) phonologically behave as long. Lowenstamm (*voce*) also argues that vowel length in languages like English might be conditioned by the virtual geminate status of the following consonant. This means that in the case of a pair like *bad* b̥aːt and *bat* b̥at, what is standardly analysed as a voicing contrast would, in fact, be one of a simplex and a geminate word-final stop.

3 Consonant lenition

The notion of lenition is strongly theory-specific. For one thing, since alternative terms with similar meanings (like reduction or weakening) are around, what one treats as lenition is largely a matter of definition. In his attempt to unify all possible kinds of segmental weakening, Harris (1997), for example, treats vowel reduction and all types of consonantal neutralization as instances of the same phenomenon — the weakening of licensing. Cser (2001), on the other hand, limits the scope of what he labels lenition to changes increasing the sonority of a consonant.

The theory this paper bases its claims on, first exposed in Dienes & Szigetvári 1999, presupposes monovalent melodic primes and distinguishes two types of consonant lenition, depending on the direction of the change. Three such directions can be separated: (i) a consonant may weaken by becoming more sonorous, while keeping its place and laryngeal properties (the latter only if possible, i.e., not in the case of obstruent-to-sonorant changes): e.g., t → s/ɾ, p/b → w, p → p͡f/f, g → ɣ. (ii) Another type of weakening is involved in the loss of place of articulation, which can be instanced by a consonant becoming glottal (e.g., t/k → ʔ, s/f → h); or becoming coronal (e.g., ɲ → n, ʎ → l); or becoming velar(ized) (e.g., n → ŋ, l → ɫ).[1] (iii) Loss of laryngeal properties constitutes a third category in the weakening of consonants (d/tʰ/dʱ → t).

As already noted by Ségéral & Scheer (1999 : 24), the three types of consonant weakening enumerated above can roughly be associated with two

[1] Admittedly, while becoming glottal (debuccalization) is almost unanimously accepted as loss of place of articulation, the latter two types, becoming coronal and becoming velar, are again theory specific. I do not intend to go into details here, but refer the unconvinced reader to the literature on coronal underspecification, e.g., Paradis & Prunet 1991, Backley 1993, Szigetvári 1994, Scheer 1996, etc.

favoured environments (this is not to say that cases to the contrary never occur). An increase in sonority is typical intervocalically.[2] This is what Cser reserves the label 'lenition' for; here it will be referred to as vocalic lenition (v-lenition), since it makes a consonant more vowel-like (sonorous). Loss of place and/or laryngeal properties is typical in nonprevocalic position; let us call this type consonantic-lenition (c-lenition), since it makes a consonant more like what can be taken to be the prototypical consonant, ʔ (which has neither place, nor laryngeal properties). This type of lenition is decomplexification—in the sense of Harris 1997—and has nothing to do with sonority hierarchies. Given its parallels in vowel neutralization phenomena, it could also be called reduction (cf. Nádasdy 2003). The labels v- and c-lenition will nevertheless be retained for reasons to be developed in §6.

4 The sonority hierarchy

Rankings of sound(classe)s have a long history in phonological thinking. Various hierarchies have evolved during the past century, primarily with the aim of explaining phonotactic regularities. Some of them are universal, others language specific. If the sonority hierarchy is based on phonetic properties of segments, language specificity is obviously implausible; if it is based on the phonological properties of segments, then the reasoning easily becomes circular, since it is exactly the behaviour of different sound types that sonority hierarchies are supposed to predict.

In (1) I quote five sonority hierarchies, which exhibit significant differences that bear on the issues discussed in this paper. (I use the symbols "<" and ">" as in the original, although in some cases they point toward the more sonorous segment, in others towards the less sonorous one. The reader can easily figure out the current meaning.)

As can be seen, some hierarchies attribute relevance to the place of articulation, two are shown in (1a) and (1c). Other authors take the laryngeal properties, most notably voicing, to be a property that distinguishes segments or groups of segments; (1a) and (1b) are examples. Not all of these lists include laryngeal consonants (ʔ h), or perhaps they subsume them in the sets of stops and fricatives, respectively. Those that mention them explicitly, however, put them in practically all the possible locations: (1c) in the middle, between liquids and glides, (1d) at the bottom as the least sonorous

[2] and in certain kinds of preconsonantal position (more or less the true coda position of GP, the rhymal complement), but let us not bring in this complication yet

(1) a. a > æ > ɛ > ɪ > u > i > l > n > m > z > v > s > ʃ > d > t > k
(Ladefoged 1993 : 246; partial hierarchy for English)
b. voiceless stops, voiceless fricatives/voiced stops, voiced fricatives, nasals, liquids, vowels
(Anderson & Ewen 1987; universal)
c. stops > fricatives > ŋ > m > n > l > r > h > w > j > vowels
(Zwicky 1972, cited by Lass 1984 : 183; for English)
d. vowels – semi-vowels/approximants – nasals – obstruents – laryngeals
(Dogil 1988 : 93, 1992 : 330; universal)
e. laryngeal < V/glide < liquid < nasal < fricative < stop
(Hume & Odden 1996 : 359; universal)

segments, (1e) at the top, above vowels.[3] A similar discrepancy is detectable in the classification of h and ʔ in the SPE vs. Ladefoged 1971, too. While Chomsky and Halle list these two consonants among glides ([−consonantal]), Ladefoged claims them to be true consonants ([+consonantal]).

The uncertainty about the sonority value of laryngeal consonants illustrated above suggests that there is no one-dimensional "strength" hierarchy (cf. Lass 1984 : 178). Instead, sonority is but one dimension, of a more complex system, the other orthogonal dimension being place/laryngeal properties.[4] (2) shows some widely attested types of lenition. The direction of the arrows shows that segments are not organizable into a one-dimensional string from strongest to weakest, lenition has (at least) two directions: sonorizing (horizontally here) and debuccalizing/delaryngealizing (vertically here).

[3] To be faithful to the source, it must be mentioned that Hume & Odden (1996) talk about the impedance of sounds not their sonority. They replace sonority with impedance so that they can place laryngeals above vowels without losing the phonetic basis of the classification.

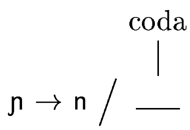
[4] Whether place and laryngeal properties indeed constitute one dimension is uncertain. It is noteworthy that although there is an implicational relation between word-final and word-medial codas, such that the latter are more prone to lenition, this generalization is defied by devoicing, which is common in word-final position to the exclusion of word-medial codas, what's more, word-final devoicing could even be treated as fortition, an unusual process word finally (Tobias Scheer, *voce*). This embarrassment may be wiped off by positing a three-dimensional strength scale, the details of which have to be worked on.

(2)														
	t	→	s	→	ɾ		p	→	f	→	ʋ	d	z	tʰ
	↓		↓				↓		↓			↓	↓	↓
	ʔ		h				ʔ		h			t	s	t

5 Syllable structure

With certain interregna, the intuitively evident notion of the syllable has always been around in phonological theory. Its standard implementation is in terms of arboreal structures connecting segments that are claimed to belong to the same syllabic constituents, e.g., the onset, the nucleus, the rhyme, or the coda. Under such circumstances phonological phenomena can be expressed as happening to segments residing under a certain syllabic constituent, like for example in (3).

(3)



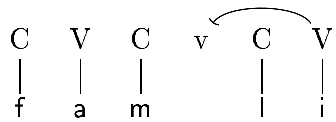
In an alternative account, government phonology (Kaye & al. 1990), syllabic constituency is expressed by relations between slots of the skeleton, e.g., if a slot governs another slot to its right, the two constitute a branching onset or a branching nucleus, if the same slot governs to the left, the two will not belong to the same constituent, they will either be a coda followed by an onset or an onset followed by a nucleus.

The theory, however, retains part of the undergrowth: although the syllable and the coda nodes are dispensed with, onsets, nuclei and rhymes remain. Takahashi (1993) points out that constituent nodes are redundant if relations define them anyway. Nevertheless, they still have a role in orthodox government phonology: it is by virtue of being dominated by an onset or nucleus node that a given batch of melodic primes comes to be interpreted as a consonant or a vowel, respectively. If onsets and nuclei could be substituted in this function of theirs, deforestation could be completed. To achieve this goal, the x slots of the skeleton can be replaced with Cs and Vs, as was the practice until the mid-80's (e.g., in Halle & Vergnaud 1980 and Clements & Keyser 1983), when Kaye & Lowenstamm (1984) proposed that the skeleton contains only xs. The motivation for this proposal was also economic: Kaye & Lowenstamm argue that *if* syllable structure is available, the C- and V-hood of skeletal slots is redundant. If, however, we accept the alternative that syllabic constituents are not represented by graphs, the x-skeleton is not elaborate enough, and it seems necessary to return to the CV-skeleton. This luxury will be counterbalanced by the spartan structure of the skeleton to be introduced below.

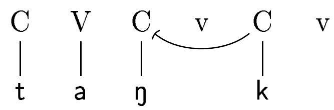
Whether deviations from the omnipresent CV syllable type are to be expressed by complex syllabic arborescence, or allowing one or the other half of the CV "syllable" to remain unpronounced is largely a matter of scholarly taste and tradition (Szigetvári 2001). In this paper I assume the latter option, that is, if a syllable is more complex than CV, it will be analysed as containing further CV "syllables" with either their C or their V part unpronounced. An interesting difference may be noticed in the muteness of Cs and Vs. While that of the first is readily accepted by most phonologists, a mute V causes more distress, i.e., it is simpler to convince one that a string like Hungarian *tea* tɛɑ 'tea' is CVcV,[5] than to claim that *bat* is CVCv. This asymmetry is explained if we assume that the defining property of consonants is muteness, while that of vowels is loudness, any departure from this is the result of some external influence. Thus, unless something is done to the intervocalic c in *tea,* it remains unpronounced, but, to the contrary, the final v in *bat* only remains mute on the surface if something is done to it. A solitary C slot thus represents the bottom of the sonority hierarchy, a solitary V slot represents its top. Dependency phonology (Anderson & Ewen 1987, Hulst 1995 : 94) sees the role of V and C in a similar way, but in the present model Cness does not contribute stricture/noise to a segment. It is Dogil's model, in (1d), with the glottal stop below oral stops, that is close to our view.

It is easy to see that in a theory with no two V slots and no two C slots ever adjacent on the skeleton (Lowenstamm 1996) the more the consonants that accumulate in a cluster, the more the empty Vs that have to be posited and then silenced between them. We suggest two ways of silencing a v position in the skeleton (Dienes & Szigetvári 1999). Both are accepted notions in government phonology, and both are executed by government. The first, V-to-V government (GP's proper government), is a relation established between a V slot and the preceding V slot. The effect of government is a deterioration in the inherent properties of the target, that is, a governed V slot loses its loudness and becomes mute. The configuration is illustrated by the syncope attested in *fam*⟨i⟩*ly* in (4). (The blunt arrow points from governor to governee.)

[5] I use the convention of representing pronounced skeletal slots by an uppercase letter, unpronouced ones by lowercase.

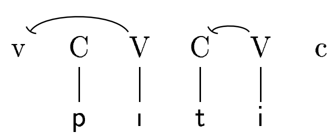
(4) 

The other means of silencing a vowel is C-to-C government (occasionally called onset-to-onset government in GP), which is established between a C slot and the preceding C slot and is subject to constraints on the melody of the two slots. The v slot over which C-to-C government is established must not contain any melody and is said to be buried. Buried V slots remain mute, as illustrated by *tank* in (5).

(5) 

Note that neither V-to-V, nor C-to-C government is able to mute the word-final v of *bat* or *tank*. Elsewhere I argue that it is in fact not there, that phonogical skeletons universally end in a C slot and begin with a V slot, because they are made up of VC units (Szigetvári 1999); here I proceed accordingly.

If a C slot is governed it also loses its inherent property, but as opposed to a V slot, which is muted, a C slot is made louder, i.e., more sonorous, more vowel like, when hit by government. It is not only under C-to-C government that involves this possibility, but also V-to-C government, which is established if a V slot cannot govern the preceding V slot for some reason — usually because it is not melodically empty. This is the case in the word *pity,* as shown in (6).

(6) 

The other relation organizing the skeleton is licensing. The notion has wide currency in autosegmental models since Itô's (1986) introduction of prosodic licensing. In our model, however, it is not required that every skeletal position be licensed: this, as we will shortly see, is even theoretically impossible here. What is most reminiscent of standard prosodic licensing is V-to-C licensing: any pronounced V position governs the preceding nonempty C slot. The effect is that the C position will do better at maintaining its melodic content (cf. Goldsmith 1990 : 108, 123ff, Harris 1997, Ségéral & Scheer 1999). V-to-V licensing is the vocalic counterpart of C-to-C government: it also prevails only across an empty position (C in this case), and also creates a burial domain. Its interpretation is a long vowel or a diphthong. The two configurations are illustrated in (7). (The double arrow points from licenser to licensee.)

(7)

There is reason to believe that C-to-C licensing may be taken to be the representation of branching onsets, but — it must be admitted — this is a weak point of the theory. (The interested reader is referred to Szigetvári 1999 : 111ff.)

To demonstrate the tightness of the theory, let it be mentioned that by making both relations directional (right-to-left) and local (a position can reach — govern and/or license — another only if they are in adjacent skeletal units and can only reach the nearest position of the required type), only the six possibilities mentioned above are available. More specifically, a C position can never reach a V position, since in the configuration [V_1 C_1][V_2 C_2][V_3 C_3] C_2 cannot reach (i) V_1 because it is not "the nearest position of the required type", or (ii) V_2 because it is not "in an adjacent skeletal couplet", or (iii) V_3 because it is not to its left. All the other possibilities, V-to-V, V-to-C, and C-to-C government and licensing are available and were disussed above.

6 Sites of lenition

The theory of syllable structure sketched in the previous section is very good at — because it was designed for — predicting the location and the direction of consonant lenition. As already stated, government destroys the inherent muteness of a C slot, while licensing supports the melodic primes associated to the slot. Accordingly, no lenition is predicted in a C position that is licensed and not governed. This occurs before a pronounced vowel, which licenses, and after an unpronounced vowel, which absorbs the government also coming from the licenser. Such is the case word-initially—recall, consonant-initial words begin with an unpronounced V position (as shown in (6)) —, and postconsonantally, where it is the unpronounced V position is between the two consonants.

C-lenition, the loss of place and/or laryngeal features, is expected in positions where a C slot fails to be licensed. This is basically those positions that are not followed by a pronounced vowel (the potential licenser), i.e., the traditional coda: preconsonantal and word-final position. If branching onsets are indeed represented as a C-to-C licensing domain, the only non-prevocalic licensed C position is the first member of a branching onset, the only preconsonantal noncoda environment. In want of licensing, a C position is prone to lose some of its melodic primes, resulting in debuccalization or devoicing/deaspiration, which is what we called c-lenition. Examples include Spanish *s*-debuccalization (*después* dehpweh 'afterward'), or German devoicing (*Bagdad* bakdat 'Baghdad').[6]

In C positions that are governed, on the other hand, the theory predicts that v-lenition should occur. A C position is governed when it is either followed *and* preceded by a pronounced vowel or is the first party in a C-to-C governing domain (i.e., it is what government phonology treats as the "real coda", a consonant not only superficially, but also underlyingly adjacent to a following consonant, not constituting a branching onset with it, of course). The first case is again illustrated by *pity* (shown in (6)): its *t* is governed by the word-final vowel, since the preceding V position is not empty; the result in many dialects is flapping (pɪɾi).[7,8]

The second case, the "real coda" position has the interesting property of being both unlicensed and governed, hence subject to both types of lenition. C-lenition is here manifest in the place and laryngeal assimilations typical of such consonants; the position does not debuccalize or devoice superficially, but assumes the place or laryngeal specification of the following C position, its governor; hence losing its *independent* place and laryngeal features. The fact that such codas are typically sonorants, or, at least, more

[6] I am naively pretending that *Bagdad* has voiced coda consonants. Examples with alternation are also available but hopefully unnecessary to cite.

[7] London English glottalling in this position (pɪʔi) is an embarrassment for the theory.

[8] An explanation of why pretonic consonants in intervocalic position fail to v-lenite (*tattoo* *təɾú) would unnecessarily sidetrack the discussion. Let it suffice to mention that syncope—also caused by government—is also impossible in pretonic position. For further details the reader is referred to Szigetvári 1999 : 79f, 133f.

sonorous than the next consonant, is taken to be the manifestation of their v-lenition.

7 V-lenition

In the framework described here, v-lenition does not involve the loss of any melodic material—as opposed to c-lenition: in this sense they are two quite independent phenomena. V-lenition is caused by the detrimental effect of government, which causes the C position, mute by its nature, to become "less mute", that is, more sonorous. The idea that sonority should not be expressed by autosegmental primes is not novel. In fact, the CV-skeleton is a first step on this path, followed by many others, some of which are mentioned in §2.

If there were melodic primes responsible for manner properties of sounds (more specifically for their continuancy), this property would be doubly coded. Furthermore, v-lenition would equally be expected in ungoverned and unlicensed positions (e.g., word finally), and we would lose the empirically adequate prediction that it is much rarer there.

Theories that unify c- and v-lenition and view both as instances of decomplexification, i.e., loss of melodic material, like that of Harris (1997), are forced to represent "strong" consonants — stops — as rich in primes, hence very marked. Only thus can they lenite, losing bits and pieces of their large complexity.[9] This view, however, is at odds with the well-established cross-linguistic observation that stops are the least marked consonant type. Although melodic complexity cannot simply be translated to markedness, e.g., the melodiless consonant (usually thought of as ɣ in the government phonology framework; ʔ in the present one) is not as common in languages as its simplicity suggests, it is clearly undesirable in a theory that wishes to encode markedness and complexity simultaneously that the very common oral stops contain three or four melodic primes.

8 Fortition

Fortition is a problem phenomenon for a theory in which lenition is viewed only as the loss of melodic primes. About the Vulgar Latin maj:ore > Italian maʤ:ore case Harris, for example, says "there is evidently some general pressure on geminate consonants to appear in the guise of stops, although

[9] To be fair, it must be mentioned that the complexity of obstruents also makes them good governors in Harris's theory. This is an external corroboration of his view.

precisely what its representational motivation is remains somewhat unclear" (1994 : 132). What is unclear is where the stop prime comes from; intervocalically it lacks any local source. If lenition is not a uniform phenomenon, but is split in (at least) two processes, c- and v-lenition, fortition can only be a counterforce of the latter. Loss of melodic primes—c-lenition—cannot be reversed, but with the changing of skeletal relations, v-lenition can.

Assimilation is a case of virtual fortition, but only if we limit our scope to the single segment. Assimilation always involves a trigger, which supplies the melodic prime that the target is enriched by. Thus, the assimilating segment does not become any stronger, in fact, its weakness shows by the fact that it comes under the control of the trigger, which extends the domain of interpretation of its own properties over the target.

9 Claim: there is no stop primitive

It follows then that stopness is not coded by some melodic prime, but is the interpretation of the skeletal slot C and a skeletal relation, or rather, the absence of one: an ungoverned C is the defining property of a stop consonant. Alternatively, one may wish to say that the C slot of the skeleton *is* the stopness prime, which, however, is a peculiar prime in that it is neutralized if governed.

There are certain advantages to such an approach. Firstly, if stopness is inseparably bound to the C slot of the skeleton we receive a nonstipulative explanation of why the stop prime is universally excluded from vowels. In other theories it is only by virtue of an axiomatic redundancy rule, like [−consonantal] → [+continuant], or

*N
|
ʔ

that this universal property of language can be expressed. That is, either we have to stipulate that vowels are incompatible with stopness, or that continuancy is always present in vowels. Here noncontinuancy is a property of vowels by definition.

Government phonology's dilemma about the representation of stops is also solved. Recall, stops have to be furnished with many primes, since they are a typical starting point of lenition trajectories (stop > affricate; stop > fricative; stop > glide), hence should have many primes to lose. At the same time stops have to be represented by very few primes, since they are the least marked, the prototypical consonants.

If skeletal slots — C here, but perhaps also V, as discussed below — are (functioning as) melodic primes, then the OCP is expected to constrain them. Consequently, C slots and V slots should not occur adjacently. If so, the strictly alternating CV-skeleton assumed here is derivable from a more basic principle.

A further prediction made by the present set-up is that words of the pɑʋɑ type, where the two consonants do not contrast, should be more unmarked than pɑpɑ, ʋɑʋɑ, or ʋɑpɑ. Some morphological alternations are cited in (8), which illustrate that what is a stop in nonintervocalic position is interpreted as a glide intervocalically, i.e., when governed.

(8) **Axininca Campa** (Hume & Odden 1996 : 361)

kanari	no-janari-ti	'wild turkey∼1sg.poss.'
paʧʰaka	no-β̞aʧʰaka-ti	'gourd∼1sg.poss.'

Negidal (Hume & Odden 1996 : 362)

jepkit-pun	'my food'
kotol-bun	'my knives'
koto-β̞un	'my knife'

Similar data were collected from a learner of Hungarian as a first language aged 2,6, given in (9).

(9)

STANDARD	LEARNER	GLOSS
ʒoːfi	ʤoːfi	a name
jutkɑ	ɟukːɑ	a name
buɟi	buji	'knickers'
fyci	fyji	'willy'
ɑɲu	ɑju	'mummy'
ɑpɑ	ɑfɑ	'dad'
buboː	buvoː	a cartoon character
ɑɲɟɑl	ɑɲɟɑl, *ɑɲjɑl	'angel'

These are all simple cases of fortition and lenition. Under the present analysis, they involve no melodic change, merely a difference in skeletal relations: the learner applies the default system, in which intervocalic C slots are governed, while word-initial and postconsonantal ones are not governed. When governed, the C slot is interpreted as a continuant, in the absence of this destructive relation the C slot retains its natural consonantal property, muteness.

A similar pattern often emerges diachronically, for example, Proto-Germanic geminate, postnasal and word-initial approximants and voiced fricatives (i.e., precisely those in ungoverned position) strengthen to stops: PGmc ββ/ðð/ɣɣ > bb/dd/gg, mβ/nð/nɣ > mb/nd/ng, #β/ð > #b/d (Cser 1996 : 2). The Romance glide strengthening jj > ʤʤ, mentioned above, or the Ancient Greek strengthening of the imperfect suffix (tup+j+ɔː > tuptɔː 'strike-pres-1sg') are but two of many other instances of this phenomenon.

It is clear, that being goverend or ungoverned cannot be the only way that continuancy is encoded in consonants. Languages that have nonintervocalic continuants and/or intervocalic noncontinuants must employ some other mechanism to produce this contrast. Whether this is some yet undiscovered skeletal relation, or a more complex skeletal structure (as proposed by Živanović 2003), or something else is an open issue.

10 The noise category

Standard government phonology applies another melodic prime — besides **ʔ** — to encode manner properties, which again is incompatible with vowels, **h**. It is a privative equivalent of [−sonorant], present, accordingly, in stops, affricates and fricatives. The motivation for its introduction by Harris (1990 : 263) is to make sure that stops are more complex than fricatives: t and s contain identical primes, but the stop is equipped with **ʔ** in addition, thus it is more complex. The justification is that stops are noisy: "aperiodic energy, in the form of a noise burst, also characterises the release phase of genuine plosives (as opposed to unreleased stops)" (*ibid.*). However, as Harris himself admits, "this effect has generally not been considered distinctive for [genuine plosives] within orthodox feature frameworks" (*ibid.*). The ignorance of this phonetic contrast is obviously rooted in that there seems to be no language in which a released t and an unreleased t̚ contrast phonologically. Harris adheres to encoding it, because t → t̚ appears to be a lenitive step, occurring to nonprevocalic stops. A similar correspondence can be observed in the case of approximant–fricative alternations, for example, in Porteño Spanish (Hume & Odden 1996 : 369), shown in (10).

(10)	PORTEÑO/STD	STANDARD	PORTEÑO	GLOSS
	lej	lejes	leʒes	'law sg.∼pl.'
	ir	jendo	ʒendo	'go∼going'
	orfanato	werfano	ɣʷerfano	'orphanage∼orphan'

One possible interpretation of the data in (10) is that the noise prime (**h**) is present when licensed—prevocalically—, and is lost in unlicensed positions, a view supporting Harris's stance. What makes the idea spurious is that t–t˺ is the only nonphonological contrast encoded in the system, which otherwise explicitly ignores such detail. A theory-internal difficulty with with the **h** prime is that in this case ʒ → j must be considered an instance of c-lenition, the loss of a melodic prime, although it is a change towards vocalicness, i.e., it ought to be a case of v-lenition.

Two alternatives are available for the analyst whose aim is to avoid this wrong categorization and/or to dispense with the **h** prime. One is to claim that it is not the **h** prime that is interpreted as noise in intervocalic position but the skeletal relation itself. Thus, as the status of being an ungoverned C is interpreted as noncontinuance, the status of being a licensed C is interpreted as obstruency. The difference between this set-up and the one employing an **h** prime, is that without the prime autosegmental spreading is inhibited. This is a welcome developemnt. The other possibility is to equate **h** with **H**, a laryngeal prime, standardly associated with aspiration. Such a merger (proposed by, e.g., Neubarth & Rennison 1998 and Starčević 2001 : 48ff) is made reasonable by a number of observations: (i) aspiration also favours prevocalic (i.e., licensed) position, in fact, (ii) postaspiration is intimately bound to the release of the stop; (iii) the "devoicing" of sonorants may obstruentize them (e.g., English *truck* tr̥ʌk∼tʃʌk, *tube* tj̊ub∼tçub∼tʃub). Extensive research is needed to enable progress along this path.

11 What is V?

If one of the two types of skeletal slot, C, is provided with a phonetic identity, ʔ, it is reasonable to ask whether the other type, V, is also pronounceable. The answer of standard government phonology is a clear-cut yes, a bare nucleus is pronounced ɯ or ə unless governed or muted otherwise. If we want to claim that C and V represent the two edges of the sonority hierarchy, a bare V cannot be a high or mid vowel, since among vowels ɑ is the most sonorous one.

Such a move has various interesting consequences. It brings us closer to understanding the privileged status of ɑ — and its representative, the prime **A** — in vowel systems. For example, single-vowel systems are expected to contain ɑ; e and o (GP's **A**+**I** and **A**+**U**) ought to be less marked than y (**I**+**U**); **A** ought to be incompatible with consonants — as opposed to **I** and **U**, the interpretation of **A** shows great variability in the GP literature.

It is worth noting that standard government phonology is not consistent in applying its complexity condition (the requirement that a governor be more complex than its governee) in the vocalic domain. The apparently abandoned charm theory (Kaye & al. 1985, 1990) must be retained in order to explain why bi-positional diphthongs cannot contain an ɑ offglide, although the complexity relations would be acceptable in a hypothetical eɑ̯ diphthong (Harris 1990 : 276).

12 Conclusion

Following an important trend of phonological theory, the effort to decrease the number of melodic primes and to express certain phonetic characteristics of speech by structural relations, this paper proposes that the prototypical consonantal property, stopness is not encoded in phonological representations by an explicit melodic prime but by the relations between skeletal positions, namely, it is an ungoverned C position that is phonetically interpreted as noncontinuant. This move is necessitated by the view that the lenition of consonants is not a uniform process, but falls into two separate categories, induced by different causes and yielding different results. The status of the other exclusively consonantal prime, noise or obstruency, is also examined, but the conclusions made are even less definite than for stopness. It seems evident that the path this paper treads is not an easy one.

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