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A World without Voiced Sonorants: Reflections on Cyran 2014 (Part 2)

Abstract
The current part of the article evaluates the idea that sonorants and vowels are phonologically unspecified for voicing in all languages. This is the central assumption made by Cyran (2014), which, however, remains unsubstantiated and does not follow from any property of Element Theory. Sonorants do not undergo final devoicing, and voicing is never used for distinctive purposes in vowels. Cases where it is reported to be used to contrast sonorants are rare and subject to caution since it may not always be clear that the contrastive property is really voicing.

The central testing ground is then intervocalic voicing. If sonorants and vowels are unable to spread voicing because they do not have any, the prediction is that intervocalic voicing is never assimilation. Instead it is argued to be a case of lenition in weak (intervocalic) position where obstruents are delaryngealized (i.e. lose their voicing prime) and therefore subject to phonetic (or interpretational) voicing. Lenition is positional and does not involve any transmission of primes. The common practice to analyse intervocalic voicing as both lenition and the spreading of some voice-related prime is inconsistent.

Keywords
intervocalic voicing, voice contrast in sonorants, final devoicing, lenition, assimilation

Streszczenie
Przedmiotem niniejszej części artykułu jest ocena hipotezy, według której we wszystkich językach spółgłoski sonorne oraz samogłoski nie mają specyfikacji fonologicznej ze względu na dźwięczność. Jest to główne założenie przyjęte w pracy Cyrana (2014), dla którego autor nie podaje jednak żadnego uzasadnienia i które nie wynika wprost z żadnej właściwości teorii elementów. Spółgłoski sonorne nie ulegają ubezdźwięcznieniu w wygłosie, a dźwięczność nigdy nie pełni funkcji dystynktywnej w samogłoskach. Przypadki, gdy dźwięczność rzekomo różnicuje fonologicznie spółgłoski sonorne, są nieliczne i powinny być traktowane z ostrożnością, gdyż nie zawsze jest oczywiste, że cechą kontrastującą jest rzeczywiście dźwięczność.

Jako poligon doświadczalny posłuży więc zjawisko udźwięcznienia interwokalicznego. Założenie, że spółgłoski sonorne i samogłoski nie mogą rozprzestrzeniać cechy dźwięcz-

ności, ponieważ jej nie mają, skutkuje tym, że udźwięcznienie interwokaliczne nigdy nie jest asymilacją. Można je natomiast zinterpretować jako przypadek lenicji w pozycji słabej (interwokalicznej), w której to obstruenty ulegają delaryngalizacji (tzn. tracą element odpowiedzialny za dźwięczność), wskutek czego są podatne na udźwięcznienie fonetyczne (tj. na poziomie interpretacji). Lenicja jest zjawiskiem uzależnionym od pozycji i nie polega na przekazywaniu elementów. Niekonsekwencją jest często praktykowane przedstawianie udźwięcznienia interwokalicznego zarówno jako przykładu lenicji i rozprzestrzenienia jakiejś cechy związanej z dźwięcznością.

Słowa kluczowe
udźwięcznienie interwokaliczne, zróżnicowanie fonologiczne spółgłosek sonornych pod względem dźwięczności, ubezdźwięcznienie w wygłosie absolutnym, lenicja, asymilacja

The first part of this article, published in the previous issue of this journal (Scheer 2015), focused on the generative power of Laryngeal Relativism and its comparison to previous analyses of the data analysed by Cyran (2014). The current text explores Cyran's core assumption, discusses issues raised and evaluates a prediction made regarding intervocalic voicing.

6. The central assumption: sonorants and vowels are never specified for voicing

6.1. Spontaneous and non-spontaneous voicing

The entire setup of Cyran's analysis of CPP sandhi voicing as phonetic (rather than phonological), his claim that Laryngeal Realism is unable to account for this pattern (p. 19f), and the argument that the absence of a third player in the architecture of grammar, phonetic interpretation (besides phonology and phonetics), leaves no hope to get to grips with empirical patterns – all this rests on a simple assertion, which I refer to with the shorthand Unvoiced Sonorants.

(1) Unvoiced Sonorants
Sonorants and vowels never ever bear any phonological specification for voicing, in no language and under no circumstances.

Were it only for this reason, Cyran argues, all previous analyses of CPP sandhi voicing must be wrong: they all imply the spreading of a phonological prime encoding voicing from sonorants and vowels onto obstruents.

The non-phonological character of voicing in sonorants and vowels, as opposed to phonologically controlled voicing in obstruents, sits on a solid empirical record that is consensual in all phonological quarters. This record is embodied as the distinction between spontaneous (sonorants and vowels) and non-spontaneous (obstruents) voicing (Chomsky and Halle 1968: 300f). The distinction is also at the origin of the aforementioned idea that the "natural

state" of sonorants and vowels is to be voiced, while the archetypical obstruent is voiceless. Further evidence for this view comes from first language acquisition: children acquire voiceless obstruents before voiced obstruents (e.g. Major and Faudree 1996: 71).

6.2. Contrastive voicing in sonorants?

The absence of phonological control over voicing in sonorants and vowels appears in very simple patterns: there are no (or almost no) languages where sonorants and vowels contrast in voicing (while all languages implement laryngeal distinctions for obstruents), and sonorants are never affected by final devoicing.

While the latter generalization appears to be truly universal, voicing contrasts for sonorants are reported to exist in some rare cases. A case in point typically quoted in the literature is Burmese (Ladefoged and Maddieson 1996: 111; Bhaskararao and Ladefoged 1991). What are supposed to be the voiceless counterparts of [m, n, ɳ, ŋ], [l] and [j] in this language is referred to as preaspirated nasals, laterals and glides by Cornyn (1944: 8) and transcribed as hm, hn, hɳ, hŋ, hl and hj. Minimal pairs provided by Cornyn (1944: 8) include *mádé* 'is hard' vs. *hmádé* 'instructs' and *léi* 'wind' vs. *hléi* 'boat'.

Burmese is an aspiration language with a two-way laryngeal system, opposing plain voiceless and aspirated voiceless items in the obstruent series. There are also voiced obstruents, which according to Vanbik (2003: 473), however, "are only marginally phonemic in Burmese, mostly found in loanwords." Vanbik (2003) studies a process whereby morpheme-initial voiceless and aspirated obstruents become voiced in intervocalic position in certain morphological paradigms (including e.g. compounding and reduplication). For example, *pè* 'peanut' and *pouʔ* 'rot, putrid' produce the compound *pè-bouʔ* 'fermented soybean'. Vanbik (2003: 474) notes that "[c]uriously, voiceless sonorants do not undergo voicing" (illustration thereof appears on p. 478). This is clear indication that the so-called preaspirated nasals are not just aspirated versions of regular voiced nasals, just as, say, t^h is the aspirated version of t. Or, in other words, the (pre)aspiration in nasals and obstruents is not the same object: the process described by Vanbik segregates them. Note that if anything, it is certainly expected that sonorants will fall back into their natural voiced state if there is a general inclination towards voicing.

I am not a specialist of Burmese (or of genetically related languages that are reported to implement a voicing contrast in sonorants), and the contrastiveness of sonorants in these languages is certainly beyond doubt. But there might be more to it regarding the question what exactly this contrast is based on: regular voicing (here H or [spread glottis]) may not be the only candidate.

Relevant in this context is that sonorants are pre-, not post-aspirated like their alleged obstruent congeners.

We find the same relationship between pre-aspiration and voiceless sonorants in another language that is often quoted as a case where voicing is contrastive in sonorants, Icelandic. Bombien (2006: 64) reports that in this language, "voiceless sonorants in medial position always precede stops and appear to occur in the same environments as preaspiration does [on plosives]." Icelandic contrasts [n] and [n̥] e.g. in *nýta* [niita] 'to use' vs. *hnýta* [n̥iita] 'to knot' or *hendi* [hɛntɪ] 'hand' vs. *henti* [hɛn̥tɪ] 'to dispose of', but Bombien has observed that there is continuous vocal cord vibration throughout the articulation of what is supposed to be voiceless nasals. He concludes that "the distinction of the nasals – and maybe other sonorants, as well – might not be a voiced-voiceless distinction in a purely phonetic sense" (p. 63) and adds that "[i]nstead, duration, voice quality and frication appear to play an important role in the distinction of these sounds" (p. 80).

Whatever the conclusion to be drawn from Burmese, Icelandic and other patterns, it is a fact that sonorants contrasting in voicing are rare cross-linguistically. If regular phonological voicing primes are able to hook on sonorants, there is no reason why this source of contrast is not explored more regularly by languages. And there is no reason either why vowels should be unable to contrast in voicing. As far as I can see, though, there is no case where voicing is distinctive in vowels.

6.3. Approaches to the interaction of sonorant and obstruent voicing

The existence of two types of voicing, spontaneous and non-spontaneous, has produced some literature, less though than one could expect for such a fundamental and deeply rooting phenomenon. Botma (2011) provides a comprehensive overview of the issues debated. Cases where both worlds are not waterproof such as external sandhi voicing in CPP beg the question: how could sonorants and vowels ever cause voiceless obstruents to voice?

Rice and Avery (1989), Piggott (1992) and Rice (1993) argue for two distinct (phonological) features, [voice] and [sonorant voice]. The former is found only in obstruents, while the latter is present in sonorants and vowels as well as in certain obstruents – in those, precisely, which are assimilated in voicing by sonorants and vowels. Rice (1993) has coined the term *sonorant obstruent* for these. Being unimpressed by the contradiction in terms, Clements and Osu (2002: 338) are prepared to characterize sonorant obstruents as [+obstruent] and [+sonorant]. In other words, spontaneous and non-spontaneous voicing are waterproof (they are encoded by two distinct features), unless they are not (when obstruents have the feature reserved for sonorants and vowels).

The analyst puts down into phonological representation whatever the surface commands.

There is also an Element-based version of this take: Botma (2004: 56f) argues that L is the head in sonorants, but only an operator in sonorant obstruents (also Botma and Smith 2006). Honeybone (2002: 232; 2005) also uses unary primes (which are certainly inspired by Elements, although they are not explicitly identified is such) but happily implements laryngeal specifications into sonorants (which are then spread onto obstruents).

An important result of the 90s SOAS-driven programme to reduce the number of Elements (from ten in 1985 to five in the Revised Theory of Elements, e.g. Kaye 2001) is the insight that nasality and voicing, i.e. N and L, are one and the same phonological object, referred to as L (Botma 2004; Nasukawa 2005). This L, thus encompassing nasalilty and phonologically relevant voicing, is then necessarily present in nasals. Nasals, however, are sonorants. The presence of L in nasals thus challenges Cyran's claim that sonorants are never phonologically specified for voicing – at least on the face of it. For Cyran could argue that what L contributes to nasals is not voicing, but nasality. The question, then, is why L, if present in nasals, should not be able to spread onto obstruents, making them voiced. This is indeed a basic empirical motivation for equating L and N, and also for Rice's (1993) [sonorant voice]: voiceless plosives preceded by nasals often undergo voicing, and there are languages where nasals and voiced obstruents are allophones. In any case, the presence of L in some sonorants (nasals), as well as its absence in others (glides and liquids) is a firmly established property of more recent Element Theory (Backley 2011: 145ff, 165ff) and directly bears on Cyran's claim that sonorants and vowels are never phonologically specified for voicing.

Another way of making both types of voicing distinct in principle but combinable when needed is based on markedness: there is only one feature [±voice]. Redundant values of this feature are absent lexically and only come into being at the end of the derivation by default-filling. Since [+voice] is redundant for sonorants, it is absent until the end of the derivation and therefore cannot be spread to obstruents. Obstruents on the other hand are unspecified for [-voice], which is only filled in by default when no voice value is present at the end of the derivation (e.g. Itô and Mester 1986: 59f). This makes spontaneous and non-spontaneous voicing waterproof, but modifying the stage in the derivation where default filling of redundant features occurs will allow for both worlds to interact. As was mentioned in Section 4.4, the moment when default filling of [-voice] into obstruents occurs and when sonorants receive [+voice] is a critical ingredient of Bethin's (1992) analysis of Polish voicing. Default filling of [+voice] into sonorants also plays a role in Rubach's (1996) account.

6.4. Surface and analysis

These analyses all take for granted that whatever is observable on the surface must be due to the workings of phonology: since we see that sonorants and vowels are sometimes able to assimilate obstruents in voicing, they must be specified for a voicing prime, which is spread onto obstruents by a phonological process. Cyran takes exception to this view: nothing of all that is phonological. Rather, the transmission of voicing occurs post-phonologically in the phonetics and is interpretational in kind. This is a case of outsourcing and *small is beautiful* in the sense of Section 2.3. Recall that the author argues that a setup without an interpretational device that spells out phonological structure in order to make it phonetically interpretable is doomed to failure. In this case, locating the voice assimilation in the phonology is a mistake enforced by theories which lack an alternative, i.e. the interpretational option.

In order to see that there is such an option independently of Cyran's take or any specific theoretical orientation, let us briefly consider Verner's Law, a famous instance of intervocalic voicing. Note that intervocalic voicing should not exist in the first place if the voicing of sonorants and vowels is not phonological in kind. Verner's Law describes the voicing of the four fricatives present in Common Germanic after the application of Grimm's Law: f, θ, χ, s voice in intervocalic position (or rather, to be precise, when surrounded by voiced items, i.e. sonorants, vowels or voiced obstruents) if the preceding vowel was unstressed in Indo-European (e.g. Collinge 1985: 203ff). It thus looks like a voicing prime present in sonorants, vowels and obstruents spreads onto fricatives through a phonological process, which is only inhibited by preceding stress. In his Cours de Linguistique Générale, Saussure (1916: 201) suggests an upside-down interpretation of the facts, though: there was a general voicing process in the language that affected all fricatives independently of their neighbours, and this movement was only blocked by preceding stress or an adjacent voiceless obstruent. In this perspective, there is no contamination of fricatives by a voicing prime present in sonorants and vowels. Their voicing and the voicing of obstruents is entirely waterproof.

6.5. A well motivated analysis sold as a stipulation

Cyran argues that Laryngeal Realism is well suited to account for external sandhi in WP, but "fails miserably when it comes to the Cracow-Poznań data" (p. 19). This is because a voicing prime would have to be present in sonorants and vowels in order to do justice to the CPP pattern, but this "goes strongly against the Element Theory in which sonorants are not specified laryngeally" (p. 20). This is about all the reader is told in the book regarding the reason why sonorants and vowels could not possibly bear a voicing prime: Element

Theory does not like it. If one does not buy Element Theory, then, Laryngeal Realism does not fail – hence the contention is not one between Laryngeal Realism and Laryngeal Relativism as suggested by Cyran, but rather engages a particular view on segmental representation, which is a completely independent issue.

The theory-independent argument discussed in Sections 5.1 and 5.2 is not mentioned in the book: sonorants never undergo final devoicing; natural language never uses voicing for distinctive purposes in vowels, and only rarely (subject to the interpretation of the empirical record) in sonorants.

The author mentions Rice (1993) in a one-line note on p. 20, but otherwise the discussion in the literature regarding the treatment of what on the face of it seems to be phonologically active voicing of sonorants and vowels is not addressed. Nor is the statement that Element Theory does not allow for sonorants and vowels to be laryngeally specified substantiated in any way: no literature item is quoted in its support, and no explanation is given what the putative reasons are that have driven Element Theory to deny sonorants and vowels access to laryngeal primes. We have seen in Section 5.3 that contrasting with Cyran's claim, L is present in nasals in all recent versions of Element Theory, and there are versions of the theory where it is also present in liquids – exactly for the same reasons that have led the non-Element mainstream to specify sonorants with [voice] or [sonorant voice].

A prohibition of laryngeal specification of sonorants does not appear to follow from any principle of Element Theory. The fact that practitioners typically do not include L and H in the makeup of sonorants (except for L in nasals) is simply due to the fact that there is no need to do that as long as sonorants are not contrastive for voice and do not interact with obstruent voicing. In case they do, nothing in the theory withstands their specification for laryngeal properties.

Even if the reader leaves aside the fact that Element Theory is somewhat misrepresented, the result is quite harmful for the overall enterprise of the book: if one does not happen to subscribe to Element Theory, or is incline to allow for a version of that theory where sonorants and vowels may be specified for laryngeal properties, it is not true that Laryngeal Realism "fails miserably" when confronted with CPP voicing. Hence one of the two major arguments made in the book simply evaporates. It was mentioned earlier that the author is wise enough to reject the theory-specific debate to chapter 5 (which is based on Government Phonology specifics). This is to reach out for an audience of all theoretical quarters, which will be able to judge Laryngeal Relativism by itself, i.e. for what it is beyond theoretical quarrels. This ambition is brought home, except for Element Theory, which is set as a premise to refute Laryngeal Realism, before even exposing Laryngeal Relativism. This way, the author will lose those readers who have no problem with sonorants and vowels being

laryngeally specified in some cases – and this group is large, very large – in fact it is the mainstream.

Certainly a more inclusive and promising way to go would have been to set the debate at the level of the smallest common denominator for everybody: the pre-theoretical facts about voicing in sonorants and vowels discussed in Section 5.1 and 5.2. A related matter is the question why even in languages where sonorants assimilate obstruents in voicing and hence on the mainstream view bear voicing that is visible to and processible by phonological computation, their voicing appears to be systematically non-distinctive, and they never undergo final devoicing. Cast in Rice's (1993) categories, why is it that [sonorant voice] is never distinctive? Like any other feature, it should be able to take on a distinctive function.

A conceptual argument (Section 5.4) is certainly that granting laryngeal primes to sonorants and vowels whenever the surface description calls for this move is making the analyst a slave of the surface: his only job is then to accommodate whatever he sees in a formal and non-gradient fashion. While this may be a first reaction in absence of more elaborate alternatives, the one-to-one transcription of what the surface tells us is unlikely to help us understanding what is really going on – especially when pervasive facts in natural language tell us that phonology has no business in sonorant/vowel voicing. An analytic ambition should attempt to look behind the surface.

7. What does a world without phonological voicing of sonorants and vowels look like?

7.1. Intervocalic voicing defies Laryngeal Relativism

A way to go about the Unvoiced Sonorants claim under (1) is to address the real pre-theoretical issue upfront with the goal to *derive* the absence of phonologically relevant voicing in sonorants and vowels. This certainly includes the discussion of a very common phenomenon, intervocalic voicing, which on Cyran's standards cannot be phonological in kind: the transmission of voicing from vowels to obstruents can only be phonetic (interpretational).

What is more, Cyran's analysis of Polish cannot work without restricting the directionality of this transmission to a regressive movement (see (5)). The author does not say whether this right-to-left restriction is universal or language-specific. It is for sure, though, that according to his setup H-systems with final devoicing and passive voicing can only work in presence of this restriction: final devoicing delaryngealizes VC^{H}# to VC°#, which then would undergo passive voicing if the preceding vowel were a possible source of phonetic voicing. In such a language at least, Cyran predicts that intervocalic voicing cannot occur: obstruents voice in inter-, not just in pre-vocalic contexts.

Another issue is the fact that intervocalic voicing is not reported to be restricted to a particular type of laryngeal system, i.e. to either voicing (L-) or aspiration (H-) languages. It occurs in Romance as much as in Germanic (more on that below). According to Cyran's logic, laryngeally specified obstruents, i.e. C^{L} or C^{H}, can never undergo phonetic voicing: only neutral C° are possible targets. In L-systems, C° are pronounced as voiceless [T] (and are not allowed to passively voice). These systems thus provide the conditions for intervocalic voicing (though the inhibition of passive voicing would need to be revoked for the intervocalic context). In H-systems on the other hand, what appears as voiceless (or aspirated) [$T^{(h)}$] on the surface identifies as C^{H}, which could never fall under the spell of phonetic voicing. Counter to the empirical record, intervocalic voicing should thus not occur in H-systems. Except if C^{H} were delaryngealized by some phonological process. I will argue below that this process is positional in kind: lenition is the source of delaryngealization, which turns both C^{L} in L- and C^{H} in H-systems into C°.

A final hurdle for a non-phonological analysis of intervocalic voicing is the fact that there are cases where voicing really only occurs between vowels (i.e. is blocked by adjacent sonorants). According to Cyran, though, sonorants are also a legitimate source of phonetic voicing, and there is no way to make a difference between the phonetic voicing of sonorants and vowels. Patterns where really only vowels can voice obstruents thus beg the question if the voicing at hand is phonetic in kind.

The table under (2) below summarizes the three concerns discussed.

(2) issues for Laryngeal Relativism
   a. truly intervocalic voicing (blocked by adjacent sonorants)
      should not occur since vowels and sonorants are both legitimate sources of phonetic voicing.
   b. directionality of phonetic voicing
      universally restricted to be regressive (as in CPP), or determined on a language-specific basis?
   c. intervocalic voicing in H-systems
      should not occur since voiceless consonants identify as C^{H}, which are immune against phonetic voicing.

7.2. Lenition or assimilation, not both

Intervocalic voicing is known to be an instance of lenition: the intervocalic context is a typical lenition site (e.g. Szigetvári 2008: 111ff, or any textbook). If this is the case, though, intervocalic voicing couldn't be a case of assimilation, i.e. of the transmission of some phonological prime from the assimilating to the assimilated item. The definition of lenition precisely is positional and does not involve any transmission of primes: in Brazilian Portuguese for example, l-vocalization occurs in codas (both internal and final, compare *sa*[ɬ]*eiro* 'salt

cellar', *sa*[w] 'salt', *sa*[w]*gar* 'to salt', e.g. Oliveira 1983) no matter what the segmental environment, i.e. whether the preceding vowel is front, back, mid, high or low, and whatever the following consonant. The segmental properties do not play any role because the triggering factor is purely positional. Lenition is always positionally defined, and therefore contrasts with assimilation which is not, and where some property is transmitted from a trigger to a target.

Honeybone (2002: 205ff) makes the same point: "[a]ssimilations are a straightforward set of processes which involve the spreading of segmental material from adjacent or nearly adjacent segments, and if this is all that lenition is, then there is probably little else left to write on the topic" (p. 206). He argues that some lenitions such as affrication or debuccalisation couldn't be assimilations "because the output of these processes has little in common with the environment in which they occur" (p. 206). Defenders of an assimilational analysis of these processes could argue, however, that the vocalic environment triggers progressive depletion of consonants by "opening" them, affrication and debuccalisation being one possible way of implementing this "opening". This argumentation cannot do with the above mentioned l-vocalization in coda position, though: it would have to be claimed that l→w is also an instance of "opening" due to the action of a vocalic environment, i.e. of the preceding vowel. The question that will be left unanswered, then, is why there is no l-vocalization in intervocalic position, a much more conductive environment for opening "vowelhood".

It is therefore inconsistent to say that a process is an instance of lenition but in fact involves the transmission of some property from an item to another. This point is made in Scheer (2004: §560) regarding post-vocalic spirantization as found e.g. in the oft-quoted Tiberian Hebrew pattern (e.g. Kenstowicz 1994: 410ff): stops are realized as fricatives intervocalically and in codas (both internal and final), while they appear unaltered word-initially and in post-consonantal position. There are two biases for being misguidedly concluding that some vocalic property is transmitted from vowels to following stops. For one thing, analysts want to describe the event that occurs, not the non-event (i.e. when nothing happens). Hence the contexts in which fricatives appear are correctly unified as "post-vocalically", and this is then thought of identifying the causality of the process: stops are turned into fricatives *because* they occur after a vowel, i.e. *because* the vowel contaminates them with some vowelhood. Lass (1973) points out, however, that the absence of a process may be the actual linguistically relevant event.

(3) Current theory […] allows us to state as 'rules' only things that happen, i.e. changes in segments or feature specifications. It does not give us any very perspicuous way of stating things that don't, regardless of their importance. […] I suggest that this may be a pernicious convention, which can (a) obscure important generalisations, and (b) give rise to fallacious and unnatural statements of entirely natural processes. […] What doesn't happen can be as interesting, insightful, and 'general' as what does. And […] sometimes more so (Lass 1973: 10ff).

Exactly like in the analysis of Verner's Law that was mentioned in Section 5.4, the alternative to elevating the correct "post-vocalic" description of the Tiberian Hebrew pattern to a causal statement is this: there was a general process that spirantized all stops (thus in which vowels have no business and do not transmit anything), except those that stood in strong position. The definition of the strong position "word-initially and in post-consonantal position" {#,C}__ as a uniform, i.e. non-disjunctive object, is the second bias that led analysts away from this option: in regular syllable theory this disjunction cannot be resolved into a single and unique phonological object (word-initial and post-consonantal consonants are both onsets, but intervocalic consonants are as well). However, the complement can: V__V, __{#,C} reduces to "post-vocalic".

The fact that the strong position cannot be identified as a uniform phonological object, though, is not a property of the strong position, but an artefact of the syllabic theory used. Ségéral and Scheer (2001, 2008b) show that the strong position {#,C}__ (i.e. the Coda Mirror), identifies as "after a (governed) empty nucleus" (coda consonants occurring "before a (governed) empty nucleus") in terms of the syllabic theory CVCV (or strict CV, see Lowenstamm 1996; Scheer 2004). The formal statement of the spirantization in terms of the contexts in which nothing happens ("after a (governed) empty nucleus"), then, is just as uniform as its description referring to the complementary set of contexts ("post-vocalically").

7.3. Typology: "intervocalic" voicing in V__V, R__V and V__R

For the reasons described in the previous section, analyzing intervocalic voicing as an instance of lenition whereby some vocalic properties are transmitted from vowels to obstruents is inconsistent. Of course, this is the case only under the assumption that we are talking about phonological processes: nothing withstands a scenario whereby phonology operates lenition and then the contamination of obstruents by vocalic properties occurs in the phonetics. This is because we are talking about a generalization concerning *phonological* processes only: either something is (phonological) lenition, or it is (phonological) assimilation – it cannot be both.

Hence if it can be shown that intervocalic voicing in some cases is a clear case of lenition, we have an argument against the phonological character of the process. This argument will then be independent of the idea that vowels (and sonorants) are never specified for voicing.

There are many instances of intervocalic voicing on record whose identity as instances of lenition is beyond doubt. These are cases where voicing occurs in a diachronic lenition trajectory that takes voiceless stops to fricatives or nothing in a number of steps, the first being voicing (e.g. Lass 1984: 178; Szigetvári 2008: 101ff).

Western Romance provides illustration (e.g. Carvalho 2008): in this subfamily, Latin geminates degeminated (CUPPA > port. *copa* 'cup'), singleton voiceless stops voiced (RIPA > port. *riba* 'bank'), while voiced stops spirantized (CABALLU > port. *cavalo* 'horse'). These lenitions occurred in intervocalic contexts (V__V) and when the stop was located between a vowel and a sonorant (V__R). The latter pattern may be illustrated by DUPLU > fr. *double* 'double' and LIBRU > fr. *livre* 'book' for voiceless and voiced stops, respectively.[1] Voicing did not occur when sonorants preceded voiceless obstruents (R__V), though: TALPA > fr. *taupe* 'mole', VERSARE > fr. *verser* 'to pour', CANTARE > fr. *chanter* 'to sing'. This is a typical effect of the strong position (word-initial and post-consonantal) that shields consonants against lenition (Ségéral and Scheer 2008a).

Western Romance thus illustrates (2a): there is no way to phonetically distinguish the voicing of sonorants and vowels, which should therefore both trigger obstruent voicing. The fact that voicing is blocked in R__V thus appears to be incompatible with the idea that intervocalic voicing is phonetic in kind.

Western Romance also speaks to (2b): according to Cyran, phonetic voicing is only transmitted regressively, i.e. preceding sources do not contaminate obstruents to their right. That this cannot be universally true is shown by the simple fact that in Western Romance, in order to undergo voicing, obstruents need a source of (phonetic) voicing both preceding and following them. That is, voicing does not go into effect word-initially #__V or word-finally V__#. Were voicing transmission only regressive, the process would go into effect in word-initially (#__V) and after sonorants (R__V).

This is enough evidence to serve the purpose of the discussion. Let me add, though, that it is difficult to identify a clear case of what should be the trivial pattern: intervocalic voicing that really only occurs in V__V, i.e. to the exclusion of R__V and V__R. Textbooks and other data collections mention all kinds of intervocalic voicing, but do not bother being explicit about the fact that they do not occur in R__V and/or V__R. Another hurdle is that not all languages provide for R__V (missing if there are no codas) and/or V__R (missing if there are no clusters).

The same goes for the putative pattern whereby voicing occurs in V__V and R__V, but not in V__R (the symmetric situation of Western Romance). Table (4) below shows all logically possible patterns (assuming that V__V is always a triggering context). It would be interesting to know whether they actually occur in natural language.

[1] The regular French reflex of VTR is also spirantized (căpra > fr. chèvre 'goat'), but spirantization was blocked in dŭplu > double because the output cluster vl was illegal. Dŭplu > double thus witnesses the intermediate voiced non-spirant stage. Bourciez and Bourciez (1967: 171ff) for example discusses the French situation.

(4) Typology of intervocalic voicing

	obstruents voice in		
	V__V	V__R	R__V
a. ?	yes	no	no
b. Western Romance	yes	yes	no
c. Old English	yes	no	yes
d. Verner's Law	yes	yes	yes

Verner's Law, which was briefly described in Section 5.4 and to which we will return in Section 6.6, is an instantiation of (4d) if the stress-based conditioning is ignored. In the same way, Old English fricative voicing, to be discussed in Section 6.6, appears to fit the description of (4c).

7.4. Phonological control and phonetic interpretation in intervocalic voicing

We independently know why voicing is blocked after sonorants (R__V) in Western Romance: because the post-consonantal position is strong (in general and especially in Romance, see Ségéral and Scheer 2008a). Hence it shields consonants against lenition of all kinds, including for example spirantization (compare RIPA > fr. *rive* 'river bank' with TALPA > fr. *taupe* 'mole'), and thus also voicing. What that means is that intervocalic voicing is under phonological control in Western Romance: its positional conditioning is nothing that could be determined in the phonetics.

Yet another property of Western Romance is incompatible with the system set up by Cyran. Romance languages are L-systems, which means that the consonants that undergo intervocalic voicing are neutral C°s. Now recall that Cyran argues for the existence of a universal ban on passive voicing in L-systems, because this would obliterate the surface distinctiveness of the two laryngeal series. As a matter of fact, though, intervocalic voicing in an L-system cannot be anything else than passive voicing if Cyran's central claim is correct. Hence there is no universal prohibition of passive voicing in L-systems. Note that the surface contrast of C^{L} and C° in Western Romance is not exactly eliminated: it is merely neutralized in a specific environment, but elsewhere (e.g. word-initially) continues to be visible on the surface.

What that means, in turn, is that when the innovation of intervocalic lenition in Western Romance was completed, phonologically identical items, C°s, had two different pronunciations according to their position: [D] in V__V and V__R, [T] elsewhere. We know that the former pronunciation is the result of passive voicing, but now see that this passive voicing is actually under positional, i.e. phonological control. This seems to be a contradiction in terms: how could identical phonological items be subjected to a phonetic distinction that however is phonologically controlled?

The answer can only come from phonetic interpretation. Phonetic interpretation defines how phonological items are pronounced once phonological computation is completed. The phonological identity of an item is not just defined by its melodic (or segmental) makeup, though. C^{L} and C° are certainly melodically distinct because the former has a prime (L) that the latter lacks. But different C^{L}s and C°s are also phonologically distinct according to the position they occur in. In terms of the Coda Mirror (Ségéral and Scheer 2008b; Scheer and Ziková 2010), intervocalic consonants are governed, while consonants in other positions (strong or coda) are not.[2] No matter how positional characteristics of segments are expressed (in terms of government or by other means in other theories), they are a piece of the phonological identity of segments that phonetic interpretation statements may refer to.

In our case, table (5) below shows what the diachronic process in Western Romance boils down to: the innovation concerns a modification of the phonetic interpretation of C°.

(5) Western Romance intervocalic voicing
  a. before the innovation
    C° is pronounced [T]
  b. after the innovation
    C° in non-intervocalic position is pronounced [T]
    (in terms of the Coda Mirror: ungoverned C° is pronounced [T])

Given (5b), passive voicing is automatic and does not need to appeal to any position: all C°s that are not protected by the phonetic interpretation statement are exposed to phonetic contamination from their neighbours. That is, only intervocalic (V__V and V__R) obstruents undergo passive voicing.

This analysis thus allows for a phonological (positional) control over passive voicing. It is applicable to all distinctions that are positional (syllabic) in kind: to our case [V__V, V__R] (voicing) vs. R__V (no voicing), but also to the two other typological options under (4), V__V (voicing) vs. [R__V, V__R] (no voicing) and [V__V, R__V] (voicing) vs. V__R (no voicing). Note that this typology is a matter of true phonology and has nothing to do with phonetics or phonetic interpretation. The latter merely transcribes the result of the phonologically relevant distinctions. The patterns at hand are thus a testing ground for different syllabic theories, which must be able to express all situations that are attested.

A consequence is that Cyran's functionally motivated universal prohibition of passive voicing in L-systems cannot be correct. In practice, this means that

[2] This includes V__R: Brun-Trigaud and Scheer (2010) show that T in intervocalic muta cum liquida clusters VTR.V (branching onsets) is governed, i.e. experiences the same positional conditions as truly intervocalic consonants.

the absence of sonorant- and vowel-induced passive voicing in external sandhi in WP (an L-system) cannot be due to this absolute prohibition, as Cyran contends. Rather, there must be a phonetic interpretation statement along the lines shown under (6) below.

(6) Warsaw Polish
C° is pronounced [T]

This makes sure that all word-final obstruents, i.e. lexical C° as much lexical C^{L} that has become C° through delaryngealization, are pronounced as voiceless [T]. Note that this does not change anything to the assimilation of word-final and pre-obstruent C°s by following voiced C^{L}s: the workings of the phonology, i.e. here the spreading of L, remain untouched.

This being said, the functional prohibition of passive voicing in L-systems may have something to it when it is not positionally conditioned, i.e. in case it would concern all C°s of a language. Hyman (1975: 17) holds that "a sound change turning all instances of [p, t, k] into [b, d, g] has never been reported. If such a sound change were to take place, the resulting system would include a series of voiced stops but no series of voiceless stops. In other words, the Jakobsonian implicational universal whereby /b, d, g/ implies /p, t, k/ would be violated." Honeybone (2002: 12f, 286ff) discusses so-called Inner-German Consonant Weakening (IGCW) whereby the kind of unconditioned merger excluded by Hyman seems to occur when looking at the surface. Honeybone means to rescue Hyman's generalization, though, by interpreting IGCW as $C^{H} > C°$, the output of which being still phonologically distinct from C^{L}. C° is then passively voiced, while C^{L} is actively voiced. Honeybone does not explicitly say that this scenario also supposes $C° > C^{L}$ (since the system before the innovation was a two-way C^{H} vs. C° system). One wonders, then, how L could fall on C° out of the blue.

At any rate, in the end Honeybone's scenario relies on the fact that passive and active voicing are still distinct on the surface. If this is the case, Hyman's generalization was not challenged in the first place: it only claims that the two series cannot merge into voiced items, where merge means merge, i.e. being indistinguishable *on the surface*. If Honeybone's distinction between passively voiced C° and actively voiced C^{L} really is an option for a laryngeal contrast to be expressed in natural language, though, Cyran's prohibition of passive voicing in L-systems must be abandoned even if it concerns all C°s present in the language.

7.5. Directionality of passive voicing

Let us now further discuss the consequences of the preceding on the issue mentioned under (2b), i.e. the question how the directionality of passive voicing

transmission is regulated. Recall that Cyran crucially needs to restrict phonetic voicing to regressive action in CPP, because otherwise word-final C° would be passively voiced by the preceding vowel. Cyran is not explicit on whether this directionality is universal or system-specific (maybe even process-specific?).

System- or process-specificity is certainly nothing that could be done in the phonetics: parametric variation is controlled by grammar. But this is precisely what Cyran would be forced into by L-systems with intervocalic voicing. In this pattern, as we saw, only a subset of C°s are subject to passive voicing: those that are intervocalic. C° thus voice in V__V but not in #__V, and if the intervocalic condition is taken at face value the only way to differentiate both contexts is to say that passive voicing goes in both directions in the language, and is successfully transmitted to a C° only if it comes from both sides (hence C°s in #__V will escape passive voicing).

In some L-systems like WP, passive voicing would thus only be regressive, while in others like Western Romance, it would be bidirectional. On top of that, there would be a parametric variation regarding the conditions of successful transmission of phonetic voicing: coming from one side would be enough in WP, while in Western Romance it would need to hit C°s from both sides.

Finally, WP-type and Western Romance-type L-systems could not combine: their systemic specifications regarding the directionality of passive voicing are irreconcilable. In other words, there should be no L-systems that have both final devoicing and intervocalic voicing. Catalan appears to be a prime candidate instantiating this pattern, though: as a member of the Western Romance family, this language has undergone the intervocalic voicing described, and also features final devoicing.

For all these reasons, nobody will want to have to engage into parameterizing the directionality of passive voicing. The phonological control over target identification of intervocalic voicing that was developed in the previous section does away with this awkward perspective. The difference between V__V and #__V is made in the phonology: C° is governed in the former, but not in the latter context, and phonetic interpretation then makes reference to this contrast. Hence there is no need to ever talk about progressive passive voicing, target C°s that only give in when assaulted from both sides, or typological monsters of the Catalan kind. All parametric decisions are made where they belong, i.e. in the phonology, and passive voicing is given a chance to be universally regressive. Of course, this hypothesis will need to be run against an empirical record that goes beyond intervocalic voicing.

A universal regressive causality is also independently appealing given that the overwhelming majority of phonological processes are regressive, i.e. are such that the patient precedes the trigger.

Finally, note that it is again the departure from the surface description of intervocalic voicing (which suggests that vowels to the right and the left of

obstruents transmit some vocalic property) that allows us to eliminate the alleged bidirectionality of the conditioning from the picture. Phonologically, "intervocalic" identifies as a lenition site that has nothing to do with the transmission of any phonological or phonetic property from vowels to consonants: being governed is defined at the constituent level where the critical property of V_1__V_2 is that the nucleus inhabited by V_1 is not empty (more detail is available in Ségéral and Scheer 2008b). That is, in …CøTV_2… (where our obstruent T stands in strong post-consonantal position, i.e. does not lenite), V_2 has governing duties because it needs to silence the preceding empty nucleus ø. It therefore cannot govern its own onset T. By contrast in …CV_1TV_2…, V_2 does not need to govern anything (V_1 is contentful) and therefore governs its own onset T.

7.6. Intervocalic voicing in H-systems

Let us now consider (2c). It is not trivial to identify languages where the literature reports the presence of intervocalic voicing as either L- or H-systems. This is true when going by phonetic Laryngeal Realism standards, and even more so when applying Laryngeal Relativism. The presence of phonetic aspiration in a two-way system should betray an H-system, though. But the literature typically does not provide information regarding the aspirated or non-aspirated character of voiceless obstruents. Let us thus trust the Romance/Slavic vs. Germanic split that appears to be consensual in the Laryngeal Realism literature: Germanic languages are H-systems.

An example of a Germanic intervocalic voicing is the aforementioned Verner's Law, which turned all voiceless fricatives present in the language (i.e. f, θ, s, h in Common Germanic after Grimm's Law went into effect) into voiced fricatives in intervocalic position, provided that the preceding vowel did not bear stress (e.g. Collinge 1985: 203ff; Rooth 1974). The stress-based conditioning adds a factor to the intervocalic pattern which we may ignore for the purpose of the discussion. In the same way, it is at present irrelevant that "intervocalic" actually means "preceded by a vowel or a sonorant and followed by a vowel or a sonorant." Finally, it is unimportant which scenario is correct: the classical idea that fricatives voice under the action of the surrounding vowels/sonorants, or Saussure's alternative (see Section 5.4) whereby there was a general voicing process that affected all fricatives, except if they stood in strong (i.e. word-initial and post-tonic) position (or of course were adjacent to a voiceless obstruent). On both counts must there be a source for voicing in intervocalic position, and if vowels and sonorants are phonologically unspecified for voicing this source can only be phonetic, i.e. passive voicing.

Assuming thus that we are in an H-system, the laryngeal specification of C^H (interpreted as [T]) needs to be eliminated: passive voicing has no bearing

on laryngeally specified consonants. Hence there must have been a phonological process $C^H > C°$ in intervocalic position, or rather, in non-strong positions. The result C° was then passively voiced.

This is also the scenario that Honeybone (2002: 236) develops in the frame of Laryngeal Realism, where sonorants and vowels are phonologically specified for voicing and passive voicing occurs in the phonology. Honeybone (2002, 2005) discusses a number of additional obstruent voicing processes in Germanic, of which only one is restricted to intervocalic contexts: fricative voicing in Old English (Honeybone 2002: 71f; 2005: 340). Lass (1994: 72) describes the pattern by the rule f,θ,s → v,ð,z / (R)__V: fricatives voice when preceded by a stressed vowel (plus optionally a sonorant) and followed by another vowel. Again stress plays a role (but this time with the opposite effect: preceding stress is necessary, not a blocking condition), and sonorants also trigger (but only when preceding the target). Old English thus adds to the evidence that – quite unsurprisingly – H-systems also implement intervocalic voicing.

The point of all this is what was mentioned in Section 6.1: if vowels and sonorants are phonologically unspecified for voicing, H-systems can only display intervocalic voicing if the laryngeal specification H is removed from the targets prior to the action of passive voicing. In other words, intervocalic voicing has always a phonological component.

(7) Intervocalic voicing
   a. target identification is always phonological
      only governed consonants are targets
      [recall that in CVCV, governed consonants describe the set of intervocalic consonants. In other syllabic theories, intervocalic consonants will have a different, yet phonological definition.]
   b. in L-systems,
      only ungoverned C°s are specified for being phonetically interpreted as [T] (see (5)).
   c. in H-systems,
      only governed C^H undergo $C^H > C°$. The output then is subject to passive voicing.

Note that delaryngealization of intervocalic (i.e. governed) C^L may also occur in L-systems: this will produce the same surface result, i.e. only voiced consonants appear in intervocalic position. The difference is that without delaryngealizing intervocalic C^L, there will be two phonologically distinct items in this position: (lexical) C^L and (lexical) C°, which will however enjoy identical pronunciation as [D], either through active or passive voicing. In case C^L is delaryngealized intervocalically, only C° will occur in this position, and the uniform surface [D] will have only one source, passive voicing.

It is thus possible to formulate a single process that is at the origin of all cases of intervocalic voicing, as under (8).

(8) Intervocalic voicing is always lenition
   a. intervocalic voicing identifies as the delaryngealization of governed obstruents, i.e.
      $C^H > C°$ in H-languages
      $C^L > C°$ in L-languages.
   b. in L-systems, this is accompanied by a specification for ungoverned C°s to be phonetically interpreted as voiceless [T].
   c. post-phonologically, C° whose pronunciation is not specified (by virtue of b) undergo passive voicing.

For the time being, it appears that passive voicing can be said to be only ever regressive. This is because, recall, the target segments of intervocalic voicing are defined phonologically. It needs to be seen whether this universality is sustainable when run against a larger empirical record that goes beyond final devoicing and intervocalic voicing.

8. Phonetics

Finally, let us turn to the question of phonetics proper. A fact about the book is that there are no phonetic data exposed in any way. No measurements are made or reported, only items of the phonetic literature is reviewed. This strikes the reader for example upon the discussion of the table on p. 39, which is critical in the introduction of the idea that there could be H-systems whose C^H is pronounced without aspiration. The table indicates variable VOT values for different languages, but these are not substantiated in any way, either by quoting relevant literature or by independent measurements. Icelandic and English are said to have different VOT values because aspiration in the former is "more robust" than in the latter, and because there is some passive voicing in the latter, which is absent in the former. These are all interesting observations that may tell us something about the languages at hand – but they are observations about the behaviour of the languages, not about their VOT. If there is a correlation between them and VOT, it will be enough to show that there is one by mentioning the actual VOT values. These are available in the literature, but absent from the book.

Another instance where the author makes claims about phonetic facts without controlling them by measurements is in chapter 5 when talking about word boundaries and ensuing "pause control" in external sandhi: he assumes "that a potential pause in this context may further lower the possibility of observing assimilation" (p. 189f). A potential pause is not a phonetically real pause, but "pause control" means that what really makes the difference is a phonetic pause. What we see here is an effect of the outsourcing programme (Section 2.3): Cyran cannot simply talk about word boundaries and their effect because he has outsourced the facts observed from phonology to phonetics. Now

that he operates in phonetics, what is expected is phonetic reasoning and phonetic instruments: what is a "potential pause" in phonetics? What is "articulator resetting" and "relaxed adjacency", two notions that Cyran says on pp. 188, 190 are correlates of pauses? In sum: what is the phonetic reality of the notions that are manipulated?

While the preceding points certainly need to be addressed, the major issue regarding phonetics for Cyran's enterprise is the actual VOT of WP and CPP plosives, though. This goes completely unnoticed in the book. Recall that the central prediction of Laryngeal Relativism is that whether a given language is a voice or an aspiration system cannot be identified by looking at the surface (Section 3.2). Also recall that Laryngeal Realism holds that the opposite is true: the VOT of pre-vocalic word-initial plosives will tell (Ringen and Kulikov 2012). Hence Cyran predicts that WP and CPP word-initial plosives will be phonetically identical, despite the fact that they represent opposite phonological specifications: WP [T] = /C°/ will have the same VOT as CPP [T] = /C^{H}/ (the same goes for WP [D] = /C^{L}/ and CPP [D] = /C°/).

The author has things to lose but nothing to gain when relevant VOT data will be available: his model appears to be refuted (or is at great pains) if CPP [T] has significantly higher VOT values than WP [T]. If the VOT is identical for both varieties, his theory continues to be a valid competitor. In this case, Laryngeal Realism will not be in trouble, though. It will simply take on the traditional position: both WP and CPP are voice systems: their difference stems from Cracow Spread (on Rubach's take), and Cyran's Unvoiced Sonorants is wrong.

9. Conclusion

The book under review exposes an alternative, Laryngeal Relativism, to what today has become the mainstream approach to laryngeal phonology, Laryngeal Realism. The differences between the two options follow from one a central claim made by the author, Unvoiced Sonorants, holding that sonorants and vowels are never phonologically specified for laryngeal properties, in no language and under no circumstances. Two major consequences ensue: the phonological identity of laryngeal systems (voice vs. aspiration languages) cannot be determined by looking at the surface (only analysis can tell), and there must be a mediating instance between phonology and phonetics, i.e. spell-out (phonetic interpretation). The assimilation of voiceless obstruents by (voiced) sonorants and vowels that is factually observed in CPP, then, has got nothing to do with phonology: phonetic (spontaneous) voicing is transmitted in the phonetics due to the system-specific instructions of phonetic interpretation.

In other words, what the book really is about is the question of whether sonorants and vowels may be phonologically specified for voicing. This is the corner stone of Cyran's edifice, and this will decide whether Laryngeal Realism or Laryngeal Relativism is wrong. Unfortunately, the author merely exposes the alternative and points out the consequences, but hardly mentions the central issue and does not even try to argue for Unvoiced Sonorants. In other words, he does a good job at establishing the alternative to Laryngeal Realism, but a bad job at selling it.

In its second half, the present article takes up the challenge of identifying arguments in favour of Unvoiced Sonorants that are theory-neutral and unrelated to Laryngeal Relativism. The most obvious thing to be said are the facts recalled in Sections 5.1 and 5.2: sonorants and vowels never undergo final devoicing, vowels never contrast in voicing and sonorants almost never do ("almost" being subject to interpreting the data). Another argument is intervocalic voicing (Section 6.2): it is inconsistent to interpret this phenomenon as an assimilation whereby vowels transmit their voicing to obstruents. This is because intervocalic voicing unambiguously identifies as a form of lenition (chain shifts), and thus cannot be both an assimilation and a lenition. In case it is a lenition, though, there is no transmission of any melodic prime from the environment: this is the very definition of positional phenomena (i.e. lenition).

It is further shown in Section 6 how Cyran's model can account for intervocalic voicing once it is admitted that there is phonological control over the lenition process, which simply identifies as a contextual (i.e. intervocalic or otherwise positionally determined) delaryngealization (in all systems). The neutral consonants C° created by these means are then contaminated by the phonetic (spontaneous) voicing of adjacent sonornats and vowels, whereby context-sensitive phonetic interpretation statements guarantee the eventually contrastive pronunciation of non-intervocalic C°s. These workings prompt a number of modifications of Cyran's system, namely the fact that there is no universal prohibition of passive voicing in L-systems. The regressive directionality of phonetic voice transmission suggested by Cyran on the other hand may be workable given the phonological (rather than phonetic) identification of targets.

Let us now turn to the argument in favour of Laryngeal Relativism that Cyran means to draw from the analytic ambition of the book (Sections 4.4 and 4.5): he argues that previous analyses either have distinct workings for the word-internal and the external sandhi context of Polish voicing, or they resort to a specific plug-in for CPP (Cracow Spread). By contrast, goes the argument, Laryngeal Relativism gets the job done by merely identifying the systemic settings (L- vs. H-language, phonetic interpretation statements) of WP and CPP. All the rest then falls out based on identical phonological computation for all strings and both varieties, which is made of only two processes (delaryngealization and spreading of laryngeal primes to preceding obstruents).

It was shown in Section 4.6 that the two properties which stand in the way of a unified analysis, different mechanisms for word-internal and external sandhi contexts and variety-specific plug-ins, have precise functional equivalents in Cyran's analysis. The difference is that Cyran locates everything that opposes WP vs. CPP on the one hand and word-internal vs. external sandhi contexts on the other hand in phonetic interpretation (recall the outsourcing enterprise), rather than in the phonology (as Bethin and Rubach do). The phonetic interpretation conventions under (4) (passive voicing blocked in L-systems, enforcement of passive voicing in systems where C^H is pronounced without aspiration) are the relevant instruments, and the regressive character of passive voicing (5) mimics the regressive directionality of Cracow Spread.

Does the competition then boil down to the inclination of locating relevant statements in the phonology or in the post-phonological area? This would mean that we are simply back to the question of Unvoiced Sonorants, which will decide. Not quite. For Cyran's (extra-phonological) statements have a universal ambition, while Cracow Spread is a parameter: the occurrence of this rule in CPP, rather than in WP or in some other language, is accidental. Hence Cyran's take has a substantial advantage: given the systemic settings of WP and CPP, their behaviour in external sandhi could not be any different from what it is. The presence of Cracow Spread in CPP, and its absence in WP, is not accidental but predicted.

This advantage, in turn, though, hinges on two things: the truly universal character of the phonetic interpretation statements (4) and (5) and the ability to identify WP and CPP as H- or L-systems independently of external sandhi. Were external sandhi the only judge, the reasoning would be circular: there is no obstruent voicing induced by vowels and sonorants in WP because it is an L-system, and it is an L-system because there is no such external sandhi process. As was mentioned, Cyran comes up with just one rather shaky alternative way to identify the laryngeal systems of WP and CPP: the frequency of voiced and voiceless obstruents in word-final position (Section 3.3). Regarding the universality of the phonetic interpretation statements at hand, it appears that we are facing a mixed bag. On the one hand, intervocalic voicing has shown that the prohibition of passive voicing in L-systems is not universal (C° do passively voice in intervocalic position, see Section 6.4). On the other hand, enhanced passive voicing is still a candidate for universality, and so is the regressive character of passive voicing (Section 6.5).

What this comes down to is a call for more empirical coverage: Laryngeal Relativism has an analytical advantage if it can be shown that enhanced passive voicing and the regressive character of passive voicing are indeed universal. And of course, it will be fairly easy to get down to measuring the VOT of WP and CPP stops, with the consequences described in Section 7.

References

[Entries followed by WEB are available at www.unice.fr/scheer.]

Backley Phillip (2011). *An Introduction to Element Theory*. Edinburgh: Edinburgh University Press.

Bethin Christina (1992). *Polish Syllables: The Role of Prosody in Phonology and Morphology*. Columbus OH: Slavica.

Bhaskararao Peri, Ladefoged Peter (1991). Two types of voiceless nasals. *Journal of the International Phonetic Association* 21(2): 80–88.

Bombien Lasse (2006). Voicing alternations in Icelandic sonorants – a photoglottographic and acoustic analysis. *Arbeitsberichte des Instituts für Phonetik der Universität Kiel* (AIPUK) 37: 63–82.

Botma Bert (2004). Phonological aspects of nasality. An element-based dependency approach. Amsterdam: University of Amsterdam. PhD dissertation.

Botma Bert (2011). Sonorants. In *The Blackwell Companion to Phonology*, Marc van Oostendorp, Colin J. Ewen, Elizabeth Hume, Keren Rice (eds.), 171–194. New York: Wiley-Blackwell.

Botma Bert, Smith Norval (2006). A dependency account of the fortis–lenis contrast in Cama. In *Linguistics in the Netherlands 2006*, Jeroen van de Weijer, Bettelou Los (eds.), 15–27. Amsterdam: Benjamins.

Bourciez Edouard, Bourciez Jean (1967). *Phonétique française*. 9e édition. Paris: Klincksieck.

Brun-Trigaud Guylaine, Scheer Tobias (2010). Lenition in branching onsets in French and in ALF dialects. In *Development of Language through the Lens of Formal Linguistics*, Petre Karlík (ed.), 15–28. Munich: Lincom. WEB.

Carvalho Joaquim Brandão de (2008). Western Romance. In Carvalho, Scheer, Ségéral (eds.), 207–232. WEB.

Carvalho Joaquim Brandão de, Scheer Tobias, Ségéral Philippe (2008). *Lenition and Fortition*. Berlin: Mouton de Gruyter.

Chomsky Noam, Halle Morris (1968). *The Sound Pattern of English*. Cambridge, Mass.: MIT Press.

Clements George, Osu Sylvester (2002). Explosives, implosives and nonexplosives: The linguistic function of air pressure differences in stops. In *Laboratory Phonology* 7, Carlos Gussenhoven, Natasha Warner (eds.), 299–350. Berlin: Mouton de Gruyter.

Collinge Neville E. (1985). *The Laws of Indo-European*. Amsterdam, Philadelphia: Benjamins.

Cornyn William (1944). *Outline of Burmese Grammar* (Language Dissertation 38). Baltimore: Linguistic Society of America.

Cyran Eugeniusz (2014). *Between Phonology and Phonetics: Polish Voicing*. Berlin: Mouton de Gruyter.

Honeybone Patrick (2002). Germanic obstruent lenition: Some mutual implications of theoretical and historical phonology. Newcastle: University of Newcastle. PhD dissertation.

Honeybone Patrick (2005). Diachronic evidence in segmental phonology: the case of laryngeal specifications. In *The Internal Organization of Phonological Segments*, Marc van Oostendorp, Jeroen van de Weijer (eds.), 319–354. Berlin: Mouton de Gruyter.

Hyman Larry (1975). *Phonology: Theory and Analysis*. New York: Holt, Rinehart & Winston.

Itô Junko, Mester Armin (1986). The Phonology of voicing in Japanese: Theoretical consequences for morphological accessibility. *Linguistic Inquiry* 17(1): 49–73.

Kaye Jonathan (2001). Working with licensing constraints. In *Constraints and Preferences*, Katarzyna Dziubalska-Kołaczyk (ed.), 251–268. Berlin & New York: Mouton de Gruyter. WEB.

Kenstowicz Michael (1994). *Phonology in Generative Grammar*. Oxford: Blackwell.

Ladefoged Peter, Maddieson Ian (1996). *The Sounds of the World's Languages*. Oxford: Blackwell.

Lass Roger (1973). A case for making phonological rules state things that don't happen. *Edinburgh Working Papers in Linguistics* 3: 10–18.

Lass Roger (1984). *Phonology. An Introduction to Basic Concepts*. Cambridge: Cambridge University Press.

Lass Roger (1994). *Old English: A Historical Linguistic Companion*. Cambridge: Cambridge University Press.

Lowenstamm Jean (1996). CV as the only syllable type. In *Current Trends in Phonology. Models and Methods*, Vol. 2, Jacques Durand, Bernard Laks (eds.), 419–441. Salford, Manchester: ESRI. WEB.

Major Roy C., Faudree Michael C. (1996). Markedness universals and the acquisition of voicing contrasts by Korean speakers of English. *Studies in Second Language Acquisition* 18(1): 69–90.

Nasukawa Kuniya (2005). *A Unified Approach to Nasality and Voicing*. Berlin: Mouton de Gruyter.

Oliveira Marco Antônio de (1983). Phonological variation and change in Brazilian Portuguese: The case of the liquids. Philadelphia: University of Pennsylvania. PhD dissertation.

Piggott Glyne (1992). Variability in feature dependency: the case of nasality. *Natural Language and Linguistic Theory* 10(1): 33–78.

Rice Keren (1993). A reexamination of the feature [sonorant]: The status of 'sonorant obstruents'. *Language* 69(2): 308–344.

Rice Keren, Avery Peter (1989). On the interaction between sonorancy and voicing. *Toronto Working Papers in Linguistics* 10: 65–82.

Ringen Catherine, Kulikov Vladimir (2012). Voicing in Russian stops: cross-linguistic implications. *Journal of Slavic Linguistics* 20(2): 269–286.

Rooth Erik (1974). *Das Vernersche Gesetz in Forschung und Lehre (1875–1975)*. Lund: Gleerup.

Rubach Jerzy (1996). Nonsyllabic analysis of voice assimilation in Polish. *Linguistic Inquiry* 27(1): 69–110.

Saussure Ferdinand de (1916). *Cours de linguistique générale*. Paris 1972: Payot.

Scheer Tobias (2004). *A Lateral Theory of Phonology. Vol.1: What is CVCV, and why should it be?* Berlin: Mouton de Gruyter.

Scheer Tobias (2015). A world without voiced sonorants: Reflections on Cyran 2014 (Part 1). *Studies in Polish Lingusitics* 10(3): 125–151.
Scheer Tobias, Ziková Markéta (2010). The Coda Mirror v2. *Acta Linguistica Hungarica* 57(4): 411–431.
Ségéral Philippe, Scheer Tobias (2001). La Coda-Miroir. *Bulletin de la Société de Linguistique de Paris* 96: 107–152. WEB.
Ségéral Philippe, Scheer Tobias (2008a). Positional factors in lenition and fortition. In Carvalho, Scheer, Ségéral, 131–172. WEB.
Ségéral Philippe, Scheer Tobias (2008b). The Coda Mirror, stress and positional parameters. In Carvalho, Scheer, Ségéral, 483–518. WEB.
Szigetvári Péter (2008). What and where? In Carvalho, Scheer, Ségéral, 93–129.
Vanbik Kenneth (2003). Junctural and parasitic voicing in Burmese. *The Annual Proceedings of the Berkeley Linguistics Society* 29: 473–484.

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