Preliminaries

Theories of phonology include an inventory of basic elements, such as segments, tones, stress, features, and gestures, and a model that accounts for their distribution and realization. The phonological context is taken to be organized into higher-order prosodic constituents, which structure and constrain the realization of phonological elements. Moving from elements to their distribution, this section addresses issues pertaining to the syllable as an organizing constituent of phonological units, bridging between the coordination of articulatory events (**Gafos & Goldstein, this chapter**) and prosodic structure (**Turk, this chapter, and chapter 11**).

A large range of approaches to the syllable have been offered, varying in their level of abstractness and supported by an impressive variety of experimental results. Despite the richness and sophistication of this body of research and the intuitive attractiveness of the syllable, the syllabic domain remains difficult to define and characterize, physically and formally. Questions surrounding the syllable concern its nature (1-4), its role in the organization and production of sound systems (5-6), and its crosslinguistic variability (7).

(1) Is the syllable an abstract primitive, governed by universal organizational principles such as those requiring syllable onsets or prohibiting syllable codas, or an epiphenomenal category emerging from linguistic experience (e.g. Ohala 1992, 2008; Bertinetto 2001)? Does it have a substantive status in the analysis of sound systems, or is it merely a descriptive concept, a surface and loosely defined segmental grouping?
(2) What is the internal structure of the syllable? One can distinguish between a rhythmic organization involving the mora as a unit of segment quantity and syllable weight, and a segmental organization relying on subsyllabic constituents (see Zec 2007 for a recent discussion). These include the nucleus, the onset (the preceding consonants), the coda (the following consonants), the rime (nucleus+coda), and the body (onset+nucleus).

(3) What is the basis (phonetic or other) of syllable structure and syllabification procedures?

(4) How does the syllable relate to the segmental content and to other prosodic constituents?

(5) What categories of processes and generalizations, if any, are characterized in terms of syllable structure? Are they sensitive to the position of syllable edges and/or the syllabic affiliation of segments?

(6) At what levels, if any, does the syllable intervene in mechanisms of speech perception and production?

(7) What aspects of the syllable are universal or subject to crosslinguistic variation?

Several reviews of the syllable from a formal phonological perspective are available, which establish the syllable as an organizing unit between segments and higher prosodic structure (e.g. Blevins 1995; van der Hulst & Ritter 1999; Rubach 1999; Zec 2007). I focus here on the contribution of laboratory phonology to some of the issues listed above, discussing a number of recent experimental results that speak to the activity, existence and physical correlates of the syllable or particular subsyllabic constituents. The interpretation of the results is subject to much ambiguity, however, a point also emphasized by Pierrehumbert & Nair (1995) and Shattuck-Hufnagel (to appear). Shattuck-Hufnagel, for instance, argues that speech errors, regularly cited as supporting the syllable, provide basically no unambiguous evidence for it, at least in English. Discussions may fail to properly distinguish between word and syllable boundaries, between
evidence for some subsyllabic grouping and evidence for the whole syllable. Results interpreted as supporting the syllable may also be compatible with linear characterizations: in certain linguistic or experimental contexts, “onset” corresponds to “prevocalic”, the number of syllables to the number of vowels.

I concentrate on two broad categories of findings. First those that directly address the role of the syllable in phonological generalizations (subsection 2.1) and in speech perception and production (subsection 2.2). I suggest that the evidence for the syllable is not as clear as generally admitted. In subsection 3, I turn to the internal organization of the syllable or subsyllabic relationships, considered in relation to statistical tendencies in the lexicon, acoustic/perceptual factors, and articulatory organization. Focus is on the asymmetry, central to the syllable, between CV and VC sequences. Subsection 4 offers additional comments and concluding remarks. The discussion straddles phonetics, phonology, and psycholinguistics; while specialists in each domain might be left unsatisfied, it is hoped that this multidisciplinary perspective will end up being more than the sum of its parts.

2 The role of the syllable

2.1 In phonological generalizations

The syllable has enjoyed considerable success in the analysis of phonological patterns, segmental and suprasegmental. Syllable-based accounts refer either to the syllabic affiliation of segments (e.g. lenition or neutralization of coda consonants, vowel epenthesis in complex codas), or to syllable shape (e.g. vowel laxing or shortening in closed syllables, stress attraction to heavy syllables). I will not expand on this traditional type of evidence, focusing on some recent challenges to the syllabic formulation of phonological generalizations.
Descriptively, the syllable is not necessary since phonological processes that are expressed with reference to the syllable can always be reformulated in sequential terms. Conceptual economy has motivated the exclusion of the syllable from the set of basic phonological units; yet the perceived explanatory power of the syllable and the simplicity of syllable-based accounts have secured its place at the center of phonological theory. More recently, however, the syllabic basis of phonological generalizations has been questioned on empirical grounds: syllabic analyses do not necessarily make the correct predictions when a closer look at the data is taken (e.g. Steriade 1999b, 2001; Côté 2000; Blevins 2003). For example, McCrary (2004) provides experimental evidence against the role of the syllable in different aspects of the phonology of Italian, which have standardly been understood with reference to the syllable: the allomorphy of the masculine definite article (il~lo) and segment duration. In particular, no evidence for vowel lengthening in open stressed syllables is found; instead, vowel duration is inversely correlated with the duration of the following consonantal sequence, irrespective of its syllabic organization.

In mixed typological and experimental studies, Ahn (2000) and Zhang (2004) argue that stress attraction and contour tone distribution, classically formulated in terms of syllable weight, are sensitive to duration, not syllable structure. Only long vowels, not closed syllables, truly attract stress; CVC syllables may only fail to repel stress, as opposed to CV syllables, in languages with vowel-length distinctions. The distribution of contour tones is determined by the phonetic duration of the sonorous portion of the rime, which is affected by elements of the wider context such as word length and phrasal position. Such proposals put into question the correspondence between the realization of phonological elements and syllabic structure, but they still require a distinction between rimal and onset consonants. In other words, it is the activity,
not the existence, of syllabic categories that is at stake here.

In the domain of segmental phonotactics, a well articulated non-syllabic alternative is Steriade’s (1999a, 2001) “Licensing by Cue”, as opposed to “Licensing by Prosody”. The core idea is that the occurrence of a feature or segment in a given context is determined by its relative perceptibility in that context rather than its syllabic position. Voicing contrasts, for instance, tend to be maintained before a sonorant, where the cues to voicing are rich enough, and neutralized elsewhere. This usually corresponds to the onset position, hence the traditional syllabic formulation of voice licensing (e.g. Lombardi 1999), but Steriade uncovers crucial cases where the licensing-onset and neutralization-coda correspondences break up. This cue-based approach has also been applied to the resolution of consonant clusters (Côté 2000) and, with experimental support, to palatalization (Kochetov 1999, 2006b) and retroflexion (Hamann 2003); see also Kirchner & Varelas (2002). In response, licensing by cue has been argued to be either insufficient or restricted to the diachronic domain. Critics have often specifically supported the syllabic alternative (e.g. Gerfen 2001; Howe & Pulleyblank 2001; Flack 2005; Wheeler 2005; Kaplan 2006; Moreton et al. 2008, e.g.). But (a pure version of) licensing by cue may also be rejected without advocating a role for the syllable (e.g. Wagner 2002; Hansson 2003; Yu 2004).

2.2 In speech perception and production

Supplementing conclusions based on phonological generalizations and offering a different perspective on the role of the syllable, numerous experimental studies have investigated speaker behavior in speech perception and production. Mehler et al.’s (1981) classic study indicates that French listeners detect a target sequence in a lexical form faster when the sequence corresponds to a syllable in the form; for example, the sequence [ba] is detected faster in [ba.lâs] ‘balance’
than in [bal.kɔ̃] ‘balcony’, [bal] faster in [bal.kɔ̃] than in [ba.lɑ̃s] (periods indicate syllable boundaries). This suggests that the syllable constitutes a processing unit in speech perception. Similar syllabic effects have been observed in production experiments using syllable priming (e.g. Ferrand et al. 1996), and in other studies summarized in Cutler (1997), Perret (2007) and Schiller (2008). However, subsequent (and better controlled) experiments failed to replicate these effects (e.g. Content et al. 2001; Schiller et al. 2002; Schiller & Costa 2006; Perret 2007; see Schiller 2008 and Cholin et al. 2006). Instead of a syllabic effect, what is generally observed is a segmental overlap effect, with CVC primes associated with faster production latencies than CV primes, irrespective of the syllabic position of the postvocalic consonant in target words. This has led to the conclusion that syllables are not activated in lexical retrieval and not present in lexical representations, in accordance with the standard view in phonology that syllable structure is excluded from the lexicon, due to its predictable nature.

If correct, this conclusion calls for a reinterpretation of the “syllabic effects” observed in earlier studies. A phonetic account has been put forward (Altmann 1997; Segui & Ferrand 2002; Content et al. 2001). The sequence [al] is phonetically distinct in [ba.lɑ̃s] and [bal.kɔ̃], due to the different quality of the liquid and degree of coarticulation with the preceding vowel. If speakers use this phonetic information in lexical access, the sequence [bal] will initially activate words like [bal.kɔ̃] but not [ba.lɑ̃s], and vice versa for the prime [ba]. Content et al. (2001) observed a “syllabic” effect with liquid postvocalic consonants but not with obstruents. This contrast is consistent with liquids being more coarticulated with the preceding vowel than obstruents, less so with a general syllable-based mechanism. The appeal to subphonemic phonetic distinctions speaks to current debates on the content of lexical representations, between minimally specified
and phonetically detailed forms (see **Lahiri, this volume**). It may also explain Cholin et al.’s (2004) finding, interpreted in terms of syllable structure preparation, that sets of words with identical initial syllables (e.g. Dutch *spui.en, spui.de, spui.er, spui.end*) are easier to produce than sets in which one of the words has a different syllabic segmentation (e.g. *hui.len, hui.ler, hui.lend* but *hui.l.de*).

More promising evidence for the syllable may come from the effect of syllable frequency on speech production. Words composed of more frequent syllables are produced faster than words composed of less frequent syllables (with adequate control of phoneme and word frequency) (Cholin et al. 2006; Cholin & Levelt 2009). This result highlights the possible implication of the “mental syllabary”, a repository of articulatory routines or pre-compiled motor instructions corresponding to syllable-size sequences. Less frequent syllables are either less easily accessed in the syllabary, or not stored in it and computed on-line. Frequency effects, however, do not in themselves support the existence of a suprasegmental syllabic level. There is no indication that the stored units are anything else than frequent segmental sequences, and Cholin & Levelt (2009) do not exclude that the mental “syllabary” also contains chunks that are smaller or larger than a syllable.

A different line of enquiry into the role of the syllable in speech perception and the organization of sound sequences exploits the phenomenon of perceptual epenthesis. Dupoux et al. (1999) show that Japanese speakers perceive an epenthetic vowel in sequences of consonants that are not legal in their native language; *[ebzo]*, for example, is heard as *[ebuzo]*. The form of the phonotactic constraint triggering perceptual epenthesis is unclear, however. At least two options can be entertained: a linear one, which bans the sequence *[bz]*, and a syllabic one, which excludes *[b]* in coda position.
Kabak & Idsardi (2007) seek to disentangle this issue by contrasting two types of impossible biconsonantal clusters in VC₁C₂V context in Korean: clusters excluded by a syllabic constraint against C₁ in coda position (e.g. [Cm]) and clusters banned by a sequential restriction against C₁C₂ (e.g. [km], C₁ being a possible coda before consonants other than C₂). Perceptual epenthesis is observed only in sequences of the first type, suggesting that perception is modulated by a syllabic organization. However, consonants excluded from the coda position in Korean (e.g. [c]) only appear before vowels or diphthongs, while other consonants (e.g. [k]) are familiar in preconsonantal position. Perceptual epenthesis could exploit this linear distinction rather than syllabic constraints. A similar ambiguity arises in the interpretation of the results of Coetzee (to appear; **this volume**), which indicate that American listeners hear an epenthetic vowel after [s] significantly more often in nonce forms like [stʰápi] than [lustʰápi]. This finding shows that listeners attend to allophonic cues in treating incoming sequences and make use of a grammatical constraint banning aspirated stops following a word-initial [s], as in [stʰápi]. But different formulations of this constraint remain available, syllable-based (e.g. aspirated stops only occur syllable-initially) or not (e.g. stops are not aspirated after a tautomorphemic fricative): [lustʰápi] may be licensed either by the insertion of a syllable boundary after [s], as suggested by Coetzee, or by parsing it as two separate words [lus#tʰápi], with a normally aspirated word-initial [t] (like in this tablet).

3 Subsyllabic asymmetrical relationships

If support for the syllable, as reviewed above, may be considered mixed or ambiguous, evidence for asymmetrical segmental relationships within the syllable appears stronger. The dominant model of segmental association is the onset-rime one, which expresses a closer relationship
between the nucleus and the coda than between the nucleus and the onset; the competing body-coda structure groups the nucleus and the onset. In terms of weight contribution, the mora establishes a contrast between prevocalic and postvocalic consonants, as only the latter, like vowels, may bear a mora.

Three lines of investigation, reviewed in 3.1-3.3, can be identified in documenting and explaining the basic asymmetry between onset and coda consonants. Durational correlates have also been uncovered, such as compensatory mechanisms inside the rime (closed syllable vowel shortening; Maddieson 1985) and the correlation between segmental duration and the moraic status of coda consonants (Broselow et al. 1997).

3.1 Psycholinguistic and statistical evidence

In discussing the internal constituency of the syllable, classic phonological data are complemented with a variety of psycholinguistic results, relying in particular on novel word games and phonotactic distributions in the lexicon. In English, the onset-rime model is supported by experiments indicating that speakers tend to maintain the integrity of onsets and rimes and break monosyllabic words at the onset-rime boundary (see Treiman 1989 and Treiman & Kessler 1995 for reviews). Statistical analyses of the lexicon reinforce the idea of a closer relationship of vowels with following codas than preceding onsets. Kessler & Treiman (1997) show that in uninflected CVC words in English, vowels more strongly interact with codas: certain vowel-coda combinations are more frequent than expected by chance, but no comparable tendency is observed between vowels and onsets (**see also Frisch, this volume**).

The onset-rime model has dominated the literature on the syllable, but its universality has been challenged. Yoon & Derwing (2001) and Derwing (2007) present a series of experimental
results supporting the body-coda structure in Korean and Minnan Chinese, with a stronger onset-vowel association than vowel-coda. This is consistent with a parameterized approach to syllable structure, each language adopting one among a small number of possible options (e.g. onset-rime in English, body-coda in Korean).

Recent work by Lee & Goldrick (2008) argues against such a categorical approach to the difference between English and Korean. The authors confirm the link between psycholinguistic results and statistical analyses of the lexicon: both support a stronger vowel-coda association in English and a stronger onset-vowel association in Korean. In a list-recall task in which participants repeat nonword CVC syllables, Korean and English speakers are more likely to recall correctly the CV and VC portions, respectively, consistent with the stronger associations observed in the lexicon. However, this general pattern is reversed under particular conditions. English participants do better on the CV portion when the CVC syllables contain CV sequences chosen among those that show a strong statistical association in the lexicon; the same applies to the VC portion in Korean. In other words, the speakers’ behavior follows closely the statistical tendencies of the lexicon: a global preference for rime or body sequences but opposite local preferences when they are statistically favored. Since speakers do diverge from the “default” rime or body association of their language under certain conditions, the results are not immediately compatible with an abstract and invariant syllable architecture in each language.

This type of result is consistent with others that challenge the stability of syllable structure within a language. Italian leans toward an onset-rime model but the evidence appears much weaker than in English (Bertinetto 1999). Syllable weight is often not uniform language-internally but is determined by process-specific criteria; the categorization of syllables between light and heavy may be different, for example, for stress and tone (Gordon 2004).
3.2 Gestural organization

One flourishing research direction explores the links between intersegmental coordination patterns and prosodic organization. For example, investigating the traditional classification of languages as stress-timed, syllable-timed, or mora-timed (**see Turk, this chapter, for discussion**), Smith (1995) suggests that in mora-timed languages, exemplified by Japanese, vowels in CVCV sequences are primarily coordinated with adjacent consonants, whereas syllable or stress-timing, as in Italian, is associated with a pattern of vowel-to-vowel coordination across intervening consonants.

Looking inside the syllable, much work has attempted to characterize the syllabic organization in terms of magnitude and relative timing of gestures (e.g. Browman & Goldstein 1988, 1995, 2000; Byrd 1995, 1996; Krakow 1999; de Jong 2003). At least for American English, this research provides consistent results. In a CVC sequence, there is more precise timing of articulatory movements in onset than in coda consonants, resulting in increased coarticulation in VC compared to CV sequences. For example, velic lowering in [m] is synchronized with labial constriction in onset position, but it precedes it in coda position (**see Gafos & Goldstein, this chapter**, for a discussion of this aspect of articulatory organization and further examples). Concerning the magnitude of gestures, prevocalic consonants tend to be produced with a tighter constriction (a more extreme consonantal articulation) than postvocalic ones. For example, nasals are associated with a lower velic position and longer low velic plateau, increasing the amount of nasal airflow; this makes postvocalic nasals more sonorant-like or less obstruent-like than prevocalic nasals. Likewise, postvocalic laterals show a weaker tongue tip constriction.
Onset and coda clusters also display distinct timing characteristics. Onsets are characterized by the c-center effect, which corresponds to a relatively stable interval between the vowel and the center of the preceding consonantal sequence, irrespective of the number of consonants. For example, a stable interval is maintained between the vowel in *sayed*, *spayed* and *splayed* and the center of [s], [sp] and [spl]. The c-center effect is not characteristic of coda clusters, which are produced more sequentially and also display more variability of intergestural timing between consonants. This has been formalized in terms of in-phase and anti-phase coupling modes (see **Gafos and Goldstein, this volume**).

These generalizations are largely based on American English, and a growing body of work has begun to investigate their applicability to other languages and the range of crosslinguistic variation in coordination patterns; see Kochetov (2006a) for a comparison with Russian and Gick et al. (2006) for a crosslinguistic study of the production of liquids. A number of recent papers have looked at initial clusters, contrasting languages that display the c-center effect (English, Marin & Pouplier 2008; French, Kühnert et al. 2006; Italian, Hermes et al. 2008; Georgian, Goldstein et al. 2007) with languages in which the vowel aligns not with the center but with the right edge of initial consonant sequences (Tashlhiyt Berber, Goldstein et al. 2007; Moroccan Arabic, Shaw et al. 2009). The two different alignment patterns have been interpreted as corresponding to different syllable structures: center alignment with complex onsets and right alignment with simple onsets (in this case additional initial consonants are extrasyllabic or belong to a separate syllable). Different clusters may also display different coordination patterns in the same language: Hermes et al. (2008) indicate a c-center effect for stop+liquid clusters but not /s/+obstruent in Italian; see Marin & Pouplier (2008) for coda clusters in American English. More research is needed to understand the language-specific and cluster-specific nature of articulatory coordination patterns, the factors that determine those patterns (e.g. perceptual
recoverability, segmental contrasts), and the relationship between coordination patterns and syllable structure.

3.3 Acoustic and perceptual factors

CV and VC sequences also differ acoustically and perceptually, with several experiments pointing to the privileged status of CV transitions and the enhanced perceptibility of prevocalic consonants. Onset (prevocalic) consonants are more accurately perceived than coda (postvocalic) consonants (Redford & Diehl 1999; Kochetov 2004). In a VCV sequence, the following vowel contributes to the perceptibility of the consonant more than the preceding vowel (Fujimura et al. 1978; Ohala 1990; Wright 2001): when faced with contradictory transitions from the preceding and following vowels, listeners mainly rely on the CV transition to identify the consonant.

This perceptual asymmetry results from a number of factors. Acoustically, onset consonants and CV formant transitions display greater distinctness and spectral differentiation between different consonants than coda consonants and VC transitions (Öhman 1966; Kawasaki 1982; Redford & Diehl 1999). This is likely related to the articulatory factors mentioned above. Better synchronization of articulatory gestures and tighter constriction in onset enhance the contrast between the consonant and the following vowel and positively affect perceptibility, since salience is partly determined by the degree of modulation in the acoustic signal (e.g. Kawasaki 1982; Ohala & Kawasaki 1985; Ohala 1992; Boersma 1998). Prevocalic consonants also benefit from additional cues, notably stop bursts, which are not reliably audible in non-prevocalic position. Perceptually, the response of the auditory system confers increased salience to the onset of an acoustic signal (e.g. frication noise, formant structure, release burst), which gives rise to a marked burst of activity of the auditory nerve fiber (Bladon 1986; Delgutte 1997; Wright 2004).
This provides a perceptual advantage to CV cues: the onset of formants (at the CV juncture) is amplified in a way that their offset (at the VC juncture) is not. The CV boost is optimal with stops and less pronounced with sonorants, which display less syntagmatic contrast with following vowels (Wright 2004).

The CV advantage, like articulatory patterns, appears to vary crosslinguistically. Tabain et al. (2004) indicate that CV transitions are acoustically less variable and more controlled than VC ones in English, but both transitions are equally stable in Arrernte, Yanyuwa and Yindjibarndi (three Australian languages). Arrernte has been analyzed exceptionally as a VC language, banning onsets and requiring codas (Breen & Pensalfini 1999). This is consistent with the reduced advantage of CV in this language. However, there is no indication that Yanyuwa and Yindjibarndi also have a VC structure. One factor that is common to all three languages is the presence of an exceptionally large number of place distinctions, including subcoronal contrasts. Tabain et al. speculate that greater control of the VC transition (and limited gestural weakening in coda; see Kang 2000) is required to maximize the cues available to distinguish between places of articulation. So phonemic inventory contributes to determining a language’s articulatory and acoustic structure – and possibly also its syllabic organization.

4 Discussion and conclusions

This review has brought forward data from a number of separate domains: phonological processes, production and perception studies, statistical analyses of the lexicon. Globally, the evidence for the syllable as a stable and active constituent is mixed or ambiguous, but position-specific articulatory or perceptual properties and patterns of intersegmental cohesion appear more strongly supported. One additional body of experimental work not discussed so far is that dealing
with speakers’ syllabification judgments, in particular the syllabification of intervocalic consonants and clusters (see Côté & Kharlamov, to appear, for references). Such judgments do not directly address the syllabic basis of the organization of sound systems, but they contribute to defining the syllable by identifying the factors implicated in speakers’ string division judgments: nature of the consonants, onset dominance, stress position, vowel quantity, morphological structure, word-edge phonotactics.

A general consistency emerges between phonological processes characterized as syllable-based, asymmetries between CV and VC sequences, and tendencies observed in syllabification judgments. Perceptual and articulatory factors – greater salience and tighter constriction in CV, greater coarticulation in VC, all modulated by the nature of the consonants – could largely contribute to explaining “syllabic” effects such as the increased vulnerability of codas with respect to deletion, neutralization, and assimilation, the tendency for onsets to be of low sonority and codas of high sonority, and the tendency for vowels and codas (especially sonorant ones) to act as a unit. The same factors may also be reflected in basic tendencies observed in syllabification judgments. For instance, the general tendency to syllabify VCV sequences as V.CV rather than VC.V could have a perceptual origin: The consonant receives better cues from the following vowel and may be said to be perceptually more strongly associated with it.

Likewise, sonorants are less consistently syllabified as onsets than obstruents in identical contexts (e.g. Fallows 1981; Barry et al. 1999; Zamuner & Ohala 1999; Content et al. 2001; Ishikawa 2002), reflecting articulatory and perceptual distinctions between sonorants and obstruents. One may hypothesize that, in string division tasks, speakers tend to group together segments with relatively stronger perceptual and articulatory dependency, and insert divisions in locations of weaker interaction. This proposal obviously needs to undergo specific testing and further
One key question is whether the action of articulatory, perceptual, or other factors on sound patterns and syllabification judgments is direct or mediated by a level of syllabic constituency. The perceived stability and categorical nature of many phonological processes might be interpreted as supporting an intermediate syllabic level. But the concept of a stable and invariant syllable is at odds with the observed variability in syllabification judgments. In VCV sequences, for example, while consonants are generally syllabified as onsets, they can also be codas or ambisyllabic segments (e.g. Content et al. 2001 for French; Côté & Kharlamov, to appear, for Russian), contrasting with the invariant onset syllabification predicted by phonological theory. Côté & Kharlamov also show that syllabification judgments may differ significantly depending on the task speakers are asked to perform. The gap between categorical phonological processes and variable judgments on string division needs to be addressed and might be interpreted as evidence against a rigidly defined syllabic constituent; alternatively, such experimentally obtained judgments could be argued not to reflect the syllable, at least the phonologically relevant one.

Issues regarding the nature and role of the syllable in sound systems will have to be addressed at multiple levels, but much progress can be expected in the parallel study of three empirical domains: intersegmental relationships, phonological processes, and string division judgments. Recent work on perceptual and articulatory asymmetries in segment sequences has highlighted the role of intersegmental (horizontal) patterns in our understanding of syllabic effects, which complements the more traditional perspective centered on prosodic (vertical) constituency. A key question is to what extent the factors underlying asymmetrical
intersegmental relationships – coarticulation, perceptual dependency, and others – are implicated in different phonological processes and in syllabification judgments.

**References**


