Syllabic Constituents

The term syllabic constituents refers to the subgrouping of segments within the syllable. The issue of whether the syllable contains such constituents has been controversial among phonologists. One view is that the syllable has no internal constituents but consists of the segments themselves (e.g. Kahn 1976, Clements & Keyser 1983). Another view divides the syllable into three constituents: onset, nucleus, and coda (Hockett 1955, Haugen 1956, Davis 1988). The onset is a constituent comprising the syllable-initial consonant or consonant cluster; the nucleus consists of the vowel or syllabic consonant and is considered the peak of the syllable; and the coda contains the syllable-final consonant or consonant cluster. Under this view, the nucleus is an obligatory constituent of the syllable. A third view posits a bipartite division of the syllable into onset and rhyme (or ‘rime’) where rhyme comprises the syllable peak (usually a vowel) and any postpeak consonants within the syllable. While the onset-rhyme division is attributed to Pike and Pike (1947), arguments for the division are provided by Halle & Vergnaud (1980) and Selkirk (1982). Proponents of rhyme structure disagree as to whether the rhyme formally consists of the labeled constituents, nucleus and coda. A more minimalist view of syllable constituents can be found in the moraic approach to the syllable as developed in the work of Hayes (1989) in which morae alone comprise the constituents of the syllable.

A wide variety of evidence has been presented to argue for syllabic constituents. Possibly the strongest evidence for the division into onset, nucleus and coda (as well as rhyme) comes from phonotactic constraints. Other evidence for this division can be
gathered from allophonic distribution as well as from phenomena such as speech errors and language games. On the other hand, evidence from syllable weight has been provided to motivate the moraic view of the syllable.

First, phonotactic constraints, often viewed as the primary evidence for syllabic constituents, are those constraints found on the sequence of segments in a given language. Many phonologists (e.g. Fudge 1969, Selkirk 1982) have noted that in English there are constraints holding over the first two phonemes of a syllable if both are consonants. For example, if two consonants appear at the beginning of the syllable they cannot both be sonorant consonants. But, there are virtually no constraints if the first two phonemes of a syllable consist of a consonant followed by a vowel. The constraints holding over the first two consonants suggest that they comprise a single unit or constituent, the onset, while the lack of such constraints over a consonant followed by a vowel indicates that they are in separate parts of the syllable. On this view, the domain of phonotactic constraints is the syllabic constituent. Phonotactic arguments have been given by Selkirk (1982) to argue for the constituency of the nucleus and coda in English. For example, the constraints that hold between the vowel and a following off-glide in English (e.g. [ay] is a possible sequence but not [ew]) argue for their comprising the peak (or nucleus) of the syllable, and the restrictions that hold among the consonants in consonantal sequences at the end of a syllable (e.g. they cannot be of rising sonority) argue for the constituency of the coda. Furthermore, the argument from phonotactic constraints has been used to justify the rhyme as a constituent of the syllable. Researchers such as Halle and Vergnaud (1980) and Selkirk (1982) have observed that
there are restrictions on what nucleus can precede what coda. In an English syllable containing a diphthong followed by a consonant cluster, the consonant cluster must consist of coronal consonants (e.g. “kind” [kaynd] vs. the phonotactically impossible *[kaymp]).

An important issue that arises in the use of phonotactic constraints as a diagnostic for syllabic constituency concerns the particular nature of the phonotactic constraint. Davis & Hammond (1995) specifically argue against the use of phonotactic constraints that reference identity, OCP-type constraints, as a diagnostic for constituency. They note that these may hold between adjacent or non-adjacent phonemes that do not otherwise seem to comprise a single constituent. Both Davis and Hammond (1995) and Blevins (1995) note that it is sonority-based phonotactics that are the diagnostics. As observed by Blevins, in an English CCV sequence, the sonority value of the second consonant is restricted by the first one, not by the following vowel, thus suggesting that the first two consonants comprise a constituent. Another issue that arises in the discussion of the phonotactics of English and other languages is the patterning of s-clusters. For example, English syllables can begin with /sp/, /st/, / and sk/ but there are no non-s-obstruent clusters at the beginning of the syllable. This has led to suggestions that these s-clusters in English are phonologically single segments (Selkirk 1982), but they could just as well be analyzed with the initial /s/ of the cluster phonologically outside of the syllable.

A second type of evidence bearing on syllabic constituents comes from allophonic distribution, namely the distribution of the variant pronunciations of a phoneme. It is not uncommon for allophones of a phoneme to be associated with certain positions within the
syllable. Consider, for example, one pattern of the distribution of light and dark (velarized) /l/ in American English. Light /l/ occurs at the beginning of the syllable and as the second consonant in a syllable-initial consonant sequence (e.g. as in “play”). Dark /l/ occurs at the end of the syllable and as part of a syllable-final consonant sequence (e.g. as in “help”). One way to account for this distribution is by reference to syllabic constituents: light /l/ occurs as part of an onset and dark /l/ as part of a coda. Another case of allophonic distribution that seems to refer to syllabic constituents is German obstruent devoicing which has been analyzed as occurring when the obstruent is in coda position (Vennemann 1978). However, some researchers (e.g. Blevins 2003) have contended that such cases of allophonic distribution are better understood by position within the phonetic string rather than by invoking syllabic constituents.

Third, two types of external evidence that have been used to motivate syllabic constituents are evidence from speech errors (i.e. slips of the tongue) and language games. Speech errors often involve the movement of a phoneme or the exchange of phonemes or sequences of phonemes. Given this, researchers such as Shattuck-Hufnagel (1983), Laubstein (1987), and Davis (1988) have pointed out that the speech error evidence from English can be used to support the onset, nucleus, and coda as syllabic constituents. Among the common transposition errors (cited by Davis 1988 and references therein) are ones involving phoneme reversals such as the actual examples “caught torses” for “taught courses”, “bud begs” for “bed bugs”, and “stick neff” for “stiff neck”. In these errors, syllable-initial elements exchange with one another, vowels exchange with one another, and syllable-final elements exchange with one another.
Laubstein (1987:342) concludes, based on her investigation of such naturally occurring speech errors, that they support the division of the syllable into onset, nucleus, and coda, though not the rhyme. She maintains that “the [speech] errors support a root syllable node that is trinary branching, dominating an initial consonant or consonant cluster, a vowel or vowel glide sequence, and a final consonant or consonant cluster.” While the speech error evidence for syllabic constituents is suggestive, it is not conclusive given that there are some speech errors that indeed involve the exchange of other subsyllabic elements (such as “cassy put” for “pussy cat”).

Researchers such as Davis (1988, 1989), Barlow (2001) and Yip (2003) have brought language game data to bear on the issue of syllabic constituents. An underlying assumption is that if a language game requires the movement of phonemes or the insertion of phonemes, it does so in a way that reflects constituent structure. For instance, Davis (1989) contends that Pig Latin, in which the initial consonant sequence moves to the end of the word (e.g. pig → igpey and blast → astbley), provides evidence for the constituency of the onset in English. A caveat with the use of language games as evidence for constituency is that not all users of language games manipulate the language game in the same way. Barlow (2001) shows that some users of English Pig Latin only move the initial consonant of a consonant cluster to the end of the word, and moreover, speakers are quite inconsistent in their treatment of the coronal on-gl ide in words like “cute”. Thus, evidence from language games on their own may be inconclusive on specific issues of syllabic constituency.
Finally, a type of evidence that has played an important role in the discussion of syllabic constituency comes from processes that are sensitive to syllablic weight, such as the assignment of stress. Many languages divide syllables into two types according to syllabic weight: light syllables and heavy syllables. Heavy syllables are typically those that have a long vowel or a syllable-final consonant. A light syllable typically ends in a short vowel. Stress is then attracted onto some heavy syllable. In Latin, stress falls on a penultimate syllable if it is heavy, otherwise on the antepenultimate. This seems to support the rhyme as a constituent of the syllable since a heavy syllable would be one that has more than a single element in the rhyme. Detailed examination of the typology of stress (e.g. Hayes 1995), however, shows that in some languages only a long vowel makes a syllable heavy and not a coda consonant. This is somewhat problematic for the onset-rhyme division of the syllable since not all heavy rhymes are treated alike. Instead, such phenomena have been used to motivate the moraic view of the syllable (e.g. Hayes 1989) which abandons onset-rhyme division. On this view, the mora is considered a unit of syllable weight, such that a short vowel forms a single mora, a long vowel constitutes two morae, and a coda consonant may or may not be moraic depending on whether they make a syllable heavy. In Latin, thus, stress falls on the penultimate syllable if it contains a long vowel or if it ends in a consonant, that is, if it is bimoraic; otherwise, stress falls on the antepenultimate syllable. Within the moraic view of the syllable, the issue of the constituency of the onset is an independent matter. While Davis (1990) argues that syllable-initial consonants can still comprise a constituent within the syllable, most advocates of the moraic approach (e.g. McCarthy & Prince 1995) assume that the syllable
initial consonants are adjoined to the syllable and do not form an independent constituent on their own.

One of the reasons that the issue of syllabic constituency has remained controversial is that detailed examinations of individual languages often point to inconsistencies. Ideally, in a single language a variety of weight sensitive processes which, in addition to stress may include compensatory lengthening, reduplication, and aspects of tonal phonology, will treat all syllables with coda consonants alike, either as bimoraic or monomoraic. However, researchers such as Hyman (1992) have noted moraic mismatches whereby one weight-sensitive process in a language treats a CVC syllables as bimoraic but a different weight-sensitive process treats that same syllable as monomoraic. In this connection, Yip (2003) has provided a variety of examples where in a single language the same prenuclear glide may be treated as an onset element or a nucleus element depending on the speaker and the process involved. Such phenomena have led to suggestions that syllable structure is process specific, as in Vennemann (1984). A formal analysis of this view can be developed within optimality theory (e.g. Rosenthal 1997 and Rosenthal & van der Hulst 1999) where the realization of moraic elements is contextually dependent.

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