Apart from its empirical merit, reference to the syllable is advantageous from a theoretical point of view, since it offers a more economical and insightful perspective. For instance, in English words like *button* there are two syllables, the first of which contains the vowel **[ʌ]** as a nucleus and the second one the syllabic nasal. Additionally, a syllable may optionally contain consonants in the margins (i.e. onsets and codas). For example, in the Greek word **[ailiː V O] 'salty'** there are three syllables, the first (i.e. **[ail]**) consisting of a nucleus and a coda, the second (i.e. **[iV]**) of an onset and a nucleus, and the third (i.e. **[V O]**) of an onset, a nucleus and a coda. It is usually assumed that all languages have syllables, although it is occasionally reported in the literature (e.g. **[Himaa 1985 for Gokana]**) that syllables can be phonologically insignificant in the sense that no process makes reference to them.

A controversial issue is whether or not the syllable is a phonological or phonetic unit. According to many linguists (e.g. **[Ladefoged/Maddieson 1996, Zec 2007]**), the syllable is considered to be an abstract phonological constituent without clear phonetic correlates. For others this distinction is less clear; for instance, **[Blevins 1995]** observes mismatches between the phonological syllable and its phonetic representation. In particular, it may be the case that there are more syllables at the phonological level than peaks on the phonetic level. It has been suggested that in languages like Odawa, Modern Hebrew, English and Japanese, there are instances of vowel loss which seem to occur in the phonetic component, but not in the phonological component, where the vowels are retained. The converse has also been observed; in Maxakallí, the maximal phonological syllable is **[CV]**, but it can be phonetically realized with two phonetic peaks instead of one (i.e. **[CVC]**), indicating that a single phonological syllable may correspond to two phonetic peaks.

Although mismatches like these have led some researchers to challenge the syllable, there is nonetheless abundant evidence for its existence (see **[Blevins 1995 for details]**). First, there are numerous segmental processes which apply at edges of syllables. For instance, in Mataco (**[Claesson 1994]**), a syllable final uvular stop **[k]** turns into **[kʰ]** when preceded by a front vowel, e.g. **[niːq] → [nêkʰ]** (cf. **[niːq]**) 'she comes'. Reference to the syllable must be made, because this process is possible only when the segments in question are syllable-final, hence **[kə qa.ʦiː] (cf. *[kə kʰ a ʦiː]*)'she is there'** (**[Claesson 1994: 17]**). In Ligurian (**[Greni 1995]**) the nasals **[m n ɲ]** contrast in onset position, e.g. **[ra.mu] 'branch', [ra.eu] 'spider', [pe.na] 'pen', [pe.ɲa] 'penalty, pain'. However, this contrast is neutralized in favor of the velar nasal syllable-finally, both at the end of words, e.g. **[viːn] 'wine', [tən] 'even', [noʊ] 'not', [fən] 'fine', as well as word-medially, e.g. **[pum.pə] 'pump', [kaŋ.ɲaŋ.ɲa] 'bell', [veŋ.de] 'sell', [fiŋ.ze] 'pretend'. In many languages, a phonological rule of final devoicing occurs at the right edge of syllables. In German for example, voiced syllable-initial **[z]** in **[ai.zər ç] 'icy'** neutralizes to its voiceless counterpart word-finally, e.g. **[ɛu [ais] 'ice', or word-medially when another consonant follows as in [ai.zər lauf] 'skating race'** (**[Wetzels/Megaro 2001]**).

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way to capture phonological processes. As the data above illustrate, many rules are applicable at the end of words or medially when another consonant follows, i.e. in the context before \{#, C\}. Such a disjunction can be eliminated by stating that the rule applies at the right edge of a syllable.

In addition to segmental rules, suprasegmental processes (e.g. stress, tone, reduplication, lengthening) also make reference to syllables. For instance, in Araucanian (Echeverria/ Contreras 1985), the second syllable of a word receives primary stress and every syllable thereafter gets secondary stress, e.g. [wu: le] 'tomorrow', [t, i: pan.to] 'year', [e: lnu.mu. ju] 'give us', [e: lua. e.new] 'he will give me', [ki: muba. lu.wu. laj] 'he pretended not to know'. This system can be accounted for once reference to syllables and feet is made. In particular, Araucanian words are parsed into iambic feet from the beginning of the word rightward. More generally, a wide range of stress systems cross-linguistically can be understood by means of feet (see Hew 1995). Evidently, their admission in the theory presupposes syllables.

In Kikuyu (Clements 1984), an input high tone shifts rightwards by exactly one syllable, e.g. [to.mo-tó-ma.ya/...to.mo.to.má.ya] 'we send him/her', [to-má-tó-ra.ya/-...to.ma.to.ta.ya] 'we look at them', [to-má-tó-ma.ya/-...to.ma.to.ta.ya] 'we send them'. Timunog Murut reduplication (Penning 1971) appears as prelation in front of consonant-initial stems, e.g. [limo] 'five' – [li-limo] 'about five' and as inflexion in vowel-initial stems, e.g. [ulampo] – [u-la-lampo] (no gloss). Common in both forms is that the reduplicated portion is a open CV syllable. In Makonde (Kwue 2005), the stressed penultimate syllable gets lengthened, e.g. [ku: le ma] 'cultivates', [ku: li: mi la] 'to cultivate for', [ku: li: mac na] 'to cultivate each other'.

In addition to language-internal evidence, there is considerable language-external evidence in support of syllables. Native speakers commonly make active, albeit unconscious, use of syllables in a number of processes. In particular, the listeners' ability to judge a verse as metrically well-formed or not, implies their ability to access and count syllables and see whether they conform to a metrical schema (e.g. Leonard 2005). Speakers also use syllables in the construction of acronyms and in the formation of language games. With respect to the latter, Baginhal (1995 and references therein) for instance reports on French full syllable-reversal in words like [veri.tő] to [te.ri.vé] 'truth' and Fula transpositions of the type [deftə.re] to [te.re.def] 'book'. Crucially, both operations involve syllables.

Syllables have been argued to be indispensable in current phonological theory. But this has not always been so; in pre-generative and American structuralist phonology, opinions were split. Indicative of this disagreement is Probert (1955) and Koos (1966), who accepted and denied the syllable respectively. In early generative phonology, SPE assigned no formal status to the syllable; rather, the authors utilized segments – analyzed as unordered feature bundles – and various boundary symbols that corresponded to morpheme boundaries. While the exclusion of syllables constrained the profusion of phonological representations, this came at a grave cost since it entailed the proliferation of rules that missed important generalizations. For instance, in the case of German final devoicing, SPE-inspired analyses needed to refer to the disjunction involving a right word edge or a following consonant without offering an explanation as to what these two contexts have in common.

Within the generative tradition, a wealth of work soon emerged justifying the use of the syllable as a phonological constituent. This includes McCawley (1968), Fudge (1969), Kahn (1976) and Selkirk (1982), among others. More recently, however, the syllable has been challenged again. For instance, Steriade (1999) has argued that a number of phonotactic generalizations are best accounted for by means of perceptibility considerations that govern segments in strings rather than in syllables. Her approach can be illustrated with reference to aspiration is stops. Aspiration can either associate with the release of stops, as in post-aspirated [tʰ], or – less commonly – with its closure, as in pre-aspirated [t]. Steriade observes that post-aspiration contrasts are best maintained before sonorants, whereas pre-aspiration contrasts are best preserved after sonorants. Moreover, such contrasts tend to neutralize in the same positions within the string when obstruents, instead of sonorants, are involved. Utilizing the concept of licensing-by-cue – the idea that contrasts can be licensed in positions where they are more perceptible – this pattern can be understood by considering that the strongest cue for aspiration is the partial devoicing that can occur onto a neighbouring sound. Given that sonorants are ideal candidates for such devoicing due to their acoustic properties, it makes sense that aspiration contrasts best next to sonorants. A syllable-based approach on the other hand would need to make recourse to subsyllabic constituents to capture these facts. For instance, with regard to post-aspiration, it would need to say that the aspiration contrast is preserved in onsets and neutralized in codas. But certain empirical facts invalidate this claim. Evidence from metrics in Sanskrit suggests that word-medial post-aspirated stops syllabify as codas (e.g. [Vt SV]), where ‘S’ represents a sonorant) and not as onsets ([VT SV]), against the predictions of a syllable-based account.

In spite of these challenges, the syllable remains a fundamental concept in phonological theory and – still even today – generates much interest among theorists regarding its internal structure and organization (see van der Hulst/Ritter 1999 for a recent review).

Although many phonologists distinguish between three syllabic constituents (usually referred to as nucleus, mora and coda), such distinctions are by no means unanimously accepted. To exemplify, one approach argues that the syllable branches into onset and rhyme without a nucleus and a coda. Other treatments claim that the syllable branches into an onset and a rhyme and that the latter constituent branches into a nucleus and a coda. The latter two constituents are sometimes considered to be the domain for weight-related processes (cf. Belevins 1995 and references therein). Syllable weight refers to the property of syllables to act as heavy or light depending on their internal structure. Among other effects, heavy syllables usually attract stress or tone. Other frameworks dispense with the traditional syllabic constituents (i.e. onset, nucleus, coda, rhyme) altogether. For example, moraic theory (Hew 1989) introduces the mora, a unit of weight, and stipulates that only peaks (i.e. vowels) and consonants at the right edge of the syllable may be mora-bearing. This approach therefore requires no rhyme. More recently, Topalli (2010) argues for a revised moraic theory in which all segments within the syllable can contribute to syllable weight; thus, any segment can be moraic on a language-specific basis. Such model is reminiscent of other ‘flat’ syllable models like the one proposed by Davis (1985). In other frameworks, e.g. the Strict CV Theory (Lommelstamm 1996), a descendant of Government Phonology, the syllable branches into an onset and nucleus without admitting codas. Instead, the latter are syllabified as onsets of empty nuclei.

From the typological perspective, the four most common syllable types are the following: CV, V, CV.C and VC. Typological studies (e.g. Belevins 1995, Zec 2007) have shown that there are four types of languages: Languages with CV (e.g. Hua and Senoufo), languages with CV and V (e.g. Fijian and Cayuava), languages with CV and C (e.g. Klamath and Sedang), and languages with CV, V, CV and VC (e.g. Greek and English). CV is the universally preferred syllable, given that it occurs in all languages and that is the first one to be acquired during language acquisition (e.g. Levelt van de Vijver 2004). Its primacy also becomes evident when considering syllabification – the parsing of segments into syllables. Syllabification is believed not to be present in the underlying structure; rather, it is the outcome of rules or constraints – depending on the theoretical framework – while adhering to certain principles. One such principle is the Obligatory Onset Principle (Hoenig 1972), which states that onset formation precedes coda formation. Thus, a string like [...] should always be syllabified as [CV] rather than as [VCV]. Despite this cross-linguistic generalization, a handful of languages (e.g. Arrente, Bara Gaelic and Kunjen – especially its dialect Oy kangand; Belevins 1995), have been claimed to provide counterexamples to this statement in the sense that they lack CV syllables in favour of VC syllables, but the validity of the argumentation is in dispute.
Beyond rather simple CV or CVC syllables, there are many languages admitting syllables containing complex onsets (e.g. [CCV]) or complex codas (e.g. [CVC]), as in the English word *front* (front), which has both. A prerequisite for complex structures however is that the simple structures are also present in the language (see Levelt/B. De Vilver 2004 for examples). Thus, an impossible language is one with a CCV or a VCC syllable but without a CV or a VC one in its syllabic inventory.

The admissible combinations of consonants in onset and coda clusters (i.e. syllable phonotactics) is considered to be regulated by sonority requirements (see Raker 2002 for a thorough review) and in particular by the Sonority Sequencing Generalization, according to which sonority rises going from the left edge of the syllable to the nucleus – where it peaks – and then gradually declines in the coda. According to one version of the Sonority Hierarchy (Clahsen 1990), vowels are more sonorous than glides, glides are more sonorous than liquids, liquids more sonorous than nasals, and nasals more sonorous than obstruents. Given this Sonority Hierarchy, the Greek word *'elkiř-o* ‘sled’ will be syllabified as *'elkiř-o* rather than *'e.lijər-o*. This is because parsing the string [lk] heterosyllabically creates a better sonority profile with a smooth transition from coda [l] to onset [k], compared to the malformed sonority-wise complex onset [lk]. Moreover, syllabifying [lk] as an onset cluster achieves a welcome sonority rise as opposed to the contender [lk] which unnecessarily produces a closed syllable.

**Internal link**
- coda (Phonetics and Phonology)
- licensing by cue (Phonetics and Phonology)
- mora (Phonetics and Phonology)
- nucleus (1) (Phonetics and Phonology)
- onset (2) (Phonetics and Phonology)
- sonority hierarchy (Phonetics and Phonology)
- sonority sequencing generalization (Phonetics and Phonology)
- syllable weight (Phonetics and Phonology)

**External link**
- Silbe (Phonetik und Phonologie)

**Literature**


Koehler, K.J. [1966] Is the syllable a phonetic universal? In: J Ling 2: 207-208


