**ADVANCED TOPICS IN ENGLISH PHONOLOGY**

**by**

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[The English syllable (and word) *twelfths* /twɛlfθs/ is divided into the onset /tw/, the nucleus /ɛ/ and the coda /lfθs/; thus, it can be described as CCVCCCC (C = consonant, V = vowel). On this basis it is possible to form rules for which representations of phoneme classes may fill the cluster. For instance, English allows at most three consonants in an onset, but among native words under standard accents (and excluding a few obscure learned words such as *sphragistics*), phonemes in a three-consonantal onset are limited to the following scheme:[3] 36](#_Toc7164)

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**COURSE TITLE: ADVANCED TOPICS IN english**

**phonology**

**COURSE CODE: ENL 7302**

**HOURS TAUGHT: Three hours per week**

**PREREQUISITES: None**

# PURPOSE OF THE COURSE

* To avail students the opportunity to focus on aspects of English, stress and intonation, generally regarded as too complex to be handled at lower levels of undergraduate work.
* To equip the students with universally available option of procedures and principles capable of accounting for the intricate stress patterns in English as well as in many other languages of the world.

# EXPECTED LEARNING OUTCOMES

By the end of the course, students should be able to;

* To critically appraise the variety of models or approaches that have been proposed to account for stress in English.
* Be aware of how stress parameters interact with features and segmental processes in accounting for stress in English
* Be aware of how stress parameters interact with features and segmental processes in English in accounting for stress.
* Be able to identify the relevant stretched in which intonation applies
* Be able to identify the maximally prominent syllable or syllables in an intonational phrase
* Distinguish the specific time pattern operative in English

**Course Content**

* General phonological principles
* The features of English (Feature geometry/hierarchy)
* Derivations and rule ordering
* Autosegmental principles and their applicability to phonological processes in English.
* Stress and metrics
* Linear and non-linear models of accounting for stress
* A metrical analysis of English stress
* Stress parameters
* Phonology above the word (intonation)
* The main features of English intonation
* The phonological phase or tone unit and its internal organisation
* Intonation patterns
* Functions of intonation.

**MODE OF DELIVERY**

* Lectures
* Demonstrations
* Tutorials
* Written and oral exercises

**INSTRUCTIONAL MATERIALS AND/OR EQUIPMENT**

* Whiteboard and Markers
* Flip Charts
* LCD Projectors
* CDs, DVDs and Tapes

**COURSE ASSESSEMNT**

* Continuous written and/or oral tests 20%
* Group and individual assignments 20%
* End-of-semester /trimester examination 60%

**Total 100%**

**READING LIST**

Goldsmith, J (1990) Autosegmental and metrical Phonology. Blackwell: oxford

Goldsmith, J(ed) (1990) The Handbook of Phonological Theory Blackwell: Oxford

Gussenhoven, C. & Jacobs, H. (2005) Understanding Phonology. 2nd Edition. Hodder Arnold: London.

Hayes, B(1995) Metrical stress theory: Principles and case studies. University of Chicago Press.

Katamba, F. (1989) An Introduction to phonology, London, Longman

O’Grady, William , Michael Dobrovolsky and Francis Katamba (1997) *Contemporary Linguistics-—An Introduction* , United Kingdom: Longman

**Phonology**

**Phonology** is a branch of [linguistics](https://en.wikipedia.org/wiki/Linguistics) concerned with the systematic organization of [sounds](https://en.wikipedia.org/wiki/Sound) in languages. It has traditionally focused largely on the study of the [systems](https://en.wikipedia.org/wiki/System) of [phonemes](https://en.wikipedia.org/wiki/Phoneme) in particular [languages](https://en.wikipedia.org/wiki/Language) (and therefore used to be also called *phonemics*, or *phonematics*), but it may also cover any [linguistic analysis](https://en.wikipedia.org/wiki/Linguistic_analysis) either at a level beneath the word (including [syllable](https://en.wikipedia.org/wiki/Syllable), onset and [rime](https://en.wikipedia.org/wiki/Syllable_rime), [articulatory gestures](https://en.wikipedia.org/wiki/Articulatory_gestures), articulatory features, [mora](https://en.wikipedia.org/wiki/Mora_%28linguistics%29), etc.) or at all levels of language where [sound](https://en.wikipedia.org/wiki/Sound) is considered to be structured for conveying [linguistic meaning](https://en.wikipedia.org/wiki/Linguistic_meaning).

Phonology also includes the study of equivalent non-oral languages such as [ASL](https://en.wikipedia.org/wiki/ASL) or other [sign languages](https://en.wikipedia.org/wiki/Sign_language).

**Terminology**

The word 'phonology' (as in [*the phonology of English*](https://en.wikipedia.org/wiki/English_phonology)) can also refer to the phonological system (sound system) of a given language. This is one of the fundamental systems which a language is considered to comprise, like its [syntax](https://en.wikipedia.org/wiki/Syntax) and its [vocabulary](https://en.wikipedia.org/wiki/Vocabulary).

Phonology is often distinguished from [*phonetics*](https://en.wikipedia.org/wiki/Phonetics). While phonetics concerns the physical production, acoustic transmission and [perception](https://en.wikipedia.org/wiki/Perception) of the sounds of speech,[[1]](https://en.wikipedia.org/wiki/Phonology#cite_note-Lass1998-1)[[2]](https://en.wikipedia.org/wiki/Phonology#cite_note-Carr2003-2) phonology describes the way sounds function within a given language or across languages to encode meaning. For many linguists, phonetics belongs to [descriptive linguistics](https://en.wikipedia.org/wiki/Descriptive_linguistics), and phonology to [theoretical linguistics](https://en.wikipedia.org/wiki/Theoretical_linguistics), although establishing the phonological system of a language is necessarily an application of theoretical principles to analysis of phonetic evidence. Note that this distinction was not always made, particularly before the development of the modern concept of the [phoneme](https://en.wikipedia.org/wiki/Phoneme) in the mid-20th century. Some subfields of modern phonology have a crossover with phonetics in descriptive disciplines such as [psycholinguistics](https://en.wikipedia.org/wiki/Psycholinguistics) and [speech perception](https://en.wikipedia.org/wiki/Speech_perception), resulting in specific areas like [articulatory phonology](https://en.wikipedia.org/wiki/Articulatory_phonology) or [laboratory phonology](https://en.wikipedia.org/wiki/Laboratory_phonology).

**Derivation and definitions**

The word *phonology* comes from [Ancient Greek](https://en.wikipedia.org/wiki/Ancient_Greek) φωνή, *phōnḗ*, "voice, sound," and the suffix [*-logy*](https://en.wikipedia.org/wiki/-logy) (which is from Greek λόγος, *lógos*, "word, speech, subject of discussion"). Definitions of the term vary. [Nikolai Trubetzkoy](https://en.wikipedia.org/wiki/Nikolai_Trubetzkoy) in *Grundzüge der Phonologie* (1939) defines phonology as "the study of sound pertaining to the system of language," as opposed to phonetics, which is "the study of sound pertaining to the act of speech" (the distinction between *language* and *speech* being basically [Saussure](https://en.wikipedia.org/wiki/Ferdinand_de_Saussure)'s distinction between [*langue* and *parole*](https://en.wikipedia.org/wiki/Langue_and_parole)).[[3]](https://en.wikipedia.org/wiki/Phonology#cite_note-GdP-3) More recently, Lass (1998) writes that phonology refers broadly to the subdiscipline of linguistics concerned with the sounds of language, while in more narrow terms, "phonology proper is concerned with the function, behavior and organization of sounds as linguistic items."[[1]](https://en.wikipedia.org/wiki/Phonology#cite_note-Lass1998-1) According to Clark *et al.* (2007), it means the systematic use of [sound](https://en.wikipedia.org/wiki/Sound) to encode meaning in any spoken [human language](https://en.wikipedia.org/wiki/Human_language), or the field of linguistics studying this use.[[4]](https://en.wikipedia.org/wiki/Phonology#cite_note-ClarkEtal2007-4)

**History**

Early evidence for a systematic study of the sounds in a language appears in the 4th century BCE [*Ashtadhyayi*](https://en.wikipedia.org/wiki/Ashtadhyayi), a [Sanskrit](https://en.wikipedia.org/wiki/Sanskrit) grammar composed by Pāṇini. In particular the [*Shiva Sutras*](https://en.wikipedia.org/wiki/Shiva_Sutras), an auxiliary text to the *Ashtadhyayi*, introduces what may be considered a list of the phonemes of the Sanskrit language, with a notational system for them that is used throughout the main text, which deals with matters of [morphology](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29), [syntax](https://en.wikipedia.org/wiki/Syntax) and [semantics](https://en.wikipedia.org/wiki/Semantics).

The study of phonology as it exists today is defined by the formative studies of the 19th-century Polish scholar [Jan Baudouin de Courtenay](https://en.wikipedia.org/wiki/Jan_Baudouin_de_Courtenay), who (together with his students [Mikołaj Kruszewski](https://en.wikipedia.org/wiki/Miko%C5%82aj_Kruszewski) and [Lev Shcherba](https://en.wikipedia.org/wiki/Lev_Shcherba)) shaped the modern usage of the term [*phoneme*](https://en.wikipedia.org/wiki/Phoneme) in a series of lectures in 1876-1877. The word *phoneme* had been coined a few years earlier in 1873 by the French linguist [A. Dufriche-Desgenettes](https://en.wikipedia.org/wiki/A._Dufriche-Desgenettes). In a paper read at the 24th of May meeting of the [Société de Linguistique de Paris](https://en.wikipedia.org/wiki/Soci%C3%A9t%C3%A9_de_Linguistique_de_Paris),[[5]](https://en.wikipedia.org/wiki/Phonology#cite_note-5) Dufriche-Desgenettes proposed that *phoneme* serve as a one-word equivalent for the German *Sprachlaut*.[[6]](https://en.wikipedia.org/wiki/Phonology#cite_note-6) Baudouin de Courtenay's subsequent work, though often unacknowledged, is considered to be the starting point of modern phonology. He also worked on the theory of phonetic alternations (what is now called [allophony](https://en.wikipedia.org/wiki/Allophony) and [morphophonology](https://en.wikipedia.org/wiki/Morphophonology)), and may have had an influence on the work of Saussure according to [E. F. K. Koerner](https://en.wikipedia.org/wiki/E._F._K._Koerner).[[7]](https://en.wikipedia.org/wiki/Phonology#cite_note-7)

An influential school of phonology in the interwar period was the [Prague school](https://en.wikipedia.org/wiki/Prague_school). One of its leading members was Prince [Nikolai Trubetzkoy](https://en.wikipedia.org/wiki/Nikolai_Trubetzkoy), whose *Grundzüge der Phonologie* (*Principles of Phonology*),[[3]](https://en.wikipedia.org/wiki/Phonology#cite_note-GdP-3) published posthumously in 1939, is among the most important works in the field from this period. Directly influenced by Baudouin de Courtenay, Trubetzkoy is considered the founder of [morphophonology](https://en.wikipedia.org/wiki/Morphophonology), although this concept had also been recognized by de Courtenay. Trubetzkoy also developed the concept of the [*archiphoneme*](https://en.wikipedia.org/wiki/Archiphoneme). Another important figure in the Prague school was [Roman Jakobson](https://en.wikipedia.org/wiki/Roman_Jakobson), who was one of the most prominent linguists of the 20th century.

In 1968 [Noam Chomsky](https://en.wikipedia.org/wiki/Noam_Chomsky) and [Morris Halle](https://en.wikipedia.org/wiki/Morris_Halle) published [*The Sound Pattern of English*](https://en.wikipedia.org/wiki/The_Sound_Pattern_of_English) (SPE), the basis for [generative phonology](https://en.wikipedia.org/wiki/Generative_phonology). In this view, phonological representations are sequences of [segments](https://en.wikipedia.org/wiki/Segment_%28linguistics%29) made up of [distinctive features](https://en.wikipedia.org/wiki/Distinctive_feature). These features were an expansion of earlier work by Roman Jakobson, [Gunnar Fant](https://en.wikipedia.org/wiki/Gunnar_Fant), and Morris Halle. The features describe aspects of articulation and perception, are from a universally fixed set, and have the binary values + or −. There are at least two levels of representation: [underlying representation](https://en.wikipedia.org/wiki/Underlying_representation) and surface phonetic representation. Ordered phonological rules govern how [underlying representation](https://en.wikipedia.org/wiki/Underlying_representation) is transformed into the actual pronunciation (the so-called surface form). An important consequence of the influence SPE had on phonological theory was the downplaying of the syllable and the emphasis on segments. Furthermore, the generativists folded [morphophonology](https://en.wikipedia.org/wiki/Morphophonology) into phonology, which both solved and created problems.

Natural phonology is a theory based on the publications of its proponent David Stampe in 1969 and (more explicitly) in 1979. In this view, phonology is based on a set of universal [phonological processes](https://en.wikipedia.org/wiki/Phonological_process) that interact with one another; which ones are active and which are suppressed is language-specific. Rather than acting on segments, phonological processes act on [distinctive features](https://en.wikipedia.org/wiki/Distinctive_feature) within prosodic groups. Prosodic groups can be as small as a part of a syllable or as large as an entire utterance. Phonological processes are unordered with respect to each other and apply simultaneously (though the output of one process may be the input to another). The second most prominent natural phonologist is [Patricia Donegan](https://en.wikipedia.org/w/index.php?title=Patricia_Donegan&action=edit&redlink=1) (Stampe's wife); there are many natural phonologists in Europe, and a few in the U.S., such as Geoffrey Nathan. The principles of natural phonology were extended to [morphology](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29) by [Wolfgang U. Dressler](https://en.wikipedia.org/wiki/Wolfgang_U._Dressler), who founded natural morphology.

In 1976, [John Goldsmith](https://en.wikipedia.org/wiki/John_Goldsmith_%28linguist%29) introduced [autosegmental phonology](https://en.wikipedia.org/wiki/Autosegmental_phonology). Phonological phenomena are no longer seen as operating on *one* linear sequence of segments, called phonemes or feature combinations, but rather as involving *some parallel sequences* of features which reside on multiple tiers. Autosegmental phonology later evolved into [feature geometry](https://en.wikipedia.org/wiki/Feature_geometry), which became the standard theory of representation for theories of the organization of phonology as different as lexical phonology and [optimality theory](https://en.wikipedia.org/wiki/Optimality_theory).

[Government phonology](https://en.wikipedia.org/wiki/Government_phonology), which originated in the early 1980s as an attempt to unify theoretical notions of syntactic and phonological structures, is based on the notion that all languages necessarily follow a small set of [principles](https://en.wikipedia.org/wiki/Principle) and vary according to their selection of certain binary [parameters](https://en.wikipedia.org/wiki/Parameter). That is, all languages' phonological structures are essentially the same, but there is restricted variation that accounts for differences in surface realizations. Principles are held to be inviolable, though parameters may sometimes come into conflict. Prominent figures in this field include [Jonathan Kaye](https://en.wikipedia.org/wiki/Jonathan_Kaye_%28linguist%29), Jean Lowenstamm, Jean-Roger Vergnaud, Monik Charette, and John Harris.

In a course at the LSA summer institute in 1991, [Alan Prince](https://en.wikipedia.org/wiki/Alan_Prince) and [Paul Smolensky](https://en.wikipedia.org/wiki/Paul_Smolensky) developed [optimality theory](https://en.wikipedia.org/wiki/Optimality_theory)—an overall architecture for phonology according to which languages choose a pronunciation of a word that best satisfies a list of constraints ordered by importance; a lower-ranked constraint can be violated when the violation is necessary in order to obey a higher-ranked constraint. The approach was soon extended to morphology by [John McCarthy](https://en.wikipedia.org/wiki/John_McCarthy_%28linguist%29) and [Alan Prince](https://en.wikipedia.org/wiki/Alan_Prince), and has become a dominant trend in phonology. The appeal to phonetic grounding of constraints and representational elements (e.g. features) in various approaches has been criticized by proponents of 'substance-free phonology', especially by [Mark Hale](https://en.wikipedia.org/wiki/Mark_Hale) and [Charles Reiss](https://en.wikipedia.org/wiki/Charles_Reiss).[[8]](https://en.wikipedia.org/wiki/Phonology#cite_note-HaleReiss2008-8)[[9]](https://en.wikipedia.org/wiki/Phonology#cite_note-HaleReiss2000-9)

An integrated approach to phonological theory that combines synchronic and diachronic accounts to sound patterns was initiated with [Evolutionary Phonology](https://en.wikipedia.org/wiki/Evolutionary_Phonology) in recent years.[[10]](https://en.wikipedia.org/wiki/Phonology#cite_note-10)

**Analysis of phonemes**

An important part of traditional, pre-generative schools of phonology is studying which sounds can be grouped into distinctive units within a language; these units are known as [phonemes](https://en.wikipedia.org/wiki/Phoneme). For example, in English, the "p" sound in *pot* is [aspirated](https://en.wikipedia.org/wiki/Aspiration_%28phonetics%29) (pronounced [pʰ]) while that in *spot* is not aspirated (pronounced [p]). However, English speakers intuitively treat both sounds as variations ([allophones](https://en.wikipedia.org/wiki/Allophone)) of the same phonological category, that is of the phoneme /p/. (Traditionally, it would be argued that if an aspirated [pʰ] were interchanged with the unaspirated [p] in *spot*, native speakers of English would still hear the same words; that is, the two sounds are perceived as "the same" /p/.) In some other languages, however, these two sounds are perceived as different, and they are consequently assigned to different phonemes. For example, in [Thai](https://en.wikipedia.org/wiki/Thai_language), [Hindi](https://en.wikipedia.org/wiki/Hindi), and [Quechua](https://en.wikipedia.org/wiki/Quechua_languages), there are [minimal pairs](https://en.wikipedia.org/wiki/Minimal_pair) of words for which aspiration is the only contrasting feature (two words can have different meanings but with the only difference in pronunciation being that one has an aspirated sound where the other has an unaspirated one).



The vowels of modern (Standard) [Arabic](https://en.wikipedia.org/wiki/Arabic) and (Israeli) [Hebrew](https://en.wikipedia.org/wiki/Hebrew) from the phonemic point of view. Note the intersection of the two circles—the distinction between short *a*, *i* and *u* is made by both speakers, but Arabic lacks the mid articulation of short vowels, while Hebrew lacks the distinction of vowel length.



The vowels of modern (Standard) Arabic and (Israeli) Hebrew from the phonetic point of view. Note that the two circles are totally separate—none of the vowel-sounds made by speakers of one language is made by speakers of the other.

Part of the phonological study of a language therefore involves looking at data (phonetic [transcriptions](https://en.wikipedia.org/wiki/Transcription_%28linguistics%29) of the speech of [native speakers](https://en.wikipedia.org/wiki/Native_speaker)) and trying to deduce what the underlying [phonemes](https://en.wikipedia.org/wiki/Phoneme) are and what the sound inventory of the language is. The presence or absence of minimal pairs, as mentioned above, is a frequently used criterion for deciding whether two sounds should be assigned to the same phoneme. However, other considerations often need to be taken into account as well.

The particular contrasts which are phonemic in a language can change over time. At one time, [f] and [v], two sounds that have the same place and manner of articulation and differ in voicing only, were [allophones](https://en.wikipedia.org/wiki/Allophones) of the same phoneme in English, but later came to belong to separate phonemes. This is one of the main factors of historical change of languages as described in [historical linguistics](https://en.wikipedia.org/wiki/Historical_linguistics).

The findings and insights of speech perception and articulation research complicate the traditional and somewhat intuitive idea of interchangeable allophones being perceived as the same phoneme. First, interchanged allophones of the same phoneme can result in unrecognizable words. Second, actual speech, even at a word level, is highly co-articulated, so it is problematic to expect to be able to splice words into simple segments without affecting speech perception.

Different linguists therefore take different approaches to the problem of assigning sounds to phonemes. For example, they differ in the extent to which they require allophones to be phonetically similar. There are also differing ideas as to whether this grouping of sounds is purely a tool for linguistic analysis, or reflects an actual process in the way the human brain processes a language.

Since the early 1960s, theoretical linguists have moved away from the traditional concept of a phoneme, preferring to consider basic units at a more abstract level, as a component of [morphemes](https://en.wikipedia.org/wiki/Morpheme); these units can be called *morphophonemes*, and analysis using this approach is called [morphophonology](https://en.wikipedia.org/wiki/Morphophonology).

**Other topics in phonology**

In addition to the minimal units that can serve the purpose of differentiating meaning (the [phonemes](https://en.wikipedia.org/wiki/Phoneme)), phonology studies how sounds alternate, i.e. replace one another in different forms of the same morpheme ([allomorphs](https://en.wikipedia.org/wiki/Allomorph)), as well as, for example, [syllable](https://en.wikipedia.org/wiki/Syllable) structure, [stress](https://en.wikipedia.org/wiki/Stress_%28linguistics%29), [feature geometry](https://en.wikipedia.org/wiki/Feature_geometry), [accent](https://en.wikipedia.org/wiki/Accent_%28phonetics%29), and [intonation](https://en.wikipedia.org/wiki/Intonation_%28linguistics%29).

Phonology also includes topics such as [phonotactics](https://en.wikipedia.org/wiki/Phonotactics) (the phonological constraints on what sounds can appear in what positions in a given language) and [phonological alternation](https://en.wikipedia.org/wiki/Alternation_%28linguistics%29) (how the pronunciation of a sound changes through the application of [phonological rules](https://en.wikipedia.org/wiki/Phonological_rule), sometimes in a given order which can be [feeding](https://en.wikipedia.org/wiki/Feeding_order) or [bleeding](https://en.wikipedia.org/wiki/Bleeding_order),[[11]](https://en.wikipedia.org/wiki/Phonology#cite_note-11)) as well as [prosody](https://en.wikipedia.org/wiki/Prosody_%28linguistics%29), the study of [suprasegmentals](https://en.wikipedia.org/wiki/Suprasegmental) and topics such as [stress](https://en.wikipedia.org/wiki/Stress_%28linguistics%29) and [intonation](https://en.wikipedia.org/wiki/Intonation_%28linguistics%29).

The principles of phonological analysis can be applied independently of [modality](https://en.wikipedia.org/wiki/Modality_%28semiotics%29) because they are designed to serve as general analytical tools, not language-specific ones. The same principles have been applied to the analysis of [sign languages](https://en.wikipedia.org/wiki/Sign_language) (see [Phonemes in sign languages](https://en.wikipedia.org/wiki/Phoneme#Phonemes_in_sign_languages)), even though the sub-lexical units are not instantiated as speech sounds.

**English phonology**

Like many other languages, [English](https://en.wikipedia.org/wiki/English_language) has wide variation in [pronunciation](https://en.wikipedia.org/wiki/Pronunciation), both [historically](https://en.wikipedia.org/wiki/History_of_the_English_language) and from [dialect to dialect](https://en.wikipedia.org/wiki/List_of_dialects_of_the_English_language). In general, however, the regional dialects of English share a largely similar (but not identical) [phonological](https://en.wikipedia.org/wiki/Phonology) system. Among other things, most dialects have [vowel reduction](https://en.wikipedia.org/wiki/Vowel_reduction) in [unstressed](https://en.wikipedia.org/wiki/Unstressed) [syllables](https://en.wikipedia.org/wiki/Syllable) and a complex set of [phonological features](https://en.wikipedia.org/wiki/Phonological_feature) that distinguish [fortis and lenis](https://en.wikipedia.org/wiki/Fortis_and_lenis) [consonants](https://en.wikipedia.org/wiki/Consonant) ([stops](https://en.wikipedia.org/wiki/Stop_consonant), [affricates](https://en.wikipedia.org/wiki/Affricate), and [fricatives](https://en.wikipedia.org/wiki/Fricative)). Most dialects of English preserve the consonant /w/ (spelled ⟨w⟩) and many preserve /θ, ð/ (spelled ⟨th⟩), while most other Germanic languages have shifted them to /v/ and /t, d/: compare English *will* [/wɪl/](https://en.wikipedia.org/wiki/Help%3AIPA/English) ( [listen](https://upload.wikimedia.org/wikipedia/commons/6/67/En-us-will.ogg)) and *then* [/ðɛn/](https://en.wikipedia.org/wiki/Help%3AIPA/English) ( [listen](https://upload.wikimedia.org/wikipedia/commons/a/a5/En-us-then.ogg)) with German [*will*](https://en.wiktionary.org/wiki/will#German) [[vɪl]](https://en.wikipedia.org/wiki/Help%3AIPA/Standard_German) ( [listen](https://upload.wikimedia.org/wikipedia/commons/8/8d/De-will.ogg)) ('want') and [*denn*](https://en.wiktionary.org/wiki/denn#German) [[dɛn]](https://en.wikipedia.org/wiki/Help%3AIPA/Standard_German) ( [listen](https://upload.wikimedia.org/wikipedia/commons/9/91/De-denn.ogg)) ('because').

Phonological analysis of English often concentrates on or uses, as a reference point, one or more of the [prestige](https://en.wikipedia.org/wiki/Prestige_%28sociolinguistics%29) or [standard](https://en.wikipedia.org/wiki/Standard_language) accents, such as [Received Pronunciation](https://en.wikipedia.org/wiki/Received_Pronunciation) for [England](https://en.wikipedia.org/wiki/England), [General American](https://en.wikipedia.org/wiki/General_American) for the [United States](https://en.wikipedia.org/wiki/United_States), and [General Australian](https://en.wikipedia.org/wiki/Australian_English) for [Australia](https://en.wikipedia.org/wiki/Australia). Nevertheless, many other dialects of English are spoken, which have developed independently from these standardized accents, particularly regional dialects. Information about these standardized accents functions only as a *limited* guide to all of **English phonology**, which one can later expand upon once one becomes more familiar with some of the many other dialects of English that are spoken.

**Phonemes**

A [phoneme](https://en.wikipedia.org/wiki/Phoneme) of a language or dialect is an [abstraction](https://en.wikipedia.org/wiki/Abstraction) of a [speech sound](https://en.wikipedia.org/wiki/Speech_sound) or of a group of different sounds which are all perceived to have the same function by speakers of that particular language or dialect. For example, the English word *through* consists of three phonemes: the initial "th" sound, the "r" sound, and an "oo" vowel sound. Notice that the phonemes in this and many other English words do not always correspond directly to the letters used to spell them (English [orthography](https://en.wikipedia.org/wiki/Orthography) is not as strongly [phonemic](https://en.wikipedia.org/wiki/Phonemic_orthography) as that of many other languages).

The number and distribution of phonemes in English vary from dialect to dialect, and also depend on the interpretation of the individual researcher. The number of consonant phonemes is generally put at 24 (or slightly more). The number of vowels is subject to greater variation; in the system presented on this page there are 20 vowel phonemes in [Received Pronunciation](https://en.wikipedia.org/wiki/Received_Pronunciation), 14–16 in [General American](https://en.wikipedia.org/wiki/General_American) and 20–21 in Australian English (CITE). The pronunciation keys used in dictionaries generally contain a slightly greater number of symbols than this, to take account of certain sounds used in foreign words and certain noticeable distinctions that may not be—strictly speaking—phonemic.

**Consonants**

The following table shows the 24 consonant phonemes found in most dialects of English, in addition to /x/, whose distribution is more limited. [Fortis](https://en.wikipedia.org/wiki/Fortis_and_lenis) consonants are always [voiceless](https://en.wikipedia.org/wiki/Voicelessness), [aspirated](https://en.wikipedia.org/wiki/Aspirated_consonant) in [syllable onset](https://en.wikipedia.org/wiki/Syllable_onset) (except in clusters beginning with /s/), and sometimes also [glottalized](https://en.wikipedia.org/wiki/Glottalization) to an extent in [syllable coda](https://en.wikipedia.org/wiki/Syllable_coda) (most likely to occur with /t/, see [T-glottalization](https://en.wikipedia.org/wiki/T-glottalization)), while lenis consonants are always [unaspirated](https://en.wikipedia.org/wiki/Unaspirated_consonant) and un-glottalized, and generally partially or fully [voiced](https://en.wikipedia.org/wiki/Voice_%28phonetics%29). The alveolars are usually [apical](https://en.wikipedia.org/wiki/Apical_consonant), i.e. pronounced with the tip of the tongue touching or approaching the roof of the mouth, though some speakers produce them [laminally](https://en.wikipedia.org/wiki/Laminal_consonant), i.e. with the blade of the tongue.[[1]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERogers201420-1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | [**Labial**](https://en.wikipedia.org/wiki/Labial_consonant) | [**Dental**](https://en.wikipedia.org/wiki/Dental_consonant) | [**Alveolar**](https://en.wikipedia.org/wiki/Alveolar_consonant) | [**Post-alveolar**](https://en.wikipedia.org/wiki/Postalveolar_consonant) | [**Palatal**](https://en.wikipedia.org/wiki/Palatal_consonant) | [**Velar**](https://en.wikipedia.org/wiki/Velar_consonant) | [**Glottal**](https://en.wikipedia.org/wiki/Glottal_consonant) |
| [**Nasal**](https://en.wikipedia.org/wiki/Nasal_consonant) | [m](https://en.wikipedia.org/wiki/Bilabial_nasal)1 |  | [n](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_nasals#Alveolar)1 |  |  | [ŋ](https://en.wikipedia.org/wiki/Velar_nasal) |  |
| [**Plosive**](https://en.wikipedia.org/wiki/Plosive)**/**[**affricate**](https://en.wikipedia.org/wiki/Affricate) | [**fortis**](https://en.wikipedia.org/wiki/Fortis_and_lenis) | [p](https://en.wikipedia.org/wiki/Voiceless_bilabial_stop) |  | [t](https://en.wikipedia.org/wiki/Voiceless_dental_and_alveolar_stops#Alveolar) | [t͡ʃ](https://en.wikipedia.org/wiki/Voiceless_palato-alveolar_affricate) |  | [k](https://en.wikipedia.org/wiki/Voiceless_velar_stop) |  |
| [**lenis**](https://en.wikipedia.org/wiki/Fortis_and_lenis) | [b](https://en.wikipedia.org/wiki/Voiced_bilabial_stop) |  | [d](https://en.wikipedia.org/wiki/Voiced_dental_and_alveolar_stops#Alveolar) | [d͡ʒ](https://en.wikipedia.org/wiki/Voiced_palato-alveolar_affricate) |  | [ɡ](https://en.wikipedia.org/wiki/Voiced_velar_stop) |  |
| [**Fricative**](https://en.wikipedia.org/wiki/Fricative) | **fortis** | [f](https://en.wikipedia.org/wiki/Voiceless_labiodental_fricative) | [θ](https://en.wikipedia.org/wiki/Voiceless_dental_fricative) | [s](https://en.wikipedia.org/wiki/Voiceless_alveolar_fricative#Voiceless_alveolar_sibilant) | [ʃ](https://en.wikipedia.org/wiki/Voiceless_postalveolar_fricative) |  | [x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative)2 | [h](https://en.wikipedia.org/wiki/Voiceless_glottal_fricative) |
| **lenis** | [v](https://en.wikipedia.org/wiki/Voiced_labiodental_fricative) | [ð](https://en.wikipedia.org/wiki/Voiced_dental_fricative) | [z](https://en.wikipedia.org/wiki/Voiced_alveolar_fricative#Voiced_alveolar_sibilant) | [ʒ](https://en.wikipedia.org/wiki/Voiced_postalveolar_fricative) |  |  |
| [**Approximant**](https://en.wikipedia.org/wiki/Approximant) |  |  | [l](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_lateral_approximants)1 | [r](https://en.wikipedia.org/wiki/Alveolar_and_postalveolar_approximants)5 | [j](https://en.wikipedia.org/wiki/Palatal_approximant#Palatal)4 | [w](https://en.wikipedia.org/wiki/Voiced_labio-velar_approximant)3 |  |

1. Most varieties of English have [syllabic consonants](https://en.wikipedia.org/wiki/Syllabic_consonant) in some words, principally [l̩, m̩, n̩], for example at the end of *bottle*, *rhythm* and *button*. In such cases, no phonetic vowel is pronounced between the last two consonants, and the last consonant forms a [syllable](https://en.wikipedia.org/wiki/Syllable) on its own. Syllabic consonants are generally transcribed with a vertical line under the consonant letter, so that phonetic transcription of *bottle* would be [ˈbɒtl̩], [ˈbɑɾl̩], or [ˈbɔɾl̩] in RP, GA, and Australian respectively, and for *button* [ˈbʌʔn̩]. In theory, such consonants could be analyzed as individual phonemes. However, this would add several extra consonant phonemes to the inventory for English,[[2]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach2009100–1-2) and phonologists prefer to identify syllabic nasals and [liquids](https://en.wikipedia.org/wiki/Liquid_consonant) phonemically as /ə[C](https://en.wikipedia.org/wiki/Consonant)/.[[3]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEKreidler200484-3)[[4]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells198255-4) Thus *button* is phonemically /ˈbʌtən/ or /ˈbɐtən/ and *bottle* is phonemically /ˈbɒtəl/, /ˈbɑtəl/, or /ˈbɔtəl/.
2. The [voiceless velar fricative](https://en.wikipedia.org/wiki/Voiceless_velar_fricative) /x/ is mainly used in [Hiberno-](https://en.wikipedia.org/wiki/Hiberno-English), [Scottish](https://en.wikipedia.org/wiki/Scottish_English), [South African](https://en.wikipedia.org/wiki/South_African_English) and [Welsh English](https://en.wikipedia.org/wiki/Welsh_English); words with /x/ in Scottish accents tend to be pronounced with /k/ in other dialects. The velar fricative sometimes appears in recent [loanwords](https://en.wikipedia.org/wiki/Loanword) such as *chutzpah*. Under the influence of Welsh and Afrikaans, the actual phonetic realization of /x/ in Welsh English and White South African English is uvular [[χ](https://en.wikipedia.org/wiki/Voiceless_uvular_fricative)], rather than velar [[x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative)].[[5]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982389,_619-5)[[6]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTETench1990132-6)[[7]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBowerman2004939-7) Dialects do not necessarily agree on the exact words in which /x/ appears; for instance, in Welsh English it appears in loanwords from Welsh (such as [*Amlwch*](https://en.wikipedia.org/wiki/Amlwch) /ˈæmlʊx/), whereas in White South African English it appears only in loanwords from Afrikaans or Xhosa (such as *gogga* /ˈxɒxə/ 'insect').[[5]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982389,_619-5)[[7]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBowerman2004939-7)
3. In some conservative accents in Scotland, Ireland, the southern United States, and New England, the digraph ⟨wh⟩ in words like *which* and *whine* represents a voiceless *w* sound [ʍ], a [voiceless labiovelar fricative](https://en.wikipedia.org/wiki/Voiceless_labio-velar_approximant)[[8]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2008230-8)[[9]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEMcMahon200231-9)[[10]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGiegerich199236-10) or [approximant](https://en.wikipedia.org/wiki/Voiceless_labio-velar_approximant),[[11]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTELadefoged200668-11) which contrasts with the voiced *w* of *witch* and *wine*. In most dialects, this sound is lost, and is pronounced as a voiced *w* (the [*wine*–*whine* merger](https://en.wikipedia.org/wiki/Phonological_history_of_wh#Wine–whine_merger)). Phonemically this sound is analysed as a consonant cluster /hw/, rather than as a separate phoneme \*/ʍ/. Thus *which* and *whine* are transcribed phonemically as /hwɪtʃ/ and /hwaɪn/. This does not mean that such speakers actually pronounce [h] followed by [w]: the phonemic transcription /hw/ is simply a convenient way of representing a single sound [ʍ] without analysing such dialects as having an extra phoneme.[[12]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach200943-12)
4. Similarly, the sound at the beginning of *huge* in most accents[[*verification needed*](https://en.wikipedia.org/wiki/Wikipedia%3AVerifiability)] is a [voiceless palatal fricative](https://en.wikipedia.org/wiki/Voiceless_palatal_fricative) [ç], but this is analysed phonemically as the consonant cluster /hj/ so that *huge* is transcribed /hjuːdʒ/. As with /hw/, this does not mean that speakers pronounce [h] followed by [j]; the phonemic transcription /hj/ is simply a convenient way of representing the single sound [ç].[[12]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach200943-12) The [*yod*-dropping](https://en.wikipedia.org/wiki/Phonological_history_of_English_consonant_clusters#Yod-dropping) found in [Norfolk dialect](https://en.wikipedia.org/wiki/Norfolk_dialect) means that the traditional Norfolk pronunciation of *huge* is [hʊudʒ] and not [çuːdʒ].
5. This phoneme is conventionally transcribed with the basic Latin letter ⟨r⟩ (the IPA symbol for the [alveolar trill](https://en.wikipedia.org/wiki/Alveolar_trill)), even though its pronunciation is usually a [postalveolar approximant](https://en.wikipedia.org/wiki/Postalveolar_approximant) [ɹ̠]. The trill does exist but it is rare, found only in [Scottish](https://en.wikipedia.org/wiki/Scottish_English) dialects and sporadically in [Received Pronunciation](https://en.wikipedia.org/wiki/Received_Pronunciation) preceding a stressed vowel in highly emphatic speech or when placing special emphasis on a word. See [Pronunciation of English /r/](https://en.wikipedia.org/wiki/Pronunciation_of_English_/r/).
6. The [postalveolar consonants](https://en.wikipedia.org/wiki/Postalveolar_consonant) /tʃ, dʒ, ʃ, ʒ, r/ are also often slightly [labialized](https://en.wikipedia.org/wiki/Labialization): [tʃʷ dʒʷ ʃʷ ʒʷ ɹ̠ʷ].

**Consonant examples**

The following table shows typical examples of the occurrence of the above consonant phonemes in words.

|  |  |
| --- | --- |
| **Fortis** | **Lenis** |
| /[p](https://en.wikipedia.org/wiki/Voiceless_bilabial_stop)/ | **p**it | /[b](https://en.wikipedia.org/wiki/Voiced_bilabial_stop)/ | **B**it |
| /[t](https://en.wikipedia.org/wiki/Voiceless_dental_and_alveolar_stops#Alveolar)/ | **t**in | /[d](https://en.wikipedia.org/wiki/Voiced_dental_and_alveolar_stops#Alveolar)/ | **D**in |
| /[k](https://en.wikipedia.org/wiki/Voiceless_velar_stop)/ | **c**ut | /[ɡ](https://en.wikipedia.org/wiki/Voiced_velar_stop)/ | **G**ut |
| /[tʃ](https://en.wikipedia.org/wiki/Voiceless_palato-alveolar_affricate%22%20%5Co%20%22Voiceless%20palato-alveolar%20affricate)/ | **ch**eap | /[dʒ](https://en.wikipedia.org/wiki/Voiced_palato-alveolar_affricate%22%20%5Co%20%22Voiced%20palato-alveolar%20affricate)/ | **J**eep |
| /[f](https://en.wikipedia.org/wiki/Voiceless_labiodental_fricative)/ | **f**at | /[v](https://en.wikipedia.org/wiki/Voiced_labiodental_fricative)/ | **V**at |
| /[θ](https://en.wikipedia.org/wiki/Voiceless_dental_fricative)/ | **th**igh | /[ð](https://en.wikipedia.org/wiki/Voiced_dental_fricative)/ | **Th**y |
| /[s](https://en.wikipedia.org/wiki/Voiceless_alveolar_fricative#Voiceless_alveolar_sibilant)/ | **s**ap | /[z](https://en.wikipedia.org/wiki/Voiced_alveolar_fricative#Voiced_alveolar_sibilant)/ | **Z**ap |
| /[ʃ](https://en.wikipedia.org/wiki/Voiceless_postalveolar_fricative)/ | dilu**ti**on | /[ʒ](https://en.wikipedia.org/wiki/Voiced_postalveolar_fricative)/ | delu**si**on |
| /[x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative)/ | lo**ch** |  |
| /[h](https://en.wikipedia.org/wiki/Voiceless_glottal_fricative)/ | **h**am |  |
|  | /[m](https://en.wikipedia.org/wiki/Bilabial_nasal)/ | **M**ap |
|  | /[n](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_nasals#Alveolar)/ | Thi**n** |
|  | /[ŋ](https://en.wikipedia.org/wiki/Velar_nasal)/ | Thi**ng** |
|  | /[j](https://en.wikipedia.org/wiki/Palatal_approximant#Palatal)/ | **Y**es |
|  | /[w](https://en.wikipedia.org/wiki/Voiced_labio-velar_approximant)/ | **W**e |
|  | /[r](https://en.wikipedia.org/wiki/Postalveolar_approximant)/ | **R**un |
|  | /[l](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_lateral_approximants)/ | **L**eft |

**Sonorants**

1. The pronunciation of /l/ varies by dialect:
	1. Received Pronunciation has two main allophones of /l/: the clear or plain [l], and the dark or [velarized](https://en.wikipedia.org/wiki/Velarization) [ɫ]. The clear variant is used before vowels when they are in the same syllable, and the dark variant when the /l/ precedes a consonant or is in syllable-final position before silence.
	2. In South Wales, Ireland, and the Caribbean, /l/ is often always clear, and in North Wales, Scotland, Australia, New Zealand and Canada it is always dark.
	3. In General American, /l/ is generally dark, but to varying degrees: before stressed vowels it is neutral or only slightly velarized.[[13]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982490-13) In southern U.S. accents it is noticeably clear between vowels, and in some other positions.[[14]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982550-14)
	4. In urban accents across England and Scotland, as well as New Zealand and some parts of the United States, /l/ can be pronounced as an approximant or [semivowel](https://en.wikipedia.org/wiki/Semivowel) ([w], [o], [ʊ]) at the end of a syllable ([*l*-vocalization](https://en.wikipedia.org/wiki/L-vocalization)).
2. Depending on dialect, /r/ has at least the following allophones in varieties of English around the world:
	1. [postalveolar approximant](https://en.wikipedia.org/wiki/Postalveolar_approximant) [ɹ̠] (the most common realization of the /r/ phoneme, occurring in most dialects, RP and General American included)
	2. [retroflex approximant](https://en.wikipedia.org/wiki/Retroflex_approximant) [ɻ] (occurs in most Irish dialects and some American dialects)
	3. [labiodental approximant](https://en.wikipedia.org/wiki/Labiodental_approximant) [ʋ] (occurs in south-east England and some London accents; known as [*r*-labialization](https://en.wikipedia.org/wiki/R-labialization))
	4. [alveolar flap](https://en.wikipedia.org/wiki/Alveolar_flap) [ɾ] (occurs in most Scottish and some South African dialects, some conservative dialects in England and Ireland; not to be confused with [flapping](https://en.wikipedia.org/wiki/Flapping) of /t/ and /d/)
	5. [alveolar trill](https://en.wikipedia.org/wiki/Alveolar_trill) [r] (occurs in some very conservative Scottish dialects)
	6. [voiced uvular fricative](https://en.wikipedia.org/wiki/Voiced_uvular_fricative) [ʁ] (occurs in northern Northumbria, largely disappeared; known as the [Northumbrian burr](https://en.wikipedia.org/wiki/Northumbrian_burr))
3. In most dialects /r/ is [labialized](https://en.wikipedia.org/wiki/Labialized) [ɹ̠ʷ] in many positions, as in *reed* [ɹ̠ʷiːd] and *tree* [tɹ̠̊ʷiː]; in the latter case, the /t/ may be slightly labialized as well.[[15]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTELadefoged200155-15)
4. In some [rhotic accents](https://en.wikipedia.org/wiki/Rhoticity_in_English), such as General American, /r/ when not followed by a vowel is realized as an [r-coloring](https://en.wikipedia.org/wiki/R-colored_vowel) of the preceding vowel or its coda: *nurse* [ˈnɚs], *butter* [ˈbʌtɚ].
5. The distinctions between the nasals are [neutralized](https://en.wikipedia.org/wiki/Phoneme#Neutralization) in some environments. For example, before a final /p/, /t/ or /k/ there is nearly always only one nasal sound that can appear in each case: [m], [n] or [ŋ] respectively (as in the words *limp*, *lint*, *link* – note that the *n* of *link* is pronounced [ŋ]). This effect can even occur across syllable or word boundaries, particularly in stressed syllables: *synchrony* is pronounced [ˈsɪŋkɹəni] whereas *synchronic* may be pronounced either as [sɪŋˈkɹɒnɪk] or as [sɪnˈkɹɒnɪk]. For other possible syllable-final combinations, see [§ Coda](https://en.wikipedia.org/wiki/English_phonology#Coda) in the Phonotactics section below.

**Obstruents**

In most dialects, the fortis stops and affricate /p, t, tʃ, k/ have various different allophones, and are distinguished from the lenis stops and affricate /b, d, dʒ, ɡ/ by several phonetic features.[[16]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECelce-MurciaBrintonGoodwin199662–67-16)

1. The allophones of the fortes /p, t, tʃ, k/ include:
	1. [aspirated](https://en.wikipedia.org/wiki/Aspiration_%28phonetics%29) [pʰ, tʰ, kʰ] when they occur at the beginning of a word, as in ***t****omato*, ***t****rip*, or at the beginning of a [stressed](https://en.wikipedia.org/wiki/Lexical_stress) syllable in the middle of a word, as in *po****t****ato*. They are unaspirated [p, t, k] after /s/ within the same syllable, as in *s****t****an, s****p****an, s****c****an*, and at the ends of syllables, as in *mat*, *map*, *mac*.[[17]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach200926–28-17) The voiceless fricatives are always unaspirated, but a notable exception to this are English-speaking areas of Wales, where they are often aspirated.[[18]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982388-18)
	2. In many accents of English, fortis stops /p, t, k, tʃ/ are [glottalized](https://en.wikipedia.org/wiki/Glottalization) in some positions. This may be heard either as a glottal stop preceding the oral closure ("pre-glottalization" or "glottal reinforcement") or as a substitution of the glottal stop [ʔ] for the oral stop (glottal replacement). /tʃ/ can only be pre-glottalized. Pre-glottalization normally occurs in British and American English when the fortis consonant phoneme is followed by another consonant or when the consonant is in final position. Thus *football* and *catching* are often pronounced [ˈfʊʔtbɔːl] and [ˈkæʔtʃɪŋ], respectively. Glottal replacement often happens in cases such as those just given, so that *football* is frequently pronounced [ˈfʊʔbɔːl]. In addition, however, glottal replacement is increasingly common in British English when /t/ occurs between vowels if the preceding vowel is stressed; thus *getting better* is often pronounced by younger speakers as [ˈɡeʔɪŋ ˌbeʔə].[[19]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2008179–180-19) Such [*t*-glottalization](https://en.wikipedia.org/wiki/T-glottalization) also occurs in many British regional accents, including [Cockney](https://en.wikipedia.org/wiki/Cockney_English), where it can also occur at the end of words, and where /p/ and /k/ are sometimes treated the same way.[[20]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982323-20)
2. Among stops, both fortes and lenes:
	1. May have [no audible release](https://en.wikipedia.org/wiki/No_audible_release) [p̚, b̚, t̚, d̚, k̚, ɡ̚] in the word-final position.[[21]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECelce-MurciaBrintonGoodwin199664-21)[[22]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2014173–182-22) These allophones are more common in North America than Great Britain.[[21]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECelce-MurciaBrintonGoodwin199664-21)
	2. Always have a 'masked release' before another plosive or affricate (as in *ru****bb****ed* [ˈrʌˑb̚d̥]), i.e. the release of the first stop is made after the closure of the second stop. This also applies when the following stop is [homorganic](https://en.wikipedia.org/wiki/Homorganic_consonants) (articulated in the same place), as in *to****p p****layer*.[[23]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2014170_and_173–182-23) A notable exception to this is [Welsh English](https://en.wikipedia.org/wiki/Welsh_English), where stops are usually released in this environment.[[18]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982388-18)
	3. The affricates /tʃ, dʒ/ have a mandatory fricative release in all environments.[[24]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2014190-24)
3. Very often in the United States and Canada, and less frequently in Australia[[25]](https://en.wikipedia.org/wiki/English_phonology#cite_note-25) and New Zealand,[[26]](https://en.wikipedia.org/wiki/English_phonology#cite_note-26) both /t/ and /d/ can be [pronounced as a voiced flap](https://en.wikipedia.org/wiki/Flapping) [ɾ] in certain positions: when they come between a preceding stressed vowel (possibly with intervening /r/) and precede an unstressed vowel or [syllabic](https://en.wikipedia.org/wiki/Syllabic_consonant) /l/. Examples include *wa****t****er*, *bo****tt****le*, *pe****t****al*, *pe****dd****le* (the last two words sound alike when flapped). The flap may even appear at word boundaries, as in *pu****t*** *it on*. When the combination /nt/ appears in such positions, some American speakers pronounce it as a [nasalized](https://en.wikipedia.org/wiki/Nasalization) flap that may become indistinguishable from /n/, so *winter* [ˈwɪɾ̃ɚ] may be pronounced similarly or identically to *winner* [ˈwɪnɚ].[[27]](https://en.wikipedia.org/wiki/English_phonology#cite_note-27)

**Vowels**

English has a particularly large number of vowel phonemes, and on top of that the [vowels](https://en.wikipedia.org/wiki/Vowel) of English differ considerably between dialects. Because of this, corresponding vowels may be transcribed with various symbols depending on the dialect under consideration. When considering English as a whole, [lexical sets](https://en.wikipedia.org/wiki/Lexical_set) are often used, each named by a word containing the vowel or vowels in question. For example, the LOT set consists of words which, like *lot*, have /ɒ/ in [Received Pronunciation](https://en.wikipedia.org/wiki/Received_Pronunciation) and /ɑ/ in [General American](https://en.wikipedia.org/wiki/General_American). The "LOT vowel" then refers to the vowel that appears in those words in whichever dialect is being considered, or (at a greater level of [abstraction](https://en.wikipedia.org/wiki/Abstraction)) to a [diaphoneme](https://en.wikipedia.org/wiki/Diaphoneme) which transcends all dialects. A commonly used system of lexical sets, devised by [John C. Wells](https://en.wikipedia.org/wiki/John_C._Wells), is presented below; for each set, the corresponding phonemes are given for RP and General American, using the notation that will be used on this page.

|  |
| --- |
| Full monophthongs |
| **LS** | **RP** | **GA** |
| TR**A**P | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) |
| B**A**TH | [ɑː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) |
| P**A**LM | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) |
| L**O**T | [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) |
| CL**O**TH | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel), [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) |
| TH**OUGH**T | [ɔː](https://en.wikipedia.org/wiki/Mid_back_rounded_vowel) |
| K**I**T | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) |
| FL**EE**CE | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |
| DR**E**SS | [e](https://en.wikipedia.org/wiki/Mid_front_unrounded_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) |
| STR**U**T | [ʌ](https://en.wikipedia.org/wiki/Near-open_central_unrounded_vowel) | [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) |
| F**OO**T | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_rounded_vowel) |
| G**OO**SE | [uː](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) | [u](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) |

|  |
| --- |
| Diphthongs |
| **LS** | **RP** | **GA** |
| F**A**CE | eɪ |
| PR**I**CE | aɪ |
| CH**OI**CE | ɔɪ |
| G**OA**T | əʊ | oʊ |
| M**OU**TH | aʊ |

|  |
| --- |
| R-colored vowels |
| **LS** | **RP** | **GA** |
| N**UR**SE | ɜː(r) | ɜr |
| ST**AR**T | ɑː(r) | ɑr |
| N**OR**TH | ɔː(r) | ɔr |
| F**OR**CE | ɔr, oʊr |
| N**EAR** | ɪə(r) | ɪr |
| SQU**ARE** | eə(r) | ɛr |
| C**URE** | ʊə(r) | ʊr |

|  |
| --- |
| Reduced vowels |
| **LS** | **RP** | **GA** |
| COMM**A** | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid_central_unrounded_vowel) |
| LETT**ER** | ə(r) | ər |
| HAPP**Y** | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |

For a table that shows the pronunciations of these vowels in a wider range of English dialects, see [IPA chart for English dialects](https://en.wikipedia.org/wiki/IPA_chart_for_English_dialects).

The following tables show the vowel phonemes of three standard varieties of English. The notation system used here for Received Pronunciation (RP) is fairly standard; the others less so. For different ways of transcribing General American and Received Pronunciation, see [§ Transcription variants](https://en.wikipedia.org/wiki/English_phonology#Transcription_variants) below. The feature descriptions given here (front, close, etc.) are abstracted somewhat; the actual pronunciations of these vowels are somewhat more accurately conveyed by the [IPA](https://en.wikipedia.org/wiki/IPA) symbols used (see [Vowel](https://en.wikipedia.org/wiki/Vowel) for a chart indicating the meanings of these symbols; though note also the points listed below the following tables).

|  |
| --- |
| Received Pronunciation[[28]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach2004242-28) |
|  | [**Front**](https://en.wikipedia.org/wiki/Front_vowel) | [**Central**](https://en.wikipedia.org/wiki/Central_vowel) | [**Back**](https://en.wikipedia.org/wiki/Back_vowel) |
| **short** | **long** | **short** | **long** | **short** | **long** |
| [**Close**](https://en.wikipedia.org/wiki/Close_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |  |  | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_rounded_vowel) | [uː](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) |
| [**Mid**](https://en.wikipedia.org/wiki/Mid_vowel) | [e](https://en.wikipedia.org/wiki/Mid_front_unrounded_vowel)1 |  | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid_central_unrounded_vowel) | [ɜː](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid_central_unrounded_vowel) |  | [ɔː](https://en.wikipedia.org/wiki/Mid_back_rounded_vowel) |
| [**Open**](https://en.wikipedia.org/wiki/Open_vowel) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) |  | [ʌ](https://en.wikipedia.org/wiki/Near-open_central_unrounded_vowel)2 |  | [ɒ](https://en.wikipedia.org/wiki/Open_back_rounded_vowel) | [ɑː](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) |
| [**Diphthongs**](https://en.wikipedia.org/wiki/Diphthong) | eɪ   aɪ   ɔɪ   aʊ   əʊɪə   eə   ʊə |
| [**Triphthongs**](https://en.wikipedia.org/wiki/Triphthong) | (eɪə   aɪə   ɔɪə   aʊə   əʊə) |

|  |
| --- |
| General American |
|  | [**Front**](https://en.wikipedia.org/wiki/Front_vowel) | [**Central**](https://en.wikipedia.org/wiki/Central_vowel) | [**Back**](https://en.wikipedia.org/wiki/Back_vowel) |
| **lax** | **tense** | **lax** | **tense** |
| [**Close**](https://en.wikipedia.org/wiki/Close_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [i](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |  | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_rounded_vowel) | [u](https://en.wikipedia.org/wiki/Close_back_rounded_vowel) |
| [**Close-mid**](https://en.wikipedia.org/wiki/Close-mid_vowel) |  | eɪ | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid_central_unrounded_vowel)(ɜ) |  | oʊ |
| [**Open-mid**](https://en.wikipedia.org/wiki/Open-mid_vowel) | [ɛ](https://en.wikipedia.org/wiki/Open-mid_front_unrounded_vowel) |  | [ʌ](https://en.wikipedia.org/wiki/Open-mid_back_unrounded_vowel) | ([ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel)) |
| [**Open**](https://en.wikipedia.org/wiki/Open_vowel) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) |  |  |  | [ɑ](https://en.wikipedia.org/wiki/Open_back_unrounded_vowel) |
| [**Diphthongs**](https://en.wikipedia.org/wiki/Diphthong) | aɪ   ɔɪ   aʊ |

|  |
| --- |
| General Australian |
|  | [**Front**](https://en.wikipedia.org/wiki/Front_vowel) | [**Central**](https://en.wikipedia.org/wiki/Central_vowel) | [**Back**](https://en.wikipedia.org/wiki/Back_vowel) |
| **Short** | **long** | **short** | **long** | **short** | **long** |
| [**Close**](https://en.wikipedia.org/wiki/Close_vowel) | [ɪ](https://en.wikipedia.org/wiki/Near-close_near-front_unrounded_vowel) | [iː](https://en.wikipedia.org/wiki/Close_front_unrounded_vowel) |  | [ʉː](https://en.wikipedia.org/wiki/Close_central_rounded_vowel) | [ʊ](https://en.wikipedia.org/wiki/Near-close_near-back_rounded_vowel) |  |
| [**Mid**](https://en.wikipedia.org/wiki/Mid_vowel) | [e](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | [eː](https://en.wikipedia.org/wiki/Close-mid_front_unrounded_vowel) | [ə](https://en.wikipedia.org/wiki/Mid_central_vowel#Mid_central_unrounded_vowel) | [ɜː](https://en.wikipedia.org/wiki/Close-mid_central_unrounded_vowel) | [ɔ](https://en.wikipedia.org/wiki/Open-mid_back_rounded_vowel) | [oː](https://en.wikipedia.org/wiki/Close-mid_back_rounded_vowel) |
| [**Open**](https://en.wikipedia.org/wiki/Open_vowel) | [æ](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) | [æː](https://en.wikipedia.org/wiki/Near-open_front_unrounded_vowel) | [ɐ](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) | [ɐː](https://en.wikipedia.org/wiki/Open_central_unrounded_vowel) |  |  |
| [**Diphthongs**](https://en.wikipedia.org/wiki/Diphthong) | æɪ   ɑe   oɪ   æɔ   əʉɪə   (ʊə) |

1. RP transcriptions use /e/ rather than /ɛ/ largely for convenience and historical tradition; it does not necessarily represent a different sound from the General American phoneme, although the RP vowel may be described as somewhat less open than the American one.[[29]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982128-29)
2. Although the notation /ʌ/ is used for the vowel of STRUT in RP, the actual pronunciation is closer to a [near-open central unrounded vowel](https://en.wikipedia.org/wiki/Near-open_central_unrounded_vowel) [ɐ]. The symbol ⟨ʌ⟩ continues to be used for reasons of tradition (it was historically a back vowel) and because it is still back in other varieties.[[30]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERocaJohnson1999135-30)

The differences between these tables can be explained as follows:

1. General American lacks a truly contrastive NURSE vowel, so pairs like *forward* vs. *foreword* (distinguished in RP as /ˈfɔːwəd/ and /ˈfɔːwɜːd/, respectively) are most typically homophonous as [ˈfɔɹwɚd]. Also, [ʌ] (stressed) and [ə] (unstressed) may be considered allophones of a single phoneme in General American.[[31]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982121,_132-31)
2. General American lacks a phoneme corresponding to RP /ɒ/ (LOT, CLOTH), instead using /ɑ/ in the LOT words and generally /ɔ/ in the CLOTH words. In a few North American accents, namely in [Eastern New England](https://en.wikipedia.org/wiki/Eastern_New_England_English) ([Boston](https://en.wikipedia.org/wiki/Boston)), [Western Pennsylvania](https://en.wikipedia.org/wiki/Western_Pennsylvania_English) ([Pittsburgh](https://en.wikipedia.org/wiki/Pittsburgh)), and to some degree in [Pacific Northwest](https://en.wikipedia.org/wiki/Pacific_Northwest_English) ([Seattle](https://en.wikipedia.org/wiki/Seattle), [Portland](https://en.wikipedia.org/wiki/Portland%2C_Oregon)) and [Canadian English](https://en.wikipedia.org/wiki/Canadian_English), LOT words do not have the vowel of PALM (the [*father*–*bother* merger](https://en.wikipedia.org/wiki/Father%E2%80%93bother_merger) has not occurred) but instead merge with CLOTH/THOUGHT.[[32]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982473–474-32)[[33]](https://en.wikipedia.org/wiki/English_phonology#cite_note-Atlas2005-33)[[34]](https://en.wikipedia.org/wiki/English_phonology#cite_note-Woods1993-34)[[35]](https://en.wikipedia.org/wiki/English_phonology#cite_note-35)
3. The different notations used for the vowel of GOAT in RP and General American (/əʊ/ and /oʊ/) reflect a difference in the most common phonetic realizations of that vowel.
4. The triphthongs given in the RP table are usually regarded as sequences of two phonemes (a diphthong plus /ə/); however, in RP, these sequences frequently undergo [smoothing](https://en.wikipedia.org/wiki/Smoothing_%28phonetics%29) into single diphthongs or even monophthongs.
5. The different notations used here for some of the Australian vowels reflect the phonetic realization of those vowels in Australian: a central [ʉː] rather than [uː] in GOOSE, a more closed [e] rather than [ɛ] in DRESS, an open-mid [ɔ] rather than traditional RP's [ɒ] in LOT and CLOTH, a close-mid [oː] rather than mid [ɔː] in THOUGHT, NORTH and FORCE (here the difference lies almost only in transcription rather than pronunciation), an opener [ɐ] rather than somewhat closer [ʌ] in STRUT, a fronted [ɐː] rather than [ɑː] in CALM and START, and somewhat different pronunciations of most of the diphthongs. Note that central [ʉː] in GOOSE and open-mid [ɔ] in LOT are possible realizations in modern RP; in the case of the latter vowel, it is even more common than the traditional open [ɒ].[[36]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2014126_and_133-36)
6. The Australian monophthong /eː/ corresponds to the RP diphthong /eə/ (SQUARE).
7. Australian has the [*bad*–*lad* split](https://en.wikipedia.org/wiki/Bad%E2%80%93lad_split), with distinctive short and long variants in various words of the TRAP set: a long phoneme /æː/ in words like *bad* contrasts with a short /æ/ in words like *lad*. (A similar split is found in the accents of some speakers in southern England.)
8. The vowel /ʊə/ is often omitted from descriptions of Australian, as for most speakers it has split into the long monophthong /oː/ (e.g. *poor*, *sure*) or the sequence /ʉː.ə/ (e.g. *cure*, *lure*).[[37]](https://en.wikipedia.org/wiki/English_phonology#cite_note-37)

Other points to be noted are these:

1. The vowel /æ/ is coming to be pronounced more open (approaching [a]) by many modern RP speakers. In American speech, however, there is a tendency for it to become more closed, tenser and even diphthongized (to something like [eə]), particularly in certain environments, such as before a [nasal consonant](https://en.wikipedia.org/wiki/Nasal_consonant).[[38]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982129-38) Some American accents, for example those of [New York City](https://en.wikipedia.org/wiki/New_York_City), [Philadelphia](https://en.wikipedia.org/wiki/Philadelphia) and [Baltimore](https://en.wikipedia.org/wiki/Baltimore), make a marginal phonemic distinction between /æ/ and /eə/, although the two occur largely in mutually exclusive environments. See [æ-tensing](https://en.wikipedia.org/wiki/Phonological_history_of_English_short_A#æ_tensing).
2. A significant number of words (the BATH group) have /æ/ in General American, but /ɑː/ in RP (and mostly /ɐː/ in Australian).
3. Most speakers in Canada outside of the [Maritime Provinces](https://en.wikipedia.org/wiki/The_Maritimes), and some speakers in the United States, do not distinguish /ɑ/ from /ɔ/, except before /r/ (see [*cot*–*caught* merger](https://en.wikipedia.org/wiki/Cot%E2%80%93caught_merger)). However, evidence by Labov et al. suggests that in dialects without the merger [/ɔːr/](https://en.wikipedia.org/wiki/Help%3AIPA/English) and [/ɔː/](https://en.wikipedia.org/wiki/Help%3AIPA/English) may not actually be [assonant](https://en.wikipedia.org/wiki/Assonance),[[39]](https://en.wikipedia.org/wiki/English_phonology#cite_note-39) especially in dialects with the [*horse*–*hoarse* merger](https://en.wikipedia.org/wiki/Horse%E2%80%93hoarse_merger).
4. In General American and Canadian (which are [rhotic accents](https://en.wikipedia.org/wiki/Rhotic_and_non-rhotic_accents), where /r/ is pronounced in positions where it does not precede a vowel), many of the vowels can be [r-colored](https://en.wikipedia.org/wiki/R-colored_vowel) by way of realization of a following /r/. This is often transcribed phonetically using a vowel symbol with an added retroflexion [diacritic](https://en.wikipedia.org/wiki/Diacritic) [ ˞ ]; thus the symbol [ɚ] has been created for an r-colored [schwa](https://en.wikipedia.org/wiki/Schwa) (sometimes called schwar) as in LETT**ER**, and the vowel of START can be modified to make [ɑ˞] so that the word *start* may be transcribed [stɑ˞t]. Alternatively, the START vowel might be written [stɑɚt] to indicate an r-colored offglide. The vowel of NURSE is generally always r-colored in these dialects, and this can be written [ɚ] (or as a syllabic [ɹ̩]).
5. In RP and other dialects, many words from the CURE group are coming to be pronounced by an increasing number of speakers with the NORTH vowel (so *sure* is often pronounced like *shore*). Also the RP vowels /ɛə/ and /ʊə/ may be monophthongized to [ɛː] and [oː] respectively.[[40]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach2004240-40)
6. The vowels of FLEECE and GOOSE are commonly pronounced as narrow diphthongs, approaching [ɪi] and [ʊu], in RP. Near-RP speakers may have particularly marked diphthongization of the type [əi] and [əu ~ əʉ], respectively. In General American, the pronunciation varies between a monophthong and a diphthong.[[41]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982140,_147,_299-41)

**Allophones of vowels**

Listed here are some of the significant cases of [allophony](https://en.wikipedia.org/wiki/Allophony) of vowels found within standard English dialects.

1. There is a tendency for many vowels to be pronounced with greater length in [open syllables](https://en.wikipedia.org/wiki/Open_syllable) than closed syllables, and with greater length in syllables ending with a [voiced consonant](https://en.wikipedia.org/wiki/Voiced_consonant) than with a voiceless one. For example, the /aɪ/ in *advise* is longer than that in *advice*.
2. In many accents of English, [tense](https://en.wikipedia.org/wiki/Tenseness) vowels undergo [breaking](https://en.wikipedia.org/wiki/Vowel_breaking) before /l/, resulting in pronunciations like [piəl] for *peel*, [puəl] for *pool*, [peəl] for *pail*, and [poəl] for *pole*.
3. In RP, the vowel /əʊ/ may be pronounced more back, as [ɒʊ], before syllable-final /l/, as in *goal*. In Australian English the vowel /əʉ/ is similarly backed to [ɔʊ] before /l/. A similar phenomenon may occur in [Southern American English](https://en.wikipedia.org/wiki/Southern_American_English).
4. The vowel /ə/ is often pronounced [ɐ] in open syllables.[[42]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2008132-42)
5. The PRICE and MOUTH diphthongs may be pronounced with a less open starting point when followed by a [voiceless](https://en.wikipedia.org/wiki/Voiceless) consonant;[[43]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECelce-MurciaBrintonGoodwin199666-43) this is chiefly a feature of Canadian speech ([Canadian raising](https://en.wikipedia.org/wiki/Canadian_raising)), but is also found in parts of the United States.[[44]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982149-44) Thus *writer* may be distinguished from *rider* even when [flapping](https://en.wikipedia.org/wiki/Flapping) causes the /t/ and /d/ to be pronounced identically.

**Unstressed syllables**

[Unstressed syllables](https://en.wikipedia.org/wiki/Unstressed_syllable) in English may contain almost any vowel, but there are certain sounds—characterized by [central](https://en.wikipedia.org/wiki/Central_vowel) position and weakness—that are particularly often found as the nuclei of syllables of this type. These include:

1. [schwa](https://en.wikipedia.org/wiki/Schwa), [ə], as in COMM**A** and (in non-rhotic dialects) LETT**ER** ([*panda*–*pander* merger](https://en.wikipedia.org/wiki/Rhotic_and_non-rhotic_accents#Panda–pander_merger)); also in many other positions such as ***a****bout*, *phot****o****graph*, *padd****o****ck*, etc. This sound is essentially restricted to unstressed syllables exclusively. In the approach presented here it is identified as a phoneme /ə/, although other analyses do not have a separate phoneme for schwa and regard it as a reduction or neutralization of other vowels in syllables with the lowest degree of stress.
2. [r-colored schwa](https://en.wikipedia.org/wiki/R-colored_schwa), [ɚ], as in LETT**ER** in General American and some other rhotic dialects, which can be identified with the underlying sequence /ər/.
3. [syllabic consonants](https://en.wikipedia.org/wiki/Syllabic_consonant): [l̩] as in *bott****le***, [n̩] as in *butt****on***, [m̩] as in *rhyth****m***. These may be phonemized either as a plain consonant or as a schwa followed by a consonant; for example *button* may be represented as /ˈbʌtn̩/ or /ˈbʌtən/ (see above under [Consonants](https://en.wikipedia.org/wiki/English_phonology#Consonants)).
4. [ɨ̞], as in *ros****e****s* and *mak****i****ng*. This can be identified with the phoneme /ɪ/, although in unstressed syllables it may be pronounced more centrally, and for some speakers (particularly in Australian and New Zealand and some American English) it is merged with /ə/ in these syllables ([weak vowel merger](https://en.wikipedia.org/wiki/Phonological_history_of_English_high_front_vowels#Weak-vowel_merger)). Among speakers who retain the distinction there are many cases where [free variation](https://en.wikipedia.org/wiki/Free_variation) between /ɪ/ and /ə/ is found, as in the second syllable of *typ****i****cal*. (The [OED](https://en.wikipedia.org/wiki/OED) has recently adopted the symbol ⟨ᵻ⟩ to indicate such cases.)
5. [ʉ̞], as in *arg****u****ment*, *t****o****day*, for which similar considerations apply as in the case of [ɨ̞]. (The symbol ⟨ᵿ⟩ is sometimes used in these cases, similarly to ⟨ᵻ⟩.) Some speakers may also have a rounded schwa, [ɵ], used in words like *omission* [ɵˈmɪʃən].[[45]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBolinger1986347-360-45)
6. [i], as in *happ****y***, *coff****ee***, in many dialects (others have [ɪ] in this position).[[46]](https://en.wikipedia.org/wiki/English_phonology#cite_note-46) The phonemic status of this [i] is not easy to establish. Some authors consider it to correspond phonemically with a close front vowel that is neither the vowel of KIT nor that of FLEECE; it occurs chiefly in contexts where the contrast between these vowels is neutralized,[[47]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEKreidler200482–3-47)[[48]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEMcCully2009123–4-48)[[49]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach200966–8-49) implying that it represents an [archiphoneme](https://en.wikipedia.org/wiki/Archiphoneme), which may be written /i/. Many speakers, however, do have a contrast in pairs of words like *studied* and *studded* or *taxis* and *taxes*; the contrast may be [i] vs. [ɪ], [ɪ] vs. [ə] or [i] vs. [ə], hence some authors consider that the *happY*-vowel should be identified phonemically either with the vowel of KIT or that of FLEECE, depending on speaker.[[50]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells201453-50) See also [*happy*-tensing](https://en.wikipedia.org/wiki/Happy-tensing).
7. [u], as in *infl****u****ence*, *t****o*** *each*. This is the back rounded counterpart to [i] described above; its phonemic status is treated in the same works as cited there.

[Vowel reduction](https://en.wikipedia.org/wiki/Vowel_reduction) in unstressed syllables is a significant feature of English. Syllables of the types listed above often correspond to a syllable containing a different vowel ("full vowel") used in other forms of the same [morpheme](https://en.wikipedia.org/wiki/Morpheme) where that syllable is stressed. For example, the first *o* in *photograph*, being stressed, is pronounced with the GOAT vowel, but in *photography*, where it is unstressed, it is reduced to schwa. Also, certain common words (*a*, *an*, *of*, *for*, etc.) are pronounced with a schwa when they are unstressed, although they have different vowels when they are in a stressed position (see [Weak and strong forms in English](https://en.wikipedia.org/wiki/Weak_and_strong_forms_in_English)).

Some unstressed syllables, however, retain full (unreduced) vowels, i.e. vowels other than those listed above. Examples are the /æ/ in ***a****mbition* and the /aɪ/ in *fin****i****te*. Some phonologists regard such syllables as not being fully unstressed (they may describe them as having *tertiary stress*); some dictionaries have marked such syllables as having [secondary stress](https://en.wikipedia.org/wiki/Secondary_stress). However linguists such as Ladefoged[[51]](https://en.wikipedia.org/wiki/English_phonology#cite_note-51) and [Bolinger (1986)](https://en.wikipedia.org/wiki/English_phonology#CITEREFBolinger1986) regard this as a difference purely of vowel quality and not of stress,[[52]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBolinger1986351-52) and thus argue that vowel reduction itself is phonemic in English. Examples of words where vowel reduction seems to be distinctive for some speakers[[53]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBolinger1986348-53) include *chickar****ee*** vs. *chicor****y*** (the latter has the reduced vowel of HAPP**Y**, whereas the former has the FLEECE vowel without reduction), and *Phar****aoh*** vs. *farr****ow*** (both have the GOAT vowel, but in the latter word it may reduce to [ɵ]).

**Transcription variants**

The choice of which symbols to use for phonemic transcriptions may reflect theoretical assumptions or claims on the part of the transcriber. English vowels are distinguished by a synergy of features, such as [quality](https://en.wikipedia.org/wiki/Vowel_quality) (vowel height and backness), [contour](https://en.wikipedia.org/wiki/Contour_%28linguistics%29) (monophthong vs. diphthong) and [length](https://en.wikipedia.org/wiki/Vowel_length) (short vs. long); different traditions in the linguistic literature emphasize different features. In this section, the diphthong phonemes /aɪ, ɔɪ, aʊ, ɪə, eə, ʊə/ are omitted for simple visualization of the vowel space.

The following tables list the [lexical sets](https://en.wikipedia.org/wiki/Lexical_set) of General American and Received Pronunciation respectively. For simplicity, the vowel systems listed here are Modern GA (with the [cot-caught merger](https://en.wikipedia.org/wiki/Cot-caught_merger)) and Modern RP.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- |
| **Lexical sets representingGeneral American full vowels** |
| FLEECE | GOOSE |
| KIT | FOOT |
| FACE | GOAT |
| DRESS | STRUT |
| TRAP | PALM |

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| --- |
| **Lexical sets representingReceived Pronunciation full vowels** |
| FLEECE | GOOSE |  |
| KIT | FOOT | THOUGHT |
| FACE | GOAT |  |
| DRESS | NURSE | LOT |
| TRAP | STRUT | PALM |

 |

Possible analyses[[54]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982120–122-54) of the vowels of General American are shown in the tables below, necessarily distinguishing vowel quality.[[55]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTELindsey1990-55) The contour transcriptions show that there is no phonemic distinction between semivowels and the high segments of diphthongs, so that /ej/ is equivalent to /eɪ̯/.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- |
| **General American full vowels,vowel quality distinctive** |
| I | u |
| ɪ | ʊ |
| E | o |
| ɛ | ʌ |
| Æ | ɑ |

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| --- |
| **General American full vowels,quality & contour distinctive** |
| ɪj | ʊw |
| ɪ | ʊ |
| ej | ow |
| ɛ | ʌ |
| æ | ɑ |

 |

Similar analyses[[56]](https://en.wikipedia.org/wiki/English_phonology#cite_note-56) of the vowels of Received Pronunciation are shown below, necessarily distinguishing vowel contour and length:[[55]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTELindsey1990-55)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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| --- |
| **Received Pronunciation full vowels,contour & length distinctive** |
| ij | ʉw |  |
| i | ʉ | oː |
| ej | əw |  |
| e | əː | o |
| a | ə | aː |

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|  |
| --- |
| **Received Pronunciation full vowels,quality, contour & length distinctive** |
| ɪj | ɵw |  |
| ɪ | ɵ | oː |
| ɛj | əw |  |
| ɛ | əː | ɔ |
| a | ʌ | ɑː |

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**Lexical stress**

[Lexical stress](https://en.wikipedia.org/wiki/Stress_%28linguistics%29) is phonemic in English. For example, the noun ***in****crease* and the verb *in****crease*** are distinguished by the positioning of the stress on the first syllable in the former, and on the second syllable in the latter. (See [initial-stress-derived noun](https://en.wikipedia.org/wiki/Initial-stress-derived_noun).) Stressed syllables in English are louder than non-stressed syllables, as well as being longer and having a higher pitch.

In traditional approaches, in any English word consisting of more than one [syllable](https://en.wikipedia.org/wiki/Syllable), each syllable is ascribed one of three degrees of stress: *primary*, *secondary* or *unstressed*. Ordinarily, in each such word there will be exactly one syllable with primary stress, possibly one syllable having secondary stress, and the remainder are unstressed. For example, the word *am****az****ing* has primary stress on the second syllable, while the first and third syllables are unstressed, whereas the word ***or****ganiz****a****tion* has primary stress on the fourth syllable, secondary stress on the first, and the second, third and fifth unstressed. This is often shown in pronunciation keys using the [IPA](https://en.wikipedia.org/wiki/IPA) symbols for primary and secondary stress (which are ˈ and ˌ respectively), placed before the syllables to which they apply. The two words just given may therefore be represented (in [RP](https://en.wikipedia.org/wiki/Received_Pronunciation)) as /əˈmeɪzɪŋ/ and /ˌɔːɡənaɪˈzeɪʃən/.

Some analysts identify an additional level of stress (*tertiary* stress). This is generally ascribed to syllables that are pronounced with less force than those with secondary stress, but nonetheless contain a "full" or "unreduced" vowel (vowels that are considered to be reduced are listed under [English phonology § Unstressed syllables](https://en.wikipedia.org/wiki/English_phonology#Unstressed_syllables) above). Hence the third syllable of *organization*, if pronounced with /aɪ/ as shown above (rather than being reduced to /ɪ/ or /ə/), might be said to have tertiary stress. (The precise identification of secondary and tertiary stress differs between analyses; dictionaries do not generally show tertiary stress, although some have taken the approach of marking all syllables with unreduced vowels as having at least secondary stress.)

In some analyses, then, the concept of lexical stress may become conflated with that of vowel reduction. An approach which attempts to separate these two is provided by [Peter Ladefoged](https://en.wikipedia.org/wiki/Peter_Ladefoged), who states that it is possible to describe English with only one degree of stress, as long as [unstressed syllables](https://en.wikipedia.org/wiki/Unstressed_vowel) are phonemically distinguished for [vowel reduction](https://en.wikipedia.org/wiki/Vowel_reduction).[[57]](https://en.wikipedia.org/wiki/English_phonology#cite_note-Lad-57) In this approach, the distinction between primary and secondary stress is regarded as a phonetic or prosodic detail rather than a phonemic feature – primary stress is seen as an example of the predictable "tonic" stress that falls on the *final* stressed syllable of a [prosodic unit](https://en.wikipedia.org/wiki/Prosodic_unit). For more details of this analysis, see [Stress and vowel reduction in English](https://en.wikipedia.org/wiki/Stress_and_vowel_reduction_in_English).

For stress as a prosodic feature (emphasis of particular words within utterances), see [§ Prosodic stress](https://en.wikipedia.org/wiki/English_phonology#Prosodic_stress) below.

**Phonotactics**

[Phonotactics](https://en.wikipedia.org/wiki/Phonotactics) is the study of the sequences of phonemes that occur in languages and the sound structures that they form. In this study it is usual to represent consonants in general with the letter C and vowels with the letter V, so that a syllable such as 'be' is described as having CV structure. The [IPA](https://en.wikipedia.org/wiki/IPA) symbol used to show a division between syllables is the dot [.]. Syllabification is the process of dividing continuous speech into discrete syllables, a process in which the position of a syllable division is not always easy to decide upon.

Most languages of the world syllabify CVCV and CVCCV sequences as /CV.CV/ and /CVC.CV/ or /CV.CCV/, with consonants preferentially acting as the onset of a syllable containing the following vowel. According to one view, English is unusual in this regard, in that stressed syllables attract following consonants, so that ˈCVCV and ˈCVCCV syllabify as /ˈCVC.V/ and /ˈCVCC.V/, as long as the consonant cluster CC is a possible syllable coda; in addition, /r/ preferentially syllabifies with the preceding vowel even when both syllables are unstressed, so that CVrV occurs as /CVr.V/. This is the analysis used in the [*Longman Pronunciation Dictionary*](https://en.wikipedia.org/wiki/Longman_Pronunciation_Dictionary).[[58]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells199076–86-58) However, this view is not widely accepted, as explained in the following section.

**Syllable structure**

The [syllable](https://en.wikipedia.org/wiki/Syllable) structure in English is (C)3V(C)5, with a near maximal example being *strengths* (/strɛŋkθs/, although it can be pronounced /strɛŋθs/).[[59]](https://en.wikipedia.org/wiki/English_phonology#cite_note-59) From the phonetic point of view, the analysis of syllable structures is a complex task: because of widespread occurrences of articulatory overlap, English speakers rarely produce an audible release of individual consonants in consonant clusters.[[60]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEZsiga2003404-60) This coarticulation can lead to articulatory gestures that seem very much like deletions or complete assimilations. For example, *hundred pounds* may sound like [hʌndɹɪ**b** paʊndz] and *jumped back* (in slow speech, [dʒʌmptbæk]) may sound like [dʒʌmpbæk], but X-ray[[61]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBrowmanGoldstein1990-61) and electropalatographic [[62]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBarry1991-62)[[63]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBarry1992-63)[[64]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTENolan1992-64) studies demonstrate that inaudible and possibly weakened contacts or lingual gestures may still be made. Thus the second /d/ in *hundred pounds* does not entirely assimilate to a labial place of articulation, rather the labial gesture co-occurs with the alveolar one; the "missing" [t] in *jumped back* may still be articulated, though not heard.

Division into syllables is a difficult area, and different theories have been proposed. A widely accepted approach is the maximal onset principle:[[65]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTESelkirk1982-65) this states that, subject to certain constraints, any consonants in between vowels should be assigned to the following syllable. Thus the word *leaving* should be divided /ˈliː.vɪŋ/ rather than \*/ˈliːv.ɪŋ/, and *hasty* is /ˈheɪ.sti/ rather than \*/ˈheɪs.ti/ or \*/ˈheɪst.i/. However, when such a division results in an onset cluster which is not allowed in English, the division must respect this. Thus if the word *extra* were divided \*/ˈe.kstrə/ the resulting onset of the second syllable would be /kstr/, a cluster which does not occur in English. The division /ˈek.strə/ is therefore preferred. If assigning a consonant or consonants to the following syllable would result in the preceding syllable ending in an unreduced short vowel, this is avoided. Thus the word *comma* should be divided /ˈkɒm.ə/ and not \*/ˈkɒ.mə/, even though the latter division gives the maximal onset to the following syllable, because English syllables do not end in /ɒ/.

In some cases, no solution is completely satisfactory: for example, in British English (RP) the word *hurry* could be divided /ˈhʌ.ri/ or /ˈhʌr.i/, but the former would result in an analysis with a syllable-final /ʌ/ (which is held to be non-occurring) while the latter would result in a syllable final /r/ (which is said not to occur in this accent). Some phonologists have suggested a compromise analysis where the consonant in the middle belongs to both syllables, and is described as [ambisyllabic](https://en.wikipedia.org/wiki/Ambisyllabicity).[[66]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGiegerich1992172-66)[[67]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEHarris1994198-67) In this way, it is possible to suggest an analysis of *hurry* which comprises the syllables /hʌr/ and /ri/, the medial /r/ being ambisyllabic. Where the division coincides with a word boundary, or the boundary between elements of a compound word, it is not usual in the case of dictionaries to insist on the maximal onset principle in a way that divides words in a counter-intuitive way; thus the word *hardware* would be divided /ˈhɑː.dweə/ by the M.O.P., but dictionaries prefer the division /ˈhɑːd.weə/.[[68]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGimson2008258–9-68)[[69]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEGiegerich1992167–70-69)[[70]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEKreidler200476–8-70)

In the approach used by the [*Longman Pronunciation Dictionary*](https://en.wikipedia.org/wiki/Longman_Pronunciation_Dictionary), Wells[[58]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells199076–86-58) claims that consonants syllabify with the preceding rather than following vowel when the preceding vowel is the nucleus of a more salient syllable, with stressed syllables being the most salient, reduced syllables the least, and full unstressed vowels ("secondary stress") intermediate. But there are lexical differences as well, frequently but not exclusively with compound words. For example, in *dolphin* and *selfish,* Wells argues that the stressed syllable ends in /lf/, but in *shellfish,* the /f/ belongs with the following syllable: /ˈdɒlf.ɪn, ˈself.ɪʃ/ → [ˈdɒlfɪ̈n, ˈselfɪ̈ʃ], but /ˈʃel.fɪʃ/ → [ˈʃelˑfɪʃ], where the /l/ is a little longer and the /ɪ/ is not reduced. Similarly, in *toe-strap* Wells argues that the second /t/ is a full plosive, as usual in syllable onset, whereas in *toast-rack* the second /t/ is in many dialects reduced to the unreleased allophone it takes in syllable codas, or even elided: /ˈtoʊ.stræp/, /ˈtoʊst.ræk/ → [ˈtoˑʊstɹæp, ˈtoʊs(t̚)ɹæk]; likewise *nitrate* /ˈnaɪ.treɪt/ → [ˈnaɪtɹ̥eɪt] with a voiceless /r/ (and for some people an affricated *tr* as in *tree*), vs *night-rate* /ˈnaɪt.reɪt/ → [ˈnaɪt̚ɹeɪt] with a voiced /r/. Cues of syllable boundaries include aspiration of syllable onsets and (in the US) flapping of coda /t, d/ *(a tease* /ə.ˈtiːz/ → [əˈtʰiːz] vs. *at ease* /æt.ˈiːz/ → [æɾˈiːz]), epenthetic stops like [t] in syllable codas (*fence* /ˈfens/ → [ˈfents] but *inside* /ɪn.ˈsaɪd/ → [ɪnˈsaɪd]), and r-colored vowels when the /r/ is in the coda vs. labialization when it is in the onset *(key-ring* /ˈkiː.rɪŋ/ → [ˈkiːɹʷɪŋ] but *fearing* /ˈfiːr.ɪŋ/ → [ˈfɪəɹɪŋ]).

**Onset**

The following can occur as the [onset](https://en.wikipedia.org/wiki/Syllable_onset):

|  |  |
| --- | --- |
| All single consonant phonemes except /ŋ/ |   |
| Stop plus approximant other than /j/: /pl/, /bl/, /kl/, /ɡl/, /pr/, /br/, /tr/,[1] /dr/,[1] /kr/, /ɡr/, /tw/, /dw/, /ɡw/, /kw/, /pw/ | play, blood, clean, glove, prize, bring, tree,[1] dream,[1] crowd, green, twin, dwarf, language, quick, puissance |
| Voiceless fricative or /v/ plus approximant other than /j/:[2] /fl/, /sl/, /θl/,[3] /fr/, /θr/, /ʃr/, /hw/,[4] /sw/, /θw/, /vw/ | floor, sleep, thlipsis,[3] friend, three, shrimp, what,[4] swing, thwart, reservoir |
| Consonant plus /j/ (before /uː/ or its modified/reduced forms[5]): /pj/, /bj/, /tj/,[5] /dj/,[5] /kj/, /ɡj/, /mj/, /nj/,[5] /fj/, /vj/, /θj/,[5] /sj/,[5] /zj/,[5] /hj/, /lj/[5] | pure, beautiful, tube,[5] during,[5] cute, argue, music, new,[5] few, view, thew,[5] suit,[5] Zeus,[5] huge, lurid[5] |
| /s/ plus voiceless stop:[6] /sp/, /st/, /sk/ | speak, stop, skill |
| /s/ plus nasal other than /ŋ/:[6] /sm/, /sn/ | smile, snow |
| /s/ plus voiceless fricative:[3] /sf/, /sθ/ | sphere, sthenic |
| /s/ plus voiceless stop plus approximant:[6] /spl/, /skl/,[3] /spr/, /str/, /skr/, /skw/, /smj/, /spj/, /stj/,[5] /skj/ | split, sclera, spring, street, scream, square, smew, spew, student,[5] skewer |
| /s/ plus voiceless fricative plus approximant:[3] /sfr/ | sphragistics |

**Notes:**

1. For certain speakers, /tr/ and /dr/ tend to affricate, so that *tree* resembles "chree", and *dream* resembles "jream".[[71]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1990?-71)[[72]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERead1986?-72)[[73]](https://en.wikipedia.org/wiki/English_phonology#cite_note-73) This is sometimes transcribed as [tʃr] and [dʒr] respectively, but the pronunciation varies and may, for example, be closer to [tʂ] and [dʐ][[74]](https://en.wikipedia.org/wiki/English_phonology#cite_note-74) or with a fricative release similar in quality to the rhotic, i.e. [tɹ̝̊ɹ̥], [dɹ̝ɹ], or [tʂɻ], [dʐɻ].
2. Some northern and insular Scottish dialects, particularly in the [Shetlands](https://en.wikipedia.org/wiki/Shetlands), preserve onsets such as /ɡn/ (as in *gnaw*), /kn/ (as in *knock*), and /wr/ or /vr/ (as in *write*).[[75]](https://en.wikipedia.org/wiki/English_phonology#cite_note-75)
3. Words beginning in unusual consonant clusters that originated in Latinized Greek loanwords tend to drop the first phoneme, as in \*/bd/, \*/fθ/, \*/ɡn/, \*/hr/, \*/kn/, \*/ks/, \*/kt/, \*/kθ/, \*/mn/, \*/pn/, \*/ps/, \*/pt/, \*/tm/, and \*/θm/, which have become /d/ (*bdellium*), /θ/ (*phthisis*), /n/ (*gnome*), /r/ (*rhythm*), /n/ (*cnidoblast*), /z/ (*xylophone*), /t/ (*ctenophore*), /θ/ (*chthonic*), /n/ (*mnemonic*), /n/ (*pneumonia*), /s/ (*psychology*), /t/ (*pterodactyl*), /m/ (*tmesis*), and /m/ (*asthma*). However, the onsets /sf/, /sfr/, /skl/, /sθ/, and /θl/ have remained intact.
4. The onset /hw/ is simplified to /w/ in the majority of dialects ([wine–whine merger](https://en.wikipedia.org/wiki/Wine%E2%80%93whine_merger)).
5. Clusters ending /j/ typically occur before /uː/ and before the CURE vowel (General American /ʊr/, RP /ʊə/); they may also come before the reduced form /ʊ/ (as in *ar****gu****ment*) or even /ər/ (in the American pronunciation of *fi****gu****re*). There is an ongoing sound change ([yod-dropping](https://en.wikipedia.org/wiki/English_consonant-cluster_reductions#Yod-dropping)) by which /j/ as the final consonant in a [cluster](https://en.wikipedia.org/wiki/Consonant_cluster) is being lost. In RP, words with /sj/ and /lj/ can usually be pronounced with or without this sound, e.g. [suːt] or [sjuːt]. For some speakers of English, including some British speakers, the sound change is more advanced and so, for example, General American does not contain the onsets /tj/, /dj/, /nj/, /θj/, /sj/, /stj/, /zj/, or /lj/. Words that would otherwise begin in these onsets drop the /j/: e.g. *tube* (/tub/), *during* (/ˈdʊrɪŋ/), *new* (/nu/), *Thule* (/ˈθuli/), *suit* (/sut/), *student* (/ˈstudənt/), *Zeus* (/zus/), *lurid* (/ˈlʊrɪd/). In some dialects, such [Welsh English](https://en.wikipedia.org/wiki/Welsh_English), /j/ may occur in more combinations; for example in /tʃj/ (*chew*), /dʒj/ (*Jew*), /ʃj/ (*sure*), and /slj/ (*slew*).
6. Many clusters beginning with /ʃ/ and paralleling native clusters beginning with /s/ are found initially in German and Yiddish loanwords, such as /ʃl/, /ʃp/, /ʃt/, /ʃm/, /ʃn/, /ʃpr/, /ʃtr/ (in words such as [*schlep*](https://en.wikipedia.org/wiki/Schlep)*, spiel, shtick, schmuck,* [*schnapps*](https://en.wikipedia.org/wiki/Schnapps)*, Shprintzen's, strudel*). /ʃw/ is found initially in the Hebrew loanword [schwa](https://en.wikipedia.org/wiki/Schwa). Before /r/ however, the native cluster is /ʃr/. The opposite cluster /sr/ is found in loanwords such as *Sri Lanka*, but this can be nativized by changing it to /ʃr/.

Other onsets

Certain English onsets appear only in contractions: e.g. /zbl/ (*'sblood*), and /zw/ or /dzw/ (*'swounds* or *'dswounds*). Some, such as /pʃ/ (*pshaw*), /fw/ (*fwoosh*), or /vr/ (*vroom*), can occur in [interjections](https://en.wikipedia.org/wiki/Interjection). An archaic voiceless fricative plus nasal exists, /fn/ (*fnese*), as does an archaic /snj/ (*snew*).

Several additional onsets occur in [loan words](https://en.wikipedia.org/wiki/Loan_word) (with varying degrees of anglicization) such as /bw/ (*bwana*), /mw/ (*moiré*), /nw/ (*noire*), /tsw/ (*zwitterion*), /zw/ (*zwieback*), /dv/ (*Dvorak*), /kv/ (*kvetch*), /ʃv/ (*schvartze*), /tv/ (*Tver*), /tsv/ (*Zwickau*), /kdʒ/ (*Kjell*), /kʃ/ (*Kshatriya*), /tl/ (*Tlaloc*), /vl/ (*Vladimir*), /zl/ (*zloty*), /tsk/ (*Tskhinvali*), /hm/ (*Hmong*), and /km/ (*Khmer*).

Some clusters of this type can be converted to regular English phonotactics by simplifying the cluster: e.g. /(d)z/ (*dziggetai*), /(h)r/ (*Hrolf*), /kr(w)/ (*croissant*), /(ŋ)w/ ([*Nguyen*](https://en.wikipedia.org/wiki/Nguyen#Pronunciation)), /(p)f/ (*pfennig*), /(f)θ/ (*phthalic*), /(t)s/ (*tsunami*), /(ǃ)k/ (*!kung*), and /k(ǁ)/ (*Xhosa*).

Others can be replaced by native clusters differing only in [voice](https://en.wikipedia.org/wiki/Voice_%28phonetics%29): /zb ~ sp/ (*sbirro*), and /zɡr ~ skr/ (*sgraffito*).

**Nucleus[**[**edit**](https://en.wikipedia.org/w/index.php?title=English_phonology&action=edit&section=14)**]**

The following can occur as the [nucleus](https://en.wikipedia.org/wiki/Syllable_nucleus):

* All vowel sounds
* /m/, /n/ and /l/ in certain situations (see below under [word-level rules](https://en.wikipedia.org/wiki/English_phonology#Word-level_rules))
* /r/ in [rhotic varieties](https://en.wikipedia.org/wiki/Rhotic_and_non-rhotic_accents) of English (e.g. [General American](https://en.wikipedia.org/wiki/General_American)) in certain situations (see below under [word-level rules](https://en.wikipedia.org/wiki/English_phonology#Word-level_rules))

**Coda**

Most (in theory, all) of the following except those that end with /s/, /z/, /ʃ/, /ʒ/, /tʃ/ or /dʒ/ can be extended with /s/ or /z/ representing the [morpheme](https://en.wikipedia.org/wiki/Morpheme) -s/-z. Similarly, most (in theory, all) of the following except those that end with /t/ or /d/ can be extended with /t/ or /d/ representing the morpheme -t/-d.

[Wells (1990)](https://en.wikipedia.org/wiki/English_phonology#CITEREFWells1990) argues that a variety of syllable codas are possible in English, even /ntr, ndr/ in words like *entry* /ˈɛntr.ɪ/ and *sundry* /ˈsʌndr.ɪ/, with /tr, dr/ being treated as affricates along the lines of /tʃ, dʒ/. He argues that the traditional assumption that pre-vocalic consonants form a syllable with the following vowel is due to the influence of languages like French and Latin, where syllable structure is CVC.CVC regardless of stress placement. Disregarding such contentious cases, which do not occur at the ends of words, the following sequences can occur as the [coda](https://en.wikipedia.org/wiki/Syllable_coda):

|  |  |
| --- | --- |
| The single consonant phonemes except /h/, /w/, /j/ and, in [non-rhotic varieties](https://en.wikipedia.org/wiki/Rhotic_and_non-rhotic_accents), /r/ |   |
| Lateral approximant plus stop or affricate: /lp/, /lb/, /lt/, /ld/, /ltʃ/, /ldʒ/, /lk/ | help, bulb, belt, hold, belch, indulge, milk |
| In rhotic varieties, /r/ plus stop or affricate: /rp/, /rb/, /rt/, /rd/, /rtʃ/, /rdʒ/, /rk/, /rɡ/ | harp, orb, fort, beard, arch, large, mark, morgue |
| Lateral approximant + fricative: /lf/, /lv/, /lθ/, /ls/, /lʃ/ | golf, solve, wealth, else, Welsh |
| In rhotic varieties, /r/ + fricative: /rf/, /rv/, /rθ/, /rs/, /rz/, /rʃ/ | dwarf, carve, north, force, Mars, marsh |
| Lateral approximant + nasal: /lm/, /ln/ | film, kiln |
| In rhotic varieties, /r/ + nasal or lateral: /rm/, /rn/, /rl/ | arm, born, snarl |
| Nasal + [homorganic](https://en.wikipedia.org/wiki/Homorganic) stop or affricate: /mp/, /nt/, /nd/, /ntʃ/, /ndʒ/, /ŋk/ | jump, tent, end, lunch, lounge, pink |
| Nasal + fricative: /mf/, /mθ/, /nθ/, /ns/, /nz/, /ŋθ/ in some varieties | triumph, warmth, month, prince, bronze, length |
| Voiceless fricative plus voiceless stop: /ft/, /sp/, /st/, /sk/ | left, crisp, lost, ask |
| Two voiceless fricatives: /fθ/ | fifth |
| Two voiceless stops: /pt/, /kt/ | opt, act |
| Stop plus voiceless fricative: /pθ/, /ps/, /tθ/, /ts/, /dθ/, /ks/ | depth, lapse, eighth, klutz, width, box |
| Lateral approximant + two consonants: /lpt/, /lps/, /lfθ/, /lts/, /lst/, /lkt/, /lks/ | sculpt, alps, twelfth, waltz, whilst, mulct, calx |
| In rhotic varieties, /r/ + two consonants: /rmθ/, /rpt/, /rps/, /rts/, /rst/, /rkt/ | warmth, excerpt, corpse, quartz, horst, infarct |
| Nasal + homorganic stop + stop or fricative: /mpt/, /mps/, /ndθ/, /ŋkt/, /ŋks/, /ŋkθ/ in some varieties | prompt, glimpse, thousandth, distinct, jinx, length |
| Three obstruents: /ksθ/, /kst/ | sixth, next |

Note: For some speakers, a fricative before /θ/ is elided so that these never appear phonetically: /fɪfθ/ becomes [fɪθ], /sɪksθ/ becomes [sɪkθ],[[*who?*](https://en.wikipedia.org/wiki/Wikipedia%3AManual_of_Style/Words_to_watch#Unsupported_attributions)] /twɛlfθ/ becomes [twɛlθ].

**Syllable-level rules**

1. Both the onset and the coda are optional.
2. Onset clusters ending in /j/ must be followed by /uː/ or its variants (see note 5 above).
3. Long vowels and diphthongs are not found before /ŋ/, except for the mimetic words *boing* and *oink*, unassimilated foreign words such as Burmese *aung* and proper names such as [*Taung*](https://en.wikipedia.org/wiki/Taung), and American-type pronunciations of words like *strong* (which have /ɔŋ/ or /ɑŋ/). The short vowels /ɛ, ʊ/ occur before /ŋ/ only in assimilated non-native words such as [*ginseng*](https://en.wikipedia.org/wiki/Ginseng) and [*Sung*](https://en.wikipedia.org/wiki/Sung_Dynasty) (name of dynasty) or non-finally in some dialects in words like *strength*.
4. /ŋ/ does not occur in syllable-initial position.
5. /h/ does not occur in syllable-final position.
6. /ʊ/ is rare in syllable-initial position[[76]](https://en.wikipedia.org/wiki/English_phonology#cite_note-76) (although in the northern half of England, [ʊ] is used for /ʌ/ and is common at the start of syllables).
7. Stop + /w/ before /uː, ʊ, ʌ, aʊ/ (all presently or historically /u(ː)/) are excluded.[[77]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEClementsKeyser1983?-77)
8. Sequences of /s/ + C1 + V̆ + C1, where C1 is a consonant other than /t/ and V̆ is a short vowel, are virtually nonexistent.[[77]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEClementsKeyser1983?-77)

**Word-level rules**

1. /ə/ does not occur in stressed syllables.
2. /ʒ/ does not occur in word-initial position in native English words, although it can occur syllable-initially as in *luxurious* /lʌɡˈʒʊəriəs/, and at the start of borrowed words such as *genre*.
3. /m/, /n/, /l/ and, in [rhotic varieties](https://en.wikipedia.org/wiki/Rhotic_and_non-rhotic_accents), /r/ can be the syllable nucleus (i.e. a [syllabic consonant](https://en.wikipedia.org/wiki/Syllabic_consonant)) in an unstressed syllable following another consonant, especially /t/, /d/, /s/ or /z/. Such syllables are often analyzed phonemically as having an underlying /ə/ as the nucleus. See above under [Consonants](https://en.wikipedia.org/wiki/English_phonology#Consonants).
4. The short vowels are [checked vowels](https://en.wikipedia.org/wiki/Checked_and_free_vowels), in that they cannot occur without a coda in a word-final stressed syllable. (This does not apply to /ə/, which does not occur in stressed syllables at all.)

**Prosody**

The [prosodic](https://en.wikipedia.org/wiki/Prosody_%28linguistics%29) features of English – stress, rhythm, and intonation – can be described as follows.

**Prosodic stress**

**Prosodic stress** is extra stress given to words or syllables when they appear in certain positions in an utterance, or when they receive special emphasis.

According to Ladefoged's analysis (as referred to under [Lexical stress § Notes](https://en.wikipedia.org/wiki/Lexical_stress#Notes) above), English normally has prosodic stress on the final stressed syllable in an [intonation unit](https://en.wikipedia.org/wiki/Intonation_unit). This is said to be the origin of the distinction traditionally made at the lexical level between primary and secondary stress: when a word like *admiration* (traditionally transcribed as something like /ˌædmɪˈreɪʃən/) is spoken in isolation, or at the end of a sentence, the syllable *ra* (the final stressed syllable) is pronounced with greater force than the syllable *ad*, although when the word is not pronounced with this final intonation there may be no difference between the levels of stress of these two syllables.

Prosodic stress can shift for various [pragmatic](https://en.wikipedia.org/wiki/Pragmatics) functions, such as focus or contrast. For instance, in the dialogue *Is it brunch tomorrow? No, it's* ***dinner*** *tomorrow*, the extra stress shifts from the last stressed syllable of the sentence, *to****mor****row*, to the last stressed syllable of the emphasized word, ***din****ner.*

Grammatical [function words](https://en.wikipedia.org/wiki/Function_word) are usually prosodically unstressed, although they can acquire stress when emphasized (as in *Did you find the cat? Well, I found* ***a*** *cat*). Many English function words have distinct strong and weak pronunciations; for example, the word *a* in the last example is pronounced /eɪ/, while the more common unstressed *a* is pronounced /ə/. See [Weak and strong forms in English](https://en.wikipedia.org/wiki/Weak_and_strong_forms_in_English).

**Rhythm**

English is claimed to be a [*stress-timed*](https://en.wikipedia.org/wiki/Timing_%28linguistics%29) language. That is, stressed syllables tend to appear with a more or less regular rhythm, while non-stressed syllables are shortened to accommodate this. For example, in the sentence *One make of car is better than another*, the syllables *one*, *make*, *car*, *bett-* and *-noth-* will be stressed and relatively long, while the other syllables will be considerably shorter. The theory of stress-timing predicts that each of the three unstressed syllables in between *bett-* and *-noth-* will be shorter than the syllable *of* between *make* and *car*, because three syllables must fit into the same amount of time as that available for *of*. However, it should not be assumed that all varieties of English are stress-timed in this way. The English spoken in the West Indies,[[78]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECollins_and_Mees2013138-78) in Africa[[79]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982644-79) and in India[[80]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells1982630–1-80) are probably better characterized as [syllable-timed](https://en.wikipedia.org/wiki/Isochrony), though the lack of an agreed scientific test for categorizing an accent or language as stress-timed or syllable-timed may lead one to doubt the value of such a characterization.[[81]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach198273–9-81)

**Intonation**

Phonological contrasts in intonation can be said to be found in three different and independent domains. In the work of Halliday[[82]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEHalliday196718–24-82) the following names are proposed:

1. *Tonality* for the distribution of continuous speech into tone groups.
2. *Tonicity* for the placing of the principal accent on a particular syllable of a word, making it the *tonic syllable*. This is the domain also referred to as [prosodic stress](https://en.wikipedia.org/wiki/Stress_%28linguistics%29#Prosodic_stress) or [sentence stress](https://en.wikipedia.org/wiki/Sentence_stress).
3. *Tone* for the choice of pitch movement on the tonic syllable. (The use of the term *tone* in this sense should not be confused with the [tone](https://en.wikipedia.org/wiki/Tone_%28linguistics%29) of tone languages, such as Chinese.)

These terms ("the Three Ts") have been used in more recent work,[[83]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTETench1996-83)[[84]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEWells2006-84) though they have been criticized for being difficult to remember.[[85]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTERoach2009144-85) American systems such as [ToBI](https://en.wikipedia.org/wiki/ToBI) also identify contrasts involving boundaries between intonation phrases (Halliday's *tonality*), placement of pitch accent (*tonicity*), and choice of tone or tones associated with the pitch accent (*tone*).

Example of phonological contrast involving placement of intonation unit boundaries (boundary marked by |):

a) Those who ran quickly | escaped. (the only people who escaped were those who ran quickly)

b) Those who ran | quickly escaped. (the people who ran escaped quickly)

Example of phonological contrast involving placement of tonic syllable (marked by capital letters):

a) I have plans to LEAVE. (= I am planning to leave)

b) I have PLANS to leave. (= I have some drawings to leave)

Example of phonological contrast (British English) involving choice of tone (\ = falling tone, \/ = fall-rise tone)

a) She didn't break the record because of the \ WIND. (= she did not break the record, because the wind held her up)

b) She didn't break the record because of the \/ WIND. (= she did break the record, but not because of the wind)

There is typically a contrast involving tone between [wh-questions](https://en.wikipedia.org/wiki/Wh-question) and [yes/no questions](https://en.wikipedia.org/wiki/Yes/no_question), the former having a falling tone (e.g. "Where did you \PUT it?") and the latter a rising tone (e.g. "Are you going /OUT?"), though studies of spontaneous speech have shown frequent exceptions to this rule.[[86]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTEBrown1990122–3-86) [Tag questions](https://en.wikipedia.org/wiki/Tag_questions) asking for information are said to carry rising tones (e.g. "They are coming on Tuesday, /AREN'T they?") while those asking for confirmation have falling tone (e.g. "Your name's John, \ISN'T it.").

**History of English pronunciation**

The pronunciation system of English has undergone many changes throughout the history of the language, from the [phonological system of Old English](https://en.wikipedia.org/wiki/Old_English_phonology), to [that of Middle English](https://en.wikipedia.org/wiki/Middle_English_phonology), through to that of the present day. Variation between [dialects](https://en.wikipedia.org/wiki/English_dialects) has always been significant. Former pronunciations of many words are reflected in their spellings, as [English orthography](https://en.wikipedia.org/wiki/English_orthography) has generally not kept pace with phonological changes since the Middle English period.

The English consonant system has been relatively stable over time, although [a number of significant changes](https://en.wikipedia.org/wiki/Phonological_history_of_English_consonants) have occurred. Examples include the loss (in most dialects) of the [ç] and [x] sounds still reflected by the ⟨gh⟩ in words like *night* and *taught*, and the splitting of voiced and voiceless allophones of fricatives into separate phonemes (such as the two different [phonemes represented by ⟨th⟩](https://en.wikipedia.org/wiki/Pronunciation_of_English_%E2%9F%A8th%E2%9F%A9)). There have also been many [changes in consonant clusters](https://en.wikipedia.org/wiki/Phonological_history_of_English_consonant_clusters), mostly reductions, for instance those that produced the usual modern pronunciations of such letter combinations as ⟨wr-⟩, ⟨kn-⟩ and [⟨wh-⟩](https://en.wikipedia.org/wiki/English_wh).

The [development of vowels](https://en.wikipedia.org/wiki/Phonological_history_of_English_vowels) has been much more complex. One of the most notable series of changes is that known as the [Great Vowel Shift](https://en.wikipedia.org/wiki/Great_Vowel_Shift), which began around the late 14th century. Here the [iː] and [uː] in words like *price* and *mouth* became diphthongized, and other long vowels became higher: [eː] became [iː] (as in *meet*), [aː] became [eː] and later [eɪ] (as in *name*), [oː] became [uː] (as in *goose*), and [ɔː] became [oː] and later [oʊ] (in RP now [əʊ]; as in *bone*). These shifts are responsible for the modern pronunciations of many written vowel combinations, including those involving a [silent final ⟨e⟩](https://en.wikipedia.org/wiki/Silent_e).

Many other changes in vowels have taken place over the centuries (see the separate articles on the [low back](https://en.wikipedia.org/wiki/Phonological_history_of_English_low_back_vowels), [high back](https://en.wikipedia.org/wiki/Phonological_history_of_English_high_back_vowels) and [high front](https://en.wikipedia.org/wiki/Phonological_history_of_English_high_front_vowels) vowels, [short A](https://en.wikipedia.org/wiki/Phonological_history_of_English_short_A), and [diphthongs](https://en.wikipedia.org/wiki/Phonological_history_of_English_diphthongs)). These various changes mean that many words that formerly rhymed (and may be expected to rhyme based on their spelling) no longer do.[[87]](https://en.wikipedia.org/wiki/English_phonology#cite_note-FOOTNOTECercignani1975513–8-87) For example, in [Shakespeare](https://en.wikipedia.org/wiki/William_Shakespeare)'s time, following the Great Vowel Shift, *food*, *good* and *blood* all had the vowel [uː], but in modern pronunciation *good* has been shortened to [ʊ], while *blood* has been shortened and lowered to [ʌ] in most accents. In other cases, words that were formerly distinct have come to be pronounced the same – examples of such mergers include [*meet–meat*](https://en.wikipedia.org/wiki/Meet%E2%80%93meat_merger), [*pane–pain*](https://en.wikipedia.org/wiki/Pane%E2%80%93pain_merger) and [*toe–tow*](https://en.wikipedia.org/wiki/Toe%E2%80%93tow_merger).

**Homophonic translation**

**Homophonic translation** renders a text in one language into a near-[homophonic](https://en.wikipedia.org/wiki/Homophones) text in another language, usually with no attempt to preserve the original meaning of the text. In one homophonic translation, for example, the English "sat on a wall" [/ˈsætɒnəˈwɔːl/](https://en.wikipedia.org/wiki/Help%3AIPA/English) is rendered as French *"s'étonne aux Halles"* [[setɔnoɑl]](https://en.wikipedia.org/wiki/Help%3AIPA/French) (literally "is surprised at the Market"). More generally, **homophonic transformation** renders a text into a near-homophonic text in the same or another language: *e.g.,* "recognize speech" could become "wreck a nice beach".

Homophonic translation may be used to render proper nouns in a foreign language. A more elegant solution, when possible, is [phono-semantic matching](https://en.wikipedia.org/wiki/Phono-semantic_matching), which attempts to have closer semantics as well as the proper sound.

Alternatively, homophonic translation may be used for humorous purpose, as [bilingual punning](https://en.wikipedia.org/wiki/Bilingual_pun) ([macaronic language](https://en.wikipedia.org/wiki/Macaronic_language)). This requires the listener or reader to understand both the surface, nonsensical translated text, as well as the [source text](https://en.wikipedia.org/wiki/Source_text)—the surface text then sounds like source text spoken in a foreign accent.

**Examples**

Frayer Jerker is a homophonic translation of the French [Frère Jacques](https://en.wikipedia.org/wiki/Fr%C3%A8re_Jacques) (1956).[[1]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-1) Other examples of homophonic translation include some works by [Oulipo](https://en.wikipedia.org/wiki/Oulipo) (1960–), [Frédéric Dard](https://en.wikipedia.org/wiki/Fr%C3%A9d%C3%A9ric_Dard), [Luis van Rooten](https://en.wikipedia.org/wiki/Luis_van_Rooten)'s English-French [*Mots D'Heures: Gousses, Rames*](https://en.wikipedia.org/wiki/Mots_D%27Heures%3A_Gousses%2C_Rames) (1967), [Louis Zukofsky](https://en.wikipedia.org/wiki/Louis_Zukofsky)'s Latin-English *Catullus Fragmenta* (1969), [Ormonde de Kay](https://en.wikipedia.org/w/index.php?title=Ormonde_de_Kay&action=edit&redlink=1)'s English-French [*N'Heures Souris Rames*](https://en.wikipedia.org/wiki/N%27Heures_Souris_Rames) (1980), John Hulme's German-English *Morder Guss Reims: The Gustav Leberwurst Manuscript*,[[2]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-2) and [David Melnick](https://en.wikipedia.org/wiki/David_Melnick)'s Ancient Greek-English [Men in Aida](https://en.wikipedia.org/wiki/Men_in_Aida) (1983).

Examples of homophonic transformation include [Howard L. Chace](https://en.wikipedia.org/wiki/Howard_L._Chace)'s "[Ladle Rat Rotten Hut](https://en.wikipedia.org/wiki/Ladle_Rat_Rotten_Hut)", written in "Anguish Languish" (English Language) and published in book form in 1956.

A British schoolboy example of [Dog Latin](https://en.wikipedia.org/wiki/Dog_Latin):[[3]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-3)

|  |  |  |
| --- | --- | --- |
| Caesar adsum jam forte.Brutus aderat.Caesar sic in omnibus.Brutus sic enat. | Caesar had some jam for tea.Brutus 'ad a rat.Caesar sick in omnibus.Brutus sick in 'at. | I, Caesar, am already here, as it happens.Brutus was here also.Caesar is so in all things.Brutus so escapes. |

Other names proposed for this genre include "allographic translation",[[4]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-4) "transphonation", or (in French) "*traducson*",[[5]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-genette-5) but none of these is widely used.

Here is van Rooten's version of [*Humpty Dumpty*](https://en.wikipedia.org/wiki/Humpty_Dumpty):[[6]](https://en.wikipedia.org/wiki/Homophonic_translation#cite_note-6)

|  |  |  |
| --- | --- | --- |
| Humpty DumptySat on a wall.Humpty DumptyHad a great fall.All the king's horsesAnd all the king's menCouldn't put HumptyTogether again. | *Un petit d'un petit**S'étonne aux Halles**Un petit d'un petit**Ah! degrés te fallent**Indolent qui ne sort cesse**Indolent qui ne se mène**Qu'importe un petit**Tout gai de Reguennes.* | A little one of a little oneIs surprised at the MarketA little one of a little oneOh, degrees fail you!Lazy is he who leaves stopsLazy is he who is not ledWho cares about a little oneAll happy with Reguennes |

The individual words are almost all correct French (with the exceptions that *fallent* is a form of the non-existent verb \**faller* and *Reguennes* is a [hapax legomenon](https://en.wikipedia.org/wiki/Hapax_legomenon)), and some passages follow standard syntax and are interpretable (though nonsensical), but the result is in fact not meaningful French.

**Song lyrics**

Homophonic translations of song lyrics, often combined with music videos, for comic effect—also known as [soramimi](https://en.wikipedia.org/wiki/Soramimi) in Japan and [mondegreen](https://en.wikipedia.org/wiki/Mondegreen) in English speaking countries—have gained popularity on the internet.

* [Holorime](https://en.wikipedia.org/wiki/Holorime), a form of rhyme where the entire line or phrase is repeated by a homophonic variant
* [Mondegreen](https://en.wikipedia.org/wiki/Mondegreen), the erroneous interpretation of language by homophony
* [Mots d'Heures](https://en.wikipedia.org/wiki/Mots_d%27Heures)
* [Soramimi](https://en.wikipedia.org/wiki/Soramimi), the reinterpretation of song lyrics by homophonic translation
* [Phono-semantic matching](https://en.wikipedia.org/wiki/Phono-semantic_matching) (PSM), a borrowing in which a foreign word is matched with a phonetically and semantically similar pre-existent native word/root.
* [Translation](https://en.wikipedia.org/wiki/Translation)
* [Mairzy Doats](https://en.wikipedia.org/wiki/Mairzy_Doats)

**Morphophonology**

**Morphophonology** (also **morphophonemics** or **morphonology**) is the branch of [linguistics](https://en.wikipedia.org/wiki/Linguistics) that studies the interaction between [morphological](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29) and [phonological](https://en.wikipedia.org/wiki/Phonology) or [phonetic](https://en.wikipedia.org/wiki/Phonetic) processes. Its chief focus is the sound changes that take place in [morphemes](https://en.wikipedia.org/wiki/Morpheme) (minimal meaningful units) when they combine to form words.

Morphophonological analysis often involves an attempt to give a series of formal rules that successfully predict the regular sound changes occurring in the morphemes of a given language. Such a series of rules converts a theoretical [underlying representation](https://en.wikipedia.org/wiki/Underlying_representation) into a surface form that is actually heard. The units of which the underlying representations of morphemes are composed are sometimes called **morphophonemes**. The surface form produced by the morphophonological rules may consist of [phonemes](https://en.wikipedia.org/wiki/Phoneme) (which are then subject to ordinary phonological rules to produce speech sounds or [*phones*](https://en.wikipedia.org/wiki/Phone_%28phonetics%29)), or else the morphophonological analysis may bypass the phoneme stage and produce the phones itself.

**Morphophonemes and morphophonological rules**

When [morphemes](https://en.wikipedia.org/wiki/Morpheme) combine, they influence each other's sound structure (whether analyzed at a phonetic or [phonemic](https://en.wikipedia.org/wiki/Phonemic) level), resulting in different variant pronunciations for the same morpheme. Morphophonology attempts to analyze these processes. A language's morphophonological structure is generally described with a series of rules which, ideally, can predict every morphophonological [alternation](https://en.wikipedia.org/wiki/Alternation_%28linguistics%29) that takes place in the language.

An example of a morphophonological alternation in English is provided by the [plural](https://en.wikipedia.org/wiki/Plural) morpheme, written as "-s" or "-es". Its pronunciation alternates between [s], [z], and [ɪz], as in *cats*, *dogs*, and *horses* respectively. A purely phonological analysis would most likely assign to these three endings the phonemic representations /s/, /z/, /ɪz/. On a morphophonological level, however, they may all be considered to be forms of the underlying object //z//, which is a **morphophoneme**. The different forms it takes are dependent on the segment at the end of the morpheme to which it attaches: the dependencies are described by morphophonological rules. (The behaviour of the English past tense ending "-ed" is similar: it can be pronounced /t/, /d/ or /ɪd/, as in *hoped*, *bobbed* and *added*.)

The plural suffix "-s" can also influence the form taken by the preceding morpheme, as in the case of the words *leaf* and *knife*, which end with [f] in the singular/but have [v] in the plural (*leaves*, *knives*). On a morphophonological level, the morphemes may be analyzed as ending in a morphophoneme //F//, which becomes [voiced](https://en.wikipedia.org/wiki/Voiced_consonant) when a voiced consonant (in this case the //z// of the plural ending) is attached to it. The rule may be written symbolically as /F/ -> [αvoice] / \_\_ [αvoice]. This expression is called Alpha Notation in which α can be +(positive value) or -(negative value).

Common conventions to indicate a morphophonemic rather than phonemic representation are double slashes (//  //) (as above, implying that the transcription is 'more phonemic than simply phonemic'), pipes (|  |), double pipes (‖  ‖)[[1]](https://en.wikipedia.org/wiki/Morphophonology#cite_note-1) and curly brackets ({  }).[[2]](https://en.wikipedia.org/wiki/Morphophonology#cite_note-2)

For instance, the English word *cats* may be transcribed phonetically as [ˈkʰæts], phonemically as /ˈkæts/ and morphophonemically as //ˈkætz//, if the plural is argued to be underlyingly //z//, assimilating to /s/ after a voiceless nonsibilant. The tilde ~ may indicate morphological alternation, as in //ˈniː~ɛl+t// for *kneel~knelt* (the plus sign '+' indicates a morpheme boundary).[[3]](https://en.wikipedia.org/wiki/Morphophonology#cite_note-3)

**Relation with phonology**

Until the 1950s, many phonologists assumed that [neutralizing](https://en.wikipedia.org/wiki/Neutralization_%28linguistics%29) rules generally applied before [allophonic](https://en.wikipedia.org/wiki/Allophone) rules. Thus phonological analysis was split into two parts: a morphophonological part, where neutralizing rules were developed to derive phonemes from morphophonemes; and a purely phonological part, where phones were derived from the phonemes. Since the 1960s (in particular with the work of the [generative](https://en.wikipedia.org/wiki/Generative_linguistics) school, such as Chomsky and Halle's [*The Sound Pattern of English*](https://en.wikipedia.org/wiki/The_Sound_Pattern_of_English)) many linguists have moved away from making such a split, instead regarding the surface phones as being derived from the underlying morphophonemes (which may be referred to using various terminology) through a single system of [(morpho)phonological rules](https://en.wikipedia.org/wiki/Phonological_rule).

The purpose of both phonemic and morphophonemic analysis is to produce simpler underlying descriptions for what appear on the surface to be complicated patterns. In purely phonemic analysis the data is just a set of words in a language, while for the purposes of morphophonemic analysis the words must be considered in grammatical [paradigms](https://en.wikipedia.org/wiki/Inflection) to take account of the underlying [morphemes](https://en.wikipedia.org/wiki/Morphemes). It is postulated that morphemes are recorded in the speaker's "[lexicon](https://en.wikipedia.org/wiki/Lexicon)" in an invariant (morphophonemic) form, which, in a given environment, is converted by rules into a surface form. The analyst attempts to present as completely as possible a system of underlying units (morphophonemes) and a series of rules that act on them, so as to produce surface forms consistent with the linguistic data.

**Isolation forms**

The **isolation form** of a morpheme is the form in which that morpheme appears in isolation (when not subject to the effects of any other morpheme). In the case of a [bound morpheme](https://en.wikipedia.org/wiki/Bound_morpheme), such as the English past tense ending "-ed", it will generally not be possible to identify an isolation form, since such a morpheme does not occur in isolation.

It is often reasonable to assume that the isolation form of a morpheme provides its underlying representation. For example, in some varieties of [American English](https://en.wikipedia.org/wiki/American_English), *plant* is pronounced [plænt], while *planting* is [ˈplænɪŋ], where the morpheme "plant-" appears in the form [plæn]. Here the underlying form can be assumed to be //plænt//, corresponding to the isolation form, since rules can be set up to derive the reduced form [plæn] from this (while it would be difficult or impossible to set up rules that would derive the isolation form [plænt] from an underlying //plæn//).

That is not always the case, however; sometimes the isolation form itself is subject to [neutralization](https://en.wikipedia.org/wiki/Neutralization_%28linguistics%29) that does not apply to some other instances of the morpheme. For example, the French word *petit* ("small") is pronounced in isolation without the final [t] sound, but in certain derived forms (such as the feminine *petite*), the [t] is heard. If the isolation form were adopted as the underlying form, the information that there is a final "t" would be lost, and it would be hard then to explain the appearance of the "t" in the inflected forms.

Assume that the grammar of a language has two rules, rule A and rule B, with A ordered before B. If, in a given derivation, the application of rule A creates the environment for rule B to apply, which was not present before the application of rule A, rule A and B are in a *feeding relationship* so rule A feeds rule B.

Assuming again rule A and B, with A ordered before B in the derivation in which rule A destroys the environment to which rule B shall apply, one says A and B are in a *bleeding order*.

If it is assumed again that a pair of rules A and B, with A ordered before B and B creating an environment to which A could have applied, B is said to counterfeed A, and the relationship is *counterfeeding*.

If one assumes a pair of rules A and B and A ordered before B is in a *counterbleeding* relationship if B destroys the environment that A applies to and has already applied, therefore, B ordered after A has missed its chance to bleed A.

*Conjunctive ordering* is the ordering that ensures that all rules are applied in a derivation before the surface representation is arrived at. One says that rules applied in a feeding relationship are *conjunctively ordered*.

*Disjunctive ordering* is a rule that applies and prevents the other rule to apply up to the surface representation. Such rules have a bleeding relationship and are *disjunctively ordered*.

**Orthography**

The principle behind [alphabetic](https://en.wikipedia.org/wiki/Alphabet) writing systems is that the letters ([graphemes](https://en.wikipedia.org/wiki/Grapheme)) represent [phonemes](https://en.wikipedia.org/wiki/Phoneme). However, in many [orthographies](https://en.wikipedia.org/wiki/Orthography) based on such systems the correspondences between graphemes and phonemes are not exact, and it is sometimes the case that certain spellings better represent a word's morphophonological structure rather than the purely phonological. An example of this is that the English plural morpheme is written *-s* regardless of whether it is pronounced as /s/ or /z/; we write *cat****s*** and *dog****s***, not *dog****z***.

The above example involves active morphology ([inflection](https://en.wikipedia.org/wiki/Inflection)), and morphophonemic spellings are common in this context in many languages. Another type of spelling that can be described as morphophonemic is the kind that reflects the [etymology](https://en.wikipedia.org/wiki/Etymology) of words. Such spellings are particularly common in English; examples include ***sci****ence* /saɪ/ vs. *uncon****sci****ous* /ʃ/, ***pre****judice* /prɛ/ vs. ***pre****quel* /priː/, ***sign*** /saɪn/ ***sign****ature* /sɪɡn/, ***na****tion* /neɪ/ vs. ***na****tionalism* /næ/, and ***spec****ial* /spɛ/ vs. ***spec****ies* /spiː/.

For more detail on this topic, see [Phonemic orthography](https://en.wikipedia.org/wiki/Phonemic_orthography), in particular the section on [Morphophonemic features](https://en.wikipedia.org/wiki/Phonemic_orthography#Morphophonemic_features).

**Nasalization**

In [phonetics](https://en.wikipedia.org/wiki/Phonetics), **nasalization** (or **nasalisation**) is the production of a sound while the [velum](https://en.wikipedia.org/wiki/Soft_palate) is lowered, so that some air escapes through the nose during the production of the sound by the mouth. An archetypal nasal sound is [n].

In the [International Phonetic Alphabet](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet), nasalization is indicated by printing a [tilde](https://en.wikipedia.org/wiki/Tilde) diacritic U+0303 ◌̃ COMBINING TILDE (HTML &#771;) above the symbol for the sound to be nasalized: [ã] is the nasalized equivalent of [a], and [ṽ] is the nasalized equivalent of [v]. An older IPA subscript diacritic [ą], called an [ogonek](https://en.wikipedia.org/wiki/Ogonek) or [nosinė](https://en.wikipedia.org/wiki/Nosin%C4%97), is still seen, especially when the vowel bears [tone](https://en.wikipedia.org/wiki/Tone_%28linguistics%29) marks that would interfere with the superscript tilde. For example, [ą̄ ą́ ą̀ ą̂ ą̌] are more legible in most fonts than [ã̄ ã́ ã̀ ã̂ ã̌].

**Nasal vowels**

Nasal vowels are found in various languages around the world, such as [French](https://en.wikipedia.org/wiki/French_language), [Polish](https://en.wikipedia.org/wiki/Polish_language), [Portuguese](https://en.wikipedia.org/wiki/Portuguese_language), [Breton](https://en.wikipedia.org/wiki/Breton_language), [Hindi](https://en.wikipedia.org/wiki/Hindi), [Hmong](https://en.wikipedia.org/wiki/Hmong_language), [Hokkien](https://en.wikipedia.org/wiki/Hokkien), [Yoruba](https://en.wikipedia.org/wiki/Yoruba_language) and [Cherokee](https://en.wikipedia.org/wiki/Cherokee_language). Those nasal vowels contrast with [oral vowels](https://en.wikipedia.org/wiki/Oral_vowel). Many languages, however, have only oral vowels or do not contrast oral and nasalizational vowels.

There are occasional cases for vowels showing contrasting degrees of nasality.[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)]. One such is [Palantla Chinantec](https://en.wikipedia.org/wiki/Palantla_Chinantec).[[1]](https://en.wikipedia.org/wiki/Nasalization#cite_note-1)

**Nasal consonants**

By far the most common nasal sounds are [nasal consonants](https://en.wikipedia.org/wiki/Nasal_consonant) such as [m], [n] or [ŋ]. Most nasal consonants are occular, and airflow through the mouth is blocked and redirected through the nose. Their oral counterparts are the [stops](https://en.wikipedia.org/wiki/Stop_consonant).

**Nasalized consonants**

Nasalized versions of other consonant sounds also exist but are much rarer than either nasal occlusives or nasal vowels. Some [South Arabian languages](https://en.wikipedia.org/wiki/Modern_South_Arabian_languages) use [phonemic](https://en.wikipedia.org/wiki/Phonemic) nasalized fricatives, such as /z̃/, which sounds something like a simultaneous [n] and [z]. The [Chinese](https://en.wikipedia.org/wiki/Chinese_language) [consonant](https://en.wikipedia.org/wiki/Rime_table) [日](https://en.wikipedia.org/w/index.php?title=Wiki:%E6%97%A5&action=edit&redlink=1) ([ȵʑ]) has an odd history; for example, it has evolved into [[ʐ](https://en.wikipedia.org/wiki/Voiced_retroflex_fricative)] and [ɑɻ] (or [[ɻ](https://en.wikipedia.org/wiki/Retroflex_approximant)] and [[ɚ](https://en.wikipedia.org/wiki/R-colored_vowel)] respectively, depending on accents) in [Standard Chinese](https://en.wikipedia.org/wiki/Standard_Chinese); [[z](https://en.wikipedia.org/wiki/Voiced_alveolar_fricative#Voiced_alveolar_sibilant)]/[[ʑ](https://en.wikipedia.org/wiki/Voiced_alveolo-palatal_fricative)] and [[n](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_nasals#Alveolar)] in [Hokkien](https://en.wikipedia.org/wiki/Hokkien); [z]/[ʑ] and [n]/[[ɲ](https://en.wikipedia.org/wiki/Palatal_nasal#Palatal_or_alveolo-palatal)] while borrowed into Japan. It seems likely that it was once a nasalized fricative, perhaps a palatal [ʝ̃].

In [Coatzospan Mixtec](https://en.wikipedia.org/wiki/Coatzospan_Mixtec), fricatives and affricates are nasalized before nasal vowels even when they are voiceless. In the [Hupa](https://en.wikipedia.org/wiki/Hupa_language), the [velar nasal](https://en.wikipedia.org/wiki/Velar_nasal) /ŋ/ often has the tongue not make full contact, resulting in a nasalized approximant, [ɰ̃]. That is [cognate](https://en.wikipedia.org/wiki/Cognate) with a [nasalized palatal approximant](https://en.wikipedia.org/wiki/Nasal_palatal_approximant)] [ȷ̃] in other [Athabaskan languages](https://en.wikipedia.org/wiki/Athabaskan_languages).

In [Umbundu](https://en.wikipedia.org/wiki/Umbundu_language), phonemic /ṽ/ contrasts with the ([allophonically](https://en.wikipedia.org/wiki/Allophone%22%20%5Co%20%22Allophone)) nasalized approximate [w̃] and so is likely to be a true fricative rather than an approximate.[[*further explanation needed*](https://en.wikipedia.org/wiki/Wikipedia%3APlease_clarify)] In [Old](https://en.wikipedia.org/wiki/Old_Irish) and [Middle Irish](https://en.wikipedia.org/wiki/Middle_Irish), the [lenited](https://en.wikipedia.org/wiki/Lenition) ⟨m⟩ was a nasalized bilabial fricative.[[2]](https://en.wikipedia.org/wiki/Nasalization#cite_note-2)

[Sundanese](https://en.wikipedia.org/wiki/Sundanese_language) has an allophonic nasalized [glottal stop](https://en.wikipedia.org/wiki/Glottal_stop) [ʔ̃]; nasalized stops can occur only with pharyngeal articulation or lower, or they would be simple nasals.[[3]](https://en.wikipedia.org/wiki/Nasalization#cite_note-3) Nasal [flaps](https://en.wikipedia.org/wiki/Flap_consonant) are common allophonically. Many West African languages have a nasal flap [ɾ̃] (or [n̆]) as an allophone of /ɾ/ before a nasal vowel; [Pashto](https://en.wikipedia.org/wiki/Pashto_language), however, has a phonemic nasal [retroflex lateral flap](https://en.wikipedia.org/wiki/Retroflex_lateral_flap).

Other languages, such as the [Khoisan languages](https://en.wikipedia.org/wiki/Khoisan_languages) of [Khoekhoe](https://en.wikipedia.org/wiki/Khoekhoe_language) and [Gǀui](https://en.wikipedia.org/wiki/G%C7%80ui_dialect), as well as several of the [!Kung languages](https://en.wikipedia.org/wiki/%21Kung_language), include [nasal click](https://en.wikipedia.org/wiki/Nasal_click) consonants. Nasalization of the phonemes is denoted with a superscript ⟨ᵑ⟩ preceding the consonant (for example, ⟨ᵑǂ⟩).[[4]](https://en.wikipedia.org/wiki/Nasalization#cite_note-4) Nasalized laterals such as [l̃] are easy to produce but rare or nonexistent as phonemes; often when [l] is nasalized, it becomes [n].

**True nasal fricatives**

Besides nasalized oral fricatives, there are true nasal fricatives, previously called *nareal fricatives*. They are sometimes produced by people with disordered speech. The [turbulence](https://en.wikipedia.org/wiki/Turbulence) in the airflow characteristic of [fricatives](https://en.wikipedia.org/wiki/Fricative) is produced not in the mouth but in the [nasal cavity](https://en.wikipedia.org/wiki/Nasal_cavity). A tilde and [trema](https://en.wikipedia.org/wiki/Trema_%28diacritic%29) diacritic (two dots representing the nostrils) is used for this in the [extensions to the IPA](https://en.wikipedia.org/wiki/Extensions_to_the_IPA): [n͋] is a voiced alveolar nasal fricative, with no airflow out of the mouth, and [n̥͋] is the voiceless equivalent; [v͋] is an oral fricative with simultaneous nasal frication. No known language makes use of nasal fricatives in non-disordered speech.

**Denasalization**

Nasalization may be lost over time. There are also [denasal](https://en.wikipedia.org/wiki/Denasalization) sounds, which sound like nasals spoken with a head cold. They may be found in non-pathological speech as a language loses nasal consonants, as in [Korean](https://en.wikipedia.org/wiki/Korean_language).

**Contextual nasalization**

Vowels assimilate to surrounding [nasal consonants](https://en.wikipedia.org/wiki/Nasal_consonant) in many languages, such as [Thai](https://en.wikipedia.org/wiki/Thai_language), creating nasal vowel allophones. Some languages exhibit a nasalization of [segments](https://en.wikipedia.org/wiki/Segment_%28linguistics%29) adjacent to phonemic or allophonic [nasal vowels](https://en.wikipedia.org/wiki/Nasal_vowels), such as [Apurinã](https://en.wikipedia.org/wiki/Apurin%C3%A3_language).

Contextual nasalization can lead to the addition of nasal vowel phonemes to a language.[[5]](https://en.wikipedia.org/wiki/Nasalization#cite_note-5) That happened in French, most of whose final consonants disappeared, but its final nasals made the preceding vowels become nasal, which introduced a new distinction into the language. An example is *vin blanc* [[vɛ̃ blɑ̃]](https://en.wikipedia.org/wiki/Help%3AIPA/French) ('white wine'), ultimately from [Latin](https://en.wikipedia.org/wiki/Latin) *vinum* and *blancum*.

**Phonotactics**

**Phonotactics** (from [Ancient Greek](https://en.wikipedia.org/wiki/Ancient_Greek) *phōnḗ* "voice, sound" and *tacticós* "having to do with arranging")[[1]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-1) is a branch of [phonology](https://en.wikipedia.org/wiki/Phonology) that deals with restrictions in a [language](https://en.wikipedia.org/wiki/Language) on the permissible combinations of [phonemes](https://en.wikipedia.org/wiki/Phoneme). Phonotactics defines permissible [syllable](https://en.wikipedia.org/wiki/Syllable) structure, [consonant clusters](https://en.wikipedia.org/wiki/Consonant_cluster) and [vowel](https://en.wikipedia.org/wiki/Vowel) sequences by means of *phonotactic constraints*.

Phonotactic constraints are highly language specific. For example, in [Japanese](https://en.wikipedia.org/wiki/Japanese_language), consonant clusters like /st/ do not occur. Similarly, the clusters /kn/ and /ɡn/ are not permitted at the beginning of a word in Modern English but are in [German](https://en.wikipedia.org/wiki/German_language) and [Dutch](https://en.wikipedia.org/wiki/Dutch_language) and were permitted in [Old](https://en.wikipedia.org/wiki/Old_English) and [Middle English](https://en.wikipedia.org/wiki/Middle_English). In contrast, in some [Slavic languages](https://en.wikipedia.org/wiki/Slavic_languages) /l/ and /r/ are used alongside vowels as syllable nuclei.

Syllables have the following internal segmental structure:

* [Onset](https://en.wikipedia.org/wiki/Syllable_onset) (optional)
* [Rhyme](https://en.wikipedia.org/wiki/Syllable_rhyme) (obligatory, comprises nucleus and coda):
	+ [Nucleus](https://en.wikipedia.org/wiki/Syllable_nucleus) (obligatory)
	+ [Coda](https://en.wikipedia.org/wiki/Syllable_coda) (optional)

Both onset and coda may be empty, forming a vowel-only syllable, or alternatively, the nucleus can be occupied by a [syllabic consonant](https://en.wikipedia.org/wiki/Syllabic_consonant). Phonotactics is known to affect [second language](https://en.wikipedia.org/wiki/Second_language) [vocabulary acquisition](https://en.wikipedia.org/wiki/Vocabulary_acquisition).[[2]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-FOOTNOTELaufer1997-2)

**English phonotactics**

The English syllable (and word) *twelfths* /twɛlfθs/ is divided into the onset /tw/, the nucleus /ɛ/ and the coda /lfθs/; thus, it can be described as CCVCCCC (C = consonant, V = vowel). On this basis it is possible to form rules for which representations of phoneme classes may fill the cluster. For instance, English allows at most three consonants in an onset, but among native words under standard accents (and excluding a few obscure learned words such as *sphragistics*), phonemes in a three-consonantal onset are limited to the following scheme:[[3]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-3)

/s/ + [stop](https://en.wikipedia.org/wiki/Stop_consonant) + [approximant](https://en.wikipedia.org/wiki/Approximant_consonant):

* /s/ + /m/ + /j/
* /s/ + /t/ + /ɹ/
* /s/ + /t/ + /j/ (not in most accents of [American English](https://en.wikipedia.org/wiki/American_English))
* /s/ + /p/ + /j ɹ l/
* /s/ + /k/ + /j ɹ l w/

This constraint can be observed in the pronunciation of the word *blue*: originally, the vowel of *bl****ue*** was identical to the vowel of *c****ue***, approximately [iw]. In most dialects of English, [iw] shifted to [juː]. Theoretically, this would produce \*\*[bljuː]. The cluster [blj], however, infringes the constraint for three-consonantal onsets in English. Therefore, the pronunciation has been reduced to [bluː] by [elision](https://en.wikipedia.org/wiki/Elision) of the [j].

Not all languages have this constraint: compare [Spanish](https://en.wikipedia.org/wiki/Spanish_language) ***pli****egue* [ˈpljeɣe] or [French](https://en.wikipedia.org/wiki/French_language) ***plu****ie* [plɥi].

In English, there exist fourteen constraints on phonotactics:[[4]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-4)

1. All syllables have a nucleus
2. No [geminates](https://en.wikipedia.org/wiki/Geminate)
3. No onset /ŋ/
4. No /h/ in the [syllable coda](https://en.wikipedia.org/wiki/Syllable_coda)
5. No [affricates](https://en.wikipedia.org/wiki/Affricate_consonant) in complex onsets
6. The first consonant in a complex onset must be an [obstruent](https://en.wikipedia.org/wiki/Obstruent)
7. The second consonant in a complex onset must not be a voiced obstruent
8. If the first consonant in a complex onset is not an /s/, the second must be a [liquid](https://en.wikipedia.org/wiki/Liquid_consonant) or a [glide](https://en.wikipedia.org/wiki/Glide_consonant)
9. Every subsequence contained within a sequence of consonants must obey all the relevant phonotactic rules (the substring principle)[[5]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-5)
10. No glides in codas
11. If there is a complex coda, the second consonant must not be /ŋ/, /ʒ/, or /ð/
12. If the second consonant in a complex coda is voiced, so is the first
13. Non-alveolar nasals must be [homorganic](https://en.wikipedia.org/wiki/Homorganic_consonants) with the next segment
14. Two obstruents in the same coda must share [voicing](https://en.wikipedia.org/wiki/Consonant_voicing_and_devoicing)

**Sonority Sequencing Principle**

Segments of a syllable are universally distributed following what is called the Sonority Sequencing Principle (SSP), which states that, in any syllable, the nucleus has maximal sonority and that sonority decreases as you move away from the nucleus. Sonority is a measure of the amplitude of a speech sound. The particular ranking of each speech sound by sonority, called the [sonority hierarchy](https://en.wikipedia.org/wiki/Sonority_hierarchy), is language-specific, but, in its broad lines, hardly varies from a language to another,[[6]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-6) which means all languages form their syllables in approximately the same way with regards to sonority.

To illustrate the SSP, the [voiceless alveolar fricative](https://en.wikipedia.org/wiki/Voiceless_alveolar_fricative) [s] is lower on the sonority hierarchy than the [alveolar lateral approximant](https://en.wikipedia.org/wiki/Alveolar_lateral_approximant) [l], so the combination /sl/ is permitted in onsets and /ls/ is permitted in codas, but /ls/ is not allowed in onsets and /sl/ is not allowed in codas. Hence *slips* /slɪps/ and *pulse* /pʌls/ are possible English words while *\*lsips* and *\*pusl* are not.

The SSP expresses a very strong cross-linguistic tendency, however, it does not account for the patterns of all complex syllable margins. It may be violated in two ways: the first occurs when two segments in a margin have the same sonority, which is known as a *sonority plateau*. Such margins are found in a few languages, including English, as in the words *sphinx* and *fact*.

The second instance of violation of the SSP is when a peripheral segment of a margin has a higher sonority than a segment closer to the nucleus. These margins are known as reversals and occur in some languages including English (*steal* [stiːɫ], *bets* /bɛts/) or French (*dextre* /dɛkstʁ/, *strict* /stʁikt/).[[7]](https://en.wikipedia.org/wiki/Phonotactics#cite_note-7)

**Reduplication**

**Reduplication** in [linguistics](https://en.wikipedia.org/wiki/Linguistics) is a [morphological](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29) process in which the [root](https://en.wikipedia.org/wiki/Root_%28linguistics%29) or [stem](https://en.wikipedia.org/wiki/Stem_%28linguistics%29) of a [word](https://en.wikipedia.org/wiki/Word) (or part of it) or even the whole word is repeated exactly or with a slight change.

Reduplication is used in [inflections](https://en.wikipedia.org/wiki/Inflection) to convey a grammatical function, such as plurality, intensification, etc., and in [lexical](https://en.wikipedia.org/wiki/Lexicon) [derivation](https://en.wikipedia.org/wiki/Derivation_%28linguistics%29) to create new words. It is often used when a speaker adopts a tone more "expressive" or figurative than ordinary speech and is also often, but not exclusively, [iconic](https://en.wikipedia.org/wiki/Iconicity) in meaning. Reduplication is found in a wide range of languages and language groups, though its level of [linguistic productivity](https://en.wikipedia.org/wiki/Productivity_%28linguistics%29) varies.

*Reduplication* is the standard term for this phenomenon in the linguistics literature. Other terms that are occasionally used include *cloning*, *doubling*, *duplication*, *repetition*, and [*tautonym*](https://en.wikipedia.org/wiki/Tautonym) when it is used in [biological taxonomies](https://en.wikipedia.org/wiki/Taxonomy_%28biology%29), such as "Bison bison".

The origin of this usage of *tautonym* is uncertain, but it has been suggested that it is of relatively recent derivation.

**Typological description**

**Form**

Reduplication is often described [phonologically](https://en.wikipedia.org/wiki/Phonology) in one of two different ways: either (1) as reduplicated *segments* (sequences of [consonants](https://en.wikipedia.org/wiki/Consonants)/[vowels](https://en.wikipedia.org/wiki/Vowels)) or (2) as reduplicated [*prosodic*](https://en.wikipedia.org/wiki/Prosody_%28linguistics%29) *units* ([syllables](https://en.wikipedia.org/wiki/Syllable) or [moras](https://en.wikipedia.org/wiki/Mora_%28linguistics%29)). In addition to phonological description, reduplication often needs to be described [morphologically](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29) as a reduplication of linguistic [constituents](https://en.wikipedia.org/wiki/Constituent_%28linguistics%29) (i.e. [words](https://en.wikipedia.org/wiki/Word_%28linguistics%29), [stems](https://en.wikipedia.org/wiki/Stem_%28linguistics%29), [roots](https://en.wikipedia.org/wiki/Root_%28linguistics%29)). As a result, reduplication is interesting theoretically as it involves the interface between phonology and morphology.

The *base* is the word (or part of the word) that is to be copied. The reduplicated element is called the ***reduplicant***, often abbreviated as *RED* or sometimes just *R*.

In reduplication, the reduplicant is most often repeated only once. However, in some languages, reduplication can occur more than once, resulting in a tripled form, and not a *duple* as in most reduplication. **Triplication** is the term for this phenomenon of copying two times.[[1]](https://en.wikipedia.org/wiki/Reduplication#cite_note-1) [Pingelapese](https://en.wikipedia.org/wiki/Pingelapese) has both reduplication and triplication.

|  |  |  |
| --- | --- | --- |
| **Basic verb** | **Reduplication** | **Triplication** |
| *kɔul*  'to sing' | *kɔukɔul*  'singing' | *kɔukɔukɔul*  'still singing' |
| *mejr*  'to sleep' | *mejmejr*  'sleeping' | *mejmejmejr*  'still sleeping' |

*(Rehg 1981)*

Triplication occurs in other languages, e.g. [Ewe](https://en.wikipedia.org/wiki/Ewe_language), [Shipibo](https://en.wikipedia.org/wiki/Shipibo_language), [Twi](https://en.wikipedia.org/wiki/Twi_language), [Mokilese](https://en.wikipedia.org/wiki/Mokilese_language), [Min Nan](https://en.wikipedia.org/wiki/Min_Nan) ([Hokkien](https://en.wikipedia.org/wiki/Hokkien)), [Stau](https://en.wikipedia.org/wiki/Horpa_language) *(Gates 2016).*

*Sometimes* [*gemination*](https://en.wikipedia.org/wiki/Gemination) *(i.e. the doubling of consonants or vowels) is considered to be a form of reduplication. The term dupleme has been used (after morpheme) to refer to different types of reduplication that have the same meaning.*

***Full and partial reduplication***

*Full reduplication involves a reduplication of the entire word. For example,* [*Kham*](https://en.wikipedia.org/wiki/Kham_language) *derives reciprocal forms from* [*reflexive*](https://en.wikipedia.org/wiki/Reflexive_pronoun) *forms by total reduplication:*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [ɡin] | 'ourselves' | → | [ɡinɡin] | 'we (to) us' | (ɡin-ɡin) |
|   |   | [jaː] | 'themselves' | → | [jaːjaː] | 'they (to) them' | (jaː-jaː) | *(Watters 2002)* |

Another example is from Musqueam [Halkomelem](https://en.wikipedia.org/wiki/Halkomelem) "dispositional" [aspect](https://en.wikipedia.org/wiki/Grammatical_aspect) formation:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [kʼʷə́ɬ] | 'to capsize' | → | [kʼʷə́ɬkʼʷəɬ] | 'likely to capsize' | (kʼʷə́ɬ-kʼʷəɬ) |
|   |   | [qʷél] | 'to speak' | → | [qʷélqʷel] | 'talkative' | (qʷél-qʷel) | *(Shaw 2004)* |

*Partial reduplication* involves a reduplication of only part of the word. For example, [Marshallese](https://en.wikipedia.org/wiki/Marshallese_language) forms words meaning 'to wear X' by reduplicating the last *consonant-vowel-consonant* (*CVC*) sequence of a base, i.e. *base*+*CVC*:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | *kagir* | 'belt' | → | *kagirgir* | 'to wear a belt' | (kagir-gir) |
|   |   | *takin* | 'sock' | → | *takinkin* | 'to wear socks' | (takin-kin) | *(Moravsik 1978)* |

Many languages often use both full and partial reduplication, as in the [Motu](https://en.wikipedia.org/wiki/Motu_language) example below:

|  |  |  |
| --- | --- | --- |
| **Base verb** | **Full reduplication** | **Partial reduplication** |
| *mahuta*  'to sleep' | *mahutamahuta*  'to sleep constantly' | *mamahuta*  'to sleep (plural)' |
|   | (*mahuta-mahuta*) | (*ma-mahuta*) |

**Reduplicant position**

Reduplication may be *initial* (i.e. [prefixal](https://en.wikipedia.org/wiki/Prefix_%28linguistics%29)), *final* (i.e. [suffixal](https://en.wikipedia.org/wiki/Suffix)), or *internal* (i.e. [infixal](https://en.wikipedia.org/wiki/Infix)), e.g.

**Initial** reduplication in [Agta](https://en.wikipedia.org/wiki/Aeta_peoples#Language) *(CV- prefix)*:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [ɸuɾab] | 'afternoon' | → | [ɸuɸuɾab] | 'late afternoon' | (*ɸu*-ɸuɾab) |
|   |   | [ŋaŋaj] | 'a long time' | → | [ŋaŋaŋaj] | 'a long time (in years)' | (*ŋa*-ŋaŋaj) | *(Healey 1960)* |

**Final** reduplication in [Dakota](https://en.wikipedia.org/wiki/Lakota_language) *(-CCV suffix)*:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [hãska] | 'tall (singular)' | → | [hãskaska] | 'tall (plural)' | (hãska-*ska*) |
|   |   | [waʃte] | 'good (singular)' | → | [waʃteʃte] | 'good (plural)' | (waʃte-*ʃte*) | *(Shaw 1980, Marantz 1982, Albright 2002)* |

**Internal** reduplication in [Samoan](https://en.wikipedia.org/wiki/Samoan_language) *(-CV- infix)*:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | *savali* | 'he/she walks' (singular) | → | *savavali* | 'they walk' (plural) | (sa-*va*-vali) |
|   |   | *alofa* | 'he/she loves' (singular) | → | *alolofa* | 'they love' (plural) | (a-*lo*-lofa) | *(Moravcsik 1978, Broselow and McCarthy 1984)* |
|   |   | *le tamaloa* | 'the man' (singular)[[2]](https://en.wikipedia.org/wiki/Reduplication#cite_note-pratt-2) | → | *tamaloloa* | 'men' (plural) | (tama-*lo*-loa) |  |

Internal reduplication is much less common than the initial and final types.

**Copying direction**

A reduplicant can copy from either the left edge of a word (*left-to-right* copying) or from the right edge (*right-to-left* copying). There is a tendency for prefixing reduplicants to copy left-to-right and for suffixing reduplicants to copy right-to-left:

Initial **L → R** copying in Oykangand [Kunjen](https://en.wikipedia.org/w/index.php?title=Kunjen&action=edit&redlink=1) (a [Pama–Nyungan](https://en.wikipedia.org/wiki/Pama%E2%80%93Nyungan_languages) language of [Australia](https://en.wikipedia.org/wiki/Australia)):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   |   | [eder] | → | [ededer] | 'rain' | (*ed*-eder) |
|   |   | [alɡal] | → | [alɡalɡal] | 'straight' | (*alg*-algal) |

Final **R → L** copying in [Sirionó](https://en.wikipedia.org/wiki/Sirion%C3%B3):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   |   | *achisia* | → | *achisiasia* | 'I cut' | (achisia-*sia*) |
|   |   | *ñimbuchao* | → | *ñimbuchaochao* | 'to come apart' | (ñimbuchao-*chao*) | *(McCarthy and Prince 1996)* |

Copying from the other direction is possible although less common:

Initial **R → L** copying in [Tillamook](https://en.wikipedia.org/wiki/Tillamook_language):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [ɡaɬ] | 'eye' | → | [ɬɡaɬ] | 'eyes' | (*ɬ*-ɡaɬ) |
|   |   | [təq] | 'break' | → | [qtəq] | 'they break' | (*q*-təq) | *(Reichard 1959)* |

Final **L → R** copying in [Chukchi](https://en.wikipedia.org/wiki/Chukchi_language):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | *nute-* | 'ground' | → | *nutenut* | 'ground (abs. sg.)' | (nute-*nut*) |
|   |   | *jilʔe-* | 'gopher' | → | *jilʔejil* | 'gopher (abs. sg.)' | (jilʔe-*jil*) | *(Marantz 1982)* |

Internal reduplication can also involve copying the beginning or end of the base. In Quileute, the first consonant of the base is copied and inserted after the first vowel of the base.

Internal **L → R** copying in [Quileute](https://en.wikipedia.org/wiki/Quileute_language):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [tsiko] | 'he put it on' | → | [tsitsko] | 'he put it on (frequentative)' | (tsi-*ts*-ko) |
|   |   | [tukoːjoʔ] | 'snow' | → | [tutkoːjoʔ] | 'snow here and there' | (tu-*t*-ko:jo’) | *(Broselow and McCarthy 1984)* |

In Temiar, the last consonant of the root is copied and inserted before the medial consonant of the root.

Internal **R → L** copying in [Temiar](https://en.wikipedia.org/wiki/Temiar_language) (an [Austroasiatic](https://en.wikipedia.org/wiki/Austroasiatic) language of [Malaysia](https://en.wikipedia.org/wiki/Malaysia)):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | [sluh] | 'to shoot (perfective)' | → | [shluh] | 'to shoot (continuative)' | (s-*h*-luh) |
|   |   | [slɔɡ] | 'to marry (perfective)' | → | [sɡlɔɡ] | 'to marry (continuative)' | (s-*ɡ*-lɔɡ) | *(Broselow and McCarthy 1984, Walther 2000)* |

A rare type of reduplication is found in [Semai](https://en.wikipedia.org/wiki/Semai_language) (an Austroasiatic language of Malaysia). "Expressive minor reduplication" is formed with an initial reduplicant that copies the first and last segment of the base:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   |   | [kʉːʔ] | → | [kʔkʉːʔ] | 'to vomit' | (*kʔ*-kʉːʔ) |
|   |   | [dŋɔh] | → | [dhdŋɔh] | 'appearance of nodding constantly' | (*dh*-dŋɔh) |
|   |   | [cruhaːw] | → | [cwcruhaːw] | 'monsoon rain' | (*cw*-cruhaːw) | *(Diffloth 1973* |

**Reduplication and other morphological processes**

All of the examples above consist of only reduplication. However, reduplication often occurs with other phonological and morphological process, such as [deletion](https://en.wikipedia.org/wiki/Elision), [affixation](https://en.wikipedia.org/wiki/Affixation) of non-reduplicating material, etc.

For instance, in [Tz'utujil](https://en.wikipedia.org/wiki/Tz%27utujil_language) a new '-ish' adjective form is derived from other words by suffixing the reduplicated first consonant of the base followed by the segment [oχ]. This can be written succinctly as *-Coχ*. Below are some examples:

* [kaq] 'red' → [kaqkoχ] 'reddish'  (kaq-*k*-oχ)
* [qʼan] 'yellow' → [qʼanqʼoχ] 'yellowish'  (qʼan-*qʼ*-oχ)
* [jaʔ] 'water' → [jaʔjoχ] 'watery'  (jaʔ-*j*-oχ)   *(Dayley 1985)*

[Somali](https://en.wikipedia.org/wiki/Somali_language) has a similar suffix that is used in forming the plural of some nouns: *-aC* (where *C* is the last consonant of the base):

* [toɡ] 'ditch' → [toɡaɡ] 'ditches'  (toɡ-a-*ɡ*)
* [ʕad] 'lump of meat' → [ʕadad] 'lumps of meat'  (ʕad-a-*d*)
* [wɪːl] 'boy' → [wɪːlal] 'boys'  (wɪːl-a-*l*)   *(Abraham 1964)*

This combination of reduplication and affixation is commonly referred to as *fixed-segment reduplication*.

In [Tohono O'odham](https://en.wikipedia.org/wiki/Tohono_O%27odham) initial reduplication also involves [gemination](https://en.wikipedia.org/wiki/Gemination) of the first consonant in the distributive plural and in repetitive verbs:

* [nowiu] 'ox' → [nonnowiu] 'ox (distributive)'  (*no*-n-nowiu)
* [hódai] 'rock' → [hohhodai] 'rock (distributive)'  (*ho*-h-hodai)
* [kow] 'dig out of ground (unitative)' → [kokkow] 'dig out of ground (repetitive)'  (*ko*-k-kow)
* [ɡɨw] 'hit (unitative)' → [ɡɨɡɡɨw] 'hit (repetitive)'  (*ɡɨ*-ɡ-ɡɨw)   *(Haugen forthcoming)*

Sometimes gemination can be analyzed as a type of reduplication.

**Phonological processes, environment, and reduplicant-base relations**

* overapplication
* underapplication
* backcopying – A putative phenomenon of over-application in the reduplicant of a process triggered by the reduplicant in the base[[3]](https://en.wikipedia.org/wiki/Reduplication#cite_note-3)
* base-reduplicant "identity" ([OT](https://en.wikipedia.org/wiki/Optimality_theory) terminology: BR-faithfulness)
* tonal transfer/non-transfer

**Reduplicative babbling in child language acquisition**

During the period 25–50 weeks after birth, all typically developing infants go through a stage of reduplicated or canonical [babbling](https://en.wikipedia.org/wiki/Babbling) (Stark 198, Oller, 1980). Canonical babbling is characterized by repetition of identical or nearly identical consonant-vowel combinations, such as 'nanana' or 'didididi'. It appears as a progression of language development as infants experiment with their vocal apparatus and home in on the sounds used in their native language. Canonical/reduplicated babbling also appears at a time when general rhythmic behavior, such as rhythmic hand movements and rhythmic kicking, appear. Canonical babbling is distinguished from earlier syllabic and vocal play, which has less structure.

The [Proto-Indo-European language](https://en.wikipedia.org/wiki/Proto-Indo-European_language) used partial reduplication of a consonant and *e* in many [stative aspect](https://en.wikipedia.org/wiki/Proto-Indo-European_verb#Stative) verb forms. The perfect or preterite (past) tense of some [Ancient Greek](https://en.wikipedia.org/wiki/Ancient_Greek#Reduplication),[[6]](https://en.wikipedia.org/wiki/Reduplication#cite_note-6) [Gothic](https://en.wikipedia.org/wiki/Gothic_language#Verbs), and [Latin](https://en.wikipedia.org/wiki/Latin) verbs preserves this reduplication:

* Ancient Greek λύω *lúō* 'I free' vs. λέλυκα *léluka* "I have freed"
* Gothic *hald* "I hold" vs. *haíhald* (*hĕhald*) "I/he held"
* Latin *currō* "I run" vs. *cucurrī* "I ran" or "have run"

Proto-Indo-European also used reduplication for [imperfective aspect](https://en.wikipedia.org/wiki/Proto-Indo-European_verb#Root_aspect). Ancient Greek preserves this reduplication in the present tense of some verbs. Usually, but not always, this is reduplication of a consonant and *i*, and contrasts with e-reduplication in the perfect:[[7]](https://en.wikipedia.org/wiki/Reduplication#cite_note-7)

* δίδωμι *dídōmi* "I give" (present)
* δέδωκα *dédōka* "I have given" (perfect)
* \*σίσδω *sísdō* → ἵζω *hízō* "I set" (present)
* \*σέσδομαι *sésdomai* → ἕζομαι *hézomai* "I sit down" (present; from sd-, [zero-grade](https://en.wikipedia.org/wiki/Indo-European_ablaut#Ablaut_in_Proto-Indo-European) of [root](https://en.wikipedia.org/wiki/Proto-Indo-European_root) in \*sed-os → ἕδος *hédos* "seat, abode")

Reduplication in nouns was rare, the best example being Proto-Indo-European *\*kʷé-kʷl-os* ‘[wheel](https://en.wikipedia.org/wiki/Wheel)’ (cf. [Lithuanian](https://en.wikipedia.org/wiki/Lithuanian_language) *kãklas* ‘neck’, [Sanskrit](https://en.wikipedia.org/wiki/Sanskrit) *cakrá* ‘wheel’), which doubled \**kʷel-o-* (cf. [Old Prussian](https://en.wikipedia.org/wiki/Old_Prussian) *kelan* ‘wheel’, [Welsh](https://en.wikipedia.org/wiki/Welsh_language) *pel* ‘ball’),[[8]](https://en.wikipedia.org/wiki/Reduplication#cite_note-8) itself likely a deverbative of \**kʷelh₁-* ‘to turn’.

**English**

English has several types of reduplication, ranging from informal expressive vocabulary (the first four forms below) to grammatically meaningful forms (the last two below).

* **Rhyming reduplication**: hokey-pokey, razzle-dazzle, super-duper, boogie-woogie, teenie-weenie, walkie-talkie, hoity-toity, wingding, ragtag, easy-peasy, hurdy-gurdy.
* **Exact reduplications** (baby-talk-like): bye-bye, choo-choo, night-night, no-no, pee-pee, poo-poo. In South African English, 'now-now' means 'immediately' (whereas an ordinary 'now' can also mean 'somewhat later').
* [**Ablaut**](https://en.wikipedia.org/wiki/Ablaut) **reduplications**: chit-chat, criss-cross, [hip-hop](https://en.wikipedia.org/wiki/Hip-hop), ding-dong, jibber-jabber, kitty-cat, knick-knack, pitter-patter, splish-splash, zig-zag, flimflam, wibble-wobble. In the ablaut reduplications, the first vowel is almost always a [high vowel](https://en.wikipedia.org/wiki/High_vowel) and the reduplicated ablaut variant of the vowel is a [low vowel](https://en.wikipedia.org/wiki/Low_vowel).
* [**Shm-reduplication**](https://en.wikipedia.org/wiki/Shm-reduplication) can be used with most any word; e.g. *baby-shmaby*, *cancer-shmancer* and *fancy-shmancy*. This process is a feature of [American English](https://en.wikipedia.org/wiki/American_English) from [Yiddish](https://en.wikipedia.org/wiki/Yiddish_language), starting among the [American Jews](https://en.wikipedia.org/wiki/American_Jews) of [New York City](https://en.wikipedia.org/wiki/New_York_City), then the [New York dialect](https://en.wikipedia.org/wiki/New_York_City_English) and then the whole country.

Only the last of the above types is [productive](https://en.wikipedia.org/wiki/Productivity_%28linguistics%29), meaning that examples of the first three are fixed forms and new forms are not easily accepted.

* [**Comparative**](https://en.wikipedia.org/wiki/Comparative) **reduplication**: In the sentence "John's apple looked redder and redder," the reduplication of the [comparative](https://en.wikipedia.org/wiki/Comparative) indicates that the comparative is becoming more true over time, meaning roughly "John's apple looked progressively redder as time went on." In particular, this construction does *not* mean that John's apple is redder than some other apple, which would be a possible interpretation in the absence of reduplication, e.g. in "John's apple looked redder." With reduplication, the comparison is of the object being compared to itself over time. Comparative reduplication always combines the reduplicated comparative with "and". This construction is common in speech and is used even in formal speech settings, but it is less common in formal written texts. Although English has simple constructs with similar meanings, such as "John's apple looked ever redder," these simpler constructs are rarely used in comparison with the reduplicative form. Comparative reduplication is fully [productive](https://en.wikipedia.org/wiki/Productivity_%28linguistics%29) and clearly changes the meaning of any comparative to a temporal one, despite the absence of any time-related words in the construction. For example, the temporal meaning of "The frug seemed wuggier and wuggier" is clear: Despite not knowing what a frug is or what wugginess is, we know that the apparent wugginess of the frug was increasing over time, as indicated by the reduplication of the comparative "wuggier".
* [**Contrastive focus reduplication**](https://en.wikipedia.org/wiki/Contrastive_focus_reduplication): Exact reduplication can be used with contrastive focus (generally where the first noun is [stressed](https://en.wikipedia.org/wiki/Stress_%28linguistics%29)) to indicate a literal, as opposed to figurative, example of a noun, or perhaps a sort of [Platonic ideal](https://en.wikipedia.org/wiki/Platonic_idealism) of the noun, as in "Is that carrot cheesecake or carrot CAKE-cake?".[[9]](https://en.wikipedia.org/wiki/Reduplication#cite_note-9) This is similar to the Finnish use mentioned above. Furthermore, it is used to contrast "real" or "pure" things against imitations or less pure forms. For example, at a coffee shop one may be asked, "Do you want soy milk?" and respond, "No, I want **milk** milk." This gives the idea that they want "real" milk.

The [double copula](https://en.wikipedia.org/wiki/Double_copula) is in some cases a type of reduplication, which may be regarded as non-standard or incorrect.

More can be learned about English reduplication in Thun (1963), Cooper and Ross (1975), and Nevins and Vaux (2003).

**Rhotic consonant**

In [phonetics](https://en.wikipedia.org/wiki/Phonetics), **rhotic consonants**, or "R-like" sounds, are [liquid consonants](https://en.wikipedia.org/wiki/Liquid_consonant) that are traditionally represented [orthographically](https://en.wikipedia.org/wiki/Orthography) by symbols derived from the [Greek](https://en.wikipedia.org/wiki/Greek_alphabet) letter [rho](https://en.wikipedia.org/wiki/Rho_%28letter%29), including [⟨R⟩, ⟨r⟩](https://en.wikipedia.org/wiki/R) in the [Latin script](https://en.wikipedia.org/wiki/Latin_script) and [⟨Р⟩, ⟨p⟩](https://en.wikipedia.org/wiki/Er_%28Cyrillic%29) in the [Cyrillic script](https://en.wikipedia.org/wiki/Cyrillic_script). They are transcribed in the [International Phonetic Alphabet](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet) by upper- or lower-case variants of Roman ⟨R⟩, ⟨r⟩:[[1]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-ladefoged1996sounds-1) [r](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_trills), [ɾ](https://en.wikipedia.org/wiki/Dental_and_alveolar_flaps), [ɹ](https://en.wikipedia.org/wiki/Alveolar_and_postalveolar_approximants), [ɻ](https://en.wikipedia.org/wiki/Retroflex_approximant), [ʀ](https://en.wikipedia.org/wiki/Uvular_trill), [ʁ](https://en.wikipedia.org/wiki/Voiced_uvular_fricative), [ɽ](https://en.wikipedia.org/wiki/Retroflex_flap), and [ɺ](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_lateral_flaps).

This class of sounds is difficult to characterise phonetically; from a phonetic standpoint, there is no single articulatory [correlate](https://en.wikipedia.org/wiki/Correlate) common to rhotic consonants.[[2]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-lindau-2) Rhotics have instead been found to carry out similar phonological functions or to have certain similar phonological features across different languages.[[3]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-Wiese-3) Although some have been found to share certain acoustic peculiarities, such as a lowered third [formant](https://en.wikipedia.org/wiki/Formant),[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)] further study has revealed that this does not hold true across different languages.[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)] For example, the acoustic quality of lowered third formants pertains almost exclusively to American varieties of [English](https://en.wikipedia.org/wiki/English_language).[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)] Being "R-like" is an elusive and ambiguous concept phonetically and the same sounds that function as rhotics in some systems may pattern with [fricatives](https://en.wikipedia.org/wiki/Fricative), [semivowels](https://en.wikipedia.org/wiki/Approximant) or even stops in others—for example, "tt" in American English "better" is often pronounced as an [alveolar tap](https://en.wikipedia.org/wiki/Alveolar_tap), a rhotic consonant in many other languages.[[2]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-lindau-2)

Some languages have **rhotic** and **non-rhotic** varieties, which differ in the incidence of rhotic consonants. In [non-rhotic accents of English](https://en.wikipedia.org/wiki/Rhoticity_in_English), /r/ is not pronounced unless it is followed directly by a vowel.

**Types**

The most typical rhotic sounds found in the world's languages are the following:[[1]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-ladefoged1996sounds-1)

* [**Trill**](https://en.wikipedia.org/wiki/Trill_consonant) (popularly known as **rolled r**): The airstream is interrupted several times as one of the organs of speech (usually the tip of the tongue or the [uvula](https://en.wikipedia.org/wiki/Uvula)) vibrates, closing and opening the air passage. If a trill is made with the tip of the tongue against the upper gum, it is called an **apical** (tongue-tip) [**alveolar trill**](https://en.wikipedia.org/wiki/Alveolar_trill); the [IPA](https://en.wikipedia.org/wiki/International_Phonetic_Alphabet) symbol for this sound is [r]. Most non-alveolar trills, such as the [bilabial one](https://en.wikipedia.org/wiki/Bilabial_trill), however, are not considered a rhotic.
	+ Many languages, such as [Bulgarian](https://en.wikipedia.org/wiki/Bulgarian_language), [Swedish](https://en.wikipedia.org/wiki/Swedish_language), [Norwegian](https://en.wikipedia.org/wiki/Norwegian_language), [Frisian](https://en.wikipedia.org/wiki/Frisian_languages), [Italian](https://en.wikipedia.org/wiki/Italian_language), [Spanish](https://en.wikipedia.org/wiki/Spanish_language), [Russian](https://en.wikipedia.org/wiki/Russian_language), [Polish](https://en.wikipedia.org/wiki/Polish_language), [Ukrainian](https://en.wikipedia.org/wiki/Ukrainian_language), [Dutch](https://en.wikipedia.org/wiki/Dutch_language) and most [Occitan variants](https://en.wikipedia.org/wiki/Occitan_language), use trilled rhotics. In the [English](https://en.wikipedia.org/wiki/English_language)-speaking world, the stereotyped [Scottish](https://en.wikipedia.org/wiki/Scottish_English) rolled [r] is well known. The "stage pronunciation" of [German](https://en.wikipedia.org/wiki/German_language) specifies the alveolar trill for clarity. Rare kinds of trills include [Czech](https://en.wikipedia.org/wiki/Czech_language) ⟨ř⟩ [r̝] (**fricative trill**) and [Welsh](https://en.wikipedia.org/wiki/Welsh_phonology) ⟨rh⟩ [r̥] (**voiceless trill**).
* [**Tap *or* flap**](https://en.wikipedia.org/wiki/Flap_consonant) (these terms describe very similar articulations): Similar to a trill, but involving just one brief interruption of airflow. In many languages taps are used as reduced variants of trills, especially in fast speech. However, in Spanish, for example, taps and trills contrast, as in *pero* /ˈpeɾo/ ("but") versus *perro* /ˈpero/ ("dog"). Also flaps are used as basic rhotics in [Japanese](https://en.wikipedia.org/wiki/Japanese_language) and [Korean](https://en.wikipedia.org/wiki/Korean_language) languages. In the [Australian](https://en.wikipedia.org/wiki/Australian_English) and some [American](https://en.wikipedia.org/wiki/American_English) dialects of English, flaps do not function as rhotics but are realizations of intervocalic apical stops (/t/ and /d/, as in *rider* and *butter*). The IPA symbol for this sound is [ɾ].
* [**Alveolar**](https://en.wikipedia.org/wiki/Alveolar_approximant) or [**retroflex approximant**](https://en.wikipedia.org/wiki/Retroflex_approximant) (as in most accents of English—with minute differences): The front part of the tongue approaches the upper gum, or the tongue-tip is curled back towards the roof of the mouth ("retroflexion"). No or little friction can be heard, and there is no momentary closure of the vocal tract. The IPA symbol for the alveolar approximant is [ɹ] and the symbol for the retroflex approximant is [ɻ]. There is a distinction between an *unrounded retroflex approximant* and a *rounded* variety that probably could have been found in [Anglo-Saxon](https://en.wikipedia.org/wiki/Old_English_language) and even to this day in somedialects of English, where the orthographic key is *r* for the unrounded version and usually *wr* for the rounded version (these dialects will make a differentiation between *right* and *write*). Also used as a rhotic in some dialects of Armenian, Dutch, German, Brazilian Portuguese (depending on [phonotactics](https://en.wikipedia.org/wiki/Phonotactics)).
* [**Uvular**](https://en.wikipedia.org/wiki/Uvular_consonant) (popularly called [**guttural r**](https://en.wikipedia.org/wiki/Guttural_R)): The back of the tongue approaches the soft palate or the uvula. The standard Rs in [Portuguese](https://en.wikipedia.org/wiki/Portuguese_language), [French](https://en.wikipedia.org/wiki/French_language), [German](https://en.wikipedia.org/wiki/German_language), [Hebrew](https://en.wikipedia.org/wiki/Hebrew_language), and [Danish](https://en.wikipedia.org/wiki/Danish_language) are variants of this rhotic. If fricative, the sound is often impressionistically described as harsh or grating. This includes the [voiced uvular fricative](https://en.wikipedia.org/wiki/Voiced_uvular_fricative), [voiceless uvular fricative](https://en.wikipedia.org/wiki/Voiceless_uvular_fricative), and [uvular trill](https://en.wikipedia.org/wiki/Uvular_trill). In northern England, there were accents that once employed a uvular R, which was called a "burr".
* **developmental non-rhotic Rs**: Many non-rhotic British speakers have a [labialization](https://en.wikipedia.org/wiki/R-labialization) to [[ʋ](https://en.wikipedia.org/wiki/Labiodental_approximant)] of their Rs, which is between idiosyncratic and dialectal (southern and southwestern England), and since it includes some [RP](https://en.wikipedia.org/wiki/Received_Pronunciation) speakers, somewhat prestigious. Apart from English, in all [Brazilian Portuguese](https://en.wikipedia.org/wiki/Brazilian_Portuguese) dialects the ⟨rr⟩ phoneme, or /ʁ/, may be actually realized as other, traditionally non-rhotic, [fricatives](https://en.wikipedia.org/wiki/Fricative_consonant)[[4]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-4)[[5]](https://en.wikipedia.org/wiki/Rhotic_consonant#cite_note-5) (and most often is so), unless it occurs single between vowels, being so realized as a dental, alveolar, postalveolar or [retroflex flap](https://en.wikipedia.org/wiki/Retroflex_flap). In the syllable coda, it varies individually as a fricative, a flap or an approximant, though fricatives are ubiquitous in the [Northern](https://en.wikipedia.org/wiki/North_Region%2C_Brazil) and [Northeastern](https://en.wikipedia.org/wiki/Northeast_Region%2C_Brazil) regions and all states of [Southeastern Brazil](https://en.wikipedia.org/wiki/Southeast_Region%2C_Brazil) but [São Paulo](https://en.wikipedia.org/wiki/S%C3%A3o_Paulo_%28state%29) and surrounding areas. The total inventory of /ʁ/ allophones is rather long, or up to [[r](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_trills) [ɻ̝̊](https://en.wikipedia.org/wiki/Voiceless_retroflex_fricative) [ç](https://en.wikipedia.org/wiki/Voiceless_palatal_fricative#Palatal) [x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative) [ɣ](https://en.wikipedia.org/wiki/Voiced_velar_fricative) [χ](https://en.wikipedia.org/wiki/Voiceless_uvular_fricative) [ʁ](https://en.wikipedia.org/wiki/Voiced_uvular_fricative) [ʀ](https://en.wikipedia.org/wiki/Uvular_trill) [ħ](https://en.wikipedia.org/wiki/Voiceless_pharyngeal_fricative) [h](https://en.wikipedia.org/wiki/Voiceless_glottal_fricative) [ɦ](https://en.wikipedia.org/wiki/Voiced_glottal_fricative)], the latter eight being particularly common, while none of them except archaic [[r](https://en.wikipedia.org/wiki/Dental%2C_alveolar_and_postalveolar_trills)], that contrast with the flap in all positions, may occur alone in a given dialect. Few dialects, such as [*sulista*](https://en.wikipedia.org/wiki/South_Region%2C_Brazil) and [*fluminense*](https://en.wikipedia.org/wiki/Rio_de_Janeiro_%28state%29), give preference to voiced allophones; elsewhere, they are common only as coda, before voiced consonants. Additionally, some other languages and variants, such as [Haitian Creole](https://en.wikipedia.org/wiki/Haitian_Creole) and Timorese Portuguese use velar and glottal fricatives instead of traditional rhotics, too. In [Vietnamese](https://en.wikipedia.org/wiki/Vietnamese_phonology), depending on dialect, the rhotic can occur as [z], [ʐ] or [ɹ]. In [modern Mandarin Chinese](https://en.wikipedia.org/wiki/Standard_Chinese_phonology), the phoneme /ɻ~ʐ/ is represented as ⟨r⟩ in [Hanyu Pinyin](https://en.wikipedia.org/wiki/Hanyu_Pinyin), resembles the rhotics in other languages in realization, and is descended from the [Late Middle Chinese](https://en.wikipedia.org/wiki/Late_Middle_Chinese) initial /r/;[[*citation needed*](https://en.wikipedia.org/wiki/Wikipedia%3ACitation_needed)] thus, it can be considered a rhotic consonant.

**Silent letter**

In an [alphabetic writing system](https://en.wikipedia.org/wiki/Alphabet), a **silent letter** is a [letter](https://en.wikipedia.org/wiki/Letter_%28alphabet%29) that, in a particular [word](https://en.wikipedia.org/wiki/Word), does not correspond to any [sound](https://en.wikipedia.org/wiki/Phone_%28phonetics%29) in the word's [pronunciation](https://en.wikipedia.org/wiki/Pronunciation). [Phonetic transcriptions](https://en.wikipedia.org/wiki/Phonetic_transcription) that better depict pronunciation and which note changes due to [grammar](https://en.wikipedia.org/wiki/Grammar) and proximity of other words require a symbol to show that the letter is mute. Handwritten notes use a circle with a line through it and the sound is called "zero"; It resembles the symbol for the "[empty set](https://en.wikipedia.org/wiki/Empty_set)", but must not be confused with the [Danish](https://en.wikipedia.org/wiki/Danish_language) and [Norwegian](https://en.wikipedia.org/wiki/Norwegian_language) letter [Ø](https://en.wikipedia.org/wiki/%C3%98). In [printed](https://en.wikipedia.org/wiki/Printing) or [computer](https://en.wikipedia.org/wiki/Computer)'s graphic presentation, using the [IPA](https://en.wikipedia.org/wiki/IPA) system, the symbol ∅ is used.

**English**

One of the noted difficulties of [English spelling](https://en.wikipedia.org/wiki/English_spelling) is a high number of silent letters. [Edward Carney](https://en.wikipedia.org/wiki/Faculty_of_Humanities_%28University_of_Manchester%29) distinguishes different kinds of "silent" letters, which present differing degrees of difficulty to readers.

* **Auxiliary letters** which, with another letter, constitute [digraphs](https://en.wikipedia.org/wiki/Digraph_%28orthography%29), i.e. two letters combined which represent a single [phoneme](https://en.wikipedia.org/wiki/Phoneme). These may further be categorized as:
	+ "Exocentric" digraphs, where the sound of the digraph is different from that of either of its constituent letters. These are rarely considered "silent". Examples:
		- Where the phoneme has no standard single-letter representation, as with [consonants](https://en.wikipedia.org/wiki/Consonant) ⟨ng⟩ for /ŋ/ as in *sing*, ⟨th⟩ for /θ/ as in *thin* or /ð/ as in *then*, [diphthongs](https://en.wikipedia.org/wiki/Diphthong) ⟨ou⟩ in *out* or ⟨oi⟩ in *point*. These are the default spellings for the relevant sounds and present no special difficulty for readers or writers.
		- Where standard single-letter representation uses another letter, as with ⟨gh⟩ in *enough* or ⟨ph⟩ in *physical* instead of ⟨f⟩. These may be considered irregular for writers, but less difficult for readers.
	+ "Endocentric" digraphs, where the sound of the digraph is the same as that of one of its constituent letters. These include:
		- Most [double consonants](https://en.wikipedia.org/wiki/Digraph_%28orthography%29#Double_letters), as ⟨bb⟩ in *clubbed*; though not [geminate consonants](https://en.wikipedia.org/wiki/Geminate_consonant), as ⟨ss⟩ in *misspell*. Doubling due to [suffixation](https://en.wikipedia.org/wiki/Suffix) or [inflection](https://en.wikipedia.org/wiki/Inflection) is regular; otherwise, it may present difficulty to writers (e.g. *accommodate* is often misspelled), but not to readers.
		- The discontiguous digraphs, whose second element is "[magic e](https://en.wikipedia.org/wiki/Silent_e)", e.g. ⟨a\_e⟩ in *rate* (cf. *rat*), ⟨i\_e⟩ in *fine* (cf. *fin*). This is the regular way to represent "long" [vowels](https://en.wikipedia.org/wiki/Vowel) in the last [syllable](https://en.wikipedia.org/wiki/Syllable) of a [morpheme](https://en.wikipedia.org/wiki/Morpheme).
		- Others, such as ⟨ck⟩ (which is in effect the "doubled" form of ⟨k⟩), ⟨gu⟩ as in *guard*, *vogue*; ⟨ea⟩ as in *bread*, *heavy*, etc. These may be difficult for writers and sometimes also for readers.
* **Dummy letters** with no relation to neighboring letters and no correspondence in pronunciation:
	+ Some are **inert letters**, which are sounded in a [cognate](https://en.wikipedia.org/wiki/Cognate) word: e.g. ⟨n⟩ in *damn* (cf. *damnation*); ⟨g⟩ in *phlegm* (cf. *phlegmatic*); ⟨a⟩ in *practically* (cf. *practical*). If the cognate is obvious, it may aid writers in spelling, but mislead readers in pronunciation.
	+ The rest are **empty letters**, which never have a sound, e.g. ⟨w⟩ in ans*w*er, ⟨h⟩ in Sara*h*, ⟨s⟩ in i*s*land, ⟨b⟩ in su*b*tle, the ⟨t⟩ in balle*t*. These may present the greatest difficulty to writers and often to readers, as well.

The distinction between "endocentric" digraphs and empty letters is somewhat [arbitrary](https://en.wikipedia.org/wiki/Arbitrary). For example, in such words as *little* and *bottle*, one might view ⟨le⟩ as an "endocentric" digraph for /əl/, or view ⟨e⟩ as an empty letter; Similarly, with ⟨bu⟩ or ⟨u⟩ in *buy* and *build*.

Not all silent letters are completely redundant:

* Silent letters can distinguish between [homophones](https://en.wikipedia.org/wiki/Homophone), e.g. *in*/*inn*; *be*/*bee*; *lent*/*leant*. This is an aid to readers, already familiar with both words.
* Silent letters may give an insight into the [meaning](https://en.wikipedia.org/wiki/Meaning_%28linguistics%29) or [origin of a word](https://en.wikipedia.org/wiki/Etymology); e.g. *vineyard* suggests [vines](https://en.wikipedia.org/wiki/Vine) more than the phonetic *\*vinyard* would.
* Silent letters may help to put [weight on a certain syllable](https://en.wikipedia.org/wiki/Syllable_weight), telling the reader to put more stress on the [syllable](https://en.wikipedia.org/wiki/Syllable) (Compare *physics* to *physiques*). The final ⟨fe⟩ in *giraffe* gives a clue to the second-syllable stress, where *\*giraf* might suggest initial-stress.

Silent letters arise in several ways:

* [Sound changes](https://en.wikipedia.org/wiki/Sound_change) occurring without a spelling change. The [digraph](https://en.wikipedia.org/wiki/Digraph_%28orthography%29) ⟨gh⟩ [was pronounced](https://en.wikipedia.org/wiki/Gh_%28digraph%29#English) [[x](https://en.wikipedia.org/wiki/Voiceless_velar_fricative)] in [Middle English](https://en.wikipedia.org/wiki/Middle_English_language) in such words as *light*.
* Sound distinctions from [foreign languages](https://en.wikipedia.org/wiki/Foreign_language) may be lost, as with the distinction between smooth [rho](https://en.wikipedia.org/wiki/Rho_%28letter%29) (ρ) and roughly [aspirated](https://en.wikipedia.org/wiki/Aspirated_consonant) rho (ῥ) in [Ancient Greek](https://en.wikipedia.org/wiki/Greek_language), represented by ⟨r⟩ and ⟨rh⟩ in [Latin](https://en.wikipedia.org/wiki/Latin), but merged to the same [r] in [English](https://en.wikipedia.org/wiki/English_language). Similarly, with ⟨f⟩ / ⟨ph⟩; The latter from [Greek](https://en.wikipedia.org/wiki/Greek_language) [phi](https://en.wikipedia.org/wiki/Phi_%28letter%29).
* [Clusters of consonants may be simplified](https://en.wikipedia.org/wiki/English_consonant-cluster_reductions), producing silent letters; e.g. silent ⟨th⟩ in *asthma*, silent ⟨t⟩ in *Christmas* (in Conservative [RP](https://en.wikipedia.org/wiki/Received_Pronunciation), such as that spoken by [Dame Vera Lynn](https://en.wikipedia.org/wiki/Dame_Vera_Lynn), the ⟨t⟩ is pronounced - /krɪstməs/, instead of /krɪsməs/ in all other dialects). Similarly, with alien clusters, such as [Greek](https://en.wikipedia.org/wiki/Greek_language) initial ⟨ps⟩ in *psychology* and ⟨mn⟩ in *mnemonic*, and the much rarer clusters in [*chthonic*](https://en.wikipedia.org/wiki/Chthonic) and [*phthalate*](https://en.wikipedia.org/wiki/Phthalate).
* [Compound words](https://en.wikipedia.org/wiki/Compound_word) are often simplified in pronunciation, while their spelling remains the same. For example, *cupboard* and *breakfast* were once pronounced as written, but were then simplified over time. The words *forehead* and *waistcoat* have largely reverted to their [spelling pronunciations](https://en.wikipedia.org/wiki/Spelling_pronunciation), but were once pronounced \**forrid* and \**weskit*, respectively.
* Occasionally, spurious letters are consciously inserted in spelling to reflect [etymology](https://en.wikipedia.org/wiki/Etymology) (real or imagined). The ⟨b⟩ in *debt* and *doubt* (from [French](https://en.wikipedia.org/wiki/French_language) *dette, doute*) was inserted to match [Latin](https://en.wikipedia.org/wiki/Latin) cognates like *debit* and *dubitable*. A silent ⟨s⟩ was inserted in *isle* ([Norman French](https://en.wikipedia.org/wiki/Norman_French) *ile*, [Old French](https://en.wikipedia.org/wiki/Old_French) *isle*, from Latin *insula*; cognate to *isolate*) and then extended to the unrelated word *island*. The ⟨p⟩ in *ptarmigan* was apparently suggested by Greek words such as *pteron* ('wing').

Since [accent](https://en.wikipedia.org/wiki/Accent_%28sociolinguistics%29) and pronunciation differ, letters may be silent for some speakers, but not others. In [non-rhotic](https://en.wikipedia.org/wiki/Non-rhotic) accents, ⟨r⟩ is silent in such words as *hard*, *feathered*; in [*h*-dropping](https://en.wikipedia.org/wiki/H-dropping) accents, ⟨h⟩ is silent. A speaker may or may not pronounce ⟨t⟩ in *often*, the first ⟨c⟩ in *Antarctic*, ⟨d⟩ in *sandwich*, etc.

**Differences between British English and American English**

**Pronunciation**

In the US, the *h* in *herb* is silent (*a****n*** *herb*), but in the UK, it is pronounced (*a herb*). The same is true for the *l* in *solder*.
In parts of the UK, the *a* in *dictionary* and *secretary* is silent, but in the US, it is pronounced.

**Spelling**

In US spellings, silent letters are sometimes omitted (e.g., *acknowledgment* / UK *acknowledg****e****ment*, *ax* / UK *ax****e***, *catalog* / UK *catalog****ue***), but not always (e.g., *dialog****ue*** is the standard spelling in US and UK; *dialog* is regarded as a US variant; the spelling *axe* is also often used in US). In most words, silent letters are written in both styles (e.g., *de****b****t*, *g****u****ard*, *hous****e***).

**Sound change**

**Sound change** includes any processes of [language change](https://en.wikipedia.org/wiki/Language_change) that affect pronunciation (phonetic change) or sound system structures ([phonological change](https://en.wikipedia.org/wiki/Phonological_change)). Sound change can consist of the replacement of one [speech sound](https://en.wikipedia.org/wiki/Phoneme) (or, more generally, one [phonetic feature](https://en.wikipedia.org/wiki/Distinctive_feature) value) by another, the complete loss of the affected sound, or even the introduction of a new sound in a place where there had been none. Sound changes can be *environmentally conditioned*, meaning that the change only occurs in a defined [sound environment](https://en.wikipedia.org/wiki/Phonetic_environment), whereas in other environments the same speech sound is not affected by the change. The term "sound change" refers to [diachronic](https://en.wikipedia.org/wiki/Historical_linguistics) changes—that is, irreversible changes in a language's sound system over time; "[alternation](https://en.wikipedia.org/wiki/Alternation_%28linguistics%29)", on the other hand, refers to changes that happen [synchronically](https://en.wikipedia.org/wiki/Synchronic_analysis) (i.e. within the language of an individual speaker, depending on the neighboring sounds) and which do not change the language's [underlying system](https://en.wikipedia.org/wiki/Underlying_representation) (for example, the *-s* in the [English plural](https://en.wikipedia.org/wiki/English_plural) can be pronounced differently depending on what sound it follows; this is a form of alternation, rather than sound change). However, since "sound change" can refer to the historical introduction of an alternation (such as post-vocalic /k/ in [Tuscan](https://en.wikipedia.org/wiki/Tuscan_dialect)—once [k], but now [h])—the label is inherently imprecise and often must be clarified as referring to phonetic change or restructuring.

Research on sound change is usually conducted on the [working assumption](https://en.wikipedia.org/wiki/Heuristic) that it is *regular*, which means that it is expected to apply mechanically whenever its structural conditions are met, irrespective of any nonphonological factors (such as the meaning of the words affected). However, apparent exceptions to regular change can occur—due to dialect borrowing, grammatical analogy, or other causes, known and unknown—and some changes are described as "sporadic", meaning that they affect only one particular word or a few words, without any apparent regularity.

The [Neogrammarian](https://en.wikipedia.org/wiki/Neogrammarian) linguists of the 19th century introduced the term "sound law" to refer to rules of regular change, perhaps in imitation of the laws of physics.[[1]](https://en.wikipedia.org/wiki/Sound_change#cite_note-1) and the term "law" is still used in referring to specific sound rules named after their authors, such as [Grimm's Law](https://en.wikipedia.org/wiki/Grimm%27s_Law), [Grassmann's Law](https://en.wikipedia.org/wiki/Grassmann%27s_Law), [etc.](https://en.wikipedia.org/wiki/Category%3ASound_laws). Real-world sound changes often admit exceptions; nevertheless, the expectation of their regularity or absence of exceptions is of great [heuristic](https://en.wikipedia.org/wiki/Heuristic) value, since it allows historical linguists to define the notion of *regular correspondence* (see: [comparative method](https://en.wikipedia.org/wiki/Comparative_method)).

Each sound change is limited in space and time. This means it functions within a limited area (within certain [dialects](https://en.wikipedia.org/wiki/Dialect)) and during a limited period of time. For these (and other) reasons, the term "sound law" has been criticized for implying a universality that is unrealistic with regard to sound change.[[2]](https://en.wikipedia.org/wiki/Sound_change#cite_note-2)

Sound change that affects the phonological system, in the number or distribution of its [phonemes](https://en.wikipedia.org/wiki/Phoneme), is covered more fully at [phonological change](https://en.wikipedia.org/wiki/Phonological_change).

**Formal notation**

A statement of the form

A > B

is to be read, "sound A changes into (or is replaced by, is reflected as, etc) sound B". Therefore, A belongs to an older stage of the language in question, whereas B belongs to a more recent stage. The symbol ">" can be reversed, B < A, still meaning that the (more recent) B derives from the (older) A".

For example,

POc. \*t > Rot. f

means that "Proto-[Oceanic](https://en.wikipedia.org/wiki/Oceanic_languages) (*POc.*) \*t is reflected as the [Voiceless labiodental fricative](https://en.wikipedia.org/wiki/Voiceless_labiodental_fricative) [f] in the [Rotuman language](https://en.wikipedia.org/wiki/Rotuman_language) (*Rot.*)."

The two sides of such a statement indicate start and end points only, and do not imply that there are no additional intermediate stages. The example above is actually a compressed account of a *sequence* of changes; \*t changed first into a [voiceless dental fricative](https://en.wikipedia.org/wiki/Voiceless_dental_fricative#Voiceless_dental_non-sibilant_fricative) [θ] (like the initial consonant of English *thin*), which has yielded present-day [f]. This can be represented more fully as:

t > θ > f

Unless a change operates unconditionally (in all environments), the context in which it applies must be specified:

A > B /X\_\_Y

= "A changes to B when preceded by X and followed by Y."

For example:

It. b > v /[vowel]\_\_[vowel], which can be simplified to just

It. b > v /V\_\_V (where the capital V stands for any given vowel)

= "Intervocalic [b] (inherited from Latin) became [v] in Italian" (e.g. in *caballum, dēbet* > *cavallo* 'horse', *deve* 'owe (3sg.)'

A second example:

PIr. [−cont][−voi] > [+cont]/\_\_[C][+cont]

= "Preconsonantal voiceless non-continuants (i.e. voiceless stops) changed into corresponding voiceless continuants ([fricatives](https://en.wikipedia.org/wiki/Fricative_consonant)) in Proto-[Iranian](https://en.wikipedia.org/wiki/Iranian_languages) (*PIr*)" when immediately followed by a continuant consonant (i.e. resonants and fricatives). Examples: Proto-Indo-Iranian \**pra* 'forth' > Avestan *fra*; \**trayas* "three" (masc.nom.pl.)> Av. *θrayō*; \**čatwāras* "four" (masc.nom.pl.) > Av. *čaθwārō*; \**pśaws* "of a cow" (nom. \**paśu*) > Av. *fšāoš* (nom. *pasu*). Note that the fricativization does not occur before stops, so \**sapta* "seven" > Av. *hapta*. (However, in the variety of Iranian that led to [Old Persian](https://en.wikipedia.org/wiki/Old_Persian), fricativization occurs in all clusters, thus Old Persian *hafta* "seven".)

The symbol "#" stands for a word boundary (initial or final). Thus the notation "/\_\_#" means "word-finally", and "/#\_\_" means "word-initially". For example:

Gk. [stop] > ∅ /\_\_#

= "Word-final stops were deleted in Greek (*Gk.*)."

This can be simplified to

Gk. P > ∅ / \_\_#

where capital P stands for any plosive.

**Principles**

The following statements are used as heuristics in formulating sound changes as understood within the [Neogrammarian](https://en.wikipedia.org/wiki/Neogrammarian) model. However, for modern linguistics, they are not taken as inviolable rules; rather, they are seen as guidelines.

**Sound change has no memory**: Sound change does not discriminate between the sources of a sound. If a previous sound change causes X,Y > Y (features X and Y merge as Y), a new one cannot affect only an original X.

**Sound change ignores grammar**: A sound change can only have phonological constraints, like X > Z in [unstressed syllables](https://en.wikipedia.org/wiki/Stress_%28linguistics%29). For example, it cannot only affect [adjectives](https://en.wikipedia.org/wiki/Adjective). The only exception to this is that a sound change may or may not recognise word boundaries, even when they are not indicated by [prosodic](https://en.wikipedia.org/wiki/Prosody_%28linguistics%29) clues. Also, sound changes may be [regularized](https://en.wikipedia.org/wiki/Regularization_%28linguistics%29) in inflectional paradigms (such as verbal inflection), in which case the change is no longer [phonological](https://en.wikipedia.org/wiki/Phonology) but [morphological](https://en.wikipedia.org/wiki/Morphology_%28linguistics%29) in nature.[[3]](https://en.wikipedia.org/wiki/Sound_change#cite_note-3)

**Sound change is exceptionless**: if a sound change can happen at a place, it will. It affects all sounds that meet the criteria for change. Apparent exceptions are possible, due to [analogy](https://en.wikipedia.org/wiki/Analogy) and other regularization processes, or another sound change, or an unrecognized conditioning factor. This is the traditional view, expressed by the [Neogrammarians](https://en.wikipedia.org/wiki/Neogrammarian). In past decades it has been shown that sound change does not necessarily affect all the words that in principle it could. However, when a sound change is initiated, it often expands to the whole [lexicon](https://en.wikipedia.org/wiki/Lexicon) given enough time, though not always. For example, in [Spanish](https://en.wikipedia.org/wiki/Spanish_language) the fronting of the [Vulgar Latin](https://en.wikipedia.org/wiki/Vulgar_Latin) [g] ([voiced velar stop](https://en.wikipedia.org/wiki/Voiced_velar_stop)) before [i e ɛ] seems to have reached every possible word it could. By contrast, the voicing of word-initial Latin [k] to [g] occurred in *colaphus* > *golpe* and *cattus* > *gato*, but not in *canna* > *caña*. See also [lexical diffusion](https://en.wikipedia.org/wiki/Lexical_diffusion).

**Sound change is unstoppable**: *All* languages vary from place to place and time to time, and neither writing nor media prevent this change.

**Terms for changes in pronunciation**

There are a number of traditional terms in [historical linguistics](https://en.wikipedia.org/wiki/Historical_linguistics) designating types of phonetic change, either by nature or result. A number of such types are often (or usually) sporadic, that is, more or less accidents that happen to a specific form. Others affect a whole phonological system. Sound changes that affect a whole phonological system are also classified according to how they affect the overall shape of the system; see [*phonological change*](https://en.wikipedia.org/wiki/Phonological_change).

* [Assimilation](https://en.wikipedia.org/wiki/Assimilation_%28linguistics%29): One sound becomes more like another, or (much more rarely) two sounds become more like each other. Example: in Latin the prefix \**kom*- becomes *con*- before an [apical stop](https://en.wikipedia.org/wiki/Apical_consonant) ([t d]) or [n]: *contactus* "touched", *condere* "to found, establish", *connūbium* "legal marriage". The great majority of assimilations take place between contiguous segments, and the great majority involve the earlier one becoming more like the later one (e.g. in *connūbium,* *m- + n* becomes *-nn-* rather than *-mm-*). Assimilation between contiguous segments are ([diachronically](https://en.wikipedia.org/wiki/Diachronics) speaking) exceptionless sound laws rather than sporadic, isolated changes.
* [Dissimilation](https://en.wikipedia.org/wiki/Dissimilation): The opposite of assimilation. One sound becomes less like another, or (much more rarely) two sounds become less like each other. Examples: Latin *quīnque* /kʷiːnkʷe/ "five" > Proto-Romance \**kinkʷe* (whence French *cinq*, Italian *cinque*, etc.); [Old Spanish](https://en.wikipedia.org/wiki/Old_Spanish_language) *omne* "man" > Spanish *hombre*. The great majority of dissimilations involve segments that are **not** contiguous, but, as with assimilations, the great majority involve an earlier sound changing with reference to a later one. Dissimilation is usually a sporadic phenomenon, but [Grassmann's Law](https://en.wikipedia.org/wiki/Grassmann%27s_Law) (Sanskrit and Greek) is an example of a systematic dissimilation. If the change of a sequence of fricatives such that one becomes a stop is dissimilation, then such changes as [Proto-Germanic](https://en.wikipedia.org/wiki/Proto-Germanic_language) \*χs to /ks/ (spelled *x*) in English would count as a regular sound law: PGmc. \**seχs* "six" > [Old English](https://en.wikipedia.org/wiki/Old_English) *siex*, etc.
* [Metathesis](https://en.wikipedia.org/wiki/Metathesis_%28linguistics%29): Two sounds switch places. Example: Old English *th****ri****dda* became Middle English *th****ir****d*. Most such changes are sporadic, but occasionally a sound law is involved, as Romance \**tl* > Spanish *ld*, thus \**kapitlu, \*titlu* "chapter (of a cathedral)", "[tittle](https://en.wikipedia.org/wiki/Tittle)" > Spanish *cabildo, tilde*. Metathesis can take place between non-contiguous segments, as Greek *amélgō* "I milk" > Modern Greek *armégō.*
* [Lenition](https://en.wikipedia.org/wiki/Lenition), softening of a consonant, e.g. [stop consonant](https://en.wikipedia.org/wiki/Stop_consonant) to [affricate](https://en.wikipedia.org/wiki/Affricate) or [fricative](https://en.wikipedia.org/wiki/Fricative); and its [antonym](https://en.wikipedia.org/wiki/Antonym) [fortition](https://en.wikipedia.org/wiki/Fortition), hardening of a consonant.
* [Tonogenesis](https://en.wikipedia.org/wiki/Tone_%28linguistics%29#Origin): Syllables come to have distinctive [pitch contours](https://en.wikipedia.org/wiki/Pitch_contour).
* [Sandhi](https://en.wikipedia.org/wiki/Sandhi): conditioned changes that take place at word-boundaries but not elsewhere. It can be [morpheme](https://en.wikipedia.org/wiki/Morpheme)-specific, as in the loss of the vowel in the enclitic forms of English *is* /ɪz/, with subsequent change of /z/ to /s/ adjacent to a voiceless consonant *Frank's not here* /ˈfræŋksnɒtˈhɪər/. Or a small class of elements, such as the assimilation of the /ð/ of English *the, this* and *that* to a preceding /n/ (including the /n/ of *and* when the /d/ is elided) or /l/: *all the* often /ɔːllə/, *in the* often /ɪnnə/, and so on. As in these examples, such features are rarely indicated in standard orthography. A striking exception is Sanskrit, whose orthography reflects a wide variety of such features; thus, *tat* "that" is written *tat*, *tac*, *taj*, *tad*, or *tan* depending on what the first sound of the next word is. These are all assimilations, but medial sequences do not assimilate the same way.
* [Haplology](https://en.wikipedia.org/wiki/Haplology): The loss of a syllable when an adjacent syllable is similar or (rarely) identical. Example: Old English *Englaland* became Modern English *England*, or the common pronunciation of *probably* as [ˈprɒbli]. This change usually affects commonly used words. The word haplology itself is sometimes jokingly pronounced "haplogy".
* [Elision](https://en.wikipedia.org/wiki/Elision), [aphaeresis](https://en.wikipedia.org/wiki/Apheresis_%28linguistics%29), [syncope](https://en.wikipedia.org/wiki/Syncope_%28phonetics%29), and [apocope](https://en.wikipedia.org/wiki/Apocope): All losses of sounds. Elision is the loss of unstressed sounds, aphaeresis the loss of initial sounds, syncope is the loss of medial sounds, and apocope is the loss of final sounds. Elision examples: in the southeastern United States, unstressed schwas tend to drop, so "American" is not /əˈmɛɹəkən/ but /ˈmɚkən/. Standard English is *possum* < *opossum*. Syncope examples: the Old French word for "state" is *estat,* but then the *s* dropped, yielding, *état.* Similarly, the loss of /t/ in English *soften, hasten, castle*, etc. Apocope examples: the final -*e* [ə] in Middle English words was pronounced, but is only retained in spelling as [silent E](https://en.wikipedia.org/wiki/Silent_E). In English /b/ and /ɡ/ were apocopated in final position after nasals: *lamb, long* /læm/ /lɑːŋ/.
* [Epenthesis](https://en.wikipedia.org/wiki/Epenthesis) (also known as anaptyxis): The introduction of a sound between two adjacent sounds. Examples: Latin *humilis* > English *humble*; in Slavic an -l- intrudes between a labial and a following yod, as \**zemya* "land" > Russ. *zemlya* (земля). Most commonly, epenthesis is in the nature of a "transitional" consonant, but vowels may be epenthetic: non-standard English *film* in two syllables, *athlete* in three. Epenthesis can be regular, as when the Indo-European "tool" suffix \*-*tlom* everywhere becomes Latin -*culum* (so *speculum* "mirror" < \**speḱtlom*, *pōculum* "drinking cup" < \**poH3-tlom*). Some scholars reserve the term *epenthesis* for "intrusive" vowels and use *excrescence* for intrusive consonants.
* [Prothesis](https://en.wikipedia.org/wiki/Prothesis_%28linguistics%29): The addition of a sound at the beginning of a word. Example: word-initial /s/ + stop clusters in Latin gained a preceding /e/ in Old Spanish and Old French; hence, the Spanish word for "state" is *estado,* deriving from Latin *status.*
* [Nasalization](https://en.wikipedia.org/wiki/Nasalization): Vowels followed by nasal consonants can be nasalized. If the nasal consonant is lost but the vowel retains its nasalized pronunciation, nasalization becomes [phonemic](https://en.wikipedia.org/wiki/Phoneme), that is, distinctive. Example: French "-in" words used to be pronounced [in], but are now pronounced [ɛ̃], and the [n] is no longer pronounced (except in cases of [liaison](https://en.wikipedia.org/wiki/Liaison_%28French%29)).

**Speech error**

A **speech error**, commonly referred to as a **slip of the tongue**[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) ([Latin](https://en.wikipedia.org/wiki/Latin): ***lapsus linguae***, or occasionally self-demonstratingly, ***lipsus languae***) or **misspeaking**, is a deviation (conscious or unconscious) from the apparently intended form of an [utterance](https://en.wikipedia.org/wiki/Utterance).[[2]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Bussmann,_Hadumod_1996-2) They can be subdivided into spontaneously and inadvertently produced [speech](https://en.wikipedia.org/wiki/Speech) errors and intentionally produced word-plays or puns. Another distinction can be drawn between production and comprehension errors. Errors in speech production and perception are also called performance errors.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) Some examples of speech error include sound exchange or sound anticipation errors. In sounds exchange errors the order of two individual morphemes is reversed, while in sound anticipation errors a sound from a later syllable replaces one from and earlier syllable.[[4]](https://en.wikipedia.org/wiki/Speech_error#cite_note-4) Slips of the tongue are a normal and common occurrence. One study shows that most people can make up to as much as 22 slips of the tongue per day.[[5]](https://en.wikipedia.org/wiki/Speech_error#cite_note-5)

Speech errors are common among [children](https://en.wikipedia.org/wiki/Children), who have yet to refine their speech, and can frequently continue into adulthood. When errors continue past the age of 9 they are referred to as "residual speech errors" or RSEs.[[6]](https://en.wikipedia.org/wiki/Speech_error#cite_note-:1-6) They sometimes lead to embarrassment and betrayal of the speaker's [regional](https://en.wikipedia.org/wiki/Region) or [ethnic](https://en.wikipedia.org/wiki/Ethnic) origins. However, it is also common for them to enter the [popular culture](https://en.wikipedia.org/wiki/Popular_culture) as a kind of linguistic "flavoring". Speech errors may be used intentionally for humorous effect, as with [Spoonerisms](https://en.wikipedia.org/wiki/Spoonerism).

Within the field of [psycholinguistics](https://en.wikipedia.org/wiki/Psycholinguistics), speech errors fall under the category of [language](https://en.wikipedia.org/wiki/Language) production. Types of speech errors include: exchange errors, perseveration, anticipation, shift, substitution, blends, additions, and deletions. The study of speech errors has contributed to the establishment/refinement of models of speech production since [Victoria Fromkin](https://en.wikipedia.org/wiki/Victoria_Fromkin)'s pioneering work on this topic.[[7]](https://en.wikipedia.org/wiki/Speech_error#cite_note-7)

**Psycholinguistic explanations**

Speech errors are made on an occasional basis by all speakers.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) They occur more often when speakers are nervous, tired, anxious or intoxicated.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) During live broadcasts on TV or on the radio, for example, nonprofessional speakers and even hosts often make speech errors because they are under stress.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) Some speakers seem to be more prone to speech errors than others. For example, there is a certain connection between stuttering and speech errors.[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) Charles F. Hockett explains that "whenever a speaker feels some anxiety about possible lapse, he will be led to focus attention more than normally on what he has just said and on what he is just about to say. These are ideal breeding grounds for stuttering."[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) Another example of a "chronic sufferer" is Reverend William Archibald Spooner, whose peculiar speech may be caused by a cerebral dysfunction, but there is much evidence that he invented his famous speech errors (spoonerisms).[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1)

An outdated explanation for the occurrence of speech errors is the one of Sigmund Freud, who assumed that speech errors are the result of an intrapsychic conflict of concurrent intentions.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) "Virtually all speech errors [are] caused by the intrusion of repressed ideas from the unconscious into one's conscious speech output", Freud explained.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) This gave rise to the expression [Freudian slip](https://en.wikipedia.org/wiki/Freudian_slip). His hypothesis was rejected because it only explains a minority of speech errors.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1)

**Psycholinguistic classification**

There are few speech errors that clearly fall into only one category. The majority of speech errors can be interpreted in different ways and thus fall into more than one category.[[9]](https://en.wikipedia.org/wiki/Speech_error#cite_note-9) For this reason, you are well advised to be skeptical about percentage figures for the different kinds of speech errors.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) Moreover, the study of speech errors gave rise to different terminologies and different ways of classifying speech errors. Here is a collection of the main types:

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| **Types of speech errors** |
| **Type** | **Definition** | **Example** |
| **Addition** | "Additions add linguistic material."[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** We**Error:** We and I |
| **Anticipation** | "A later segment takes the place of an earlier segment."[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** reading list**Error:** leading list |
| **Blends** | Blends are a subcategory of lexical selection errors.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) More than one item is being considered during speech production. Consequently, the two intended items fuse together.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** person/people**Error:** perple |
| **Deletion** | Deletions or omissions leave some linguistic material out.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** unanimity of opinion**Error:** unamity of opinion |
| **Exchange** | Exchanges are double shifts. Two linguistic units change places.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** getting your nose remodeled**Error:** getting your model renosed |
| **Lexical selection error** | The speaker has "problems with selecting the correct word".[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) | **Target:** tennis racquet**Error:** tennis bat |
| [**Malapropism**](https://en.wikipedia.org/wiki/Malapropism)**, classical** | The speaker has the wrong beliefs about the meaning of a word. Consequently, he produces the intended word, which is semantically inadequate. Therefore, this is a competence error rather than a performance error. Malapropisms are named after 'Mrs. Malaprop', a character from [Richard B. Sheridan](https://en.wikipedia.org/wiki/Richard_Sheridan)’s eighteenth-century play [*The Rivals*](https://en.wikipedia.org/wiki/The_Rivals).[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) | **Target:**The flood damage was so bad they had to evacuate the city.**Error:** The flood damage was so bad they had to evaporate the city. |
| [**Metathesis**](https://en.wikipedia.org/wiki/Metathesis_%28linguistics%29) | "Switching of two sounds, each taking the place of the other."[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) | **Target:** pus pocket**Error:** pos pucket |
| **Morpheme-exchange error**[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) | Morphemes change places. | **Target:** He has already packed two trunks.**Error:** He has already packs two trunked. |
| **Morpheme stranding** | Morphemes remain in place but are attached to the wrong words.[[11]](https://en.wikipedia.org/wiki/Speech_error#cite_note-11) | **Target:** He has already packed two trunks.**Error:** He has already trunked two packs. |
| **Omission** | cf. deletions | **Target:** She can’t tell me.**Error:** She can tell me. |
| **Perseveration** | "An earlier segment replaces a later item."[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** black boxes**Error:** black bloxes |
| **Residual Speech Errors** | "Distortions of late-developing sounds such as /s/, /l/, and /r/."[[6]](https://en.wikipedia.org/wiki/Speech_error#cite_note-:1-6) | **Target:** The box is red. **Error:** The box is wed. |
| **Shift** | "One speech segment disappears from its appropriate location and appears somewhere else."[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** She decides to hit it.**Error:** She decide to hits it. |
| **Sound-exchange error** | Two sounds switch places.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) | **Target:** Night life [nait laif]**Error:** Knife light [naif lait] |
| [**Spoonerism**](https://en.wikipedia.org/wiki/Spoonerism) | A spoonerism is a kind of metathesis. Switching of initial sounds of two separate words.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) They are named after Reverend William Archibald Spooner, who probably invented most of his famous spoonerisms.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) | **Target:** I saw you light a fire.**Error:** I saw you fight a liar. |
| **Substitution** | One segment is replaced by an intruder. The source of the intrusion is not in the sentence.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) | **Target:** Where is my tennis racquet?**Error:** Where is my tennis bat? |
| **Word-exchange error** | A word-exchange error is a subcategory of lexical selection errors.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) Two words are switched. | **Target:** I must let the cat out of the house.**Error:** I must let the house out of the cat. |

Speech errors can affect different kinds of segments or linguistic units:

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| **Segments** |
| **Segment** | **Example** |
| **Distinctive or phonetic features** | **Target:** clear blue sky**Error:** glear plue sky (voicing) |
| **Phonemes or sounds** | **Target:** ad hoc**Error:** odd hack |
| **Sequences of sounds** | **Target:**spoon feeding**Error:** foon speeding |
| **Morphemes** | **Target:** sure**Error:** unsure |
| **Words** | **Target:** I hereby deputize you.**Error:** I hereby jeopardize you. |
| **Phrases** | **Target:** The sun is shining./The sky is blue.**Error:** The sky is shining. |

**Types**

* [Grammatical](https://en.wikipedia.org/wiki/Grammatical) – For example, children take time to learn [irregular verbs](https://en.wikipedia.org/wiki/Irregular_verb), so in [English](https://en.wikipedia.org/wiki/English_language) use the -[ed](https://en.wikipedia.org/wiki/Past_tense) form incorrectly. This is explored by Steven Pinker in his book [*Words and Rules*](https://en.wikipedia.org/wiki/Words_and_Rules).
* [Mispronunciation](https://en.wikipedia.org/wiki/Mispronunciation)
* [Vocabulary](https://en.wikipedia.org/wiki/Vocabulary) – [Young children](https://en.wikipedia.org/wiki/Infant) make [category](https://en.wikipedia.org/wiki/Categorization) approximations, using [car](https://en.wikipedia.org/wiki/Car) for [truck](https://en.wikipedia.org/wiki/Truck) for example. This is known as [hyponymy](https://en.wikipedia.org/wiki/Hyponymy).

**Examples**

* "par**tic**uly" (particu**lar**ly) ← [elision](https://en.wikipedia.org/wiki/Elision)
* "syn**tax**ically" (syn**tact**ically) ← [vocabulary](https://en.wikipedia.org/wiki/Vocabulary)

**Scientific relevance**

Speech production is a highly complex and extremely rapid process so that research into the involved mental mechanisms is very difficult.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) Investigating the audible output of the speech production system is a way to understand these mental mechanisms. According to Gary S. Dell "the inner workings of a highly complex system are often revealed by the way in which the system breaks down".[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10) Therefore, speech errors are of an explanatory value with regard to the nature of language and language production.[[12]](https://en.wikipedia.org/wiki/Speech_error#cite_note-smithsrisca.demon.co.uk-12)

Performance errors may provide the linguist with empirical evidence for linguistic theories and serve to test hypotheses about language and speech production models.[[13]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Fromkin_1973-13) For that reason, the study of speech errors is significant for the construction of performance models and gives insight into language mechanisms.[[13]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Fromkin_1973-13)

**Evidence and insights**

* Speech errors provide investigators with insights into the sequential order of language production processes.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10)
* Speech errors clue investigators in on the interactivity of language production modules.[[12]](https://en.wikipedia.org/wiki/Speech_error#cite_note-smithsrisca.demon.co.uk-12)
* The existence of lexical or phonemic exchange errors provides evidence that speakers typically engage in forward planning their utterances. It seems that before the speaker starts speaking the whole utterance is available.[[10]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Eysenck_Keane_2005-10)

**Anticipation**

**Target:** Take my bike.

**Error:** Bake my bike.

**Perseveration**

**Target:** He pulled a tantrum.

**Error:** He pulled a pantrum.

* Performance errors supply evidence for the psychological existence of discrete linguistic units.

Speech errors involve substitutions, shifts, additions and deletions of segments. "In order to move a sound, the speaker must think of it as a separate unit."[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) Obviously, one cannot account for speech errors without speaking of these discrete segments. They constitute the planning units of language production.[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1) Among them are distinctive features, phonemes, morphemes, syllables, words and phrases. Victoria Fromkin points out that "many of the segments that change and move in speech errors are precisely those postulated by linguistic theories." Consequently, speech errors give evidence that these units are psychologically real.

* One can infer from speech errors that speakers adhere to a set of linguistic rules.

"There is a complex set of rules which the language user follows when making use of these units."[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) Among them are for example phonetic constraints, which prescribe the possible sequences of sounds.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) Moreover, the study of speech error confirmed the existence of rules that state how morphemes are to be pronounced or how they should be combined with other morphemes.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3) The following examples show that speech errors also observe these rules:

**Target:** He likes to have his team rested. [rest+id]

**Error:** He likes to have his rest teamed. [ti:m+d]

**Target:** Both kids are sick. [kid+z]

**Error:** Both sicks are kids. [sik+s]

Here the past tense morpheme resp. the plural morpheme is phonologically conditioned, although the [lemmas](https://en.wikipedia.org/wiki/Lemma_%28psycholinguistics%29) are exchanged. This proves that first the lemmas are inserted and then phonological conditioning takes place.

**Target:** Don’t yell so loud! / Don’t shout so loud!

**Error:** Don’t shell so loud!

"Shout" and "yell" are both appropriate words in this context. Due to the pressure to continue speaking, the speaker has to make a quick decision which word should be selected.[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) This pressure leads to the speaker’s attempt to utter the two words simultaneously, which resulted in the creation of a blend.[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) According to Charles F. Hockett there are six possible blends of "shout" and "yell".[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) Why did the speaker choose "shell" and not one of the alternatives? The speaker obeyed unconscious linguistic rules because he selected the blend, which satisfied the linguistic demands of these rules the best.[[8]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Hockett_1973-8) Illegal non-words are for example instantaneously rejected.

In conclusion, the rules which tell language users how to produce speech must also be part of our mental organization of language.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3)

* Substitution errors, for instance, reveal parts of the organization and structure of the mental lexicon.

**Target:** My thesis is too long.

**Error:** My thesis is too short.

In case of substitution errors both segments mostly belong to the same category, which means for example that a noun is substituted for a noun. Lexical selection errors are based on semantic relations such as synonymy, antonymy or membership of the same lexical field.[[2]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Bussmann,_Hadumod_1996-2) For this reason the mental lexicon is structured in terms of semantic relationships.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3)

**Target:** George’s wife

**Error:** George’s life

**Target:** fashion square

**Error:** passion square

Some substitution errors which are based on phonological similarities supply evidence that the mental lexicon is also organized in terms of sound.[[3]](https://en.wikipedia.org/wiki/Speech_error#cite_note-Tserdanelis_Wong_2004-3)

* Errors in speech are non-random. Linguists can elicit from the speech error data how speech errors are produced and which linguistic rules they adhere to. As a result, they are able to predict speech errors.

**Four generalizations about speech errors have been identified:**[[1]](https://en.wikipedia.org/wiki/Speech_error#cite_note-David_Carroll_1986-1)

1. Interacting elements tend to come from a similar linguistic environment, which means that initial, middle, final segments interact with one another.
2. Elements that interact with one another tend to be phonetically or semantically similar to one another. This means that consonants exchange with consonants and vowels with vowels.
3. Slips are consistent with the phonological rules of the language.
4. There are consistent stress patterns in speech errors. Predominantly, both interacting segments receive major or minor stress.
* These four generalizations support the idea of the lexical bias effect. This effect states that our phonological speech errors generally form words rather than non-words. Baars (1975) showed evidence for this effect when he presented word pairs in rapid succession and asked participants to say both words in rapid succession back. In most of the trials, the mistakes made still formed actual words.[[14]](https://en.wikipedia.org/wiki/Speech_error#cite_note-:0-14)

**Information obtained from performance additions**

An example of the information that can be obtained is the use of "um" or "uh" in a conversation.[[15]](https://en.wikipedia.org/wiki/Speech_error#cite_note-15) These might be meaningful words that tell different things, one of which is to hold a place in the conversation so as not to be interrupted. There seems to be a hesitant stage and fluent stage that suggest speech has different levels of production. The pauses seem to occur between sentences, conjunctional points and before the first content word in a sentence. That suggests that a large part of speech production happens there.

Schachter et al. (1991) conducted an experiment to examine if the numbers of word choices affect pausing. They sat in on the lectures of 47 undergraduate professors from 10 different departments and calculated the number and times of filled pauses and unfilled pauses. They found significantly more pauses in the humanities departments as opposed to the natural sciences.[[16]](https://en.wikipedia.org/wiki/Speech_error#cite_note-16) These findings suggest that the greater the number of word choices, the more frequent are the pauses, and hence the pauses serve to allow us time to choose our words.

Slips of the tongue are another form of "errors" that can help us understand the process of speech production better. Slips can happen at many levels, at the syntactic level, at the phrasal level, at the lexical semantic level, at the morphological level and at the phonological level and they can take more than one form like: additions, substations, deletion, exchange, anticipation, perseveration, shifts, and haplologies M.F. Garrett, (1975).[[17]](https://en.wikipedia.org/wiki/Speech_error#cite_note-17) Slips are orderly because language production is orderly.

There are some biases shown through slips of the tongue. One kind is a lexical bias which shows that the slips people generate are more often actual words than random sound strings. Baars Motley and Mackay (1975) found that it was more common for people to turn two actual words to two other actual words than when they do not create real words.[[14]](https://en.wikipedia.org/wiki/Speech_error#cite_note-:0-14) This suggests that lexemes might overlap somewhat or be stored similarly.

A second kind is a semantic bias which shows a tendency for sound bias to create words that are semantically related to other words in the linguistic environment. Motley and Baars (1976) found that a word pair like "get one" will more likely slip to "wet gun" if the pair before it is "damp rifle". These results suggest that we are sensitive to how things are laid out semantically.[[18]](https://en.wikipedia.org/wiki/Speech_error#cite_note-18)

**Euphemistic misspeaking**

Although the roots of **misspeaking** roots lie in [Middle English](https://en.wikipedia.org/wiki/Middle_English) and earlier,[[19]](https://en.wikipedia.org/wiki/Speech_error#cite_note-oed-19) since the 1980s the word has been used increasingly in politics to imply that errors made by a speaker are accidental and should not be construed as a deliberate attempt to misrepresent the facts of a case. As such, its usage has attracted a degree of media coverage, particularly from critics who feel that the term is overly [approbative](https://en.wikipedia.org/wiki/Approbative) in cases where either ignorance of the facts or intent to misrepresent should not be discarded as possibilities.[[20]](https://en.wikipedia.org/wiki/Speech_error#cite_note-newyorker-20)[[21]](https://en.wikipedia.org/wiki/Speech_error#cite_note-lawson-21)

The word was used by a White House spokesman after [George W. Bush](https://en.wikipedia.org/wiki/George_W._Bush) seemed to say that his government was always "thinking about new ways to harm our country and our people", and more famously by then American presidential candidate [Hillary Clinton](https://en.wikipedia.org/wiki/Hillary_Clinton) who recalled landing in at the US military outpost of [Tuzla](https://en.wikipedia.org/wiki/Tuzla) "under sniper fire" (in fact, video footage demonstrates that there were no such problems on her arrival).[[21]](https://en.wikipedia.org/wiki/Speech_error#cite_note-lawson-21)[[22]](https://en.wikipedia.org/wiki/Speech_error#cite_note-22) Other users of the term include American politician [Richard Blumenthal](https://en.wikipedia.org/wiki/Richard_Blumenthal), who incorrectly stated on a number of occasions that he had served in Vietnam during the [Vietnam War](https://en.wikipedia.org/wiki/Vietnam_War).[[21]](https://en.wikipedia.org/wiki/Speech_error#cite_note-lawson-21)