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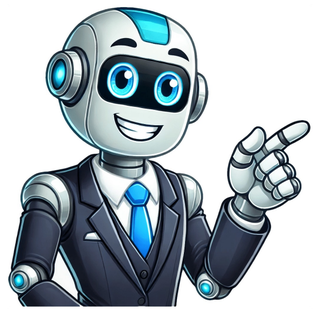

Fact Checked Content Last Updated: 16.05.2023 11 min reading time Content creation process designed by Content cross-checked by Content quality checked by Save Article Save Article The International Phonetic Alphabet (shortened to IPA) is a set of symbols that represent phonetic sounds. These sounds are known as phones. The IPA is used to help us understand and transcribe different speech sounds from different languages.The IPA helps us to pronounce words accurately. Instead of relying on the written spelling of words, which does not always match the way we pronounce them, the phonetic alphabet describes the sounds of words (without reference to the letters of a language). So, when something is written using IPA, it will always match the pronunciation. This is particularly useful for people learning a new language, as they will be able to correctly pronounce the words.The International Phonetic Alphabet was created in 1888 by Paul Passy, a French linguist. It was based on the Latin alphabet and originally represented speech sounds in different languages so they could be easily written down. It was also made with the purpose of replacing the many individual transcription systems previously used because a single system for representing sounds in all languages was deemed easier to use.The IPA represents all of the different qualities and sounds of speech in different languages. These include:PhonesPhonemesIntonationSeparation between wordsSyllables.Let's go through these in more detail!What are phones?Phones are distinguishable sounds. When we speak, we produce phones. Phones are not specific to any language, so are used globally. When we transcribe phones, they are written between square brackets [ ].What are phonemes?Phonemes are the mental representations and meanings of the sound of a word. Changing a phoneme in a word can change its meaning. For example, changing the phoneme /t/ in the word sheet to the phoneme /p/ creates the word sheep. Unlike phones, phonemes are language-specific, so cannot be applied to all languages. When we transcribe phonemes, they are written between slashes / /.What is intonation?Intonation refers to the variation of someone's pitch when they speak. Intonation can be used for a variety of reasons, such as:to show a speaker's emotion or attitude.to show the difference between a statement and a question.to indicate whether or not the speaker has finished their sentence.to add stress to certain parts of a sentence, which can slightly change the meaning.What are separations between words?When we speak, not every word will flow and not every syllable will end on a clear sound. So, there can be gaps between the sounds we make as we say them. For example, with the word 'utmost', the 't' is often not clearly pronounced. When transcribing, the 't' sound can be replaced by a symbol called a glottal stop, which looks like this: ʔ. It is used to indicate the blocking of airflow, which stops us from producing a clear sound.What are syllables?Syllables are units of spoken language that must contain a vowel sound, and sometimes consonants. For example, if we look at the following words:Book - 1 syllable Table - 2 syllablesGardening - 3 syllablesAs well as signifying gaps between words, the IPA can also be used to signify breaks between different syllables.The International Phonetic Alphabet (IPA) chart is a visual representation of the phonetic symbols used in the IPA system. It's organized into sections for different types of sounds including consonants, vowels, suprasegmentals, diacritics, and tones. The consonant chart is typically divided by place of articulation (where in the vocal tract the sound is produced) and manner of articulation (how the sound is produced). The vowel chart is often displayed as a trapezoid representing the position of the tongue in the mouth. The chart is used worldwide by linguists, phoneticians, language teachers, and students for the accurate transcription and pronunciation of any language.Fig. 1 - The IPA chart shows all of the sounds and qualities of speech in system of representative symbols.The IPA chart is typically broken down into:Pulmonic consonantsNon-pulmonic consonantsVowels (monophthongs and diphthongs)SuprasegmentalsTones and word accentsDiacriticsThese are consonants that are made by air pressure from the lungs and blocking the space between the vocal cords. All consonants in the English language are pulmonic, but there are some in other languages (see below).In the IPA chart, pulmonic consonants are classified in three ways:Voicing - this refers to whether or not the vocal cords make a sound. Voiced consonants are a result of the vocal cords vibrating to produce sound. For example, the consonants: B, D, G, J, L. With voiceless consonants, the vocal cords do not make a sound, instead air passes through them. For example, the consonants: s, p, t, f, f.Place of articulation - this refers to where in the mouth sounds are made.Manner of articulation - this refers to how our speech organs are used to produce a sound, particularly how the airflow is blocked in order to make different sounds.For example, the sound pronounced /b/ is called a voiced bilabial plosive. This means that to produce the /b/ sound:The vocal cords vibrate to make a sound (voiced).Both lips are pressed together (bilabial).The vocal tract is blocked and then air is pushed out through the lips (plosive).These are consonants that are not produced with airflow from the lungs. There are no non-pulmonic consonants in English. The three types of non-pulmonic consonants are:EjectivesImplosivesClicksKhoisan languages are known for their use of click consonants, which can be written using symbols such as ǃ and ǂ.Vowels are sounds that are made with no restriction of airflow, and the sound is dependent on the position of the mouth and the tongue.For example, when we pronounce the vowel 'a' in the word 'bake', our tongues are far from the roof of our mouths and are positioned towards the front of the mouth. But, when we pronounce the vowel 'u' in the word 'music', the tongue is close to the roof of the mouth and is positioned towards the back.Types of vowelsVowels can be divided into two categories:Monophthongs are single vowel sounds in a syllable. For example, the vowel 'i' in the word 'hit' is a single vowel sound that can be transcribed as /ɪ/.Diphthongs are two vowel sounds in a syllable. For example, in the word 'play', the vowel 'a' has two sounds, which are transcribed as /eɪ/. Diphthongs are also called gliding vowels, as one vowel sound glides into another. A group of symbols that represent the prosodic features of speech, including Stress - emphasis on certain parts of a word or utterance.Tone - variation in pitch of the voice.Duration - Length of sounds measured in milliseconds (not to be confused with vowel length)Syllable breaks - where one syllable ends and another begins.Linking - an absence of a syllable breakTones and accents are used when transcribing tonal languages, in which the words can have different meanings depending on the inflection (pitch) used. Examples of tonal languages include Chinese, Thai, Vietnamese.Diacritics are marks added to phonetic characters (eg. accents or cedillas) that show small distinctions in sounds that mildly alter pronunciation.For example, the word 'pen' has an audible expiration of air after the letter 'p'. This can be shown with the diacritic [ʰ], so would look like [pʰen].Fig. 2 - Diacritic symbols and their meanings are shown in a table on the IPA chart.As said before, the International Phonetic Alphabet (IPA) serves as a universal system to transcribe every conceivable speech sound across all languages, including English. These sounds, known as phones and phonemes, are fundamental units of speech. A phonemic chart, derived from the IPA and tailored specifically to English, visually represents the language's sounds. English has 44 distinct phonemes, which are shown below:Fig. 3 - The English phonemic alphabet shows all of the phonemes used in the English language.Please note that the exact number and type of phonemes can vary between different dialects of English. For instance, Received Pronunciation (British English) has 44 phonemes, while General American English has 39. When phones are transcribed, they are written between square brackets [ ]. Phonetic transcriptions are detailed, including many elements of speech sounds to be more specific about the variations of pronunciation. These are so-called 'narrow transcriptions'.Below are some examples of phonetic transcriptions. They are all written according to British Received Pronunciation.Pin - [pʰɪn]Wing - [wĩŋ]Port - [pʰɔ·t]Diacritics are used in the above transcriptions to show specific differences in pronunciation. The [ʰ] indicates aspiration - an audible exhalation of air. The [h] indicates nasalisation - air flows out of the nose.When phonemes are transcribed, they are written between slashes / /. Phonemic transcriptions only mention the most obvious and important elements of speech sounds. These are so-called 'broad transcriptions'.Below are some examples of phonemic transcriptions. They are all written according to British Received Pronunciation.Pin - /pɪn/Wing - /wɪŋ/Port - /pɔːt/As phonemic transcriptions are not as detailed as phonetic transcriptions, diacritics are not needed as they are not necessary to the meaning of the words.The international phonetic alphabet (IPA) is a set of symbols that represent phonetic sounds. The IPA helps us to transcribe words in different languages and pronounce words accurately no matter the language.The IPA was created in 1888 by Paul Passy, a French linguist.The different parts of the IPA chart are: pulmonic consonants, non-pulmonic consonants, monophthong, diphthongs, suprasegmentals, tones and word accents, diacritics.The English Phonemic Alphabet chart is specific to the English language and contains 44 English phonemes.Phonetic transcriptions are known as narrow transcriptions. They are written between brackets. Phonemic transcriptions are known as broad transcriptions. They are written between slashes. What is the International Phonetic Alphabet (IPA)? The International Phonetic Alphabet is a set of symbols that represent phonetic sounds. Who created the International Phonetic Association? The founder of the International Phonetic Association was Paul Passy. How do I use the International Phonetic Alphabet? The International Phonetic Alphabet is used to give accurate representations of speech sounds. This is done using the symbols from the IPA to represent sounds and aspects of speech. What is IPA for all languages? The International Phonetic Alphabet (IPA) is not specific to one language. It contains symbols that represents all possible speech sounds from all languages and so can be used to give accurate representations of speech in any language. What was the first phonetic alphabet? The international phonetic alphabet was created by French linguist Paul Passy in 1888. It was based on the Latin alphabet and was created so that each speech sound could be written down and represented by a corresponding symbol. Save Article Access over 700 million learning materials Study more efficiently with flashcards Get better grades with AI Sign up for free Already have an account? Log in Good job! Keep learning, you are doing great. Don't give up! Next Open in our app At StudySmarter, we have created a learning platform that serves millions of students. Meet the people who work hard to deliver fact based content as well as making sure it is verified. Lily Hulatt is a Digital Content Specialist with over three years of experience in content strategy and curriculum design. She gained her PhD in English Literature from Durham University in 2022, taught in Durham University's English Studies Department, and has contributed to a number of publications. Lily specialises in English Literature, English Language, History, and Philosophy. Get to know Lily Gabriel Freitas is an AI Engineer with a solid experience in software development, machine learning algorithms, and generative AI, including large language models' (LLMs) applications. Graduated in Electrical Engineering at the University of São Paulo, he is currently pursuing an MSc in Computer Engineering at the University of Campinas, specializing in machine learning topics. Gabriel has a strong background in software engineering and has worked on projects involving computer vision, embedded AI, and LLM applications. Get to know Gabriel StudySmarter is a globally recognized educational technology company, offering a holistic learning platform designed for students of all ages and educational levels. Our platform provides learning support for a wide range of subjects, including STEM, Social Sciences, and Languages and also helps students to successfully master various tests and exams worldwide, such as GCSE, A Level, SAT, ACT, Abitur, and more. 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Unsourced material may be challenged and removed.Find sources: "Featural writing system" – news · newspapers · books · scholar · JSTOR (September 2009) (Learn how and when to remove this message) In a featural writing system, the shapes of the symbols (such as letters) are not arbitrary but encode phonological features of the phonemes that they represent. The term featural was introduced by Geoffrey Sampson to describe the Korean alphabet[1]: 120 and Pitman shorthand.[1]: 40 Joe Martin introduced the term featural notation to describe writing systems that include symbols to represent individual features rather than phonemes. He asserts that "alphabets have no symbols for anything smaller than a phoneme".[2]: 5 A featural script represents finer detail than an alphabet. Here, symbols do not represent whole phonemes, but rather the elements (features) that make up the phonemes, such as voicing or its place of articulation. In the Korean alphabet, the featural symbols are combined into alphabetic letters, and these letters are in turn joined into syllabic blocks, so the system combines three levels of phonological representation. Some scholars (e.g. John DeFrancis) reject this class or at least labeling the Korean alphabet as such.[3] Other featural writing systems include stenographies and constructed scripts of hobbyists and fiction writers (such as Tengwar), many of which feature advanced graphic designs corresponding to phonologic properties. It has been shown that even the Latin script has sub-character "features".[4][clarification needed] This is a small list of examples of featural writing systems by date of creation. The languages for which each system was developed are also shown. Hangul – Korean Canadian Aboriginal syllabics – several Algonquian, Eskimo-Aleut and Athabaskan languages Gregg shorthand – many languages from different families Duployan shorthand – originally French, later English, German, Spanish, Romanian, Chinook Jargon and others Visible Speech (a phonetic script) – no specific language. Developed to aid the deaf and teach them to speak properly Deseret alphabet - phonetic script used to write English by the Church of Latter-Day Saints. Vowels and voicing pairs of consonants are similar in shape. Shavian alphabet, Quikscript – English Tengwar (an artificial script invented by J. R. R. Tolkien) – fictional languages from Tolkien's novels; Tolkien's invented languages and English SignWriting – sign languages; featural notation[2]: 5 Mandombe – several Bantu Languages Ditema tsa Dinoko / Isibheqe Sohlamvu – Sotho and other Southern Bantu languages Other scripts may have limited featural elements. Many languages written in the Latin alphabet make use of diacritics, and those letters using diacritics are sometimes considered separate letters within the language's alphabet. The Polish alphabet, for example, indicates a palatal articulation of some consonants with an acute accent. The Turkish alphabet uses the presence of one or two dots above a vowel to indicate that it is a front vowel. The Japanese kana syllabaries indicate voiced consonants with marks known as dakuten. The International Phonetic Alphabet (IPA) also has some featural elements, for example in the hooks and tails that are characteristic of implosives, ɓ ɗ ʄ ɠ ʛ, and retroflex consonants, ʈ ɖ ʂ ʐ ɳ ɻ ɽ ɭ. The IPA diacritics are also featural. The Fraser alphabet used for Lisu rotates the letters for the tenuis consonants ꓑ /p/, ꓔ /t/, ꓝ /ts/, ꓚ /tʃ/, and ꓗ /k/ 180° to indicate aspiration. Abugida Abjad Syllabary ^ a b Sampson, Geoffrey (1990). Writing Systems. Stanford University Press. ISBN 978-0-8047-1756-4. ^ a b Martin, Joe (2000). A Linguistic Comparison: Two Notation Systems for Signed Languages (PDF) (Thesis). ^ DeFrancis, John (1989). Visible Speech: The Diverse Oneness of Writing Systems. University of Hawaii Press. pp. 196–198, 218. ISBN 0824812077. ^ See Primus, Beatrice (2004), "A featural analysis of the Modern Roman Alphabet" (PDF), Written Language and Literacy, 7 (2): 235–274, doi:10.1075/wll.7.2.06pri, archived from the original (PDF) on 2017-10-10, retrieved 2015-12-05. Retrieved from " System of phonetic notation For the spelling alphabet used in spoken communication over radio, see NATO phonetic alphabet. For an introductory guide on IPA symbols with audio, see Help:IPA. For the usage of the IPA on Wikipedia, see Help:IPA/Introduction and Help:IPA/English. International Phonetic Alphabet"IPA", transcribed narrowly as [aɪ pʰiː eɪ̯]Script type Alphabet – partially featuralPeriod1888–presentLanguagesUsed for phonetic and phonemic transcription of any oral languageRelated scriptsParent systemsEgyptian hieroglyphsProto-Sinaitic scriptPhoenician alphabetGreek alphabetLatin scriptLepsius Standard AlphabetPalaeotype alphabet, English Phonotypic AlphabetRomic alphabetInternational Phonetic AlphabetUnicodeUnicode rangeSee Phonetic symbols in Unicode § Unicode blocks This article contains phonetic transcriptions in the International Phonetic Alphabet (IPA). For an introductory guide on IPA symbols, see Help:IPA. For the distinction between [ ], / / and ⟨ ⟩, see IPA § Brackets and transcription delimiters. This article contains phonetic symbols. Without proper rendering support, you may see question marks, boxes, or other symbols instead of phonetic symbols. The International Phonetic Alphabet (IPA) is an alphabetic system of phonetic notation based primarily on the Latin script. It was devised by the International Phonetic Association in the late 19th century as a standard written representation for the sounds of speech.[1] The IPA is used by linguists, lexicographers, foreign language students and teachers, speech–language pathologists, singers, actors, constructed language creators, and translators.[2][3] The IPA is designed to represent those qualities of speech that are part of lexical (and, to a limited extent, prosodic) sounds in oral language: phones, intonation and the separation of syllables.[1] To represent additional qualities of speech – such as tooth gnashing, lisping, and sounds made with a cleft palate – an extended set of symbols may be used.[2] Segments are transcribed by one or more IPA symbols of two basic types: letters and diacritics. For example, the sound of the English digraph ⟨ch⟩ may be transcribed in IPA with a single letter: [c],[not verified in body] or with multiple letters plus diacritics: [t̠̺͡ʃʰ], depending on how precise one wishes to be. Slashes are used to signal phonemic transcription; therefore, /tʃ/ is more abstract than either [t̠̺͡ʃʰ] or [c] and might refer to either, depending on the context and language.[note 1] Occasionally, letters or diacritics are added, removed, or modified by the International Phonetic Association. As of the most recent change in 2005, [4] there are 107 segmental letters, an indefinitely large number of suprasegmental letters, 44 diacritics (not counting composites), and four extra-lexical prosodic marks in the IPA. These are illustrated in the current IPA chart, posted below in this article and on the International Phonetic Association's website.[5] Main article: History of the International Phonetic Alphabet In 1886 a group of French and English language teachers, led by the French linguist Paul Passy, formed what would be known from 1897 onwards as the International Phonetic Association (in French, l'Association phonétique internationale).[6] The idea of the alphabet had been suggested to Passy by Otto Jespersen. It was developed by Passy along with other members of the association, principally Daniel Jones. The original IPA alphabet was based on the Romic alphabet, an English spelling reform created by Henry Sweet that in turn was based on the Palaeotype alphabet of Alexander John Ellis, itself derived from Lepsius Standard Alphabet first used for transcribing Ancient Egyptian into German. The original intent was to make it usable for other languages the values of the symbols were allowed to vary from language to language.[note 2] For example, the sound [ʃ] (the sh in shoe) was originally represented with the letter ⟨c⟩ for English but with ⟨x⟩ for French and German; with German, ⟨c⟩ was used for the [x] sound of Bach.[6] With a growing number of transcribed languages this proved impractical, and in 1888 the values of the letters were made uniform across languages. This would provide the base for all future revisions.[6][8] Since its creation, the IPA has undergone a number of revisions. After relatively frequent revisions and expansions from the 1890s to the 1940s, the IPA remained nearly static until the Kiel Convention in 1989, which substantially revamped the alphabet. A smaller revision took place in 1993 with the resurrection of letters for mid central vowels[2] and the retirement of letters for voiceless implosives.[9] The alphabet was last revised in May 2005 with the addition of a letter for a labiodental flap.[10] Apart from the addition and removal of symbols, changes to the IPA have consisted largely of renaming symbols and categories and in modifying typefaces.[2] Extensions to the International Phonetic Alphabet for speech pathology (extIPA) were created in 1990 and were officially adopted by the International Clinical Phonetics and Linguistics Association in 1994.[11] They were substantially revised in 2015. The official summary chart of the IPA, revised in 2020 The general principle of the IPA is to provide one letter for each distinctive sound (speech segment).[note 3] This means that: It does not normally use combinations of letters to represent single sounds, the way English does with ⟨sh⟩, ⟨th⟩ and ⟨ng⟩, nor single letters to represent multiple sounds, the way ⟨x⟩ represents /ks/ or /gz/ in English. There are no letters that have context-dependent sound values, the way ⟨c⟩ and ⟨g⟩ in several European languages have a "hard" or "soft" pronunciation. The IPA does not usually have separate letters for two sounds if no known language makes a distinction between them, a property known as "selectiveness".[2][note 4] However, if a large number of phonemically distinct letters can be derived with a diacritic, that may be used instead.[note 5] The alphabet is designed for transcribing sounds (phones), not phonemes, though it is used for phonemic transcription as well. A few letters that did not indicate specific sounds have been retired – ⟨ˇ⟩, once used for the "compound" tone of Swedish and Norwegian, and ⟨ƞ⟩, once used for the moraic nasal of Japanese – though one remains: ⟨ɧ⟩, used for the sj-sound of Swedish. When the IPA is used for broad phonetic or for phonemic transcription, the letter–sound correspondence can be rather loose. The IPA has recommended that more 'familiar' letters be used when that would not cause ambiguity.[13] For example, ⟨e⟩ and ⟨o⟩ for [ɛ] and [ɔ], ⟨t⟩ for [t̪] or [ʈ], ⟨f⟩ for [ɸ], etc. Indeed, in the illustration of Hindi in the IPA Handbook, the letters ⟨c⟩ and ⟨ɟ⟩ are used for /t͡ʃ/ and /d͡ʒ/. Among the symbols of the IPA, 107 letters represent consonants and vowels, 31 diacritics are used to modify these, and 17 additional signs indicate suprasegmental qualities such as length, tone, stress, and intonation.[note 6] These are organized into a chart; the chart displayed here is the official chart as posted at the website of the IPA. Loop-tail ⟨g⟩ and open-tail ⟨ɡ⟩ are graphic variants. Open-tail ⟨ɡ⟩ was the original IPA symbol, but both are now considered correct. See history of the IPA for details. The letters chosen for the IPA are meant to harmonize with the Latin alphabet.[note 7] For this reason, most letters are either Latin or Greek, or modifications thereof. Some letters are neither: for example, the letter denoting the glottal stop, ⟨ʔ⟩, originally had the form of a question mark with the dot removed. A few letters, such as that of the voiced pharyngeal fricative, ⟨ʕ⟩, were inspired by other writing systems (in this case, the Arabic letter ⟨ع⟩, ʿayn, via the reversed apostrophe).[9] Some letter forms derive from existing letters: The right-swinging tail, as in ⟨ʈ ɖ ɳ ɽ ʂ ʐ ɻ ɭ⟩, indicates retroflex articulation. It originates from the hook of an r. The top hook, as in ⟨ɠ ɗ ɓ⟩, indicates implosion. Several nasal consonants are based on the form ⟨n⟩: ⟨n ɲ ɳ ŋ⟩. ⟨ɲ⟩ and ⟨ŋ⟩ derive from ligatures of gn and ng, and ⟨ɱ⟩ is an ad hoc imitation of ⟨ŋ⟩. Letters turned 180 degrees for suggestive shapes, such as ⟨ɐ ɔ ə ɟ ɥ ɯ ɹ ʌ ʍ ʎ⟩ from ⟨a c e f h m r v w y⟩.[note 8] Either the original letter may be reminiscent of the target sound, e.g., ⟨ɐ ə ɹ ʍ⟩ – or the turned one, e.g., ⟨ɔ ɟ ɥ ɯ ʌ ʎ⟩ recall o j y u/w ʌ y/λ. Rotation was popular in the era of mechanical typesetting, as it had the advantage of not requiring the casting of special type for IPA symbols, much as the sorts had traditionally often pulled double duty for ⟨b⟩ and ⟨q⟩, ⟨d⟩ and ⟨p⟩, ⟨n⟩ and ⟨u⟩, ⟨6⟩ and ⟨9⟩ to reduce cost. An example of a font that uses turned small-capital omega ⟨ꭥ⟩ for the vowel letter ʊ. The glyph had originally been a small-capital ⟨ᴜ⟩. Among consonant letters, the small capital letters ⟨ɢ ʜ ʟ ɴ ʀ ʁ⟩, and also ⟨ꞯ⟩ in extIPA, indicate more guttural sounds than their base letters – ⟨ʙ⟩ is a late exception. Among vowel letters, small capitals indicate lax vowels. By 1947, the original small-cap vowel letters ⟨ʌ Ɐ ɪ ᴜ⟩ had been replaced by ⟨ʌ ɤ ɩ ɷ/ʊ⟩, with only ⟨ʏ⟩ remaining as a small capital, though later ⟨ɪ⟩ and ⟨ɶ⟩ would be restored. The International Phonetic Alphabet is based on the Latin script, and uses as few non-Latin letters as possible.[6] The Association created the IPA so that the sound values of most letters would correspond to "international usage" (approximately Classical Latin).[6] Hence, the consonant letters ⟨b⟩, ⟨d⟩, ⟨f⟩, ⟨ɡ⟩, ⟨h⟩, ⟨k⟩, ⟨l⟩, ⟨m⟩, ⟨n⟩, ⟨p⟩, ⟨s⟩, ⟨t⟩, ⟨v⟩, ⟨w⟩, and ⟨z⟩ have more or less their word-initial values in English (g as in gill, h as in hill, though p t k are unaspirated as in spill, still, skill); and the vowel letters ⟨a⟩, ⟨e⟩, ⟨i⟩, ⟨o⟩, ⟨u⟩ correspond to the (long) sound values of Latin: [i] is like the vowel in machine, [u] is as in rule, etc. Other Latin letters, particularly ⟨j⟩, ⟨r⟩ and ⟨y⟩, differ from English, but have their IPA values in Latin or other European languages. This basic Latin inventory was extended by adding small-capital and cursive forms, diacritics and rotation. The sound values of these letters are related to those of the original letters, and their derivation may be iconic.[note 9] For example, letters with a rightward-facing hook at the bottom represent retroflex equivalents of the source letters, and small capital letters usually represent uvular equivalents of their source letters. There are also several letters from the Greek alphabet, though their sound values may differ from Greek. For most Greek letters, subtly different glyph shapes have been devised for the IPA, specifically ⟨ɑ⟩, ⟨ꞵ⟩, ⟨ɣ⟩, ⟨ɛ⟩, ⟨ɸ⟩, ⟨ꭓ⟩ and ⟨ʋ⟩, which are encoded in Unicode separately from their parent Greek letters. One, however – ⟨θ⟩ – has only its Greek form, while for ⟨ꞵ ~ β⟩ and ⟨ꭓ ~ χ⟩, both Greek and Latin forms are in common use.[16] The tone letters are not derived from an alphabet, but from a pitch trace on a musical scale. Beyond the letters themselves, there are a variety of secondary symbols which aid in transcription. Diacritic marks can be combined with the letters to add tone and phonetic detail such as secondary articulation. There are also special symbols for prosodic features such as stress and intonation. There are two principal types of brackets used to set off (delimit) IPA transcriptions: Symbol Use [...] Square brackets are used with phonetic notation, whether broad or narrow[17] – that is, for actual pronunciation, possibly including details of the pronunciation that may not be used for distinguishing words in the language being transcribed, but which the author nonetheless wishes to document. Such phonetic notation is the primary function of the IPA. / ... / Slashes[note 10] are used for abstract phonemic notation,[17] which note only features that are distinctive in the language, without any extraneous detail. For example, while the 'p' sounds of English pin and spin are pronounced differently (and this difference would be meaningful in some languages), the difference is not meaningful in English. Thus, phonemically the words are usually analyzed as /ˈpɪn/ and /ˈspɪn/, with the same phoneme /p/. To capture the difference between them – the allophones of /p/ – they can be transcribed phonetically as [pʰɪn] and [spɪn]. Phonemic notation commonly uses IPA symbols that are rather close to the default pronunciation of a phoneme, but for legibility often uses simple and 'familiar' letters rather than precise notation, for example /r/ and /o/ for the English [ɹʷ] and [əʊ̯] sounds, or /c, ɟ/ for [t͡ʃ, d͡ʒ] as mentioned above. Less common conventions include: Symbol Use { ... } Braces ("curly brackets") are used for prosodic notation.[18] See Extensions to the International Phonetic Alphabet for examples in this system. (...) Parentheses are used for indistinguishable[17] or unidentified utterances. They are also seen for silent articulation (mouthing),[19] where the expected phonetic transcription is derived from lip-reading, and with periods to indicate silent pauses, for example (...) or (2 sec). The latter usage is made official in the extIPA, with unidentified segments circled instead.[20] ⸨ ... ⸩ Double parentheses indicate either a transcription of obscured speech or a description of the obscuring noise. The IPA specifies that they mark the obscured sound,[18] as in ⸨2σ⸩, two audible syllables obscured by another sound. The current extIPA specifications prescribe double parentheses for the extraneous noise, such as ⸨cough⸩ for a cough by another person (not the speaker) or ⸨knock⸩ for a knock on a door, but the IPA Handbook identifies IPA and extIPA usage as equivalent.[21] Early publications of the extIPA explain double parentheses as marking "uncertainty because of noise which obscures the recording", and that within them "may be indicated as much detail as the transcriber can detect."[22] All three of the above are provided by the IPA Handbook. The following are not, but may be seen in IPA transcription or in associated material (especially angle brackets): Symbol Field Description ⟦ ... ⟧ Phonetics Double square brackets are used for especially precise phonetic transcription, often finer than is normally practicable.[23] This is consistent with the IPA convention of doubling a symbol to indicate greater degree. Double brackets may indicate that a letter has its cardinal IPA value. For example, ⟦a⟧ is an open front vowel, rather than the perhaps slightly different value (such as open central) that "[a]" may be used to transcribe in a particular language. Thus, two vowels transcribed for easy legibility as [e] and [ɛ] may be clarified as actually being ⟦e̝⟧ and ⟦e⟧; [ð] may be more precisely ⟦ð̠ˠ⟧.[24] Double brackets may also be used for a specific token or speaker; for example, the pronunciation of a particular child as opposed to the adult pronunciation that is their target.[25] ⫽ ... ⫽{ ... }| ... |‖ ... ‖ Morphophonology Double slashes are used for morphophonemic transcription. This is also consistent with the IPA convention of doubling a symbol to indicate greater degree – in this case, more abstract than phonemic transcription. Also commonly seen are the braces of set theory, especially when enclosing the set of phonemes that constitute the morphophoneme, e.g. {t d} or {t|d} or {/t/, /d/} for a conflated /t/ and /d/. Braces have a conflicting use to delimit prosodic transcription within the Voice Quality Symbols, which are an extension of IPA used in extIPA, but are not otherwise used in IPA proper. Other delimiters sometimes seen are pipes and double pipes taken from Americanist phonetic notation. However, these conflict with the pipes used in basic IPA prosodic transcription.[note 11] \ ... \ ... | ... |! ... ! Diaphonology Backslashes are used for diaphonemic transcription, for example setting off pronunciations in dictionaries that do not target a specific preferred dialect.[note 10] Other delimiters are double slashes, – the same notation as for morphophonology, – exclamation marks, and pipes. ⟨ ... ⟩⟪ ... ⟫| ... | Graphemics Angle brackets[note 12] are used to mark both original Latin orthography and transliteration from another script; they are also used to identify individual graphemes of any script.[28][29] In IPA literature, they are used to indicate the IPA letters themselves rather than the sound values that they carry. For example, ⟨cot⟩ would be used for the orthography of the English word cot, as opposed to its pronunciation /ˈkɒt/. Italics are usual when words are written as themselves (as with cot in the previous sentence) rather than to specifically note their orthography. However, italics are sometimes ambiguous, and italic markup is not always accessible to sight-impaired readers who rely on screen reader technology. Double angle brackets may occasionally be useful to distinguish original orthography from transliteration, or the idiosyncratic spelling of a manuscript from the normalized orthography of the language. Pipes are sometimes used instead of double angle brackets to denote the distinct allographs of a grapheme that are known as glyphs. For example, print |g| and script |ɡ| are two glyph variants of the grapheme ⟨g⟩ of Latin script.[30] Some examples of contrasting brackets in the literature: In some English accents, the phoneme /l/, which is usually spelled as ⟨l⟩ or ⟨ll⟩, is articulated as two distinct allophones: the clear [l] occurs before vowels and the consonant /j/, whereas the dark [ɫ]/[lˠ] occurs before consonants, except /j/, and at the end of words.[31] the alternations /f/ – /v/ in plural formation in one class of nouns, as in knife /naɪf/ – knives /naɪvz/, which can be represented morphophonemically as {naɪV} – {naɪV+z}. The morphophoneme {V} stands for the phoneme set {/f/, /v/}.[32] [ˈf\faməlz ˈhɛld ɪn (.) ⸨knock on door⸩ bɑɪsə{p ˈloʊnə and ˈmadɹɪd p}] — f-finals held in Barcelona and Madrid.[33] Main articles: Cursive forms of the International Phonetic Alphabet and IPA Braille IPA letters have cursive forms designed for use in manuscripts and when taking field notes, but the Handbook recommended against their use, as cursive IPA is "harder for most people to decipher".[34] A braille representation of the IPA for blind or visually impaired professionals and students has also been developed.[35] The authors of textbooks or similar publications often create revised versions of the IPA chart to express their own preferences or needs. The image displays one such version. All pulmonic consonants are moved to the consonant chart. Only the black symbols are on the official IPA chart; additional symbols are in grey. The grey fricatives are part of the extIPA, and the grey retroflex letters are mentioned or implicit in the Handbook. The grey click is a retired IPA letter that is still in use. The International Phonetic Alphabet is occasionally modified by the Association. After each modification, the Association provides an updated simplified presentation of the alphabet in the form of a chart. (See History of the IPA.) Not all aspects of the alphabet can be accommodated in a chart of the size published by the IPA. The alveolo-palatal and epiglottal consonants, for example, are not included in the consonant chart for reasons of space rather than of theory (two additional columns would be required, one between the retroflex and palatal columns and the other between the pharyngeal and glottal columns), and the lateral flap would require an additional row for that single consonant, so they are listed instead under the catchall block of "other symbols".[36] The indefinitely large number of tone letters would make a full accounting impractical even on a larger page, and only a few examples are shown, and even the tone diacritics are not complete; the reversed tone letters are not illustrated at all. The procedure for modifying the alphabet or the chart is to propose the change in the Journal of the IPA. (See, for example, December 2008 on an open central unrounded vowel[37] and August 2011 on central approximants.)[38] Reactions to the proposal may be published in the same or subsequent issues of the Journal (as in August 2009 on the open central vowel).[39] [better source needed] A formal proposal is then put to the Council of the IPA[40][clarification needed] – which is elected by the membership[41] – for further discussion and a formal vote.[42][43] Many users of the alphabet, including the leadership of the Association itself, deviate from its standardized usage.[note 13] The Journal of the IPA finds it acceptable to mix IPA and extIPA symbols in consonant charts in their articles. (For instance, including the extIPA letter ⟨□⟩, rather than ⟨ʎ̝̊⟩, in an illustration of the IPA.)[44] Further information: Phonetic transcription Of more than 160 IPA symbols, relatively few will be used to transcribe speech in any one language, with various levels of precision. A precise phonetic transcription, in which sounds are specified in detail, is known as a narrow transcription. A coarser transcription with less detail is called a broad transcription. Both are relative terms, and both are generally enclosed in square brackets.[1] Broad phonetic transcriptions may restrict themselves to easily heard details, or only to details that are relevant to the discussion at hand, and may differ little if at all from phonemic transcriptions, but they make no theoretical claim that all the distinctions transcribed are necessarily meaningful in the language. Phonetic transcriptions of the word international in two English dialects For example, the English word little may be transcribed broadly as [ˈlɪtəl], approximately describing many pronunciations. A narrower transcription may focus on individual or dialectical details: [ˈɫɪɾɫ] in General American, [ˈlɪʔo] in Cockney, or [ˈɫɪːɫ] in Southern US English. Phonemic transcriptions, which express the conceptual counterparts of spoken sounds, are usually enclosed in slashes (/ /) and tend to use simpler letters with few diacritics. The choice of IPA letters may reflect theoretical claims of how speakers conceptualize sounds as phonemes or they may be merely a convenience for typesetting. Phonemic approximations between slashes do not have absolute sound values. For instance, in English, either the vowel of pick or the vowel of peak may be transcribed as /i/, so that pick, peak would be transcribed as /ˈpik, ˈpiːk/ or as /ˈpɪk, ˈpik/; and neither is identical to the vowel of the French pique, which would also be transcribed /pik/. By contrast, a narrow phonetic transcription of pick, peak, pique could be: [pʰɪk], [pʰiːk], [pikʲ]. IPA is popular for transcription by linguists. Some American linguists, however, use a mix of IPA with Americanist phonetic notation or Sinological phonetic notation or otherwise use nonstandard symbols for various reasons.[45] Authors who employ such nonstandard use are encouraged to include a chart or other explanation of their choices, which is good practice in general, as linguists differ in their understanding of the exact meaning of IPA symbols and common conventions change over time. Many British dictionaries, including the Oxford English Dictionary and some learner's dictionaries such as the Oxford Advanced Learner's Dictionary and the Cambridge Advanced Learner's Dictionary, now use the International Phonetic Alphabet to represent the pronunciation of words.[46] However, most American (and some British) volumes use one of a variety of pronunciation respelling systems, intended to be more comfortable for readers of English and to be more acceptable across dialects, without the implication of a preferred pronunciation that the IPA might convey. For example, the respelling systems in many American dictionaries (such as Merriam-Webster) use ⟨y⟩ for IPA [j] and ⟨sh⟩ for IPA [ʃ], reflecting the usual spelling of those sounds in English.[47][48][note 14] (In IPA, [y] represents the sound of the French ⟨u⟩, as in tu, and [sh] represents the sequence of consonants in grasshopper.) The IPA is also not universal among dictionaries in languages other than English. Monolingual dictionaries of languages with phonemic orthographies generally do not bother with indicating the pronunciation of most words, and tend to use respelling systems for words with unexpected pronunciations. Dictionaries produced in Israel use the IPA rarely and sometimes use the Hebrew alphabet for transcription of foreign words.[note 15] Bilingual dictionaries that translate from foreign languages into Russian usually employ the IPA, but monolingual Russian dictionaries occasionally use pronunciation respelling for foreign words.[note 16] The IPA is more common in bilingual dictionaries, but there are exceptions here too. Mass-market bilingual Czech dictionaries, for instance, tend to use the IPA only for sounds not found in Czech.[note 17] Main article: Case variants of IPA letters IPA letters have been incorporated into the alphabets of various languages, notably via the Africa Alphabet in many sub-Saharan languages such as Hausa, Fula, Akan, Gbe languages, Manding languages, Lingala, etc. Capital case variants have been created for use in these languages. For example, Kabiyè of northern Togo has Ɖ ɖ, Ŋ ŋ, Ɣ ɣ, Ɔ ɔ, Ɛ ɛ, Ʋ ʋ. These, and others, are supported by Unicode, but appear in Latin ranges other than the IPA extensions. In the IPA itself, however, only lower-case letters are used. The 1949 edition of the IPA handbook indicated that an asterisk (*) might be prefixed to indicate that a word was a proper name,[50] and this convention was used by Le Maître Phonétique, which was written in IPA rather than in English or French orthography, but it was not included in the 1999 Handbook, which notes the contrary use of the asterisk as a placeholder for a sound or feature that does not have a symbol.[51] The IPA has widespread use among classical singers during preparation as they are frequently required to sing in a variety of foreign languages. They are also taught by vocal coaches to perfect diction and improve tone quality and tuning.[52] Opera librettos are authoritatively transcribed in IPA, such as Nico Castel's volumes[53] and Timothy Cheek's book Singing in Czech.[54] Opera singers' ability to read IPA was used by the site Visual Thesaurus, which employed several opera singers "to make recordings for the 150,000 words and phrases in VT's lexical database ... for their vocal stamina, attention to the details of enunciation, and most of all, knowledge of IPA".[55] See also: International Phonetic Alphabet chart The International Phonetic Association organizes the letters of the IPA into three categories: pulmonic consonants, non-pulmonic consonants, and vowels.[note 18][57][58] Pulmonic consonant letters are arranged singly or in pairs of voiceless (tenuis) and voiced sounds, with these then grouped in columns from front (labial) sounds on the left to back (glottal) sounds on the right. In official publications by the IPA, two columns are omitted to save space, with the letters listed among "other symbols" even though theoretically they belong in the main chart.[note 19] They are arranged in rows from full closure (occlusives: stops and nasals) at top, to brief closure (vibrants: trills and taps), to partial closure (fricatives), and finally minimal closure (approximants) at bottom, again with a row left out to save space. In the table below, a slightly different arrangement is made: All pulmonic consonants are included in the pulmonic-consonant table, and the vibrants and laterals are separated out so that the rows reflect the common lenition pathway of stop → fricative → approximant, as well as the fact that several letters pull double duty as both fricative and approximant; affricates may then be created by joining stops and fricatives from adjacent cells. Shaded cells represent articulations that are judged to be impossible or not distinctive. Vowel letters are also grouped in pairs – of unrounded and rounded vowel sounds – with these pairs also arranged from front on the left to back on the right, and from maximal closure at top to minimal closure at bottom. No vowel letters are omitted from the chart, though in the past some of the mid central vowels were listed among the "other symbols". See also: IPA consonant chart with audio A pulmonic consonant is a consonant made by obstructing the glottis (the space between the vocal folds) or oral cavity (the mouth) and either simultaneously or subsequently letting out air from the lungs. Pulmonic consonants make up the majority of consonants in the IPA, as well as in human language. All consonants in English fall into this category.[60] The pulmonic consonant table, which includes most consonants, is arranged in rows that designate manner of articulation, meaning how the consonant is produced, and columns that designate place of articulation, meaning where in the vocal tract the consonant is produced. The main chart includes only consonants with a single place of articulation. Place → Labial Coronal Dorsal Laryngeal Manner ↓ Bilabial Labiodental Linguolabial Dental Alveolar Postalveolar Retroflex Palatal Velar Uvular Pharyngeal/epiglottal Glottal Nasal m̥ m ɱ̊ ɱ n̼ n̥ n ɳ̊ ɳ ɲ̊ ɲ ŋ̊ ŋ ɴ̥ ɴ Plosive p b p̪ b̪ t̼ d̼ t d ʈ ɖ c ɟ k ɡ q ɢ ʡ ʔ Sibilant fricative s z ʃ ʒ ʂ ʐ ɕ ʑ Non-sibilant fricative ɸ β f v θ̼ ð̼ θ ð θ̠ ð̠ ɹ̠̊˔ ɹ̠˔ ɻ̊˔ ɻ˔ ç ʝ x ɣ χ ʁ ħ ʕ h ɦ Approximant ʋ ɹ ɻ j ɰ ʔ̞ Tap/flap ⱱ̟ ⱱ ɾ̼ ɾ̥ ɾ ɽ̊ ɽ ɢ̆ ʡ̆ Trill ʙ̥ ʙ r̥ r ɽ̊r̥ ɽr ʀ̥ ʀ ʜ ʢ Lateral fricative ɬ ɮ □ □ ʎ̝̊ □ ʟ̝ Lateral approximant l ɭ ʎ ʟ ʟ̠ Lateral tap/flap ɺ̥ ɺ □ □ ʎ̆ ʟ̆ IPA help audio full chart template Notes In rows where some letters appear in pairs (the obstruents), the letter to the right represents a voiced consonant, except breathy-voiced [ɦ].[61] In the other rows (the sonorants), the single letter represents a voiced consonant. While IPA provides a single letter for the coronal places of articulation (for all consonants but fricatives), these do not always have to be used exactly. When dealing with a particular language, the letters may be treated as specifically dental, alveolar, or post-alveolar, as appropriate for that language, without diacritics. Shaded areas indicate articulations judged to be impossible. The letters [β, ð, ʁ, ʕ, ʢ] are canonically voiced fricatives but may be used for approximants.[note 20] In many languages, such as English, [h] and [ɦ] are not actually glottal, fricatives, or approximants. Rather, they are bare phonation.[63] It is primarily the shape of the tongue rather than its position that distinguishes the fricatives [ʃ ʒ], [ɕ ʑ], and [ʂ ʐ]. [ʜ, ʢ] are defined as epiglottal fricatives under the "Other symbols" section in the official IPA chart, but they may be treated as trills at the same place of articulation as [ħ, ʕ] because trilling of the aryepiglottic folds typically co-occurs.[64] Some listed phones are not known to exist as phonemes in any language. Non-pulmonic consonants are sounds whose airflow is not dependent on the lungs. These include clicks (found in the Khoisan languages and some neighboring Bantu languages of Africa), implosives (found in languages such as Sindhi, Hausa, Swahili and Vietnamese), and ejectives (found in many Amerindian and Caucasian languages). BL LD D A PA RF P V U EG Ejective Stop pʼ tʼ ʈʼ cʼ kʼ qʼ ʡʼ Fricative ɸʼ fʼ θʼ sʼ ʃʼ ʂʼ ɕʼ xʼ χʼ Lateral fricative ɬʼ Click(top: velar;bottom: uvular) Tenuis kʘqʘ kǀqǀ kǃqǃ kǂqǂ Voiced ɡʘɢʘ ɡǀɢǀ ɡǃɢǃ ɡǂɢǂ Nasal ŋʘɴʘ ŋǀɴǀ ŋǃɴǃ ŋǂɴǂ Tenuis lateral kǁqǁ Voiced lateral ɡǁɢǁ Nasal lateral ŋǁɴǁ Implosive Voiced ɓ ɗ ᶑ ʄ ɠ ʛ Voiceless ɓ̥ ɗ̥ ᶑ̊ ʄ̊ ɠ̊ ʛ̥ IPA help audio full chart template Notes Clicks have traditionally been described as consisting of a forward place of articulation, commonly called the click "type" or historically the "influx", and a rear place of articulation, which when combined with the quality of the click is commonly called the click "accompaniment" or historically the "efflux". The IPA click letters indicate only the click type (forward articulation and release). Therefore, all clicks require two letters for proper notation: ⟨k͡ǀ, ɡ͡ǀ, q͡ǀ⟩, etc., or with the order reversed if both the forward and rear releases are audible. The letter for the rear articulation is frequently omitted, in which case a ⟨k⟩ may usually be assumed. However, some researchers dispute the idea that clicks should be analyzed as doubly articulated, as the traditional transcription implies, and analyze the rear occlusion as solely a part of the airstream mechanism.[65] In transcriptions of such approaches, the click letter represents both places of articulation, with the different letters representing the different click types, and diacritics are used for the elements of the accompaniment: ⟨ǀ, ǀ̬, ǀ̃⟩, etc. Letters for the voiceless implosives ⟨ƥ, ƭ, ƈ, ƙ, ʠ⟩ are no longer supported by the IPA, though they remain in Unicode. Instead, the IPA typically uses the voiced equivalent with a voiceless diacritic: ⟨ɓ̥, ʛ̥⟩, etc. The letter for the retroflex implosive, ⟨ᶑ⟩, is not "explicitly IPA approved",[66] but the IPA has endorsed the inclusion of ⟨ᶑ⟩ and voiceless ⟨□⟩ into Unicode.[citation needed] The ejective diacritic is placed at the right-hand margin of the consonant, rather than immediately after the letter for the stop: ⟨t͜ʃʼ⟩, ⟨kʷʼ⟩. In imprecise transcription, it often stands in for a superscript glottal stop in glottalized but pulmonic sonorants, such as [mˀ], [lˀ], [wˀ], [aˀ] – also transcribable as creaky [m̰], [l̰], [w̰], [a̰]. Affricates and co-articulated stops are represented by two letters joined by a tie bar, either above or below the letters with no difference in meaning.[note 21] Affricates are optionally represented by ligatures – e.g. ⟨ʧ, ʤ⟩ – though this is no longer official IPA usage.[1] Alternatively, a superscript notation for a consonant release is sometimes used to transcribe affricates, for example ⟨tˢ⟩ for [t͜s], paralleling [kˣ] ~ [k͜x]. The letters for the palatal plosives ⟨c⟩ and ⟨ɟ⟩ are often used as a convenience for [t͜ʃ] and [d͜ʒ] or similar affricates, even in official IPA publications, so they must be interpreted with care.[68] Bilabial Labiodental Dental Alveolar Postalveolar Retroflex Palatal Velar Uvular Epiglottal Glottal Pulmonic Sibilant ts dz tʃ dʒ ʈʂ ɖʐ tɕ dʑ Non-sibilant pɸ bβ p̪f b̪v t̪θ d̪ð tɹ̝̊ dɹ̝ t̠ɹ̠̊˔ d̠ɹ̠˔ cç ɟʝ kx ɡɣ qχ ɢʁ ʡʜ ʡʢ ʔh Lateral tɬ dɮ ʈ□ ɖ□ c□ ɟʎ̝ k□ ɡʟ̝ Ejective Central t̪θʼ tsʼ tʃʼ ʈʂʼ kxʼ qχʼ Lateral tɬʼ cʼ kʼ IPA help full chart template Because in a true affricate the plosive element and the fricative element are homorganic, and the place of articulation of an affricate is most audible in the fricative element, the letter for the former will not always be precisely transcribed where such precision would be redundant. For example, while the English ch sound is [t̠͡ʃ] in close transcription, the diacritic is commonly left off, for [t͡ʃ]. Similarly, [ʈ͡ʂ] and [ɖ͡ʐ] are more commonly written [t͡ʂ] and [d͡ʐ], and in the ligatures there is only a single retroflex hook. Co-articulated consonants are sounds that involve two simultaneous places of articulation (are pronounced using two parts of the vocal tract). In English, the [w] in "went" is a coarticulated consonant, being pronounced by rounding the lips and raising the back of the tongue. Similar sounds are [ʍ] and [ɥ]. In some languages, plosives can be double-articulated, for example in the name of Laurent Gbagbo. Nasal n͡m Labial–alveolar ɳ͡m Labial–retroflex ŋ͡m Labial–velar Plosive t͡p d͡b Labial–alveolar ʈ͡p ɖ͡b Labial–retroflex k͡p ɡ͡b Labial–velar q͡ʡ Uvular–epiglottal q͡p Labial–uvular Fricative/approximant ɥ̊ ɥ Labialized palatal ʍ w Labialized velar ɧ Sj-sound (variable) Lateral approximant ɫ Velarized alveolar Implosive ɠ͡ɓ ɗ͡ɓ Labial–velar Ejective t͡pʼ Labial–alveolar IPA help full chart template Notes [ɧ], the Swedish sj-sound, is described by the IPA as a "simultaneous [ʃ] and [x]", but it is unlikely such a simultaneous fricative actually exists in any language.[69] Multiple tie bars can be used: ⟨a͡b͡c⟩ or ⟨a͜b͜c⟩. For instance, a pre-voiced velar affricate may be transcribed as ⟨ɡ͡k͡x⟩ If a diacritic needs to be placed on or under a tie bar, the combining grapheme joiner (U+034F) needs to be used, as in [b͜d̰ə̀bd̰ò] 'chewed' (Margi). Font support is spotty, however. With the implosives, authors may not bother to redundantly mark both letters as implosive, but instead write them as less-cluttered ⟨ɡ͡ɓ⟩ and even ⟨k͡ɓ⟩. Main article: Vowel See also: IPA vowel chart with audio Tongue positions of cardinal front vowels, with highest point indicated. The position of the highest point is used to determine vowel height and backness. X-ray photos show the sounds [i, u, a, ɑ]. The IPA defines a vowel as a sound which occurs at a syllable center.[70] Below is a chart depicting the vowels of the IPA. The IPA maps the vowels according to the position of the tongue. Front Central Back Close i y ɨ ʉ ɯ u Near-close ɪ ʏ ʊ Close-mid e ø ɘ ɵ ɤ o Mid e̞ ø̞ ə ɤ̞ o̞ Open-mid ɛ œ ɜ ɞ ʌ ɔ Near-open æ ɐ Open a ɶ ä ɑ ɒ IPA help audio full chart template The vertical axis of the chart is mapped by vowel height. Vowels pronounced with the tongue lowered are at the bottom, and vowels pronounced with the tongue raised are at the top. For example, [ɑ] (the first vowel in father) is at the bottom because the tongue is lowered in this position. [i] (the vowel in "meet") is at the top because the sound is said with the tongue raised to the roof of the mouth. In a similar fashion, the horizontal axis of the chart is determined by vowel backness. Vowels with the tongue moved towards the front of the mouth (such as [ɛ], the vowel in "met") are to the left in the chart, while those in which it is moved to the back (such as [ʌ], the vowel in "but") are placed to the right in the chart. In places where vowels are paired, the right represents a rounded vowel (in which the lips are rounded) while the left is its unrounded counterpart. Diphthongs are typically specified with a non-syllabic diacritic, as in ⟨ui̯⟩ or ⟨u̯i⟩, or with a superscript for the on- or off-glide, as in ⟨uʲ⟩ or ⟨ᵘi⟩. Sometimes a tie bar is used: ⟨u͡i⟩, especially when it is difficult to tell if the diphthong is characterized by an on-glide or an off-glide or when it is variable. Notes ⟨a⟩ officially represents a front vowel, but there is little if any distinction between front and central open vowels (see Vowel § Acoustics), and ⟨a⟩ is frequently used for an open central vowel.[45] If disambiguation is required, the retraction diacritic or the centralized diacritic may be added to indicate an open central vowel, as in ⟨a̠⟩ or ⟨ä⟩. Diacritics are used for phonetic detail. They are added to IPA letters to indicate a modification or specification of that letter's normal pronunciation.[71] By being made superscript, any IPA letter may function as a diacritic, conferring elements of its articulation to the base letter. Those superscript letters listed below are specifically provided for by the IPA Handbook; other uses can be illustrated with ⟨tˢ⟩ ([t] with fricative release), ⟨ᵗs⟩ ([s] with affricate onset), ⟨ⁿd⟩ (prenasalized [d]), ⟨bʱ⟩ ([b] with breathy voice), ⟨mˀ⟩ (glottalized [m]), ⟨sᶴ⟩ ([s] with a flavor of [ʃ], i.e. a voiceless alveolar retracted sibilant), ⟨oᶷ⟩ ([o] with diphthongization), ⟨ɯᵝ⟩ (compressed [ɯ]). Superscript diacritics placed after a letter are ambiguous between simultaneous modification of the sound and phonetic detail at the end of the sound. For example, labialized ⟨kʷ⟩ may mean either simultaneous [k] and [w] or else [k] with a labialized release. Superscript diacritics placed before a letter, on the other hand, normally indicate a modification of the onset of the sound (⟨mˀ⟩ glottalized [m], ⟨ˀm⟩ [m] with a glottal onset). (See § Superscript IPA.) Airstream diacritics ◌ʼ kʼ sʼ Ejective ◌̰ː pː dː Iclinic Syllabicity diacritics ◌̩ ɹ̩ n̩ Syllabic ◌̯ ɪ̯ ʊ̯ Non-syllabic ◌̑ ɪ̑ ŋ̍ ◌̆ ỹ̆ Consonant-release diacritics ◌ʰ tʰ Aspirated[α] ◌̚ p̚ No audible release ◌ⁿ dⁿ Nasal release ◌ˡ dˡ Lateral release ◌ᶿ tᶿ Voiceless dental fricative release ◌ˣ tˣ Voiceless velar fricative release ◌ᵊ dᵊ Mid central vowel release Phonation diacritics ◌̥ n̥ d̥ Voiceless ◌̬ s̬ t̬ Voiced ◌̤ ŋ̤ ◌̤ b̤ a̤ Breathy voiced[α] ◌̰ b̰ a̰ Creaky voiced Articulation diacritics ◌̪ t̪ d̪ Dental (◌̪ is dentolabial or underbite in extIPA) ◌̼ t̼ d̼ Linguolabial ◌̺ t̺ d̺ Apical ◌̻ t̻ d̻ Laminal ◌̟ u̟ t̟ Advanced (fronted) ◌̠ i̠ t̠ Retracted (backed) ◌□ ɡ□ ◌□ q□[β] ◌̈ ë ä Centralized ◌̽ e̽ ɯ̽ Mid-centralized ◌̝ e̝ ɹ̝ Raised ([ɹ̝], [ɭ˔] are fricatives) ◌̞ e̞ β̞ Lowered ([β̞], [ɣ˕] are approximants) ◌˔ ɭ˔ ◌˕ y˕ ɣ˕ Co-articulation diacritics ◌̹ ɔ̹ x̹ More rounded / less spread(over-rounding) ◌̜ ɔ̜ xʷ̜ Less rounded / more spread(under-rounding)[γ] ◌͗ y͗ χ͗ ◌͗ y͗ χʷ ◌ʷ tʷ dʷ Labialized ◌ʲ tʲ dʲ Palatalized ◌ˠ tˠ dˠ Velarized ◌̴ ɫ ᵶ Velarized or pharyngealized ◌ˤ tˤ aˤ Pharyngealized ◌̘ e̘ o̘ Advanced tongue root (expanded pharynx) ◌̙ e̙ o̙ Retracted tongue root ◌˔ y˔ ◌˕ y˕ ◌̃ ẽ z̃ Nasalized ◌˞ ɚ ɝ Rhoticity Notes: ^ a b With aspirated voiced consonants, the aspiration is usually also voiced (voiced aspirated – but see voiced consonants with voiceless aspiration). Many linguists prefer one of the diacritics dedicated to breathy voice over simple aspiration, such as ⟨b̤⟩. Some linguists restrict that diacritic to sonorants, such as breathy-voice ⟨m̤⟩, and transcribe voiced-aspirated obstruents as e.g. ⟨bʱ⟩. ^ In the Unicode Pipeline As of 2024[update]. Care must be taken that a superscript retraction sign is not mistaken for mid tone. ^ These are relative to the cardinal value of the letter. They can also apply to unrounded vowels: [ɛ̜] is more spread (less rounded) than cardinal [ɛ], and [ɯ̹] is less spread than cardinal [ɯ].[72]Since ⟨xʷ⟩ can mean that the [x] is labialized (rounded) throughout its articulation, and ⟨x̜⟩ makes no sense ([x] is already completely unrounded), ⟨x̜ʷ⟩ can only mean a less-labialized/rounded [xʷ]. However, readers might mistake ⟨x̜ʷ⟩ for "[x̜]" with a labialized off-glide, or might wonder if the two diacritics cancel each other out. Placing the 'less rounded' diacritic under the labialization diacritic, ⟨xʷ̜⟩, makes it clear that it is the labialization that is 'less rounded' than its cardinal IPA value. Subdiacritics (diacritics normally placed below a letter) may be moved above a letter to avoid conflict with a descender, as in voiceless ⟨ŋ̊⟩.[71] The raising and lowering diacritics have optional spacing forms ⟨˔⟩, ⟨˕⟩ that avoid descenders. A couple additional superscript letters are found for secondary articulation. In the Handbook, for example, ⟨ʱ⟩ is used for voiced aspiration. ⟨ᶣ⟩ is commonly seen with languages such as Twi where consonants may be simultaneously palatalized and labialized, while ⟨ˀ⟩ may be used for glottalized sounds without specifying whether they are ejective or have creaky voice. ExtIPA provides ⟨ʶ⟩ for uvularization. However, only limited set of IPA letters are used is this fashion; for others, superscripting indicates more general shades of sound. The state of the glottis can be finely transcribed with diacritics. A series of alveolar plosives ranging from open-glottis to closed-glottis phonation is: Phonation scale Open glottis [t] voiceless [d̤] breathy voice, also called murmured [d̤] slack voice Sweet spot [d] modal voice [d̰] stiff voice [d̰] creaky voice Closed glottis [ʔ͡t] glottal closure Additional diacritics are provided by the Extensions to the IPA for speech pathology. These symbols describe the features of a language above the level of individual consonants and vowels, that is, at the level of syllable, word or phrase. These include prosody, pitch, length, stress, intensity, tone and gemination of the sounds of a language, as well as the rhythm and intonation of speech.[73] Various ligatures of pitch/tone letters and diacritics are provided for by the Kiel Convention and used in the IPA Handbook despite not being found in the summary of the IPA alphabet found on the one-page chart. Under capital letters below we will see how a carrier letter may be used to indicate suprasegmental features such as labialization or nasalization. Some authors omit the carrier letter, for e.g. suffixed [kʰuˣt̪s̟]ʷ or prefixed [ʷkʰuˣt̪s̟],[note 22] or place a spacing variant of a diacritic such as ⟨˔⟩ or ⟨˜⟩ at the beginning or end of a word to indicate that it applies to the entire word.[note 23] Length, stress, and rhythm ˈke Primary stress (appears before stressed syllable) ˌke Secondary stress (appears before stressed syllable) eː kː Long (long vowel orgeminate consonant) eˑ Half-long ĕ ŏ Extra-short ek.steeks.te Syllable break (internal boundary) es‿e Linking (lack of a boundary; a phonological word)[note 24] Intonation |[α] Minor or foot break ‖[α] Major or intonation break ↗ Global rise[note 25] ↘ Global fall[note 25] Up- and down-step ꜛke Upstep ꜜke Downstep Notes: ^ a b The pipes for intonation breaks should be a heavier weight than the letters for click consonants. Because fonts do not reflect this, the intonation breaks in the official IPA charts are set in bold typeface. Pitch diacritics[note 26] ŋ̋ e̋ Extra high ŋ̌ ě Rising ŋ᷄ e᷄ Mid-rising ŋ́ é High ŋ̂ ê Falling ŋ᷅ e᷅ Low-rising ŋ̄ ē Mid ŋ᷈ e᷈ Peaking

(rising–falling) ŋ̂ ê High-falling ŋ̀ è Low ŋ̌ ě Dipping (falling–rising) ŋ̂ ê Mid-falling ŋ̀ è Extra low (etc.)[note 27] Chao tone letters[note 26] ˥e ꜒e e˥ e꜒ High ˦e ꜓e e˦ e꜓ Half-high ˧e ꜔e e˧ e꜔ Mid ˨e ꜕e e˨ e꜕ Half-low ˩e ꜖e e˩ e꜖ Low ˩˥e ꜖꜒e e˩˥ e꜖꜒ Rising (low to high or generic) ˥˩e ꜒꜖e e˥˩ e꜒꜖ Falling (high to low or generic) (etc.) The old staveless tone
letters, which are effectively obsolete, include high ⟨ˉe⟩, mid ⟨˗e⟩, low ⟨ˍe⟩, rising ⟨ˊe⟩, falling ⟨ˋe⟩, low rising ⟨ˏe⟩ and low falling ⟨ˎe⟩. Officially, the stress marks ⟨ˈ ˌ⟩ appear before the stressed syllable, and thus mark the syllable boundary as well as stress (though the syllable boundary may still be explicitly marked with a period).[76] Occasionally the
stress mark is placed immediately before the nucleus of the syllable, after any consonantal onset.[77] In such transcriptions, the stress mark does not mark a syllable boundary. The primary stress mark may be doubled ⟨ˈˈ⟩ for extra stress (such as prosodic stress). The secondary stress mark is sometimes seen doubled ⟨ˌˌ⟩ for extra-weak stress, but this
convention has not been adopted by the IPA.[76] Some dictionaries place both stress marks before a syllable, ⟨¦⟩, to indicate that pronunciations with either primary or secondary stress are heard, though this is not IPA usage.[note 28] There are three boundary markers: ⟨.⟩ for a syllable break, ⟨|⟩ for a minor prosodic break and ⟨‖⟩ for a major prosodic
break. The tags 'minor' and 'major' are intentionally ambiguous. Depending on need, 'minor' may vary from a foot break to a break in list-intonation to a continuing–prosodic unit boundary (equivalent to a comma), and while 'major' is often any intonation break, it may be restricted to a final–prosodic unit boundary (equivalent to a period). The 'major'
symbol may also be doubled, ⟨‖‖⟩, for a stronger break.[note 29] Although not part of the IPA, the following additional boundary markers are often used in conjunction with the IPA: ⟨μ⟩ for a mora or mora boundary, ⟨σ⟩ for a syllable or syllable boundary, ⟨+⟩ for a morpheme boundary, ⟨#⟩ for a word boundary (may be doubled, ⟨##⟩, for e.g. a breath-
group boundary),[79] ⟨$⟩ for a phrase or intermediate boundary and ⟨%⟩ for a prosodic boundary. For example, C# is a word-final consonant, %V a post-pausa vowel, and σC a syllable-initial consonant. See also: tone letter ⟨ꜛ ꜜ⟩ are defined in the Handbook as "upstep" and "downstep", concepts from tonal languages. However, the upstep symbol can
also be used for pitch reset, and the IPA Handbook uses it for prosody in the illustration for Portuguese, a non-tonal language. Phonetic pitch and phonemic tone may be indicated by either diacritics placed over the nucleus of the syllable – e.g., high-pitch ⟨é⟩ – or by Chao tone letters placed either before or after the word or syllable. There are three
graphic variants of the tone letters: with or without a stave, and facing left or facing right from the stave. The stave was introduced with the 1989 Kiel Convention, as was the option of placing a staved letter after the word or syllable, while retaining the older conventions. There are therefore six ways to transcribe pitch/tone in the IPA: i.e., ⟨é⟩, ⟨˦e⟩,
⟨e˦⟩, ⟨꜓e⟩, ⟨e꜓⟩ and ⟨ˉe⟩ for a high pitch/tone.[76][80][81] Of the tone letters, only left-facing staved letters and a few representative combinations are shown in the summary on the Chart, and in practice it is currently more common for tone letters to occur after the syllable/word than before, as in the Chao tradition. Placement before the word is a
carry-over from the pre-Kiel IPA convention, as is still the case for the stress and upstep/downstep marks. The IPA endorses the Chao tradition of using the left-facing tone letters, ⟨˥ ˦ ˧ ˨ ˩⟩, for underlying tone, and the right-facing letters, ⟨꜒ ꜓ ꜔ ꜕ ꜖⟩, for surface tone, as occurs in tone sandhi, and for the intonation of non-tonal languages.[note 30] In the
Portuguese illustration in the 1999 Handbook, tone letters are placed before a word or syllable to indicate prosodic pitch (equivalent to [↗] global rise and [↘] global fall, but allowing more precision), and in the Cantonese illustration they are placed after a word/syllable to indicate lexical tone. Theoretically therefore prosodic pitch and lexical tone
could be simultaneously transcribed in a single text, though this is not a formalized distinction. Rising and falling pitch, as in contour tones, are indicated by combining the pitch diacritics and letters in the table, such as grave plus acute for rising [ě] and acute plus grave for falling [ê]. Only six combinations of two diacritics are supported, and only
across three levels (high, mid, low), despite the diacritics supporting five levels of pitch in isolation. The four other explicitly approved rising and falling diacritic combinations are high/mid rising [e᷄], low rising [e᷅], high falling [e᷇], and low/mid falling [e᷆].[note 31] The Chao tone letters, on the other hand, may be combined in any pattern, and are
therefore used for more complex contours and finer distinctions than the diacritics allow, such as mid-rising [e˨˦], extra-high falling [e˥˦], etc. There are 20 such possibilities. However, in Chao's original proposal, which was adopted by the IPA in 1989, he stipulated that the half-high and half-low letters ⟨˦ ˨⟩ may be combined with each other, but not
with the other three tone letters, so as not to create spuriously precise distinctions. With this restriction, there are 8 possibilities.[82] The old staveless tone letters tend to be more restricted than the staved letters, though not as restricted as the diacritics. Officially, they support as many distinctions as the staved letters,[note 32] but typically only
three pitch levels are distinguished. Unicode supports default or high-pitch ⟨ˉ ˊ ˋ ˆ ˇ ˜ ˙⟩ and low-pitch ⟨ˍ ˏ ˎ ꞈ ˬ ˷⟩. Only a few mid-pitch tones are supported – such as ⟨˗ ˴⟩ – and then only accidentally. Although tone diacritics and tone letters are presented as equivalent on the chart, "this was done only to simplify the layout of the chart. The two sets of
symbols are not comparable in this way."[83] Using diacritics, a high tone is ⟨é⟩ and a low tone is ⟨è⟩; in tone letters, these are ⟨e˥⟩ and ⟨e˩⟩. One can double the diacritics for extra-high ⟨e̋⟩ and extra-low ⟨ȅ⟩; there is no parallel to this using tone letters. Instead, tone letters have mid-high ⟨e˦⟩ and mid-low ⟨e˨⟩; again, there is no equivalent among the
diacritics. Thus in a three-register tone system, ⟨é ē è⟩ are equivalent to ⟨e˥ e˧ e˩⟩, while in a four-register system, ⟨e̋ é è ȅ⟩ may be equivalent to ⟨e˥ e˦ e˨ e˩⟩.[76] The correspondence breaks down even further once they start combining. For more complex tones, one may combine three or four tone diacritics in any permutation,[76] though in practice
only generic peaking (rising-falling) e᷈ and dipping (falling-rising) e᷉ combinations are used. Chao tone letters are required for finer detail (e˧˥˧, e˩˩˧, e˦˩˧, e˨˩˦, etc.). Although only 10 peaking and dipping tones were proposed in Chao's original, limited set of tone letters, phoneticians often make finer distinctions, and indeed an example is found on the
IPA Chart.[note 33] The system allows the transcription of 112 peaking and dipping pitch contours, including tones that are level for part of their length. Original (restricted) set of Chao tone letters[note 34] Register Level[note 35] Rising Falling Peaking Dipping e˩ e˩˩ e˩˧ e˧˩ e˩˧˩ e˧˩˧ e˧ e˧˧ e˧˥ e˥˧ e˧˥˧ e˥˧˥ e˥ e˥˥ e˩˥ e˥˩ e˩˥˩ e˥˩˥ e˥˩
e˩˥ e˩˥ e˩˥˩ e˥˩˥ More complex contours are possible. Chao gave an example of [˧˥˩˧] (mid-high-low-mid) from English prosody.[82] Chao tone letters generally appear after each syllable, for a language with syllable tone – ⟨a˧vɔ˥˩⟩ – or after the phonological word, for a language with word tone (⟨avɔ˧˥˩⟩). The IPA gives the option of placing the tone
letters before the word or syllable – ⟨˧a˥˩vɔ⟩, ⟨˧˥˩avɔ⟩ – but this is rare for lexical tone. Reversed tone letters may be used to clarify that they apply to the following rather than to the preceding syllable – ⟨꜔a꜒꜖vɔ⟩, ⟨꜔꜒꜖avɔ⟩. The staveless letters are not directly supported by Unicode, but some fonts allow the stave in Chao tone letters to be suppressed.
IPA diacritics may be doubled to indicate an extra degree (greater intensity) of the feature indicated.[84] This is a productive process, but apart from extra-high and extra-low tones being marked by doubled high- and low-tone diacritics, ⟨ə̋, ȁ⟩, the major prosodic break ⟨‖⟩ being marked as a doubled minor break ⟨|⟩, and a couple other instances, such
usage is not enumerated by the IPA. For example, the stress mark may be doubled (or even tripled, as may be the prosodic-break bar, ⟨⦀⟩) to indicate an extra degree of stress, such as prosodic stress in English.[85] An example in French, with a single stress mark for normal prosodic stress at the end of each prosodic unit (marked as a minor prosodic
break), and a double or even triple stress mark for contrastive/emphatic stress: [ˈˈɑ̃ːtre | məˈsjø ‖ ˈˈvwala maˈdam ‖] Entrez monsieur, voilà madame.[86] Similarly, a doubled secondary stress mark ⟨ˌˌ⟩ is commonly used for tertiary (extra-light) stress, though a proposal to officially adopt this was rejected.[87] In a similar vein, the effectively obsolete
staveless tone letters were once doubled for an emphatic rising intonation ⟨˶⟩ and an emphatic falling intonation ⟨˵⟩.[88] Length is commonly extended by repeating the length mark, which may be phonetic, as in [ĕ e eˑ eː eːˑ eːː] etc., as in English shhh! [ʃːːː], or phonemic, as in the "overlong" segments of Estonian: vere /vere/ 'blood [gen.sg.]', veere
/veːre/ 'edge [gen.sg.]', veere /veːːre/ 'roll [imp. 2nd sg.]' lina /linɑ/ 'sheet', linna /linːɑ/ 'town [gen. sg.]', linna /linːːɑ/ 'town [ill. sg.]' (Normally additional phonemic degrees of length are handled by the extra-short or half-long diacritic, i.e. ⟨e eˑ eː⟩ or ⟨ĕ e eː⟩, but the first two words in each of the Estonian examples are analyzed as typically short and
long, /e eː/ and /n nː/, requiring a different remedy for the additional words.) Delimiters are similar: double slashes indicate extra phonemic (morpho-phonemic), double square brackets especially precise transcription, and double parentheses especially unintelligible. Occasionally other diacritics are doubled: Rhoticity in Badaga /be/ "mouth", /be˞/
"bangle", and /be˞˞/ "crop".[89] Mild and strong aspiration, [kʰ], [kʰʰ].[note 36] Nasalization, as in Palantla Chinantec lightly nasalized /ẽ/ vs heavily nasalized /ẽ̃/,[90] though some care can be needed to distinguish this from the extIPA diacritic for velopharyngeal frication in disordered speech, /e͌/, which has also been analyzed as extreme nasalization.
Weak vs strong ejectives, [kʼ], [kʼʼ].[91] Especially lowered, e.g. [t̞̞] (or [t̞˕], if the former symbol does not display properly) for /t/ as a weak fricative in some pronunciations of register.[92] Especially retracted, e.g. [ø̠̠] or [s̠̠],[note 37][84][93] though some care might be needed to distinguish this from indications of alveolar or alveolarized articulation in
extIPA, e.g. [s͇]. Especially guttural, e.g. [ɫ] (velarized l), [ɫ̴] (pharyngealized l).[94] The transcription of strident and harsh voice as extra-creaky /a̰̰/ may be motivated by the similarities of these phonations. The extIPA provides combining parentheses for weak intensity, which when combined with a doubled diacritic indicate an intermediate degree. For
instance, increasing degrees of nasalization of the vowel [e] might be written ⟨e ẽ ẽ̃ ẽ̃⟩. As noted above, IPA letters are often used quite loosely in broad transcription if no ambiguity would arise in a particular language. Because of that, IPA letters have not generally been created for sounds that are not distinguished in individual languages. A
distinction between voiced fricatives and approximants is only partially implemented by the IPA, for example. Even with the relatively recent addition of the palatal fricative ⟨ʝ⟩ and the velar approximant ⟨ɰ⟩ to the alphabet, other letters, though defined as fricatives, are often ambiguous between fricative and approximant. For forward places, ⟨β⟩ and
⟨ð⟩ can generally be assumed to be fricatives unless they carry a lowering diacritic. Rearward, however, ⟨ʁ⟩ and ⟨ʕ⟩ are perhaps more commonly intended to be approximants even without a lowering diacritic. ⟨h⟩ and ⟨ɦ⟩ are similarly either fricatives or approximants, depending on the language, or even glottal "transitions", without that often being
specified in the transcription. Another common ambiguity is among the letters for palatal consonants. ⟨c⟩ and ⟨ɟ⟩ are not uncommonly used as a typographic convenience for affricates, typically [t͡ʃ] and [d͡ʒ], while ⟨ɲ⟩ and ⟨ʎ⟩ are commonly used for palatalized alveolar [nʲ] and [lʲ]. To some extent this may be an effect of analysis, but it is common to
match up single IPA letters to the phonemes of a language, without overly worrying about phonetic precision. It has been argued that the lower-pharyngeal (epiglottal) fricatives ⟨ʜ⟩ and ⟨ʢ⟩ are better characterized as trills, rather than as fricatives that have incidental trilling.[95] This has the advantage of merging the upper-pharyngeal fricatives [ħ, ʕ]
together with the epiglottal plosive [ʡ] and trills [ʜ ʢ] into a single pharyngeal column in the consonant chart. However, in Shilha Berber the epiglottal fricatives are not trilled.[96][97] Although they might be transcribed ⟨ħ̠ ʕ̠⟩ to indicate this, the far more common transcription is ⟨ʜ ʢ⟩, which is therefore ambiguous between languages. Among vowels,
⟨a⟩ is officially a front vowel, but is more commonly treated as a central vowel. The difference, to the extent it is even possible, is not phonemic in any language. For all phonetic notation, it is good practice for an author to specify exactly what they mean by the symbols that they use. Main article: Unicode subscripts and superscripts § Superscript
IPASee also: Extensions to the International Phonetic Alphabet § Superscript variants Superscript IPA letters are used to indicate secondary aspects of articulation. These may be aspects of simultaneous articulation that are considered to be in some sense less dominant than the basic sound, or may be transitional articulations that are interpreted as
secondary elements.[98] Examples include secondary articulation; onsets, releases, aspiration and other transitions; shades of sound; light epenthetic sounds and incompletely articulated sounds. Morphophonemically, superscripts may be used for assimilation, e.g. ⟨aʷ⟩ for the effect of labialization on a vowel /a/, which may be realized as phonemic /o/.
[99] The IPA and ICPLA endorse Unicode encoding of superscript variants of all contemporary segmental letters in the IPA proper and of all additional fricatives in extIPA, including the "implicit" IPA retroflex letters ⟨ꞎ □ □ ᶑ □⟩.[44][100][101] Superscripts are often used as a substitute for the tie bar, for example ⟨tᶴ⟩ for [t͡ʃ] and ⟨kᵖ⟩ or ⟨ᵏp⟩ for [k͡p].
However, in precise notation there is a difference between a fricative release in [tᶴ] and the affricate [t͡ʃ], between a velar onset in [ᵏp] and doubly articulated [k͡p].[102] Superscript letters can be meaningfully modified by combining diacritics, just as baseline letters can. For example, a superscript dental nasal in ⟨ⁿ̪d⟩, a superscript voiceless velar nasal
in ⟨ᵑ̊ǂ⟩, and labial-velar prenasalization in ⟨ᵑᵐɡ͡b⟩. Although the diacritic may seem a bit oversized compared to the superscript letter it modifies, e.g. ⟨ᶟ⟩, this can be an aid to legibility, just as it is with the composite superscript c-cedilla ⟨ᶜ̧⟩ and rhotic vowels ⟨ᵊ˞ ᶟ˞⟩. Superscript length marks can be used to indicate the length of aspiration of a consonant,
e.g. [pʰ tʰ kʰ]. Another option is to use extIPA parentheses and a doubled diacritic: ⟨p⁽ʰ⁾ tʰ kʰʰ⟩.[44] Main articles: Obsolete and nonstandard symbols in the International Phonetic Alphabet, Click letter, and Sinological extensions to the International Phonetic Alphabet A number of IPA letters and diacritics have been retired or replaced over the years.
This number includes duplicate symbols, symbols that were replaced due to user preference, and unitary symbols that were rendered with diacritics or digraphs to reduce the inventory of the IPA. The rejected symbols are now considered obsolete, though some are still seen in the literature. The IPA once had several pairs of duplicate symbols from
alternative proposals, but eventually settled on one or the other. An example is the vowel letter ⟨ɷ⟩, rejected in favor of ⟨ʊ⟩. Affricates were once transcribed with ligatures, such as ⟨ʧ ʤ⟩ (and others, some of which not found in Unicode). These have been officially retired but are still used. Letters for specific combinations of primary and secondary
articulation have also been mostly retired, with the idea that such features should be indicated with tie bars or diacritics: ⟨ƍ⟩ for [zʷ] is one. In addition, the rare voiceless implosives, ⟨ƥ ƭ ƈ ƙ ʠ⟩, were dropped soon after their introduction and are now usually written ⟨ɓ̥ ɗ̥ ʄ̊ ɠ̊ ʛ̥⟩. The original set of click letters, ⟨ʇ, ʗ, ʖ, ʞ⟩, was retired but is still sometimes
seen, as the current pipe letters ⟨ǀ, ǃ, ǁ, ǂ⟩ can cause problems with legibility, especially when used with brackets ([ ] or / /), the letter ⟨l⟩ (small L), or the prosodic marks ⟨|, ‖⟩. (For this reason, some publications which use the current IPA pipe letters disallow IPA brackets.)[103] Individual non-IPA letters may find their way into publications that
otherwise use the standard IPA. This is especially common with: Affricates, such as the Americanist barred lambda ⟨ƛ⟩ for [t͜ɬ] or ⟨č⟩ for [t͡ʃ].[note 38] The Karlgren letters for Chinese vowels, ⟨ɿ, ʅ, ʮ, ʯ⟩. Digits for tonal phonemes that have conventional numbers in a local tradition, such as the four tones of Standard Chinese. This may be more
convenient for comparison between related languages and dialects than a phonetic transcription would be, because tones vary more unpredictably than segmental phonemes do. Digits for tone levels, which are simpler to typeset, though the lack of standardization can cause confusion (e.g. ⟨1⟩ is high tone in some languages but low tone in others; ⟨3⟩
may be high, medium or low tone, depending on the local convention). Iconic extensions of standard IPA letters that are implicit in the alphabet, such as retroflex ⟨ᶑ⟩ and ⟨ꞎ⟩. These are referred to in the Handbook and have been included in Unicode at IPA request. Even presidents of the IPA have used para-IPA notation, such as resurrecting the old
diacritic ⟨◌̫⟩ for purely labialized sounds (not simultaneously velarized), the lateral fricative letter ⟨ꞎ⟩, and either the old dot diacritic ⟨ṣ ẓ⟩ or the novel letters ⟨ʃ ʒ⟩ for the not-quite-retroflex fricatives of Polish sz, ż and of Russian ш ж. In addition, it is common to see ad hoc typewriter substitutions, generally capital letters, for when IPA support is not
available, e.g. S for ⟨ʃ⟩. (See also SAMPA and X-SAMPA substitute notation.) Main article: Extensions to the International Phonetic Alphabet Chart of the Extensions to the International Phonetic Alphabet (extIPA), as of 2015 The Extensions to the International Phonetic Alphabet for Disordered Speech, commonly abbreviated "extIPA" and sometimes
called "Extended IPA", are symbols whose original purpose was to accurately transcribe disordered speech. At the Kiel Convention in 1989, a group of linguists drew up the initial extensions,[note 39] which were based on the previous work of the PRDS (Phonetic Representation of Disordered Speech) Group in the early 1980s.[105] The extensions
were first published in 1990, then modified, and published again in 1994 in the Journal of the International Phonetic Association, when they were officially adopted by the ICPLA.[106] While the original purpose was to transcribe disordered speech, linguists have used the extensions to designate a number of sounds within standard communication,
such as hushing, gnashing teeth, and smacking lips,[2] as well as regular lexical sounds such as lateral fricatives that do not have standard IPA symbols. In addition to the Extensions to the IPA for disordered speech, there are the conventions of the Voice Quality Symbols, which include a number of symbols for additional airstream mechanisms and
secondary articulations in what they call "voice quality". This section needs additional citations for verification. Please help improve this article by adding citations to reliable sources in this section. Unsourced material may be challenged and removed. (April 2025) (Learn how and when to remove this message) Capital letters and various characters on
the number row of the keyboard are commonly used to extend the alphabet in various ways. There are various punctuation-like conventions for linguistic transcription that are commonly used together with IPA. Some of the more common are: ⟨*⟩ (a) A reconstructed form. (b) An ungrammatical form (including an unphonemic form). ⟨**⟩ (a) A
reconstructed form, deeper (more ancient) than a single ⟨*⟩, used when reconstructing even further back from already-starred forms. (b) An ungrammatical form. A less common convention than ⟨*⟩ (b), this is sometimes used when reconstructed and ungrammatical forms occur in the same text.[107] ⟨×⟩, ⟨✗⟩ An ungrammatical form. A less common
convention than ⟨*⟩ (b), this is sometimes used when reconstructed and ungrammatical forms occur in the same text.[108] ⟨?⟩ A doubtfully grammatical form. ⟨%⟩ A generalized form, such as a typical shape of a wanderwort that has not actually been reconstructed.[109] ⟨#⟩ A word boundary – e.g. ⟨#V⟩ for a word-initial vowel. ⟨$⟩ A phonological word
boundary; e.g. ⟨H$⟩ for a high tone that occurs in such a position. ⟨+⟩ A morpheme boundary; e.g. ˈnɛl+t for English knelt. ⟨_⟩ The location of a segment – e.g. ⟨V_V⟩ for an intervocalic position, or ⟨_#⟩ for word-final position. ⟨~⟩ Alternation or contrast – e.g. [f] ~ [v] or [f ~ v] for variation between [f] and [v], noting that a /uː/ ~ /ʊ/ contrast is maintained
or lost, or indicating the change of a root in e.g. ˈniːl ~ ˈnɛl+t for English kneel ~ knelt. ⟨∅⟩ A null segment or morpheme. This may indicate the absence of an affix, e.g. ⟨kæt-∅⟩ for where an affix might appear but does not (cat instead of cats), or a deleted segment that leaves a feature behind, such as ⟨∅ʷ⟩ for an theoretical labialized segment that is
only realized as labialization on adjacent segments.[99] Full capital letters are not used as IPA symbols, except as typewriter substitutes (e.g. N for ⟨ŋ⟩, S for ⟨ʃ⟩, O for ⟨ɔ⟩ – see SAMPA). They are, however, often used in conjunction with the IPA in two cases: for (archi)phonemes and for natural classes of sounds (that is, as wildcards). The extIPA chart,
for example, uses capital letters as wildcards in its illustrations. as carrying letters for the Voice Quality Symbols. Wildcards are commonly used in phonology to summarize syllable or word shapes, or to show the evolution of classes of sounds. For example, the possible syllable shapes of Mandarin can be abstracted as ranging from /V/ (an atonic
vowel) to /CGVNᵀ/ (a consonant-glide-vowel-nasal syllable with tone), and word-final devoicing may be schematized as C → C̥/_#. They are also used in historical linguistics for a sound that is posited but whose nature has not been determined beyond some generic category such as {nasal} or {uvular}. In speech pathology, capital letters represent
indeterminate sounds, and may be superscripted to indicate they are weakly articulated: e.g. [ᴰ] is a weak indeterminate alveolar, [ᴷ] a weak indeterminate velar.[110] There is a degree of variation between authors as to the capital letters used, but these are ubiquitous in English-language material: ⟨C⟩ for {consonant} ⟨V⟩ for {vowel} ⟨N⟩ for {nasal}
Other common conventions are: ⟨T⟩ for {tone/accent} (tonicity) ⟨P⟩ for {plosive} ⟨F⟩ for {fricative} ⟨S⟩ for {sibilant}[note 40] ⟨G⟩ for {glide/semivowel} ⟨L⟩ for {lateral} or {liquid} ⟨R⟩ for {rhotic} or {resonant/sonorant}[note 41] ⟨₵⟩ for {obstruent} ⟨Ʞ⟩ for {click} ⟨A, E, I, O, U⟩ for {open, front, close, back, rounded vowel}[note 42] and ⟨B, D, Ɉ, K, Q,
Φ, H⟩ for {labial, alveolar, post-alveolar/palatal, velar, uvular, pharyngeal, glottal[note 43] consonant}, respectively ⟨X⟩ for {any sound}, as in ⟨CVX⟩ for a heavy syllable {CVC, CVV̯, CVː} The letters can be modified with IPA diacritics, for example: ⟨Cʼ⟩ for {ejective} ⟨Ƈ⟩ for {implosive} ⟨N͡C⟩ or ⟨ᴺC⟩ for {prenasalized consonant} ⟨Ṽ⟩ for {nasal vowel}
⟨CʰV́⟩ for {aspirated CV syllable with high tone} ⟨S̬⟩ for {voiced sibilant} ⟨N̥⟩ for {voiceless nasal} ⟨P͡F⟩ or ⟨P□⟩ for {affricate} ⟨Cᴳ⟩ for a consonant with a glide as secondary articulation (e.g. ⟨Cʲ⟩ for {palatalized consonant} or ⟨Cʷ⟩ for {labialized consonant}) ⟨D̪⟩ for {dental consonant} ⟨H⟩, ⟨M⟩, ⟨L⟩ are also commonly used for high, mid and low tone,
with ⟨LH⟩ for rising tone and ⟨HL⟩ for falling tone, rather than transcribing them overly precisely with IPA tone letters or with ambiguous digits.[note 44] Typical examples of archiphonemic use of capital letters are: ⟨I⟩ for the Turkish harmonic vowel set {i y ɯ u}[note 45] ⟨D⟩ for the conflated flapped middle consonant of American English writer and
rider ⟨N⟩ for the homorganic syllable-coda nasal of languages such as Spanish and Japanese (essentially equivalent to the wild-card usage of the letter) ⟨R⟩ in cases where a phonemic distinction between trill /r/ and flap /ɾ/ is conflated, as in Spanish enrejar /eNreˈxaR/ (the n is homorganic and the first r is a trill, but the second r is variable).[111]
Similar usage is found for phonemic analysis, where a language does not distinguish sounds that have separate letters in the IPA. For instance, Castillian Spanish has been analyzed as having phonemes /Θ/ and /S/, which surface as [θ] and [s] in voiceless environments and as [ð] and [z] in voiced environments (e.g. hazte /ˈaΘte/ → [ˈaθte], vs hazme /
ˈaΘme/ → [ˈaðme], or las manos /laS ˈmanoS/ → [lazˈmanos]).[112] ⟨V⟩, ⟨F⟩ and ⟨C⟩ have completely different meanings as Voice Quality Symbols, where they stand for "voice" (VoQS jargon for secondary articulation),[note 46] "falsetto" and "creak". These three letters may take diacritics to indicate what kind of voice quality an utterance has, and may
be used as carrier letters to extract a suprasegmental feature that occurs on all susceptible segments in a stretch of IPA. For instance, the transcription of Scottish Gaelic [kʷʰuˣʷt̪ʷs̟ʷ] 'cat' and [kʷʰʉˣʷt̪ʃʷ] 'cats' (Islay dialect) can be made more economical by extracting the suprasegmental labialization of the words: Vʷ[kʰuˣt̪s̟] and Vʷ[kʰʉˣt̪ʃ].[113] The
conventional wildcards ⟨X⟩ or ⟨C⟩ might be used instead of VoQS ⟨V⟩ so that the reader does not misinterpret ⟨Vʷ⟩ as meaning that only vowels are labialized (i.e. Xʷ[kʰuˣt̪s̟] for all segments labialized, Cʷ[kʰuˣt̪s̟] for all consonants labialized), or the carrier letter may be omitted altogether (e.g. ʷ[kʰuˣt̪s̟], [ʷkʰuˣt̪s̟] or [kʰuˣt̪s̟]ʷ). (See § Suprasegmentals for
other transcription conventions.) This summary is to some extent valid internationally, but linguistic material written in other languages may have different associations with capital letters used as wildcards. For example, in German ⟨K⟩ and ⟨V⟩ are used for Konsonant 'consonant' and Vokal 'vowel'; in Russian, ⟨С⟩ and ⟨Г⟩ are used for согласный
(soglasnyj, 'consonant') and гласный (glasnyj, 'vowel'). In French, tone may be transcribed with ⟨H⟩ and ⟨B⟩ for haut 'high' and bas 'low'.[114] The blank cells on the summary IPA chart can be filled without much difficulty if the need arises. The missing retroflex letters, namely ⟨ᶑ ꞎ □⟩, are "implicit" in the alphabet, and the IPA supported their adoption
into Unicode.[44] Attested in the literature are the retroflex implosive ⟨ᶑ⟩, the voiceless retroflex lateral fricative ⟨ꞎ⟩, the retroflex lateral flap ⟨ ⟩ and the retroflex click ⟨ ⟩; the first is also mentioned in the IPA Handbook, and the lateral fricatives are provided for by the extIPA. The epiglottal trill is arguably covered by the generally trilled epiglottal
"fricatives" ⟨ʜ ʢ⟩. Ad hoc letters for near-close central vowels, ⟨ᵻ ᵿ⟩, are used in some descriptions of English, though those are specifically reduced vowels – forming a set with the IPA reduced vowels ⟨ə ɐ⟩ – and the simple points in vowel space are easily transcribed with diacritics: ⟨ɪ̈ ʊ̈⟩ or ⟨ɨ̞ ʉ̞⟩. Diacritics are able to fill in most of the remainder of the
charts.[note 47] If a sound cannot be transcribed, an asterisk ⟨*⟩ may be used, either as a letter or as a diacritic (as in ⟨k*⟩ sometimes seen for the Korean "fortis" velar). Representations of consonant sounds outside of the core set are created by adding diacritics to letters with similar sound values. The Spanish bilabial and dental approximants are
commonly written as lowered fricatives, [β̞] and [ð̞] respectively.[note 48] Similarly, voiced lateral fricatives can be written as raised lateral approximants, [ɭ˔ ʎ̝ ʟ̝], though the extIPA also provides ⟨□⟩ for the first of these. A few languages such as Banda have a bilabial flap as the preferred allophone of what is elsewhere a labiodental flap. It has been
suggested that this be written with the labiodental flap letter and the advanced diacritic, [ⱱ̟].[116] Similarly, a labiodental trill would be written [ʙ̪] (bilabial trill and the dental sign), and the labiodental plosives are now universally ⟨p̪ b̪⟩ rather than the ad hoc letters ⟨ȹ ȸ⟩ once found in Bantuist literature. Other taps can be written as extra-short
plosives or laterals, e.g. [ɟ̆ ɢ̆ ʟ̆], though in some cases the diacritic would need to be written below the letter. A retroflex trill can be written as a retracted [r̠], just as non-subapical retroflex fricatives sometimes are. The remaining pulmonic consonants – the uvular laterals ([ʟ̠ □ ʟ̠˔]) and the palatal trill – while not strictly impossible, are very difficult to
pronounce and are unlikely to occur even as allophones in the world's languages. The vowels are similarly manageable by using diacritics for raising, lowering, fronting, backing, centering, and mid-centering.[note 49] For example, the unrounded equivalent of [ʊ] can be transcribed as mid-centered [ɯ̽], and the rounded equivalent of [æ] as raised [ɶ̝]
or lowered [œ̞] (though for those who conceive of vowel space as a triangle, simple [ɶ] already is the rounded equivalent of [æ]). True mid vowels are lowered [e̞ ø̞ ɘ̞ ɵ̞ ɤ̞ o̞] or raised [ɛ̝ œ̝ ɜ̝ ɞ̝ ʌ̝ ɔ̝], while centered [ɪ̈ ʊ̈] and [ä] (or, less commonly, [ɑ̈]) are near-close and open central vowels, respectively. The only known vowels that cannot be represented
in this scheme are vowels with unexpected roundedness. For unambiguous transcription, such sounds would require dedicated diacritics. Possibilities include ⟨ʏʷ⟩ or ⟨ɪʷ⟩ for protrusion and ⟨uᵝ⟩ (or VoQS ⟨ɯᵝ⟩) for compression. However, these transcriptions suggest that the sounds are diphthongs, and so while they may be clear for a language like
Swedish where they are diphthongs, they may be misleading for languages such as Japanese where they are monophthongs. The extIPA 'spread' diacritic ⟨◌͍⟩ is sometimes seen for compressed ⟨u͍⟩, ⟨o͍⟩, ⟨ɔ͍⟩, ⟨ɒ͍⟩, though again the intended meaning would need to be explained or they would be interpreted as being spread the way that cardinal [i] is. For
protrusion (w-like labialization without velarization), Ladefoged & Maddieson use the old IPA omega diacritic for labialization, ⟨◌̫⟩, for protruded ⟨y̫⟩, ⟨ɣ̫⟩, ⟨ø̫⟩, ⟨œ̫⟩. This is an adaptation of an old IPA convention of rounding an unrounded vowel letter like i with a subscript omega (⟨◌̫⟩) and unrounding a rounded letter like u with a subscript turned
omega.[118] As of 2024[update], the turned omega diacritic is in the pipeline for Unicode, and is under consideration for compression in extIPA.[119] Kelly & Local use a combining w diacritic ⟨◌ᪿ⟩ for protrusion (e.g. ⟨yᪿ øᪿ⟩) and a combining ʍ diacritic ⟨◌ᫀ⟩ for compression (e.g. ⟨uᫀ oᫀ⟩).[120] Because their transcriptions are manuscript, these are
effectively the same symbols as the old IPA diacritics, which indeed are historically cursive w and ʍ. However, the more angular ⟨◌ᫀ⟩ of typescript might misleadingly suggest the vowel is protruded and voiceless (like [ʍ]) rather than compressed and voiced. Main article: Naming conventions of the International Phonetic Alphabet In both print and
speech, an IPA symbol is often distinguished from the sound it transcribes because IPA letters very often do not have their cardinal IPA values in practice. This is commonly the case in phonemic and broad phonetic transcription, making articulatory descriptions of IPA letters, such as "mid front rounded vowel" or "voiced velar stop", inappropriate as
names for those letters. While the Handbook of the International Phonetic Association states that no official names exist for its symbols, it admits the presence of one or two common names for each.[121] The symbols also have nonce names in the Unicode standard. In many cases, the names in Unicode and the IPA Handbook differ. For example, the
Handbook calls ⟨ɛ⟩ "epsilon", while Unicode calls it "small letter open e". The traditional names of the Latin and Greek letters are usually used for unmodified letters.[note 50] Letters which are not directly derived from these alphabets, such as ⟨ʕ⟩, may have a variety of names, sometimes based on the appearance of the symbol or on the sound that it
represents. In Unicode, some of the letters of Greek origin have Latin forms for use in IPA; the others use the characters from the Greek block. For diacritics, there are two methods of naming. For traditional diacritics, the IPA notes the name in a well known language; for example, ⟨é⟩ is "e-acute", based on the name of the diacritic in English and
French. Non-traditional diacritics are often named after objects they resemble, so ⟨d̪⟩ is called "d-bridge". Geoffrey Pullum and William Ladusaw [d] list a variety of names in use for both current and retired IPA symbols in their Phonetic Symbol Guide. Many of them found their way into Unicode.[9] Main article: Phonetic symbols in Unicode § IPA
Unicode supports nearly all of the IPA. Apart from basic Latin and Greek and general punctuation, the primary blocks are IPA Extensions, Spacing Modifier Letters and Combining Diacritical Marks, with lesser support from Phonetic Extensions, Phonetic Extensions Supplement, Combining Diacritical Marks Supplement, and scattered characters
elsewhere. The extended IPA is supported primarily by those blocks and Latin Extended-G. Main article: IPA number After the Kiel Convention in 1989, most IPA symbols were assigned an identifying number to prevent confusion between similar characters during the printing of manuscripts. The codes were never much used and have been
superseded by Unicode. The sequence ⟨˨˦˥꜒꜓k□ǂ̊ᴹ⟩ in the fonts Gentium Book Plus, Andika, Brill, Noto Serif, DejaVu Sans and Calibri. All but DejaVu align diacritics well. Asterisks are characters not supported by that font. In Noto and DejaVu, the red tone letters do not link properly, and in DejaVu the stacked diacritics overstrike each other. This is a
test sequence: Noto and Calibri support most IPA adequately. Many typefaces have support for IPA characters, but good diacritic rendering remains rare.[123] Web browsers generally do not need any configuration to display IPA characters, provided that a typeface capable of doing so is available to the operating system. Typefaces that provide full
IPA and nearly full extIPA support, including properly rendering the diacritics, include Gentium Plus, Charis SIL, Doulos SIL, and Andika developed by SIL International. Indeed, the IPA chose Doulos to publish their chart in Unicode format. In addition to the level of support found in commercial and system fonts, these fonts support the full range of
old-style (pre-Kiel) staveless tone letters, through a character variant option that suppresses the stave of the Chao tone letters. They also have an option to maintain the [a] ~ [ɑ] vowel distinction in italics. The only notable gaps are with the extIPA: the combining parentheses, which enclose diacritics, are not supported, nor is the enclosing circle that
marks unidentified sounds, and which Unicode considers to be a copy-edit mark and thus not eligible for Unicode support. The basic Latin Noto fonts commissioned by Google also have significant IPA support, including diacritic placement, only failing with the more obscure IPA and extIPA characters and superscripts of the Latin Extended-F and Latin
Extended-G blocks. The extIPA parentheses are included, but they do not enclose diacritics as they are supposed to. DejaVu is the second free Unicode font chosen by the IPA to publish their chart. It was last updated in 2016 and so does not support the Latin F or G blocks. Stacked diacritics tend to overstrike each other. As of 2018[update], the IPA
was developing their own font, unitipa, based on TIPA.[124][needs update] Calibri, the former default font of Microsoft Office, has nearly complete IPA support with good diacritic rendering, though it is not as complete as some free fonts (see image at right). Other widespread Microsoft fonts, such as Arial and Times New Roman, have poor support.
The Apple system fonts Geneva, Lucida Grande and Hiragino (certain weights) have only basic IPA support. Brill has complete IPA and extIPA coverage of characters added to Unicode by 2020, with good diacritic and tone-letter support. It is a commercial font but is freely available for non-commercial use.[125] Further information: Comparison of
ASCII encodings of the International Phonetic Alphabet Several systems have been developed that map the IPA symbols to ASCII characters. Notable systems include SAMPA and X-SAMPA. The usage of mapping systems in on-line text has to some extent been adopted in the context input methods, allowing convenient keying of IPA characters that
would be otherwise unavailable on standard keyboard layouts. IETF language tags have registered fonipa as a variant subtag identifying text as written in IPA.[126] Thus, an IPA transcription of English could be tagged as en-fonipa. For the use of IPA without attribution to a concrete language, und-fonipa is available. Online IPA keyboard utilities are
available, though none of them cover the complete range of IPA symbols and diacritics. Examples are the IPA 2018 i-charts hosted by the IPA,[127] IPA character picker by Richard Ishida at GitHub,[128] Type IPA phonetic symbols at TypeIt.org,[129] and an IPA Chart keyboard by Weston Ruter also at GitHub.[130] In April 2019, Google's Gboard for
Android added an IPA keyboard to its platform.[131][132] For iOS there are multiple free keyboard layouts available, such as the IPA Phonetic Keyboard.[133] Afroasiatic phonetic notation – Phonetic notationPages displaying short descriptions of redirect targets Americanist phonetic notation – Phonetic alphabet developed in the 1880s Articulatory
phonetics – A branch of linguistics studying how humans make sounds Case variants of IPA letters – International Phonetic Alphabet variants Cursive forms of the International Phonetic Alphabet – Deprecated cursive forms of IPA symbols Extensions to the International Phonetic Alphabet – Disordered speech additions to the phonetic alphabet Index
of phonetics articles International Alphabet of Sanskrit Transliteration – Transliteration scheme for Indic scripts Sound correspondences between English accents List of international common standards Luciano Canepari – Italian linguist (born 1947) Phonetic symbols in Unicode RFE Phonetic Alphabet – phonetic transcription system for Iberian
languages, proposed by Tomás Navarro Tomás and adopted by Centro de Estudios Históricos for use in its journal Revista de Filología Española (whence its name)Pages displaying wikidata descriptions as a fallback SAMPA – Computer-readable phonetic script Semyon Novgorodov – Yakut politician and linguist – inventor of IPA-based Yakut scripts
TIPA – TeX macro package provides IPA support for LaTeX UAI phonetic alphabet – Phonetic transcriptionPages displaying short descriptions of redirect targets Uralic Phonetic Alphabet – Phonetic alphabet for Uralic languagesPages displaying short descriptions of redirect targets Voice Quality Symbols – Set of phonetic symbols used for voice
quality, such as to transcribe disordered speech X-SAMPA – Remapping of the IPA into ASCII ^ The small minus under the ⟨t̠͡ʃʰ⟩ specifies it as postalveolar (pronounced slightly back from the alveolar ridge), the inverted bridge specifies it as apical (pronounced with the tip of the tongue), and the superscript h shows that it is aspirated (breathy). The
latter two qualities cause the English /tʃ/ to sound different from the Italian or Spanish /tʃ/, which is a laminal (pronounced with the blade of the tongue)[citation needed] and unaspirated [t͡ʃ]. [t̺͡ʃʰ] and [t͡ʃ] are thus two different, though similar, sounds. ^ "Originally, the aim was to make available a set of phonetic symbols which would be given different
articulatory values, if necessary, in different languages."[7] ^ "From its earliest days [...] the International Phonetic Association has aimed to provide 'a separate sign for each distinctive sound; that is, for each sound which, being used instead of another, in the same language, can change the meaning of a word'."[12] ^ For instance, flaps and taps are
two different kinds of articulation, but since no language has (yet) been found to make a distinction between, say, an alveolar flap and an alveolar tap, the IPA does not provide such sounds with dedicated letters. Instead, it provides a single letter – in this case, [ɾ] – for both. Strictly speaking, this makes the IPA a partially phonemic alphabet, not a
purely phonetic one. ^ This exception to the rules was made primarily to explain why the IPA does not make a dental–alveolar distinction, despite one being phonemic in hundreds of languages, including most of the continent of Australia. Americanist Phonetic Notation makes (or at least made) a distinction between apical ⟨t d s z n l⟩ and laminal ⟨τ δ ç
ζ ν λ⟩, which is easily applicable to alveolar vs dental (when a language distinguishes apical alveolar from laminal dental, as in Australia), but despite several proposals to the Council, the IPA never voted to accept such a distinction. ^ There are three basic tone diacritics and five basic tone letters, both sets of which may be compounded. ^ "The non-
roman letters of the International Phonetic Alphabet have been designed as far as possible to harmonize well with the roman letters. The Association does not recognize makeshift letters; It recognizes only letters which have been carefully cut so as to be in harmony with the other letters."[14] ^ Originally, [ʊ] was written as a small capital U.
However, this was not easy to read, and so it was replaced with a turned small capital omega. In modern typefaces, it often has its own design, called a "horseshoe". ^ "The new letters should be suggestive of the sounds they represent, by their resemblance to the old ones."[15] ^ a b For example, Merriam-Webster dictionaries use backslashes \ ... \ to
demarcate their in-house diaphonemic transcription system. This contrasts with the Oxford English Dictionary, which transcribes a specific target accent. ^ For example, single and double pipe symbols are used for minor and major prosodic breaks. Although the Handbook specifies the prosodic symbols as being "thick" vertical lines, which would in
theory be distinct from simple ASCII pipes used as delimiters (and similar to Dania transcription), this was an idea to keep them distinct from the otherwise similar pipes used as click letters, and is almost never found in practice.[26] The Handbook assigns the prosodic pipe the Unicode encodings U+007C, which is the simple ASCII symbol, and the
double pipe U+2016.[27] ^ The proper angle brackets in Unicode are the mathematical symbols (U+27E8 and U+27E9). Chevrons ‹...› (U+2039, U+203A) are sometimes substituted, as in Americanist phonetic notation, as are the less-than and greater-than signs (U+003C, U+003E) found on ASCII keyboards. ^ See "Illustrations of the IPA" in the
Handbook for individual languages which for example may use ⟨/c/⟩ as a phonemic symbol for what is phonetically realized as [t͡ʃ], or superscript variants of IPA letters that are not officially defined. ^ Pronunciation respelling for English contains detailed comparisons of respelling systems. ^ Monolingual Hebrew dictionaries use pronunciation
respelling for words with unusual spelling; for example, the Even-Shoshan Dictionary respells תָּכְנִית as ⟨תּוֹכְנִית⟩ because the word uses the kamatz katan. ^ For example, Sergey Ozhegov's dictionary adds [нэ́] in brackets to the French loan-word пенсне (pince-nez) to indicate that the final ⟨е⟩ does not iotate the preceding ⟨н⟩. ^ "In accordance with
long-established Czech lexicographical tradition, a modified version of the International Phonetic Alphabet (IPA) is adopted in which letters of the Czech alphabet are employed."[49] ^ "Segments can usefully be divided into two major categories, consonants and vowels."[56] ^ They were moved "for presentational convenience [...] because of [their]
rarity and the small number of types of sounds which are found there."[59] ^ "A symbol such as [β], shown on the chart in the position for a voiced bilabial fricative, can also be used to represent a voiced bilabial approximant if needed."[62] ^ It is traditional to place the tie bar above the letters. It may be placed below to avoid overlap with ascenders
or diacritic marks, or simply because it is more legible that way, as in Niesler; Louw; Roux (2005). "Phonetic analysis of Afrikaans, English, Xhosa and Zulu using South African speech databases".[67] ^ Cf. the /ʷ.../ and /ʲ.../ transcriptions in Ernst-Kurdi, Eszter (2017). "The Phonology of Mada". SIL Yaoundé. ^ E.g. Dolgopolsky, Aaron (2013). Indo-
European Dictionary with Nostratic Etymologies. Studia Philologica. Rukopisnye pamiatniki Drevneĭ Rusi. ^ The IPA Handbook variously defines the "linking" symbol as marking the "lack of a boundary"[74] or "absence of a break",[27] and gives French liaison and English linking r as examples. The illustration for Croatian uses it to tie atonic clitics to
tonic words, with no resulting change in implied syllable structure. It is also sometimes used simply to indicate that the consonant ending one word forms a syllable with the vowel beginning the following word. ^ a b The global rise and fall arrows come before the affected syllable or prosodic unit, like stress and upstep/downstep. This contrasts with
the Chao tone letters (listed below), which most commonly come after. One will occasionally see a horizontal arrow ⟨→⟩ for global level pitch (only dropping due to downdrift), e.g. in Julie Barbour (2012) A Grammar of Neverver. Additionally, some fonts display the arrows as emoji by default, if is not appended. ^ a b There is not a one-to-one
correspondence between tone diacritics and tone letters. When pitch is transcribed with diacritics, the three pitches ⟨é ē è⟩ are taken as the basic levels and are called 'high', 'mid' and 'low'. Contour tones combine only these three and are called ⟨e᷄⟩ 'high-mid' etc. The more extreme pitches, which do not form contours, are ⟨e̋⟩ 'extra-high' and ⟨ȅ⟩
'extra-low', using doubled diacritics. When transcribed with tone letters, however, combinations of all five levels are possible. Thus, ⟨e˥ e˧ e˩⟩ may be called 'high', 'mid' and 'low', with ⟨e˦ e˨⟩ being 'near-high' and 'near-low', analogous to descriptions of vowel height. In a three-level transcription, ⟨é ē è⟩ are identified with ⟨e˥ e˧ e˩⟩, but in a five-level
transcription, ⟨e̋ ȅ⟩ are identified with ⟨e˥ e˩⟩.[75] ^ Although any combination of tone diacritics is theoretically possible, such as ⟨e᷈⟩ for a falling–rising–falling tone, any others than those illustrated are vanishingly rare. ^ For example, "Balearic". Merriam-Webster.com Dictionary. Merriam-Webster. ^ Russian and Lithuanian sources and commonly
use the character U+2E3D ⸽ VERTICAL SIX DOTS for a less-than-minor break, such as the slight break in list intonation (e.g. the very slight break between digits in a telephone number). U+2E3E ⸾ WIGGLY VERTICAL LINE is used for an unexpected interruption in or a sharp change of intonation.[78] ^ Maddieson and others have noted that a
phonemic/phonetic distinction should be handled by /slash/ or [bracket] delimiters. However, the reversed tone letters remain in use to distinguish tone sandhi from lexical tone when both are phonemic. ^ A work-around sometimes seen when a language has more than one rising or falling tone, and the author wishes to avoid the poorly legible
diacritics ⟨e᷄, e᷅, e᷇, e᷆⟩ but does not wish to employ tone letters, is to restrict the generic rising ⟨ě⟩ and falling ⟨ê⟩ diacritics to the higher-pitched of the rising and falling tones, say /e˦˥/ and /e˥˦/, and to resurrect the retired (pre-Kiel) IPA subscript diacritics ⟨e̗⟩ and ⟨e̖⟩ for the lower-pitched rising and falling tones, say /e˨˧/ and /e˧˨/. When a language has
either four or six level tones, the two middle tones are sometimes transcribed as high-mid ⟨e̍⟩ (non-standard) and low-mid ⟨ē⟩. Non-standard ⟨e̍⟩ is occasionally seen combined with acute and grave diacritics or with the macron to distinguish contour tones that involve the higher of the two mid tone levels. ^ See for example Pe Maung Tin (1924).
"bɜ·miːz". Le Maître Phonétique. 2 (39) (5): 4–5. JSTOR 44704085. where five pitch levels are distinguished. ^ The example has changed over the years. In the chart included in the 1999 IPA Handbook, it was [˦˥˦], and since the 2018 revision of the chart it has been [˧˦˧]. ^ Chao did not include tone shapes such as [˩˥˥], [˧˩˩], which rise or fall and
then level off (or vice versa). Such tone shapes are, however, frequently encountered in the modern literature. ^ In Chao's Sinological convention, a single tone letter ⟨˥⟩ is used for a high tone on a checked syllable, and a double tone letter ⟨˥˥⟩ for a high tone on an open syllable. Such redundant doubling is not used in the Handbook, where the tones
of Cantonese [sɪk˥] 'silk' and [sɪk˥] 'color' are transcribed the same way. If the author wishes to indicate a difference in phonetic or phonemic length, the IPA accomplishes that with the length marks ⟨◌̆ ◌ˑ ◌ː⟩ rather than through the tone letters. ^ Sometimes the obsolete transcription ⟨kʻ⟩ (with a turned apostrophe) for weak aspiration vs. ⟨kʰ⟩ for
strong aspiration is still seen. ^ E.g. in Laver 1994, pp. 559–560 ^ The motivation for this may vary. Some authors find the tie bars displeasing but the lack of tie bars confusing (i.e. ⟨č⟩ for /t͡ʃ/ as distinct from /tʃ/), while others simply prefer to have one letter for each segmental phoneme in a language.[citation needed] ^ "At the 1989 Kiel Convention of
the IPA, a sub-group was established to draw up recommendations for the transcription of disordered speech."[104] ^ As in Afrasianist phonetic notation. ⟨S⟩ is particularly ambiguous. It has been used for 'stop', 'fricative', 'sibilant', 'sonorant' and 'semivowel'. On the other hand, plosive/stop is frequently abbreviated ⟨P⟩, ⟨S⟩ or (with non-tonal
languages) * ⟨T⟩. The illustrations given here use, as much as possible, letters that are capital versions of members of the sets they stand for: IPA [n] is a nasal and ⟨N⟩ is any nasal; [p] is a plosive, [f] a fricative, [s] a sibilant, [l] both a lateral and a liquid, [r] both a rhotic and a resonant, and [ʞ] a click. ⟨₵⟩ is an obstruent in Americanist notation, where
it stands for [ts]. An alternative wildcard for 'glide', ⟨J⟩, fits this pattern, but is much less common than ⟨G⟩ in English-language sources. ^ In the context of ⟨CRV-⟩ syllables, the ⟨R⟩ is understood to include liquids and glides but to exclude nasals, as in Bennett (2020: 115) 'Click Phonology', in Sands (ed.), Click Consonants, Brill ^ {Close vowel} may
instead be ⟨U⟩, and ⟨O⟩ may stand for {obstruent}. ^ Or glottal~pharyngeal ⟨H⟩, as in Afrasianist phonetic notation. ^ Somewhat more precisely, ⟨LM⟩ and ⟨MH⟩ are sometimes used for low and high rising tones, and ⟨HM⟩, ⟨ML⟩ for high and low falling tones; occasionally ⟨R⟩ for 'rising' or ⟨F⟩ for 'falling' is seen. ^ For other Turkic languages, ⟨I⟩ may
be restricted to {ɯ i} (that is, to ı i), ⟨U⟩ to u ü, ⟨A⟩ to a e (or a ä), etc. ^ VoQS ⟨V⟩ does not mean phonetic voicing, nor a vowel; for example, in VoQS ⟨Ṽ⟩ is "nasal voice" (that is, nasalization), not a nasal vowel as it would be read in IPA notation. ^ "Diacritics may also be employed to create symbols for phonemes, thus reducing the need to create new
letter shapes."[115] ^ Dedicated letters have been proposed, such as rotated ⟨β⟩ and ⟨ð⟩, reversed ⟨β⟩ and ⟨ð⟩, or small-capital ⟨ʙ⟩ and ⟨ᴅ⟩. Ball, Rahilly & Lowry (2017) Phonetics for speech pathology, 3rd edition, Equinox, Sheffield. ^ "The diacritics...can be used to modify the lip or tongue position implied by a vowel symbol."[117] ^ For example, the
IPA Handbook lists ⟨p⟩ as "lower-case P" and ⟨χ⟩ as "chi."[122]
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^ International Phonetic Association 1999, p. 186 ^ (International Phonetic Association 1999, p. 27) ^ International Phonetic Association 1949, p. 7, 12 ^ (International Phonetic Association 1949) ^ International Phonetic Association 1999, p. 196 ^ Cf. the notes at the Unicode IPA EXTENSIONS code chart Archived 5 August 2019 at the Wayback
Machine as well as blogs by Michael Everson Archived 10 October 2017 at the Wayback Machine and John Wells here Archived 2 June 2019 at the Wayback Machine and here Archived 2 June 2019 at the Wayback Machine.[clarification needed] ^ a b c International Phonetic Association 1999, p. 175 ^ a b International Phonetic Association 1999,
p. 176 ^ International Phonetic Association 1999, p. 191 ^ International Phonetic Association 1999, pp. 188, 192 ^ International Phonetic Association 1999, pp. 176, 192 ^ Duckworth, Martin; Allen, George; Hardcastle, William; Ball, Martin (1990). "Extensions to the International Phonetic Alphabet for the transcription of atypical speech". Clinical
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Hyams, Nina (2011). An Introduction to Language (9th ed.). Boston: Wadsworth, Cengage Learning. pp. 233–234. ISBN 978-1-4282-6392-5. Wikimedia Commons has media related to International Phonetic Alphabet. Official website Interactive IPA chart Retrieved from " The official International Phonetic Alphabet, and its organization in a chart, is
maintained by the Association. As noted in our 1999 Handbook (Appendix 4), modifications have always been the result of "members making proposals for changes, which were published in the journal and voted on by the Association's Council" (p. 196). Only changes to the alphabet or chart that have been approved by the Council can be considered
part of the official IPA. For further information, please consult the Secretary. Other related tables and links: