An Analysis of Multiple Articulations in the Speech of Multilinguals: Problem-posing Pronunciation Difficulty Types in Indo-European and Semitic Speaking Multilinguals

Mehmet DEMİREZEN[1]

[1]Prof. Dr., Hacettepe University, Ankara, Turkey
dem.mehmet2011@gmail.com
https://orcid.org/0000-0003-1614-874X

Abstract

In the pronunciation efforts of multilinguals there is a continuous struggle for correct pronunciation. In the field of phonetics and phonology, oral articulations are primarily grouped into primary, secondary, coarticulation, and multiple articulations. In the pronunciation and intonation of multilinguals, there are solid traces of impacts originating from their native language, age, exposure, innate phonetic ability, identity and language ego, motivation, and concern for good pronunciation. While primary articulation is not a serious problem-posing hardship for non-native learners of English for pronunciation, secondary articulation, coarticulation and multiple articulations give hard times to non-natives of English. Especially, multiple articulations contain two or more articulations due to their articulatory compression that take place simultaneously in different locations of the vocal tract. Double articulations, nasalization, labialization, palatalization, retroflexion, velarization, glottalization, pharyngealization, laryngealization, flapping, and so on can easily take place in the same lexical item. In this study, the causes and types of fossilized pronunciation errors of Indo-European and Semitic language speakers will be unearthed.

Key words: Co-articulation, double articulation, secondary articulation, multiple articulations, pronunciation fossilization

Çokdilli Kişilerin Konuşmalarındaki Çoklu Sesletimlerin Çözümlenmesi: Hint-Avrupa ve Sami Dillerini Konuşan Çokdillilere Sorun Oluşturan Sesletim Türleri

Özet

Çokdilli kişilerin sesletim çabalarında, doğru sesletim için sürekli bir uğraş vardır. Sesbilgisel ve Sesbilimi alanlarında, sesletimler öncelikle birincil, ikincil, eşsesletim ve çoklu sesletim olarak gruplandırılır. Çokdilli kişilerin sesletim ve tonlamalarında, ana dillerinden, yaşlarından, yabancı dile başlama yaşlarından, doğuştan gelen sesbilgisel yeteneklerinden, kimlik ve dil benliğinden, güdülenmelerinden ve iyi sesletime duydukları ilgiden kaynaklanan etkilerin belirgin izleri vardır. Birincil sesletim, anadili İngilizce olmayan öğrenciler için sesletim konusunda ciddi bir sorun yaratan bir zorluk olmasa da, ikincil sesletim, eşsesletim ve çoklu sesletimler, anadili İngilizce olmayanlar için zorluklar ortaya çıkarır. Özellikle çoklu sesletimler, ses yolunun farklı yerlerinde eşzamanlı olarak meydana gelen sesletim sıkıştırmaları nedeniyle, aynı anda iki veya daha fazla sesletimi gerektirir. Çift sesletim, dudaksıl sesletim, burunsal sesletim, damaksıllaşma, geriye kıvrılma, artdamaksıllaşma, gırtlaklaşma ve çırpma gibi ses değişikliği olayları, aynı sözcük yapısında kolaylıkla yer alabilir ve çok dilli kişiler büyük sesletim hataları yaptırabilir. Bu çalışmada Hint-Avrupa ve Sami dillerini konuşanlar çokdilli kişilerde kemikleşmiş sesletim hatalarının nedenleri ve türleri belirlenecektir.

Anahtar Sözcükler: Eşsesletim, ikincil sesletim, çift sesletim, çoklu sesletim, sesletim kemikleşmesi

1. Introduction

What is meant by the term "multiple articulations" in this study is that if two or three or more of articulations take place collectively in the same word, the articulations get to be very difficult and highly challenging for a great majority of non-natives of English in terms of pronunciation. It is for this reason that this process is termed as "multiple articulations". Right from the beginning it must the highlighted that having more than one constriction to narrow the vocal tract at two or more places at the same time is highly frequent in vocabulary items both in Endo-European and Semitic languages. Language families house languages which stem from the same source language.

Multilingualism is generally viewed as the use of more than one language at the same time. "Multilingualism is an interdisciplinary domain of investigation into how individuals and groups of people acquire and use two and more languages" (Aronin & Hornsby, 2018, p. 1-2; Aronin, 2012, p. 179). In the pronunciation of multilinguals, Lı interference between the phonological systems of the languages they speak, along with lexical and grammatical issues, is almost inescapable. The incongruence between the points, places, and manners of articulation of sounds and phonemes in the speech cavities make it difficult to control about 100 muscles in the cavities of Indo-European and Semitic languages, specifically located in the tongue, lips, pharynx, larynx, and vocal cords.

1.1. Pronunciation Challenges for Multilinguals

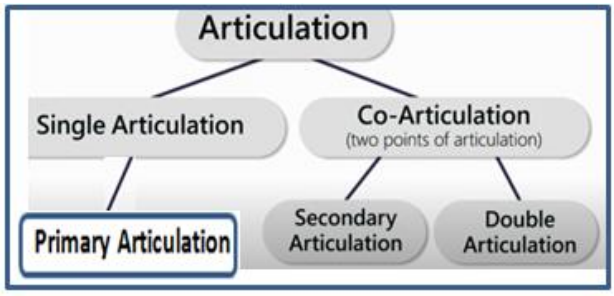
Pronunciation is an articulation skill in which the sounds of a language are produced. It is an essential element of multilingualism because it affects how well we can communicate with others by using correct pronunciation. If the pronunciation of a multilingual is poor, s/he may struggle so as to be understood because of the pressures prompted "by the psychology of multilingualism" (Göncz, 2021, p. 176), even if her/his grammar and vocabulary are correct. There are some pronunciation needs of not only monolinguals and bilinguals (Cenoz, 2003), but most importantly for multilinguals. It cannot be denied that correct pronunciation is an integral part of the "linguistic competence of multilinguals" (Göncz, 2021, p.176). Correct articulation in also manifested in double articulations, secondary articulations, and coarticulation, all of which boil down to multiple articulations. More importantly, silent letter issues in pronunciation pose serious psychological difficulties to all of the multilinguals. If these types of articulation are managed, the result will be the enhancement of understanding, boost of confidence in oral communication, and helping to promote accuracy, intelligibility, and fluency.

It must be noted that multiple articulations comprise two (or more) instantaneous compressions in the pronunciation structure of utterances. In cases where both compressions are of equal degree, these are referred to as double articulations. More commonly, one compression is more open than the other. In this respect, a **double articulation** boils down to mean the co-articulation of two sounds (Ladefoged and Maddieson, 1996; Trask, 1999; Weijer, 2011; Ladd, 2012). For example, the [t͡ʃ] sound, which is heard in such words as *chair* [t͡ʃɛɪ], *change* [t͡ʃeɪndʒ], and *chin* [t͡ʃɪn], starts as a stop and ends as a fricative in articulation. The same incident takes place in the articulation of the [dʒ] sound which is heard in *judge* [dʒʌdʒ], *gem* [dʒæm], and *jungle* [ˈdʒʌŋgəl]. Yet the point is that it is often difficult to resolve if a stop and fricative form a single phoneme or a consonant pair.

1.2. Types of Articulations

Everybody makes articulations in their speech every day. Without articulation, it would be difficult to understand what someone is saying to each other. Hence conversations could be misunderstood by the interlocutors. Therefore, it is the articulation that makes it easier for everyone to understand what is being expressed, making the conversation clear and easy to understand. In essence, articulation is the act of pronunciation of speech sounds, words, phrases, and sentences aloud according to the sound rules of a language correctly so that they are clearly understood by the listeners. The pronunciation is made by means of one or two articulatory organs located in one of the speech cavities, which are oral, nasal, pharyngeal, or laryngeal hollows.

Articulations are made by means of active articulators which are basically the upper lip, lower lip, tongue tip, tongue blade, tongue front, tongue back, tongue root, vocal folds, and passive articulators that are upper lip, the upper teeth and roof of the mouth, velum, and uvula, respectively. It must be noted that an active articulator is the one that moves while the passive articulator stays still. An active articulator moves towards the passive articulator to form a narrow passage during the articulation of a sound. Active and passive articulators cooperatively shape the airflow into speech sounds in the speech cavities.



Types of articulations are handled by ***parametric phonetics***, points to a view of the study of speech sounds via the *dynamic parametric view* that draws attention to the movement of speech organs, while the *static segmental or postural view* involves paying attention to the position or posture of the organs of speech at a given moment.

Figure 1. *Types of Articulation (Adapted from: https://www.youtube.com/watch?v=0plhoJ16xj0)*

Primary articulation generally points to a single articulation. It is the one which paves the way to the greater constriction in one of the cavities. Primary articulation mentions both the place and manner in which the narrowing passage is made for a consonant sound. No single articulation is alone. The primary articulation must allow some range of movements for other articulators that are not involved in its formation because of double articulation, co-articulation, secondary articulation, and multiple articulations along with assimilatory changes.

Double articulation indicates that both strictures are of equal degree in terms of contraction. For example, [tʃ] and [dʒ] are affricate sounds that are made of two sounds, which are [t] and [ʃ], [d] and [ʒ], each of which are segments that have two places of constriction which as "equal" in terms of compression. To put it in a nutshell, the main difference between secondary articulation and double articulation is that in the secondary articulation there is a major consonant-based articulatory contraction on which a vowel-like minor articulation is superimposed, while in double articulation the two articulations have a narrowing type of equal status.

Double articulation means that there are two constrictions involved in producing a particular sound. Double articulation refers to segments which have two places of constriction as "equal" in terms of contraction (Trusk, 1999; Ogden, 2009, p. 175). For example, [w], for example, has a bilabial constriction (both of lips involved) as well as a velar constriction. Similarly, English [tʃ] and [dʒ] sounds are perfect examples of double articulation, as heard in *choose* [tʃu:z], *chit-chat* [ˈtʃɪt tʃæt], *juice* [dʒu:s], and *judge* [dʒʌdʒ].

Coarticulation is the pronunciation of two or more speech sounds cooperatively, so that one influences the other Ogden (2009). That is why co-articulation is the fruitful ground for the creation of allophones which can occur as a result of coarticulation across word boundaries. While articulating one sound, the articulators start to form the sound and pave the way for the following sound. This can distort the articulation of individual sounds during speech because the sounds are not produced in isolated units. Thus, coarticulation is very similar to the well-known phenomenon called assimilation.

To demonstrate the coarticulation issue, when we articulate the word huge [hu: dʒ], after the production of [h] sound, the following front long vowel, which is [ju:], distorts the articulation of the preceding [h] and forces to make it to be pronounced as [hʲ]: this process is called coarticulation. In this example, a sound is modified by another sound on account of its occurrence in a given context. This is one of the reasons why many non-native leaners of English

confuse to articulate this word as [hʲu:dʒ]. Thus, coarticulation is "the overlapping of adjacent articulations" (Ladefoged 1993, p. 55). Apparently, English consonants can have secondary articulations through assimilation to a neighboring vowel. So, coarticulation is a natural property of speech.

Secondary articulation holds the more open constriction. Secondary articulation refers to a "lesser" constriction. Secondary articulations are often closely related to vowels. Therefore, secondary articulations are typically glide-like. Here are some examples in NAE:

Table 1.
Secondary Articulation Types (Longman Dictionary of American English, 2008)

Primary Articulation	Glossary	Secondary Articulation
[tɪn]	twin	[tʷɪn] (labialization)
[ˈi:kəl]	equal	[ˈi:kʷəl] (labialization)
[ɪmˈpɔɹtənt]	important	[ɪmˈpɔɹtˀnt] (glottalization)
[ku:t]	cute	[kʲu:t] (palatalization)
[ˈhu:mɪd]	humid	[ˈhʲu:mɪd] (palatalization)

Anticipatory coarticulation, otherwise called regressive assimilation, comes into being when a feature or characteristic of a speech sound is anticipated (assumed) for the production of a preceding speech sound (Liu, Kawamoto, Payne & Dorsey, 2018; Hardcastle & Hewlett, 2006; Perkell & Chiang, 1986). In our mind's eye, we know that a sound coming in the second order will produce an impact to assimilate a sound that comes first. For example, **nasalization** is a typical case of anticipatory co-articulation. Anticipatory co-articulation boils down to mean that if [n, m, ŋ] sounds come after a vowel, that vowel will be nasalized, as in *simple* [ˈsĩmpəl], *banana* [bə̃ˈnæ̃nə], and *meaning* [ˈm̃i:nĩŋ]. In this respect, the phonetic rule indicates that all vowel sounds are nasalized before nasal consonants, which are [n, m, ŋ] sounds.

Multiple articulations involve two or more simultaneous contractions in one or more of the cavities. It is possible to have more than one constriction gesture. In other words, it's possible to make constrictions in the vocal tract at two or more places at the same time. It is mostly inevitable to avoid multiple articulations. It must be noted that multiple articulations are often classified as **double articulations** as well as **secondary articulations** on the basis of whether the two constrictions are equal in degree. In the phonetic construction of many vocabulary items in English, primary, secondary, double, and co-articulations take place collectively and instantaneously. Many non-native learners of English language typically face challenges producing certain multiple articulations. For example, a word like *equator* [ɪˈkʷeɪ**D̩ɹ̩**] inherits labio-velarization ([ʷ]), voicing (flapping) (D), and velarized syllabic consonant formation ([**ɹ̩**]), whose articulations happen at the same time in the same word, manifesting simultaneous occurrence of a multiple articulation.

So**,** articulation is the formation of clear and distinct sounds in speech. The production of sounds involves the coordinated movements of primary, secondary, coarticulation productions that work collectively to form the speech sounds. Hence, multiple articulations are a natural property of speech and are highly necessary for accuracy, intelligibility, and fluency. Regarding multiple articulations, the **Parametric Phonetics** (Lawrence, 1965; Tench, 1978, p. 34 - 46), handles the biological basis of speech and emphasizes the fact that speech is produced by various speech organs whose movements are well coordinated in producing an elasticity of speech. A parametric phonetic description of speech aims at showing how the various organs in the vocal tract, such as lungs, larynx, jaw, velum, tongue and lips, coordinate in producing a speech sound. Thus, **parametric phonetics** indicates how speech is overlaid on biological speech apparatus via vocal tract which is a tool for the anatomical components of the human body that produce speech by means of using biological structures for communication.

1.3. Coarticulation Problems in Vocabulary Items

Secondary articulations are also instances of **coarticulation**. Coarticulation can be generally defined as "the overlapping of adjacent articulations" (Ladefoged, 1993, p. 55; Fowler, 1980) or as two articulators "moving at the same time for different phonemes" (Borden & Harris 1984, p.130; Harcastle, 1985). Common examples of coarticulation on English are given in table 2:

Table 2.
Coarticulation examples in English (Adapted from Longman Dictionary of American English, 2008).

Vocabulary	**Coarticulation**
four [fɔɹ]	fourth [fɔ̪ɹ̪**θ**]
fort [fɔɹt]	forth [fɔ̪ɹ̪θ]
eight [eIt]	eighth [eI**t̪**θ]
heart [hɑɹt]	hearth [hɑɹ**t̪**θ]
warm [wɔɹm]	warmth [ˈwɔɹ**m̪**θ
thousand [ˈθaʊzənd]	thousandth [ˈθaʊzən**d̪θ**]

The [t] sound is an alveolar stop, and by the addition of voiceless interdental stop [θ] just next to [t], [t] gets a dental quality and is converted into [**t̪**], which not now an alveolar stop, but is a dental stop: this is what is meant by coarticulation.

1.4. Labialization

Labialization indicates a situation in which the production of a speech sound gains the addition of lip rounding. Most speech sounds are affected by their environment with respect to neighboring sounds. The labialization process refers to the addition of a [w] like to an articulation accompanied with lip-rounding. Sound segments are be produced with lips rounded when followed by rounded vowels like [u:, ʊ, oʊ, ɔ, ɔ:] in North American English (NAE).

1.5. Labio-velarization
Similarly, labio-velarization, which is an extension of labialization, is another common example of pronunciation fossilization in the articulation of most of the multilinguals. Here are some examples:

Table 3.
Labio-velarization Examples in English (Adapted from Longman Dictionary of American English, 2008).

Palatal	**Coarticulation: Labio-velarization**
keep [**k̟**I:p]	cool [**k**$^{\mathbf{w}}$ul]
kick [**k̟**ɪk]	quick [**k**$^{\mathbf{w}}$ɪk]
kit [**k̟**ɪt]	quit [**k**$^{\mathbf{w}}$ɪt]
kilt [**k̟**ɪlt]	quilt **[k**$^{\mathbf{w}}$ɪlt]

The [**k**] sound is a voiceless velar stop, but when it precedes the /ɪ/ phoneme it gets palatalized (fronted) into [**k̟**], which becomes a voiceless palatal stop. Then, the [**k̟**] sound, given in the second column, gains a labialization quality while **[k**$^{\mathbf{w}}$] pronunciation gets a labio-velarization feature in pronunciation. **[k**$^{\mathbf{w}}$] mostly escapes from the attention of multilinguals and heard as a fossilized pronunciation error in their articulations.

Additionally, the presence of **secondary articulations** the structure of words comes to the stage a mega pronunciation problem. Secondary articulation is an enunciation with a lesser degree of constriction occurring at the same time as another primary articulation takes place simultaneously. In other words, the secondary articulation is usually the addition of an approximant or vowel-like articulation to the primary articulation. In the case of a secondary

articulation the one with the greater constriction is said to be the primary articulation while the one with the more open closure is referred to as a secondary articulation.

So, a secondary articulation which is a case of co-articulation comes into being when the articulation of a consonant is matched with the combined articulations of two or three simpler consonants. Rounding, inter-dentalization, nasalization, labio-dentalization, palatalization, velarization, pharyngealization, laryngealization, glottalization are typical cases of secondary articulations. It must be noted that secondary articulation often has a strong influence on neighboring vowels. Another factor that makes pronunciation challenging in the articulations of multilinguals is the presence of **silent letters**. In many words, you don't pronounce certain letters at all. For example, *talk* [tɔk], *folk* [foʊk], *psalm* [sɑm], *building* [ˈbɪldɪŋ], *bread* [ˈbɹɛd], *bite* [ˈbaɪt], *bus**i**ness* [ˈbɪznɪs], and *c**o**untry* [ˈkʌntɹi] contain silent vowels. These silent letters can be perplexing for learners and multilinguals who rely on the spelling of a word to determine its pronunciation.

1.6. Rounding/Labialization in Multiple Articulations

In phonetics, rounding means the production of a sound with the lips rounded. Rounding comes up as bilabial articulation. Rounding is a vowel quality which comes from the shape of the lips. Lips are rounded in the manner of kissing someone. The figure 2 shows how rounding occurs for consonants that precedes the rounded vowels:

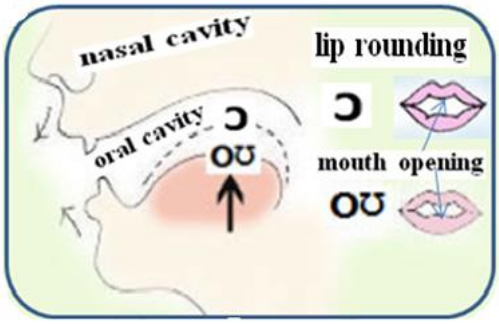


Figure 2. *Place of Articulation for **[ɔ]** and **[oʊ]** Vowel Sounds (https://www.ldoceonline.com/dictionary/brawl)*

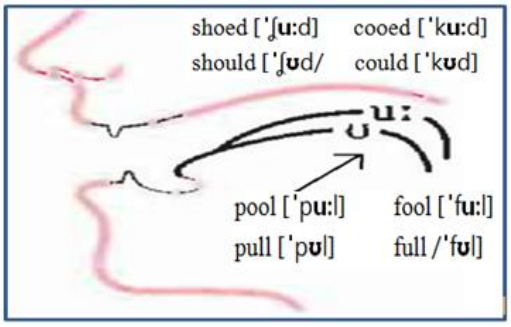
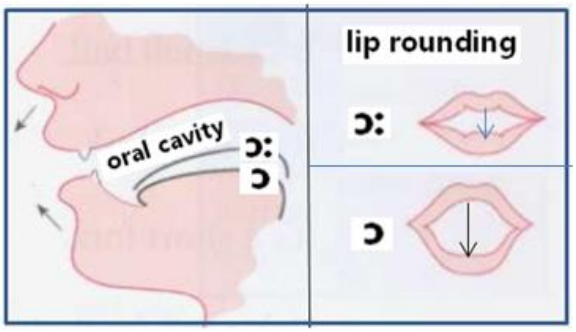


Figure 3. *Place of Articulation for **[u:]** and **[ʊ]** sounds (Adapted from Baker, 2006, p. 23)*



Examples: all /ɔ:l/, caught /kɔ:t/, bought /bɔ:t/, ball /bɔ:l/, bawl /bɔ:l/, brawl /bɹɔ:l/, claw /klɔ:/, crawl /kɹɔl/, dawn /dɔ:n/, draw /dɹɔ:/, drawl /dɹɔ:l/, fall /fɔ:l/, flaw /flɔ:/, mall /mɔ:l/, roar /ɹɔ:ɹ/, sought /sɔ:t/, tall /tɔ:l/, walk /wɔ:k/, /wɔ:l/,

Figure 4. *Place of Articulation for* ***[ɔ:]*** *and* ***[ɔ]*** *Sounds (Adapted from Baker, 2006, p. 23)*

Vowels, semivowels, and some consonants may be rounded in process of articulation via the impacts of neighboring sounds. In English, such rounded vowels as [ɔ, ɔ:, ʊ, oʊ, u:, ɒ (U.K)] exert lip-rounding quality to the preceding consonants.

Table 4.

Examples on Rounding in English

Primary Articulation	Rounding (Secondary Articulation)
nose [noʊz]	nose [nʷoʊz]
note [noʊt]	note [nʷoʊt]
notion [ˈnoʊʃən]	[ˈnʷoʊʃən]
Primary Articulation	**Rounding (Secondary Articulation)**
boss [bɔs]	[bʷɔs]
born [bɔɹn]	[bʷɔɹn]
torch [tɔɹtʃ]	[tʷɔɹtʃ]
Primary Articulation	**Rounding (Secondary Articulation)**
bull [bʊl]	[bʷʊl]
bush [bʊʃ]	[bʷʊʃ]
cushion [ˈkʊʃən]	[ˈkʷʊʃən]
Primary Articulation	**Rounding (Secondary Articulation)**
judo [ˈdʒu:doʊ]	[ˈdʒʷu:dʷoʊ]
noon [nu:n]	[nʷu:n]
include [ɪnˈklu:d]	[ɪnˈklʷu:d]
Primary Articulation	**Rounding (Secondary Articulation)**
four [fɔ:ɹ]	[fʷɔ:ɹ]
more [mɔ:ɹ]	[mʷɔ:ɹ]
talk [tɔ:k]	[tʷɔ:k]"

(Adapted from Longman Dictionary of American English, 2008)

So, in phonetics, vowel roundedness is the amount of rounding given to the lips during the articulation of a vowel or a consonant. In rounded sounds, the lips are physically rounded and appear in an 'O' shape. Rounding gives

labialization to a vowel. The term rounding is normally used in reference to vowels, which can also be used to describe the secondary articulation of approximant-like consonants. For example, English [ɹ] and [w, ʍ] are both pronounced with lip rounding.

1.7. Inter-dentalization in English

Interdental consonant sounds are said to be rare cross-linguistically. The letters <th> are used to represent the interdental sounds in English. The existence of inter-dental fricatives constitutes a very low incidence in languages in the world. So, the matter of the fact is that the sounds that are spelled <th>in English are pretty rare in other languages. In English, the letter ⟨ð⟩ was taken from the Old English (450-1066 A. D.) and Icelandic letter called *eth*, which stands for either a voiced or unvoiced (inter)-dental non-sibilant fricative. Even though the German language spoken in Germany today shares the same lineage with English spoken in England**,** the <th> related sounds do not exist in the German language. Germans and other non-native English speakers approximate those sounds with something close places of articulation. Similarly, in languages like Danish, Norwegian, and Swedish which share the same linage with German, the voiceless <th> has changed to [t], and voiced <th> have changed to /d/.

Regarding multilingualism, the [ð] exists in English, *Icelandic*, *Swedish* and *Norwegian* dialects, *Danish*, *Kven, Saami, Welsh, Spanish* ([ð] in *Castilian Spanish* between two vowels, where it is an allophone of the phoneme /d/), *Basque, Catalan, various Italian* languages, *Albanian, Greek, Arabic, Berber, Hawrami, Mari* (an Uralic-Altaic language), *Bashkir, Turkmen* (in Turkmenistan), *Somali, Dahalo* (an endangered *Cushitic* language on the coast of Kenya), *Moro* (in Sudan), *Didinga* (a language of South Sudan), *Kiku*yu (in Kenya), *Kamba* (a slang in Malayalam language), *Swahili* (a Bantu language in Kenya, Tanzania, and Mozambique), *Tamil, Burmese, Thao* (in Taiwan), *Iai* (New Guinea), Palauan (a Malayo-polynesian family. *Polynesian* language native to the Republic of Palau), *Fijian* (an Austronesian language of the Malayo-Polynesian family), *Aleut* (Eskimo), widely in Athabascan (American Indian), *Shoshone* (a Numic language of the Uto-Aztecan family, spoken in the Western United States by the Shoshone people), *Lakota* (a Siouan language spoken by the Lakota people of the Sioux tribes, and *Osage* (a Siouan language spoken by the Osage people of the Oklahoma state of USA).

French, German, Russian, Turkish and some other languages don't have a <th> letter related sounds **([ð, θ])** whatsoever! That is why the <th> letter housing the **[ð] and [θ]** consonant sounds is replaced with /t/ or /d/ or alternatively with /s/ or /z/. For production of the <th>, the tongue protrudes from between the teeth. Since French, German, Russian, Turkish speakers don't have the <th> related consonant sounds in their native languages, they tend not to keep the tongue in protruded position in the words with <th>.

Table 5.

Transcription for the [ð] and [θ] Sounds in English (Adapted from Longman Dictionary of American English, 2008)

[ð] Sound			**[θ]** Sound		
these [ˈðiːz]	thus [ˈðʌs]	then [ˈðɛn]	thin [ˈ**θ**ɪn]	think [ˈ**θ**ɪŋk]	three [ˈ**θ**ɹiː]
this [ˈðɪs]	that [ˈðæt]	those [ˈðoʊz]	thank [ˈ**θ**æŋk]	throat [ˈ**θ**ɹoʊt]	threat [ˈ**θ**ɹɛt]
there [ˈðɛɹ]	these [ˈðiːz]	bother [ˈbɑðəɹ]	throw [ˈ**θ**ɹoʊ]	theme [ˈ**θ**iːm]	eth [ˈɛ**θ**]
other [ˈʌðəɹ]	though [ðoʊ]	rather [ˈɹæðəɹ]	thesis [ˈ**θ**iːsɪs]	thief [ˈ**θ**iːf]	bath [ˈ**bæθ**]
lathe [leɪð]	scythe [saɪð]	they [ˈðeɪ]	both [ˈboʊ**θ**]	cloth [ˈklɔ**θ**]	Earth [ˈɜɹ**θ**]

1.7.1. On Some Articulation Features of [ð] and [θ] Sounds

Interdental consonant sounds are speech sounds that are articulated with a contraction between the tongue and the upper and/or lower teeth. The term interdental indicates the production of a sound produced in between the upper and lower teeth ridge while the tip of the tongue protrudes a bit through the teeth ridges. In the International Phonetic

Alphabet (IPA) **[θ]** and **[ð]** are included as interdental fricatives. [θ] is called *theta* and pronounced as (UK /ˈθiːtə/, US/ˈθeɪtə/. [θ] exists in Arabic and Greek. [ð] is named as *eth*. While the [θ] sound is as a voiceless interdental fricative, [ð] is accepted as the voiced counter part of [θ].

In NAE, [θ], called theta, is a voiceless inter-dental slit fricative consonant. As stated earlier, it is produced with a protruding tip of the tongue that makes a firmer contact between the rims of the tongue and the upper side teeth and gums accompanied with no vocal cord vibration. In its production the tip of the tongue forms a light contact with the inner edge of the upper front teeth which makes the outgoing airstream in the oral sound in whose production the tip of the tongue comes to a slight contact with the inner edges of the upper and lower front teeth while the vocal cords vibrate. The inter-dental contact is there, but very little or no friction occurs. It must be noted that the tip of the tongue sticks out a bit from the mouth as it is made, and this requires extra energy.

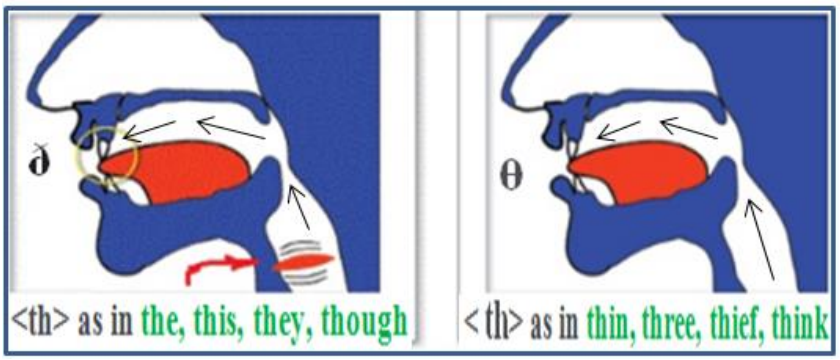


Figure 5. *The Place of Articulation of **[ð]** and **[θ]** sounds*
(Adapted from https://www.researchgate.net/publication/272885316-The-Teaching-of-th- and-d-Sounds-in-English)

English language did not develop a single letter for [θ] and [ð] sounds. The <th> letter was used to represent both of them. It's worth pointing out that [θ] and [ð] are fairly unstable consonants. Being represented by a digraph <th> is a serious disadvantage because even many native speakers cannot decide when <th> letter stands for [θ] and [ð]. Furthermore, they're articulated in a part of the mouth that is largely unused. They are similar enough to neighboring sounds in terms of place of articulation. That is why [θ] can shift to [f, s, t, ɸ] and [ð] to [d, β, v, z] that they tend to collapse to one of them. This is an ongoing process in English today. Trouble with the <th>related sounds is a type of articulation issue because the lips and tongue must be positioned against teeth and the roof of the mouth to create sounds that will ultimately merge them together to articulate the [θ] and [ð] sounds words. Therefore, [θ] and [ð] sounds have always created pronunciation problems for multilinguals who keep struggle with their interdental tongue position. Acoustically speaking, [ð] is said to be acoustically harder to detect.

It is no surprise that [θ] and [ð]are often mispronounced and replaced with alternatives like a [d, t, f, z, s, ɸ, β] by the multilinguals that do not have them in their native tongues. Speakers who pronounce <th> as [f] don't have a speech impediment, but may exhibit muscle inertia triggered by their L_1: it's a matter of accent and dialect. Furthermore, for the same reason, it is neither 'wrong' nor the result of poor education or laziness, or anything like that. In the field of child language acquisition, children start using them later than some other consonants. The children cannot use the <th> sound with the greatest of ease due to its inter-dentalness. That is why it is claimed that English-speaking children do not start using <th> until around four years of age.

1.8. The [θ] and [ð] sounds represented by <th> in English: Doomed to Disappear after 50 Years as Predicted?

The sounds represented by the letter <th> have been in English for at least 1500 years. The prediction that the sounds represented by the letter <th> in English is said to have been doomed to disappear is based on a linguistic phenomenon called **"th-stopping."** The first reference to th-fronting is in the "low English" of London in 1787, though only a

single author in that century writes about it, and it was likely perceived as an idiosyncrasy, rather than a full-fledged dialect feature of Cockney English, even into the early half of the twentieth century" (The Oxford Handbook of the History of English, 2012, p.71). "The use of the labiodental fricatives [f] and [v] for the dental fricatives [θ] and [ð] was noted in Yorkshire in 1876" (Upton, 2012, p. 395).

In reality, there are two sound represented by<th>. There's the voiced dental fricative [**ð**] and the voiceless dental fricative [θ]. **Th-stopping** is a process where the inter-dental fricatives [θ] (as in "thing, think, thief, and thin") and [ð] (as in "*this, the, that,* and *them*") are replaced by a stop consonant, typically [t] or [d], in certain dialects or accents of English. Additionally, as mentioned before, [θ] may become [t], [s], [f] or [ɸ], and [ð] may change to [d], [v], [z], or [β], all of which are overwhelmingly the sounds of labial class, except [s] and [z]. **Th-stopping** seems to be more a dialectal, socio-phonetic, working class and now a largely urban occurrence.

The claim is that the sounds represented by the letter <th> would likely disappear, but the sounds would not disappear from English worldwide. Regionally speaking, the words "this" and "that" became "dis" and "dat" already locally. The New York dialect has, or had, that feature because of the large number of immigrants from Ireland in the 19th century.

Th-stopping is more common in some varieties of English, such as African American English, Cockney English, and some Southern American English dialects. However, it is not a common feature of all English dialects, and many speakers of English continue to use the sounds represented by <th> without replacing it with a stop consonant. So, while "<th>-stopping" may be a feature of certain dialects, it is not correct to say that the <th> is universally disappearing from English. Being an important feature of the language's phonological system, the sounds represented by <th> letter remain a distinct phoneme in many varieties of English. It is true to say that languages evolve over time, and it is possible that certain sound changes may not occur in the future. However, at present, the <th> sound is still very much a part and parcel of the English language and is unlikely to disappear entirely.

In sum, "Th-fronting is a prominent feature of several dialects of English, notably Cockney, Essex dialect, Estuary English, some West Country and Yorkshire dialects, African American Vernacular English, and Liberian English, as well as in many non-native English speakers (e.g. Hong Kong English, though the details differ among those accents" (Wells, 1982, p. 96–97). In India, Indian English accent uses the aspirated dental [t^{h}], as the speakers of Southern Irish English pronounce it similarly. In many languages of the Philippines, [θ] is taking place ass an allophone of /t/ as well. In *Hiberno-English* spoken in Ireland, the two sounds of <th>, [θ] and [ð], have become [t] and [d] respectively. In Estuary English, which is spoken around London and Southeast England along with some other dialects, [θ] and [ð] have become [f] and [v], respectively. All of these shifts boil down to mean that the related changes are in an ongoing state. The following quotation marks the shifts of sounds mentioned here:

> "The <th> sound, which is very prominent in British English, is poised to be lost by 2066 due to multiculturalism. Linguists predict that in 50 years, the sound will no longer be heard on London's streets, and you might hear "fink" instead of "think…. At the moment, Estuary English, which is a hybrid of received pronunciation (RP) and Cockney, and the prevalent speech pattern in South East, has already been taken over by Multicultural London English or MLE, which is strongly influenced by Asian, West African and Caribbean communities.
>
> Based on the projection of linguistic experts from University of York, the voiced <th> sound would probably be substituted by v, d or f… Artificial intelligence (AI) will likely have an impact also and will develop or invent new words…… the <th> sound, which is very prominent in British English, is poised to be lost by 2066 due to multiculturalism. Linguists predict that in 50 years, the sound will no longer be heard on London's streets, and you might hear "fink" instead of "think.""
>
> (https://www.daytranslations.com/blog/linguists-predict-loss-th-sound-2066/#:~:text).

It is worth noting that [θ] and [ð] sounds are two of the hardest sounds for non-native speakers to master. Even the native English speakers don't actually differentiate [θ] and [ð] that well. They do not bother to introspect on that, and assume there is only one sound because there's only way of writing them. The interdental fricatives have dropped out in Germanic languages, as well as many Semitic languages.

1.9. Bilabialization and Labio-dentalization

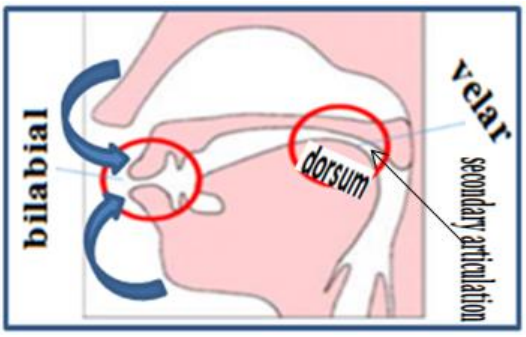
Labialization is a secondary articulation feature of consonant sounds in many languages. Labialized sounds require the use of lips for articulation. For example, bilabial consonants, such as [p, b, m, w, ʍ] are called bilabial because they are articulated by making a contraction using the two lips. Labialization involves lip rounding as a secondary articulation on consonants as a fundamental requirement. It is said that labial and bilabial consonants, such as [p, b, m, w, f, v] are produced by children as speech sounds at the age of two the earliest. The [w] sound is hardest bilabial sound of English language for Turks who constantly tend to articulate it as [v]. Here are some examples:

Table 6.
Examples for the [w] Sound in Broad Transcription (Adapted from Longman Dictionary of American English, 2008)

walk [ˈwɔk]	walker [ˈwɔkəɹ]	whereas [wɛɹˈæz]
walnut [ˈwɔlnʌt]	wallet [ˈwɑlɪt, ˈwɔ-]	whet [ˈʍɛt]
wall [ˈwɔl]	wane [ˈweɪn]	whether [ˈʍɛðəɹ]
waltz [ˈwɔlts]	want [ˈwʌnt, ˈwɑnt, ˈwɔnt]	while [ˈʍaɪl]
wan [ˈwɑn]	warlord [ˈwɔɹlɔɹd]	whiff [ˈʍɪf]
wander [ˈwɑndəɹ]	warmth [ˈwɔɹmθ]	whim [ˈʍɪm]
war [ˈwɔɹ]	warrior [ˈwɔɹiːəɹ, ˈwɑ-]	whine [ˈʍaɪn]
wayward [ˈweɪwəɹd]	widower [ˈwɪdoʊəɹ]	whitewash [ˈʍaɪʔwɑʃ, -wɔʃ]
widowed [ˈwɪdoʊd]	worthwhile [ˌwɜɹθˈwaɪl]	withdrawn [wɪθˈdɹɔn]
willpower [ˈwɪlˌpaʊəɹ]	woodworm [ˈwʊd.wɝːm]	westward [ˈwɛstwəɹd]
woodwind [ˈwʊdˌwɪnd]	woodwork [ˈwʊdwɜɹk]	worldwide [ˌwɜɹldˈwaɪd]

1.10. Place and Point of Articulation for the [w] Sound

The English [w] sound is bilabial because during its production the two lips are brought together, and is also termed as labio-velar because while the lips are put together, the dorsum is raised up to velum to close the oral cavity, as seen in figure (6). The [w] sound is produced with no friction or obstruction with very little bit of aspiration in the oral cavity. So, English [w] sound is made both at the lips and with the back of the tongue being raised upward the soft palate; therefore, [w] is also called a labio-velar consonant. The lip constriction is the primary articulation (probably), as the constriction is greater there; the raising of the tongue to the soft palate is the secondary articulation as the constriction is additionally made there.

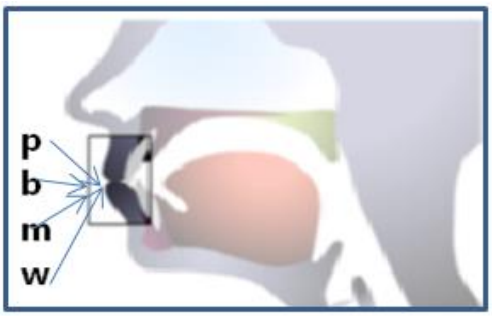


[**w**] is also phonologically called as a semi-vowel because phonetically it behaves like a vowel, but like consonants in certain environments (Roach, 2012). **[ʍ],** which is a combination of **w+h** in spelling, as in *where, what, which, why, who, whose, when*, and so on, is the voiceless form of it.

Figure 6. *The Place of Articulation of the [w] Sound (Adapted from https://quizlet.com/au/282724461/place-of-articulation-with-diagrams-flash-cards/)*

1.11. Bilabialization

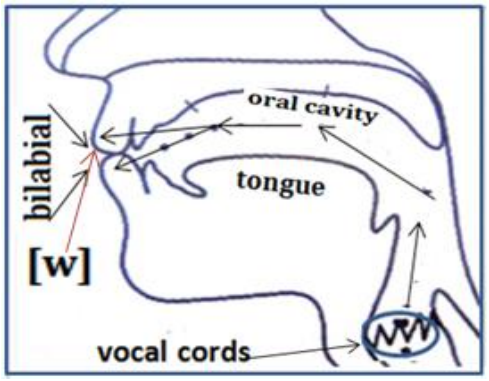
The term bilabialization means the articulation of a speech sound with the pursing of both the lips at the same time. In the bilabialization process, the two lips act as articulators: the lower lip is the active articulator while the upper lip the passive articulator. The two lips come and close together to produce the [p, b, m, w] sounds. Additional, the same articulation process takes place for the articulation of the [w] sound, but also the back of the tongue is lifted up to velum during the articulation moment. The English the [p, b, m] sounds convert the [n] sound into [m] within progressive assimilation (Demirezen, 2016).



Bilabial assimilation comes into being when a non-labial consonant is converted into a labial consonant due to the pressure of a neighboring labial consonant. For example, the word *cup* [kʌp] may be pronounced as *pup* [pʌp] because of the influence of the bilabial word-final [p] sound.

Figure 7. *Bilabial Consonants and Bilabialization (Adapted from https://quizlet.com/867875431/l1-place-of-articulation-flash-cards/*

A very special pronunciation incident takes place in the pronunciation of Turkish English learners. As it is indicated by the figure given below the Turks systematically convert the English [w] to [v] in their pronunciation via *labio-dentalization* (figures 8 and 9) since Turkish has no [w] sound in its phonetic inventory: this is a solid example of mother tongue interference. In labio-dentalization, English [w] loses half of its bilabial quality.



→

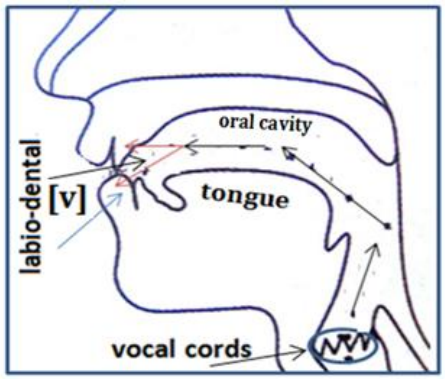


Figure 8. *Point and place of articulation for the [w] sound*

Figure 9. *Point and place of articulation for the [v] sound*

(Adapted from https://mmcmodinagar.ac.in/bridge-library/pdf/english/MA)

In English, the [w] shifts to [v] is a phonemic issue, which is able change the meaning of utterances. Here are some examples:

Table 7.

[**w**] Sound versus [**v**] Sound

w	v	**w**	v

wet	vet	wine	vine
wiper	viper	wow	vow
whale	veil	went	vent
west	vest	wheel	veal
why	vie	worse	verse
wane	vein	wale	veil

Bilabialized consonants optionally lose their bilabiality in casual speech as well as connected speech. A bilabial consonant becomes labio-dental in the environment of coming before an unrounded vowel. "Creating a difference between [v] and [w] two sounds when speaking English can be a little bit tricky. "To master the pronunciation of (v-w/, you need to both understand the mechanics of how to pronounce these complicated sounds with no delabializing the bilabial or rounded /w into /v/, and work on the difference between them". (https://englishlikeanative.co.uk/blog/the-5-hardest-sounds-in-english-pronunciation/)

1.12. Velarization as a Secondary Articulation

Velarization is a secondary articulation type on the consonant sounds. In the production velarization, a non-velar sound is adjusted to a neighboring velar sound by lifting up the back of the tongue towards the soft palate. As a very common type of secondary articulation, velarization has been testified in a number of languages across the world (e.g. Turkish, English, Irish, Swiss German, Dutch, Portuguese, Russian, Serbian, and almost all Arabic languages. During its production, the tongue is lifted far up and back in the mouth toward the velum, or soft palate. Velarization is a solid example for consonantal assimilation as well.

1.12.1. Velar Nasal in English: [ŋ]

English has three nasal phonemes, [n], [m], [ŋ], all of which are pronounced by pushing the incoming airflow through the nasal passage. The raised soft palate closes the way to oral cavity and allows the airflow to flow through the nose, and thus the velar nasal [ŋ] is made. The /n/+/k/ combination creates the [ŋk] sound word-finally, as in *bank, blink, blank, chunk, crank, drank, sink, think, kink, link, pink, tank, and monk*. But the /n/+/g/ combination merges and makes the [ŋ] sound, as in *bang, king, long, sing, song, thing, young,* and *wrong:* the pronunciation /n/+/g/ combination comes up wrongly as [ŋ**k**] in a great majority of Turkish learner of English.

Turkish learners of English can make the sound combination /n/+/g/, but articulate it wrongly, adding an extra **[k]** sound. The velar nasal is pronounced with the tongue in the same position as it is used for [k] and [g]. For the production of the [**ŋ]** sound in English, the back of the tongue lifted up to touch the soft palate sound while airstream flows through the nasal cavity and the back of the tongue simultaneously pressing onto the soft palate (the velum). The velar sound **[ŋ]** never appears at the beginning of words, but it commonly appears by itself at the ends of words e.g. words ending with {-ing} suffix, as heard in *being, knowing, putting, sitting, studying*, and so on. In addition, it also appears by itself in the middles of words:

Table 8.
Examples for the [ŋ] Sound in English (Adapted from Longman Dictionary of Contemporary English, 2008).

angora [æŋˈgɔɪə]	gangrene [ˈgæŋgɪi:n]	mingle [ˈmɪŋgəl]
angle [ˈæŋgəl]	hunger [ˈhʌŋgəɪ]	morning [ˈmɔɪnɪŋ]
ankle [ˈæŋkəl]	anger [ˈæŋgəɪ]	Bangkok [ˈbæŋkɑk]
hungry [ˈhʌŋgɪi]	banking [ˈbæŋkɪŋ]	Beijing [beɪˈdʒɪŋ]
pancreas [ˈpæŋkɪi:əs]	gangster [ˈgæŋstəɪ]	Pyongyang [ˌpjəŋˈjæŋ]
penguin [ˈpɛŋgwɪn]	hanger [ˈhæŋəɪ]	Shanghai [ʃæŋˈhai]

single [ˈsɪŋgəl]	larynx [ˈlæɹɪŋks]	Wyoming [waɪˈoʊmɪŋ]
language [ˈlæŋgwɪdʒ]	linguistics [ˈlɪŋgwɪstɪks]	sanguine [ˈsæŋgwɪn]

Apart from this, a great majority of Turkish speakers of English do not press onto the soft palate and let erroneously escape some part of the incoming air stream into the oral cavity wherein a lousy [k] sound is wrongly added into the pronunciation of the word, sounding like [ŋ**k**]. Here are some examples:

Table 9.

*The wrong Articulation of the [ŋ] as [ŋ**k**] (Adeapted from https://linkedin.com/pulseIdoes-myvoice-sound-nasal-finding-balanced-judith-weinman)*

Correct	Vocabulary	**Incorrect**
[bæŋ]	bang	bæŋ**k***]
[kɪŋ]	king	[kɪŋ**k***]
[lɔŋ]	long	[lɔŋ**k***]
[pɪŋ]	ping	[pɪŋ**k***]
[sɪŋ]	sing	[sɪŋ**k***]
[sɔŋ]	song	[sɔŋ**k***]
[sæŋ]	sang	[sæŋ**k***]
[jʌŋ]	young	[jʌŋ**k***]
[ɹɔŋ]	wrong	[ɹɔŋ**k***]”

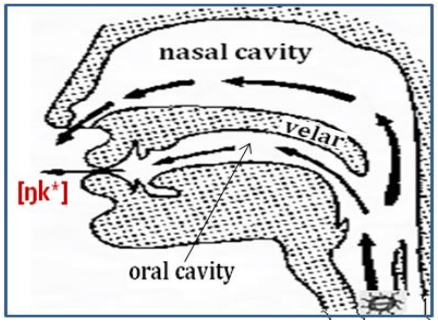


Figure 10. *The Faulty Articulation of the [ŋ] as [ŋ**k**] (Adapted from Longman Dictionary of Contemporary English Edition, 2008).*

Finally, velarization is a type of secondary articulation in the pronunciation of consonants during the production of which the tongue is pulled far up and backwards in the mouth toward the velum, or soft palate), as if to pronounce a back vowel such as [ʊ, uː, ɔ, o ʊ]. The pronunciation of the combination ***n+g*** at the end of the words constitutes a problematic location wherein Turkish learners of English have a wrong affinity to articulate that combination as [ŋ**k**], but not as [ŋ].

1.12.2. Dark-l Clear- l: As a Case of Velarization for Secondary Articulation in English

English only has one /l/ phoneme, but it has two variants: dark-l and clear-l. In articulation of the "dark"-l or velarized-l, the dorsum (back of the tongue) is raised toward the soft palate. In the production of the "clear-[l]" (also called light-l) or non-velarized-[l], the back of the tongue remains low in the mouth. So, rising of the back of the tongue to form a secondary articulation is termed velarization. The IPA symbol for velarization is a tilde which is put through the letter. For example, English postvocalic **/l/** is velarized **[ɬ]** before velar sounds. The /l/ sound that is followed by a vowel at the beginning of a word is a clear-l, as in *light, late, lean; lock, little, and so on.* The "dark-[l]", a velarized allophone, appears in syllable coda position both in Received Pronunciation (BrE) and North American English,

commonly heard in *all, ball, call, soul, tall, wall,* and so on. Dark-l, **[ɬ]**, usually follows a vowel and is normally the sound that occurs at the end of a word as in appeal, build, and bill, kill, fill, cool, pool, etc.

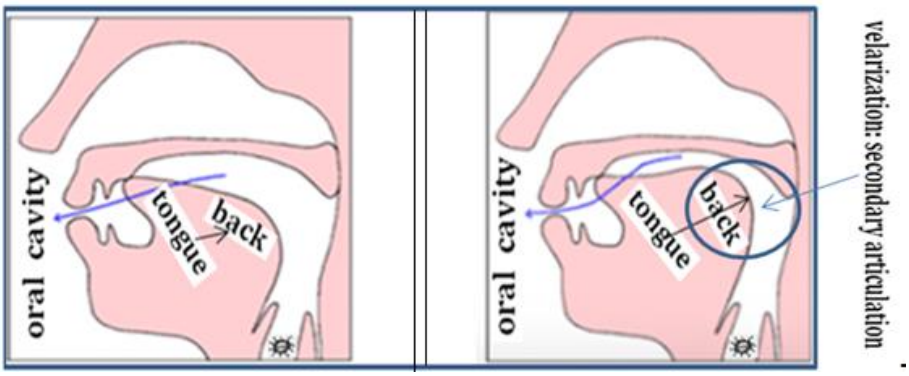


Figure 11. *The Place of Articulation for **CLEAR-l***
(Adapted from https://www.azlifa.com/pp-tute-2-answers/)

Figure 12. *The Place of Articulation for **DARK-L***

Here are some more examples on dark-l in IPA broad transcription:

Table 10.

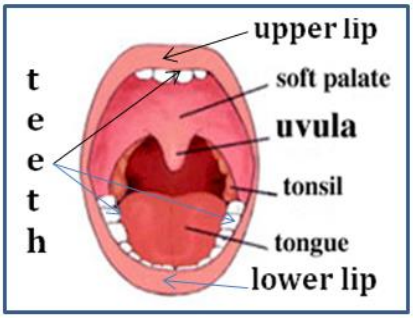
Transcription of dark-l in English Vocabulary Items (Adapted from Longman Dictionary of American English, 2008)

all [ɔɬ]	bold [bɔɬd]	milk [mɪɬk]
ball [bɔɬ]	film [fɪɬm]	mould [moʊɬd]
fall [fɔɬ]	field [fɪɬd]	silk [sɪɬk]
cold [kɔɬd]	fold [fɔɬd]	sold [soʊɬd]
goal [goʊɬ]	gold [gɔɬd]	sulk [sʌɬk]
hulk [hʌɬk]	called [kɔɬd]	waltz [wɔɬts]

It must be noted that certain languages do not have the dark-l sound. For example, Standard German has no dark-l, but has clear-l. In German, clear-l only exists in some regional varieties, like in Schmelz in the Saarland, or like Köln German. Most of German speakers use clear-l in place of dark-l while speaking in English.

1.13. Uvularization of Consonant Sounds

Uvula is the little soft flapping tissue hanging ball located in the back of the throat. Uvula is an object that dangles down near the throat. Located right behind the tongue, it is a small, soggy part at the back of the mouth, sagging down from the soft palate. So, being a part of the soft palate, it helps prevent food and liquid from going up our nose when we swallow. In fact, the uvula and the soft palate collectively move during swallowing act to shut off the nasopharynx to ensure that the ingested food doesn't accidentally enter the nasal cavity. It also produces saliva to keep the mouth hydrated. To facilitate human speech, it discharges saliva inside the mouth and creates an adequate slipperiness which is required for complex human speech.



Uvula is positioned between the base of the tongue and the pharynx. If you open your mouth wide, you can look at in a mirror. It is seen as a small, fleshy protrusion hanging down from the soft palate, seeming usually pale or pink in color. It is mostly covered moist tissue as a mucous membrane so as to keep the surface of the uvula moist and healthy. At the moment its precise functions for speech have not been determined with absolute certainty.

Figure 13. *Location of Uvula in the Mouth (Adapted from https://www.alamy.com/stock-photo/uvula.html?sortBy=relevant)*

A stated earlier, uvula is a place of articulation where the passive articulator is the uvula. The back-most part of the tongue is lifted up towards the uvula to restrict air flow to make the uvular sound. The back of the tongue (dorsum) is actually the only active agent. In many languages, uvularization is a type of secondary articulation of consonants or vowels. For example, Danish, Spanish (Andalusia region), French, Belgian French, Italian, Arabic languages, Kazakh, Georgian, and Quechua (in central Peru) have uvular sounds. In these languages, uvular consonants exist as stops, fricatives, nasals, trill, or approximants. Again, uvularization is made by the back of the tongue which is constricted toward the uvula and upper pharynx during the articulation of a sound. English doesn't have any uvular sounds, but French and German do. In fact, the great majority of the languages surveyed (80.9 %) have no uvular sounds (https://wals.info/chapter/6).

A uvular sound is articulated with a vibration of the uvula, or with the back of the tongue near or in contact with the uvula. In the mouth, a uvular sound is made further back than velar consonants as heard in some French or German words. As uvular consonants in the IPA chart, voiced uvular fricative [ʁ] and voiced uvular trill [ʀ] ([ʀuʒ]) in French, [q] in Arabic, and unvoiced uvular fricative [χ] in German are noted on the uvular consonants.

It must be noted that the uvula is partially regarded as a potentially dangerous organ, sitting in the very back of the tongue hanging down over the dorsum. If it's too big, it gives a feeling like there's a lump in your throat, and thus it may affect the breathing activity in speech. A longer or swollen uvula could cause problems for the activities of trachea. Even today, medical doctors argue that it causes serious snoring, chronic coughing, throat dryness, sleep apnea, heart problems, and sudden death. If the snoring wakes the person or other members of the family, your doctor might urge you to consider a type of surgery called *uvulectomy*. It's totally possible to live with a removed uvula. If the entire uvula is removed, the patient won't be able to produce the uvular sounds.

1.13.1. Voiceless Uvular Fricative: [χ]

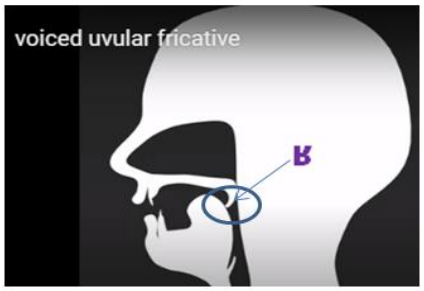
Uvular fricatives are produced further back in the vocal tract than velar fricatives. Uvular fricatives involve the vibration of the uvula, which is the fleshy extension at the back of the soft palate in the throat. To make this sound, the back of the tongue is lifted up to the uvula to create a narrow channel to force air through**.** In French, there exist multiple versions of the uvular consonant even though they are all represented by the same letter <r> In the IPA system, the symbol of voiceless uvular fricative is [χ], which is based on the shape of the Greek letter called "chi". The voiceless uvular fricative takes place in some dialects of German, Spanish, French, and colloquial Arabic. It is also encountered in some Dutch varieties and in standard Afrikaans.

1.13.2. Voiced Uvular Fricative: [ʁ]

The **voiced uvular fricative [ʁ]** is a consonant sound. The uvula, sitting at the entrance of the throat, also plays a role in human speech because it is one way or another essential to articulate uvular consonants. The voiced uvular fricative **[ʁ]** is highly prominent in certain languages such as Arabic, French, Hebrew, and German. It is articulated with the back (dorsum) and uvula while the pulmonic airflow goes out with the accompaniment of the vibrating vocal cords. The passive articulator is the uvula;

The articulator creates a narrow passage against the point of articulation when the airflow goes through the oral cavity; an audible frication like noise is created. For example, the words *extraire* (extract) is normally pronounced [ɛ**ks**.t**ʁɛʁ**]. Similarly, the word *ouverte* is heard as [u:vɛ**ʁ**tə], *fenêtre* as [fənɛːt**ʁ**ə] (window), and *Paris* [pa**ʁi**] as (Paris).

The[**ʁ**] sound is heard in Basque (a region in France, the westernmost of Pyrenees), Andorra, Catalonia (Spain), Danish German, Judaeo-Spanish, Norwegian, Occitan (an official language of Catalonia), Portuguese, Swedish, some variants of Low Saxon, Yiddish, Caspian (Caucasian), and most of Turkic languages, but not Turkish.

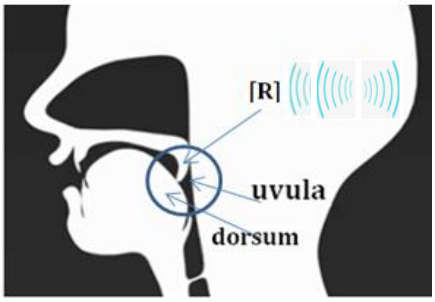


[ʁ] is formed with the back of the tongue (the dorsum) moving up to the uvula. The outgoing (pulmonic) constricted air turbulence flows through a narrow channel at the uvular place of articulation while vocal cords vibrate.
Examples: In French, *rester* [**ʁ**ɛste], *Paris* [pa**ʁ**i], *rouge* [**ʁ**u:ʒ], *rue* [**ʁ**ü:]

Figure 14. *The place of articulation for **[ʁ]** (Adapted https://www.youtube.com/shorts/u_jh-6TTKi4)*

1.13.3. The Uvular Trill: [ʀ]

The voiced uvular trill [ʀ] is common in modern French as the [r] sound. The voiced uvular sound, as in *très* [tʀɛ] in French, is a form of consonantal trill. In IPA its symbol is [ʀ], in written language, ⟨ʀ⟩ is a capital version of the Latin letter <R>. The uvular trill, [ʀ] is very rare among the world's languages. Yet French, German, and Dutch frequently use it.



[R] sound is produced at the back of the vocal tract while with uvula vibrates. Its manner of articulation is accepted as a trill. It is produced by directing air over an articulator by the creation of vibrations. Uvula and dorsum strike each other several times in quick succession in the articulation of this sound. The airstream moves through a narrow passage between the dorsum and uvula, and thus a turbulent friction is created by the uvula touching dorsum several times.

Figure 15. *The Place of Articulation for the [R] Sound (Adapted from https://www.youtube.com/shorts/KtwvxEwNjbo)*

Examples from French: (https://www.collinsdictionary.com/dictionary/french-english/)

Vocabulary	IPA Transcription	English Meaning
gratter	[g**ʀ**ate]	to scrape
rendez-vous	[ˈ**R**ɑ̃ndevʊ]	rendez-vous
maître	[mɛt**ʀ**]	master; teacher
préférer	[p**ʀ**efe**ʀ**e]	prefer
trouer	[t**ʀ**u]	hole”
répéter	[**ʀ**epete]	to repeat
requérir	[**ʀ**ək**ʀ**i**ʀ**]	to call for; to demand
quatre	[kat**ʀ**]	four

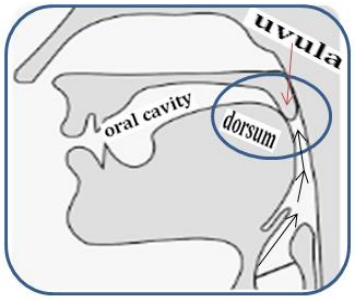
Here are more of the examples for the [ʀ] sound: German rot (red) [Ro:t], Dutch Root (red) [Ro:t], Arabic [ˈqʌmʌR] (moon), Italian raro (rare) [ˈʀäːʀɔ], and in Spanish perro (dog) [ˈpɐRɔ].

Additionally, regarding the pronunciation in multilingualism, the [R] Sound is frequently heard in French-speaking part of Belgium, most of Germany, Denmark, in certain parts of Portugal (particularly Azore Islands), the large parts of Netherlands, the southern parts of Sweden, Basque speaking areas of Spain, in northern areas of Italy, and southwestern parts of Norway. It is also frequent in Flanders (v), eastern Austria, Yiddish, and among all French and some German speakers in Switzerland. Outside the Europe, the uvular trill is used in some parts of Quebec in Canada. [R] is heard in various parts of Brazil, among minorities of other Portuguese-speaking regions, in parts of Puerto Rico Cuba, and Dominican Republic. English has no uvular sounds.

In conclusion, the voiced uvular trill is a rhotic sound. Since it does not do not exist in English, there is a large chance that many non-natives will misperceive it as a different rhotic sound because its manner of articulation is trill. Unlike the trills made by the tip of the, it is the uvula that vibrates, not the tongue. While back of the tongue (the dorsum) moves towards the uvula, outgoing airflow is bound for over the uvula to make the vibrations. If you touch the uvula, it could induce a strong sense gagging or vomiting. Additionally, if the uvula is removed, it creates changes in the voice. For example, the speakers with removed uvula gain a more high-pitched or nasalized sounding speech after the surgery. These speakers won't naturally be able to speak using uvular consonants.

1.13.4. A Voiceless Uvular Stop: [q]

[q] is a voiceless uvular stop. Uvular sounds are consonants made with the tongue dorsum against or near the uvula, staying in a gap between the tongue and the uvula. Even though the produced sound is uvular, the tongue is actually the active articulator. The outgoing airflow is entirely blocked in the throat. During its articulation, there must be a strong control over the muscles on dorsum so that the tongue can be at the position where it needs to be to produce the [q].



The symbol of the IPA to represents this sound is [q]. Its place of articulation is uvular, which means it is articulated with the tongue dorsum while trying to touch the uvula. The back of the tongue makes contact on uvula, but not on the soft palate. It is produced without vibrations of the vocal cords. If you listen to recordings or examples of native speakers producing the uvular sound, it can help you get a sense of this sound.

Figure 16. *The Place of Articulation for the [q] Sound*

(Adaptedfromhttps://ecampusontario.pressbooks.pub/essentialsoflinguistics2/chapter/3-3-describing-consonants-place-and-phonation/)

Examples: The following examples from Arabic are given with their transliteration: (Adapted from https://arabic.fi/letters/66)

Arabic	***Meaning***	***Arabic***	**Meaning**
shawq [ˈʃa:w**q**]	longing	dhawq [ˈzew**q**]	taste
qalak [ˈ**q**ala**q**]	worry	raqm [ˈra**q**am]	number; record
waqt [ˈwa**q**t]	time	ʒaqt [ˈa:**q**ɪt]	agreement; contract
ʒaqt [ˈa:**q**il]	mind	ʒishıq [eiʃ**q**]	passion
tabaq [ˈdaba**q**]	plate	quTn [ˈ**q**ɔtən]	cotton

Furthermore, the voiceless velar stop [k] is heard with uvular conterparts in many regions of

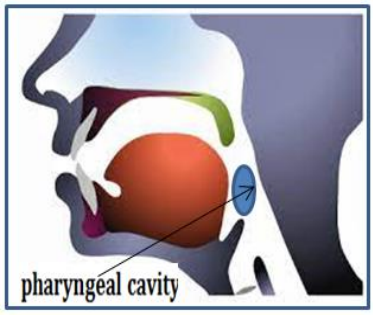
Anatolia. Here are some examples: (The transcriptions given below belongs to the researcher)

"Velar /k/	Uvular /**q**/	Velar /k/	Uvular /**q**/
kız [kɯz] (girl)	kız [**q**ɯz] (girl)	kapı [kʌpɯ] (door)	kapı [**q**ʌpɯ] (door)
çok [tʃɔk] (plenty)	çok [tʃɔ**q**] (plenty)	bak- [bʌk](to look)	bak-[bʌ**q**] (to look)
ak [ʌk] (white)	ak [ʌ**q**] (white)	yok [jɔk] (absent)	yok [jɔ**q**] (absent)
tak [tʌk] (to put on)	tak [tʌq] (to put on)	yak [jʌk] (burn)	yak [jʌ**q**] (burn)"

In conclusion, uvular sounds are consonants articulated with the tongue dorsum against or near the uvula, which is located directly below the velum. Uvular sounds are all rhotic sounds. Since the uvular consonants do not exist in English, there is a large chance that many non-natives will misperceive and articulate it as a different rhotic sound. As mentioned before, "The great majority of the languages surveyed (80.9%) have no uvulars" (https://wals.info/chapter/6).

1.14. Pharyngealization as a Secondary Articulation

Pharyngealization is a secondary articulation related with consonants or vowels. In the production of the pharyngeal sounds, pharynx or epiglottis is contracted during the articulation of the sound. Arabic, German, Spanish, and French use the pharyngeal cavity to a great extent. A [ˢ] symbol is placed to the right top of the sound to show that it is a pharyngealized sound. In Arabic, the activity of retracting of the root of the tongue while making another articulation is called pharyngealization. Pharyngealization occurs extensively in what are called emphatic consonants in Arabic languages.



A pharyngeal consonant is a consonant sound articulated primarily in the pharynx. A pharyngeal consonant is a sound that is produced by a strong pharyngeal constriction in the pharynx. Pharyngealization comes into being when the root of the tongue or the epiglottis is constricted and raised to create a narrow passage with the pharyngeal wall while producing a consonant or a vowel. Pharyngealization is particularly associated with Semitic languages, which are rich in uvular and pharyngeal sounds.

Figure 17. *The Pharyngeal Cavity*
(Adapted from https://calleteach.wordpress.com/tag/places-of-articulation/)

"The pharynx is the cavity behind the tongue root and just above the Larynx" (Ogen, 2009, p. 84). In the IPA sound system, pharyngealized sounds are indicated with the addition of a diacritic superscript of the shape of an inverted question mark [ˤ] attached to the left top of the sound. Turkish tends to depharyngealize the borrowed words from Arabic in Ottoman Turkish, as seen in the following words:

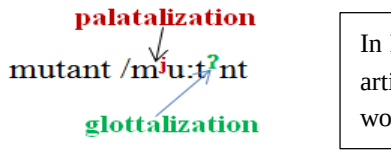
Examples from Arabic and Turkish:

Arabic	Glossary	Turkish
/ˤadāla/	justice	/adālet/ (adalet)
/ˤāʾila/	family	/ai:le/ (aile)
/saˤbr/	patience	/sabɯr/ (sabır)
/daˤrbah/	stroke	/darbe/ (darbe)
/mahsˤu:l/	crops	/mahsul/ (mahsul)
/ˤajība/	whether	/adʒaba/ (acaba)
/ˤajala/	quick	/adʒele/ (acele)
/ˤājiz/	incapable	/ādʒız/ (aciz)

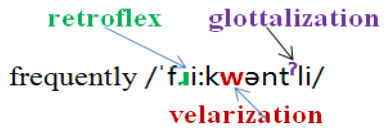
(https://en.wiktionary.org/wiki/Turkish)

1.15. Multiple Articulations in the Pronunciation of Multilinguals

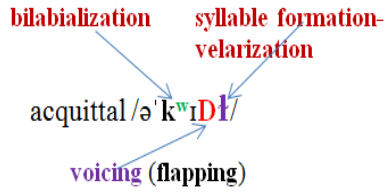
In the pronunciation activities of multilinguals, the points, places, and manners of articulations move collectively as seen in the sound changes given below from nasal cavity down to laryngeal cavity, and shift back and forth by the struggles of active and passive articulators to achieve the pronunciation event, which is full of impediments and hardships for the multilinguals in transitions from one speech cavity to another. Here are some examples on multiple articulations:



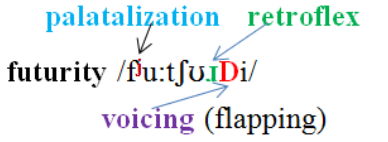
In NAE, in the word *mutant* the [m] sound is palatalized into [mʲ] as a secondary articulation while [t] gains a glottal feature like [tˀ] at the same time in the same word.



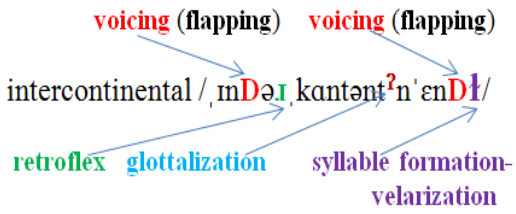
In NAE, while [r] undergoes retroflexion, [k] gets the [kʷ] feature and becomes bilabialized into [kʷ] while [t] gets into [tˀ] an additional glottalization in the next syllable inNAE.



[k] gets the [kʷ] feature and becomes bilabialized into [kʷ] while [t] gains a flapping feature. The [l], after the drop of the schwa sound ([ə]), gains a velarized feature along with a consonantal syllabic nature.



[f] is palatalized into [fʲ] by the long [u] sound, and simultaneously [r] undergoes retroflexion while [t] changes to [D] via voicing (flapping).

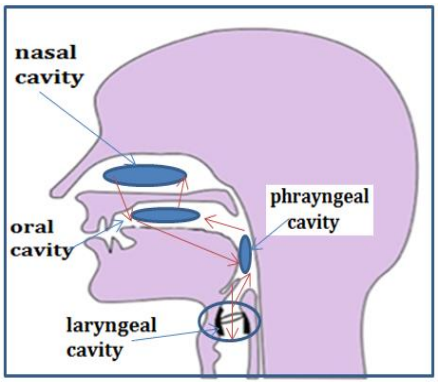


While two flapping incidents take place, [t] gains a glottal feature like [t²]. Since there is a primary stress on the syllable before the last one, it triggers the schwa drop which paves the way for the formation the word-final velar dark-l.

In must be noted that different languages use different cavities in speech production, and these differences in sound are the result of different manners of articulation which is the way they are pronounced. Indo-European languages, like many others, heavily utilize the oral cavity for speech production due to the nature of human vocal anatomy and the mechanics of sound production. The use of the oral cavity in Indo-European languages reflects both the physiological constraints of human speech production and the intricate linguistic systems that have evolved within these language families. In addition, Semitic languages, such as Arabic and Hebrew, are known for their utilization of laryngeal and pharyngeal articulations to a significant extent. The extensive use of laryngeal and pharyngeal articulations in Semitic languages reflects their dependency on environmental and climactic positions along with their linguistic evolution and cultural heritage.

Overall, there is an ecological rubric of multilingualism (Maher, 2017). Therefore, it cannot be denied that geographical location and setting of languages play a significant role in shaping the creation and development of languages. The environment interacts with various social, cultural, and historical factors to shape the creation, evolution, and diversity of languages around the world. Also, the direct impact of climate on the creation of languages might be as pronounced as other environmental factor like geography or cultural practices; it therefore still plays a role in shaping linguistic diversity in several indirect ways. So, climate influences human behavior, social organization, and cultural practices, all of which contribute to the creation and evolution of languages.

Multilinguals have to move instantly from one speech cavity to another accompanied by the impacts of primary, secondary, and coarticulation forces of L_1, L2, L_3, or L_4. All of these traits collectively force them to speak within multiple articulation and pronunciation, inevitably driving them into pronunciation fossilizations. Figure 17 below exhibits how they have to simultaneously move from one speech cavity to another in their articulations.



While English language uses the oral cavity to a great extent, French uses the nasal cavity. As opposed to them, Semitic languages (i.e, Arabic languages) utilize the pharyngeal and laryngeal cavities. Serious articulation problems arise especially in co-articulations, secondary articulation, and in multiple articulations. It happens to very difficult for the multilinguals to jump from one cavity of speech to another one, which necessitates further muscle control and efficiency, requiring approximately the coordination of 100 muscles.

Figure 18. *The Cavities of Pronunciation for the Multilinguals of Indo-European and Semitic Languages*

In brief, shifting points, places, and manners of articulation between languages in different language families, such as Indo-European and Semitic languages, is really a challenging issue. Different languages utilize distinct sets of articulatory movements in their cavities to produce their sounds, and mastering these movements often requires muscle control and coordination. This is all to say that articulation mistakes are unavoidable for each and every of words that structurally inherit the multiple articulatory features. Multilinguals of these two language families cannot effectively

navigate the challenges of shifting points, places, and manners of articulation from one cavity to another due to physiological and muscle-related factors of articulation. Additionally, muscle memory plays a significant role in pronunciation and language acquisition. As multilinguals practice producing sounds in different languages, their articulatory muscles gradually adapt to the required movements. Over time, this muscle memory helps facilitate smoother transitions between languages.

That is why multiple articulations are touchstones for the segmental efficacy of the articulation of problem-posing sounds in the pronunciation of multilinguals along with the factors like age of acquisition for L1 (De Angelis, 2011), L2, L3 (Huang, Steinkrauss, & Verspoor, 2020), or L4 exposure (Dewaele, 2021), individual aptitude, and so on. So, while pronunciation **fossilization** (Dolan, 2020; Han,2009; Brown, 2007; Selinker & Lamendella, 1979) may present a challenge for multilinguals, it's not an undefeatable fate. Since there is a principle of lifelong learning, continuous learning and practice can lead to ongoing betterment in the fossilized pronunciation skills of multilinguals.

3. Conclusion

Multilingualism is a controversial issue because "It is an outstandingly complex area, treated by a host of related disciplines such as linguistics and applied linguistics, pedagogy, education, Second Language Acquisition (SLA), Third Language Acquisition (TLA) and also psychology, sociology, complexity and globalization studies (Aronin & Hornsby, 2018, p. 1-21; Aronin, 2012, p. 179). The beginning of the 21st century launched the onset of globalization, which led to the exchange of ideas in different languages, commerce, international relations, marketing, business relations, tourism, and cultures. As a result, the demand for multilingual people called polyglots has increased, which has brought up the essentiality for individuals to be proficient in more than one language. That is why, "Today multilingualism is recognized as one of the most essential social practices in the world and its significance has spilled over from local and private domains and has gained a much broader, global importance" (Aronin & Hornsby, 2018, p. 1-21**;** Aronin, 2012, p. 179).

Needless to say, foreign language learning is both a complex and challenging task that forces learners to develop mastery in multiple domains of different languages. Therefore, mastering multiple languages is not without its challenges in relation to multiple articulations. It is possible to have more than one constriction gesture during the articulation in terms of pronunciation by narrowing the vocal tract within two or more places at the same time. But this a very difficult articulation manner for mutilinguals while switching from one language to another simultaneously. Therefore, speaking multiple languages can be mentally challenging because multilinguals have to struggle to balance different languages so as to maintain accuracy, intelligibility, and fluency. Hence, speaking requires coordinated movement of the articulators surfing with 100 muscles in four cavities to achieve a desired status for multiple articulations.

A vivid language use accompanied by correct articulation and pronunciation helps the interlocutors create strong, distinct, clear, and memorable mental images in their minds. A correctly sounding language usage in multilingual speech aids the listeners truly understand and imagine what a speaker is saying. Multilingualism is actually the simultaneous possessing of the efficient practice of two or more languages that require the ability to make use of them in communication. Articulation types like **double articulation, secondary articulation, coarticulation,** and **multiple articulations, which are also promoters of labialization, biliabalization, labio-velarization, inter-dentalization, palatalization, rhotacization**, **uvularization, pharyngealization, and** laryngealization, inevitably create not only a faulty pronunciation but also an accent problem in the pronunciation and intonation of multilinguals.

Accent variation among multilinguals may be viewed as a fascinating aspect of language acquisition. It reflects the unique journey each individual takes in learning multiple languages. While some may view accent differences as a barrier, they are also viewed as a striking expression of cultural diversity and linguistic versatility. The importance of linguistic versatility can be supported by the fact that "Multilingualism investigates neurological, intellectual abilities

and skills, cognitive and emotional processes of multilingual individuals, as well as social, political, cultural processes and outcomes and demographic trends" (Aronin & Hornsby, 2018, p. 1-2; Aronin, 2012, p. 179).

Embracing one's accent, whether it **is** influenced by their native tongue or the languages they have learned, can enhance communication and foster understanding among diverse communities. However, it is essential to recognize that accent discrimination exists in some contexts, which can impact individuals' confidence and opportunities. Encouraging acceptance and appreciation of accent diversity can help create a more inclusive linguistic environment. It is also beneficial for academic multilinguals to actively work on improving their pronunciation through practice, feedback, and potentially seeking out resources such as pronunciation courses or speech coaches. For academic multilinguals, the accent challenges faced by them can be particularly nuanced. In academic settings, clear communication is crucial for conveying complex ideas and research findings. However, accents influenced by one's native language or L2 or L3 languages learned may sometimes lead to misunderstandings, highly serious difficulties, or irreparable troubles in comprehension, especially if listeners are not accustomed to diverse accents. Yet in must be noted that embracing linguistic diversity enriches academic discourse and fosters a more inclusive and equitable academic environment.

Furthermore, the pronunciation and accent challenges faced by academic translation and interpreting multilinguals are multifaceted. In this field, clear and accurate communication is paramount, as mistranslations or misinterpretations can have significant consequences. Accents can sometimes affect the clarity and precision of translations or interpretations, potentially leading to misunderstandings, particularly in specialized academic contexts. There are many highly skilled translators and interpreters who have accents influenced by their native language or other languages learned, and their expertise lies in their ability to accurately convey meaning across languages.

Multilingual communicative competence, which is a skill called *polyglotism* that requires to become a human google translator as well, is ability to use different languages appropriately, effectively, and strategically for communication along with multilingual-based truthful pronunciation. Multilingual pronunciation competence, therefore, is a type of strategic communicative competence, which happens to create pronunciation trauma for academic multilinguals in their psychology. That is why **multilingual strategic pronunciation competence** has been functioning as the soft spot of academic multilinguals.

All in all, multiple articulations housing coarticulation, double articulation, and secondary articulation, pose challenges for multilinguals in achieving native-like pronunciation in their pronunciation and intonation. It is as if multiple articulations are speech traps for them, exposing their efficiency in their speech. Professionally speaking, it is better for professional multilinguals to work to minimize the impact of multiple articulations on their speech clarity and communication effectiveness. As mentioned earlier, multiple articulations can pose challenges, particularly when attempting to achieve native-like, even near native-like pronunciation efficiency in a second or third foreign language. Multilinguals may find it difficult to switch between different articulatory patterns in the four speech cavities (as shown in figure 20) leading to accent interference or non-native pronunciation features which are accompanied with irreparable pronunciation fossilization. This will potentially affect their intelligibility and how they are perceived by native speakers of the language. With practice, awareness, willingness, and targeted instruction, multilinguals can mitigate the challenges in their pronunciation and intonation which are associated with multiple articulations and enhance their overall communication skills in multiple languages.

4. Pedagogical Implications

In must be noted that when multilingual persons start to talk, the languages they speak can be active at the same time, even if only one of them gets used. Therefore, since the monolingual mindset does not work, switching between languages will definitely bring up articulation hardships in the utterance that possess multiple places, points, and manners of articulation. Therefore, in terms of maintaining proficiency in pronunciation and intonation, multiple articulations will always remain challenging for the multilinguals. In this respect, along with multilingual pedagogical

approach, multimodal approach is one of the best approaches that can be recommended to empower the foreign language speaking style that's specifically designed for people who can speak multiple languages. In this way, regarding their efforts in managing the multiple articulations, multilingual learners can adjust their creative speaking skills by reducing their mispronunciations to acquire and reflect new knowledge with fewer sophisticated words through more contextual and inclusive language within less pronunciation and intonation errors. The problem-posing pronunciation difficulties covering multiple articulations in the speech of multilinguals, the application of these two approaches can lead to more effective and practical listening and speaking outcomes for multilingual students who suffer from the psychological pressures related to the hardships in the production of multiple articulations in words, phrases, clauses, sentences, and so on. Apparently, applications of multilingual pedagogical approach and multimodal approach will serve to promote the multilingual communicative, discourse, strategic, and cross-cultural competences of the multilinguals, leading them to perform better academically.

References

Aronin, L. (2012). Material culture of multilingualism and affectivity. *Studies in Second Language Learning and Teaching*, *2*(2), 179-191.

Aronin, L. and Hornsby, M. (2018). Introduction: The realm of the material culture of multilingualism. In **L.** Aronin, M. Hornsby **&** G. Kiliańska-Przybyło (eds), *The Material Culture of Multiculturalism* **(**Eds), (pp. 1-21). The Springer.

Baker, A. (2006). *Ship or sheep: An intermediate pronunciation course*. Cambridge: Cambridge University Press.

Borden, J. G. & Harris, K .S. *Speech science primer: physiology, acoustics, and perception of speech*. London: Williams & Wilkins.

Brown, H.D. (2007). *Principles of language learning and teaching.* 5th Edition. White Plains: NY, Pearson-Education.

Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition: A review. *International Journal of Bilingualism*, *7*(1), 71-87.

Cenoz J. (2013). The influence of bilingualism on third language acquisition: Focus on multilingualism. *Language Teaching*, *46*(1), 71-86. https://doi:10.1017/S0261444811000218

De Angelis, G. (2011). Teachers' beliefs about the role of prior language knowledge in learning and how these influence teaching practices. *International Journal of Multilingualism*, *8*(3), 216-234.

Demirezen, M. (2016). Assimilation as a co-articulation producer in words and pronunciation problems for Turkish English teachers. *Educational Sciences: Theory & Practice,* 16, 477-509.

Dewaele, Jean-Marc. (2021). Multilingualism and trait emotional intelligence: an exploratory investigation. *International Journal of Multilingualism 18* (3), 337-351. ISSN 1479-0718.

Dolan, K. (2020). How to correct fossilized pronunciation errors of English language learners. Master's Projects and Capstones. 992. https://repository.usfca.edu/capstone/992

Fowler, C.A. (1980). Coarticulation and theories of extrinsic timing. *Journal of Phonetics*, 8, 113-133.

Göncz, L. (2012). *The psychology of multilingualism*: *Concepts, theories and application.* Cambridge Scholars Publishing.

Han, Z. (2009). Interlanguage and fossilization: Towards an analytic model. In Cook, V. & Wei, L. (eds.), *Contemporary Applied Linguistics Volume 1: Volume One Language Teaching and Learning*. London: Continuum, 137-162.

Hardcastle, W. J. (1985). Some phonetic and syntactic constraints on lingual coarticulation. *Speech Communication*, 4, 247–263

Hardcastle, W. & Hewlett, N. (2006). *Coarticulation: Theory, data, and techniques*. Cambridge University Press.

Huang, T., Steinkrauss, R. & Verspoor, M. (2020). Learning an L2 and L3 at the same time: help or hinder? *International Journal of Multilingualism*, *19*(4), 566–582. https://doi.org/10.1080/14790718.2020.1779726

Ladefoged, P. (1993). *A course in phonetics* (3rd edition). Harcourt Brace Jovanovich College Publishers.

Ladefoged, P. & Maddieson, I. (1996). *The sounds of the world's languages.* Blackwell Publishers.

Ladd, D. R. (2012). What is duality of patterning, anyway? *Language and Cognition 4(4),* 261–273.

Lawrence, W. (1965). Parametric phonetics. *Journal of Acoustical Society of America.* 37, 1186.

Liu, Q., Kawamoto, A. H., Payne, K. K., & Dorsey, G. N. (2018). Anticipatory coarticulation and the minimal planning unit of speech. *Journal of Experimental Psychology: Human Perception and Performance*, *44*(1), 139-153. https://doi.org/10.1037/xhp0000443

Longman Dictionary of American English 5th Edition. (2008). Pearson. *Longman Dictionary of Contemporary English Edition*. (2008). Longman: Pearson, Harlow.

Ogden, R. (2009). *An Introduction to English phonetics*. Edinburg: Edinburgh University Press Ltd.

Maher, J. C. (2017). *Multilingualism: A very short introduction*. Oxford: Oxford University Press.

Nevalainen, T. & Traugott, E. (Eds.) (2012). *The Oxford Handbook of the History of English*. (Oxford Handbooks in Linguistics). Oxford University Press.

Perkell, J.S. & Chiang, C., (1986). Preliminary support for a 'hybrid model' of anticipatory coarticulation. *Proceedings of the 12th International Congress of Acoustics* (pp. A3–A6).

Roach, P. (2009). *English Phonetics and phonology: A practical course*. Cambridge: Cambridge University Press.

Selinker, L. & Lamendella J. T. (1979). The role of extrinsic feedback in interlanguage fossilization: A discussion of rule fossilization: A tentative model. *Language Learning 29*(2), 363-75.

Tench, W. P. (1978). On introducing parametric phonetics. *Journal of the International Phonetic Association*, *8*, 34-46.

The Oxford Handbook of the History of English, edited by Terttu Nevalainen, Elizabeth Closs

Trask, R. L. (1999). *Language: The basics*. Routledge.

Upton, C. (2012). Modern regional English in the British Isles. In Mugglestone, Lynda (ed.).

Weijer, J. V. D. (2011). Secondary and double articulation. In Marc van Oostendorp, Colin J. Ewen, Elizabeth Hume and Keren Rice (eds.). *The Blackwell Companion to Phonology*, 694-710. London: Wiley-Blackwell.

Wells, John C. (1982). *Accents of English*. Vol. 2. Cambridge: Cambridge University Press.

Web Sites

https://www.azlifa.com/pp-tute-2-answers/
https://www.ldoceonline.com/dictionary/brawl
https://www.researchgate.net/publication/272885316-The-Teaching-of-th- and-d-Sounds-in-English
https://www.daytranslations.com/blog/linguists-predict-loss-th-sound-2066/#:~:text
https://quizlet.com/867875431/l1-place-of-articulation-flash-cards/
https://mmcmodinagar.ac.in/bridge-library/pdf/english/MA-III-Sem-G-3012-Dr-Bulbul-Gupta-15-07-2020-consonants_place-of-articulation.pdf
https://quizlet.com/au/282724461/place-of-articulation-with-diagrams-flash-cards/
https://englishlikeanative.co.uk/blog/the-5-hardest-sounds-in-english-pronunciation/
https://www.alamy.com/stock-photo/uvula.html?sortBy=relevant
https://wals.info/chapter/6
https://www.youtube.com/shorts/u_jh-6TTKi4
https://www.youtube.com/shorts/KtwvxEwNjbo https://www.collinsdictionary.com/dictionary/french-english/)
https://ecampusontario.pressbooks.pub/essentialsoflinguistics2/chapter/3-3-describing-consonants-place-and-phonation/
https://arabic.fi/letters/66
https://calleteach.wordpress.com/tag/places-of-articulation/ https://en.wiktionary.org/wiki/Turkish
https://www.youtube.com/watch?v=0plhoJ16xj0