Flute Articulation Pedagogy: The Effect of Language-Specific Consonant Pronunciation on a Flutist’s Articulation within the French and English Languages.

D.M.A. DOCUMENT

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Abstract

The major linguistic differences between the various stop-burst consonants found within the vast multitude of languages of the world have an extensive impact on the articulation employed by the modern flutist. French and English alone have contradictory linguistic features that may largely impact articulation on the instrument. It has been shown that these syllables are produced by fast changes in the vocal tract muscles and movements of the tongue, lips and jaws and thus may have an impact on the way flutists of both the French and English languages have learned and applied their articulative practices. Additionally, the amassing of treatises and tutor literature in both languages over the past four centuries has documented the changes in teaching of mnemonics to aid the articulation of students. Since there is a difference in the way that a student pronounces the syllables that are found within the innumerable trove of pedagogical flute literature, it is speculated that the execution of those syllables may also be impacted. Therefore, the concept of teaching multiple styles of stop-burst consonants in various languages may have a profound impact on the ability and flexibility of the modern flute player’s articulation. This document investigates the validity of this question by exploring the limited research that has been conducted in this
specific field of flute playing, specifically Linda Lamkin’s work. Additionally, specific mnemonic references used to aid a flutist’s articulation within the oeuvre of pedagogical flute materials dating back to Hotteterre’s treatise are annotated and catalogued. Finally, parallel vowel anticipation in tandem with common stop-burst consonants in the French and English languages that are commonly found in the flute literature (such as /p/, /b/, /t/, /d/, /k/ and /g/) are compared and contrasted with spoken syllable production through basic spectral analysis with Audacity 1.3.12 (Unicode) software. This experiment was conducted in Dijon, France, in March 2012 and simply serves as a basic foundation for the application of language-based articulation pedagogy for flutists. Previous research in this subject was confirmed in that there was a correlation between spoken syllable and articulation on the flute. Furthermore, the application of foreign language in articulation pedagogy for non-native speakers was found to impact the participants’ articulative production. Appropriate federal government permission protocol for use of human subjects was applied for and granted by the Ohio State University Institutional Review Board.
This document is dedicated to my incredible husband, Michael. You are and always will be an inspiration to me, both in music and in life. Thank you for being my best friend.
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Chapter 1: Introduction

“Around the fountains of which I have spoken, the first discourses were the first songs; the periodic and unmeasured recurrences of rhythm, the melodious inflections of accents caused poetry and music to be born along with language…”¹

-From his chapter entitled, “The First Voices” in Essay on the Origins of Languages, Jean-Jacques Rousseau

Development of rudimentary language in our history as a species has always been of interest to historians, philosophers and anthropologists alike. How did we begin to ascribe meaning to bursts of sounds that emanated from our vocal folds? And in what way was language intrinsically linked to the development of music in society? Jean-Jacques Rousseau (1712-1778), a Swiss philosopher and composer, writes that communal life sprang up around water sources that were common to a geographic area. Around these allegorical “fountains”, he asserts that language

and music developed simultaneously out of the inhabitants’ previous gestural language through reiteration of rhythm and inflection.

At its roots, language could be directly tied to music. With one system developing alongside the other in history, it is not too much to consider that speech is directly echoed within the oeuvre of music composition and performance. In this sense, the connection between spoken words and notes within a piece is noticeable. As Nancy Toff, a noted flute historian, writes, “The intellectual process [of making music], too, is similar, whether it forms verbal syllables into words, phrases, and sentences or joins musical notes into phrases, periods, and movements.” Simply, humans may understand and respond to music because it is a natural progression of language. For this reason, there may be implications to the fact that language and music are bound together.

To many flutists, this concept is a welcome and intrinsic part of teaching methodology. Since tone on the flute is produced by a generally uninhibited stream of air that emanates from the mouth and encounters no mouthpiece or reed structure to foster air resistance, tone production on the flute is extremely sensitive to lip, tongue and teeth structure as well as minute changes in the oral cavity, tongue and throat. John Krell, a longtime piccolo player with the Philadelphia Orchestra and past teacher at the Curtis Institute, quotes his teacher, William Toff, Nancy. *The Flute Book.* 1985. Second Edition. New York: Oxford University Press, 1996., Pg. 116.
Kincaid, “There are various types of articulation that can be produced on the flute, arguably more varied than many other wind instruments because of the lack of air resistance on the flute….The diaphragm, in combination with the tongue and the air stream shaped by the lips, is capable of an infinite variety of meaningful impulses, much of it done with the same imagination that is intuitively used in the inflections of speech.”

This lack of air resistance is unique to the flute within the family of wind instruments and implies that a wide array of physical elements can influence tone production on the flute specifically. From this ability, we can devise the origins of many extended techniques available to the modern flutist, including (but not limited to) singing into the instrument while playing or speaking syllables and words into the instrument as the flutist also plays a tune.

The connection between speech and the flute specifically begs the question: can speech be used to directly influence performance on the flute? This query has been at the forefront of pedagogy for flutists dating all the way back to the first published flute treatise, written by Jacques-Martin Hotteterre in 1707. Specifically, the process of articulating on the flute has garnered the most interest in combination with language implications. Articulation is described in the Oxford Music Online as, “A term denoting the degree to which each of a succession of notes is separated in performance; it may lie at either of the extremes of staccato and legato, or anywhere between the two. Articulation may be expressive or

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structural; if the latter, it is analogous to the use of punctuation in language. The shaping of phrases is largely dependent on articulation, particularly on keyboard instruments, where finely controlled attack and decay on individual notes is prescribed. The composer's intentions may be notated as dots, dashes, accents, and slurs. Articulation marks were rare in the Baroque period and earlier, when composers expected a knowledge of current practices to inform the performer's approach to articulation. On the flute, articulation is created by imposing the tongue onto the air stream in a variety of ways. As John Krell so aptly described it, “Articulation is precisely what the word implies: an attempt to make clear what the composer intends in the way of articulate communication. Use the same care and introspection that an actor would take in bringing to life a soliloquy of Hamlet.”

Articulation has been taught to flutists over the centuries through a process of mnemonics. This methodology, dating back to Hotteterre will be explored, documented and catalogued later in this document. (See Chapter 3.) Dr. David Hughes, Professor at the University of London with studies in music and ethnomusicology, carefully explains the concept of mnemonics and solmization systems for teaching.

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5 Krell, Pg. 22.
Dr. Hughes writes, “…there are syllabic systems that transmit information other than or in addition to intervals, such as duration, loudness, resonance, timbre, attack and decay; most of these similarly use vowels and consonants in non-arbitrary ways. Since the latter are not, strictly speaking, solmization systems, a broader term is needed to embrace all systems where there is a close and highly regular connection between sonic aspects of mnemonic syllables and of the corresponding musical phenomena.”

Hughes relates the sounds that are produced in music as analogous to spoken syllables. In his own brand of nomenclature, he calls these sounds “acoustic-iconic mnemonic systems.” The title, “reflects the fact that certain phonetic features of the syllables—both vowels and consonants—are in an iconic relation to the musical sounds they represent, that is, they mimic or resemble them clearly acoustically, as onomatopoeic words imitate sounds.”

These “acoustic-iconic mnemonic systems” are the basis for a proposed application of language to flute playing. Flute players do not experience the mechanism of air-resistance the way a trumpeter or saxophonist might, for example, when encountering the mouthpiece. A flutist blows directly across the lip plate on the instrument and uses only a percentage of the air he or she puts out. This flexibility in shaping allows the flute player to shape syllables into the flute and change the product of sound. Hughes indicates that such sounds could be nonsense syllables

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7 Ibid.
8 Hughes, Pgs. 45-6.
but they will make sense once the underlying logic to the principle is understood. In this way, pedagogues can elicit changes in playing by employing different “acoustic-iconic mnemonic systems”.

Hughes’ aim is to demonstrate that the universal perceptions of sound and shape transcend any language and that they can be used practically as a teaching method for music. In his estimation, “the basic logic underlying acoustic-iconic mnemonic systems allows them to function successfully and with impressive consistency even though the users are generally unaware of the full details of the logic.”\(^9\) Simply put, the use of syllables in teaching music works for any student because he or she subliminally responds to speaking sound.

A flute teacher will most likely respond favorably to this concept; as pedagogues, we often have students sing out rhythms or speak through a set of articulation exercises to learn how to employ a student’s tongue while he or she passes air through the aperture.

Hughes discusses his experience with learning the Japanese noh flute. His teacher taught him for many weeks without Hughes ever picking up the instrument. Instead, Hughes learned to sing a piece from memory through a mnemonic system of nonsense syllables called shōga (kuchi-shōga). Hughes explains that shōga is

\(^9\) Hughes, Pg. 46.
valuable because “on one level it could be merely that singing the melody in advance, with much of its ornamental detail, implants firmly in your mind. But then, why not just sing “la la la” (or “ra ra ra”)? It is clearly because the acoustic-iconic nature of the vowels and consonants adds an important dimension to the memorization process, one that…seems to translate easily into direct performance action on the instrument.”\(^{10}\)

Since Hughes is not a professional flute player and because his research was language-specific, he does not delve into why the mnemonic system directly affected his performance on the flute, namely the effect of the air-reed and the lack of air-resistance. However, he does get into the specific effects of mnemonic devices on his flute playing.

“For wind instruments, initial consonants generally mimic the attack or onset of a pitch. …the lack of a consonant before the opening [o] indicates a relatively smooth onset rather than an abrupt tongued attack...the [t] may not mimic the attack with precision, but it does mark a cutting of the air stream that distinguishes this note’s attack from those of the subsequent notes of the phrase.”\(^{11}\) Hughes discusses that sound on the wind instruments is generally started by a consonant. This is true for the flute as well. “Looking at other cultures as well [besides for Japanese culture], we find that ‘stop’ consonants such as [p, t, k, b, d, g] generally mark the sharp

\(^{10}\) Hughes, Pg. 48.
\(^{11}\) Hughes, Pg. 49.
attack of a plucked string or struck membranophone or idiophone.”12 In this way, these “stop consonants” are used to teach and produce sounds on many instruments.

Summarizing briefly, the mnemonics that can be used to demarcate the starting articulation on the flute are fundamental and subliminal to most people since they derive directly from language. Even outside of one’s own home language, learning sounds that may relate to another language can be taught because those sounds are universal and intrinsic to all who speak. This is the basis of articulation pedagogy for the modern flute player.

In 1965, Pierre Delattre served as the Director of the Research Laboratory of Experimental Phonetics at the University of California at Santa Barbara. Through a contract with the United States Office of Education, Department of Health, Education and Welfare, he published an interim report on the comparison of the prosodic, vocalic and consonantal features of English, German, Spanish and French. Prosodic analysis of language deals with the flow, emphasis and weight on certain syllables within speech patterns that give a language its own particular cadence. The vocalic features of a language deal with the use of vowels, while the consonantal features center upon consonants. Of particular note for this research

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12 Hughes, Pg. 49.
are the differences and similarities between the consonants of the English and French languages.

As a general comment, Delattre notes that “a consonant is not satisfactorily described by one articulatory position…for a consonant is not a stationary position; it is a movement.” Major contributions to the science of linguistics in the 1950’s have shown that consonants, unlike vowels, are perceived by fast changes in the vocal tract muscles, which, in turn, reflect in the movements of the tongue, lips and jaws. In this sense, the mouth and its contributing muscles and parts produce consonants in a quick motion that cannot be easily described.

There are two types of consonant articulation that he discusses; “friction” consonants produce noises such as /sa/ and /fa/ and “explosion” or “burst” consonants produce noises such as /ba/ and /da/.

Additionally, the consonants that are the sharpest and fastest to the human ear are the “stop-burst” consonants, which are /p/, /b/, /t/, /d/, /k/ and /g/. Articulation on the flute is primarily limited to stop-burst consonants and will be the main focus of this research.

These stop-burst consonants are all produced in different portions of the mouth. “Labial” consonants utilize the lips and include /p/ and /b/. “Dento-alveolar”

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14 Ibid.
15 Ibid.
16 Delattre, Pg. 81.
consonants, like /t/ and /d/, are produced with the tip of the tongue behind the front teeth. “Palato-velar” consonants are produced further back in the throat such as /k/ and /g/. Further investigation reveals that these points of consonant creation are generally the same for speakers of French and English but may vary in tongue position.\textsuperscript{17} It can be generally asserted that the stop-burst consonants in question for this research are produced in much the same physical way for English-speakers and French-speakers.

However, there is reason to believe that the addition of the same vowels in English and French create differences in the stop-burst production. Delattre writes that, “There are marked differences among languages in the degree of anticipation of the articulatory position of a subsequent vowel during articulation of a consonant.”\textsuperscript{18} What sounds like the same pronunciation of a stop-burst consonant in English and French are actually formulated in slightly different ways by speakers of both languages. He includes a comparison of vowel anticipation between the American English “do” and the French “doux” and finds that the degree of lip protrusion and rounding in preparation for the vowel at the point of tongue contact with the teeth or alveols are different between the two languages. The lips are much more protruded in French and therefore, the anticipation is thought to be more pronounced in French. “In English the lips round and close while the tongue draws back for the

\textsuperscript{17} Delattre, Pg. 81.
\textsuperscript{18} Delattre, Pg. 104.
[u], whereas in French the lips are already completely rounded and closed for [u] when the tongue is still in contact with the teeth for [d].”¹⁹

With specific reference to stop-consonant production, a linguistics study by Bonneau, Djezzar and Laprie in 1996 discusses the similarities and differences in the various consonants of several languages. “French is a syllable-timed language, whereas the others [Dutch, English, German] are stress-timed languages. Another added piece of the puzzle is that the French /t/ are dental consonants, where as English /t/ are alveolar consonants.”²⁰ The French /t/ stop-consonant is produced with the tip of the tongue behind the teeth but the English /t/ is produced by placing the tip of the tongue further back in the mouth, by the alveolar ridge in front of the soft palate. This implies that there may a difference in how flutists of English and French speaking cultures articulate on the flute.

Geoffrey Gilbert, a celebrated flute pedagogue writes, “People tend to believe that the production of the letter ‘T’ is the same in almost every language but I don’t think it really is. An English ‘T’ is produced behind the teeth. In fact, I think that there could be a special problem in America in the sense that the spoken language itself is losing it’s ‘T’s’ anyway…One often hears ‘t’ replaced by ‘d’ as in ‘liddle’ instead of little, ‘Adlana’ instead of Atlanta, or ‘innermission’ again with no ‘t’…I’m merely

¹⁹ Delattre, Pg. 107.
posing the question of whether or not it does have anything to do with the deterioration of the articulative process in the language.\textsuperscript{21} This is a concise example of how language has an impact on how flutists may conceptualize their articulative process.

The concept that there may be major differences within the various stop-burst consonants employed within just the English and French language alone justifies exploration of the effect that those syllables have on the modern flutist. It has been shown that these syllables are produced in different places within the mouths of English and French speakers and thus may have an impact on the way flutists of both languages have learned their articulative practices. Additionally, the amassing of treatises and tutor literature in both languages over the past four centuries has developed the teaching of mnemonics to aid the articulation of students. If there is a difference in the way that a student pronounces the syllables that are found within the vast trove of pedagogical flute literature, is it not too much to consider that the execution of those syllables may also be impacted? And, if so, the concept of teaching multiple styles of stop-burst consonants in various languages may have a profound impact on the ability and flexibility of the modern flute player’s articulation.

The limited research that has been conducted in this specific field will be explored within this document. Additionally, specific mnemonic references used to aid a

flutist’s articulation within the oeuvre of pedagogical flute materials dating back to Hotteterre's treatise will be annotated and catalogued. The mnemonics that will be the focus of this research are the stop-burst consonants most often taught to flutists including /p/, /b/, /t/, /d/, /k/ and /g/. Vowel anticipation in tandem with these stop-burst consonants commonly found in the flute literature will be put to the test with French speakers within the empirical portion of this document and will serve simply as a basic foundation for the application of language-based articulation pedagogy for flutists. Additionally, appropriate federal government permission protocol for use of human subjects was applied for and granted by the Ohio State University Institutional Review Board.

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22 Delattre, Pg. 81.
Chapter 2: Background and Rationale

In playing the instrument, flutists shape the inside of their mouths in a fashion similar to the way they do in speaking. However, to speak, people with different language cultures use mouth and tongue formations to make the consonant and vowel sounds inherent to their own language. A language culture is a group of people speaking a language with a particular style or inflection. A good example of a language culture is British English compared to American English. Conceptually, the shape and tongue position of a flutist should have slight differences depending on his or her language culture and these differences could have minor or major influence on the production of sound on the flute.

Karl Barton writes in an article in the Traverso Historical Flute Newsletter that the historical tonguing found within the various tutors and treatises of the flute literature is a telling indication to how flutists of each time period produced sound and articulation on the flute. Historical articulation, as well as the way lines were

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phrased and expressed was indicative of the native language of an area and therefore allows an internal view of an author’s language culture. He writes, “If we are to be historically articulate in our performances, we must go beyond the conception that the great masters of their day were merely recommending ‘simplistic prescriptions’ for untalented musicians. Even a brief excursion into some of the articulation possibilities suggested by Quantz or Tromlitz will convince the skeptical that their advice was not for the simple-minded.”

The articulations contained within the vast number of pages of the flute oeuvre are numerous and varied. They each carry with them the implications of the native language culture as well as the influence of culture and the spread of publication and knowledge.

Patricia Ranum writes of this “word-music relationship” with a specific emphasis on France during the seventeenth and eighteenth centuries, a time when many of the first flute treatises were published. She warns against the “‘Euro-‘ or ‘Common-Marker’ approach that has characterized early music performance…Articulations gleaned from Italian, English, French, German and Dutch wind treatises, 1535-1827, are melted down into a common currency that performers apply to three centuries of European music. Schickhardt’s ti ri’s, Bismantova’s te le re’s and Quantz’s ti ri’s rub shoulders with Hotteterre’s statements about tu and ru, as if

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similar consonants implied similar phrasings and tongue motions." This statement truly embodies the trap of the various treatises that performers have at their fingertips. It may be easy to assign many articulations within the literature into generalities but the depth of linguistic possibilities and language cultures make for innumerable variations that truly affect the sound production of articulation on the flute.

With so many different options available to the flutist, how can one be properly informed about articulation and its effect on the sound production of the instrument? First, current research must be considered. Then, the literature must be consulted. Finally, the effect of language on flute articulation must be gauged.

The only piece of research conducted on this subject is at once compelling and ambiguous and is an article by Linda Landeros Lamkin, currently a woodwind faculty member at the School of Music at Indiana University. Dr. Lamkin found in her study that there exists a direct correlation between a flutist’s recorded flute sound and articulation and his or her native language and other fluencies. Specifically, language culture was found to affect the development of the repetition in the execution of syllable choice.

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26 Lamkin, Pg. 1.
27 Ibid.
Lamkin studied four aspects of music and speech: music production as compared to speech production and speech perception as compared to music perception.\(^{28}\) She tested a pool of flute students at Indiana University and gathered information about their language experiences through a questionnaire. Many of the students did not speak English as a first language. Lamkin had the subjects read through sentences in English and then sentences in their native language that featured stop-consonants (i.e. /t/, /d/, /k/, /g/, /dl/, /l/, /o/, /y/).

After the subjects spoke through the sentences, Lamkin had each play six well-known examples of pieces from the flute repertoire. Her choices tested more than simply articulation: specifically, she tested for single tongue articulation, expressiveness, sight-reading ability, rhythm, and double tonguing (a style of fast flute articulation that uses a rebound of the tongue to quicken the production of articulation on the flute).

Her experimental method was to establish a correlation between the sound production and speech production through spectrographic analysis, much in the same manner that the recorded data gathered in this study will be analyzed. She was able to find that “articulation and the quality of sound are correlated with the way a flutist speaks.”\(^{29}\)

\(^{28}\) Lamkin, Pg. 2.  
\(^{29}\) Lamkin, Pg. 10.
This research lays the groundwork for the further study of the implications of linguistics on the articulation of the modern flutist. Since there is a proven correlation between language and articulation production, the next step would be to delve into the pedagogical implications of this finding, as Dr. Lamkin indicates in her further studies section.

In her research, Lamkin explores several stop-burst consonants found within the flute treatise literature that flutists might use to articulate on the flute. She writes, “In an attempt to categorize articulation choices, all permutations of the use of articulators in the forms of a consonant-stop vowel syllable (CV) for /t/, /d/, /k/, /g/ and /r/ (not as a liquid, but a flapped alveolar stop) in combination with all vowels were found in the literature. The list here is representative of the large body of treatises, manuals, and articles that have attempted to guide generations of flutist on how to tongue on the flute.”

The list that Lamkin includes in her work is a review of the articulations found within the pages of the flute literature but is limited to /c/ stop-burst consonants. There is a vast number of articulations to consider that Lamkin does not include in this work. Any combination of stop-burst consonant and resultant vowel must be catalogued within the flute literature to build a strong foundation to linguistic applications to flute pedagogy.

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30 Lamkin, Pg. 2.
This document will now explore in detail many of the various treatises, tutors and manuals written since Hotteterre’s work in 1707 and annotate and catalogue the discussion of articulation within that literature specifically. The scope of this research will only extend to English and French documents, as the empirical portion will cover the idiosyncrasies of the French language. The application of language into articulation pedagogy will then be put to the test in the empirical portion of this document.
Well before the advent of the flute treatise or tutor, the Lutheran musician and teacher, Martin Agricola, published a book in 1529 on the many musical instruments of the day. *Musica instrumentalis deudsch* is somewhat modeled on Sebastian Verdung’s *Musica getutscht*, using some of the same diagrams but exploring the wind instruments in depth. Within its pages, Agricola writes, “concerning many kinds of wind instruments…If you want your playing to stand the test, then learn well your *di ri di ri de*, for this belongs to the small notes. Thus do not let yourself be made a mockery.” Since the contemporary of the modern flute at this time, the Swiss fife, was transverse and blown without air resistance, the tonguing is comparable and relevant to that on the modern flute.

Additionally, without specific reference to the Swiss flute, Agricola writes, “Some people employ this method in playing divisions and call it flutter-tongue *[flitterzunge]*, as follows: *tellegelllellellellellellelle*.” This articulation is not the modern

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32 Agricola, Pg. 94.
33 Agricola, Pg. 95.
concept of flutter-tonguing, which will be described later, but it is relevant to articulation pedagogy.

What follows is an extensive historical review of a majority of treatises and tutors written concerning articulation practices on the transverse flute. For purposes of this work, the treatise list will be limited to books and methods specifically and will not include a survey of other mediums such as articles or periodicals. Additionally, only sources in English (including English translations) and French will be explored. While it is the intention of this document to review as many sources as possible, several of note may have been missed. Additionally, all translations have been completed by the author of this document.


Hotteterre dedicates an entire chapter of his treatise to “Tonguing.” He discusses a varied concept of articulation. “To make playing more pleasant, and to avoid too much uniformity in tonguing, articulation is varied in several ways. For example, two main tongue strokes are used: *tu* and *ru*.”34 The editor, Paul Marshall Douglas, notes, “the use of this word as a tonguing device presupposes that the *r* is not uvular but alveolar. This would produce the effect of a soft *d*-sound, which is closer

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to the tonguing characteristics desired, especially when used alternately with tu."\(^{35}\)
The English /r/ is produced back in the throat but the /r/ that Hotteterre discusses is actually further forward and created by placing the tip of the tongue by the alveolar ridge, directly behind the teeth.

Of the two articulations, “The tu is the more common, and is used almost everywhere.”\(^{36}\) In fact, the only time that Hotteterre recommends using the “ru” articulation is when there are ascending or descending scale passages. The modern flutist would most likely see the relevance of using this tongue stroke to play faster passages, which tended to be scalar passages in Baroque music. He also speaks of the use of the “ru” articulation in conjunction with the short notes in a dotted rhythm. This is what he refers to as “dotting.”\(^{37}\)

In the case of faster passages, where there are eighth notes and sixteenth notes, Hotteterre says, “Tu is used on all these eighth notes and ru is used only on the sixteenth notes.”\(^{38}\) He specifies that this is also true in places where there are quarter notes and eighth notes but the speed of the movement is fast.

\(^{35}\) Hotteterre, Pg. 36.  
\(^{36}\) Ibid.  
\(^{37}\) Hotteterre, Pg. 37.  
\(^{38}\) Hotteterre, Pg. 38.

The author recommends alternating between two types of articulation so as to vary the sound produced between longer and shorter notes. “To render the playing more agreeable, and to avoid too great a uniformity in tonguing, ’twill be proper to use two principal articulations, Viz. Tu and Ru, the Tu, is more in use, and is used in all cases as to semibreves, minims, crochets, and to the greatest number of quavers, for when these last are on the same line, or such as leap, you pronounce Tu when they ascend or descend by degrees and joyn’d [sic] we use also Tu but intermixes Ru with it, as you may observe by the following examples these two syllables do succeed each other.”

The examples included are a passage of mostly quarter notes and some intermixed eighth notes. The quarter notes, as a rule, are shown with the articulation /tu/ marked underneath, while the eighth notes are demarcated with the articulation /ru/.


Corrette rejects Hotteterre’s tu ru articulation and recommends treating the flute’s articulation like that on the violin. He writes, “Formerly, the two syllables tu, ru,

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were used to express the attacks of the tongue. But the present virtuosos, who do not teach by *tu, ru*, regard these as being absurd and only hinder the student."\(^{40}\)

Corrette does not give any suggestions for the syllables that would be used. However, Carol Reglin Farrar writes in her footnote, "It is probably that he [Corrette] intends *tootle*, which appears to be the next suggested in flute articulation after *tu, ru.*"\(^{41}\)

In consulting Appendix A of this document, her assertion can be confirmed as probable.


The author speaks of articulation only in the sense of applying it to the act of double tonguing, which is a faster application of the articulation that utilizes various kinds of actions and reactions of the tongue in separate places within the mouth. This is the first time in the literature that the method of double tonguing is seen in the flute literature, even though Agricola discusses it in tandem with all wind instruments; however, Quantz is generally recognized as the first to write about it. Concerning the practice, he writes, "Double Tongueing [sic] is of that importance to a performer on the German Flute, that no one can be a finished Player without it, it gives spirit and fire to the Allegros, awakens the attention of the Hearers in the Largos, and


renders all difficult passages in Music easy, and is attended with such an amazing articulated execution, as surpasses all Imagination; the method to arrive at this Point, is the Action and Reaction on the Tongue, against the Roof of the Mouth, pronouncing the words tootle, tootle, tootle, toole yourself, which done, for a few Minutes try to do the same with the top Piece of your Flute." The author's support of the practice of double tonguing is exuberant. Additionally, he gives the student the advice to practice first on the head-joint (the mouthpiece only) and then put the flute together. Generally, the syllables /tootle tootle/ utilize the front and middle portions of the mouth.


Simpson discusses the two articulations /tu/ and /ru/ but goes into more detail concerning the use of the two choices. He writes, “There are two articulations used in playing on this instrument; tu, and ru, the first is always begun with and used to semibreves, minums, crotchets and quavers, in common time on [the] same line, or when they leap from one line to another but when they are joined and ascend or descend by degrees then tu and ru are used alternatively; as they are to crotchets when the number in each bar is odd, but when they are even tu, is pronounced to

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the two first and then alternate.”\textsuperscript{43} In general, leaps require the same strong /tu/ tonguing, almost the way a strong downward bow stroke would be utilized on a string instrument. However, in the case of scalar passages that rise or fall, Simpson asserts the use of the /ru/ articulation in alternation with /tu/. This aids in the smoothness and quickness of the passagework.

Interestingly, after carefully reporting the rules and customs of the two articulations, Simpson goes on to discuss the aid of the ear and musical sensibilities of the flute player to make proper decisions about his or her articulation. “When two quavers are mixed with crotchets, or two semiquavers with quavers, tu, ru, are pronounced to the two first of each: but as this is chiefly done for a greater sweetning [sic], the ear must be consulted and that way used which is most agreeable, without any respect to the rules, if ranging of notes, or difference of movements, only ru should not be pronounced on a shake, or two notes together.”\textsuperscript{44} Aside from not using the /ru/ articulation on a trill or on more than one note in succession, Simpson allows for the possibility of flexibility in choice.

On a more general note, Simpson adds, “The tonguing is softest on German flute, more distinct of common flute and very strong only on Hautboy.”\textsuperscript{45} This comment is directed more at the tonal abilities of the woodwind instruments at the current time.

\textsuperscript{43} Simpson, J. \textit{The Compleat [sic] Tutor for the German Flute}. London: The Author, c. 1746., Pg. 11-2.  
\textsuperscript{44} Simpson, Pg. 13.  
\textsuperscript{45} Ibid.
rather than the aesthetic preference of the time. This may account for the general lack of multiple articulations on the instrument.


Quantz discusses the importance of the use of syllables to articulate and teach articulation. “To make the tone of the flute speak properly with the aid of the tongue and the wind that it allows to escape, you must, as you blow, pronounce certain syllables, in accordance with the nature of the notes to be played. These syllables are of three kinds. The first is *ti* or *di*, the second *tiri*, and the third *did’il*. The last is usually called the *double tongue*, while the first is called the *single tongue*. These syllables all use the same general mouth shape and are based around the German pronunciation as written in the footnote by Reilly. He writes, “The German the *i* resembles the English vowel in *bit*.” Additionally, Quantz is credited for being the first to write about the effect of double tonguing within the literature, even though, as said earlier, it appears in a treatise dated circa 1730.

In his first section, entitled, "Of the Use of the Tongue with the Syllable *ti* or *di*,” Quantz writes, “Since some notes must be tipped firmly and others gently, it is important to remember that *ti* used for short, equal, lively, and quick notes. *Di* on

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the contrary, must be used when the melody is slow, and even when it is gay, provided that it is still pleasing and sustaining...Those accustomed to the Upper Saxon dialect must take particular care not to confuse the t with the d. (the footnote says ‘In this dialect t is pronounced d.’)"\footnote{Quantz, Pgs. 71-2.} Quantz makes a special effort to point out the difference between the /t/ and /d/ in articulating on the flute, even in the special instance of language cultures that might not notice the difference. This begs the question: if a speaker is made aware of an articulation that exists outside of their language culture, how easy would it be to alter that articulation?

All at once critical, Quantz goes on to describe what modern flutists refer to as “forward tonguing.” He writes, “Some have a way of placing the tongue between the lips and making the stroke by withdrawing it. This I consider wrong. It prevents a full, round, and masculine tone, particularly in the low register, and the tongue also must make excessive forward or backward movement, which impedes quickness.”\footnote{Quantz, Pg. 72.} This concept is currently used in various ways as both a teaching and performance tool in the flute community, with a roughly equal number of advocates and critics. It is referred to as forward tonguing and can be used as an action that increases the sharpness of articulation. It is commonly accepted to be a derivative of language, specifically French. Obviously, Quantz finds it to be a negative action on the instrument.
“If you wish to make the notes very short, you must use the *ti*, since the tip of the tongue must spring back against the palate immediately, in order to check the wind again. You can note this process best, if, without blowing, you quickly pronounce *ti-ti-ti-ti* several times in succession.” As a teaching example, Quantz suggests that the student pronounces the mnemonic several times before playing the articulation on the flute.

In contrast to the short articulation, Quantz describes a more mellow style of tonguing. “For slow and sustained (*nourrissantes*) notes, the stroke must not be firm; hence you must use *di* instead of *ti*. It should be noted that while in the *ti* the tongue immediately springs back against the palate, in the *di* it must remain free in the middle of the mouth, so that the wind is not kept from sustaining the tone.”

In keeping with baroque style, Quantz discusses the concept of “notes inégales” for note lengths. This is a term that refers to notes written in equal note durations but performed in unequal lengths. “In quick passage-work the single tongue does not have a good effect, since it makes all the notes alike, and to conform with the good taste they must be a little unequal. Thus the other two ways of using the tongue may be employed, that is, *tiri* for the dotted notes and moderately quick passage-

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49 Quantz, Pg. 73.  
50 Ibid.
work, and did’ll for very quick passage-work. This means that these articulations are meant for the “inégale” style of Baroque performance practice.

Quantz continues to define the use of the /di/ syllable. He adds, “Ordinarily di rather than ti is used for slurred notes. If, however, a stroke stands above the note preceding the slur, both the first and the following notes receive ti. If the slur begins on the second note, and the unstressed note is slurred to the stressed one, play them as is to be seen in Fig. 7. [di syllable only] But if this happens in a quick tempo, use ti instead of di. Generally, of the /ti/ and /di/ syllables, it can be said that shorter, sharper articulations can be accomplished with the /ti/ and more mellow, softer articulations would be favored by the /di/ articulation.

Of the comparison, Quantz writes, “It is impossible to define fully in words either the difference between ti or di, upon which a considerable part of the expression of the passions depends, or all of the different kinds of tongue-strokes. Meanwhile, individual reflection will suffice to convince everyone that, just as there are various shades between black and white, there is more than one intermediate degree between a firm and a gentle tongue-stroke. Hence you can also express ti and di in diverse ways with the tongue. You simply must try to make the tongue supple enough to be able to tip the notes more firmly at one time, more gently at another, in accordance with their nature. This is accomplished both by the quicker or slower

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51 Quantz, Pg. 74.
52 Ibid.
withdrawal of the tongue from the palate, and by the stronger or weaker exhalation of the wind."\(^{53}\) Simply, Quantz believes that articulation can be as varied and different as the flutist can imagine it.

In Quantz’s second section, entitled “Of the Use of the Tongue with the Word *tiri,*” he discusses that, “This kind of tongue-stroke is most useful in passage-work of moderate quickness, especially since the quickest notes in them must always be played a little unequally. In the previous section I have already indicated how the syllable *ti* is to be formed with the tongue. In the tongue-stroke treated here *ri* is added to it. You must seek to pronounce the letter *r* very sharply. To the ear it produces the same effect as when the single tongue *di* is used, although it does not appear the same to the player.”\(^{54}\) The tongue almost trills the */r/* which does produce a rebound that sounds like a */di/* syllable.

Additionally, Quantz writes that, “*Tiri* is indispensible for dotted notes; it expresses them in a much sharper and livelier fashion than is possible with any other kind of tonguing. In this word *tiri* the accent falls on the second syllable; the *ti* is short, and the *ri* long. Hence the *ri* must always be used for the note on the downbeat, and the *ti* for the note on the upbeat.”\(^{55}\) This brightness in terms of articulation is directly related to the mnemonic.

\(^{53}\) Quantz, Pg. 75.
\(^{54}\) Quantz, Pg. 76.
\(^{55}\) Ibid.
In the third section, entitled, “Of the Use of the Tongue with the Word *did’ll*, or the so-called Double Tongue”, Quantz writes, “The double tongue is used only for the very quickest passage-work. Although easy to explain orally, and simple for the ear to grasp, it is difficult to teach in writing. The word *did’ll* which is articulated in it should consist of two syllables.” Quantz asks that the flutist remove the vowel from the mnemonic in order to quicken the articulation. “In the second, however, no vowel is present; hence it must be pronounced *did’ll* rather than *didel* or *dili*, suppressing the vowel which should appear in the second syllable. But the *d’ll* must not be articulated with the tip of the tongue like the *di*…To articulate *did’ll*, first say *di*, and while the tip of the tongue springs forward to the palate, quickly draw the middle portion of the tongue downward a little on both sides, away from the palate, so that the wind is expelled on both sides obliquely between the teeth. The withdrawal of the tongue will then produce the stroke of the second syllable *d’ll*; but it can never be articulated without the preceding *di*. If you pronounce *did’ll* quickly several times in a row, you will hear how it should sound better than I can express it in writing.”

Quantz goes on over the course of many pages to give various examples that are combinations of the above tongue strokes and how to use them appropriately. There are musical and written examples with the syllables inscribed underneath.

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56 Quantz, Pg. 79.
Additionally, Quantz wrote his tutor *Solfeggi Pour La Flute Traversiere avec l’enseignement* within the time span of 1728 and 1742,\(^{57}\) well before his *Versuch*. This tutor confirms the articulations he discusses in the *Versuch* by including those syllables below the many exercises in *Solfeggi*.


Mahaut speaks very briefly on the subject of tonguing. He says, “formerly tongued articulation used the syllables *tu* and *ru*, which were sufficient for the music of earlier times, when notes were almost always grouped in pairs. It is no longer the same with modern music, which requires different kinds of articulation to express slurred and detached notes.”\(^{58}\) Instead, Mahaut recommends that the flutist, “should attempt to develop the most precise articulation possible, according to his natural ability and without worrying too much about the various syllables.”\(^{59}\) Mahaut believes that different mnemonics will work differently for various flutists.

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57 Michel, Winfried and Hermien Teske. Frontmatter of Johann Joachim Quantz’s *Solfeggi Pour La Flute Traversiere avec l’enseignement*. New York: Amadeus Verlag, 1978., Pg. II.
59 Ibid.
He does go into specifics about tongue strokes though, which could reasonably be thought to involve some sort of strong stop-burst consonant. “When two, three or more notes are marked with a slur above or below, they are played with the same tongue stroke, that is, you only tongue the first note.”60 The stop-burst consonant, then, is only used on the first note.

“Notes without slurs each get a tongue stroke.”61 This does not purport that the stop consonants used are all the same; in fact, Mahaut gives no indication what mnemonic might be appropriate. The syllables could each be different.

Of double tonguing, Mahaut writes, “Many people rely on what is called double tonguing: it is used in very rapid passages and articulated with the two syllables Di Del.”62 These syllables require the same tongue stroke on both notes, which does not take advantage of any rebound action of the tongue that most modern approaches to double tonguing do take. However, it is possible that the /l/ syllable is more responsible for the second note than the starting /d/ in /del/. In this manner, there is more a rebound action.

60 Mahaut, Pg. 21.
61 Ibid.
62 Ibid.
This treatise could not be consulted directly, as there is only a copy listed in the Library of Congress in Washington, D.C. and it could not be requested. However, Janice Dockendorff Boland has written a brief annotation of the tutor in her book, *Method for the One-Keyed Flute, Baroque and Classical.* She writes that Granom included an extensive and detailed accounting of the process of double tonguing. He recommends the syllable /toot-tle/ and even goes on to discuss its relative articulation, triple tonguing. The syllable for this articulation is /toot-tle-too/ and Boland claims that many subsequent treatises actually plagiarized his ideas.\(^6\)

Heron’s treatise is also only available in the Library of Congress and is the only extant copy. However, his thoughts on articulation are cogently described. In Janice Dockendorff Boland’s book, called *Method for the One-Keyed Flute, Baroque and Classical,* she writes that Heron does not refer to the earlier articulations seen in the literature but instead recommends the syllable /tit/ for single tonguing and the syllable /tit-tle/ for double tonguing. Boland says that Heron had clear instructions for where the tongue would be placed properly in the mouth but does not include this specific information. Further implications for study would

certainly incorporate traveling to the Library of Congress and personally consulting this document.


Divergent from previous treatises, Dr. Arnold discusses only one type of articulation that uses the tongue. He does discuss a second articulation but it is only a breath attack. He writes, “In order to execute the various passages in musick [sic], there are two articulations used in playing on the German Flute, which are TU, and UR; the former produced by placing the tip of the tongue between the lips, and withdrawing it with a smartish stroke of the breath; the latter by an aspirative forcing of the breath through the aperture of the lips without the assistance of the tongue. As the exact place, and application of these articulations, TU, and UR, cannot with any precision be pointed out in any written instructions, the pupil must apply to a good master, who can alone properly explain nice distinctions, in the course of practice, as particular passages occur.”

Dr. Arnold specifically recommends that students have a master teacher to help differentiate between the two articulations and their proper uses.

In accordance with previous thought, Dr. Arnold also throws his defense to the practice of double tonguing. “Address in DOUBLE TONGUEING [sic] is of the

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utmost importance to the Performer; and it is attained by a proper management of the action and reaction of the Tongue against the Roof of the mouth, while the pupil pronounces to himself the words, TOOTLE, TOOTLE, TOOTLE; This being practiced a few minutes, he must endeavor to do the same with the top piece of his Flute, articulating TOOTLE, TOOTLE, TOOTLE, several times running, as fast as he can, so as not to lose the sound of his Amboucher, [sic] and making the reaction as distinct and clear as the action."65 The application on first the head-joint and then the full body of the instrument is used today.

(178-) Cahusac. *The Compleat [sic] Tutor for the German Flute*. (No publisher info), 178-.

At the advent of publishing, it was common practice to copy directly from other treatises as there was no intellectual property protection in place, as we learn from angry letters written by Leopold Mozart and others. In this manner, Cahusac has directly copied from previous treatises, including (but not limited to) the anonymously written source that was published by Longman. He copies, "The method to arrive at this point is the action and reaction of the Tongue against the roof of the Mouth, pronouncing the words tootle, tootle, tootle to yourself."66

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65 Arnold, Pg. 31.  
The concept of mnemonic use for articulation on the flute is carefully explained and considered by Tromlitz. “On close scrutiny you will notice that the tongue’s movements when producing the notes form a species of syllables, and when they are combined, words, and finally a vocabulary, which it is possible to apply universally according to a suitable system. Quantz has already dealt with this in his treatise on flute playing…He says; to play a single note the syllable \textit{ti} or \textit{di} should be enunciated. But I think the letter \textit{i} does not have the best effect on the tone of the flute, because when it is pronounced all the inner parts and muscles are drawn together, making the flute’s tone thin; just try it, and pay careful attention, and you will find that it is so. If you are not willing to admit that this interior disposition of the mouth has influence and affects the tone, how does it come about that the tone of a wind instrument always has so much similarity with one’s natural voice, unless it originates in the interior structure of the parts necessary to tone or speech? I have noticed about a wind-instrument player who speaks through his nose, or as they say, drawls, when talking, that his tone on his instrument drawls or sounds nasal in just the same way. If you are not able to produce a bright tone on the flute, the \textit{i} is sounding as \textit{u}, although you think you are pronouncing it right, and this has an even worse effect. This has motivated me to choose another letter which makes the tone fuller, rounder and brighter, and to my taste there is none more suitable than \textit{a}.  

(1791) Tromlitz, Johann George. \textit{Ausführlicher und gründlicher Unterricht die Flöte zu spielen.} Leipzig: Adam Friedrich Böhme, 1791. Translated by Ardal Powell as \textit{The Virtuoso Flute-Player} (Cambridge and New York: Cambridge University Press, 1992.)
Make an effort to enunciate this a as much like an a as possible, and you will find that the because the throat and other relevant parts expand the tone becomes fuller. Instead of ti or di, we have the syllables ta, da, or ra, the use and proper application of which will be explained in the following. Flute players were interested in the effect that the tongue and shape of the mouth had in creating certain syllables on the flute centuries before now. Tromlitz concludes from his own experience with Quantz’s recommendation that the /a/ syllable attached to the same stop-burst consonants in Quantz’s treatise will in fact make the tone fuller and rounder.

The first single tongue articulation Tromlitz describes is the /ta/ syllable. He goes into the exhausting depth of the use of this articulation. “This ‘ta’, when it stands alone, is used:

1) on single notes, whether good or bad (for good and bad notes, see below) [long and short notes, respectively]; that is: on notes which are separate and not connected to others of the same value…

2) On the upbeat…Note: The little note before the bar-line, called the anacrusis or upbeat, coming not on the downward but the upward beat, may occur at the

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68 Tromlitz, Pg 158-9.
beginning [of a piece] or in the course of it; and so it and the next one are articulated separately with ta…

3) *When there are strokes over the notes, and [when] the melody has bass-like figures…*

4) *After those notes that have dots on them: ‘ta’ comes both on the short note and the following long one; it is the same when there are rests preceding…*

5) *When the penultimate note in the bar is separated from the last by the nature of the melody, the last gets ‘ta’…*

6) *On three equal notes, such as three crotchets, three quavers, three semiquavers, if three of them comprise a unit; whether they are three crotchets in ¾ time, or three quavers in 3/8, or a single figure like a triplet, then the last note is played short with ‘ta’…*

7) *When several notes of the same value are written on the same line or space, they all get ‘ta’ or ‘da’, depending on whether they should be more or less joined up…*

8) *On large leaps, especially with long notes…*
9) The note that makes a caesura or a cadence after a trill, or even when there is no preceding trill, is always articulated with ‘ta’…

10) When there are dots over the notes, each note is indeed articulated with ‘ta’, but to express the dot properly the ‘t’ of the following ‘ta’ is always connected to the previous ‘ta’, giving rise to the syllable ‘tat’…

Tromlitz’s syllable choice for staccato articulation comes from the elision found between the syllables for single tongue.

Tromlitz changes the use of the stop-burst consonant entirely in the next section by describing a passage of long and short notes in alternation. “When two notes of equal value are written on different lines or spaces so that the first is the good note and the second the bad, they will be expressed clearly if the first is articulated with ‘ta’ and the second with ‘a’ as in the word ‘taa’.”

Tromlitz uses the repeated /a/ syllable to rearticulate the shorter note.

In addition to the /t/ consonant, Tromlitz introduces the /r/ consonant, which is typically produced farther back in the mouth. He writes, “When four notes of equal value come together, they are played with the word ‘taara’, so that the first is on

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69 Tromlitz, Pg. 153-6.
70 Tromlitz, Pg. 156.
‘ta’, the second, ‘a’, the third on ‘ra’ and the fourth, ‘a’...it is important after the beginning to change the ta into da, to make it more like ra, and where possible exactly the same.”71 This refers to the concept of the fast /r/ consonant, that effectively resembles a /d/ in pronunciation. He confirms this by writing, “When more than four notes of equal value, or whole passages of the same figure occur in succession, the ‘ta’ is subsequently changed to ‘da’ in order to be more similar to ‘ra’.”72

The concept of this linguistic change is further explained and developed by the author. “These short notes described here always get ta, and the ones after them, ra, as already stated; more detail about this below. Those who cannot pronounce ra with the tip of the tongue, but speak it in the throat like most people in Lower Saxony, must make use of da in its place, because ra spoken in the throat has no effect on the instrument. This da must however be pronounced very gently so that it has the same effect as the ra; still the ra is much to be preferred…”73

With regard to the /ra/ syllable, Tromlitz outlines very specific rules and instances for its use. He first discusses its use on short notes. “When ‘ta’ comes on a short note, either at the beginning or in the middle [of a phrase], then the next one must

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71 Tromlitz, Pg. 157.
72 Tromlitz, Pg. 158.
73 Tromlitz, Pg. 159-60.
always be articulated with ‘ra.’ The /ra/ syllable is useful for all series of short notes.

“When a short note comes after a dotted note, it gets ‘ta’, but the long note after the short one gets ‘ra’; this gives rise to the word: ‘tara’, and is kept up as long as this kind of figure goes on, even when it makes leaps.”

Tromlitz goes on to describe the use of the /ra/ (eventually /da/) syllable for slower tempo markings in the music. “If figures and passages such as the ones described…occur in a moderate tempo, and in a tender and agreeable melody, or are marked by the composer with slurs, they are best executed with ‘taaraa’, so that the first one with the dot is always held very long, and the short one is made very short, and for the sake of evenness the ‘ta’ is subsequently changed to ‘da’…”

In complete contrast to what has come before, Tromlitz writes of a new mnemonic for dotted rhythms that take place in one beat. “When a note has a dot after it which when added to the next note makes up a beat of the bar, it is tongued in fast and lively movements with ‘hat’ or ‘at’; and in slower ones ‘had’ or ‘ad’. This ‘t’ or ‘d’ is taken from the next ‘ta’ or ‘da’, and so the next note simply gets ‘a’.”

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74 Tromlitz, Pg. 160.  
75 Tromlitz, Pg. 162.  
76 Tromlitz, Pg. 163.  
77 Tromlitz, Pg. 168.
The /ta/ syllable makes a final appearance for the use of syncopated rhythms.

“When three notes occur, of which the middle one is worth as much as the first and the last together...in the figure called a syncopation, then the first gets ‘ta’; or instead if there are two notes...‘taa’; the second gets ‘taa’ because it must be divided into two parts of which the first (which is short) belongs to the first note and the second (which is long) to the last...”

As to be expected, Tromlitz discusses in detail exceptions to the rules above on pages 177-81. Generally, Tromlitz continues to follow the rules he has outlined earlier in his work but discusses options when tempo and rhythm are not clearly defined.

On the subject of double tonguing, Tromlitz credits Quantz as the first to discuss the practice in print. He breaks down his own experience with choosing the syllables best suited to the effect of double tonguing. “Now I had about eight of them [words for double tonguing], the principal word of which was tar’ll, which produced two notes, and was tar’lldarar’llda, etc. While I was occupied with achieving security and certainty in this, Quantz came out with his book, which had tid’ll for this kind of articulation, and tid’lldi in the triplets, which had the same effect as mine in practice, if the i is taken away, for I had a in its place, and still do, preferring a to i because the former makes the tone fuller, as already stated. If a is used in place of i the

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78 Tromlitz, Pg. 171.
79 Tromlitz, Pg. 195.
similarity becomes even more apparent: *tad’ll*, *tad’ilda* and my version, *tar’ll*, *tar’ilda*: in practice it will be found, if one is able to do both correctly, that they have exactly the same effect. That two persons, then, knowing nothing about each other, nor being acquainted with each other, should make such similar discoveries, is a sign that this articulation must be founded on the essence of the thing."\(^80\) The substitution of the */a*/ vowel for the */i*/ vowel of Quantz makes the tone fuller, in Tromlitz’s estimation.

Tromlitz begins his discussion of his choice of syllables by describing the actual vowel for use. “So we will take *tid’ll*, or for those who want to do it my way, *tad’ll*. Actually, it is not quite an */a*, but contains something of an */o*, though one should try to get as close to an */a* as possible, because it has a great influence on the tone-quality; */i* gives it a thin tone, and */a* a full one.”\(^81\)

“So *tad’ll* gives two equal notes; to pronounce the second syllable, */d’ll* into the flute so that it produces a note as bright as the first is difficult…when you have said */ta*, and while the */ta* is still sounding (for it must continue to sound until the second syllable is pronounced), place the tip of the tongue, which must be made a little bent, on the palate, and while saying */d’ll* press the wind, held back by the bent tongue placed on the palate, out on both sides while the tongue remains on the

\(^80\) Tromlitz, Pg. 197.
\(^81\) Ibid.
palate; this produces the second note. Tromlitz describes the exact motion of the tongue needed to pronounce the syllable properly. It is also of additional interest that he spends so little time comparatively discussing the double tongue in general.


Wragg very briefly discusses articulation, simply to echo earlier sentiments on teaching double tonguing. “The chief difficulty in acquiring this, is in the Action and Re-Action of the tongue against the Roof of the Mouth, pronouncing at the same time the words Tootle Tootle to yourself and carefully observing to sound the Notes clearly and distinctly.”


Gunn implores the student to avoid what most modern flutists would call “forward tonguing.” He defines this, exclusive of the modern nomenclature, as “similar to the action of the tongue in spitting saliva or any other thing out of the mouth….whereby the tongue is made to pass between the lips, which greatly impedes the sound in

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82 Tromlitz, Pg. 198.
passing through that aperture.”  
Generally, he feels that the action of protruding the tongue out through the lips to articulate will negatively affect the sound, creating a stuffy response.

Instead, Gunn describes proper articulation by relating it to spoken consonants. Specifically, “the usual and best method of tonguing in general, is by that action of the tongue against the palate, which pronounces the letters $t$ and $d$; the former is more strong and spirited, and the latter more soft and delicate.”  
In this manner, Gunn associates a sharper and more pronounced tongue stroke with the /t/ consonant and a duller stroke with the /d/ consonant. He also recommends that the performer practice proper articulation by sounding a note over and over in succession to acquire what he describes as a “full and clear” articulation that never impedes the tone that follows.

In Gunn’s later description of double tonguing, he points out that “the usual method of tonguing is insufficient and inadequate [for faster passages], since it is impossible to pronounce $t$ and $d$ quick enough.”  
His solution is to use the syllabic reaction of the tongue. “A substitute has been found, in the motion of the tongue,

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85 Gunn, Pg. 13.
86 Ibid.
87 Gunn, Pg. 14.
consisting of action and reaction, by pronouncing very distinctly the syllables diddle, the first syllable of which articulates one note, and the second is articulated, but in a less distinct manner, by the reaction of the tongue, in pronouncing the second syllable.” 88 In this manner, Gunn relates articulation to a language element. It is of note that the modern approach to double tonguing promotes consistency between both the action and reaction of the tongue so that the notes of the passage sound with articulatory equality. Gunn simply realizes that the sharp and soft reaction of the double stroke is naturally created and is therefore unequal.

Gunn also discusses the “New, or Staccato Tonguing.” 89 This is also a description of double tonguing stroke; however, this depiction is shorter and “is not liable to the objection made to the common double tonguing [discussed earlier], that the reaction is not equally perfect with the action; for it is impossible to distinguish any difference in the effect [of the new tonguing].” 90 He advises the student to pronounce the words /teddy/ and /tiddy/, “for some time very distinctly, and afterwards soften the consonants as much as possible, [which] will acquire a volubility as great as the other double tongue, but infinitely more articulate and distinct.” The resultant articulation is simultaneously more equal and sharper and shorter.

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88 Gunn, Pg. 14.
89 Ibid.
90 Ibid.
The origin of this “new tonguing” is described enigmatically; apparently, Gunn was proud of the fact that the notion had “never before been published” and that he had self-reportedly stolen it from an amateur player “on the continent.” Of the technique’s origin, he writes, “The inventor of this new method of tonguing rapid passages, seems to have been led to it from Quantz’s manner of tonguing accented notes, which follow very short unaccented notes, in a very quick succession…where we have [previously] made use of the syllables tee de…We have adopted these syllables [teddy and tiddy], as introductory to the new staccato tonguing, instead of Quantz’s ri, tiri, which he pronounced ree, tiree; and it is plain, that by changing the accent to the first of the two syllables, which will make tirry, tirry in our pronunciation; and turning r into the soft pronunciation of d, it will produce this new tonguing…by making the strokes of the latter as softly as possible against the palate." It is evident from this elaborate description that Gunn feels that articulation is directly dependant on its syllabic content, which is to be derived from the player’s language. The soft /r/ that is resultant in German from the pronunciation of the /d/ consonant can only properly be described to a German speaker by a German speaker.

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91 Gunn, Pg. 14.
92 Ibid.

Devienne begins his discussion of articulation in general terms, declaring that, “Without the tongue it is impossible to play any wind instrument…Its [tonguing] pronunciation (as I have said above) should be *tu* and not *te* or *ta,* because it is necessary to open the mouth to pronounce these last two syllables.”93 His description of the single tongue syllable requires the flutist to keep the mouth and embouchure in a more closed position than is facilitated by the resultant vowels of /a/ and /e/.

He continues on by briefly discussing the syllables necessary for double tonguing, a method of articulation that he clearly despises. Devienne writes, “Double tonguing: *dougue, dougue, dougue, dougue, dougue, dougue, dou.* One may also pronounce this *Tourou* or *Turu,* but no matter how it is pronounced it is no less defective, in that it only sounds like a disagreeable rolling to the ear; it is impossible to achieve cleanness in execution; and it prevents the one who uses it from being able to play with the slightest nuance in passage-work or to supply any expression.”94 The expression that he is speaking of is achieved through a rigorous adherence to many

94 Devienne, Pg. 9.
different syllables for each tongued note. As we have seen in earlier treatises, there are many to choose from and an equal number of rules for use. The effect of double tonguing, in Devienne’s estimation, effectively removes those abilities and choices and forces the player to repeat the same syllables over and over again.


Peraut does not spend any time discussing syllables in single tonguing but he makes it quite clear that he does not care for the practice of double tonguing. He writes, “Je l’ai déjà dit, et je le répète, il n’existe point de double Coup de Langue sur cet Instrument Le Dougou Dougou Dougou, n’est qu’un barbouillage empâté. Le Tourou Tourou ou Turu Turu qu’un miserable Charlatanisme: un coup ne peut être frappé qu’après l’autre et c’est toujours au palais que la langue doit frapper; un grand exercice pour le plus ou moins de vitesse, voilà le véritable secret des effets du Coups de langues. [I have already said it, and I will repeat it, there does not exist a Tongue Stroke on this Instrument of Dougou Dougou Dougou, this only creates a pasted smearing. Tourou Tourou or Turu Turu is only a miserable charlatanism; one stroke can be struck only after the other and it is always on the palate that the language can strike; a good exercise for faster or slower speeds, here is the true secrecy of the effects of the Tongue Stroke.]”95 Peraut claims that the secret of articulating properly is tied to the tongue strokes found within

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language. Additionally, the stroke of single tonguing will serve to play fast passages if the flutist practices at all speeds.


Wunderlich and Hugot write about the relationship between the tongue and the string instrument bow as punctuation for music. “L’articulation sur la Flûte se fait par la langue; cet agent, que l’on pourroit appeler l’archet des instrumens à vent, determine par son action les principales nuances de l’exécution; c’est cette action que nous avons nommée coup de langue; nous admettons deux coups de langue: le premier, qui sert pour les sons soutenus et pour les traits en simples croches, doit se faire ainsi que nous l’avons indique, en prononçant la syllabe tu. Le deuxième, qui sert pour les traits de vitesse, pour ceux marqués deux notes coulees et deux détachées et pour ceux totalement détachées se fait en portant la langue légèrement au palais au dessus des dents supérieures et en la retirant pour prononcer la syllabe du. [Articulation on the Flute is done though the tongue; this agent, that one could call the bow of the wind instrument, determines the principal nuances of execution by its action; it is this action that we have called the tongue stroke; we recognize two tongue strokes: the first, which is useful for continuous [long?] sounds and for passages of simple quarter notes, done thus as we have indicated it, by pronouncing the syllable tu. The second, which is useful for fast
passages, for those passages marked two slurred and two detached and for those passages totally detached and it is accomplished by lightly placing the tongue on the palate above the front teeth and withdrawing it by while pronouncing the syllable du.]\(^{96}\) Generally, the longer and more attached tonguing can be accomplished with the /tu/ syllable and the more detached and lighter notes are best served by the /du/ syllable.

Wuderlich and Hugot describe the syllable used to play short, light staccato notes. Interestingly, they recommend just how the mouth will be shaped during the execution of the mnemonic. “Pour bien executer le piqué il faut détacher chaque note moëlleusement en portant la langue au palais, sans force et sans trop serer les lèvres en prononçant la syllabe du. [For successful execution of the staccato note, it necessary to detach each notes softly by placing the tongue against the palate, without force and without tightening the lips too much and pronouncing the syllable du.]\(^{97}\)

Wunderlich and Hugot provide many examples of articulations that use the du syllable simply because of the speed of the execution. “Dans les exemples suivans il faut donner le coup de langue en prononçant la syllabe du à cause de la vitesse du mouvement, ainsi qu’il a été dit au commencement de cet article. [In the

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\(^{97}\) Hugot/Wunderlich, Pg. 7.
following examples, it is necessary to give tongue strokes that pronounce the syllable *du* because of the speed of the movement, as it was said at the beginning of this article.\textsuperscript{98}

Finally, the authors discuss briefly the concept of triplet production. It is to be noted that they never delve into the subject of double tonguing. They write, “*Il faut pour la faire avec vitesse et légereté, donner le coup de langue en prononçant la syllabe du.* [It is necessary for the accomplishment of speed and lightness, to give the tongue stroke a pronunciation of the syllable *du*.]\textsuperscript{99}


As Wunderlich wrote in his previous treatise, “*La Langue est la principal Organe pour les Instruments à vent.* [The tongue is the principal Organ for the wind instrument.]\textsuperscript{100} The tongue is the vector of the musical expression.

The effect of double tonguing does not make an entrance in Wunderlich’s first treatise but it does in this one. He discusses the articulation as well as the benefits of the effect that puts it above the other articulations. “*Opinion sur le Coup de

\begin{footnotesize}
\textsuperscript{98} Hugot/Wunderlich, Pg. 9.
\textsuperscript{99} Hugot/Wunderlich, Pg. 14.
\end{footnotesize}
Langue Dou-gue, nommé double Coup de Langue. Ce Coup de Langue se fait en prononçant les syllabes Dou gue sur deux Notes en avançant la langue légèrement contre le palais et en la retirant de même. Ce Coup de Langue, à la vérité étranger aux autres Articulations, imite parfaitement le détaché simple; et, quand il est fait avec perfection et employé rarement, produit beaucoup d’effet en ce qu’il donne une énergie et un brillant aux Traits que l’on ne pourrait obtenir par aucune de Articulations ordinaires. [Opinion on the Tongue Stroke Dou-gue, called double tongue stroke. This tongue stroke is made by pronouncing the syllables Dou-gue on two notes by advancing the tongue lightly against the palate and withdrawing it in the same way. This tongue stroke, truthfully a strange articulation, perfectly imitates a simple detaché; and, when it is done with perfection and employed rarely, produces the effect well in that it gives an energy and a brilliance for passagework that one cannot obtain with ordinary articulations.]\textsuperscript{101}

\textsuperscript{101} Wunderlich, Pg. 14.
too-tle, too-tle, too-tle. This ought to be studied until the second syllable becomes as clear as the first.”102

However, Nicholson also discusses several other mnemonic choices for the double tongue application. “You may also vary the syllables by pronouncing dig-ga, dig-ga, tuc-ca, tuc-ca, tit-tle, tit-tle. The author, however, decidedly prefers the first.”103


Berbiguier describes in detail the action and placement of the tongue and the use of different articulation for appropriate passagework. He writes, “Pour obvier à cet inconvenient, nous pensons que la langue doit être posée derrière les dents, touchant légèrement au palais, en ayant soin de tenir les lèvres assez resserrées, de manière à ce que vous prononciez la syllabe TU, forçant l’articulation; et la syllabe DU, en l’adoucissant. Il en résulte dans les premières moments une certaine lourdeur, qu’un exercice de quelques jours fait disparître. Il nous a semblé que le plus sûr moyen de délier la langue, c’est de lui faire articuler le syllabe DU (comme si on avait un défaut de langue, le D Anglais rend parfaitement notre idée.) et non pas TU, qu’il faut réserver pour attaquer avec force le première note d’un trait de vitesse. [To obviate this disadvantage, we think that the tongue should be

103 Ibid.
posed behind the teeth, lightly touching the palate, and having care enough to tighten the lips, so that you pronounce the syllable TU, in forceful articulation; and the syllable DU, in the softer. In the first moments, it will result in a certain heaviness that an exercise over a few days makes disappear. It seems to us that the surest means of untying the tongue is to make the student articulate the syllable DU (if there were a defect of language [French], the English D displays our idea perfectly.) and not TU, that is necessary to reserve for a forceful attack for the first note of fast passage work.] "104

He makes sure that the flutist is aware that even though the syllable may change, the tongue placement does not. "Il est essentiel d'observer ici, que la syllabe TU, comme la syllabe DU doivent être prononcées avec la langue derrière les dents, en touchant fortement au palais pour le Tu et légerement pour le DU [It is essential to observe here, that the syllable TU, like the syllable DU must be pronounced with the tongue behind the teeth, by strongly touching on the palate for TU and lightly for the DU]."105

The syllable /du/ has other uses that Berbiguier goes on to highlight. "Articulation très brilliante et très usitée dans la vitesse. La syllabe DU est de rigueur. [Very

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105 Berbiguier, Pg. 48.
brilliant articulation is used very much in rapid tempo. The syllable DU is required."

Berbigiuer discusses his principle of double tonguing by describing how the start of the passagework is to be accomplished. "Nous avons posé en principe que dans les traits détachés en DOUBLE COUP DE LANGUE la [premiere] note d’un passage ainsi que la dernière devaient être prononcées avec la syllabe dou; mais il est des cas où cette règle devient inutile et où même il serait impossible de l’appliquer, surtout dans les passages en octaves détachées, dont la [premiere] note est la note basse comme dans l’exemple suivant...Infaisable avec le dougou dougou. Pour pouvoir employer cette articulation dans les octaves détachées, il faut que la [premiere] note soit la note haute comme ci-après...[We posed in theory that in detached passagework with DOUBLE TONGUING the first note of the passage as well as the last were to be pronounced with the syllable dou; but it is in the case where this rule becomes useless and where it is the same it would be impossible to apply, especially in the passages of detached octaves of which the first note is the bass note as in the following example...Impossible with dougou dougou. To be able to employ this articulation in the detached octaves, it is necessary that the first note be a high note, as shown here..."
Alexander affirms many of his colleagues’ sentiments in discussing the practice of
double tonguing. “Double Tonguing is produced by the action and re-action of the
tongue against the roof of the mouth, by pronouncing the words tootle tootle to
yourself very distinctly, to accomplish which the Learner should practice the
following Examples for a considerable time, carefully observing that he sounds
every note distinct and clear, and that his tongue and fingers move together, which
is very essential.”108

He is the first to bring up the subject of triple tonguing, which involves the same
rebound action of the tongue as in double tonguing, but adds a third syllable to
facilitate extremely fast triplet passages. “In Double tonguing Triplets, Too must
be added to the word Tootle…”109 This is still difficult, since it requires two strong
tongue strokes, executed at the front of the mouth.

(c. 1826) Vaillant, P. Nouvelle Méthode de flûte. (c. 1826) Vol. 3, Méthodes et
Traités flûte traversière (France, Série II 1800-1860). Edited by Arlette Biget,

Vailliant only speaks briefly about tonguing syllables but he describes the action of
the tongue in the process. He writes, “C’est la langue qui, en s’approchant de la

109 Ibid.
lèvre supérieure et en se retirant ensuite, doit servir de soupape au soufflé qu’on veut introduire dans l’instrument, en articulant le syllabe TU; ce qu’on nomme coup de langue. [It is the tongue that approaches the upper lip and then withdraws quickly, that must serve as a valve for the air that one introduces in the instrument by articulating the syllable TU; this is called a tongue stroke.”

He only speaks of the /tu/ syllable and recommends this for use on all articulation.


It can be seen in the progression of the treatises throughout history that the position of the tongue inside the mouth to produce the single tongue articulation begins to stand out as a discussion point. Dressler writes, “The first [articulation type] principally used for slow notes, not quicker than quavers in a moderate time, is performed by placing the point of the tongue above the upper teeth, and withdrawing the tongue quickly so as to produce the syllable doo. A fuller body of tone being obtained by this articulation than by any other, the student should commence with it.” He is very specific that the tongue strikes at the palate where the teeth touch.

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He goes on to describe a variation of this articulation to produce a different articulatory result. “The second [articulation type] is used for quicker notes, such as semiquavers and triplet quavers in moderate time, being better adapted for the articulation of rapid passages than the preceding. In performing it, the point of the tongue is placed against the upper teeth, pronouncing the same syllable, *doo*, by withdrawing the tongue quickly as before.”\(^{112}\) This articulation uses the same syllable but modifies the point of contact for the tongue to one that presses on the teeth.

“The third [articulation type] is used for short or staccato notes, and is produced by pronouncing the syllable *too.*”\(^{113}\) In this instance, Dressler changes the consonant but does not alter the resultant vowel.

Dressler discusses another type of articulation that utilizes only the breath and not the action of the tongue. “The fourth mode of articulating is by *Aspiration*, performed by means of the syllable *hoo*, in place of the action of the tongue; its effect resembles that of the harmonica, and gives a beautiful delicacy of expression in smooth and plaintive melodies, where the gentlest action of the tongue would injure the effect.”\(^{114}\)

\(^{112}\) Dressler, Pg. 8.
\(^{113}\) Ibid.
\(^{114}\) Ibid.
As a means of summing up the single tongue, Dressler writes in a passage called, “Passages with a few of the principal Articulations”, “Notes tipped short or staccato are marked thus (…) they are articulated with the syllable too, so short as to leave a space after each Note as if there was a rest. When a slur is placed over the dotes thus (…) it denotes that the Notes are articulated very gently and smoothly with *doo.*”\(^{115}\) Dressler considers the */too/* to be sharp enough of an articulation to use on short notes, while the */doo/* articulation is to be used with long notes.

In discord with some previous writings, Dressler comments on the importance and relevance of the resultant vowel after a syllable in flute articulation. “After a patient trial of every variety of articulation, I have by long experience proved that mode of Double tonguing to be the best, which I shall explain in the course of the following pages. The motion of the tongue, both in *Single* and *Double* tonguing is accompanied by the whisper of a vowel. Different vowels have been proposed, but that represented by the letters, oo, as in *too*, is evidently best calculated for the purpose; for, in the utterance of this vowel, the lips are contracted so as to be very nearly in the position required for playing the flute.”\(^{116}\)

In order to create the double tongue articulation, Dressler recommends an alteration of the syllables */too/* and */dle/*: “The first two notes of any passage are articulated by means of the syllables *doo* _dle_; the next, and all the succeeding

\(^{115}\) Dressler, Pg. 16.  
\(^{116}\) Dressler, Pg. 48.
couples, by *too_dle*, when played very rapidly. When slower, and yet too rapid for the *Single tongue*, the syllables *too_tle* are employed throughout,”¹¹⁷

Dressler also comments on the production of triple tonguing: “When the *triplets* are very rapid the syllables *doo_dle_doo* are to be employed; and when the time is somewhat slower, the syllables *too_tle_too*. As the triple tongue must be practised at first slowly and distinctly, I have marked the Exs: with the latter syllables; these, as the student is enabled to encrease [sic] the time, are to be softened down gradually till he arrives at a clear, rapid articulation of the syllables *doo_dle_doo.*”¹¹⁸ This is simply the addition of the strong tongue stroke at the end of the articulation.

“In passages consisting of *dotted notes with intervening short ones*, occurring in movements of a gay character, such as Rondos, Quadrilles, Waltzes, &c: the *single tongue* cannot beyond a certain degree of rapidity, be employed, without great exertion, and a stammering effect; while in the same passages, that species of *double tongue* which I am about to exemplify, will produce a charming sprightliness [sic] & gaiety, and is not attended with any considerable difficulty in attainment. The syllables to be articulated are *dootoo, rootoo, rootoo* &c. The first two notes receive the syllables *dootoo*, and each succeeding pair, *rootoo.*”¹¹⁹ Since the first note of a

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¹¹⁷ Dressler, Pg. 49.
¹¹⁸ Dressler, Pg. 50.
¹¹⁹ Dressler, Pg. 52.
dotted rhythm is slightly longer than its fellow note, the two strong tongue strokes serve to give the rhythm clarity in articulation.


Lindsay first delves quite briefly into the subject of articulation near the front of his work. He writes, “The tip of the tongue smartly struck against the upper gum, near the teeth, pronouncing the syllable *too* or *doo* into the Flute, is what is called *tipping.*” [Author’s footnote, ‘The syllable *too* is indisputably the best for all *Staccato* passages, since it gives a sharpness to the articulation, which no other mode of tipping can equal; but in other passages, where the notes are not pointed, and are merely intended to be simply tongued, the syllable *doo*, which is softer, is considered preferable, by those writers who are nice in such distinctions.’]¹²⁰

Interestingly, Lindsay delves further into articulation later in his book. He begins this portion by asserting the success of Drouët’s tonguing ability. “The unparalleled excellence of M. Drouët’s *Tipping* (tonguing) must, however, be allowed by all; and well, in fact, it may, for few, we imagine, would consent to sacrifice the days, months, and even years, which he so perseveringly devoted to the acquirement of his certainly inimitable tip.”¹²¹ With this recommendation, he goes on to agree

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¹²¹ Lindsay, Pg. 96.
whole-heartedly with the syllable choices that Drouët supports. He writes, with direct quotes from Drouët’s *Méthode*, “For the Single, or Short Staccato Tip…the syllable I employ is *Teu*; and *Deu* for notes marked less decidedly *Staccato*; but *Tu, Te, Tou,* - or *Du, De, Dou*, are also good articulations. The pupil should choose that which he can pronounce with the greatest facility; and in leaving him the free exercise of this choice, it will sometimes be seen that a good Embouchure is a gift of nature less rare than is often imagined. There are many persons in England and in Italy, who are never able to pronounce the French U, but who nevertheless are capable of striking a note on the Flute quite as well as we do in Paris.”\(^{122}\) It is interesting that Lindsay allows the student to use any syllable that is comfortable, especially when so many of his peers are so adamant about specific phonetic sounds. However, Lindsay agrees with his colleague, Drouët, in asserting that there is a major difference between the English and French pronunciation of /tu/ but that both are equally acceptable.

Finally, Lindsay pays homage to Dressler’s concept by discussing “articulating by Aspiration.”\(^{123}\) “Another mode of articulating we had almost forgotten,” writes Lindsay, “consists in a mere forcing of the note, by means of the syllable ‘*hoo,*’ instead of the usual action of the tongue, and in some slurred passages, where

\(^{122}\) Lindsay, Pg. 96.
\(^{123}\) Lindsay, Pg. 97.
marks of emphasis are attached to the notes, may be advantageously applied."^{124}

He goes on to directly quote Dressler.

The discussion of double tonguing, however, is a completely different vehicle for Lindsay. First he gives a basic summary of what he considers to be the two schools of thought on the matter. "In France...Double-Tonguing had usually been taught by repeating the two syllables *Dou-gue*, and in England by those of *Too-tle*. The latter is the best of the two."^{125} However, Lindsay is not completely sold by this method. He writes, "let the student, therefore...apply all, or either, of the following vehicles, in their turn, _viz._, *Tu-du, Too-ta, Too-da, Tit-ta, Tud-da_ (all pronounced short, except the *too*, which must be sounded as in *tooth*), and after giving full, impartial trial to each, let him, we say, adhere to that one in particular which he finds best suited to his own peculiar Organs."^{126}


Drouët stands out from his peers in that he recommends the student find the most appropriate articulation to suit his or her embouchure, specifically. He recommends the articulation that works the best for him personally. "L’articulation _TEU_ est celle dont je me sers pour attaquer un son; je me suis aperçu qu’elle convient le mieux

^{124} Lindsay, Pg. 97.
^{125} Ibid.
^{126} Lindsay, Pg. 98.
en general; néanmoins essayez aussi les Articulations TU, TE, TOU, TO, et voyez la quelle convient le mieux à la conformation de votre bouche, et vous fait produire le meilleur son. [The articulation TEU is what I use for myself to attack a sound; I realized that that it is the most appropriate in general; nevertheless also try the Articulations TU, TE, TOU, TO; see which is the best for the formation of your mouth, and you will produce the best sound.]

Drouët has an extremely negative reaction to the concept of double tonguing a certain way, especially because of the effect it has on language. “Je ne sais par quelle fatalité on s'est imaginé en France, que les Syllabes qui conviennent le mieux à ce qu'on y nomme Double Coup de Langue étaient: DOU GUE. Certes, rien de plus ingrat pour tirer un Son de la Flûte que ce Son guttural GUE, et sortout dans les traits rapides qui sont tout justement ceux où l'on emploie le Double Coup de Langue. [I do not know by what fatality people are led to imagine, in France, that the syllables best adapted for double-Tonguing are Dou-gue. Certainly nothing can be less calculated to elicit a clear note from the Flute than this guttural sound gue, especially in rapid passages, which are those in which the Double-Tongue should be employed.]”

128 Drouët, Pg. 67.
Drouët does go on to describe a double tonguing syllable that he can recommend. It was developed from his personal playing. "On m’avait aussi enseigné un Double Coup de Langue, mais c’était tout autre chose que DOU GUE, c’était TU TEL. Je m’aperçus bientôt qu’il était à peu près impossible de donner à une Note, en articulant la Syllabe Tel, exactement le même nuance que lorsqu’on articulait tout simplement TE. Je laissai donc l’L et je travaillai par conséquent TU TE. [One is also taught by me a Double tongue stroke, but use anything besides DOU GUE, it was TU TEL. I learned quickly that it was nearly impossible to play the Note with the articulation of the syllable TEL, exactly the same nuance was created when simply TE was articulated. I therefore left the L and I subsequently worked on TU TE]."^{129}

Drouët comments about the use of specific articulations and their uses for speakers of different languages. "L’Articulation qui convient le mieux aux Allemandes, aux Italiens et aux Anglais, est DU RU...les Anglais en donnant à l’Ut le Son qu’ils donnent à l’O dans la Verbe Faire. DE RE avec l’E muet Francais, est aussi une bonne articulation. Tout cela vaut beaucoup mieux que le TU TEL don’t se servent quelque Flûtes tudesques. [The articulation that best suits the Italians, Germans and in English, is Du-ru...the English, in giving the U the sound which they give to the O in the verb “to do.” De-re with the French e mute is also a good articulation.

^{129} Drouët, Pg. 67.
All this is much superior to the *Tu-tel* employed by some flutists.]¹³⁰ The articulation he uses himself is not what he would recommend to speakers of other languages outside of French.

“Ainsi je conseille aux Amateurs du Double Coup de Langue de prononcer DEU REU, DOU ROU, ou DE RE, et à ceux qui n’en sont pas Amateurs, de l’apprendre, vu que c’est toujours une bonne chose à savoir. Je ne dois pas terminer cet Article sans engager les Elèves à ne jamais se servir de DOU GUE. Rien de plus pernicieux pour la Gorge at pour la Poitrine que cette Syllabe GUE en faisant résonner la Flûte. Les Amateurs de cet Instrument doivent avoir en horreur cette Articulation funeste qui a fait souvent des Victimes. [I therefore recommend Amateurs of Double-Tonguing to pronounce *Deu-reu*, *Dou-rou*, or *De-re*; and to those who are not already Amateurs of it, to learn it,- convinced that every Flute-Player ought to cultivate its acquaintance. At the same time, I ought not to conclude this article without again cautioning learners never to employ *Dou-gue*, *dou-gue*, for nothing can be more pernicious to the throat and chest, than the use of this same syllable *Gue*, in sounding the Instrument. Amateurs should, in fact, hold this ill-fated agent of articulation in horror, for it has already had but too many unsuccessful followers.”¹³¹

¹³⁰ Drouët, Pg. 68.
¹³¹ Ibid.
His final words on the subject of double tonguing deal with the inherent accents of the syllables. He writes, “Le Double Coup de Langue ne doit jamais se faire à contre Tems; DEU doit toujours tomber sur un Tems Fort de la Mesure, et REU sur un Tems Faible. [Double tonguing should never be produced against the beat; DEU must always fall on the strong beat of the measure and REU on the weak beat.]”


Bigot, like many of his colleagues, favors the more simple approach to articulation. He teaches one syllable that can be changed in different scenarios. “Il faut avoir soin de donner un coup de langue (qui forme la sillabe [sic] TU) toutes les fois que l’on renouvelle le soufle [sic]. [It is necessary to take care to give a tongue stroke (which forms the syllable TU) all the time on top of the continuing air.]”

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132 Drouët, Pg. 68.

Tulou tackles two sections of the issue of producing articulation on the flute; namely, tonguing and a section he describes as articulation. The first section is more relevant. He begins by claiming, “In some respects, tonguing is the speech of the music on wind instruments. With the help of appropriate articulation, the tongue gives accentuation and coloration to phrases that require sweetness, energy or fluidity.” As the tongue is able to start and stop the notes that are produced on the flute in a manner of ways, it is not a stretch to see the metaphor.

Tulou goes on to describe four kinds of tonguing:

“1) The simple tongue. The simple tongue is produced by striking the tip of the tongue on the edge of the lips without sticking it out and by pronouncing the syllable *tu.*

2) The staccato tongue. The staccato tongue is produced by articulating the note crisply without maintaining the sound.

3) The louré. (See footnote: The louré refers to the mode of attack used for notes that have dots above them but fall under a slur.) The louré is produced by striking the tongue on the palate a little above the teeth while producing du.

4) The double tongue. The double tongue is produced by pronouncing tu que (tu on the first note, que on the second).”

Tulou proceeds to state that, “a variety of tonguing syllables may be used to produce the double tongue.” However, it is clear that his preference is for the above stated mnemonic of /tu que/. It is quite interesting that the words tu and que are both French in origin. An English speaker might not know exactly how to properly pronounce these syllables. However, the softening of the /t/ and /k/ syllables into the French words that Tulou describes will have an effect on the type of articulation the flutist will use.

(c 1835-40) Anonymous. New Flute Tutor to which are added Forty Popular Melodies by an Eminent Professor. Cocks and Co, c. 1835-40.

The anonymous “Eminent Professor” who is credited for writing this tutor very briefly talks about articulation on the flute. He or she writes, “Staccato is a distinct
style of playing. Upon the Flute every note is to be produced by the tongue striking against the teeth as in pronouncing the letter T. This is called Tipping.”

Obviously, there would be more to articulate on the flute aside from staccato passages but the reference is still worth mentioning. Interestingly, the professor makes the comment that striking the back of the teeth produces the articulation.


Nicholson spends a fair amount of time on the subject of articulation, devoting an entire chapter to it. He introduces the topic by writing, “This is a subject on which I am most anxious, as its vast importance (on all instruments) renders it next in consideration to tone. Brilliancy and accent depend on its application; in fact, music would become indefinite without it.”

His description of the most basic form of articulation is much like others. “The first articulation to acquire is Single Tonguing; it is produced by placing the point of the tongue against the roof of the mouth near the gum, and then pronouncing the syllable *too*; in doing this, the tongue will be instantly released from that position, and, by its action, the breath will be impelled with considerable force in the flute.”

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138 Anonymous. *New Flute Tutor to which are added Forty Popular Melodies by an Eminent Professor*. Cocks and Co, c. 1835-40., Pg. 6.
140 Ibid.
However, he goes on to describe this type of tonguing with his syllable of choice as being quite independent of others. “I must here observe, that I have heard and read of various syllables being used to soften the effect produced by the syllable too, but I know the articulation produced by it can be rendered as soft and mellow as by any other; and this is effected by merely relaxing the action of the tongue and subduing the tongue.”¹⁴¹

Nicholson suggests that any variation of articulation a flutist desires can be accomplished by altering the same /too/ syllable. He recommends softening the reaction of the tongue as well as the tip of the tongue itself. Unlike his peers, he believes that different phonetic choices for articulation are irrelevant.

Of the phenomenon of “forward tonguing”, Nicholson says, “The greater number of pupils who come to me have either been taught or have acquired the bad habit of placing the tongue between the teeth and withdrawing it to produce an articulation, this is merely allowing the breath to escape, the effect of which in articulation is feeble and inefficient; indeed, so far from the tongue protruding between the teeth, its action ought not to have the slightest influence on the lips or embouchure.”¹⁴²

¹⁴¹ Nicholson, Pg. 64.
¹⁴² Ibid.
It is apparent that Nicholson disagrees with the concept of forward tonguing but it must be considered that his first language, English, naturally places the tongue further back in the mouth.

On the subject of double tonguing, he writes, “There are various modes of producing double tongueing [sic]; but as I am not writing the system of others, I shall confine myself to my own. Double tongueing [sic] is produced by pronouncing the syllables too_tle_too_tle, it will be perceived that the first and third syllables employed are the same as single tongueing [sic], and the difficulty is, to get the second and fourth as rigorous and clear as the first and third.”

In describing this articulation, Nicholson goes on to add, “This is not to be done by the reaction of the tongue, but by the impetus of the breath acted upon by the root of the tongue, producing a guttural pronunciation of the second syllable.” He points out that the reaction of the tongue after the initial stop-burst actuates near the back of the throat in the form of the other half of the fast double tongue articulation.


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143 Nicholson, Pg. 65.
144 Ibid.
Camus only spends a moment on articulation but he stresses the importance of the air used to produce the articulation. “On donnera un coup de langue (formant la sillabe [sic] TEU) toutes les fois qu’on renouvellera le soufflé. [One will give a tongue stroke (forming the syllable TEU), all the time one will continue to replenish the breath.]”

Coche sounds like he is quoting other treatises when he discusses articulation. “Ainsi c’est donc comme un exercise mécanique que nous engageons à travailler les syllabes suivantes. Du ru, dou rou, tu te, tu tel, ti tel, tu le, du gue, ti cle, tu du, tu ru, tu gue, tug tug, te ke, dou gue, de gue, deu reu, deu geu, dou gou, te gue, de re, les Anglais se servent de tu tle, les Allemandes de ti tel, et les Francais de de gue, dou gue, dou gou. Quant à l’articulation dou gou, elle doit être rejetée parcequ’elle est gutturale. Mr. Drouêt est de mon avis. [Thus it is as a mechanical exercise that we engage to work on the following syllables, Du ru, dou rou, tu te, tu tel, ti tel, tu le, du gue, ti cle, tu du, tu ru, tu gue, tug tug, te ke, dou gue, de gue, deu reu, deu geu, dou gou, te gue, de re, the English are served by tu tle, the Germans by ti tel, and the French by de gue, dou gue, dou gou. As for the

articulation *dou gou*, it is to be rejected because it is too guttural. Mr. Drouët is in agreement with me."\(^{146}\) Coche uses /te que/ and /de re/ as his options in the parts.


Walckiers describes the action of the tongue in releasing air on the syllable. He writes, “Après avoir Aspiré et a l’instant de laisser échapper le soufflé, la langue, donc le bout est pose contre les dents et à l’ouverture des leveres, doit se retirer avec force et promptitude en articulant à peu pres la syllable tet. L’effet que cette action determine se nomme Coup de langue.” [After having Breathed and the instant the wind escapes, the tongue, which is set against the teeth and the opening of the lips, must promptly withdraw itself with force by articulating the syllable tet. The effect of this determining action is called a Tongue Stroke.]

Walckiers describes the effect and use of the single tongue articulation. “L’articulation de la syllable [sic] Tet rend assez bien cet effet; elle est breve, énergique, et marque bien la separation d’un Coup de langue e l’autre. [The


articulation of the syllable Tet has a good effect; it is short, energetic, and successfully marks the separation of one tongue stroke and the next."\textsuperscript{148}

As a progression from the above articulation, Walckiers describes the short articulation from staccato. "Après avoir travaillé quelque temps le Coup de langue de cette manière, on le pres, sera peu à peu. Mais alors on employera la syllabe Te, prononcée du bout de la langue et d’une manière seche et un peu dure; c’est le vrai moyeu d’arriver à ce beau Staccato, si brillant, si perlé. \textsuperscript{149} [After having worked on the tongue stroke each time in this manner, one will close [the mouth], little by little. Eventually, this becomes the syllable Te, pronounced by the end of the tongue and in a dry and slightly hard manner; it is the true point of arrival at that beautiful staccato, so brilliant, so bright.]

Walckiers continues to describe the use of the /te/ syllable. "Le Détaché ou coupé s’exécute du bout de la langue d’une manière sèche et bien articulée. On l’indiquera par la syllabe Te. Cette articulation sert pour les traits d’un mouvement modere et l’attaque des sons soutenus qui demande de la vigueur dans le premier cas la separation d’un coup de langue a l’autre doit être bien sentie. \textsuperscript{149} [Short or detached articulations are executed with the tip of the tongue in a dry and articulate manner. One accomplishes this with the syllable Te. This articulation is useful for

\textsuperscript{148} Walckiers, Pg. 13. \\
\textsuperscript{149} Ibid.
passagework in moderate movements and the attack of continuous tones that require strength in the case of separating one tongue stroke from another.

In contrast, he writes, “Le Piqué ou Détaché adouci s’exécute en adoucissant le coup de langue, ce qui lui donne moins de sécheresse et plus légéreté, et c’est en quoi il diffère du Detaché proprement dit. On l’indiquera par la syllabe De. Cette articulation sert pour les traits de vitesse et l’attaque des sons soutenus qui demandent de la douceur. [The Piqué or Détaché is executed by softening the tongue stroke giving it less dryness and more lightness and in this way it differs from the Détaché properly speaking. One accomplishes this with the syllable De. This articulation is used for features such as speed and the attack of continuous tones that require softness.]

Finally, for the longest and least detached articulation, Walckiers writes, “Le Louré s’exécute en adoucissant tellement le coup de langue qu’il n’y ait pour ainsi dire pointed separation d’un coup de langue à l’autre. On l’indiquera par la syllabe Le. [Louré is executed by softening the tongue stroke so much that there is barely any pointed separation so to speak between one tongue stroke and another. One accomplishes this with the syllable Le.]”

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150 Walckiers. Pg. 40.
151 Ibid.
152 Ibid.
Focusing first on short notes, Bretonnière writes, “Il est essentiel d’observer ici que quand une note porte ce signe (’) il faut l’attaquer franchement en prononçant la syllabe tu ou teu. [It is essential to observe here that when a note has the sign (’) it is necessary to firmly attack and pronounce the syllable tu or teu.]”

He also tackles longer durations of notes. “Les notes marquées par des points ronds doivent être attaquées avec moins de sécheresse que dans le precedent. (Il faut prononcer la syllabe deu.) [The notes marked by the round points [half notes] are to be attacked with less dryness that the preceding [notes]. (It is necessary to pronounce the syllable deu.)]”

Bretonnière clearly does not care for what he perceives as the normal double tonguing syllables. According to his language, French, he declares one mnemonic to be the most useful for the articulation. “Il y a plusieurs manières de la faire soit en prononçant DIE DLE ou TU TEL or DEU REU l’articulation qui convient le mieux aux Français est DEU REU en prononçant la lettre R sans roulement c’est à dire sans grasseyement. Ainsi je conseille aux amateurs et élèves de prononcer DEU, REU et à ne jamais se servir de DOU GUE; rien de plus pernicieux pour la gorge et

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154 Bretonnière, Pg. 49.
pour la poitrine que cette articulation funeste qui a fait souvent des victimes. [There are various manners in pronouncing DIE DLE or TU TEL or DEU REU, [but] the articulation that is the most appropriate to French is DEU REU in that by pronouncing the letter R without rolling, that is to say without heaviness. Thus I advise amateurs and students to pronounce DEU, REU and never use DOU GUE; nothing is more pernicious for the mouth and for the throat than this detestable articulation that has often claimed victims.]


Howe’s method is quite short and spends only a brief paragraph on the topic of articulation. He discusses double tonguing specifically. “The chief difficulty in this [double tonguing] is in the action and reaction of the tongue against the roof of the mouth, pronouncing at the same time the words tootle, tootle, too, to yourself, and carefully observing to sound the notes clearly and distinctly.”

Howe recommends speaking the words prior to articulating through the flute. It is interesting to note that, in Howe’s estimation, the tongue reacts against the soft palate in the mouth and not the teeth.

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155 Bretonnière, Pg. 52.

Kastner immediately and briefly delves into the syllables necessary to articulate on the flute. He equates the success of the single tongue with that of the double tongue. “Sur la flûte, le staccato s’obtient par le coup de langue, en prononçant la syllabe te ou tu d’une manière sèche et précipitée; il y a encore un autre staccato très brillant qui s’obtient par la double coup de langue, en prononçant les deux syllabes dou gue; on n’arrive à toute la perfection desirable de ces diverses nuances qu’après un travail assidu et des exercises multiples. [On the flute, staccato is obtained by a tongue stroke, pronouncing the syllable te or tu in a dry and rapid manner; there is still another very brilliant staccato that is obtained by a tongue stroke, in pronouncing the two syllables dou gue; one will arrive at a desirable perfection of the diverse nuances only after assiduous work and multiple exercises.]”


Carte directly speaks of articulation on the flute emanating from the roof of the mouth, which contrasts with many of his colleagues and predecessors. “Every detached note, and every note commencing a number of notes slurred, must be

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struck by the tongue. This is effected by its being suddenly struck against the roof of the mouth and withdrawn from it, as in pronouncing the syllable too, causing the air to be expelled in a jet."\textsuperscript{158} Quite simply, striking the tongue against the roof of the mouth effectively moves the tongue further back in the mouth. With a strong airstream, the starting point of the tongue could push more air into the flute than starting closer in the mouth.

In reference to Drouët’s treatise, Carte explores the commonplace practice during his life of double tonguing but emerges with a different opinion. "It is usual, in explaining the articulation of double-tongueing, to convey some idea of the motion of the tongue, by reference to a word, in pronouncing which the tongue is supposed to have the same action. The word territory, softened in the pronunciation to teditody, has been used for this purpose, in this mode of double-tongueing just described. But on a close examination of the pronunciation of territory or teditody, or, nearer still (the mouth being closed in playing), toodoo-toodoo, it will be seen that the tongue may act only as in single-tongueing; for on observing the motion of the tongue in pronouncing these syllables, it will be found that the d in di and do is but a softened t; the only difference being that the tongue in d touches the palate more lightly and loosely that in t."\textsuperscript{159} Carte therefore dismisses the then-current

\textsuperscript{158} Carte, Richard. \textit{A Complete Course of Instructions for the Boehm Flute}. London: Addison & Hodson, 1845., Pg. 7.
\textsuperscript{159} Ibid.
approach to double tonguing because the syllables, he believes, are too similar. In his estimation, they are both variations of each other.

Carte goes on to delve deeply into the use of phonetics in articulation. He even goes as far as to make commentary on the limitations of language. He writes, “I know of no syllable in the English language in which the tongue strikes against the lower teeth, and it is this action which forms the first part or syllable of this articulation, the second being the same as that which gives the singer-tongue too, and is struck from the palate. Although, as just remarked, there is no word in the English language in articulating which the tongue touches the lower teeth, this is no reason why such an action may not be used. The nearest syllable to it is thoo, in articulating which the tongue comes a little way through the teeth. All that has to be done is to use the same action, that is, from the lower teeth, dropping the h and pronouncing too. This syllable, alternated with the same syllable struck in the usual way from the roof of the mouth, makes the most perfect and rapid tongueing there is….A slight modification of this mode of tongueing [sic] is made by putting the tongue for the first syllable between the teeth, as in the syllables thoodoothoodoo, or even between the lips, the second syllable being the same as the method just mentioned.”\footnote{Carte, Pg. 7.} He recommends thinking outside of the common thought about language helping to produce an articulation and instead uses the bottom teeth as another strike point within the mouth for the tongue.
He then writes, “As to the vowels, e, i, o, it matters not which is appended to the t or d; they are made by the different manner of opening the mouth, and have nothing to do with the motion of the tongue. The mouth is closed in playing, and the motion of the tongue in pronouncing the syllables ta, te, ti, to, tu, is the same.”

Later on within the treatise, Carte again visits double tonguing. This time his purpose is to dissuade the reader from the use of many common practices for creating a double tongue articulation. “There are several other modes of double-tongueing [sic], as represented by the action of the tongue in speaking the words tootle tootle, diggadigga, tukkatukka, etc. Tootle tootle is unsatisfactory for the indistinctness of the second syllable tle, in pronouncing which the tongue rather assists in preventing the escape of air than aids in propelling it. In the mode represented by diggadigga, or, what is nearly the same, tukkatukka, which is much used in France, the same observation applies to the second syllable, ka or ga, but not to the same extent. In pronouncing the syllable ka, or, what is the same softened, ga, the air is not propelled with the same force and distinctness as in too. A check is also given to the stream of air by the k and g in tuk and dig.” Carte’s major argument with all of the above articulations for double tonguing is that the reaction of the tongue is weaker than the first action.

\[161\] Carte, Pg. 7.
\[162\] Ibid.
The word “tonguing,” as a reference to articulating on the flute, makes an appearance for the first time in Clinton’s treatise. He steps away from the terminology of “tipping” and discusses articulating and its position in the mouth. “The tone should be produced without much exertion, and as each sound is commenced, the tongue must be struck against the palate, as in pronouncing the letter T: this is called ‘Tongueing’…” The tongue strikes the palate in this discussion and not the teeth but unlike some of his predecessors, he does not speak negatively of the latter procedure.

“The staccato is effected [sic] by pronouncing the letter T, as usual; but very short; somewhat resembling the first letter T, in Teeth.” Clinton utilizes the application of phonetics to describe the style of articulation specific to staccato. The vowel that sounds after the initial /t/ in the word “teeth” fundamentally changes the duration of the note to be articulated.

The description that Clinton gives of double tonguing differs from what has come previously. “When a staccato or tongued passage is too rapid for the action of the Tongue already given, it becomes necessary to alternate a second syllable, which

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164 Clinton, Pg. 46.
is commonly termed ‘Double Tongueing;’ this is effected by simply alternating the syllable ‘Kee’ with the articulation already learnt, thus ‘Tee-Kee.’ It must be practised slowly for some time, until a free and distinct action of the Tongue (united to a clear tone) be established; after which the speed may be increased at pleasure. Beginners frequently fall into the error of pronouncing ‘Tick-ee,’ instead of ‘Tee-Kee,’ this must be particularly avoided, because it would throw all the force into the first syllable, and render the second, feeble and inarticulate; it would also injure the Tone, and destroy the flexibility and freedom of the action of the Tongue.”

He makes an effort to prove the importance of working on an even double tongue and the syllables that he suggests emphasize evenly both the strong and weak part of the beat.


In his second treatise, the first having been written nine years prior to this one, Clinton does not delve too much further into the subject of articulation. He briefly mentions double tonguing by writing, “When a tongued passage is too fast for the articulation already learnt, it becomes necessary to employ two syllables, viz: “Toot-ble Too-ble,” or “Tee-key Tee-key,” this is called ‘double tongueing.’ It must be practised slowly at first, in order to acquire and even and flexible action of the

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165 Clinton, Pg. 47.
tongue united to a clear tone." In his first treatise, Clinton teaches only the latter of these two syllable choices. The /tootle tootle/ articulation was never mentioned before now but has obviously crept into his pedagogy,

(c. 1860-61) Anonymous. *Méthode Complete*. (No publisher information)

The anonymous author talks about the immediate use of syllables in teaching as a proper mouth shaper for the subject of double tonguing. This is the only articulation that he or she tackles with syllables. "Comme je l’ai dit plus haut etre tu, et non pas te ou ta, par la raison qu’il faut ouvrir la bouche pour pouvoir prononcer ces deux dernieres syllabes. [As I said above is tu, and not te or ta, by the reasoning that it is necessary to open the mouth to allow for pronouncing the latter syllables."

On the subject of double tonguing, the author briefly writes, "On le prononce aussi Tourou or Turu, mais de quelque maniere qu’il soit prononce il n’en est pas moins defectueux. [One pronounces it also Tourou or Turu, but either manner that it is pronounced it is not any less defective."

When it comes to double tonguing, the author stands against the practice. He writes, "Je me trouverai peut être obligé de fronder quelques usages, tels que les

168 Anonymous, Pg. 13.
doubles coups de langue...[I will find myself perhaps obligated to criticize some practices, such as that of double tonguing...]


Boehm discusses the concept that language relates to the education of articulation on instruments. “Since it is only possible to indicate the declamation or correct expression of the words of a text on an instrument by means of articulation, that is by striking the notes according to the meaning or syllable-beginnings of words, it is important to learn the necessary art of tonguing and its proper application.”

“This tonguing should sound as softly as the second syllable “de” for example, in speaking the word “Beide”, which serves very satisfactorily for making the separate syllables.”


Radcliffe positions the tongue right above the teeth on the roof of the mouth for single tonguing. He writes, “The first articulation to acquire is Single Tongueing [sic]; it is produced by placing the point of the tongue against the roof of the mouth

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169 Anonymous, Pg. 13.
171 Boehm, Pg. 148.
near the gum, and then pronouncing the syllable *too*, in doing this, the tongue will be instantly released from that position, and, by its action, the breath will be impelled with considerable force into the flute.”\(^{172}\)

As for double tonguing, Radcliffe explains that the reaction of the tongue should be far in the back of the palate, in effect, creating an extremely guttural second syllable. “Double tongueing [sic] is produced by pronouncing the syllables *too_tle*, *too_tle*…this is not to be done by the reaction of the tongue, but by an impetus of the breath acted on by the root of the tongue, producing a guttural pronunciation of the second syllable.”\(^{173}\)


Altès describes several different types of articulations that can be seen in his exercises as well as his writing. “On the flute there are five different means of articulating the notes. These means are: Single tonguing, mezzo-staccato, composite tonguing, double tonguing and triple tonguing. These various articulations are obtained by trying to pronounce the following syllables:

I. TU for single-tonguing.

II. DU for mezzo-staccato tonguing.


\(^{173}\) Radcliffe, Pg. 46.
III. TUDU for the composite or compound tonguing.

IV. TUKU for double tonguing.

V. TUKUTU for triple tonguing."\(^{174}\)

On the subject of single tonguing, Altès recommends two syllables. The /tu/ is generally used but he also discusses the use of the /du/ syllable. “The ‘louré’ or mezzo staccato is indicated under slurs. It is played by attacking each note very gently with no break between the notes. For this articulation, the syllable ‘tu’ of the nautural articulation will be changed into ‘du’."\(^{175}\)

The action and reaction of the tongue is specified in Altès’ treatment of the double tongue. He writes, “Double tonguing is produced by endeavouring to pronounce the two syllables TUKU…After having articulated the first syllable, one must, in continuation of the initial impulse, make the tongue go back on itself in such a way that it just strikes the palate in an effort to make the syllable KU."\(^{176}\)

Altès specifies that in double tonguing, “When a phrase starts on the weak note, as in the following passage, where the strong note is replaced by a rest or a syncopated note, this initial weak note must be articulated by the syllable TU."\(^{177}\)

\(^{174}\) Altès, Pg. 212.
\(^{175}\) Altès, Célèbre méthode complète de flute. Paris: Alphonse Leduc, 1956., Pg. 78.
\(^{176}\) Altès, Pg. 213.
\(^{177}\) Altès, Pg. 215.
As for triple tonguing, Altès always begins his articulation with the /t/ as this is the best way to keep the integrity of the triplet. “This articulation is represented by the three syllables TUKUTU and is only applicable when the notes are grouped in threes or triplets, hence its name triple-tonguing.”


Rockstro is extremely detailed in leading his discussion on articulation. He begins with the single tongue. “The most perfect articulation is effected by the pronunciation, in a whisper, of the syllable too, but the French syllable te may be substituted. In either case, what is termed a palatal t should be used; a dental t induces a forward position of the tongue which prevents perfect clearness of attacking a note. In order to utter either of these syllables properly, inflate the lungs moderately; allow the lips to remain slightly open; apply the tongue closely to the roof of the mouth, well behind the gum; suddenly withdraw the tongue, permitting the escape of the wind from behind it, and the syllable too, or te, will be the result, according to the position in which the tongue may be allowed to remain.”

Rockstro warns against using any articulation that commences at the teeth and instead recommends the tongue touch the roof of the mouth. He believes that the

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178 Altès, Pg. 216.
closer the tongue is to the front of the mouth, the more muddled the production of sound will be. Interestingly, he draws attention to the usefulness of the French /te/ syllable, mentioning that it is just as useful as the syllable /too/.

Rockstro makes concessions for softening the syllable for single tonguing, as necessary. “The action of the tongue may be softened, and the beginning of the note rendered less acute, by using the syllable doo instead of too. Hotteterre (1669) used tu for ordinary tongueing [sic], but Quantz (1752) used di as well as ti (pronounced, of course, dee and tee). There could be no possible objection to the use of either of these syllables, if properly pronounced, but I have found that with some persons Quantz’s articulation leads to the habit of keeping the tongue dangerously low in the mouth, and it is generally safer to use the English too and doo, or the French te and de, any one of which syllables will certainly tend to keep the tongue away from the teeth.”\(^{180}\) Any syllable that brings the tongue too close to executing the articulation at or on the teeth is unacceptable to Rockstro; he recommends several variations that remove that possibility.

Rockstro discusses the use of a seldom-seen articulation but makes it quite clear that it is only used by amateurs and not for normal use. He writes, “Articulation by means of the lips, using the syllable poo, is only adopted by the untaught, and the

\(^{180}\) Rockstro, Pg. 437.
same may be said of beginning to sound the flute by puffing out the wind without any articulation.”

A comparison of Hotteterre’s /tu ru/ to Drouët’s /de re/ with the French pronunciation follows. “It is expedient to make the slight change in the vowels, indicated above, for the reasons given in [the example]. Should the dotted notes require to be played staccatissimo, the syllables must be altered to toot’-too’-root’, pronouncing the oo as in foot. Should a mezzo staccato be desired, doo’-doo’-doo’ must be used.” Rockstro finds that the syllables should be altered to express a different resultant vowel. It creates an evenness of production.

The double tonguing syllable most commonly seen in the treatises up to this point is /tootle tootle/. Rockstro believes this syllable to be completely archaic. “Too-tle may now be considered out of date, and almost out of mind.”

Rockstro is extremely critical of the then-current trends of producing the double tongue articulation. He explores some suggestions and then makes his own recommendations based on the resultant vowel and not the rebound action, like his predecessors. “During the last century, the syllables dou’-gou, deu’-gue, te’-que (all with French pronunciation), and others of similar effect came into vogue in

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181 Rockstro, Pg. 439.
182 Rockstro, Pg. 510.
183 Ibid.
France…I prefer to use the vowels oo, therefore I should recommend *too’-coo* for ordinary *staccato* passages, and *took’-coot* for the extreme *staccato*, with modification of the abruptness of the consonants and the length of the vowels, as occasion may require. For the mezzo *staccato* it will be found convenient to employ *doo’-goo*. He does not go into details as to why he prefers the /oo/ resultant vowel.

“Single triplets, whether followed immediately or not by another note, may be rapidly and brilliantly articulated by means of the syllables *too’-roo-coo*, the following note, if any, taking *too*. The same method may be adopted in playing any three quick *staccato* notes. Sometimes a single triplet with the following note may be effectively executed by *coo’-too-coo-too’*. Some persons are able to play exceedingly rapid triplets with the syllables *too’-tlee-too*, *too’-tlee-too*, but very few can execute neatly, and no one evenly, by this means.”

Rockstro employs the same /oo/ resultant vowel that he has earlier in the treatise. His triple tonguing method involves three points of contact in the mouth, which is different from many others. Also, he critiques the common concept of /tootle too/.

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184 Rockstro, Pg. 510.
185 Rockstro, Pg. 512.
The conversation of articulation is usually found later within treatises but in Tillmetz’s work, it appears in the first page. In contrast to others, Tillmetz teaches single tonguing with a completely different resultant vowel, namely the English sound “ay”. He writes, “The lips are extended towards the corners of the mouth and the tones produced by articulating the syllable ‘day’ softly thrown forward, and the current of air, which in the tones of the first octave must pass in a more perpendicular direction, be directed in equal and continuous blowings into the embouchure of the flute.” Even the softer air that Tillmetz directs the student to use is different than the faster and sharp air that many of his predecessors preferred.

Tillmetz also describes single tonguing with a /t/ consonant. He titles an entire section of exercises in his treatise, “Single tonguing through the monosyllable ‘tay’.”

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187 Tillmetz, Pg. 4.
For extremely short and accented notes, Tillmetz instructs the students that, “The notes marked with the perpendicular dash are to be played very short, with the monosyllable ‘tet’.”¹⁸⁸

In two sections concerning the compound articulation, Tillmetz entitles one set of exercises, “Double tonguing using the dissyllable ‘dee-kee’.”¹⁸⁹ For triple tonguing, he includes a set of exercises called, “Triple tonguing using the trisyllable “dee kee dee”.¹⁹⁰ There is no application discussion other than in the inclusion of the syllables underneath the exercises.

“The flutter tonguing has only quite recently been employed in orchestral works by composers. The fluttering of the tones is produced by articulating or rolling ‘rr.” “¹⁹¹ This is effectively the first time that the concept of flutter tonguing has been discussed up to this point in the literature.


Brooke uses special care in describing his articulation syllables with specific reference to language. This way, the student is aware exactly how he perceives the syllable’s pronunciation. “The commencing or striking of a note, is called ‘the

¹⁸⁸ Tillmetz, Pg. 4.
¹⁸⁹ Tillmetz, Pg. 28.
¹⁹⁰ Tillmetz, Pg. 51.
¹⁹¹ Tillmetz, Pg. 60.
attack’, and this on the flute is done by the tongue, which must make the same movement as in pronouncing the syllable ‘te’, French pronunciation; or like the first syllable in the English word ‘turkey’. It will be noticed in speaking this syllable ‘te’ that the tongue touches a place between the top of the teeth, or gums, and the roof of the mouth; this is the place the tongue must touch in ‘attacking’ a note. The tongue should never touch as low as the teeth or lips, but must remain above.”  

Brooke counters the use of other syllables. He writes, “The Portamento or Mezzo staccato…Some teachers tell the scholar to use the syllable da or de, for this form of tongueing [sic], in preference [sic] to ta or te, and the effect is about the same as if a heavier syllable were used, but the te answers the same purpose if each note is as the name signifies, ‘carried over’.”


Taffanel and Gaubert discuss various tongue strokes in the Third Part of their *Méthode*. “De L’Articulation TE-RE…Il faut faire cette articulation avec beaucoup de rudesse; pour obtenir cette rudesse il faut raider la langue qui frappe alors avec force un peu au-dessus des dents. L’attaque (TE) doit être très brève. [Of the Articulation TE-RE…It is necessary to create the articulation with a lot of

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193 Brooke, Pg. 93.
roughness; to obtain this roughness it is necessary to stiffen the tongue and then strike with force a little behind the teeth. The attack (TE) must be very short.]”

The Méthode describes double tonguing with a new set of syllables. “Lorsque la vitesse d’un trait en détaché est trop grande, le simple coup de langue devient insuffisant et il est nécessaire d’employer le double coup de langue te-ke, te-ke, qui permet d’obtenir une très grande agilité. [When the speed of détaché passagework is too much, the single tongue stroke becomes insufficient and it is necessary to employ the double tongue stroke te-ke, te-ke, which allows for improved agility.]”

Taffanel and Gaubert present numerous articulation exercises and even discuss the use of triple tonguing; later on in the exercises, they write out the syllables for use as /te ke te/.


Moore enumerates six basic tonguing styles, “for starting the new student…which could be used in playing the flute.” The first is a description of a method of tonguing that is referred to in modern nomenclature as “forward tonguing” and is often used as a method to teach younger students to start and stop the air stream without worrying about shaping a consonant to start the note. “Tongue past the lip

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195 Taffanel/ Gaubert, Pg. 108.
similar to the ‘spit the hair off the tongue’ method used in starting brass players. As far as I know few flute teachers in this country teach and use this method. As stated before, I certainly do not advocate this method of tonguing when playing the flute in public. However, I have found it a truly marvelous method for private practice.”197 While Moore does not recommend “forward tonguing” as a relevant performance articulation, the action of pushing the tongue out front of the mouth “eventually teaches the flute student how to play the longest intervals with the greatest of ease.”198

His second tonguing style is to “tongue right at the lips but not past the lips. One of the finest orchestral players I have ever heard told me, ‘When I wish to play delicate, sharp, staccatos in the upper register, I always tongue right at the lips.’”199 This is an accepted form of tonguing in the flute community; simply, it shortens the air reed and gets the air as close to the outer edge of the flute lip plate as possible. As a result, notes are very delicate and quick to execute.

Moore describes the regular single tongue, of which “some form...is used practically all the time in playing the flute.” To properly single tongue, he writes “tongu[e] back of the teeth, the tongue moving as though saying ‘too’ or ‘doo’.”200

197 Moore, Pg. 13.
198 Ibid.
199 Moore, Pg. 14.
200 Ibid.
A fourth style of tonguing that Moore expounds upon is double tonguing. “Double tonguing with the syllables ‘too-coo’, ‘ti-ki’, ‘tee-kee’, or ‘doo-goo’ is useful of course in playing rapid staccato passages.” The shorter and faster syllables may help to execute progressively faster and faster tonguing. Additionally, Moore gives suggestions on how to first learn the double tongue. “Probably the best way to practice double tonguing is to practice with just the ‘coo’ syllable first; next, ‘coo-too’ and finally ‘too-coo’. The reason for this recommendation is that the ‘coo’ stroke of the tongue is weak at first and must be strengthened to balance the ‘too’. By all means, practice slowly at first.” This is a helpful use of mnemonics to strengthen the tongue.

Incidentally, instead of recommending the use of /doo-goo/ in conjunction with the /too-coo/ like many of his colleagues, Moore says “Think of a lazy tongue- using the syllables ‘doo-goo’ will perhaps convey the idea of how to do this.” In this way, he never actually recommends using the softened syllables for double tonguing; instead, he describes their use as a way to relax the tongue and learn to double tongue with /too-coo/. Either way, Moore purports that “you can teach a student double tonguing very early. It will be to his advantage to become adept at it.”

201 Moore, Pg. 14.
202 Ibid.
203 Ibid.
204 Ibid.
Triple tonguing is the fifth articulation of interest in Moore’s estimation. This articulation can be accomplished “by the syllables ‘too-coo-too’’. It can also be done by the syllables used generally in playing the brass instruments; namely ‘too-too-coo’. The fastest triple tonguing is done with the syllables ‘too-coo-too-coo-too-coo’, which is really double tonguing with a triple accent.”

Moore analyzes all three possibilities with regard to tongue stroke:

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#1. *Too Coo Too Too Coo Too* uses four full strokes of the tongue;
#2. *Too Too Coo Too Coo Coo* uses four full strokes of the tongue;
#3. *Too Coo Too Coo Too Coo Too Coo* uses only three full strokes of the tongue in playing six notes.”

“Some flutists recommend the first method- some recommend the third. Why not learn both methods? I say both, because method #2 is rarely, if ever, used by flutists. I have found that the more tonguing methods that are practiced, the more flexible and fluent the tongue gets on the regular single tonguing.”

Finally, “there is a sixth way of using the tongue called ‘flutter-tonguing.’ A good way to teach this is to roll the tongue as if saying ‘brrr, it’s cold. The rolling of the r’s illustrates the action of the tongue in flutter tonguing.”

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205 Moore, Pg. 14.
206 Ibid.
207 Ibid.
many students never quite understand how to produce this articulation and it is no wonder. The English sentence inserted by Moore to teach this method is not pronounced the same way by all speakers. Since the trilled r is not prevalent in English, many English speakers might not be able to produce the effect.


Stevens divides his treatise into the beginning, intermediate, and advanced flutists categories. In the beginning section, he discusses articulation merely as the attack on the flute. “All unslurred notes must be attacked with the tongue by means of an appropriate consonant, usually “T”. The position of the tongue for the attack should be the same as when the student uses the “T” in his spoken language.”  This concept of language in pedagogy refers back to Hughes’s assertion (See Chapter 1) that mnemonics are a universal practice.

“The instant the “T” is articulated, however, the tongue should instantly return to a position of rest, out of the way of the airstream passing through the mouth.” The initial explosion of the syllable should not be dampened by the position of the tongue. Interestingly, Stevens says, “the tongue must not be permitted to extend past the biting edge of the front teeth to touch the lip.” This method of tonguing is

\[\text{209 Ibid.}\]
referred to in modern nomenclature as “forward tonguing.” Stevens responds unfavorably to this technique, especially for pedagogy with young people, since he includes it in the beginning flutist portion of the tutor.

In the intermediate section, Stevens goes much more in depth into his concept of articulation but still prohibits any sense of forward tonguing. Of the technique, he says, “There are rare occasions when the consonant ‘P’ may be used, and there are equally rare occasions when the tongue may, for special effects, be started by touching the upper lip with the tongue. At this stage [the intermediate stage] the two latter means should be disregarded, in fact, forbidden.” All tones should be started with a “clean attack...accomplished by using a ‘T’ or a ‘K’ to release the airstream.”

He goes on to discuss the proposed differences between the softer /d/ and /g/ consonants in comparison to the /t/ and /k/ discussed earlier. This is apparently more mental than functional, in his estimation. “In the interest of producing a gentler type of articulation, the suggestion is frequently made to substitute ‘D’ for ‘T’ and the hard ‘G’ for ‘K’. Close analysis will indicate that the only difference between alveolar” ‘T’ and ‘D’ or the velar” ‘K’ and ‘G’ is that the ‘T’ and ‘K’ are voiceless while

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210 Stevens, Pg. 44.
211 Ibid.
* Alveolar consonants are articulated with the tongue against the alveolar ridge (the ridge on the roof of the mouth between the palate and the teeth).
* Velar consonants are articulated with the tongue against the soft palate in the back of the roof of the mouth.
the ‘D’ and ‘G’ are voiced. Since we do not voice any of the consonants used in flute playing, it is apparent that the suggestion bears more psychological than physical value. The value of this suggested substitution should not be overlooked, however, as oftentimes ‘thinking’ an action seems to accomplish the desired effect.”

The position of the tongue in the mouth at the point of the articulation may still change the way the note speaks, but the consonant sounds can be categorized in these two ways.

Double and triple tonguing, in Stevens’ estimation, are an example of compound tonguing, which is simply the effect of combining the consonants discussed above on one note. “Simple articulation consists of the exclusive use of ‘T’ or ‘K’ as the articulating consonant, and compound articulation refers to the combined and generally alternated use of both the ‘T’ and the ‘K’…” However, he continues to discuss that each consonant must have the same vowel sound attached to it on order to have the most even compound tongue. “As in the case of the string instruments which has a slightly different sound for up and down bow, there is a tonal difference between the ‘T’ and the ‘K’. This difference must be minimized as much as possible to avoid the natural identifying sound of the compound tongue. To make the two articulated sounds as similar as possible, the following suggestions must be followed. The vowel used with the ‘T’ and the vowel used with the ‘K’ must be the same, i.e., the ‘T’ and ‘K’ must rhyme. Tone quality can be

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212 Stevens, Pg. 44.
affected by changing the position of the tongue in the mouth, the same manner in which vowels are altered in speech….The nature of the attack must be the identical.”

This is an example of the implication that speech has on flute articulation. While the stop-burst consonants may be similar in a variety of languages, the vowel and mouth shape that accompanies the syllable has a direct effect on the way the articulation is perceived.

Stevens has an interesting and direct process for all articulation production that involves releasing the air stream with the tongue rather than pushing the air. He writes, “All attacks, whether ‘T’ or ‘K’, loud or soft, gentle or rough, should be razor-clean at the point of release of the airstream. The tongue must not be thought of as an ejector of tone, but as a valve releasing the tone. This valve must be either instantly opened or instantly closed. The point of articulation for the ‘K’ must be as far forward in the mouth as is comfortably possible, because the farther the air front must travel before striking the back wall of the embouchure, the more diffused that front becomes.” The frontal position of the reaction of the tongue in double tonguing is of note.

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213 Stevens, Pg. 45.
214 Ibid.
With regard to triple tonguing, Stevens points out the difficulties of the common production and then offers his own suggestions. “When the subject of triple tonguing is raised, there are two commonly suggested articulative patterns and a third which is less common but more logical and versatile. There is little to choose from in the first two patterns which are as follows: TKT, TKT, TKT, TKT and TTK, TTK, TTK, TTK. The prime objection to these particular patterns is the fact that in both cases two ‘T’s’ are adjacent to each other, negating to a degree the facility which is gained by the alternating motions employed by double tonguing…consequently, it follows that a means of triple tonguing which avoids the adjacent repetition of two similar movements be investigated…. ‘T’ and ‘K’ are alternated in the double tonguing process- so it must be with the triple tongue, i.e., TKT, KTK, TKT, KTK. Initially this poses a unique problem of coordination. With a surprisingly small amount of diligent practice it can be handled quite nicely.”

Finally, Stevens deals with the concept of flutter tonguing. He gives two examples but provides reason to why he prefers the latter. “There are two accepted ways of producing the flutter tongue on the flute: (1) the tip of the tongue is manipulated to produce the rolled ‘R’ (rrrrrr); (2) the guttural ‘R’ is used in a sustained form. The latter method employs the use of the uvula or soft palate vibrating against the back of the tongue, very much like a fluidless gargle. Although it is less common and more difficult to cultivate, the author is of the opinion that it is a more practical and

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215 Stevens, Pg. 46.
versatile means. It is extremely difficult, for example, to effectively employ the rolled ‘R’ in the low register, or with much choice of dynamic, whereas the guttural is equally adaptable and controllable in all registers at any dynamic.”216 The rolled /r/ can be facilitated at all dynamics and registers but is quite difficult. It should be noted that the guttural /r/ is quite stronger and forceful than the rolled /r/.

As a closing note, Stevens mentions the difficulty of articulating clearly in the flute’s lower register due to the length of the column of air. He recommends practicing techniques to overcome this problem. “Clean, pointed articulation in the low register is one of the most difficult techniques to develop. Owing to the resilient nature of the air column, the flute becomes responsively sluggish whenever the longer-columned fundamentals are played...Best selected for this purpose is a study or passage which consists of running notes of equal value distributed largely in the lower fifth of the low register. These should be played portato, practiced slowly, and attacked on ‘T’, ‘K’, and ‘TK’.”217


Philip Bate begins with a description of the most common style of tonguing on the flute. He commences with the stop-burst consonant pedagogy that is so often found in the literature. “Most commonly the flutist does this by forming the letter T

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216 Stevens, Pg. 61.
217 Ibid.
with the tongue against the palate behind the upper teeth, but may obtain a similar
effect by touching the upper lip with the tongue and withdrawing it smartly."²¹⁸ Bate
describes this effect as a common technique for tonguing.

He then goes on to describe the “labial P” which pushes out the lips with the tongue
to form the /p/ sound. “Beginners use [the labial P] to produce the top register
softly.”²¹⁹

He says, “it is evident that the consonants of speech offer a convenient method of
naming different articulations.”²²⁰ He goes on to describe several examples in
practice, saying “K, L, trilled R- even the French glottal R is occasionally used…”²²¹
I would venture to say that a speaker of another language, especially those who
speak English and to which the book is directed, may not be familiar or even
cognizant of the “French glottal R” and its use in the application of articulation. He
also describes the double tongue by asking the student to “[use] the tip and back of
the tongue alternately, T-K-T-K.”²²²

²¹⁸ Bate, Philip. The Flute: A Study of its History, Development and Construction. London: E. Benn,
1969., Pg. 234.
²¹⁹ Ibid.
²²⁰ Ibid.
²²¹ Ibid.
²²² Ibid.
In double tonguing, the “K syllable, which came into use about 1820, was regarded in earlier times as too explosive in character.”\textsuperscript{223} As a result, Agricola’s “diridiride” becomes the vehicle that Bate recommends using to soften out the nature of double tonguing. The “diridiride”, Bate says, “…may be interpreted, a little later, and in France, as T-R-T-R-T.”\textsuperscript{224} This softer second syllable allows the tongue to be quick and lithe. “It is said that Drouët, the famous French flautist of the Beethoven period, taught his English pupils by the use of the word ‘territory’, presumably using the English trilled R.” This statement is correct and can be found in the Drouët method.

Another type of /r/ syllable that Bate discusses is the “French glottal R.” Flute players recognize this sound in that “the French glottal R has some place today in the special effect of ‘flutter-tonguing.’ “


Walfrid Kujala directs the student to lightly articulate using the single tongue articulation /doo/. He illustrates the lightness that the tongue will have to produce this effect properly. “Take a big breath, place your tongue lightly on the palate, then suddenly pull it away (but not too far- just a fraction of an inch) as you whisper ‘doo’.”\textsuperscript{225}

\begin{footnotesize}
\item[223] Bate, Pg. 234.
\item[224] Ibid.
\end{footnotesize}
Conversely, Kujala discusses how a change in tongue pressure and syllable can affect the quality of the single tongue. He writes, “You might experiment with varying degrees of tongue pressure. If the attack sounds too vague or gentle...think more in terms of ‘too’ syllables rather than ‘doo,’ but avoid any explosiveness or ‘slap-tonguing’ effect. Slap-tonguing is a term used to describe the ugly, percussive noise produced inside the mouth when the tongue is allowed to return to the palate contact position too quickly and violently (like pronouncing ‘tooT’).”

Kujala expressly warns against the syllable of /poo/. “Even though the lip attack (‘poo’) is a useful technique which we’ll use later for a special purpose, it must be avoided at this time.” He does not discuss this purpose within this treatise.


Takahashi recommends that the flutist first practice without the tongue. “Let the air flow between the lips, pronouncing ‘hwo, hwo’ as you whistle...Then instead of rice, you have to only spit out small air balls, pronouncing twho, twho.”

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226 Kujala, Pg. 18.
227 Ibid.
“Articulation is the pronunciation of sound. Although essential, it is a frequently neglected element of musical communication. Articulation makes the music speak and borrows many of its impulses and inflections from life and language. Krell’s first words on the subject of articulation show the inherent connection between language and the sound produced from the flute. In fact, the way that a flutist thinks about his or her articulatory process should theoretically be in keeping with the articulation and cadence of language.

There are various types of articulation that can be produced on the flute, arguably because of the lack of air resistance on the flute. Krell attributes these many different articulations to bowings of the stringed instruments. “If the tone of the violin is introduced by strokes of the bow, the tone of the flute is similarly initiated by the pulses of the diaphragm.” These pulses (released by the tongue) can vary from a sigh with gentle, vowel-like beginnings, to a sustained pulse for touch tonguings or quiet “change of bow” tonguings; from soft nudges for the lourès, to intermediate punches for the detachés; from percussive jabs for the staccatos and marcatos, to a sustained and supported pulse for the spicatto-like skipping tongue technique of the fast single, mixed, double or triple tonguings. The diaphragm, in

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230 The Flute community generally now recognizes that the diaphragm is an involuntary tissue.
combination with the tongue and the air stream shaped by the lips, is capable of an
infinite variety of meaningful impulses, much of it done with the same imagination
that is intuitively used in the inflections of speech.”

Due to the lack of air resistance encountered when tonguing, the flutist may use many of the inflections found in his or her speech to effectively enunciate on the flute.

Once again, the metaphor of the tongue acting as a release valve for the air reed is demonstrated. “Throughout all this, the tongue plays an essential part, but it must be remembered that it is simply a kind of spring valve that contains and releases the appropriate impulse of pressure of air behind it- sometimes barely audible, sometimes just touching the moving air, sometimes blocking out *detaches* and at others releasing little, miniature *staccato* explosions.”

The metaphor could be extended to language; the release valve that builds pressure behind the tongue corresponds to stop-burst consonants.

Krell discusses only a few syllables that are to be used to articulate on the flute. Unlike many of his predecessors, he believes that variations of /t/ and /d/ are the limits of the consonants. “The tongue releases this air from a position on the gum ridge just above the teeth. The syllables used are somewhat limited, mostly those consonant combinations starting with the sharper “T’s” (too, tah, toe, etc.) and

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231 Krell, Pg. 18.
232 Ibid.
graduated through to the more gliding and blunt character of the “D’s” (doo, dah, doe, etc.).”

Krell directly compares the effect of the double tongue on the flute to words of the English language. Much like spoken sentences, the articulation of a phrase should indicate high and low intensity points in the phrase. “The articulations of the flutist should indicate and shape these accumulations and diminutions of tension and energy by graduating the weight, length and character of these articulations and by resolving the tonguing syllables on the strong rhythmic impulses of the measure, much as we resolve the syllables in speech, e.g., the combination of the “to-doo” must have the same inflection that we use in pronouncing “to-day.” Even when a pick-up “to” is separated from the “doo,” it must imply the up impulse and consequent resolution on the “doo.” In this way, the impetus of the measures is outlined by the way a sentence has drive and impulse. This is a common comparison in the literature.

An interesting move away from the generalities of Kincaid’s teaching, a few suggestions are offered up to handle more specific articulation problems. “This syllabification [to-doo] is particularly applicable in the rapid, mixed articulation patterns involving dotted rhythms. When the tempo becomes very rapid, shift to the

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233 Krell, Pg. 19.
234 Krell, Pg. 20.
skipping “tare” or “taruh” in which case the miniature roll or slap of the tongue resolves the pattern.”

“The sharper syllables (te-ke, etc.) tend to chip at the air and musclebind the tongue, hence the blunter sounds of “doogoo” for the double and “doogoodoo” for the triple tonguings. These blunter syllables help to equalize the discrepancy in attacks and relax the tongue. For the more staccato and rapid passages, a bit sharper consonant and a little tension in the lips will provide an elasticity that will produce a quasi-staccato without interfering with the flow of air.” The suggestion of Krell’s “sharper consonants” refer to the /t/ syllables rather than the /d/ as discussed earlier.


Kincaid allows the flutist to try many resultant vowels to find the best suited to the articulation of double and triple tonguing. “To avoid tiring the tongue, double-tonguing is used for duple (double) multiples of notes, and triple-tonguing for triple multiples. To double-tongue, alternate articulations between the tongue (say ‘ta’) and the glottal throat stop (say ‘ka’). Thus, in a presto tempo ‘ta-ta-ta-ta’ becomes

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235 Krell, Pg. 20.
236 Krell, Pgs. 20-1.
articulated as ‘ta-ka-ta-ka.’…Practice this technique slowly, and notice the effect of changing the vowel- the lips are adjusted to more flexible positions.

    ta-ka  ta-ka  ta-ka  ta-ka, etc.
    ti-ki  ti-ki  ti-ki  ti-ki, etc.
    the-keh  the-keh  the-keh  the-keh, etc.
    too-koo  too-koo  too-koo  too-koo, etc.
    tu(r)-key  tu(r)-key  tu(r)-key  tu(r)-key, etc.

(Elide the r in this pattern)\(^{237}\)

“Triple-tonguing is used to articulate triple multiples of notes. Just as with double-tonguing, there is an alternation of the tongue and the glottal throat stop. Emphasis on the first note helps to clarify the triple feeling of repeated notes. Practice the exercises in double-tonguing as well as all scales and arpeggios in triple-tonguing, with the same vowels used in double-tonguing:

    ta-ka-ta  ta-ka-ta  ta-ka-ta  ta-ka-ta, etc.
    ti-ki-ti  ti-ki-ti  ti-ki-ti  ti-ki-ti, etc.
    teh-keh-teh  teh-keh-teh  teh-keh-teh  teh-keh-teh, etc.
    too-koo-too  too-koo-too  too-koo-too  too-koo-too, etc."\(^{238}\)


\(^{238}\) Kincaid, Pg. 46.
At the start of Chapter Nine, dedicated to articulation, Nancy Toff writes, “the dictionary definition, is ‘the art or process of speaking.’ The definition applies to flute playing just as it applies to verbal utterance. The components—breath, rhythm, accent, phrasing, termination, and silence—are the same, as are the tools—the respiratory system, lips, and tongue. The intellectual process, too, is similar, whether it forms verbal syllables into words, phrases, and sentences or joins musical notes into phrases, periods, and movements.”

Attributing articulation to music allows the human being to understand and process it in much the same way that our language functions.

Like many of her predecessors, Toff describes the single tongue as some form of /t/ stroke. “Most commonly, single-tonguing consists of initiating a tone with a T sound, either TE, TU, TA, or even TI. It is done, quite simply, by pulling the tongue away from the back of the teeth, just at the point where the tip of the tongue touches the roof of the mouth when the mouth is shut. The closer the tongue is to the front of the mouth, the lighter and more agile the articulation.” Interestingly, Toff points out that the stroke of the tongue is lighter if it is further forward in the mouth. While she does not blatantly advocate forward tonguing, the action of

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239 Toff, Pg. 116.
240 Toff, Pg. 117.
bringing the tongue farther forward to articulate the /t/ syllable is more on par with the French pronunciation of the syllable.

A close relative of the single tongue stroke is the stroke created with the softer /d/ syllable. “…Mezzo-staccato single-tonguing or the 'legato slur,' [is] articulated with the syllable DU, DA, DE, or DI…The tip of the tongue is softer and more rounded, and strikes farther back in the mouth. For this reason, it is sometimes known as dorsal or top tonguing.”241 This articulation is further back in the mouth and is not as strong or articulated as the /t/ syllables.

Toff continues lining up the hierarchy of single tonguing, based on strength of sound. The last and softest articulation in the single category is “pharyngeal tonguing, or back tonguing, which uses the dorsal or upper middle portion of the tongue. Its initial consonant is K or G.”242 This articulation serves as the basis for the backward stroke of double tonguing.

“Normal and mezzo-staccato tonguing may be combined in a TU-DU (or TA-DA or TE-DE or TI-DI) alternation, which is roughly equivalent to an obscure violin stroke known as Viotti bowing.”243 This is a “bounced tongue stroke” that Toff describes as being strong and then soft throughout the phrase. The natural rebounding

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241 Toff, Pg. 117-8.
242 Toff, Pg. 118.
243 Ibid.
sound of the articulation is in keeping with her overarching metaphor of bowing method.


Nyfenger has put several illustrations of poor articulation choices in his first chapter on articulation. Among them are “doo?” and “Tah!” However, he discusses the use of air with the tongue by describing, “The embouchure, air pressure, and tongue must work together in synchronous unity to avoid the double or even triple attack [of unfocused air]: T..hoo! – tongue followed politely by air.”

Nyfenger also lays out a plan for conquering the practice of double tonguing. He has the student practice both of the syllables separately and then alternate them appropriately. “Carefully alternate TKTKTK (or DGDGDG), still as sustained as possible.”

He gives several more examples of syllables for double tonguing that will change note length or affect the sound on the flute with colorful descriptions. He writes, “For the flutist, a loose lazy vowel-like tonguing like DE-GE produces fast but long notes. These notes are less incisive and seem to be anti-punctuation, resembling the speech of a quick-minded inebriate, who is still under control. A more rigid,
Germanic TI-KI or TA-KA tonguing (try them all) produces shorter, more punctuated, fast notes.\textsuperscript{247}

Nyfenger does point out the need for careful and concise finger technique for double tonguing by writing, “In many instances it is the fingers which should be prosecuted as the sole offender in a case of a limping TA-KA.”\textsuperscript{248}


Angeleita Floyd’s book, The Gilbert Legacy, chronicles the pedagogy of Geoffrey Gilbert. Of his articulation, she writes, “Gilbert’s method of tonguing since the 1940’s was executed by placing the tongue behind the embouchure, passing between the teeth- a more forward tonguing. This contrasts with most American flutists who are taught to place the tongue behind the teeth. Since adopting the French method of forward tonguing, Gilbert found many advantages to using the forward “T” syllable: (1) the French “T” allows one to use the tip of the tongue for a cleaner, neater effect; (2) pronunciation of the tonguing syllable “Tu” in the French manner – “Tooough” – allows the throat to open automatically; and (3) by tonguing closer to the embouchure, the tongue may be more precise and delicate. Gilbert

\textsuperscript{247} Nyfenger, Pg. 86.  
\textsuperscript{248} Ibid.
stated that he used the forward “T” method for all types of tonguing—single, double, and triple.”\textsuperscript{249} His use of the forward tonguing stems from its light nature.

“Rampal tongues everything forward and I don’t think you will find any Frenchman or French-trained flutist who doesn’t. You see, it is in the nature of their language—forward in the mouth and very clearly enunciated. People tend to believe that the production of the letter ‘T’ is the same in almost every language but I don’t think it really is. An English ‘T’ is produced behind the teeth. In fact, I think that there could be a special problem in America in the sense that the spoken language itself is losing it’s ‘T’s’ anyway…One often hears ‘t’ replaced by ‘d’ as in ‘liddle’ instead of little, ‘Adlana’ instead of Atlanta, or ‘innermission’ again with no ‘t’…I’m merely posing the question of whether or not it does have anything to do with the deterioration of the articulative process in the language.”\textsuperscript{250}

Gilbert was speaking of Jean-Pierre Rampal, generally and popularly considered to be one of the most renowned French flutists of all time. He attributes the use of forward tonguing to the French language. The loss of the /t/ syllable in the English language, coupled with the concept that the syllable is different in other languages might completely change the efficacy of the mnemonic in flute articulation pedagogy. This question is also the basis for the empirical portion of this document.

\textsuperscript{249} Gilbert, Pg. 103.  
\textsuperscript{250} Ibid.
Gilbert suggests using a softer syllable for a longer articulation. “For a broader, more legato method of articulation, use a soft ‘Du’ syllable instead of ‘Tu.’ The ‘Du’ syllable ‘blunts the tongue.’ Remember to use diaphragm pushes to assist the articulation.”

Floyd continues with a brief instruction by Gilbert for flutter tonguing. “Gilbert suggested that when practicing flutter tonguing, it was better to start with the throat-saying ‘ouuuuu’ like a guttural growl, using greater breath pressure, rather than beginning with a ‘T’ syllable.” The explosive nature of the stop-burst consonant might adversely affect the start of the flutter tonguing, so Gilbert recommends not beginning with any articulation.

Gilbert goes on to enumerate some possible articulation patterns that will aid the flutist.

“1. Articulation pattern of a dotted eighth followed by a sixteenth: When playing this rhythmic pattern, use the articulation syllables ‘Du,’ ‘Tu Du,’ ‘Tu Du,’ etc. Practice the articulation very legato, connected, and long, and then very short,

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251 Gilbert, Pg. 106.
252 Gilbert, Pg. 107.
staccato, and separated, which is more difficult and requires more practice.”

Gilbert’s practice technique will build the student’s repertoire of articulation.

“2. Articulation patterns ‘slur two, tongue one’ and ‘slur three, tongue one’: Geoffrey Gilbert announced at the 1985 Masterclass held in Tampa, Florida, that the theme for the class was going to be articulation and vibrato. He continued, ‘It has come to my attention that flutists have a great deal of difficulty playing ‘slur two, tongue one’ in a triple pattern, along with “slur three, tongue one.” His secret for ease of tonguing is to use the syllables ‘Tu’ for the first of the slurred notes and ‘Ku’ for the tongued notes.”

Depending on the speed of the passage to be learned, the /k/ articulation may be quite difficult to facilitate effectively.

“Gilbert found that it was possible to double tongue forward, between the teeth (behind the embouchure), just as easily as single tonguing and advocated this method for double tonguing. The syllables used for double tonguing are ‘Tu’ ‘Ku’ or ‘Du’ ‘Gu’. Gilbert made a special recommendation for not practicing the ‘Ku’ syllable alone. He believed that this ‘tends to build unwanted muscles and tightens the throat.’”

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253 Gilbert, Pg. 110.
254 Gilbert, Pg. 111.
255 Gilbert, Pg. 115.
"Gilbert advocated using the syllables ‘Tu’ ‘Ku’ ‘Tu’ or the superimposed version ‘Tu’ ‘Ku’ ‘Tu’ ‘Ku’ ‘Tu’ ‘Ku’ for triple tonguing. Where smooth triple tonguing is required without accents on the first note of each group, or where there are triple tonguing patterns in 6s where accents may not be wanted, use the pattern ‘T’ ‘K’ ‘T’ ‘K’ ‘T’ ‘K.’ Like many of his predecessors, Gilbert recommends alternating the syllables to remove the repetition of the /t/ articulation in triple tonguing. Effectively, a hemiola of double tonguing is created.


Gareth recommends that the student speak a mnemonic to find the correct position of the tongue. He points out the difference between the pronunciation of /tu/ and /too/, which is relevant for many English speakers. “On pronouncing the syllable ‘tu’ at the beginning of a note (never ‘ter’, ‘too’, or ‘te’, because they distort the embouchure) the tongue will find its correct point of contact with the palate. This is immediately behind the top teeth, without touching them…” Gareth never goes into depth on any other single tonguing syllable but is very specific about the placement of the tongue for this one syllable.

On the subject of double tonguing, Gareth writes, “When the tempo demands, two syllables are pronounced instead of the normal one, the second directing the
tongue to strike another part of the mouth so that a considerably quicker articulation is obtained. The normal ‘t’ is joined by ‘k’, and this double tongued ‘t-k’ will give the very rapid staccato which is so often needed. The ‘k’ articulation is obviously weaker than the more forward ‘t’, but with patient concentration the two syllables can be made to sound even, and equal in quality.\textsuperscript{258}

Gareth also discusses triple tonguing. He only recommends this tonguing for use with triplet passages and opts for the standard /tkt tkt/ syllables. The modified double tonguing that has been a topic in many of his colleagues' works is, in his opinion, insufficient. “Rapid detached triplets need three syllables, ‘T-k-t’, known as triple-tonguing, enables very fast passages to be played but requires concentrated practice and great perseverance. Triple-tonguing is more difficult to master because there are adjacent ‘t’s; indeed in very rapid tempi many experienced flautists admit that they descend to the use of a triple accented version of double-tonguing, an articulation which for this purpose becomes ‘t-k-t, k-t-k’. This rather second-rate method is acceptable only in abnormally fast passages, and care must be taken to emphasize the ‘k’ when it takes its place as the principal note of the group. If a triplet is preceded by a single note of the same value it is to be articulated by a ‘t’; the highest standards always obtain in instrumental technique, and it will be found that the tongue can be trained to subscribe to them.\textsuperscript{259} The concept of tonguing the single notes attached to the triplets with a /t/ is reminiscent

\begin{footnotes}
\item[258] Morris, Pg. 30.
\item[259] Morris, Pg. 31.
\end{footnotes}
of much earlier treatises dating back into the Baroque era that specify the use of articulations for anacrusis notes.


Donald Peck rejects the idea of using a /t/ stop-burst consonant entirely. He writes, “A sharp attack with the tongue is not desirable. Instead of tonguing with a t sound, you should begin the syllable with a d sound (de, do, du). The tongue should always be ‘at ease’ in the mouth- very relaxed and natural- never tight or tense. It must never stop the note or cut off the air. Once the attack is given, the tongue stays out of the way. It must not return to the roof of the mouth until it is time for the next d syllable.”

In order to create a tone that begins without any perceivable start, Peck recommends a syllable that does not begin with a stop-consonant at all. “In fact, for an attack, one need not use the tongue at all- merely release the air to make the sound begin (as a violinist rests the bow on a string and gently starts to move it- ‘start on the string,’ they say). Take a BIG breath. Build up the support in the

diaphragm. Shape the embouchure and release the air into the flute- as if to say ‘who.’ The tone seems to appear from nowhere, to listeners in the hall.”

On the subject of double tonguing, Peck writes, “If the passage is so fast, or the type of sound you desire suggests that you should use double-tonguing instead of single-tonguing, the process involved is basically the same. That is, instead of using a t sound followed by a k sound, you should use a d syllable and a g syllable such as de ge or do go.” He does not specify a particular resultant vowel but gives a few examples.

As many others have suggested, the application of the triple tongue can be accomplished in two ways according to Peck. “When triple-tonguing, I suggest two types for different effects. If a triplet sound is to be stressed, use ‘de-ge-de, de-ge-de.’ This is especially good to use if each note to be played is a different note. But if several notes are repeated for a series of triplets or sextuplets it is much smoother to use the syllables ‘de-ge-de/ge-de-de.’”

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261 Peck, Pg. 44.
262 Ibid.
263 Peck, Pg. 45.

Debost spends quite a bit of time discussing the relationship between the spoken word and the consonance inherent to articulation on the flute. He begins his chapter on articulation by stating, “Each musical phrase can be taken as a spoken sentence, each element of this phrase as a word, and each note as a syllable. This, in turn, consists of consonants and vowels.”

The multitude of syllables found within separate languages is discussed briefly. “The sound equivalent of any syllable is unique to each language. Consider the imaginary words *tude* and *ture* (for example, in *latitude* and *miniature*): it is difficult to compare the dryness of the French *u*, the guttural German *ü*, or *y*, the velvet of the Italian and Spanish *ou*, the wet English *you*. The wonder of sounds!”

“The *r* seems to be a stumbling block of Japan, where *r* and *l* are pronounced almost identically. Modern English speakers find it hard to deal with either the rolled or the guttural *r*. Learning a foreign tongue or two opens one’s mental scope; for a musician, and particularly for a flutist, it is a charming and helpful tool for articulation and for a natural phrasing.”

Debost recognizes the special need for

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265 Debost, Pg. 27.  
266 Ibid.
flute players to develop the abilities of the tongue through speaking different languages.

Debost proposes a formula for articulation. He describes the use of certain stop-burst consonants to start a note and then several resultant vowels that have different uses. He asks, “What syllables can be used to conceptualize flute articulation? The consonant can be \( t \) in all forms of single tonguing; \( k \) for short double tonguing; \( d \) for lourè (sometimes called legato in North America); \( g \) for mellow double tonguing; and \( d \) for composite single tonguing…even \( p \) is useful for a soft articulation without the tongue. The only issues are comfort, efficacy, and clarity, not dogma. Choices for the vowel are more limited; \( a \), as in bar, sings well in the long notes but can be sluggish for fast runs; \( e \), short as in pet or long as in where, is more nimble for staccato passages in single, double, and triple tonguing. The \( i \) of bid or kiss is probably the most commonly used sound in any language. Certain theories contend that Latin tongues lend themselves better to a clear articulation. However, there is no special trick or magic wand: I know some English-speaking flutists who have no problem with tonguing.”

Debost goes on to discuss a modern view on the articulation described by Johann Quantz. “Quantz dedicates a whole chapter, with many illustrations, to the use of \( tiri \) (\( ti \) short, \( ri \) longer) at a time when the \( r \) was normally rolled throughout Europe.

\[267\] Debost, Pg. 27.
Today, *di* would be most commonly used in composite tonguing instead of *ri*. Then as now, it is an extremely convenient and musical means of articulation.”


Powell discusses Agricola’ contribution to the discussion of tonguing for all wind instruments. Additionally, he reports on Hotteterre’s thoughts about the syllables */tu/* and */ru/*.

Powell’s comments that the syllables used by Quantz (*/ti/*, */tiri/*, */di/*, */diri/*, and */did’ill*/) are variations of the soft and hard articulation and credits Quantz for being the first in the flute literature to describe double tonguing, “notwithstanding the claims made on Agricola’s behalf.”

Powell describes a fight that occurred between Quantz and a former pupil, Joachim von Moldenit, who was apparently incensed that Quantz had said that von Moldenit “lacked the natural aptitude to become an excellent flutist.” In 1758, Moldenit promptly published a series of pieces that utilized a new set of articulations that emanated from the bottom lip. Powell writes, “This prompted a point-by-point refutation in November, in which Quantz defended his choice of tonguing syllables,

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268 Debost, Pg. 28.
270 Powell, Pg. 101.
noting that ‘other syllables such as *bibi, pipi, mimi, nini, kiki,* etc., would have been useless for this function’. He also emphasized a point that some later commentators have missed in the *Essay* itself: that *tiri* and *diri* are not double-tonguing.²⁷¹

Powell goes on in his survey to discuss Devienne’s contribution. “He [Devienne] displaced the Anglo-Saxon double tongue (*tid’ll*) with a French version (*dougue*), introducing the form still used by modern flutists.”²⁷² Indeed, many modern flutists use this syllable to articulate double tonguing and it is commonly taught.


In studying with Jean-Pierre Rampal and Alain Marion, Cohen became aware of the differences in articulation that French pronunciation afforded her. She writes about a lesson with Marion, “he taught me to use ‘*just* the air in the mouth’ to create a ringing tone at the instant of attack. Placing his tongue between his teeth, he spat the attack saying, ‘TU, TU, TU.’ I kept trying to imitate him with little success. He repeated, ‘Again! Again!’ After an hour or more, I begged him to let me stop. In my frustration, I cried, ‘It doesn’t matter! Let me stop!’ Fortunately for me, he commanded, ‘Again! Again!’ He *knew* that I had the ability to succeed and refused to allow me to give up. Suddenly, and miraculously, my tone sounded vibrant and

²⁷¹ Powell, Pg. 101.
²⁷² Powell, Pg. 125.
free, and felt unlike anything I had experienced before. We looked at each other in amazement and recognition. What was the secret? I discovered that he was articulating TU with his native French pronunciation, while I was articulating with an American accent. He must have repeated TU a hundred times. When I imitated his pronunciation, the tone resounded instantaneously.”

Cohen goes on to describe the articulation syllables that Rampal and Marion recommended. “Single tongue- TU (tongue between the teeth).” As for compound articulation, she writes, “Double tongue- TU-KU. When you double tongue quickly as in Enesco’s *Presto*, think of changing the syllables in your mouth (TU-KU, TI-KI, TA-KA, TO-KO, etc.) to help relax the tongue. Practice using the syllables TU-DU, TU-DU for dotted rhythms. Triple tongue- TU-KU-TU.”

Final Conclusions

In summation, the pedagogy of articulation has greatly changed over time. In general, a great deal of the multitude of articulations for single tonguing have been amalgamated into fewer and fewer syllables. However, the uses of those articulations are made manifest in many different ways. Additionally, many practices that were originally viewed negatively became favorable throughout history.

274 Cohen, Pg. 16.
Original syllables for the flute were /tu/ and /ru/, generally used for slower and faster notes respectively. Many authors used variations of these syllables for dotted rhythms. Mahaut in 1759 claimed that the syllables were no longer relevant to modern music anymore and afterwards, there are no instances of the /ru/ syllable outside of references to articulation of antiquity.

Double tonguing originated with Quantz and an anonymously written treatise of unknown chronology. Almost every major author wrote about the effect with similar or altered syllables until Gunn in 1793 proposes the weakness of the second beat. Before long (beginning with Devienne) authors began to write about their hatred of the effect. In the early nineteenth century, double tonguing began to gain in popularity again and has carried into the modern era of flute playing. Triple tonguing followed the same trends, first being introduced by Granom in 1770.

Aside from the separate connotation of Agricola’s treatise, flutter tonguing is first seen in 1890 under Tillmetz. While only discussed lightly, the effect never falls out of use.

French speakers such as Drouët and Bretonnière discuss the implications of different languages on articulation in the early nineteenth century and even offer suggestions for different articulations based on nationality.
The /d/ syllable and variations generally originated with Quantz in 1752 (and previously in his Solfeggi). In review of the sources included in this document, there are thirteen variations of the /d/ syllable for single tonguing, sixteen variations for double tonguing and five for triple tonguing. This totals to thirty-four different ways to use the /d/ syllable. The purpose of these types of syllables was to allow for a softer articulation. This type of articulation fell out of popularity for many decades as many authors claimed that the softer syllable wasn’t necessary as long as the flutist could change the /t/ syllable to the required lightness. It appeared again, starting with Quantz and gained some popularity in modern treatises.

Variations on the /g/ syllable are a rather new installation to the literature. The syllable makes its first appearance in Stevens’s treatise in 1967 and has gained some popularity in modern treatises. In review of the sources included in this document, there are four variations of the /g/ syllable for single tonguing and only one variation for double tonguing.

The /h/ syllable and variations began by Tromlitz in 1791 and were relegated to dotted rhythms. There are very few instances of this syllable in the literature but the use evolved to starts of notes without the tongue. In review of the sources included in this document, there are only four variations for single tonguing.
Bate introduces the /k/ syllable and variations in 1969. Once again, there are only four instances of single tonguing on this syllable, although there are many instances of this syllable being used for the reaction of the double tongue articulation.

There are two instances of the /l/ syllable and a variation, the first of which was mentioned by Walckiers in his 1829 treatise as a single tongue method. This appears to have never caught on, as it is only mentioned once more, in Bate’s treatise.

The /p/ syllable and variations were not popular for many years. Introduced first by Rockstro in 1890, the single tongue articulation was expressly forbidden as anything other than a teaching syllable. In fact, it remained so through Kujala in 1970 and has only recently been accepted as an articulation with other uses outside of the pedagogical. In review of the sources included in this document, there are only five variations for single tonguing.

The /t/ syllable and variations are by far the most popular articulations found within the literature. In review of the sources included in this document, there are thirty-three variations of the /d/ syllable for single tonguing, twenty-nine variations for double tonguing and fourteen for triple tonguing. The total is seventy-six variations, with /tu/ as the most written about. This includes several single tongue variations in
tandem with /r/ syllables for dotted rhythms, with the first of the syllables appearing in Hotteterre in 1707.

Aside from a few outlying syllables, these consonants generally represent the articulations found within the flute literature dating back to Hotteterre. Therefore, it is reasonable to instruct a student to use a syllable that extends past his or her language, when the possibility exists that the syllable is produced differently in the home language, adding a new wrinkle to performance and pedagogy practice. If there is a difference, is there a comparison to be made? Can the inflections of a flutists’ native language be transcended within his or her flute playing?
Chapter 4: Research Protocol and Experiment

In order to apply for the appropriate federal government permission protocol for use of human subjects by the Ohio State University Institutional Review Board the following protocol was submitted in early March 2012 for review. The information included below may contain grammatical and spelling errors but has been preserved in its original state. The use of the future tense is due only to the requirements of the submission; the research has been carried out and will be discussed in depth in Chapter 5.

Flute Articulation Pedagogy: The Effect of Language-Specific Consonant Pronunciation on a Flutist’s Articulation within the French and English Languages.

Principal Investigator (Advisor): Katherine Borst Jones
Co-Investigator (On-Site Researcher): Erin Helgeson Torres
(For completion of a Doctorate in Music Arts Document)

Research Protocol

I. Objectives

The purpose of this research is to apply elements of consonance found within the French language into the tonguing studies of an advanced flute player with the
intent to observe whether or not there is an immediate affect on that player’s articulation on the flute. I hypothesize that the application of the English pronunciations of stop-burst consonants /t/, /k/, /d/, and /p/ will have an immediate effect on a flutist’s articulation in their flute sound production.

The overarching purpose of this research is qualitative in nature; that is, it will validate or invalidate the addition of a teaching practice targeting language into flute pedagogy. Along that vein, this project is derived from the scientific method but is not meant to serve as an absolute; instead, I hope that this research can define and shape future research into flute pedagogy and the possible application of a new method of teaching.

My research documents instances of the use and discussion of linguistics in flute pedagogy centered on articulation in the literature and then targets that pedagogy. Consonants are generally the same in the English and French languages and are often taught to flute students to phonetically illustrate articulation. However, the pronunciation of stop-burst consonants, such as /t/, /k/, /d/ and /p/, are slightly different, as discussed broadly in the flute literature and more formally in language studies. If the application of language into the articulation pedagogy of flute players will affect their performance, then it may be asserted that there is some validity to implementing targeted language “therapy” into articulation exercises.
In order to accomplish this experiment, I will travel to Dijon, France and work with a group of students at the Conservatoire National Rayonnement Jean-Phillippe Rameau de Dijon (CNR). The project will attempt to implement English and French syllables into an articulation exercise by first having the student read through contextual sentences, speak a word with a targeted stop-burst consonant common to flute sound production and then use that starting syllable to articulate with a single tongue through a selected passage. Both the French and the English-speaking portions will be conducted in the same manner and the parallel stop-burst consonants will be targeted in both languages. After the experiment, the recordings of the two languages will be compared to each other through spectrographic analysis. In addition, appropriate federal government permission protocol for use of human subjects was applied for and granted.

II. Background and Rationale

With specific reference to stop-burst consonant production, a linguistics study by Bonneau, Djézzar and Laprie in 1996 discusses the similarities and differences in the various consonants of several languages. “French is a syllable-timed language, whereas the others [Dutch, English, German] are stress-timed languages. Another added piece of the puzzle is that the French /t/ are dental consonants, where as English /t/ are alveolar consonants.”

275 The French /t/ stop-burst consonant is produced with the tip of the tongue behind the teeth but the English /t/ is produced

275 Bonneau, A., L. Djézzar, and Y. Laprie, Pg. 564.
by placing the tip of the tongue further back in the mouth, by the alveolar ridge in front of the soft palate. This implies that there is a difference in how flutists of English and French speaking cultures articulate on the flute.

One of the most compelling pieces of literature written on this subject is an article by Linda Landeros Lamkin, current woodwind faculty at the School of Music at Indiana University. Dr. Lamkin found in her study that there exists a direct correlation between a flutist’s recorded flute sound and articulation and his or her native language and other fluencies.\(^\text{276}\) Specifically, language culture was found to affect the development of the repetition in the execution of syllable choice.\(^\text{277}\)

Lamkin studied four aspects of music and speech: music production as compared to speech production and speech perception as compared to music perception.\(^\text{278}\) She tested a pool of flute students at Indiana University and gathered information about their language experiences through a questionnaire. Many of the students did not speak English as a first language. Lamkin had the subjects read through sentences in English and then sentences in their native language that featured stop-burst consonants (i.e. /t/, /d/, /k/, /g/, /d/\(\tilde{\text{3}}\), /u/, /o/, /y/).

After the subjects spoke through the sentences, Lamkin had each play six well-

\(^{276}\) Lamkin, Pg. 1.
\(^{277}\) Ibid.
\(^{278}\) Lamkin, Pg. 2.
known examples of pieces from the flute repertoire. Her choices tested more than just articulation: specifically, she tested for single tongue articulation, expressiveness, sight-reading ability, rhythm, and double tonguing (a style of fast flute articulation that uses a rebound of the tongue to quicken the production of articulation on the flute).

Her experimental method was to establish a correlation between the sound production and speech production through spectrographic analysis, much in the same manner that I plan to analyze the recorded data that I gather in this study. She was able to find that “articulation and the quality of sound are correlated with the way a flutist speaks.” 279

With this research as a basis for my study, I hope to capitalize on the fact that articulation specifically is affected by language. I hope to show that the flutists who are primarily French speakers (and for whom French is a first language) will be able to incorporate the English articulations into their articulation studies and alter the way they produce the transients (burst of articulation). The subjects’ response to this style of teaching will be ascertained through a comparison of their recorded speech and their parallel stop-burst consonant articulation in both English and French. If a difference can be seen spectrally, the pedagogical implications will be limitless for flutists of all language cultures.

279 Lamkin, Pg. 10.
III. Procedures

A. Research Design

This study is qualitative in nature; therefore, only a small study group of subjects will be utilized and any conclusions that may result will have further research and pedagogical implications. Martine Charlot is Professor of Flute at the Conservatoire National Rayonnement Jean-Phillippe Rameau de Dijon (CNR). She has agreed to allow her students to participate in an anonymous two-part test and will give them a recruitment informational sheet* before I come on-site. The subjects who choose to participate will be given an Informed Consent Form** and a full disclosure of the project in their native language. The participants will be assigned a number with which to code their responses. The first portion of the test will be a questionnaire*** that establishes language experience. The second portion will establish a baseline for the language idiosyncrasies of the student by recording his or her speech patterns through pre-written sentences in French (aiming at stop-burst consonant pronunciation) and then record the student articulating certain passages of flute repertoire that aim at the same stop-burst consonants. Then, I will have the students talk through a few English sentences that aim at the parallel stop-burst consonants in English and then have the students implement the articulations into

* See Appendix B.
** See Appendix C.
*** See Appendix D.
the same passages. These sentences were pre-written in collaboration with the French language department at The Ohio State University and will specifically isolate the /t/, /k/, /d/ and /p/ stop-burst consonants only, which are relevant to flute playing. Below are the sentences used for the experiment and the stop-burst consonant based syllables that they target. They are part of the Experiment Script.

**French Portion:**

1. Mes maux de tête.
   “Te-”

2. Monsieur Ledoux est dans la boue jusqu’au cou.
   “doux”
   “boue”
   “cou”

3. Chez qui sont partis ses habits?
   “qui”
   “tis”
   “bits”

4. Je mangerai un tarte pour le dessert.
   “Ta-”
   “Pou-”

5. Il est allé sur une tirade hier.
   “Ti-”

6. Comment tu vas aller?
   “Tu-”

**English Portion:**

See Appendix E.
1. “I took a test.”
   “Te-”

2. “It will do to say “boo” when they coo.
   “do”
   “boo”
   “coo”

3. “McKee has a bee in his tea.”
   “kee”
   “bee”
   “tea”

4. “Please take me home.”
   “Ta-”

5. “She does not have time to meet.”
   “Ti-”

6. “My poor tooth hurts.”
   “Poo-”
   “Too-”

These eleven syllables utilize the four stop-burst consonants that are most common for single tonguing on the flute, which include two “labial” consonants, /p/ and /b/, and two “dento-alveolar” consonants, /t/ and /d/. The resultant vowels that were chosen are all common in the flute literature.

The collected recordings from the subjects will be compared to each other through spectral-analysis with collaboration as needed from the faculty in The Ohio State University’s cognition laboratory to determine if changing the consonant through language pedagogy will affect the articulation of the flutist. I will be looking for a
change in the initial articulative burst from the French speakers after they implement the English pronunciations.

The initial language survey, identifiable only by participant number shall be collected at the beginning of the research and will be scanned into digital documents on my persona’ scanner. The original hard copies will be preserved for later data collection. The aural portion will be recorded on a Zoom H2 Ultra-Portable Handheld Stereo Digital Audio Recorder and downloaded onto the Co-Investigator’s personal laptop. Additionally, the recordings will be copied onto hardcopy CDs and a flash drive as backup solely for personal archival purposes (related only to continuing research implications.) It should be noted that the only identifiable material on the recordings would be participant number and gender.

There will be no preferential language assignment made through this research; I merely propose that this kind of pedagogy is both valid and relevant to flute pedagogy.

**B. Sample**

I received a grant from my undergraduate institution to conduct a pedagogy review of many of the flute professors in France. One of those professors was Martine Charlot, the Professor of Flute at the Conservatoire National Rayonnement Jean-
Phillippe Rameau de Dijon (CNR). Through continued association on a professional level, the contact professor at the Dijon Conservatoire will be serving as a key person in this research. The recruitment pool is from the professor's Conservatoire students. The participants will all be at least eighteen years of age or older but the age range will extend from eighteen to thirty years of age. These students will all be advanced flute students capable of playing at the professional level and reading the most difficult music. There will be approximately ten to fifteen subjects from both sexes. The students will be given a translated recruitment informational sheet (attached to this application) before the study is to take place. They will have a week to decide to participate. There will be no penalty on the part of the Conservatory or Professor Charlot if a student chooses not to participate. There is no screening process and there will be no further communication about the study between the research team and the subjects after the study.

C. Measurement / Instrumentation

The recordings of both speech production and flute sound production will be captured on a Zoom H2 Ultra-Portable Handheld Stereo Digital Audio Recorder. It has a 44.1kHz recording sampling frequency and can be connected to a computer to save the recordings as individual mp3 files. It will be set to the same specifications for each test subject. The choice of recording equipment stems from its portability and non-obtrusiveness in the performance environment. Also, this
specific recorder is sensitive to flute performance and articulation and is the choice instrument of recording for professional musicians in its price range.

The recordings made during the study will be saved onto my personal computer and backed up onto a flash drive and a hardcopy set of CDs. The recordings will be analyzed on Sinusoidal Partial Editing Analysis and Resynthesis (SPEAR) software (Version 0.7.4 for Mac) which allows for in-depth spectrographic viewing. This analysis will be conducted in collaboration with faculty from The Ohio State University’s cognition laboratory as necessary. The choice of analysis software allows the images of the recorded syllables to be easily viewable and accessible.

D. Detailed study procedures

The empirical portion of this research will be conducted at the participants' Conservatory in an established educational setting. It focuses on instructional strategies and terminology that the students are used to as flute players. The research also utilizes a brief questionnaire that only asks for baseline language experience. There are no personal questions that will belie the identity of the participants. Additionally, the participants will code their questionnaires and recorded performances with a number and no identifiers. There is no risk to the participants' health, well-being or professional status.
No names will be collected for the purpose of this research. Each participant will be assigned a participant number at the start of the research and it will correspond to the number that he or she records on the initial language survey. That participant’s number will be stated on the aural recording by the Co-Investigator at the start of the recording portion of the research and the participant will subsequently only be referred to by his or her assigned number. Correlations will only be made based on previous language experience and the data collected in the recording (which is limited to limited speech and flute performance excerpts.) The only data that will be identifiable in the recording is the gender of the participant.

E. Internal Validity

The participant pool is not in any way affiliated with or known to the research team. While the flutists’ teacher will be serving as recruiter and translating, it has been made clear that there are to be no consequences for choosing not to participate. The teacher will not be present during the recording process.

There is also no assignment of preference to language in this study so the French flutists will not feel that their native language is being put to any sort of test.
F. Data Analysis

The initial questionnaire will establish a language basis for each of the subjects. Those subjects whose first language is French will be of the most interest and will serve as the subjects for the study.

The recordings will be analyzed on Sinusoidal Partial Editing Analysis and Resynthesis (SPEAR) software (Version 0.7.4 for Mac) which allows for in-depth spectrographic viewing. This analysis will be conducted in collaboration with faculty from The Ohio State University’s cognition laboratory as necessary. If there is a difference made in articulation from the French influenced articulation and the English influenced articulation, the spectrograph will show different shapes at the initial burst. This will be recorded and corroborated with the participants’ language experience.

Research Application

The choice of Dijon, France, as the site for this research stemmed mostly from the fact that many of the native Dijonnaise do not have much experience with English. While many may study the language in their youth, the majority of people do not claim fluency in the language. In fact, most of the participants had less than two years of English studies and the research had to be conducted in French. This
allowed for a better chance to alter a participant’s syllables, especially as they had not grown up in a multi-lingual environment, like many of the Parisians would have, for example. Also, I had a personal connection with the Professor of Flute at the Conservatoire National Rayonnement Jean-Phillippe Rameau de Dijon (CNR). Many years ago in my undergraduate studies, I met Professor Martine Charlot in France and she taught me a lesson and invited me to participate in her masterclasses.

When I arrived in Dijon, I was able to meet with Professor Charlot. We sat down and perused the documents I had brought for the experiment and then set up the appointments for the week. Most of my days ended up being split up into a morning session that started at 10:00 A.M. and an afternoon session that began at 2:00 P.M.

The sessions were generally held in Professeur Charlot’s spacious studio, where the students seemed to be quite comfortable. I set up the recording device without an external microphone on a low set table approximately six feet away from the participants’ music stand. The Experiment Script in French was on the stand as well as the selected musical example.

For the French portion, which was first for the French speakers, I asked each of the participants to first read through the Experiment Protocol to become immersed in what was being asked of him or her. The prospective students that this pedagogy
might help would, in theory, also be told of the expectations of the design. After signing the Informed Consent Form and filling out the Language Questionnaire Form, each participant was identified by only his or her participant number on the recording device and then directed through the Experiment Script. The participant was first asked to read through the first sentence in French and then isolate the underlined word that targeted a stop-burst consonant. The first syllable of this word was then repeated three times for the recording and then used to articulate though the musical example provided. The musical example (found in Appendix E) was in the middle of the flute range and utilized the single tongue stroke only. This procedure was repeated for each of the eleven stop-burst syllables.

For the English portion, because this was a foreign language for the French speakers, the procedure was slightly modified. First, I pronounced each word in the sentence for the participant to learn and repeat, after which he or she was to read through the sentence aloud. Next, the word that targeted the stop-burst consonant was repeated three times and corrected as necessary. Finally, the syllable itself was repeated three times for the recording. This was put into action by having the participant play through the same musical selection with the syllables. The musical selection was chosen from the Taffanel and Gaubert 17 Daily Exercises, which most advanced flute players know well. The range is in the comfortable middle octave, which is the most comfortable and resonant. Stevens describes the
comfortable middle range as the most indicative of the subjects' best articulative powers.\textsuperscript{280}

Generally, the participants all seemed to understand fully how the project was to be realized. The procedure was easy for them to follow and almost every student was able to repeat the procedure for each sentence without being prompted after the first complete script walkthrough. The language barrier did not seem to present a problem.

Choices for the syllables utilized in the experiment portion were made based on exact syllables, similar syllables, and different syllables. Exact syllables, which I define as syllables that are pronounced exactly the same in English and French and found within the normal vocabulary of both languages, were put into parallel sentences. These sentences are built on stop-burst consonants found within the literature. The following syllables are exact:

1.) /\textit{bee}/ in the French word “habits” and the English word “bee.” (Sentences 3 in the French and English portions)

2.) /\textit{kee}/ in both the French word “qui’ and the English word “McKee.” (Sentences 3 in the French and English portions)

\textsuperscript{280} Stevens, Pg. 61.
3.) /teh/ in both the French word “tête” and the English word “test.” (Sentences 1 in the French and English portions)

Similar syllables, which I define as syllables that appear to be pronounced exactly the same in English and French and are found within the normal vocabulary of both languages but contain slight pronunciation differences. Parallel sentences were built on stop-burst consonants found within the literature. The following syllables are similar:

1.) /boo/ in the French word “boue” and the English word “boo.” (Sentences 2 in the French and English portions)

2.) /coo/ in the French word “cou” and the English word “coo.” (Sentences 2 in the French and English portions)

3.) /doo/ in the French word “doux” and the English word “do.” (Sentences 2 in the French and English portions)

4.) /tee/ in both the French word “partis” and the English word “tea.” (Sentences 3 in the French and English portions)
Different syllables, which I define as syllables that are spelled or look the same in English and French and are found within the normal vocabulary of both languages but contain vast pronunciation differences. Parallel sentences were built on stop-burst consonants found within the literature. The following syllables are different:

1.) /poo/ or /poh/ in the French word “pour” and the English word “poor.” (Sentence 4 in the French portion and sentence 6 in the English portion)

2.) /tah/ or /tay/ in the French word “tarte” and the English word “take.” (Sentences 4 in the French and English portions)

3.) /tee/ or /ty/ in the French word “tirade” and the English word “time.” (Sentences 5 in the French and English portions)

Since the French and English portions were separated from each other, the participants were not given the chance to rehearse the syllables that were exact, similar or different. Care was taken so that the syllables were each produced in a manner indicative to the participants' natural language pronunciation.
Chapter 5: Experiment Results and Conclusions

For reference to the basic spectral analysis accomplished for this portion of the experiment, please refer to Appendix F. The results gathered within this chapter are derived from the graphic representations of the participants' speech and sound production on the instrument. These graphic representations show the frequency of the sound as the tone is produced, which visually appears as the peaks and valleys on the graph. This shape is not of note because the volume of playing versus speaking will be intrinsically different. However, the stop-burst consonant, which can be visually assessed as the shape of the start of the sound, is of note for this research. The initial shape of the spoken syllables is compared side by side to the syllable produced on the flute. These two incipits are put together on one graph. Each participant's speech production as it relates to his or her sound production is compared. Additionally, the comparison of both the initial starts of the speech and the tonal aspects between the two languages will be assessed and the demographic information about the participant will be considered. The French and English graphs for each participant are included on the same page for comparison in Appendix F.
These graphic comparisons are done with the express knowledge that there are innumerable variables to consider. While the project was executed in a sound-proofed studio, any external sound might affect the spectral analysis. Additionally, the software used, Audacity 1.3.12-beta (Unicode), charts the frequency of the sound recorded which may be affected by volume, flute brand and style, ability level and any other number of variables. For purposes of this project, a general visual representation of the initial stop-burst consonant speech production is compared to the general visual representation of the syllable in tandem with sound production on the flute. The conclusions garnered are general and non-decisive. Further research into the specifics of spectral analysis may later reveal more conclusive evidence of the conclusions offered here.

What follows is a basic comparison of the graphic representations of each participant’s recordings and the demographic information garnered through the Language Questionnaire provided at the time of the research.

Results

**Participant 1:**

Country of Birth: France

Birthdate: 10/11/1976 (35 years old)

Studied flute for: 20 years
First language: French

Language most often spoken: French

Language most often spoken at home: French

Other languages spoken fluently: English

Other languages studied: German, Latin

Analysis of Exact Syllables:

Participant 1 pronounced the exact syllables found in the words “tête” and “test” and “qui” and “McKee” in a visually comparable way. The initial articulation visually relates to the sound production on the instrument and the articulation between the French and English syllables are noticeably similar. (See A.F. Ex. 1-2, 9-10.)

The exact syllables found in the words “habits” and “bee” were not spoken in a visually comparable way but the speech and the tonal result were similar visually. Additionally, the comparison between the French and English articulations is somewhat similar but not as much as the first two sets of examples. (See A.F. Ex. 13-4.)

Analysis of Similar Syllables:

Participant 1 pronounced the similar syllables found in the words “doux” and “do” in a visually comparable way. The French “doux” appears to be slightly different than the English “do”. The initial articulation visually relates to the sound production on
the instrument and the articulation between the French and English syllables are noticeably similar. (See A.F. Ex. 3-4.)

Participant 1 pronounced the similar syllables found in the words “boue” and “boo” in a visually comparable way. The initial articulation visually relates to the sound production on the instrument and the articulation between the French and English syllables is similar but the articulation on the flute seems to be slightly different with an English syllable than a French syllable. (See A.F. Ex. 5-6.)

Participant 1 pronounced the similar syllables found in the words “coue” and “coo” in a less visually comparable way. The initial articulation visually relates to the sound production on the instrument and the articulation between the French and English syllables is similar but the French syllable appears to be much more different than the English syllable. Additionally, the articulation produced on the flute seems to parallel the syllable difference. (See A.F. Ex. 7-8.)

Participant 1 pronounced the similar syllables found in the words “partis” and “tea” in a visually comparable way. The initial articulation visually relates to the sound production on the instrument and the articulation between the French and English syllables are similar and the articulation on the flute seems to be somewhat similar between the two syllables. (See A.F. Ex. 11-2.)
Participant 1 pronounced the similar syllables found in the words “tu” and “too” in a visually different way. The syllables do visually relate directly to the articulation and both produced articulations are visually similar. (See A.F. Ex. 21-2.)

Analysis of Different Syllables:
Participant 1 pronounced the different syllables found in the words “tarte” and “take” and “tirade” and “time” in a visually different way. The initial syllable visually relates to the sound production on the instrument but syllables themselves represent vastly different shapes. Additionally, the produced articulation on the flute between the two syllables is very different between the French and the English. (See A.F. Ex. 15-6, 19-20.)

Participant 1 pronounced the different syllables found in the words “pour” and “poor” in less of a visually different way but there are differences. The initial syllable visually relates to the sound production on the instrument but syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables appears to be different between the two languages. (See A.F. Ex. 17-8.)

From a demographic standpoint, Participant 1 has grown up in a French home and speaks French primarily. He or she also speaks English fluently. Additionally, he or she has been playing for twenty years of his life and has developed an advanced
ability on the flute. In general, Participant 1 exhibited an ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable but minute changes in pronunciation did have a visual effect on the articulation. Finally, the different syllables created much different articulations on the flute and could be implemented to change the production of sound for Participant 1. These quick and visual changes in articulation could be due to Participant 1’s experience in both French and English.

**Participant 2:**

- Country of Birth: France
- Birthdate: 12/08/1980 (31 years old)
- Studied flute for: 22 years
- First language: French
- Language most often spoken: French
- Language most often spoken at home: French
- Other languages spoken fluently: None
- Other languages studied: German, English
Analysis of Exact Syllables:

Participant 2 pronounced the exact syllables found in the words “tête” and “test” in a visually different way, however the initial stop-burst retains the same shape. The initial articulation visually relates to the sound production on the instrument only in the French language; perhaps the addition of the English syllable was difficult to apply for the participant? Therefore, the articulation between the French and English syllables is noticeably different. (See A.F. Ex. 23-4.)

Participant 2 pronounced the exact syllables found in the words “qui” and “McKee” in a visually similar way. The initial articulation noticeably visually relates to the sound production on the instrument in both languages; it is possible that the participant became more comfortable with the English words. The articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 31-2.)

Participant 2 pronounced the exact syllables found in the words “habits” and “bee” in a visually different way, however the initial stop-burst retains the same shape. The initial articulation does not visually relate to the sound production on the instrument. Strangely though, the articulation between the French and English syllables is noticeably similar, as expected since the syllables are exact. (See A.F. Ex. 35-6.)
Analysis of Similar Syllables:

Participant 2 pronounced the similar syllables found in the words “doux” and “do” and “cou” and “coo” in a visually different way. The French “doux” appears to be slightly different than the English “do”, as does the French “cou” compared to the English “coo”. The initial articulation does somewhat visually relate to the sound production on the instrument but the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 29-30.)

Participant 2 pronounced the similar syllables found in the words “partis” and “tea” in a visually similar way. The French articulation does not visually relate directly to the articulation but the English does. Therefore, both produced articulations are visually different. (See A.F. Ex. 33-4.)

Participant 2 pronounced the similar syllables found in the words “tu” and “too” in a visually different way. The syllables do visually relate directly to the articulation and both produced articulations are visually similar. (See A.F. Ex. 43-4.)

Participant 2 pronounced the similar syllables found in the words “boue” and “boo” in a visually comparable way. The initial articulation visually relates somewhat to the sound production on the instrument (the French is different) but the articulation on the flute seems to be quite similar between the two languages. (See A.F. Ex. 27-8.)
Analysis of Different Syllables:

Participant 2 pronounced the different syllables found in the words “tarte” and “take” in a visually different way. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent vastly different shapes. Additionally, the produced articulation on the flute between the two syllables is different between the French and the English. (See A.F. Ex. 37-8.)

Participant 2 pronounced the different syllables found in the words “pou r” and “po or” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument (more so on the English side once again) but the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables appears to be different between the two languages. (See A.F. Ex. 39-40.)

Participant 2 pronounced the different syllables found in the words “ti rade” and “ti me” in a vastly different way visually. The initial syllable does not seem to visually relate to the sound production on the instrument in the French language but does more so on the English side. However, the syllables themselves represent vastly different shapes. Additionally, the produced articulation on the flute between
the two syllables is different between the French and the English. (See A.F. Ex. 41-2.)

From a demographic standpoint, Participant 2 has grown up in a French home and speaks French primarily. He or she also does not speak any other language fluently. Additionally, he or she has been playing for twenty-two years and has developed an advanced ability on the flute. In general, Participant 2 did exhibit an ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. In fact, it can be said that while some instances of the use of syllables in his or her playing was successful, others were noticeably lacking. This lack of consistency points to the fact that the method is possibly useful but maybe too confusing for someone with not a lot of experience with language. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument but not always. The similar syllables were generally comparable but minute changes in pronunciation did have a visual effect on the articulation. Finally, the different syllables created much different articulations on the flute and could be implemented to change the production of sound for Participant 2.
**Participant 3:**

Country of Birth: Nepal

Birthdate: 03/23/1993 (19 years old)

Studied flute for: 10 years

First language: French

Language most often spoken: French

Language most often spoken at home: French

Other languages spoken fluently: None

Other languages studied: English, Spanish

**Analysis of Exact Syllables:**

Participant 3 pronounced the exact syllables found in the words “tête” and “test” in a visually different way, however the initial stop-burst retains the same shape. The initial articulation visually relates to the sound production on the instrument more so in the English language. However, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 45-6.)

Participant 3 pronounced the exact syllables found in the words “qui” and “McKee” in a visually similar way. The initial articulation noticeably visually relates to the sound production on the instrument in both languages; it is possible that the participant became more comfortable with the English words. The articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 53-4.)
Participant 3 pronounced the exact syllables found in the words “habits” and “bee” in an extremely similar way visually. The initial articulation does visually relate to the sound production on the instrument. Therefore, the articulation between the French and English syllables is noticeably similar, as expected since the syllables are exact. (See A.F. Ex. 57-8.)

Analysis of Similar Syllables:
Participant 3 pronounced the similar syllables found in the words “doux” and “do” in a visually different way. The French “doux” appears to slightly different than the English “do”. The initial articulation does somewhat visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are slightly different. (See A.F. Ex. 47-8.)

Participant 3 pronounced the similar syllables found in the words “boue” and “boo” in a visually different way, although the initial stop-burst from each word relates to the other. The French “boue” appears to be slightly different than the English “do”. The initial articulation does somewhat visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are similar. (See A.F. Ex. 49-50.)
Participant 3 pronounced the similar syllables found in the words “cou” and “coo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are similar but not the same. (See A.F. Ex. 51-2.)

Participant 3 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. The French articulation does seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually similar. (See A.F. Ex. 55-6.)

Participant 3 pronounced the similar syllables found in the words “tu” and “too” in a visually similar way. The syllables do visually relate directly to the articulation and both produced articulations are visually similar. (See A.F. Ex. 65-6.)

Analysis of Different Syllables:
Participant 3 pronounced the different syllables found in the words “tarte” and “take” in a visually different way. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent slightly different shapes. Interestingly, the produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 59-60.)
Participant 3 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument but the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables appears to be slightly different between the two languages. (See A.F. Ex. 61-2.)

Participant 3 pronounced the different syllables found in the words “tirade” and “time” in a vastly different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in the French language but does more so on the French side. However, the syllables themselves represent vastly different shapes. Additionally, the produced articulation on the flute between the two syllables is slightly different between the French and the English. (See A.F. Ex. 63-4.)

From a demographic standpoint, Participant 3 was born in Nepal and has grown up in a French home and speaks French primarily. He or she also does not speak any other language fluently. Additionally, he or she has only been playing for ten years and has developed an advanced ability on the flute. In general, Participant 3 did exhibit a general ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. However, it can be said that while some
instances of the use of syllables in his or her playing were mildly successful, others were noticeably lacking. This lack of consistency points to the fact that the method is possibly useful but maybe too confusing for someone with not a lot of experience with language. Additionally, it appears that the participant might have been relying on learned articulations, since many of the produced articulations were the same even in the instances of completely changed syllables. Additionally, the participant’s age might have an effect on the application of the syllables. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument but not always. The similar syllables were generally comparable but minute changes in pronunciation did have a visual effect on the articulation. However, these similar syllables were generally more visually similar than the exact syllables. Finally, the different syllables created a slight difference in articulation on the flute and might be able to be implemented to change the production of sound for Participant 3.

**Participant 4:**

Country of Birth: France

Birthdate: 1989 (22 years old)

Studied flute for: 11 years

First language: French

Language most often spoken: French

Language most often spoken at home: French
Other languages spoken fluently: Italian
Other languages studied: English

Analysis of Exact Syllables:
Participant 4 pronounced the exact syllables found in the words “tête” and “test” in a similar way and the initial stop-burst retains somewhat of the same shape. The initial articulation visually generally relates to the sound production on the instrument more so in the English language. However, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 67-8.)

Participant 4 pronounced the exact syllables found in the words “qui” and “McKee” in an extremely visually similar way. The initial articulation noticeably visually relates to the sound production on the instrument in both languages; it is possible that the participant became more comfortable with the English words. The articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 75-6.)

Participant 4 pronounced the exact syllables found in the words “habits” and “bee” in an extremely visually similar way. The initial articulation does visually relate to the sound production on the instrument. Therefore, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 79-80.)
Analysis of Similar Syllables:

Participant 4 pronounced the similar syllables found in the words “doux” and “do” in a visually different way. The initial articulation does not seem to visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are slightly different. (See A.F. Ex. 69-70.)

Participant 4 pronounced the similar syllables found in the words “boue” and “boo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are very similar. (See A.F. Ex. 71-2.)

Participant 4 pronounced the similar syllables found in the words “cou” and “coo” in a visually similar way and the initial stop-burst from each word directly relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are very similar. (See A.F. Ex. 73-4.)

Participant 4 pronounced the similar syllables found in the words “partis” and “tea” in a mildly similar way visually. The French articulation does seem to visually relate directly to the articulation on the instrument. However, both produced articulations have slight visual discrepancies. (See A.F. Ex. 77-8.)
Participant 4 pronounced the similar syllables found in the words “tu” and “too” in an extremely similar way visually. The syllables do visually relate directly to the articulation and both produced articulations are very much visually similar. (See A.F. Ex. 87-8.)

Analysis of Different Syllables:
Participant 2 pronounced the different syllables found in the words “tarte” and “take” in a visually different way. The initial syllable visually relates to the sound production on the instrument (more so on the French side) but the syllables themselves represent slightly different shapes. Interestingly, the produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 81-2.)

Participant 4 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument but the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables appears to be relatively similar between the two languages. (See A.F. Ex. 83-4.)
Participant 4 pronounced the different syllables found in the words “tirade” and “time” in a vastly different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in the French language but does more so on the French side. However, the syllables themselves represent vastly different shapes. Additionally, the produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 85-6.)

From a demographic standpoint, Participant 4 has grown up in a French home and speaks French primarily. He or she also speaks Italian fluently. Additionally, he or she has only been playing for eleven years but has developed an advanced ability on the flute. In general, Participant 4 did not exhibit a general ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. In fact, it can be said that while some instances of the use of syllables in his or her playing were mildly successful, others were noticeably lacking. This lack of consistency points to the fact that the method is possibly useful but maybe too confusing for someone with not many years of flute playing. Additionally, it appears that the participant might have been relying on learned articulations, since many of the produced articulations were the same even in the instances of completely changed syllables. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument but not always. The similar syllables were generally comparable but minute changes in
pronunciation did have a visual effect on the articulation. However, these similar syllables were generally more visually similar than the exact syllables. Finally, the different syllables created a slight difference in articulation on the flute and might be able to be implemented to change the production of sound for Participant 4.

Participant 5:
Country of Birth: France
Birthdate: 09/15/1989 (22 years old)
Studied flute for: 13 years
First language: French
Language most often spoken: French
Language most often spoken at home: French
Other languages spoken fluently: None
Other languages studied: German, English

Analysis of Exact Syllables:
Participant 5 pronounced the exact syllables found in the words “tête” and “test” in a different way and the initial stop-burst is different. The initial articulation visually generally relates to the sound production on the instrument more so in the French language. There is a strange discrepancy in the production of the English syllable, perhaps because this was the first syllable of the portion. However, the articulation
between the French and English syllables is noticeably similar. (See A.F. Ex. 89-90.)

Participant 5 pronounced the exact syllables found in the words “qui” and “McKee” in an extremely visually similar way. The initial articulation noticeably visually relates to the sound production on the instrument in both languages; it is possible that the participant became more comfortable with the English words. The articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 97-8.)

Participant 5 pronounced the exact syllables found in the words “habits” and “bee” in an extremely visually similar way. The initial articulation does visually relate to the sound production on the instrument. Therefore, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 101-2.)

Analysis of Similar Syllables:
Participant 5 pronounced the similar syllables found in the words “doux” and “do” in a visually similar way. The initial articulation does seem to visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are similar. (See A.F. Ex. 91-2.)
Participant 5 pronounced the similar syllables found in the words “boue” and “boo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are very similar. (See A.F. Ex. 93-4.)

Participant 5 pronounced the similar syllables found in the words “cou” and “coo” in a visually similar way and the initial stop-burst from each word directly relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are generally similar. (See A.F. Ex. 95-6.)

Participant 5 pronounced the similar syllables found in the words “partis” and “tea” in a visually similar way. The French articulation does seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually similar. (See A.F. Ex. 99-100.)

Participant 5 pronounced the similar syllables found in the words “tu” and “too” in an slightly similar way visually. The syllables have slight differences visually but do seem to relate to the articulation. Both produced articulations are very much visually similar. (See A.F. Ex. 109-10.)
Analysis of Different Syllables:

Participant 5 pronounced the different syllables found in the words “tarte” and “take” in a visually similar way. The initial syllable visually relates to the sound production on the instrument (more so on the French side) but the syllables themselves represent slightly different shapes. However, as expected, the produced articulation on the flute between the two syllables is relatively different between the French and the English. (See A.F. Ex. 103-4.)

Participant 5 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument (much more so on the English side) but the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables appears to be relatively different between the two languages. (See A.F. Ex. 105-6.)

Participant 5 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument. However, the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables is somewhat similar between the French and the English. (See A.F. Ex. 107-8.)
From a demographic standpoint, Participant 5 has grown up in a French home and speaks French primarily. He or she speaks no other languages fluently. Additionally, he or she has only been playing for thirteen years and has developed an advanced ability on the flute. In general, Participant 5 did exhibit a successful ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are moments of inconsistency but it is possible that this may be related to the lack of long time experience on the instrument. Aside from the completely different production in the first English syllable of the test (which is understandable), the exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument. Finally, even though one set was produced in the same manner when they should have been spoken differently, the different syllables created a general difference in articulation on the flute and might be able to be implemented to change the production of sound for Participant 5.

Participant 6:

Country of Birth: France
Birthdate: 11/17/1986 (25 years old)
Studied flute for: 16 years
First language: French
Language most often spoken: French
Language most often spoken at home: French
Other languages spoken fluently: None
Other languages studied: English, Spanish

Analysis of Exact Syllables:
Participant 6 pronounced the exact syllables found in the words “tête” and “test” in a different way and the initial stop-burst is different. The initial articulation visually generally relates to the sound production on the instrument in the English comparison but less so in the French example. Perhaps this discrepancy is because this was the first syllable of the portion. However, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 111-12.)

Participant 6 pronounced the exact syllables found in the words “qui” and “McKee” in an extremely visually similar way. The initial articulation noticeably visually relates to the sound production on the instrument in both languages; it is possible that the participant became more comfortable with the English words. The articulation between the French and English syllables is very similar. (See A.F. Ex. 119-20.)

Participant 6 pronounced the exact syllables found in the words “habits” and “bee” in an extremely visually similar way. The initial articulation does visually relate to the sound production on the instrument. Therefore it is no surprise that the
articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 123-4.)

Analysis of Similar Syllables:
Participant 6 pronounced the similar syllables found in the words “doux” and “do” in a somewhat similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument, especially in the French portion and accordingly, the articulation between the French and English syllables are somewhat similar. (See A.F. Ex. 113-4.)

Participant 6 pronounced the similar syllables found in the words “boue” and “boo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are very similar. (See A.F. Ex. 115-6.)

Participant 6 pronounced the similar syllables found in the words “cou” and “coo” in a visually different way. The initial stop-burst from the French word directly relates to the articulation in the instrument but the English syllable does not. The articulation of both the French and English syllables are somewhat similar. (See A.F. Ex. 117-8.)
Participant 6 pronounced the similar syllables found in the words “partis” and “tea” in a somewhat similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually similar. (See A.F. Ex. 121-22.)

Participant 6 pronounced the similar syllables found in the words “tu” and “too” in a slightly similar way visually. The syllables have slight differences visually but do seem to relate to the articulation. Both produced articulations are somewhat visually similar. (See A.F. Ex. 131-2.)

Analysis of Different Syllables:
Participant 6 pronounced the different syllables found in the words “tarte” and “take” in a vastly different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent very different shapes. However, as expected, the produced articulation on the flute between the two syllables is relatively different between the French and the English. (See A.F. Ex. 125-6.)

Participant 6 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument but the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two
syllables appears to be very different between the two languages. (See A.F. Ex. 127-8.)

Participant 6 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument. However, the syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables is very different between the French and the English. (See A.F. Ex. 129-30.)

From a demographic standpoint, Participant 6 has grown up in a French home and speaks French primarily. He or she speaks no other languages fluently. Additionally, he or she has only been playing for sixteen years and has developed an advanced ability on the flute. In general, Participant 6 did exhibit a successful ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are moments of inconsistency. Aside from the completely different production in the first English syllable of the test (which is understandable and a recurring theme in this experiment), the exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument. Finally, the different syllables
created a noticeable overall difference in articulation on the flute and might be able to be implemented to change the production of sound for Participant 6.

**Participant 7:**

Country of Birth: France

Birthdate: 11/02/1984 (27 years old)

Studied flute for: 17 years

First language: French

Language most often spoken: French

Language most often spoken at home: French

Other languages spoken fluently: Italian

Other languages studied: English, Italian

Analysis of Exact Syllables:

Participant 7 pronounced the exact syllables found in the words “tête” and “test” in a very similar way and the initial stop-burst is the same. The initial articulation visually generally relates to the sound production on the instrument in the English comparison. Therefore, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 133-4.)

Participant 7 pronounced the exact syllables found in the words “qui” and “McKee” in a mildly similar way visually. The initial articulation noticeably visually relates to
the sound production on the instrument in French and does not seem to relate in English. The articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 141-2.)

Participant 7 pronounced the exact syllables found in the words “habits” and “bee” in an extremely visually similar way. The initial articulation does visually relate to the sound production on the instrument. Therefore it is no surprise that the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 146-7.)

Analysis of Similar Syllables:
Participant 7 pronounced the similar syllables found in the words “doux” and “do” in a somewhat similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument, especially in the English portion and accordingly, the articulation between the French and English syllables is similar. (See A.F. Ex. 135-6.)

Participant 7 pronounced the similar syllables found in the words “boue” and “boo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables are very similar. (See A.F. Ex. 137-8.)
Participant 7 pronounced the similar syllables found in the words “cou” and “coo” in a visually different way. The initial stop-burst from the English word directly relates to the articulation in the instrument but the French syllable does not. However, the articulation of both the French and English syllables are somewhat similar. (See A.F. Ex. 139-40.)

Participant 7 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually similar. (See A.F. Ex. 143-44.)

Participant 7 pronounced the similar syllables found in the words “tu” and “too” in an extremely similar way visually. The syllables do seem to relate to the articulation. Both produced articulations are visually similar. (See A.F. Ex. 153-4.)

Analysis of Different Syllables:
Participant 7 pronounced the different syllables found in the words “tarte” and “take” in a slightly different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent slightly different shapes. However, the
produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 147-8.)

Participant 7 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument (much more so in French) but the syllables themselves represent different shapes. However, the produced articulation on the flute between the two syllables appears to be very similar between the two languages. (See A.F. Ex. 149-50.)

Participant 7 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in English but not in French. The syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables is very different between the French and the English. (See A.F. Ex. 151-52.)

From a demographic standpoint, Participant 7 has grown up in a French home and speaks French primarily. He or she also speaks Italian fluently. Additionally, he or she has been playing for seventeen years and has developed an advanced ability on the flute. In general, Participant 7 did not exhibit a successful ability to pronounce the syllables in speech and then directly relate those syllables into his or
her playing. There are several moments of inconsistency. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument. The results of note are the different syllables, which should isolate the participant’s ability to change the production of sound. In this case, the different syllables created similarity in articulation on the flute except for the last syllable and this inconsistency might hinder the ability to change the production of sound for Participant 7.

**Participant 8:**

Country of Birth: France  
Birthdate: 01/11/1986 (26 years old)  
Studied flute for: 18 years  
First language: French  
Language most often spoken: French  
Language most often spoken at home: French  
Other languages spoken fluently: English  
Other languages studied: English, Spanish

Analysis of Exact Syllables:  
Participant 8 pronounced the exact syllables found in the words “tête” and “test” in a somewhat similar way and the initial stop-burst is the same. The initial articulation
visually generally relates to the sound production on the instrument in the French comparison and slightly relates to the English. Therefore, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 155-6.)

Participant 8 pronounced the exact syllables found in the words “qui” and “McKee” in a very similar way visually. The initial articulation noticeably visually relates to the sound production on the instrument in both languages. The articulation between the French and English syllables is very similar. (See A.F. Ex. 163-4.)

Participant 8 pronounced the exact syllables found in the words “habits” and “bee” in an somewhat visually similar way. The initial articulation does visually relate to the sound production on the instrument even though the shape is slightly different. The articulation between the French and English syllables is slightly similar. (See A.F. Ex. 167-8.)

Analysis of Similar Syllables:
Participant 8 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is very similar. (See A.F. Ex. 157-8.)
Participant 8 pronounced the similar syllables found in the words “boue” and “boo” in a visually similar way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 159-60.)

Participant 8 pronounced the similar syllables found in the words “cou” and “coo” in a very visually different way. The initial stop-burst from the English word directly relates to the articulation in the instrument but the French syllable does not. However, the articulation of both the French and English syllables are somewhat similar. (See A.F. Ex. 161-62.)

Participant 8 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually very similar. (See A.F. Ex. 165-66.)

Participant 8 pronounced the similar syllables found in the words “tu” and “too” in a different way visually. The English syllable does seem to relate to the articulation on the instrument but the French does not. Both produced articulations are visually different. (See A.F. Ex. 175-6.)
Analysis of Different Syllables:

Participant 8 pronounced the different syllables found in the words “tarte” and “take” in a different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent very different shapes. However, the produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 169-70.)

Participant 8 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument (more so in English) but the syllables themselves represent different shapes. However, the produced articulation on the flute between the two syllables appears to be somewhat similar between the two languages. (See A.F. Ex. 171-2.)

Participant 8 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in English but not in French. The syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables is somewhat different between the French and the English. (See A.F. Ex. 173-4.)
From a demographic standpoint, Participant 8 has grown up in a French home and speaks French primarily. He or she also speaks English fluently. Additionally, he or she has been playing for eighteen years and has developed an advanced ability on the flute. In general, Participant 8 did not exhibit a successful ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are several moments of inconsistency. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument except for one. The results of note are the different syllables, which should isolate the participant’s ability to change the production of sound. In this case, the different syllables created similarity in articulation on the flute except for the last syllable and this inconsistency might hinder the ability to change the production of sound for Participant 8.

**Participant 9:**

Country of Birth: France

Birthdate: 06/10/1978 (33 years old)

Studied flute for: 26 years

First language: French

Language most often spoken: French

Language most often spoken at home: French
Other languages spoken fluently: None
Other languages studied: English, German, Serbo-Croatian

Participant 9 was excluded from this study because of his or her misunderstanding of the experiment design. Participant 9 made the researcher aware of this after the test had been completed and it could not be administered again for concern of his compromising knowledge of the test.

**Participant 10:**

Country of Birth: France
Birthdate: 11/25/1991 (20 years old)
Studied flute for: 14 years
First language: French
Language most often spoken: French
Language most often spoken at home: French
Other languages spoken fluently: German
Other languages studied: German, English

Analysis of Exact Syllables:
Participant 10 pronounced the exact syllables found in the words “tête” and “test” in an extremely different way visually and the initial stop-burst is not the same. This could be due in part to it being at the start of the test. The initial articulation visually
relates to the sound production on the instrument in the English comparison and slightly relates to the French. However, the articulation between the French and English syllables is noticeably similar. (See A.F. Ex. 177-8.)

Participant 10 pronounced the exact syllables found in the words “qui” and “McKee” in a very similar way visually. The initial articulation noticeably visually relates to the sound production on the instrument in both languages. The articulation between the French and English syllables is very similar. (See A.F. Ex. 185-6.)

Participant 10 pronounced the exact syllables found in the words “habits” and “bee” in a very visually similar way. The initial articulation does visually relate to the sound production on the instrument and the shape is very similar. Therefore, the articulation between the French and English syllables is very similar. (See A.F. Ex. 189-90.)

Analysis of Similar Syllables:
Participant 10 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 179-80.)
Participant 10 pronounced the similar syllables found in the words “boue” and “boo” in a visually different way and the initial stop-burst from each word relates to the other. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 181-2.)

Participant 10 pronounced the similar syllables found in the words “cou” and “coo” in a very visually different way. The initial stop-burst from the English word directly relates to the articulation in the instrument but the French syllable does not. However, the articulation of both the French and English syllables are somewhat similar. (See A.F. Ex. 183-4.)

Participant 10 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually very similar. (See A.F. Ex. 187-8.)

Participant 10 pronounced the similar syllables found in the words “tu” and “too” in a very similar way visually. The English syllable does seem to relate to the articulation on the instrument but the French appears to relate less so. Both produced articulations are visually different. (See A.F. Ex. 197-8.)
Analysis of Different Syllables:

Participant 10 pronounced the different syllables found in the words “tarte” and “take” in a different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent very different shapes. However, the produced articulation on the flute between the two syllables is relatively similar between the French and the English. (See A.F. Ex. 191-2.)

Participant 10 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable visually relates mildly to the sound production on the instrument (more so in English) but the syllables themselves represent different shapes. However, the produced articulation on the flute between the two syllables appears to be mildly different between the two languages. (See A.F. Ex. 193-4.)

Participant 10 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in both languages. The syllables themselves represent different shapes. Additionally, the produced articulation on the flute between the two syllables is somewhat different between the French and the English. (See A.F. Ex. 195-6.)
From a demographic standpoint, Participant 10 has grown up in a French home and speaks French primarily. He or she also speaks German fluently. Additionally, he or she has been playing for fourteen years and has developed an advanced ability on the flute. In general, Participant 10 did exhibit a general ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are a few moments of inconsistency but the method seems valid. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument except for one. The different syllables created general difference in articulation on the flute except for the first syllable and illustrate the ability to change the production of sound for Participant 10.

**Participant 11:**

Country of Birth: France

Birthdate: 11/02/1989 (22 years old)

Studied flute for: 10 years

First language: French

Language most often spoken: French

Language most often spoken at home: French

Other languages spoken fluently: None
Other languages studied: English, Spanish

Analysis of Exact Syllables:
Participant 11 pronounced the exact syllables found in the words “tête” and “test” in an slightly different way visually but the initial stop-burst is the same. The initial articulation visually relates to the sound production on the instrument in both languages. However, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 199-200.)

Participant 11 pronounced the exact syllables found in the words “qui” and “McKee” in a similar way visually. The initial articulation visually relates to the sound production on the instrument in both languages. The articulation between the French and English syllables is similar. (See A.F. Ex. 207-8.)

Participant 11 pronounced the exact syllables found in the words “habits” and “bee” in a very visually similar way. The initial articulation does visually relate to the sound production on the instrument and the shape is very similar. Therefore, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 211-2.)

Analysis of Similar Syllables:
Participant 11 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 201-2.)

Participant 11 pronounced the similar syllables found in the words “boue” and “boo” in an extremely similar way visually and the initial stop-burst from each word relates to the articulation on the instrument. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is very similar. (See A.F. Ex. 203-4.)

Participant 11 pronounced the similar syllables found in the words “cou” and “coo” in a very visually similar way. The initial stop-burst from both languages directly relate to the articulation on the instrument. Therefore, the articulation of both the French and English syllables are somewhat similar. (See A.F. Ex. 205-6.)

Participant 11 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually very similar. (See A.F. Ex. 209-10.)
Participant 11 pronounced the similar syllables found in the words “tu” and “too” in a very similar way visually. The English syllable does seem to relate to the articulation on the instrument in both languages. Both produced articulations are slightly visually different. (See A.F. Ex. 219-20.)

Analysis of Different Syllables:
Participant 11 pronounced the different syllables found in the words “tarte” and “take” in a different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the French side) but the syllables themselves represent very different shapes. However, the produced articulation on the flute between the two syllables is somewhat different between the French and the English. (See A.F. Ex. 213-4.)

Participant 11 pronounced the different syllables found in the words “pour” and “poor” in a visually similar way. The initial syllable visually relates mildly to the sound production on the instrument but the syllables themselves represent different shapes. However, the produced articulation on the flute between the two syllables appears to be mildly different between the two languages. (See A.F. Ex. 215-6.)

Participant 11 pronounced the different syllables found in the words “tirade” and “time” in a similar way visually. The initial syllable does seem to visually relate to the sound production on the instrument in both languages. The syllables
themselves represent similar shapes. However, the produced articulation on the flute between the two syllables is very different between the French and the English. (See A.F. Ex. 217-8.)

From a demographic standpoint, Participant 11 has grown up in a French home and speaks French primarily. He or she speaks no other language fluently. Additionally, he or she has been playing for only ten years but has developed an advanced ability on the flute. In general, Participant 11 did exhibit a general ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are a few moments of inconsistency but the method seems valid. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument except for one. The different syllables created general difference in articulation on the flute and illustrate the ability to change the production of sound for Participant 11.

**Participant 12:**

Country of Birth: France  
Birthdate: 04/26/1987 (24 years old)  
Studied flute for: 17 years  
First language: French
Language most often spoken: French
Language most often spoken at home: French
Other languages spoken fluently: English
Other languages studied: German

Analysis of Exact Syllables:
Participant 12 pronounced the exact syllables found in the words “tête” and “test” in an slightly different way visually but the initial stop-burst is the same. The initial articulation visually relates to the sound production on the instrument in both languages. However, the articulation between the French and English syllables is very similar. (See A.F. Ex. 221-2.)

Participant 12 pronounced the exact syllables found in the words “qui” and “Mckee” in a very different way visually. The initial articulation visually relates to the sound production on the instrument in French but not so nearly in English. However, the articulation between the French and English syllables is very similar. (See A.F. Ex. 229-30.)

Participant 12 pronounced the exact syllables found in the words “habits” and “bee” in a visually similar way. The initial articulation does visually relate to the sound production on the instrument and the shape is somewhat similar. Therefore, the
articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 233-4.)

Analysis of Similar Syllables:
Participant 12 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 223-4.)

Participant 12 pronounced the similar syllables found in the words “boue” and “boo” in an extremely similar way visually and the initial stop-burst from each word relates to the articulation on the instrument. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is very similar. (See A.F. Ex. 225-6.)

Participant 12 pronounced the similar syllables found in the words “cou” and “coo” in a very visually similar way. The initial stop-burst from both languages directly relate to the articulation on the instrument. Therefore, the articulation of both the French and English syllables are very similar. (See A.F. Ex. 227-8.)
Participant 12 pronounced the similar syllables found in the words “partis” and “tea” in an extremely similar way visually. Both articulations do seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually very similar. (See A.F. Ex. 231-2.)

Participant 12 pronounced the similar syllables found in the words “tu” and “too” in a very similar way visually. The English syllable does seem to relate to the articulation on the instrument in both languages. Both produced articulations are very visually similar. (See A.F. Ex. 241-2.)

Analysis of Different Syllables:
Participant 12 pronounced the different syllables found in the words “tarte” and “take” in a different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument but the syllables themselves represent very different shapes. Therefore, the produced articulation on the flute between the two syllables is somewhat different between the French and the English. (See A.F. Ex. 235-6.)

Participant 12 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable does not seem to visually relate to the sound production on the instrument and the syllables themselves represent different shapes. It is no surprise that the produced articulation on the
flute between the two syllables appears to be extremely different between the two languages. (See A.F. Ex. 237-8.)

Participant 12 pronounced the different syllables found in the words “tirade” and “time” in a different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in both languages. The syllables themselves represent different shapes. Therefore, the produced articulation on the flute between the two syllables is slightly different between the French and the English. (See A.F. Ex. 239-40.)

From a demographic standpoint, Participant 12 has grown up in a French home and speaks French primarily. He or she also speaks English fluently. Additionally, he or she has been playing for seventeen years and has developed an advanced ability on the flute. In general, Participant 12 did exhibit an exceptional ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are no moments of inconsistency. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and all produced similar articulations on the instrument. The different syllables created general difference in articulation on the flute and illustrate the ability to change the production of sound for Participant 12.
**Participant 13:**

Country of Birth: Poland

Birthdate: 09/08/1987 (24 years old)

Studied flute for: 11 years

First language: Polish

Language most often spoken: Polish

Language most often spoken at home: Polish

Other languages spoken fluently: English, French

Other languages studied: German

Analysis of Exact Syllables:

Participant 13 pronounced the exact syllables found in the words “tête” and “test” in a slightly similar way visually but the initial stop-burst is generally the same. The initial articulation does not visually appear to relate to the sound production on the instrument in both languages. However, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 243-4.)

Participant 13 pronounced the exact syllables found in the words “qui” and “McKee” in a very similar way visually. The initial articulation visually relates to the sound production on the instrument in both languages. Therefore, the articulation between the French and English syllables is very similar. (See A.F. Ex. 251-2.)
Participant 13 pronounced the exact syllables found in the words “habits” and “bee” in a visually similar way. The initial articulation does visually relate to the sound production on the instrument and the shape is somewhat similar. However, the articulation between the French and English syllables is very different. (See A.F. Ex. 255-6.)

Analysis of Similar Syllables:
Participant 13 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is somewhat similar. (See A.F. Ex. 245-6.)

Participant 13 pronounced the similar syllables found in the words “boue” and “boo” in a different way visually and the initial stop-burst from the French relates to the articulation on the instrument but the English does not. The initial articulation does not visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is slightly different. (See A.F. Ex. 247-8.)

Participant 13 pronounced the similar syllables found in the words “cou” and “coo” in a visually different way. The initial stop-burst from both languages does not
directly relate to the articulation on the instrument. Therefore, the articulation of both the French and English syllables are slightly different. (See A.F. Ex. 249-50.)

Participant 13 pronounced the similar syllables found in the words “partis” and “tea” in a slightly different way visually. Both articulations do not seem to visually relate directly to the articulation on the instrument. Strangely, both produced articulations are visually slightly similar. (See A.F. Ex. 253-4.)

Participant 13 pronounced the similar syllables found in the words “tu” and “too” in a slightly similar way visually. The syllables do seem to relate to the articulation on the instrument in both languages. Both produced articulations are slightly visually similar. (See A.F. Ex. 263-4.)

Analysis of Different Syllables:
Participant 13 pronounced the different syllables found in the words “tarte” and “take” in a slightly different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the French side) but the syllables themselves represent very different shapes. However, the produced articulation on the flute between the two syllables is slightly similar between the French and the English. (See A.F. Ex. 257-8.)
Participant 13 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable does seem to visually relate to the sound production on the instrument and the syllables themselves represent different shapes. The produced articulation on the flute between the two syllables appears to be slightly similar between the two languages. (See A.F. Ex. 259-60.)

Participant 13 pronounced the different syllables found in the words “tirade” and “time” in a slightly different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in both languages. The syllables themselves represent different shapes. Therefore, the produced articulation on the flute between the two syllables is slightly different between the French and the English. (See A.F. Ex. 261-2.)

From a demographic standpoint, Participant 13 comes from a completely different background then the other participants on this study. Participant 13 has not grown up in a French home nor does he or she speak French primarily. This participant was born in Poland and has spoken Polish throughout life. He or she speaks French and English fluently for the last year. Additionally, he or she has been playing for eleven years and has developed an advanced ability on the flute. In general, Participant 13 did not exhibit an ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are huge levels of inconsistency but this is due in part to the lack of experience in either
of the targeted languages for this experiment. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument with one very large difference. The similar syllables were not generally comparable and produced similar and completely different articulations on the instrument. The different syllables created general similarities as well in articulation on the flute and illustrate the ability to not change the production of sound for Participant 13, at least with the two targeted languages in this experiment.

**Participant 14:**

Country of Birth: France

Birthdate: 04/24/1962 (49 years old)

Studied flute for: 38 years

First language: French

Language most often spoken: French

Language most often spoken at home: French

Other languages spoken fluently: None

Other languages studied: German, English

Analysis of Exact Syllables:

Participant 14 pronounced the exact syllables found in the words “tête” and “test in an slightly similar way visually but the initial stop-burst is generally the same. The initial articulation visually appears to relate to the sound production on the
instrument in both languages. Therefore, the articulation between the French and English syllables is very similar. (See A.F. Ex. 265-6.)

Participant 14 pronounced the exact syllables found in the words “qui” and “McKee” in a slightly similar way visually. The initial articulation visually relates to the sound production on the instrument in both languages. Therefore, the articulation between the French and English syllables is very similar. (See A.F. Ex. 273-4.)

Participant 14 pronounced the exact syllables found in the words “habits” and “bee” in a visually similar way. The initial articulation does visually relate to the sound production on the instrument and the shape is somewhat similar. Therefore, the articulation between the French and English syllables is very similar. (See A.F. Ex. 277-8.)

Analysis of Similar Syllables:
Participant 14 pronounced the similar syllables found in the words “doux” and “do” in a very similar way visually. The initial articulation does seem to visually relate to the sound production on the instrument in both languages and accordingly, the articulation between the French and English syllables is similar. (See A.F. Ex. 267-8.)
Participant 14 pronounced the similar syllables found in the words “boue” and “boo” in a slightly similar way visually and the initial stop-burst from the English relates to the articulation on the instrument but the French does not. The initial articulation does visually relate to the sound production on the instrument and accordingly, the articulation between the French and English syllables is slightly similar. (See A.F. Ex. 269-70.)

Participant 14 pronounced the similar syllables found in the words “cou” and “coo” in a visually different way. The initial stop-burst from both languages does basically relate to the articulation on the instrument. Therefore, the articulation of both the French and English syllables is slightly similar. (See A.F. Ex. 271-2.)

Participant 14 pronounced the similar syllables found in the words “partis” and “tea” in a very similar way visually. Both articulations seem to visually relate directly to the articulation on the instrument. Therefore, both produced articulations are visually similar. (See A.F. Ex. 275-6.)

Participant 14 pronounced the similar syllables found in the words “tu” and “too” in a slightly different way visually. The syllables do seem to relate to the articulation on the instrument in both languages. Both produced articulations are slightly visually similar. (See A.F. Ex. 285-6.)
Analysis of Different Syllables:

Participant 14 pronounced the different syllables found in the words “tarte” and “take” in a slightly different way from a visual standpoint. The initial syllable visually relates to the sound production on the instrument (more so on the English side) but the syllables themselves represent very different shapes. However, the produced articulation on the flute between the two syllables is slightly similar between the French and the English. (See A.F. Ex. 279-80.)

Participant 14 pronounced the different syllables found in the words “pour” and “poor” in a visually different way. The initial syllable does not seem to visually relate to the sound production on the instrument and the syllables themselves represent different shapes. The produced articulation on the flute between the two syllables appears to be slightly similar between the two languages. (See A.F. Ex. 281-2.)

Participant 14 pronounced the different syllables found in the words “tirade” and “time” in a slightly different way visually. The initial syllable does seem to visually relate to the sound production on the instrument in both languages. The syllables themselves represent different shapes. However, the produced articulation on the flute between the two syllables is slightly similar between the French and the English. (See A.F. Ex. 283-4.)
From a demographic standpoint, Participant 14 has grown up in a French home and speaks French primarily. He or she speaks no other languages fluently. Additionally, he or she has been playing for thirty-eight years and has developed a highly advanced ability on the flute. In general, Participant 14 did not exhibit an ability to pronounce the syllables in speech and then directly relate those syllables into his or her playing. There are a few interesting moments of inconsistency but this could be due in part to the participants’ advanced level of flute-playing. The exact syllables between French and English produced generally the same visual result for initial articulation on the instrument. The similar syllables were generally comparable and produced similar articulations on the instrument. The different syllables created general similarities as well in articulation on the flute and illustrate the ability to not change the production of sound for Participant 14.

General Results

The age range for the fourteen participants of this experiment is about thirty years, ranging from 19 years to 49 years of age. The mean age of the participants is 27 years of age. Most participants speak French as a first language and as their only fluent language. A few participants additionally spoke English or Italian fluently. One of the participants was born in Nepal but speaks French singularly. One of the participants was born in Poland and speaks Polish as a first language. This
participant also fluently spoke English and French. All of these factors will be considered in tandem with the results of the spoken portion of this experiment.

The three types of stop-burst consonants used (exact, similar and different) were utilized to isolate the participants’ ability to alter his or her articulation by implementing syllables not common to their spoken languages. It was hypothesized that the addition of these different syllables would be represented in a visual and therefore an aural way. For this reason, the participants with no other major language experience (i.e. daily conversational speech) would be the most impressionable.

Overall, the hypothesis was confirmed in this experiment. A participant is considered successful in this experiment if he or she is generally able to change the articulation result between the different syllables in each language. Eight out of twelve of the viable test subjects were able to alter their articulation through the implementation of similar and different syllables for articulation. Four out of the twelve were unable to implement the syllables into their articulation. A thirteenth participant served as a foil to the experiment, proving through a lack of French and English experience that the French and English syllables were equally successful and unsuccessful at altering the articulation of a Polish speaker but this is due to the fact that the experiment was designed for French speakers. Finally, the
fourteenth participant was removed from the study due to a misunderstanding of the experiment.

Of the successful participants, the range of ages went from 19 to 35 years of age. The participants had between 10 and 22 years of flute playing experience. Aside from French, two of the successful participants also spoke fluent English, one spoke fluent German and the other five had no other language fluencies. They were all born in France.

Of the unsuccessful participants, the range of ages was from 22 to 49 years of age. The participants had between 11 and 38 years of flute playing experience. Aside from French, one of the participants was fluent in English, two were fluent in Italian and the fourth had no other language fluency.

These demographic results could indicate that no amount of playing experience would help or hinder a students’ ability to adapt his or her articulation based on language. Also, it appears superficially that language experience might have made it more difficult for some of the participants to alter their articulation appropriately.
Chapter 6: Research Implications and Experiment Improvement

There are broad and far-reaching research implications to this work. The concept that language could change a flutist’s articulation in such a short amount of time and with a minimal amount of coaching, even if only successful for 75% of participants as this research suggests, is a helpful tool for the flute pedagogue. Conceivably, the research could be used to further build the repertory of knowledge of an advanced student base but it is the younger students that I intend to engage. Young students are more impressionable and open to linguistic studies; therefore it is reasonable to imagine that young students could stand to gain knowledge about articulation through the implementation of language in their lessons. However, since this research is only meant to serve as a basic foundation for the implementation of linguistics to color and aid flutists’ articulation, further research should be explored to develop this idea further before moving ahead.

First, the choice of language should not be a limiting factor and many others should be explored in depth. Any language above and beyond the French and English explored briefly in this document may reveal more differences and similarities between sound production on the flute. It is my express desire to form a
pedagogical published method for young students around this research; therefore, the expansion into as many languages as deemed possible would be necessary. Additionally, other factors outside of articulation could also be explored such as tone color and rhythm.

Further research into the specifics of spectral analysis may later reveal more conclusive evidence of the conclusions offered here. The use of Audacity 1.3.12-beta (Unicode) as the medium for the recordings and analysis in this document may be further explored as well as the use of any number of other software choices.

This research could be expanded upon through a much larger pool of participants, particularly students of all ages and levels. This experiment focused on one group of highly trained conservatory students but further research in this topic would branch out to other demographics and types of flutists. It would be beneficial to create a methodology that would allow the effect on younger students to be quantified as well.

The experiment design can be improved in numerous ways aside from participant pool, including spending a longer amount of time coaching the participants through the pronunciation differences between separate languages. The short amount of time allotted in this test may or may not have affected the efficacy of the method. However, since the ability to teach application of the language quickly is of the
essence, a change in the experiment design of the syllable choices and musical selection could be considered.

Additionally, a few of the original sources for this document were not located. Improvement to this work could be achieved by seeking these references and continuing to build on the list included. There are innumerable sources in the flute oeuvre so the sourcelist can always be built upon.

There are also inherent difficulties and snags in this research. Specifically, language is a changing process over time. Pronunciation and syntax characteristics change through culture and regime changes. It is difficult in some cases to even pin down how a syllable in a language culture would even have been pronounced at the time. Therefore, clinging dogmatically to the syllables found within old flute treatises may be completely moot. Additionally, there has been a marked deterioration of portions of the English language, for example, which was discussed in Chapter 3.

However, the trend of our current culture to learn new languages and become a global community is beneficial to all. This research may be expounded upon to help aid flute pedagogues in tailoring specific articulation regiments for their students that use language as a main aspect of teaching. This material, when built upon, may serve as the basis for a new language-based method. I also hope to
author several smaller articles that break up the content of this document for publication. As can be seen in the vast and endless recommendations of flute teachers dating back to Hotteterre, articulation is the way that music becomes linguistic and phrased. The more depth and varied our articulation as flutists, the more vast and infinite the possibilities of language through our music.
Bibliography


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Cahusac. *The Compleat [sic] Tutor for the German Flute.* (No publisher info), 178-.


Gunn, John. *The Art of Playing the German-Flute on New Principles Circulated to increase its powers, and give it greater variety, expression and effect, to which are added, copious examples in an elegant style, a complete system of modulation, the art of varying simple passages, and a new method of*


Sources Consulted (No relevant information)


Monzani, Tebaldo. *Instructions for the German Flute*. London: Monzani & Cimador, 1801.


Software

Audacity © 1.3.12-beta (Unicode) A Free Digital Audio Editor http://audacity.sourceforge.net/ Audacity is a free program written by a worldwide team of volunteer developers. We thank SourceForge.net and Google Code for our project hosting. Audacity is available for Windows 98 and later, Mac OS X, Linux and other Unix-like systems.
Appendix A: Catalogue

By Author (Chronological)


/\textit{tu}/ Described as most common articulation in use. (Pg. 36)

/\textit{ru}/ Discusses is actually further forward than the English /\textit{r}/ and created by placing the tip of the tongue by the alveolar ridge, directly behind the teeth. Only for ascending or descending scalar passages or on the short notes of dotted rhythms. (Pg. 36-8)


/\textit{tootle tootle}/ Double tonguing. (Pg. 13)


/\textit{tu}/ Described as the principal articulation. (Pg. 7)

/\textit{ru}/ Used to avoid uniformity in articulation. Intermixes with /\textit{tu}/ in passages with faster notes. (Pg. 7)

(c. 1734) Corrette, Michel. *Méthode pour apprendre aisément à jouer de la flute traversière*. Paris: Bolvin & Le Clerc, c. 1734. Translated by Carol Reglin
Farrar as *Michel Corrette and Flute-Playing in the Eighteenth Century* (Brooklyn: Institute of Mediaeval Music, 1970.)

/tu/ Articulation of antiquity, not useful. (Pg. 34)

/ru/ Articulation of antiquity, not useful. (Pg. 34)


/tu/ Used for leaps and slower value notes. (Pg. 11)

/ru/ Used in alternation with /tu/ in rising or falling scalar passages. In the case of shakes and two notes in a row, this articulation is expressly forbidden. (Pg. 11-3)


/ti/ Used for short, equal, lively, and quick notes. (Pg. 71)

/di/ Used when the melody is slow. (Pg. 71)

/tiri/ Used for “notes inégale” or dotted note rhythms (Pg. 76)

/did’ll/ Double tonguing. (Pg. 79)

/didel/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)

/diili/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)


/tu/ , /ru/ Not considered to be relevant to “modern music” anymore. (Pg. 21)

/di del/ Double tonguing. (Pg. 21)
(c. 1770) Granom, Lewis. *Plain and Easy Instructions for Playing of the German-Flute.* London: T. Bennett, c. 1770.

/too tle/ Double tonguing. (unknown page)

/too tle too/ Triple tonguing. (unknown page)


/tit/ Single tonguing. (unknown page)

/tit tle/ Double tonguing. (unknown page)


/tu/ Produced by placing the tip of the tongue between the lips to release fast air. (Pg. 30)

/ur/ Produced by blowing through the aperture of the lips without the assistance of the tongue. (Pg. 30)

/tootle tootle/ Double tonguing. (Pg. 31)

(178-) Cahusac. *The Compleat [sic] Tutor for the German Flute.* (No publisher info), 178-.

/tootle tootle/ Double tonguing. (Pg. 13)


/ta/ Single tongue, appropriate on a single note, an upbeat, when the notes are short, on dotted rhythms (both notes), penultimate notes in pieces, the last note of a triplet figure, notes of the same value if they are not attached, large leaps, the end of trills (Pg. 153)
/tat/ Staccato single tonguing. (Pg. 156)

/tat a/ Single tonguing, used for passages of long and short notes, respectively. (Pg. 156); Used for syncopations. (Pg. 171)

/tataraa/ Used on four notes of equal value in which the /r/ syllable changes into a /d/ syllable. (Pg 157-8); Used for dotted rhythms in moderate tempos. (Pg. 163)

/tata ra ra ra/ Single tongue articulation of a series of short notes in which all the subsequent notes after the first /ta/ are articulated with the /ra/ syllable. (Pg. 160)

/tata ra/ Used for dotted rhythms in which the first note is short and the second is long. (Pg. 162)

/tataraa/ Used for dotted rhythms in moderate tempos. (Pg. 163)

/hat at/ Used for dotted rhythms that occur over the space of one beat in a fast tempo. (Pg. 168)

/had ad/ Used for dotted rhythms that occur over the space of one beat in a moderate or slow tempo. (Pg. 168)

/tat a/ Used for syncopations. (Pg. 171)

/tatall/ Double tonguing syllable. (Pg. 197)


/tootle tootle/ Double tonguing. (Pg. 14)


/t/ “Strong and spirited” single tonguing. (Pg. 13)
/d/ “Soft and delicate” single tonguing. (Pg. 13)

/diddle/ Double tonguing, but weak second beat. (Pg. 14)

/teddy/ or /tiddy/ Staccato double tonguing with equality between action and reaction. (Pg. 14)

/teede/ Quantz’s syllables for short accented notes followed by long unaccented notes (Considered obsolete by the author) (Pg. 14)

/tirry/ Pronunciation of Quantz’s syllables (See teede) (Pg. 14)


/tu/ Single tonguing, keeping the mouth closed. (Pg. 7)

/te/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)

/ta/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)

/dougue dougue/ Double tonguing syllable. The author despises the effect. (Pg. 9)

/tourou/ Double tonguing syllable. The author despises the effect. (Pg. 9)

/turu/ Double tonguing syllable. The author despises the effect. (Pg. 9)


/dougou dougou/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)

/tourou tourou/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)
/turu turu/  Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)


/tu/  Single tonguing syllable used for continuous or long notes, passages of quarter notes (Pg. 6)

/du/  Single tonguing syllable used for fast passages, slur-two, tongue-two passages and light tongued passages. (Pg. 6) Used for light staccato. (Pg. 7) Used for triplets in fast and slow passages. (Pg. 14)


/dou gue/  Double tonguing syllable. (Pg. 10)


/tootle tootle/  Double tonguing, most preferred by the author. (Pg. 5)

/dig ga dig ga/  Double tonguing, not preferred by the author. (Pg. 5)

/tuc ca tuc ca/  Double tonguing, not preferred by the author. (Pg. 5)

/tit tle tit tle/  Double tonguing, not preferred by the author. (Pg. 5)


/tu/  Forceful articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27)
/du/ Soft articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27) Also used for faster passagework. (Pg. 51)

/dougu dougu/ Double tonguing. (Pg. 249)


/tu/ Single tonguing. (Pg. 10)


/tootle tootle/ Double tonguing. (Pg. 87)

/tootle too tootle too/ Triple tonguing. (Pg. 87)


/tu/ Single tongue, accomplished by using tongue like a valve to release air. (Pg. 5)


/teu/ Single tonguing. (Pg. 32)

/tu tel/ Double tonguing, more useful without the /l/. (Pg. 67)

/tu te/ The author’s preferred double tonguing syllables. (Pg. 67)

/du ru/ Double tonguing syllables, best suited to non-French speakers “Italians, Germans and English”. (Pg. 68)
/dougu dougu/  Double tonguing, detested by the author and not to be utilized due to its “guttural” inflection. (Pg. 112)


/doo/  In slower times, tongue strikes the palate above the teeth. (Pg. 8)

/doo/  In faster times, tongue strikes against the teeth. (Pg. 8)

/too/  Staccato single tonguing. (Pg. 8)

/hoo/  Produced without the tongue for moments of expression. (Pg. 8)

/doo dle too dle/  Double tonguing. (Pg. 49)

/doo dle d oo/  Rapid triple tonguing. (Pg. 50)

/too tle too/  Slower triple tonguing. (Pg. 50)

/dootoo rootoo rootoo/  Utilized in passages consisting of dotted notes with intervening short ones. (Pg. 52)


/too/  Used for staccato passages as it gives a sharpness to the articulation. (Pg. 38)

/doo/  Used with notes that are not short and are merely intended to be tongued or softer. (Pg. 38)

/teu/, /tu/, /te/, /tou/  Variations of /too/, as given by Drouët, (See /doo/) (Pg. 96)

/deu/, /du/, /de/, /dou/  Variations of /doo/, as given by Drouët, (See /doo/) (Pg. 96)

/hoo/  Used in some slurred passages, where marks of emphasis are attached to the notes. Created by air through the embouchure with no tongue stroke. (Pg. 97)
/tootle tootle/  Double tonguing, acceptable but not preferable.  (Pg. 97)

/tu du/, /too ta/, /too da/, /tit ta/, /tud da/  Double tonguing, all preferred equally by the author.  (Pg. 98)


/tet/  Short and articulate single tonguing.  (Pg. 5) Separates tongue strokes from one another.  (Pg. 13)

/te/  Staccato single tongue.  (Pg. 40)

/de/  Softened single tongue.  (Pg. 40)

/le/  Connected and legato single tongue.  (Pg. 40)


/tu/  Simple (single) tonguing.  Without sticking tongue through teeth.  (Pg. 8)

/du/  The louré articulation, used for notes that have dots above them but fall under a slur.  Strike tongue on palate right above the teeth.  (Pg. 8)

/tu que/  Double tonguing.  (Pg. 8)

(c 1835-40) Anonymous.  *New Flute Tutor to which are added Forty Popular Melodies by an Eminent Professor*.  Cocks and Co, c. 1835-40.

/t/  Used for every staccato note on the flute.  Produced by striking the back of the teeth.  (Pg. 6)

/too/ Single tonguing, produced on the palate above the teeth. Used for “soft and mellow” playing as well. (Pg. 62)
/tootle tootle/ Double tonguing. (Pg. 65)


/teu/ Single tonguing. (Pg. 8)

de re/ Double tonguing. (Pg. 130)

teu reu/ Proper double tonguing syllables for French speakers. (Pg. 52)

dou gue/ “Detestable” double tonguing syllables, damaging to throat and mouth. (Pg. 52)


/tootle tootle too/ Double tonguing, produced near the soft palate but not on the teeth. (Pg. 12)

/te/ Single tonguing, used for staccato. (Pg. 37)

/tu/ Single tonguing, used for staccato. (Pg. 37)

/dou gue/ Double tonguing, used for brilliant staccato. (Pg. 37)


/too/ Single tonguing, produced on the roof of the mouth. (Pg. 7)

/too doo/ or /teditody/ Drouët’s double tonguing. Carte disagrees with its use. (Pg. 7)

/thoodoo thoodoo/ Double tonguing, where the first syllable strikes above the teeth and the second strikes the bottom teeth. (Pg. 7)

/tal/, /tel/, /ti/, /to/, /tu/ Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)

/tootle tootle/, /digga digga/, /tukka tukka/ All unacceptable methods of double tonguing. (Pg. 7)


/t/ Single tongue, strikes against the palate. (Pg. 7)

/t/ As in “teeth”, staccato tonguing. (Pg. 46)

/tee kee/ Double tonguing, not “tick ee”. (Pg. 47)


/tootle tootle/ Double tonguing. (Pg. 39)
Double tonguing, also found in his earlier treatise. (Pg. 39)


Single tonguing. (Pg. 12)

Ineffective single tonguing, because the mouth is slightly opened to accomplish this syllable. (Pg. 12)

Ineffective single tonguing, because the mouth is slightly opened to accomplish this syllable. (Pg. 12)

Double tonguing syllable, pernicious for the throat. (Pg. 13)

Double tonguing syllable, pernicious for the throat. (Pg. 13)


Single tonguing. (Pg. 148)


Single tonguing, produced above the gum of the front teeth. (Pg. 44)

Double tonguing. The second syllable is to be produced back in the throat to create a gutteral effect. (Pg. 46)


Single tonguing. (Pg. 78, 212)

Mezzo-staccato tonguing, no break between notes. (Pg. 78)

Composite or compound tonguing. (Pg. 212)

Double tonguing. (Pg. 213, 5)
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/tukutu/ Triple tonguing. (Pg. 216)


/too/ or “the French /te/” Single tonguing, using the roof of the mouth. Any “palatal /t/” will work but these are recommended. (Pg. 436)

/doo/ or “the French /de/” A softer and lighter single tonguing, using the roof of the mouth. (Pg. 437)

/poo/ Used by amateur students and created by puffing air out of the mouth without a solid articulation. Not for normal use. (Pg. 439)

/toot too root/ Used for dotted notes that are played quite short, with the /oo/ pronounced as the /oo/ as in “foot’. (Pg. 510)

/toot too root/ Used for dotted notes that are played mezzo-staccato, with the /oo/ pronounced as the /oo/ as in “foot’. (Pg. 510)

/too tle/ Archaic form of double tonguing. (Pg. 510)

/dou gou/, /deu guel/, /te que/ All with French pronunciation, double tonguing syllables that came into vogue in France. Rockstro does not prefer these syllables. (Pg. 510)

/too coo/ Double tonguing for staccato passages (Pg. 510)

/took coot/ Double tonguing for the extreme staccato, with modification of the sharpness of the consonants and the length of the vowels as necessary (Pg. 510)

/doo goo/ Double tonguing for mezzo staccato. (Pg. 510)

/too roo coo/ Triple tonguing. (Pg. 512)

/too tle too, too tle too/ An ineffective method for triple tonguing. (Pg. 512)

/\day/ Single tonguing. (Pg. 1)

/\tay/ Single tonguing. (Pg. 4)

/\tet/ Extremely short single tongued notes. (Pg. 4)

/\dee kee/ Double tonguing. (Pg. 28)

/\dee kee\m/ Triple tonguing. (Pg. 51)

/\rr/ Flutter tonguing. Produced by rolling the /r/ or rapidly articulating it. (Pg. 60)


/\te/ Single tongue stroke. French pronunciation as in the English word “turkey”, always tongue where teeth touch the gums. (Pg. 20)

/\da/ Not necessary, if the /\te/ syllable is produced lightly. (Pg. 93)

/\de/ Not necessary, if the /\te/ syllable is produced lightly. (Pg. 93)


/\te/ Single tongue with roughness, behind teeth. Very short. (Pg. 81)

/\te ke/ Double tonguing. (Pg. 81)

/\te ke te/ Triple tonguing. (Pg. 108)

/too/ or /doo/ Single tonguing, produced on the back of the teeth. (Pg. 14)

/too coo/, /ti ki/, /tee kee/, or /doo goo/ All effective methods of double tonguing. The author prefers the first. (Pg. 14)

/too coo too, too coo too/ and /too too coo, too coo coo/ Ineffective triple tonguing. (Pg. 14)

/too coo too, coo too coo/ Triple tonguing. (Pg. 14)

/rr/ Flutter tonguing, rolled /r/ as in the sentence Moore includes, “‘Brrr, it’s cold.’” (Pg. 14)


/t+/ Single tonguing, commences with a /t/ syllable as pronounced by the player’s language. Cannot touch the inner lip. (Pg. 24)

/p/ Forbidden for advanced students. Only for use with young students as a teaching practice. (Pg. 44)

/d/ or /g/ Mental effect only of softening the /t/ or /k/ and has no real effect on the playing. (Pg. 44)

/t k+/ Double tonguing with the resultant vowel to be derived from the preference or language of the player. The vowels must rhyme and the reaction must be produced as far forward in the mouth as possible in order to parallel the action. (Pg. 45)

/tkt tkt tkt tkt/ or /ttk ttk ttk ttk/ Triple tonguing, acceptable but not preferred. (Pg. 46)

/tkt ttk ttk ttk/ Triple tonguing, preferred by the author since it removes the repetition of syllables. (Pg. 46)

/rrrrr/ Rolled /r/ for the production of flutter tonguing. Not preferred by the author since it is difficult to cultivate in the lower register. (Pg. 61)
“Guttural” /r/ Flutter tonguing, produced in the back of the throat like a gargle. Preferred by the author. (Pg. 61)


/t/ Single tonguing, created on the soft palate behind the teeth. Can also be produced with the tongue touching the top lip. (Pg. 234)

/p/ Described as a “labial p”, this articulation is used by beginners only and pushes the air out with the lips and not the tongue. (Pg. 234)

/k/, /l/, “trilled” /rr/, “glottal French” /r/ Found without description, just for use on the flute for several purposes. “Glottal” and “Trilled” possibly used for flutter tonguing. (Pg. 234)

/t k t k/ Double tonguing. (Pg. 234)

/diridiride/ Found in Agricola, later becomes the French /t r t r/. This would eventually give way to the articulation /t k t k/. See /t k t k/. (Pg. 234)


/doo/ Single tonguing syllable, produced by the lightest tongue pressure against the palate. (Pg. 18)

/too/ Single tonguing syllable, produced by more pressure against the palate. Used for sharper and more pronounced articulation. (Pg. 18)

/tooT/ Improper single tonguing syllable, creates too much of a percussive, “slap-tongue” effect. (Pg. 18)

/poo/ Never to be used. (Pg. 18)


/hwo/ Air attack without tongue. (Pgs. 8-9)

/twho/ Single tonguing. (Pgs. 8-9)

/t/, /too/, /tah/, /toe/, etc. Limited single tonguing, for sharper articulation. (Pg. 19)

/d/, /doo/, /dah/, /doe/, etc. Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)

/to doo/ Pick-up and downbeat articulation, to be pronounced with the stress and release of the word “to-day.” Also useful in rapid articulation patterns involving dotted rhythms. (Pg. 20)

/ta re/ or /ta ruh/ Used for dotted rhythms when the tempo becomes very rapid. (Pg. 20)

/te ke/ Double tonguing syllables, too sharp for the tongue to accomplish well. Not to be used. (Pg. 20-1)

/doo goo/ Double tonguing. (Pg. 20-1)

/doo goo doo/ Triple tonguing. (Pg. 20-1)


/ta ka/ Double tonguing syllable. (Pg. 23)

/ti ki/ Double tonguing syllable. (Pg. 23)

/teh keh/ Double tonguing syllable. (Pg. 23)

/too koo/ Double tonguing syllable. (Pg. 23)

/tu(r) key/ Double tonguing syllable. (Pg. 23)

/ta ka ta/ Triple tonguing syllable. (Pg. 46)

/ti ki ti/ Triple tonguing syllable. (Pg. 46)

/teh keh teh/ Triple tonguing syllable. (Pg. 46)
/too koo too/ Triple tonguing syllable. (Pg. 46)


/\l/, /\te/, /\tu/, /\ta/, or even /\ti/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)

/\du/, /\da/, /\de/, /\di/ Legato slur single tonguing. Produced with a softer tip of the tongue that strikes farther back in the mouth. Known as “dorsal or top tonguing” (Pg. 117-8)

/k/ or /\g/ Basis of the double tonguing articulation. Known as “pharyngeal tonguing or back tonguing.” (Pg. 118)

/\tu \du/, /\ta \da/, /\te \de/, /\ti \di/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers the /\tu \du/ syllables. (Pg. 118)


/T..hoo!/ Single tonguing, accomplished by “tongue followed politely by air.” (Pg. 19)

/tktktk/ Double tonguing. (Pg. 85)

/dgdgdg/ Double tonguing. (Pg. 85)

/de ge/ Double tonguing, fast but long notes. (Pg. 86)

/ti ki/ Double tonguing, short, fast and punctuated. (Pg. 86)

/\ta \ka/ Double tonguing, short, fast and punctuated. (Pg. 86)

/t/ Single tonguing, produced like the “French ‘T’“ and pronounced like “Tooough.” Executed with the tongue touching the lip through the teeth. The author calls this “forward tonguing.” (Pg. 103)

/du/ Single tonguing, used for a softer articulation by blunting the tongue. (Pg. 106)

/oouuu/ Flutter tonguing, starting with a guttural growl and not an articulation. (Pg. 107)

/du/, /tu du/, /tu du/ Used for dotted rhythms. (Pg. 110)

/tu ku/ Used for passages of “‘slur two, tongue one in a triple pattern, along with ‘slur three, tongue one.’” /Tu/ used for the first of slurred notes and /ku/ for the tongued notes. (Pg. 111)

/tu ku/ or /du gu/ Double tonguing, produced between the lips and through the teeth. (Pg. 115)

/tu ku tu/ or /tu ku tu ku tu ku/ Triple tonguing. (Pg. 119)


/tu/ Single tonguing syllable, produced directly behind the top teeth, without touching them. (Pg. 29)

/ter/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/too/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/te/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/tk/ Double tonguing. (Pg. 30)

/tkt tkt/ Triple tonguing. (Pg. 31)
/tkt  ktk/ Insufficient triple tonguing, as it causes the weak tongue stroke to fall on the strong beat. (Pg. 31)


/t/ Unacceptable tongue stroke, makes the attack too sharp. (Pg. 43)

/d/ Tongue stroke, relaxed and natural. (Pg. 43)

/who/ Reserved for starting notes without a perceptible beginning. (Pg. 44)

/tk/ Unacceptable double tonguing syllables, too sharp. (Pg. 44)

/dg/ Double tongue stroke. (Pg. 44)

/de ge de de ge de/ Triple tonguing, when the triplet is to be stressed. (Pg. 45)

/de ge de ge de ge/ Triple tonguing, when notes are repeated and smoothness is desired. (Pg. 45)


/t/ Single tonguing. (Pg. 27)

/k/ Short double tonguing. (Pg. 27)

/d/ For Louré. (Pg. 27)

/g/ Mellow double tonguing. (Pg. 27)

/d/ Composite single tonguing. (Pg. 27)

/p/ Soft articulation without the tongue. (Pg. 27)

/da/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)
/ga/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ka/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/pa/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ta/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/de/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/ge/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/ke/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/pe/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/te/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/di/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/gi/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/ki/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/pi/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/ti/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/di/ Composite tonguing, from Quantz. (Pg. 28)


/tu/ Single tongue, produced between the teeth. (Pg. 16)

/tu ku/ Double tongue (Think of changing syllables, TU-KU, TI-KI, TA-KA, TO-KO to relax the tongue.) (Pg. 16)

/tu du/ Double tonguing for dotted rhythms. (Pg. 16)
/tu ku tu/ Triple tonguing. (Pg. 16)
By Author (Alphabetical)


/tootle tootle/ Double tonguing. (Pg. 87)
/tootle too tootle too/ Triple tonguing. (Pg. 87)


/tu/ Single tonguing. (Pg. 78, 212)
/du/ Mezzo-staccato tonguing, no break between notes. (Pg. 78)
/tudu/ Composite or compound tonguing. (Pg. 212)
/tuku/ Double tonguing. (Pg. 213, 5)
/tukutu/ Triple tonguing. (Pg. 216)

/tootle tootle/ Double tonguing. (Pg. 13)

/tu/ Described as the principal articulation. (Pg. 7)
/ru/ Used to avoid uniformity in articulation. Intermixes with /tu/ in passages with faster notes. (Pg. 7)
Anonymous. *New Flute Tutor to which are added Forty Popular Melodies by an Eminent Professor*. Cocks and Co, c. 1835-40.

/t/ Used for every staccato note on the flute. Produced by striking the back of the teeth. (Pg. 6)


/tu/ Single tonguing. (Pg. 12)

/ta/ Ineffective single tonguing, because the mouth is slightly opened to accomplish this syllable. (Pg. 12)

/te/ Ineffective single tonguing, because the mouth is slightly opened to accomplish this syllable. (Pg. 12)

/turu/ Double tonguing syllable, pernicious for the throat. (Pg. 13)

/tourou/ Double tonguing syllable, pernicious for the throat. (Pg. 13)


/tu/ Produced by placing the tip of the tongue between the lips to release fast air. (Pg. 30)

/ur/ Produced by blowing through the aperture of the lips without the assistance of the tongue. (Pg. 30)

/tootle tootle/ Double tonguing. (Pg. 31)


/t/ Single tonguing, created on the soft palate behind the teeth. Can also be produced with the tongue touching the top lip. (Pg. 234)

/p/ Described as a “labial p”, this articulation is used by beginners only and pushes the air out with the lips and not the tongue. (Pg. 234)
/k/, /l/, “trilled” /rr/, “glottal French” /r/  Found without description, just for use on the flute for several purposes. “Glottal” and “Trilled” possibly used for flutter tonguing. (Pg. 234)

/t k t k/ Double tonguing. (Pg. 234)

/diridiride/  Found in Agricola, later becomes the French /t r t r/. This would eventually give way to the articulation /t k t k/. See /t k t k/. (Pg. 234)


/tu/  Forceful articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27)

/du/  Soft articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27)  Also used for faster passagework. (Pg. 51)

/dougou dougou/  Double tonguing. (Pg. 249)


/tu/  Single tonguing. (Pg. 10)


/de/  Single tonguing. (Pg. 148)


/tu/  Single tonguing, when a note has the sign (‘)  (Pg. 48)

/teu/  Single tonguing, when a note has the sign (‘)  (Pg. 48)
/deu/  Single tonguing, for longer note durations. (Pg. 49)

/deu reu/  Proper double tonguing syllables for French speakers. (Pg. 52)

/dou gue/  “Detestable” double tonguing syllables, damaging to throat and mouth. (Pg. 52)


/te/  Single tongue stroke. French pronunciation as in the English word “turkey”, always tongue where teeth touch the gums. (Pg. 20)

/da/  Not necessary, if the /te/ syllable is produced lightly. (Pg. 93)

/de/  Not necessary, if the /te/ syllable is produced lightly. (Pg. 93)

Cahusac. *The Compleat [sic] Tutor for the German Flute*. (No publisher info), 178-.

/tootle tootle/  Double tonguing. (Pg. 13)


/teu/  Tongue stroke. (Pg. 8)


/too/  Single tonguing, produced on the roof of the mouth. (Pg. 7)

/too doo/ or /teditody/  Drouën’s double tonguing. Carte disagrees with its use. (Pg. 7)

/thoodoo thoodoo/  Double tonguing, where the first syllable strikes above the teeth and the second strikes the bottom teeth. (Pg. 7)
Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)

All unacceptable methods of double tonguing. (Pg. 7)


Single tongue, strikes against the palate. (Pg. 7)

As in “teeth”, staccato tonguing. (Pg. 46)

Double tonguing, not “tick ee”. (Pg. 47)


Double tonguing. (Pg. 39)

Double tonguing, also found in his earlier treatise. (Pg. 39)


Double tonguing. (Pg. 130)

Double tonguing. (Pg. 130)


Single tongue, produced between the teeth. (Pg. 16)

Double tongue (Think of changing syllables, TU-KU, TI-KI, TA-KA, TO-KO to relax the tongue.) (Pg. 16)

Double tonguing for dotted rhythms. (Pg. 16)


/tu ku tu/ Triple tonguing. (Pg. 16)


/tu/ Articulation of antiquity, not useful. (Pg. 34)

/ru/ Articulation of antiquity, not useful. (Pg. 34)


/t/ Single tonguing. (Pg. 27)

/k/ Short double tonguing. (Pg. 27)

/d/ For Louré. (Pg. 27)

/g/ Mellow double tonguing. (Pg. 27)

/d/ Composite single tonguing. (Pg. 27)

/p/ Soft articulation without the tongue. (Pg. 27)

/da/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ga/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ka/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/pa/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ta/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)
/de/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)
/ge/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)
/ke/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)
/pe/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)
/te/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)
/di/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/gi/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/ki/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/pi/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/ti/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/di/ Composite tonguing, from Quantz. (Pg. 28)


/tu/ Single tonguing, keeping the mouth closed. (Pg. 7)

/te/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)

/ta/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)

/dougue dougue/ Double tonguing syllable. The author despises the effect. (Pg. 9)

/tourou/ Double tonguing syllable. The author despises the effect. (Pg. 9)

/turu/ Double tonguing syllable. The author despises the effect. (Pg. 9)

/\textipa{doo}/  In slower times, tongue strikes the palate above the teeth. (Pg. 8)

/\textipa{doo}/  In faster times, tongue strikes against the teeth. (Pg. 8)

/\textipa{too}/  Staccato single tonguing. (Pg. 8)

/\textipa{hoo}/  Produced without the tongue for moments of expression. (Pg. 8)

/\textipa{doo dle too dle}/  Double tonguing. (Pg. 49)

/\textipa{doo dle doo}/  Rapid triple tonguing. (Pg. 50)

/\textipa{too tle too}/  Slower triple tonguing. (Pg. 50)

/\textipa{dootoo rootoo rootoo}/  Utilized in passages consisting of dotted notes with intervening short ones. (Pg. 52)


/\textipa{teu}/  Single tonguing. (Pg. 32)

/\textipa{tu tel}/  Double tonguing, more useful without the /\textipa{l}/. (Pg. 67)

/\textipa{tu te}/  The author’s preferred double tonguing syllables. (Pg. 67)

/\textipa{du ru}/  Double tonguing syllables, best suited to non-French speakers “Italians, Germans and English”. (Pg. 68)

/\textipa{dougou dougou}/  Double tonguing, detested by the author and not to be utilized due to its “guttural” inflection. (Pg. 112)

/t/ Single tonguing, produced like the “French ‘T’ “ and pronounced like “Tooough.” Executed with the tongue touching the lip through the teeth. The author calls this “forward tonguing.” (Pg. 103)

/du/ Single tonguing, used for a softer articulation by blunting the tongue. (Pg. 106)

/oouuuu/ Flutter tonguing, starting with a guttural growl and not an articulation. (Pg. 107)

/du/, /tu du/, /tu du/ Used for dotted rhythms. (Pg. 110)

/tu ku/ Used for passages of “‘slur two, tongue one in a triple pattern, along with ‘slur three, tongue one.’” /Tu/ used for the first of slurred notes and /ku/ for the tongued notes. (Pg. 111)

/tu ku/ or /du gu/ Double tonguing, produced between the lips and through the teeth. (Pg. 115)

/tu ku tu/ or /tu ku tu ku tu ku/ Triple tonguing. (Pg. 119)


/too tle/ Double tonguing. (unknown page)

/too tle too/ Triple tonguing. (unknown page)


/t/ “Strong and spririted” single tonguing. (Pg. 13)

/d/ “Soft and delicate” single tonguing. (Pg. 13)

/diddle/ Double tonguing, but weak second beat. (Pg. 14)
/teddy/ or /tiddy/ Staccato double tonguing with equality between action and reaction. (Pg. 14)

/teede/ Quantz’s syllables for short accented notes followed by long unaccented notes (Considered obsolete by the author) (Pg. 14)

/tirry/ Pronunciation of Quantz’s syllables (See teede) (Pg. 14)


/tit/ Single tonguing. (unknown page)

/tit tle/ Double tonguing (unknown page)


/tu/ Described as most common articulation in use. (Pg. 36)

/ru/ Discusses is actually further forward than the English /r/ and created by placing the tip of the tongue by the alveolar ridge, directly behind the teeth. Only for ascending or descending scalar passages or on the short notes of dotted rhythms. (Pg. 36-8)


/tootle tootle too/ Double tonguing, produced near the soft palate but not on the teeth. (Pg. 12)


/tu/ Single tonguing syllable used for continuous or long notes, passages of quarter notes (Pg. 6)
/du/ Single tonguing syllable used for fast passages, slur-two, tongue-two passages and light tongued passages. (Pg. 6) Used for light staccato. (Pg. 7) Used for triplets in fast and slow passages. (Pg. 14)


/te/ Single tonguing, used for staccato. (Pg. 37)

/tu/ Single tonguing, used for staccato. (Pg. 37)

/dou gue/ Double tonguing, used for brilliant staccato. (Pg. 37)


/ta ka/ Double tonguing syllable. (Pg. 23)

/ti ki/ Double tonguing syllable. (Pg. 23)

/teh keh/ Double tonguing syllable. (Pg. 23)

/too koo/ Double tonguing syllable. (Pg. 23)

/tu(r) key/ Double tonguing syllable. (Pg. 23)

/ta ka ta/ Triple tonguing syllable. (Pg. 46)

/ti ki ti/ Triple tonguing syllable. (Pg. 46)

/teh keh teh/ Triple tonguing syllable. (Pg. 46)

/too koo too/ Triple tonguing syllable. (Pg. 46)


/t/, /too/, /tah/, /toe/, etc. Limited single tonguing, for sharper articulation. (Pg. 19)
/dl/, /doo/, /dah/, /doe/, etc. Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)

/to doo/ Pick-up and downbeat articulation, to be pronounced with the stress and release of the word “to-day.” Also useful in rapid articulation patterns involving dotted rhythms. (Pg. 20)

/ta re/ or /ta ruh/ Used for dotted rhythms when the tempo becomes very rapid. (Pg. 20)

/te ke/ Double tonguing syllables, too sharp for the tongue to accomplish well. Not to be used. (Pgs. 20-1)

/doo goo/ Double tonguing. (Pgs. 20-1)

/doo goo doo/ Triple tonguing. (Pgs. 20-1)


/doo/ Single tonguing syllable, produced by the lightest tongue pressure against the palate. (Pg. 18)

/too/ Single tonguing syllable, produced by more pressure against the palate. Used for sharper and more pronounced articulation. (Pg. 18)

/tooT/ Improper single tonguing syllable, creates too much of a percussive, “slap-tongue” effect. (Pg. 18)

/poo/ Never to be used. (Pg. 18)


/too/ Used for staccato passages as it gives a sharpness to the articulation. (Pg. 38)

/doo/ Used with notes that are not short and are merely intended to be tongued or softer. (Pg. 38)

/teu/, /tu/, /te/, /tou/ Variations of /too/, as given by Drouët, (See /doo/) (Pg. 96)
/deu/, /du/, /de/, /dou/ Variations of /doo/, as given by Drouët,  (See /doo/) (Pg. 96)

/hoo/ Used in some slurred passages, where marks of emphasis are attached to the notes. Created by air through the embouchure with no tongue stroke. (Pg. 97)

/tootle tootle/ Double tonguing, acceptable but not preferable. (Pg. 97)

/tu du/, /too ta/, /too da/, /tit ta/, /tud da/ Double tonguing, all preferred equally by the author. (Pg. 98)


/tu/, /ru/ Not considered to be relevant to “modern music” anymore. (Pg. 21)

/di del/ Double tonguing. (Pg. 21)


/too/ or /doo/ Single tonguing, produced on the back of the teeth. (Pg. 14)

/too coo/, /ti ki/, /tee kee/, or /doo goo/ All effective methods of double tonguing. The author prefers the first. (Pg. 14)

/too coo too, too coo too/ and /too too coo, too coo coo/ Ineffective triple tonguing. (Pg. 14)

/too coo too, coo too coo/ Triple tonguing. (Pg. 14)

/rr/ Flutter tonguing, rolled /r/ as in the sentence Moore includes, “‘Brrr, it’s cold.’” (Pg. 14)

/tu/ Single tonguing syllable, produced directly behind the top teeth, without touching them. (Pg. 29)

/ter/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/too/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/te/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/tk/ Double tonguing. (Pg. 30)

/tkt tkt/ Triple tonguing. (Pg. 31)

/tkt ttk/ Insufficient triple tonguing, as it causes the weak tongue stroke to fall on the strong beat. (Pg. 31)


/tootle tootle/ Double tonguing, most preferred by the author. (Pg. 5)

/dig ga dig ga/ Double tonguing, not preferred by the author. (Pg. 5)

/tuc ca tuc ca/ Double tonguing, not preferred by the author. (Pg. 5)

/tit tle tit tle/ Double tonguing, not preferred by the author. (Pg. 5)


/too/ Single tonguing, produced on the palate above the teeth. Used for “soft and mellow” playing as well. (Pg. 62)

/tootle tootle/ Double tonguing. (Pg. 65)

/\textit{T..hoo}/ Single tonguing, accomplished by “tongue followed politely by air.” (Pg. 19)

/tktktk/ Double tonguing. (Pg. 85)

/dgdgdg/ Double tonguing. (Pg. 85)

/de ge/ Double tonguing, fast but long notes. (Pg. 86)

/ti ki/ Double tonguing, short, fast and punctuated. (Pg. 86)

/ta ka/ Double tonguing, short, fast and punctuated. (Pg. 86)


/t/ Unacceptable tongue stroke, makes the attack too sharp. (Pg. 43)

d/ Tongue stroke, relaxed and natural. (Pg. 43)

/who/ Reserved for starting notes without a perceptible beginning. (Pg. 44)

/t k/ Unacceptable double tonguing syllables, too sharp. (Pg. 44)

d g/ Double tongue stroke. (Pg. 44)

/de ge de  de ge de/ Triple tonguing, when the triplet is to be stressed. (Pg. 45)

/de ge de ge de ge/ Triple tonguing, when notes are repeated and smoothness is desired. (Pg. 45)


/dougou dougou/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)
/tourou tourou/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)

/turu turu/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)


/ti/ Used for short, equal, lively, and quick notes. (Pg. 71)

/di/ Used when the melody is slow. (Pg. 71)

/tiri/ Used for “notes inégale” or dotted note rhythms (Pg. 76)

/did’ll/ Double tonguing. (Pg. 79)

/didel/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)

/dili/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)


/too/ Single tonguing, produced above the gum of the front teeth. (Pg. 44)

/too tle too tle/ Double tonguing. The second syllable is to be produced back in the throat to create a guttural effect. (Pg. 46)


/too/ or “the French /te/” Single tonguing, using the roof of the mouth. Any “palatal /t/” will work but these are recommended. (Pg. 436)

/doo/ or “the French /de/” A softer and lighter single tonguing, using the roof of the mouth. (Pg. 437)

/poo/ Used by amateur students and created by puffing air out of the mouth without a solid articulation. Not for normal use. (Pg. 439)
/toot too root/  Used for dotted notes that are played quite short, with the /oo/ pronounced as the /oo/ as in “foot’.  (Pg. 510)

/toot too root/  Used for dotted notes that are played mezzo-staccato, with the /oo/ pronounced as the /oo/ as in “foot’.  (Pg. 510)

/too tle/  Archaic form of double tonguing.  (Pg. 510)

/dou gou/, /deu gue/, /te que/  All with French pronunciation, double tonguing syllables that came into vogue in France.  Rockstro does not prefer these syllables.  (Pg. 510)

/too coo/  Double tonguing for staccato passages.  (Pg. 510)

/took coot/  Double tonguing for the extreme staccato, with modification of the sharpness of the consonants and the length of the vowels as necessary.  (Pg. 510)

/doo goo/  Double tonguing for mezzo staccato.  (Pg. 510)

/too roo coo/  Triple tonguing.  (Pg. 512)

/too tle too, too tle too/  An ineffective method for triple tonguing.  (Pg. 512)


/tu/  Used for leaps and slower value notes.  (Pg. 11)

/ru/  Used in alternation with /tu/ in rising or falling scalar passages.  In the case of shakes and two notes in a row, this articulation is expressly forbidden.  (Pgs. 11-3)


/t+/- Single tonguing, commences with a /t/ syllable as pronounced by the player’s language.  Cannot touch the inner lip.  (Pg. 24)

/p/  Forbidden for advanced students.  Only for use with young students as a teaching practice.  (Pg. 44)
/d/ or /g/ Mental effect only of softening the /t/ or /k/ and has no real effect on the playing. (Pg. 44)

/t k+/
Double tonguing with the resultant vowel to be derived from the preference or language of the player. The vowels must rhyme and the reaction must be produced as far forward in the mouth as possible in order to parallel the action. (Pg. 45)

/tkt tkt tkt tkt/ or /ttk ttk ttk ttk/ Triple tonguing, acceptable but not preferred. (Pg. 46)

/tkt ttk ttk ttk/ Triple tonguing, preferred by the author since it removes the repetition of syllables. (Pg. 46)

/rmmm/ Rolled /r/ for the production of flutter tonguing. Not preferred by the author since it is difficult to cultivate in the lower register. (Pg. 61)

“Guttural” /r/ Flutter tonguing, produced in the back of the throat like a gargle. Preferred by the author. (Pg. 61)


/te/ Single tongue with roughness, behind teeth. Very short. (Pg. 81)

/te ke/ Double tonguing. (Pg. 81)

/te ke te/ Triple tonguing. (Pg. 108)


/hwo/ Air attack without tongue. (Pgs. 8-9)

/twho/ Single tonguing. (Pgs. 8-9)

/day/ Single tonguing. (Pg. 1)
/tay/ Single tonguing. (Pg. 4)
/tet/ Extremely short single tongued notes. (Pg. 4)
/dee kee/ Double tonguing. (Pg. 28)
/dee kee dee/ Triple tonguing. (Pg. 51)
/r/ Flutter tonguing. Produced by rolling the /r/ or rapidly articulating it. (Pg. 60)


/t/, /te/, /tu/, /ta/, or even /ti/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)

/du/, /da/, /de/, /di/ Legato slur single tonguing. Produced with a softer tip of the tongue that strikes farther back in the mouth. Known as “dorsal or top tonguing”. (Pgs. 117-8)

/k/ or /g/ Basis of the double tonguing articulation. Known as “pharyngeal tonguing or back tonguing.” (Pg. 118)

/tu du/, /ta da/, /te de/, /ti di/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers the /tu du/ syllables. (Pg. 118)


/ta/ Single tongue, appropriate on a single note, an upbeat, when the notes are short, on dotted rhythms (both notes), penultimate notes in pieces, the last note of a triplet figure, notes of the same value if they are not attached, large leaps, the end of trills (Pg. 153)
/tat/  Staccato single tonguing.  (Pg. 156)

/ta a/  Single tonguing, used for passages of long and short notes, respectively.  (Pg. 156); Used for syncopations.  (Pg. 171)

/taaraa/  Used on four notes of equal value in which the /r/ syllable changes into a /d/ syllable.  (Pgs. 157-8); Used for dotted rhythms in moderate tempos.  (Pg. 163)

/ta ra ra ra/  Single tongue articulation of a series of short notes in which all the subsequent notes after the first /ta/ are articulated with the /ra/ syllable.  (Pg. 160)

/ta ra/  Used for dotted rhythms in which the first note is short and the second is long.  (Pg. 162)

/taaraa/  Used for dotted rhythms in moderate tempos.  (Pg. 163)

/hat at/  Used for dotted rhythms that occur over the space of one beat in a fast tempo.  (Pg. 168)

/had ad/  Used for dotted rhythms that occur over the space of one beat in a moderate or slow tempo.  (Pg. 168)

/ta a/  Used for syncopations.  (Pg. 171)

/tad’ll/  Double tonguing syllable.  (Pg. 197)


/tu/  Simple (single) tonguing.  Without sticking tongue through teeth.  (Pg. 8)

/du/  The louré articulation, used for notes that have dots above them but fall under a slur.  Strike tongue on palate right above the teeth.  (Pg. 8)

/tu que/  Double tonguing.  (Pg. 8)

/tu/ Single tongue, accomplished by using tongue like a valve to release air. (Pg. 5)


/tet/ Short and articulate single tonguing. (Pg. 5) Separates tongue strokes from one another. (Pg. 13)

/te/ Staccato single tongue. (Pg. 40)

/de/ Softened single tongue. (Pg. 40)

/le/ Connected and legato single tongue. (Pg. 40)


/tootle tootle/ Double tonguing. (Pg. 14)


/dou gue/ Double tonguing syllable. (Pg. 10)
By Syllable (Alphabetical and then Chronological)

/d/


/d/ “Soft and delicate” single tonguing. (Pg. 13)


/d/ Mental effect only of softening the /t/ or /k/ and has no real effect on the playing. (Pg. 44)


/d/ Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)


/d/ Tongue stroke, relaxed and natural. (Pg. 43)


/d/ For Louré. (Pg. 27)

/d g/


/dgdgdg/ Double tonguing. (Pg. 85)

/d g/ Double tongue stroke. (Pg. 44)

(da)


/da/ Not necessary, if the /te/ syllable is produced lightly. (Pg. 93)


/da/ Legato slur single tonguing. Produced with a softer tip of the tongue that strikes farther back in the mouth. Known as “dorsal or top tonguing” (Pgs. 117-8)


/da/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

(dah)


/dah/ Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)

/day/

Kistner, 1890. Translated as *Method for Learning to Play the Theobald Boehm Flute*. 1890.

/d/ Single tonguing. (Pg. 1)


/d/ Variations of /doo/, as given by Drouët, (See /doo/) (Pg. 96)


/d/ Softened single tongue. (Pg. 40)


/d/ Single tonguing. (Pg. 148)


/d/ The “French /d/” A softer and lighter single tonguing, using the roof of the mouth. (Pg. 437)


/t/ Single tongue stroke. French pronunciation as in the English word “turkey”, always tongue where teeth touch the gums. (Pg. 20)

/d/ Not necessary, if the /t/ syllable is produced lightly. (Pg. 93)

/d/ Not necessary, if the /t/ syllable is produced lightly. (Pg. 93)

/de/ Legato slur single tonguing. Produced with a softer tip of the tongue that
strikes farther back in the mouth. Known as “dorsal or top tonguing” (Pgs.
117-8)


/de/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/de ge/


/de ge/ Double tonguing, fast but long notes. (Pg. 86)

/de ge de de ge de/


/de ge de de ge de/ Triple tonguing, when the triplet is to be stressed. (Pg.
45)

/de ge de ge de ge/


/de ge de ge de ge/ Triple tonguing, when notes are repeated and
smoothness is desired. (Pg. 45)

/de re/

(1839) Coche, V.J.B. Méthode pour servir…l’enseignement de la nouvelle Flûte
Traités flûte traversière (France, Serie II 1800-1860). Edited by Arlette Biget,
/de re/ Double tonguing. (Pg. 130)

/dee kee/


/dee kee/ Double tonguing. (Pg. 28)

/dee kee dee/


/dee kee dee/ Triple tonguing. (Pg. 51)

/deu/


/deu/ Variations of /doo/, as given by Drouët, (See /doo/) (Pg. 96)


/deu/ Single tonguing, for longer note durations. (Pg. 49)

/deu gue/

/deu gue/ All with French pronunciation, double tonguing syllables that came into vogue in France. Rockstro does not prefer these syllables. (Pg. 510)

/deu reu/


/deu reu/ Proper double tonguing syllables for French speakers. (Pg. 52)

/di/


/di/ Used when the melody is slow. (Pg. 71)


/di/ Legato slur single tonguing. Produced with a softer tip of the tongue that strikes farther back in the mouth. Known as “dorsal or top tonguing” (Pgs. 117-8)


/di/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/di/ Composite tonguing, from Quantz. (Pg. 28)

/di del/


/didel/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)

/di del/ Double tonguing. (Pg. 21)

/diddle/


/diddle/ Double tonguing, but weak second beat. (Pg. 14)

/did’ll/


/did’ll/ Double tonguing. (Pg. 79)

/dig ga dig ga/


/dig ga dig ga/ Double tonguing, not preferred by the author. (Pg. 5)


/digga digga/ All unacceptable methods of double tonguing. (Pg. 7)

/dili/

/dii/ Incorrect pronunciation of double tonguing syllables. (Pg. 79)

/diridiride/


/diridiride/ Found in Agricola, later becomes the French /t r t r/. This would eventually give way to the articulation /t k t k/. See /t k t k/. (Pg. 234)

/doe/


/doe/ Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)

/doo/


/doo/ In slower times, tongue strikes the palate above the teeth. (Pg. 8)

/doo/ In faster times, tongue strikes against the teeth. (Pg. 8)


/doo/ Used with notes that are not short and are merely intended to be tongued or softer. (Pg. 38)

A softer and lighter single tonguing, using the roof of the mouth. (Pg. 437)


Single tonguing, produced on the back of the teeth. (Pg. 14)


Single tonguing syllable, produced by the lightest tongue pressure against the palate. (Pg. 18)


Limited single tonguing, for gliding and blunt character of articulation. (Pg. 19)

Rapid triple tonguing. (Pg. 50)


Rapid triple tonguing. (Pg. 50)


Double tonguing. (Pg. 49)

Double tonguing for mezzo staccato. (Pg. 510)

/doo goo/ All effective methods of double tonguing. The author prefers /too coo/. (Pg. 14)


/doo goo/ Double tonguing. (Pgs. 20-1)

/doo goo doo/


/doo goo doo/ Triple tonguing. (Pgs. 20-1)

/dootoo rootoo rootoo/


/dootoo rootoo rootoo/ Utilized in passages consisting of dotted notes with intervening short ones. (Pg. 52)

/dou/


/dou/ Variations of /doo/, as given by Drouët, (See /doo/) (Pg. 96)

/dou gou/


/dougou dougou/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)

/dou gou dou gou/ Double tonguing. (Pg. 249)


/dou gou dou gou/ Double tonguing, detested by the author and not to be utilized due to its “guttural” inflection. (Pg. 112)


/dou gou/ All with French pronunciation, double tonguing syllables that came into vogue in France. Rockstro does not prefer these syllables. (Pg. 510)

/dougue/


/dougue dougue/ Double tonguing syllable. The author despises the effect. (Pg. 9)


/dou gue/ Double tonguing syllable. (Pg. 10)


/dou gue/ “Detestable” double tonguing syllables, damaging to throat and mouth. (Pg. 52)

/dou gue/ Double tonguing, used for brilliant staccato. (Pg. 37)


/du/ Single tonguing syllable used for fast passages, slur-two, tongue-two passages and light tongued passages. (Pg. 6) Used for light staccato. (Pg. 7) Used for triplets in fast and slow passages. (Pg. 14)


/du/ Soft articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27) Also used for faster passagework. (Pg. 51)


/du/ Variations of /doo/, as given by Drouët, (See /doo/) (Pg. 96)


/du/ The louré articulation, used for notes that have dots above them but fall under a slur. Strike tongue on palate right above the teeth. (Pg. 8)


/du/ Mezzo-staccato tonguing, no break between notes. (Pg. 78)

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*/du/* Legato slur single tonguing. Produced with a softer tip of the tongue that strikes farther back in the mouth. Known as “dorsal or top tonguing” (Pgs. 117-8)


*/du/* Single tonguing, used for a softer articulation by blunting the tongue. (Pg. 106)

*/du gu/*


*/du gu/* Double tonguing, produced between the lips and through the teeth. (Pg. 115)

*/du ru/*


*/du ru/* Double tonguing syllables, best suited to non-French speakers “Italians, Germans and English”. (Pg. 68)

*/g/*


*/g/* Mental effect only of softening the /t/ or /k/ and has no real effect on the playing. (Pg. 44)

Basis of the double tonguing articulation. Known as “pharyngeal tonguing or back tonguing.” (Pg. 118)


/g/ Mellow double tonguing. (Pg. 27)

/ga/


/ga/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ge/


/ge/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/gi/


/gi/ As in “bid” or “kiss”, most commonly used sound in language. (Pg. 27)

/had ad/


/had ad/ Used for dotted rhythms that occur over the space of one beat in a moderate or slow tempo. (Pg. 168)
/hat at/


/hat at/ Used for dotted rhythms that occur over the space of one beat in a fast tempo. (Pg. 168)

/hoo/


/hoo/ Produced without the tongue for moments of expression. (Pg. 8)


/hoo/ Used in some slurred passages, where marks of emphasis are attached to the notes. Created by air through the embouchure with no tongue stroke. (Pg. 97)

/hwo/


/hwo/ Air attack without tongue. (Pgs. 8-9)

/k/


/k/ Found without description, just for use on the flute for several purposes. (Pg. 234)

/k/  Basis of the double tonguing articulation. Known as “pharyngeal tonguing or back tonguing.” (Pg. 118)


/k/  Short double tonguing. (Pg. 27)

/ka/


/ka/  As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ke/


/ke/  As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/ki/


/ki/  As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/l/


/l/  Found without description, just for use on the flute for several purposes. (Pg. 234)

/le/ Connected and legato single tongue. (Pg. 40)


/oouuuu/ Flutter tonguing, starting with a guttural growl and not an articulation. (Pg. 107)


/p/ Forbidden for advanced students. Only for use with young students as a teaching practice. (Pg. 44)


/p/ Described as a “labial p”, this articulation is used by beginners only and pushes the air out with the lips and not the tongue. (Pg. 234)


/p/ Soft articulation without the tongue. (Pg. 27)

/pa/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/pe/


/pe/ As in “pet” or long as in “where”, used for staccato. (Pg. 27)

/pi/


/pi/ As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)

/poo/


/poo/ Used by amateur students and created by puffing air out of the mouth without a solid articulation. Not for normal use. (Pg. 439)


/poo/ Never to be used. (Pg. 18)

/r/


“Guttural” /r/ Flutter tonguing, produced in the back of the throat like a gargle. Preferred by the author. (Pg. 61)
“glottal French” /r/ Found without description, just for use on the flute for several purposes. “Glottal” and “Trilled” possibly used for flutter tonguing. (Pg. 234)

/rr/


/rr/ Flutter tonguing. Produced by rolling the /r/ or rapidly articulating it. (Pg. 60)


/rr/ Flutter tonguing, rolled /r/ as in the sentence Moore includes, “ ‘Brrr, it’s cold.’ ” (Pg. 14)


/rmmm/ Rolled /r/ for the production of flutter tonguing. Not preferred by the author since it is difficult to cultivate in the lower register. (Pg. 61)


“trilled” /rr/ Found without description, just for use on the flute for several purposes. “Glottal” and “Trilled” possibly used for flutter tonguing. (Pg. 234)

/rü/

Discusses is actually further forward than the English /r/ and created by placing the tip of the tongue by the alveolar ridge, directly behind the teeth. Only for ascending or descending scalar passages or on the short notes of dotted rhythms. (Pgs. 36-8)


/r/ Used to avoid uniformity in articulation. Intermixes with /tu/ in passages with faster notes. (Pg. 7)


/tu/ Articulation of antiquity, not useful. (Pg. 34)

/r/ Articulation of antiquity, not useful. (Pg. 34)


/r/ Used in alternation with /tu/ in rising or falling scalar passages. In the case of shakes and two notes in a row, this articulation is expressly forbidden. (Pgs. 11-3)


/tu/, /ru/ Not considered to be relevant to “modern music” anymore. (Pg. 21)

/tu/

(c. 1793) Gunn, John. *The Art of Playing the German-Flute on New Principles Circulated to increase its powers, and give to it greater variety, expression and effect, to which are added, copious examples in an elegant style, a complete system of modulation, the art of varying simple passages, and a new method of tonguing*. London: Birchall, 1793. Facsimile of the first
“Strong and spirited” single tonguing. (Pg. 13)


/t/ Used for every staccato note on the flute. Produced by striking the back of the teeth. (Pg. 6)


/t/ Single tongue, strikes against the palate. (Pg. 7)

/t/ As in “teeth”, staccato tonguing. (Pg. 46)


/t+/ Single tonguing, commences with a /t/ syllable as pronounced by the player’s language. Cannot touch the inner lip. (Pg. 24)


/t/ Single tonguing, created on the soft palate behind the teeth. Can also be produced with the tongue touching the top lip. (Pg. 234)


/t/ Limited single tonguing, for sharper articulation. (Pg. 19)


/t/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)

Single tonguing, produced like the “French ‘T’ “ and pronounced like “Tooough.” Executed with the tongue touching the lip through the teeth. The author calls this “forward tonguing.” (Pg. 103)


Unacceptable tongue stroke, makes the attack too sharp. (Pg. 43)


Single tonguing. (Pg. 27)


Single tonguing, accomplished by “tongue followed politely by air.” (Pg. 19)


Double tonguing with the resultant vowel to be derived from the preference or language of the player. The vowels must rhyme and the reaction must be produced as far forward in the mouth as possible in order to parallel the action. (Pg. 45)


Double tonguing. (Pg. 234)


Double tonguing. (Pg. 85)

/tk/ Double tonguing. (Pg. 30)


/tk/ Unacceptable double tonguing syllables, too sharp. (Pg. 44)

/tkt ktk/


/tkt ktk tkt ktk/ Triple tonguing, preferred by the author since it removes the repetition of syllables. (Pg. 46)


/tkt ktk/ Insufficient triple tonguing, as it causes the weak tongue stroke to fall on the strong beat. (Pg. 31)

/tkt tkt/


/tkt tkt tkt tkt/ Triple tonguing, acceptable but not preferred. (Pg. 46)


/tkt tkt/ Triple tonguing. (Pg. 31)

/ttk ttk/


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/ttk ttk ttk ttk/ Triple tonguing, acceptable but not preferred.  (Pg. 46)

/ta/


/ta/ Single tongue, appropriate on a single note, an upbeat, when the notes are short, on dotted rhythms (both notes), penultimate notes in pieces, the last note of a triplet figure, notes of the same value if they are not attached, large leaps, the end of trills (Pg. 153)


/ta/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)


/ta/ Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)

(c. 1860-1) Anonymous. Méthode Complete. (No publisher information), c. 1860-1.

/ta/ Ineffective single tonguing, because the mouth is slightly opened to accomplish. (Pg. 12)


/ta/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)

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/ta/ As in “bar”, sings well in the long notes but can be sluggish for runs. (Pg. 27)

/ta a/


/ta a/ Single tonguing, used for passages of long and short notes, respectively. (Pg. 156); Used for syncopations. (Pg. 171)

/taaraa/


/taaraa/ Used on four notes of equal value in which the /r/ syllable changes into a /d/ syllable. (Pgs. 157-8); Used for dotted rhythms in moderate tempos. (Pg. 163)

/ta da/


/ta da/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers the /tu du/ syllables. (Pg. 118)

/ta ka/

/ta ka/ Double tonguing syllable. (Pg. 23)


/ta ka/ Double tonguing, short, fast and punctuated. (Pg. 86)

/ta ka ta/


/ta ka ta/ Triple tonguing syllable. (Pg. 46)

/ta ra/


/ta ra/ Used for dotted rhythms in which the first note is short and the second is long. (Pg. 162)

/ta ra ra ra/


/ta ra ra ra/ Single tongue articulation of a series of short notes in which all the subsequent notes after the first /ta/ are articulated with the /ra/ syllable. (Pg. 160)
/ta re/


/ta re/ Used for dotted rhythms when the tempo becomes very rapid. (Pg. 20)

/ta ruh/


/ta ruh/ Used for dotted rhythms when the tempo becomes very rapid. (Pg. 20)

/tad’ll/


/tad’ll/ Double tonguing syllable. (Pg. 197)

/tah/


/tah/ Limited single tonguing, for sharper articulation. (Pg. 19)

/tat/


/tat/ Staccato single tonguing. (Pg. 156)

/tay/ Single tonguing. (Pg. 4)


/te/ Incorrect single tonguing syllable because it is necessary to open the mouth to pronounce it. (Pg. 7)


/te/ Variations of /too/, as given by Drouët, (See /doo/) (Pg. 96)


/te/ Staccato single tongue. (Pg. 40)


/te/ Single tonguing, used for staccato. (Pg. 37)

/te/ Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)


/te/ Ineffective single tonguing, because the mouth is slightly opened to accomplish this syllable. (Pg. 12)


/te/ The “french /te/” Single tonguing, using the roof of the mouth. Any “palatal /t/” will work but these are recommended. (Pg. 436)


/te/ Single tongue stroke. French pronunciation as in the English word “turkey”, always tongue where teeth touch the gums. (Pg. 20)


/te/ Single tongue with roughness, behind teeth. Very short. (Pg. 81)


/te/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)


/te/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/te/ As in "pet" or long as in "where", used for staccato. (Pg. 27)

/te de/


/te de/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers the /tu du/ syllables. (Pg. 118)

/te ke/


/te ke/ Double tonguing. (Pg. 81)


/te ke/ Double tonguing syllables, too sharp for the tongue to accomplish well. Not to be used. (Pgs. 20-1)

/te ke te/


/te ke te/ Triple tonguing. (Pg. 108)

/te que/

/te que/  Double tonguing. (Pg. 130)


/te que/  All with French pronunciation, double tonguing syllables that came into vogue in France. Rockstro does not prefer these syllables. (Pg. 510)

/teddy/ or /tiddy/  


/teddy/ or /tiddy/  Staccato double tonguing with equality between action and reaction. (Pg. 14)

/teditody/  


/teditody/  Drouët’s double tonguing. Carte disagrees with its use. (Pg. 7)

/teede/  


/teede/  Quantz’s syllables for short accented notes followed by long unaccented notes (Considered obsolete by the author) (Pg. 14)

/tee kee/ Double tonguing, not “tick ee”. (Pg. 47)


/teekee teekee/ Double tonguing, also found in his earlier treatise. (Pg. 39)


/tee kee/ All effective methods of double tonguing. The author prefers /too coo/. (Pg. 14)


/teh keh/ Double tonguing syllable. (Pg. 23)


/teh keh teh/ Triple tonguing syllable. (Pg. 46)

/ter/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/tet/


/tet/ Short and articulate single tonguing. (Pg. 5) Separates tongue strokes from one another. (Pg. 13)


/tet/ Extremely short single tongued notes. (Pg. 4)

/teu/


/teu/ Single tonguing. (Pg. 32)


/teu/ Variations of /too/, as given by Drouët, (See /doo/) (Pg. 96)


/teu/ Tongue stroke. (Pg. 8)

/teu/  Single tonguing, when a note has the sign (’) (Pg. 48)

/thoodoo thoodoo/


/thoodoo thoodoo/  Double tonguing, where the first syllable strikes above the teeth and the second strikes the bottom teeth. (Pg. 7)

/ti/


/ti/  Used for short, equal, lively, and quick notes. (Pg. 71)


/ti/  Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)


/ti/  Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)


/ti/  As in “bid’ or “kiss”, most commonly used sound in language. (Pg. 27)
/ti di/


/tiri/ Used for “notes inégale” or dotted note rhythms. The /r/ sounds like a /d/ (Pg. 76)


/ti di/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers the /tu du/ syllables. (Pg. 118)

/ti ki/


/ti ki/ All effective methods of double tonguing. The author prefers /too coo/. (Pg. 14)


/ti ki/ Double tonguing syllable. (Pg. 23)


/ti ki/ Double tonguing, short, fast and punctuated. (Pg. 86)

/ti ki ti/


/ti ki ti/ Triple tonguing syllable. (Pg. 46)

/tiri/ Used for "notes inégale" or dotted note rhythms. The /r/ sounds like a /d/ (Pg. 76)


/tirry/ Pronunciation of Quantz's syllables (See Gunn- teede) (Pg. 14)


/tit/ Single tonguing. (unknown page)


/tit ta/ Double tonguing, all preferred equally by the author. (Pg. 98)
Double tonguing, not preferred by the author. (Pg. 5)

Double tonguing (unknown page)

Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)

Pick-up and downbeat articulation, to be pronounced with the stress and release of the word “to-day.” Also useful in rapid articulation patterns involving dotted rhythms. (Pg. 20)

Limited single tonguing, for sharper articulation. (Pg. 19)

Limited single tonguing, for sharper articulation. (Pg. 19)
/too/ Staccato single tonguing. (Pg. 8)


/too/ Used for staccato passages as it gives a sharpness to the articulation. (Pg. 38)


/too/ Single tonguing, produced on the palate above the teeth. Used for “soft and mellow” playing as well. (Pg. 62)


/too/ Single tonguing, produced on the roof of the mouth. (Pg. 7)


/too/ Single tonguing, produced above the gum of the front teeth. (Pg. 44)


/too/ Single tonguing, using the roof of the mouth. Any “palatal /t/” will work but these are recommended. (Pg. 436)


/too/ Single tonguing, produced on the back of the teeth. (Pg. 14)


/too/ Single tonguing syllable, produced by more pressure against the palate. Used for sharper and more pronounced articulation. (Pg. 18)


/too/ Limited single tonguing, for sharper articulation. (Pg. 19)

/too/ Incorrect single tonguing syllable, due to its distortion of the embouchure. (Pg. 29)

/too coo/


/too coo/ Double tonguing for staccato passages (Pg. 510)


/too coo/ All effective methods of double tonguing. The author prefers these syllables. (Pg. 14)

/too coo too, coo too coo/


/too coo too, coo too coo/ Triple tonguing. (Pg. 14)

/too coo too, too coo too/


/too coo too, too coo too/ Ineffective triple tonguing. (Pg. 14)

/too da/


/too da/ Double tonguing, all preferred equally by the author. (Pg. 98)
Drouët's double tonguing. Carte disagrees with its use. (Pg. 7)

Double tonguing syllable. (Pg. 23)

Triple tonguing syllable. (Pg. 46)

Triple tonguing. (Pg 512)

Double tonguing, all preferred equally by the author. (Pg. 98)
/too too coo/


/ too too coo, too coo coo/ Ineffective triple tonguing. (Pg. 14)

/took coot/


/took coot/ Double tonguing for the extreme staccato, with modification of the sharpness of the consonants and the length of the vowels as necessary (Pg. 510)

/tooT/


/tooT/ Improper single tonguing syllable, creates too much of a percussive, “slap-tongue” effect. (Pg. 18)

/toot too root/


/toot too root/ Used for dotted notes that are played quite short, with the /oo/ pronounced as the /oo/ as in “foot”. (Pg. 510)

/toot too root/ Used for dotted notes that are played mezzo-staccato, with the /oo/ pronounced as the /oo/ as in “foot”. (Pg. 510)

/tootle tootle/

/\tootle tootle/ Double tonguing. (Pg. 13)


/\tootle/ Double tonguing. (unknown page)

(178-) Cahusac. *The Compleat Tutor for the German Flute*. (No publisher info), 178-.

/\tootle tootle/ Double tonguing. (Pg. 13)


/\tootle tootle/ Double tonguing. (Pg. 31)


/\tootle tootle/ Double tonguing. (Pg. 14)


/\tootle tootle/ Double tonguing, most preferred by the author. (Pg. 5)


/\tootle tootle/ Double tonguing. (Pg. 87)


/\tootle tootle/ Double tonguing, acceptable but not preferable. (Pg. 97)


/\tootle tootle/ Double tonguing. (Pg. 65)

/tootle tootle/ All unacceptable methods of double tonguing. (Pg. 7)


/tootle tootle/ Double tonguing. (Pg. 39)


/toole too tle/ Double tonguing. The second syllable is to be produced back in the throat to create a guttural effect. (Pg. 46)


/toole tle/ Archaic form of double tonguing. (Pg. 510)

/tootle too/

(c. 1770) Granom, Lewis. Plain and Easy Instructions for Playing of the German-Flute. London: T. Bennett, c. 1770.

/toole too/ Triple tonguing. (unknown page)


/tootle too tootle too/ Triple tonguing. (Pg. 87)


/toole tle too/ Slower triple tonguing. (Pg. 50)


/tootle tootle too/ Double tonguing, produced near the soft palate but not on the teeth. (Pg. 12)

/\textit{too tle too, too tle too}/ An ineffective method for triple tonguing. (Pg. 512)

/\textit{tou}/


/\textit{tou}/ Variations of /\textit{too}/, as given by Drouët, (See /\textit{doo}/) (Pg. 96)

/\textit{tourou}/


/\textit{tourou}/ Double tonguing syllable. The author despises the effect. (Pg. 9)


/\textit{tourou tourou}/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)


/\textit{tourou}/ Double tonguing syllable, pernicious for the throat. (Pg. 13)

/\textit{tu}/


/\textit{tu}/ Described as most common articulation in use. (Pg. 36)

/\textit{tu}/ Described as the principal articulation. (Pg. 7)


/\textit{tu}/ Articulation of antiquity, not useful. (Pg. 34)

/\textit{ru}/ Articulation of antiquity, not useful. (Pg. 34)

(c. 1746) Simpson, J. *The Compleat Tutor for the German Flute.* London: The Author, c. 1746.

/\textit{tu}/ Used for leaps and slower value notes. (Pg. 11)


/\textit{tu}/, /\textit{ru}/ Not considered to be relevant to “modern music” anymore. (Pg. 21)


/\textit{tu}/ Produced by placing the tip of the tongue between the lips to release fast air. (Pg. 30)


/\textit{tu}/ Single tonguing, keeping the mouth closed. (Pg. 7)


/tu/ Single tonguing syllable used for continuous or long notes, passages of quarter notes (Pg. 6)


/tu/ Forceful articulation, accomplished by lightly touching the tongue to the palate. (Pg. 27)


/tu/ Single tonguing. (Pg. 10)


/tu/ Single tongue, accomplished by using tongue like a valve to release air. (Pg. 5)


/tu/ Variations of /too/, as given by Drouët, (See /doo/) (Pg. 96)


/tu/ Simple (single) tonguing. Without sticking tongue through teeth. (Pg. 8)


/tu/ Single tonguing, when a note has the sign (' ) (Pg. 48)

/tu/ Single tonguing, used for staccato. (Pg. 37)


/tu/ Single tonguing syllables, all the same even with the vowel difference. (Pg. 7)


/tu/ Single tonguing. (Pg. 12)


/tu/ Single tonguing. (Pg. 78, 212)


/tu/ Single tonguing, produced by the tip of the tongue as far forward on the roof of the mouth as possible. The closer the tongue is, the lighter the articulation. (Pg. 117)


/tu/ Single tonguing syllable, produced directly behind the top teeth, without touching them. (Pg. 29)


/tu/ Single tongue, produced between the teeth. (Pg. 16)
/tu du/


/tu du/ Double tonguing, all preferred equally by the author. (Pg. 98)


/tudu/ Composite or compound tonguing. (Pg. 212)


/tu du/ An alternation of sharper and softer articulation, which is “roughly equivalent to an obscure violin stroke known as Viotti bowing.” The author refers to this articulation as a “bounced tongue stroke” and prefers these syllables. (Pg. 118)


/du/, /tu du/, /tu du/ Used for dotted rhythms. (Pg. 110)


/tu du/ Double tonguing for dotted rhythms. (Pg. 16)

/tu ku/


/tuku/ Double tonguing. (Pg. 213, 5)


/tu ku/ Used for passages of “‘slur two, tongue one in a triple pattern, along with ‘slur three, tongue one.’” /Tu/ used for the first of slurred notes and /ku/ for the tongued notes. (Pg. 111)
/tu ku/  Double tonguing, produced between the lips and through the teeth.  (Pg. 115)


/tu ku/  Double tongue (Think of changing syllables, TU-KU, TI-KI, TA-KA, TO-KO to relax the tongue.)  (Pg. 16)

/tu ku tu/


/tukutu/  Triple tonguing.  (Pg. 216)


/tu ku tu/  Triple tonguing.  (Pg. 119)


/tu ku tu/  Triple tonguing.  (Pg. 16)

/tu ku tu ku tu ku/


/tu ku tu ku tu ku/  Triple tonguing.  (Pg. 119)

/tu que/

/tu que/ Double tonguing. (Pg. 8)

/tu ru/


/turu/ Double tonguing syllable. The author despises the effect. (Pg. 9)


/turu turu/ Double tonguing syllable, insufficient and unacceptable to the author. (Pg. 23)


/turu/ Double tonguing syllable, pernicious for the throat. (Pg. 13)

/tu te/


/tu te/ The author’s preferred double tonguing syllables. (Pg. 67)

/tu tel/


/tu tel/ Double tonguing, more useful without the /l/. (Pg. 67)
"tuc ca tuc ca"


"tuc ca tuc ca/ Double tonguing, not preferred by the author. (Pg. 5)

"tud da"


"tud da/ Double tonguing, all preferred equally by the author. (Pg. 98)

"tuk ka"


"tukka tukka/ All unacceptable methods of double tonguing. (Pg. 7)

"tu(r) key"


"tu(r) key/ Double tonguing syllable. (Pg. 23)

"twho"


"twho/ Single tonguing. (Pgs. 8-9)
(1787) Arnold, Samuel. *Dr. Arnold’s New Instructions for the German Flute.*

>/ur/ Produced by blowing through the aperture of the lips without the assistance of the tongue. (Pg. 30)


>/who/ Reserved for starting notes without a perceptible beginning. (Pg. 44)
Appendix B: Recruitment Script in English and translated by the author in French

**Flute Articulation Pedagogy: The affect of language-specific consonant pronunciation on flutists’ articulation within the confines of the French and English languages.**

Recruitment Script

Erin Helgeson Torres, a flutist at The Ohio State University in Columbus, Ohio, USA, is conducting a voluntary research study at the Conservatoire Jean-Phillippe Rameau in Dijon, France between March 12\textsuperscript{th} and March 18\textsuperscript{th}, 2012. Participants, who must be eighteen years of age or older, may choose to withdraw at any time without penalty or loss of benefits.

**Purpose of the study:** Participation in this study to test the affect of teaching consonants (/t/, /d/ and /p/) in the French and English languages to influence flutists’ articulation. This study will test for the difference between the two languages in consonant pronunciation and its possible affect on a flutist's articulation.

In order to accomplish this study, the participant (who must be eighteen years of age or older) will fill out a brief questionnaire about his or her language experience (i.e. How many languages do you speak fluently? How many languages have you studied? How long was the duration of the study? etc.) The participant (who will be aurally recorded) will be asked to speak through several sentences in French that have been provided and then will be asked to play through a provided articulation exercise using the French consonant articulation as taught in the sentences. The participant will then be asked to read through English sentences that have been provided and then will be asked to play the same provided articulation exercise using the different English consonant articulation.

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Téléphone : 1-614-292-4618  
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For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at +1.614.688.4792.

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Téléphone : 1-407-310-1449  
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Pédagogie d'articulation de flute: L'affect de la prononciation harmonieuse spécifique à une langue sur l'articulation des flutists dans les confins des anglais et français.
Manuscrit de recrutement

Erin Helgeson Torres, un flutist à l'université de l'Etat d'Ohio à Columbus, Ohio, Etats-Unis, entreprend une étude volontaire de recherches au conservatoire Jean-Philippe Rameau à Dijon, France entre les 12 mars et 19 mars 2012. Les participants, qui doivent être de dix-huit ans ou plus âgés, peuvent choisir de se retirer à tout moment sans pénalité ou perte d'avantages.

But de l'étude: Participation à cette étude pour examiner l'affect des consonnes de enseignement (/t/, /d/ et /p/) dans les anglais français et pour influencer l'articulation des flutists. Cette étude déterminera la différence entre les deux langues dans la prononciation harmonieuse et son affect possible sur l'articulation d'un flutist.

Afin d'accomplir cette étude, le participant (qui doit être de dix-huit ans ou plus anciens) complétera un bref questionnaire au sujet de son expérience de langue (c.-à-d. combien de langues vous parlez couramment ? Combien de langues avez-vous étudiées ? De quelle longueur la durée était-elle de l'étude ? etc.) le participant (qui sera de l'ouïe enregistré) sera invité pour parler par plusieurs phrases en français qui ont été fournis et puis seront invités pour jouer par un exercice fourni d'articulation utilisant l'articulation harmonieuse française comme enseignée dans les phrases. Le participant sera alors invité à lire par les phrases anglaises qui ont été fournies et puis seront invitées pour jouer la même chose exercice fourni d'articulation utilisant l'articulation harmonieuse anglaise différente.

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Appendix C: Informed Consent Form in English and translated by the Author in French

Flute Articulation Pedagogy: The Affect of Language-Specific Consonant Pronunciation on a Flutist’s Articulation within the French and English Languages.

Informed Consent (Exempt Research)

Erin Helgeson Torres, a flutist at The Ohio State University in Columbus, Ohio, USA, is conducting a voluntary research study at the Conservatoire Jean-Phillippe Rameau in Dijon, France between March 12th and March 18th, 2012. Participants, who must be eighteen years of age or older, may choose to withdraw at any time without penalty or loss of benefits.

Purpose of the study: You are being asked to participate in this study to test the affect of teaching consonants (/t/, /d/ and /p/) in the French and English languages to influence flutists' articulation. This study will test for the difference between the two languages in consonant pronunciation and its possible affect on a flutist’s articulation.

Study tasks or procedures:

1.) The participant will be assigned a number to code his or her responses on the sections of the study.
2.) The participant will be asked to fill out a brief questionnaire about his or her language experience (i.e. How many languages do you speak fluently? How many languages have you studied? How long was the duration of the study? etc.) This questionnaire will be only identified by the participant's assigned number.
3.) The participant will be asked to speak through several sentences in French that have been provided and then will be asked to play through a provided articulation exercise using the French consonant articulation as taught in the sentences. This portion will be aurally recorded and identified only by the participant's assigned number.
4.) The participant will be asked to speak through several sentences in English that have been provided and then will be asked to play the same provided
articulation exercise as earlier using the different English consonant articulation as taught in the sentences. This portion will be aurally recorded and identified only by the participant’s assigned number.

Duration of Subject’s Participation:

The questionnaire will take approximately ten minutes. Each of the spoken language portions will take approximately fifteen minutes each and the articulation exercise, which the participant will perform on his or her flute, will take approximately five minutes each. The entire study will take approximately fifty minutes.

Confidentiality:

The study will not collect any identifiers other than the gender of the participant (as determined by the recorded language statements). The recorded portions and the data collected from them will be kept in their coded format in the property of the Co-Investigator for three years as required by Ohio State University’s research policies.

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Sponsored in part by grants from The Ohio State University’s College of Arts and Humanities.
Pédagogie d'articulation de flûte: L'affect de la prononciation harmonieuse spécifique à une langue sur l'articulation des flûtists dans les confins des anglais et français.

Manuscrit de recrutement

Erin Helgeson Torres, un flûtiste à l'université de l'Etat d'Ohio à Columbus, Ohio, Etats-Unis, entreprend une étude volontaire de recherches au conservatoire Jean-Phillippe Rameau à Dijon, France entre les 12 mars et 19 mars 2012. Les participants, qui doivent être de dix-huit ans ou plus âgés, peuvent choisir de se retirer à tout moment sans pénalité ou perte d'avantages.

**But de l'étude:** Participation à cette étude pour examiner l'affect des consonnes de enseignement (/t/, /d/ et /p/) dans les anglais français et pour influencer l'articulation des flûtists. Cette étude déterminera la différence entre les deux langues dans la prononciation harmonieuse et son affect possible sur l'articulation d'un flûtist.

**Tâches ou procédures d'étude :**

1.) Le participant sera assigné un nombre pour coder ses réponses sur les sections de l'étude.
2.) Le participant sera invité à compléter un bref questionnaire au sujet de son expérience de langue (c.-à-d. combien de langues vous parlez couramment ? Combien de langues avez-vous étudiées ? De quelle longueur la durée était-elle de l'étude ? etc.) ce questionnaire sera seulement identifié par l'assigned number du participant.
3.) Le participant sera invité à parler par plusieurs phrases en français qui ont été fournis et puis seront invités pour jouer par un exercice fourni d'articulation utilisant l'articulation harmonieuse française comme enseignés dans les phrases. Cette partie sera de l'ouïe enregistrée et identifiée seulement par l'assigned number du participant.
4.) Le participant sera invité à parler par plusieurs phrases en anglais qui ont été fournis et puis seront invités pour jouer la même chose ont fourni l'exercice d'articulation en tant que plus tôt utilisant l'articulation harmonieuse anglaise différente comme enseignés dans les phrases. Cette partie sera de l'ouïe enregistrée et identifiée seulement par l'assigned number du participant.

**Durée de la participation du sujet :**

Le questionnaire prendra approximativement dix minutes. Chacune des parties parlées de langue prendra approximativement quinze minutes chacune et l'exercice d'articulation, que le participant exécutera sur sa flûte, prendra approximativement cinq minutes chacune. L’étude entière prendra approximativement cinquante minutes.
Confidentialité :

L'étude ne rassemblera aucune marque autres que le genre du participant (comme déterminé par les rapports de langue enregistrés). Les parties enregistrées et les données se sont rassemblées de eux seront maintenues dans leur format codé dans la propriété du Co-Investigateur pendant trois années selon les exigences des politiques de la recherche de l'université de l'Etat d'Ohio.

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Courriel : jones.6@osu.edu

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Commandité en partie par des concessions de l'université de l'université de l'Etat d'Ohio des arts et des sciences humaines.
Appendix D: Language Questionnaire For in English and translated by the Author in French

Language Questionnaire Form

March 2012

**Directions:**

1. Use your participant number only. Do not write your name.

2. Complete this form in its entirety. If you are unsure, write “unsure.”

3. This information will be kept confidential.

<table>
<thead>
<tr>
<th><strong>Student Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Number:</td>
</tr>
<tr>
<td>Country of Birth:</td>
</tr>
<tr>
<td>Date of Birth:</td>
</tr>
<tr>
<td>How many years have you studied flute?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Questions</strong></th>
<th><strong>Response</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the first language you learned to speak?</td>
<td></td>
</tr>
<tr>
<td>What language do you speak most often?</td>
<td></td>
</tr>
<tr>
<td>What language is most often spoken in your home?</td>
<td></td>
</tr>
<tr>
<td>What other languages (besides your first) do you speak fluently?</td>
<td></td>
</tr>
<tr>
<td>What other languages have you studied?</td>
<td></td>
</tr>
</tbody>
</table>
Any other comments you would like to make?

“For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at +1.688.4792.”
Forme de questionnaire de langue

Mars 2012

Directions:

2. Remplissez ce formulaire en sa totalité. Si vous êtes incertain, écrivez « incertain. »

3. Cette information sera maintenue confidentielle.

<table>
<thead>
<tr>
<th>L'information d'étudiant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nombre de participant:</td>
</tr>
<tr>
<td>Pays natal:</td>
</tr>
<tr>
<td>Date de naissance:</td>
</tr>
<tr>
<td>Combien d'années avez-vous étudié la flute?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions</th>
<th>Réponse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quelle est la première langue que vous avez appris à parler ?</td>
<td></td>
</tr>
<tr>
<td>Quelle langue parlez-vous le plus souvent ?</td>
<td></td>
</tr>
<tr>
<td>Quelle langue le plus souvent est parlée dans la maison ?</td>
<td></td>
</tr>
<tr>
<td>Qu'est-ce que d'autres langues (sans compter que votre premier) vous parlent couramment ?</td>
<td></td>
</tr>
<tr>
<td>Que d'autres langues vous ont-elles étudié ?</td>
<td></td>
</tr>
</tbody>
</table>

Tous autres commentaires que vous voudriez formuler?:

« Pour des questions au sujet de vos droits comme un participant à cette étude ou pour discuter d'autres soucis ou plaintes étudier-connexes avec quelqu'un qui n'est pas une
partie de l’équipe de recherche, vous pouvez contacter Mme Sandra Meadows dans le bureau des pratiques en matière responsables de recherches à +1.614.688.4792. »
Appendix E: Experiment Script in English and translated by the Author in French

Experiment Script
March 2012

<table>
<thead>
<tr>
<th>Student Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Number:</td>
</tr>
</tbody>
</table>

The researcher will direct you through these directions (This portion will be recorded):

**French Portion:**
1. “Please read the first sentence aloud.”

2. “Please say the underlined word three times.”

3. “Please shorten the underlined word to the starting syllable. Please say that syllable three times.”

4. “Please play through the provided example using the syllable you just spoke to articulate each note.”

5. “We will now repeat the above steps for each of the other sentences provided.”

**English Portion:**
1. “For the first sentence, I will pronounce each of the words separately for you three times. Please repeat aloud after me each time. Take your time to learn the words.”
2. “When you feel ready, please read aloud the first sentence twice in its entirety.”

3. “I will pronounce the underlined word used in the sentence for you three times. Please repeat after me each time.”

4. “I will now pronounce the underlined syllable used in the word you just repeated three times. Please repeat after me each time.”

5. “Please play through the provided musical example twice using the syllable you just learned to articulate each note.”

6. “We will now repeat the above steps for each of the other sentences provided.”

7. This information will be kept confidential.

French Portion:

1. Mes maux de tête.
   “Te-”

2. Monsieur Ledoux est dans la boue jusqu’au cou.
   “doux”
   “boue”
   “cou”

3. Chez qui sont partis ses habits?
   “qui”
   “tis”
   “bits”
4. Je mangerai une tarte pour le dessert.
   “Ta-”
   “Pou-”

5. Il est allé sur une tirade hier.
   “Ti-”

6. Comment tu vas aller?
   “Tu-”

English Portion:

1. “I took a test.”
   “Te-”

2. “It will do to say “boo” when they coo.
   “do”
   “boo”
   “coo”

3. “McKee has a bee in his tea.”
   “kee”
   “bee”
   “tea”

4. “Please take me home.”
   “Ta-”

5. “She does not have time to meet.”
   “Ti-”
6. “My poor tooth hurts.”
   “Poo-”
   “Too-”

“For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at +1.688.4792.”
Le chercheur vous dirigera par ces directions (cette partie sera enregistrée) :

**Partie française** :

1. « Lisez si vous plait la première phrase à haute voix. »

2. « Dites si vous plait le mot souligné trois fois. »

3. « Veuillez raccourcir le mot souligné à la syllabe commençante. Veuillez dire cette syllabe trois fois. »

4. « Jouez si vous plait par l'exemple fourni utilisant la syllabe que vous avez juste parlé pour articuler chaque note. »

5. « Nous répéterons maintenant les étapes ci-dessus pour chacune des autres phrases fournies. »

**Partie anglaise** :

1. « Pour la première phrase, je prononcerai chacun des mots séparément pour vous trois fois. Répétez si vous plait à haute voix après moi chaque fois. Prenez votre temps d'apprendre les mots. »

2. « Quand vous vous sentez prêt, lisez si vous plait à haute voix la première phrase deux fois en sa totalité. »

3. « Je prononcerai le mot souligné utilisé dans la phrase pour vous trois fois. Répétez si vous plait après moi chaque fois. »
4. « Je prononcerai maintenant la syllabe soulignée utilisée dans le mot que vous avez juste répété trois fois. Répétez si vous plait après moi chaque fois. »

5. « Jouez si vous plait par l'exemple musical fourni employant deux fois la syllabe que vous venez d'apprendre pour articuler chaque note. »

6. « Nous répéterons maintenant les étapes ci-dessus pour chacune des autres phrases fournies. »

7. Cette information sera maintenue confidentielle.

Partie française:

7. Mes maux de tête. “Te-

8. Monsieur Ledoux est dans la boue jusqu’au cou. “doux” “boue” “cou”

9. Chez qui sont partis ses habits? “qui” “tis” “bits”


11. Il est allé sur une tirade hier.
“Ti-”

12. Comment tu vas aller?
   “Tu-”

Partie anglaise:

7. “I took a test.”
   “Te-”

8. “It will do to say “boo” when they coo.
   “do”
   “boo”
   “coo”

9. “McKee has a bee in his tea.”
   “kee”
   “bee”
   “tea”

10. “Please take me home.”
    “Ta-”

11. “She does not have time to meet.”
    “Ti-”

12. “My poor tooth hurts.”
    “Poo-”
    “Too-”

« Pour des questions au sujet de vos droites comme un participant à cette étude ou pour discuter d’autres soucis ou plaintes étudier-connexes avec
quelqu'un qui n'est pas une partie de l'équipe de recherche, vous peut contacter Mme Sandra Meadows dans le bureau des pratiques en matière responsables de recherches à +1.614.688.4792. »
MUSICAL EXAMPLE

Cet portion
Seulement, s.v.p.
Appendix F: Spectral Analysis of French Syllables Compared to English Syllables with Graphs showing spoken and played syllables (Classified as “Exact”, “Similar” and “Different” [See Chapter 4, Pg. 132-3])

PARTICIPANT 1

Ex. 1  Participant 1: French Portion “tête” (Exact)

Ex. 2  Participant 1: English Portion “test” (Exact)
Ex. 3  Participant 1: French Portion “doux” (Similar)

Ex. 4  Participant 1: English Portion “do” (Similar)
Ex. 5  Participant 1: French Portion “boue” (Similar)

Ex. 6  Participant 1: English Portion “boo” (Similar)
Ex. 7  Participant 1: French Portion “cou” (Similar)

Ex. 8  Participant 1: English Portion “coo” (Similar)
Ex. 9  Participant 1: French Portion “qui” (Exact)

Ex. 10  Participant 1: English Portion “McKee” (Exact)

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Ex. 11  Participant 1: French Portion “partis” (Similar)

Ex. 12  Participant 1: English Portion “tea” (Similar)
Ex. 13  Participant 1: French Portion “habits” (Exact)

Ex. 14  Participant 1: English Portion “bee” (Exact)
Ex. 15  Participant 1: French Portion “tarte” (Different)

Ex. 16  Participant 1: English Portion “take” (Different)
Ex. 17 Participant 1: French Portion “pour” (Different)

Ex. 18 Participant 1: English Portion “poor” (Different)
Ex. 19  Participant 1: French Portion “tirade” (Different)

Ex. 20  Participant 1: English Portion “time” (Different)
Ex. 21  Participant 1: French Portion “tu” (Similar)

Ex. 22  Participant 1: English Portion “too” (Similar)
PARTICIPANT 2

Ex. 23  Participant 2: French Portion “tête” (Exact)

Ex. 24  Participant 2: English Portion “test” (Exact)
Ex. 25  Participant 2: French Portion "doux" (Similar)

Ex. 26  Participant 2: English Portion "do" (Similar)
Ex. 27  Participant 2: French Portion “boue” (Similar)

Ex. 28  Participant 2: English Portion “boo” (Similar)
Ex. 29  Participant 2: French Portion “cou” (Similar)

Ex. 30  Participant 2: English Portion “coo” (Similar)
Ex. 31  Participant 2: French Portion “qui” (Exact)

Ex. 32  Participant 2: English Portion “McKee” (Exact)
Ex. 33  Participant 2: French Portion “Partis” (Similar)

Ex. 34  Participant 2: English Portion “tea” (Similar)
Ex. 35  Participant 2: French Portion “habits” (Exact)

Ex. 36  Participant 2: English Portion “bee” (Exact)
Ex. 37  Participant 2: French Portion “tarte” (Different)

Ex. 38  Participant 2: English Portion “take” (Different)
Ex. 39  Participant 2: French Portion “pour” (Different)

Ex. 40  Participant 2: English Portion “poor” (Different)
Ex. 41  Participant 2: French Portion “tirade” (Different)

Ex. 42  Participant 2: English Portion “time” (Different)
Ex. 43  Participant 2: French Portion “tu” (Similar)

Ex. 44  Participant 2: English Portion “too” (Similar)
PARTICIPANT 3

Ex. 45  Participant 3: French Portion “tête” (Exact)

Ex. 46  Participant 3: English Portion “test” (Exact)
Ex. 47  Participant 3: French Portion “doux” (Similar)

Ex. 48  Participant 3: English Portion “do” (Similar)
Ex. 49  Participant 3: French Portion “boue” (Similar)

Ex. 50  Participant 3: English Portion “boo” (Similar)
Ex. 51 Participant 3: French Portion “cou” (Similar)

Ex. 52 Participant 3: English Portion “coo” (Similar)
Ex. 53   Participant 3: French Portion “qui” (Exact)

Ex. 54   Participant 3: English Portion “McKee” (Exact)
Ex. 55  
Participant 3: French Portion “Partis” (Similar)

Ex. 56  
Participant 3: English Portion “tea” (Similar)
Ex. 57  Participant 3: French Portion “habits” (Exact)

Ex. 58  Participant 3: English Portion “bee” (Exact)
Ex. 59  Participant 3: French Portion “tarte” (Different)

Ex. 60  Participant 3: English Portion “take” (Different)
Ex. 61  Participant 3: French Portion “pour” (Different)

Ex. 62  Participant 3: English Portion “poor” (Different)
Ex. 63  Participant 3: French Portion “tirade” (Different)

Ex. 64  Participant 3: English Portion “time” (Different)
Ex. 65  Participant 3: French Portion “tu” (Similar)

Ex. 66  Participant 3: English Portion “too” (Similar)
PARTICIPANT 4

Ex. 67 Participant 4: French Portion “tête” (Exact)

Ex. 68 Participant 4: English Portion “test” (Exact)
Ex. 69  Participant 4: French Portion "doux" (Similar)

Ex. 70  Participant 4: English Portion "do" (Similar)
Ex. 71  Participant 4: French Portion “boue” (Similar)

Ex. 72  Participant 4: English Portion “boo” (Similar)
Ex. 73  Participant 4: French Portion “cou” (Similar)

Ex. 74  Participant 4: English Portion “coo” (Similar)
Ex. 75  Participant 4: French Portion “qui” (Exact)

Ex. 76  Participant 4: English Portion “McKee” (Exact)
Ex. 77  Participant 4: French Portion “Partis” (Similar)

Ex. 78  Participant 4: English Portion “tea” (Similar)
Ex. 79  Participant 4: French Portion “habits” (Exact)

Ex. 80  Participant 4: English Portion “bee” (Exact)
Ex. 81  Participant 4: French Portion “tarte” (Different)

Ex. 82  Participant 4: English Portion “take” (Different)
Ex. 83  Participant 4: French Portion “pour” (Different)

Ex. 84  Participant 4: English Portion “poor” (Different)
Ex. 85 Participant 4: French Portion “tirade” (Different)

Ex. 86 Participant 4: English Portion “time” (Different)
Ex. 87  Participant 4: French Portion “tu” (Similar)

Ex. 88  Participant 4: English Portion “too” (Similar)
PARTICIPANT 5

Ex. 89  Participant 5: French Portion “tête” (Exact)

Ex. 90  Participant 5: English Portion “test” (Exact)
Ex. 91  Participant 5: French Portion “doux” (Similar)

Ex. 92  Participant 5: English Portion “do” (Similar)
Ex. 93  Participant 5: French Portion “boue” (Similar)

Ex. 94  Participant 5: English Portion “boo” (Similar)
Ex. 95  Participant 5: French Portion “cou” (Similar)

Ex. 96  Participant 5: English Portion “coo” (Similar)
Ex. 97  Participant 5: French Portion “qui” (Exact)

Ex. 98  Participant 5: English Portion “McKee” (Exact)
Ex. 99  Participant 5: French Portion “Partis” (Similar)

Ex. 100  Participant 5: English Portion “tea” (Similar)
Ex. 101   Participant 5: French Portion “habits” (Exact)

Ex. 102   Participant 5: English Portion “bee” (Exact)
Ex. 103  Participant 5: French Portion “tarte” (Different)

Ex. 104  Participant 5: English Portion “take” (Different)
Ex. 105  Participant 5: French Portion “pour” (Different)

Ex. 106  Participant 5: English Portion “poor” (Different)
Ex. 107  Participant 5: French Portion “tirade” (Different)

Ex. 108  Participant 5: English Portion “time” (Different)
Ex. 109  Participant 5: French Portion “tu” (Similar)

Ex. 110  Participant 5: English Portion “too” (Similar)
PARTICIPANT 6

Ex. 111    Participant 6: French Portion “tête” (Exact)

Ex. 112    Participant 6: English Portion “test” (Exact)
Ex. 113  Participant 6: French Portion “doux” (Similar)

Ex. 114  Participant 6: English Portion “do” (Similar)
Ex. 115  Participant 6: French Portion “boue” (Similar)

Ex. 116  Participant 6: English Portion “boo” (Similar)
Ex. 117  Participant 6: French Portion “cou” (Similar)

Ex. 118  Participant 6: English Portion “coo” (Similar)
Ex. 119  Participant 6: French Portion “qui” (Exact)

Ex. 120  Participant 6: English Portion “McKee” (Exact)
Ex. 121  Participant 6: French Portion “Partis” (Similar)

Ex. 122  Participant 6: English Portion “tea” (Similar)
Ex. 123  Participant 6: French Portion “habits” (Exact)

Ex. 124  Participant 6: English Portion “bee” (Exact)
Ex. 125  Participant 6: French Portion “tarte” (Different)

Ex. 126  Participant 6: English Portion “take” (Different)
Ex. 127  Participant 6: French Portion “pour” (Different)

Ex. 128  Participant 6: English Portion “poor” (Different)
Ex. 129  Participant 6: French Portion “tirade” (Different)

Ex. 130  Participant 6: English Portion “time” (Different)
Ex. 131 Participant 6: French Portion “tu” (Similar)

Ex. 132 Participant 6: English Portion “too” (Similar)
PARTICIPANT 7

Ex. 133  Participant 7: French Portion “tête” (Exact)

Ex. 134  Participant 7: English Portion “test” (Exact)
Ex. 135  Participant 7: French Portion "doux" (Similar)

Ex. 136  Participant 7: English Portion "do" (Similar)
Ex. 137  Participant 7: French Portion “boue” (Similar)

Ex. 138  Participant 7: English Portion “boo” (Similar)
Ex. 139  Participant 7: French Portion “cou” (Similar)

Ex. 140  Participant 7: English Portion “coo” (Similar)
Ex. 141  Participant 7: French Portion “qui” (Exact)

Ex. 142  Participant 7: English Portion “McKee” (Exact)
Ex. 143 Participant 7: French Portion “Partis” (Similar)

Ex. 144 Participant 7: English Portion “tea” (Similar)
Ex. 145  Participant 7: French Portion “habits” (Exact)

Ex. 146  Participant 7: English Portion “bee” (Exact)
Ex. 147 Participant 7: French Portion “tarte” (Different)

Ex. 148 Participant 7: English Portion “take” (Different)
Ex. 149  Participant 7: French Portion “pour” (Different)

Ex. 150  Participant 7: English Portion “poor” (Different)
Ex. 151  Participant 7: French Portion “tirade” (Different)

Ex. 152  Participant 7: English Portion “time” (Different)
Ex. 153  Participant 7: French Portion “tu” (Similar)

Ex. 154  Participant 7: English Portion “too” (Similar)
PARTICIPANT 8

Ex. 155  Participant 8: French Portion “tête” (Exact)

Ex. 156  Participant 8: English Portion “test” (Exact)
Ex. 157  Participant 8: French Portion “doux” (Similar)

Ex. 158  Participant 8: English Portion “do” (Similar)
Ex. 159  Participant 8: French Portion “boue” (Similar)

Ex. 160  Participant 8: English Portion “boo” (Similar)
Ex. 161  Participant 8: French Portion “cou” (Similar)

Ex. 162  Participant 8: English Portion “coo” (Similar)
Ex. 163  Participant 8: French Portion “qui” (Exact)

Ex. 164  Participant 8: English Portion “McKee” (Exact)
Ex. 165 Participant 8: French Portion “Partis” (Similar)

Ex. 166 Participant 8: English Portion “tea” (Similar)
Ex. 167  Participant 8: French Portion “habits” (Exact)

Ex. 168  Participant 8: English Portion “bee” (Exact)
Ex. 169  Participant 8: French Portion “tarte” (Different)

Ex. 170  Participant 8: English Portion “take” (Different)
Ex. 171  Participant 8: French Portion “pour” (Different)

Ex. 172  Participant 8: English Portion “poor” (Different)
Ex. 173  Participant 8: French Portion “tirade” (Different)

Ex. 174  Participant 8: English Portion “time” (Different)
Ex. 175  Participant 8: French Portion “tu” (Similar)

Ex. 176  Participant 8: English Portion “too” (Similar)
PARTICIPANT 10

Ex. 177  Participant 10: French Portion “tête” (Exact)

Ex. 178  Participant 10: English Portion “test” (Exact)
Ex. 179  Participant 10: French Portion “doux” (Similar)

Ex. 180  Participant 10: English Portion “do” (Similar)
Ex. 181  Participant 10: French Portion “boue” (Similar)

Ex. 182  Participant 10: English Portion “boo” (Similar)
Ex. 183 Participant 10: French Portion “cou” (Similar)

Ex. 184 Participant 10: English Portion “coo” (Similar)
Ex. 185  Participant 10: French Portion “qui” (Exact)

Ex. 186  Participant 10: English Portion “McKee” (Exact)
Ex. 187  Participant 10: French Portion “Partis” (Similar)

Ex. 188  Participant 10: English Portion “tea” (Similar)
Ex. 189  Participant 10: French Portion "habits" (Exact)

Ex. 190  Participant 10: English Portion "bee" (Exact)
Ex. 191  Participant 10: French Portion “tarte” (Different)

Ex. 192  Participant 10: English Portion “take” (Different)
Ex. 193  Participant 10: French Portion “pour” (Different)

Ex. 194  Participant 10: English Portion “poor” (Different)
Ex. 195  Participant 10: French Portion “tirade” (Different)

Ex. 196  Participant 10: English Portion “time” (Different)
Ex. 197  Participant 10: French Portion “tu” (Similar)

Ex. 198  Participant 10: English Portion “too” (Similar)
PARTICIPANT 11

Ex. 199  Participant 11: French Portion “tête” (Exact)

Ex. 200  Participant 11: English Portion “test” (Exact)
Ex. 201  Participant 11: French Portion “doux” (Similar)

Ex. 202  Participant 11: English Portion “do” (Similar)
Ex. 203  Participant 11: French Portion “boue” (Similar)

Ex. 204  Participant 11: English Portion “boo” (Similar)
Ex. 205    Participant 11: French Portion “cou” (Similar)

Ex. 206    Participant 11: English Portion “coo” (Similar)
Ex. 207  Participant 11: French Portion “qui” (Exact)

Ex. 208  Participant 11: English Portion “McKee” (Exact)
Ex. 209  Participant 11: French Portion “Partis” (Similar)

Ex. 210  Participant 11: English Portion “tea” (Similar)
Ex. 211  Participant 11: French Portion “habits” (Exact)

Ex. 212  Participant 11: English Portion “bee” (Exact)
Ex. 213  Participant 11: French Portion “tarte” (Different)

Ex. 214  Participant 11: English Portion “take” (Different)
Ex. 215  Participant 11: French Portion “pour” (Different)

Ex. 216  Participant 11: English Portion “poor” (Different)
Ex. 217  Participant 11: French Portion “tirade” (Different)

Ex. 218  Participant 11: English Portion “time” (Different)
Ex. 219  Participant 11: French Portion “tu” (Similar)

Ex. 220  Participant 11: English Portion “too” (Similar)
PARTICIPANT 12

Ex. 221  Participant 12: French Portion “tête” (Exact)

Ex. 222  Participant 12: English Portion “test” (Exact)
Ex. 223  Participant 12: French Portion “doux” (Similar)

Ex. 224  Participant 12: English Portion “do” (Similar)
Ex. 225  Participant 12: French Portion “boue” (Similar)

Ex. 226  Participant 12: English Portion “boo” (Similar)
Ex. 227  Participant 12: French Portion “cou” (Similar)

Ex. 228  Participant 12: English Portion “coo” (Similar)
Ex. 229  Participant 12: French Portion “qui” (Exact)

Ex. 230  Participant 12: English Portion “McKee” (Exact)
Ex. 231  Participant 12: French Portion “Partis” (Similar)

Ex. 232  Participant 12: English Portion “tea” (Similar)
Ex. 233  Participant 12: French Portion “habits” (Exact)

Ex. 234  Participant 12: English Portion “bee” (Exact)
Ex. 235  
Participant 12: French Portion “tarte” (Different)

Ex. 236  
Participant 12: English Portion “take” (Different)
Ex. 237    Participant 12: French Portion “pour” (Different)

Ex. 238    Participant 12: English Portion “poor” (Different)
Ex. 239  Participant 12: French Portion “tirade” (Different)

Ex. 240  Participant 12: English Portion “time” (Different)
Ex. 241  Participant 12: French Portion “tu” (Similar)

Ex. 242  Participant 12: English Portion “too” (Similar)
PARTICIPANT 13

Ex. 243 Participant 13: French Portion “tête” (Exact)

Ex. 244 Participant 13: English Portion “test” (Exact)
Ex. 245  Participant 13: French Portion “doux” (Similar)

Ex. 246  Participant 13: English Portion “do” (Similar)
Ex. 247  Participant 13: French Portion “boue” (Similar)

Ex. 248  Participant 13: English Portion “boo” (Similar)
Ex. 249  Participant 13: French Portion “cou” (Similar)

Ex. 250  Participant 13: English Portion “coo” (Similar)
Ex. 251  Participant 13: French Portion “qui” (Exact)

Ex. 252  Participant 13: English Portion “McKee” (Exact)
Ex. 253  Participant 13: French Portion “Partis” (Similar)

Ex. 254  Participant 13: English Portion “tea” (Similar)
Ex. 255  Participant 13: French Portion “habits” (Exact)

Ex. 256  Participant 13: English Portion “bee” (Exact)
Ex. 257  Participant 13: French Portion “tarte” (Different)

Ex. 258  Participant 13: English Portion “take” (Different)
Ex. 259  Participant 13: French Portion “pour” (Different)

Ex. 260  Participant 13: English Portion “poor” (Different)
Ex. 261    Participant 13: French Portion “tirade” (Different)

Ex. 262    Participant 13: English Portion “time” (Different)
Ex. 263  Participant 13: French Portion “tu” (Similar)

Ex. 264  Participant 13: English Portion “too” (Similar)
PARTICIPANT 14

Ex. 265  Participant 14: French Portion “tête” (Exact)

Ex. 266  Participant 14: English Portion “test” (Exact)
Ex. 267  Participant 14: French Portion “doux” (Similar)

Ex. 268  Participant 14: English Portion “do” (Similar)
Ex. 269   Participant 14: French Portion “boue” (Similar)

Ex. 270   Participant 14: English Portion “boo” (Similar)
Ex. 271  Participant 14: French Portion “cou” (Similar)

Ex. 272  Participant 14: English Portion “coo” (Similar)
Ex. 273  Participant 14: French Portion “qui” (Exact)

Ex. 274  Participant 14: English Portion “McKee” (Exact)
Ex. 275  Participant 14: French Portion “Partis” (Similar)

Ex. 276  Participant 14: English Portion “tea” (Similar)
Ex. 277    Participant 14: French Portion “habits” (Exact)

Ex. 278    Participant 14: English Portion “bee” (Exact)
Ex. 279  Participant 14: French Portion “tarte” (Different)

Ex. 280  Participant 14: English Portion “take” (Different)
Ex. 281 Participant 14: French Portion “pour” (Different)

Ex. 282 Participant 14: English Portion “poor” (Different)
Ex. 283  Participant 14: French Portion “tirade” (Different)

Ex. 284  Participant 14: English Portion “time” (Different)
Ex. 285  Participant 14: French Portion “tu” (Similar)

Ex. 286  Participant 14: English Portion “too” (Similar)