Extended Techniques for Saxophone

An Approach Through Musical Examples

by

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ABSTRACT

The repertoire of the saxophone has advanced significantly since its invention circa 1840. Performers are required to adapt to the demands of composers - many of whom are exploring new and unconventional sounds and techniques. Numerous texts exist to identify and explain these so-called "extended" techniques, but there are very few resources for the initial stages of performance.

In order to offer performers a resource, the author of this text composed forty original etudes (or studies) that incorporate extended techniques in a variety of ways. After identifying common extended techniques that a performer might face, the author focused on four different ways each individual technique might appear in actual repertoire. The resulting work is entitled *Pushing Boundaries: Forty Etudes on Extended Techniques.*

Each etude offers a practical approach to what is generally a single extended technique. Although this text is not pedagogical in the sense of identifying the mechanics and anatomical requirements of each technique, it does contain a performance analysis of each etude. This analysis identifies areas where performers might struggle and offers helpful suggestions. To this end, the etudes accompanied by performance analysis provide a paced, systematic approach to the mastery of each technique.

DEDICATION

I wish to dedicate this work to my beautiful niece, Nora Grace Estes, born February 9, 2013. Mnohaja y blahaja l'ita!

ACKNOWLEDGMENTS

I would like to give a very special acknowledgement to all of the members of my committee: Gary Hill, Timothy McAllister, Robert Spring, Albie Micklich, and James DeMars. They have been a constant source of support and encouragement, not only during these final stages of my degree, but since my entry into Arizona State University. I would like to give a very special to Gary Hill for having stepped in as my committee chairman and assisting me navigate the complicated waters of the doctorate.

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Finally, to my parents, Patrick and Eileen Murphy, without whom I would never have been able to embark upon this journey, my eternal gratitude and love.

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INTRODUCTION

As the repertoire for the saxophone evolves, performers face challenges that simply were not applicable as little as thirty years ago. The current generation of saxophonists encounters repertoire that contains a wide variety of sounds, timbres, and techniques. While the repertoire has certainly advanced to include these so-called extended techniques, the pedagogy is somewhat one-sided: there are several existing texts that describe and document extended techniques, but few that apply them practically.

Florentine composer and researcher Bruno Bartolozzi is the author of the earliest work on extended techniques for woodwind instruments. His book *New Sounds for Woodwind* is a defense of traditional instrumentation. He challenges the notion that "conventional" instruments (in this case woodwinds) reached an impasse regarding advanced and unusual sonorities.[1] Unfortunately, the saxophone does not appear in Bartolozzi's text; his focus is on flute, oboe, clarinet, and bassoon.

The earliest useful discussion of the extended capabilities of the saxophone is Jean-Marie Londeix's *Hello! Mr. Sax or Parameters of the Saxophone*.[2] This text is a valuable survey of the variety of sounds and styles available on the saxophone. It is a text that is of equal importance to the performer and composer. For all its strengths, *Hello? Mr. Sax…* does not contain any studies for the performer. Rather, it points the performer

[1] Bruno Bartolozzi, *New Sounds for Woodwind,* ed. and trans. Reginald Smith Brindle (London: Oxford University Press, 1967) 1-2.

[2] Jean-Marie Londeix, *Hello! Mr. Sax or Parameters of the Saxophone* (Paris: Alphonse Leduc & Cie., 1989).

in the direction of repertoire to examine.[3] This is not to be regarded as a weakness of the text: Londeix makes no claims that it is a complete pedagogical work – it is merely a description of what is available.[4] For twenty-one years, saxophonists and composers relied primarily on this document for guidance, instruction, and advice. In 2010, a slightly more expansive alternative to Londeix's work appeared.

Saxophonist Marcus Weiss and composer Giorgio Netti are co-authors of the work *The Techniques of Saxophone Playing*.[5] This document, while similar to Londeix's, includes more discussion and helpful, practical advice. Again, this text is extremely useful for saxophonists and composers alike though, much the Londeix's, it is a presentation, perhaps an exposition, of possibilities available on the saxophone.[6]

A third available text is Jean-Denis Michat's *Un Saxophone Contemporain*.[7] An expository text similar to both Londeix and Weiss and Netti, Michat's work differs in a few respects, notably by delving further pedagogical discussion and introducing practicing techniques. Other differences include basic anatomical diagrams and very simple exercises for the saxophonist. An unfortunate limitation of this work is the lack of translation: it is currently only available in the original French.

Combined, these three documents provide excellent discussion of the available advanced techniques for the saxophone. Along with the Bartolozzi, they demonstrate a history of extended techniques in the twentieth and twenty-first centuries. A common

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[3] Ibid., 103-111. Although this represents only a small portion of Londeix's text, it is a rather fantastic overview of repertoire up to the date of publication.

[4] Ibid., 1-2.

[5] Marcus Weiss and Giorgio Netti, *The Techniques of Saxophone Playing* (Kassel, Germany: Bärenreiter, 2010).

[6] Ibid., 7.

[7] Jean-Denis Michat, "Un Saxophone Contemporain" (Paris, www.jdmichat.com, 2010).

thread among the works, however, is a general lack of exercises or studies the performer can apply to his or her instrument. Surely, these works are most useful in combination with "traditional" etudes.

There are particularly influential collections of etudes available for saxophonists wanting to familiarize themselves with extended techniques. These works are quite broad in their approach to extended techniques – perhaps too broad. Ronald Caravan's works *Paradigms I*[8] and *Paradigms II*[9], both written for alto saxophone, might be among the first etudes focusing on extended techniques. These spectacular pieces explore numerous techniques, including: quarter tones, timbre variations, multiphonics, vibrato manipulation, flutter tongue, and slap tongue amongst other techniques. In both cases, Caravan considers these works concert etudes, pieces intended for performance. Additionally, these works combine a number of extended techniques in a single etude: the first etude of *Paradigms I* includes vibrato manipulation, timbre shifts, and quartertones.[10]

Christian Lauba also composed etudes exploring extended techniques. His *Neuf Études* (with volumes for alto, soprano, tenor, and baritone saxophones) are landmark works that examine circular breathing, multiphonics, slap tongue, sub-tone, key sounds, and other sonorities.[11] Lauba's works, also considered concert etudes, adopt a similarly

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[9] Ronald Caravan, *Paradigms I* (Medfield, PA: Dorn Publications, 1976). Ronald Caravan, *Paradigms II* (Medfield, PA: Dorn Publications, 1988).

[10] Ronald Caravan, "Ballad in Color" from *Paradigms I*.

[11] Christian Lauba, *Neuf Études,* vol. 1-4 (Paris: Alphonse Leduc & Cie, 1992-1994).

expansive approach of combining multiple techniques into a single piece: His first etude, "Balafon" is an exercise in sub tone, multiphonics, and circular breathing.[12]

What are Extended Techniques?

At this point, it is perhaps wise to discuss the definition of extended techniques. "Extended techniques" is a term that refers to any sounds, colors, or performance requirements that explore beyond the standard parameters of the instrument. A partial listing of available extended techniques is available on the next page. See Table 1.

These techniques are not necessarily new to saxophone performance; ample documentation exists of vaudeville-era artists using exotic styles of playing and tone colors.[13] Several extended techniques (including altissimo) date back to Adolphe Sax, the inventor of the saxophone himself.[14] Furthermore, many of these techniques pre-date the invention of the saxophone. A technique nearly identical to voicing, for example, can be found amongst the Tuvan people of what is modern-day Russia and Mongolia.[15] Arabic music frequently contains microtonality in the "maqam" or modes of pitches.[16] Many techniques, however, are relatively new to concert saxophone music.

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[12] Christian Lauba, "Balafon" from *Neuf Etudes, vol. 1* (Paris: Alphonse Leduc & Cie., 1992).

[13] Bruce Vermazen, *The Six Brown Brothers and the Dawning of a Musical Craze* (Oxford: Oxford University Press, 2004), 64.

[14] Thomas Liley, "Invention and Development," in *The Cambridge Companion to the Saxophone*, ed. Richard Ingram (Cambridge: Cambridge University Press, 1998), 15.

[15] Theodore Levin and Michael E. Edgerton, "The Throat Singers of Tuva," in *Scientific American* (September 20, 1999), http://www.scientificamerican.com/article.cfm?id=the-throat-singers-of-tuv&page=2 (accessed March 10, 2013).

[16] Johanna Spector, "Classical 'Ud Music in Egypt with Special Reference to Maqamat," in *Ethnomusicology,* vol. 14, no. 2 (May, 1970), 243-244.

Table 1

Selected Extended Techniques

Technique	Parameter	Extension
Altissimo	Range	Notes above the standard written range (F6)
Circular Breathing	Breathing	Cyclical breathing producing continuous sound
Double Tongue	Articulation	Use of the front and back of the tongue to ostensibly double the available rate of articulation
Microtones	Pitch	Includes tones in between semitones
Timbre Shifts	Tone color	Adds to the available palate of sonorities available on the instrument
Multiphonics	Pitch	Allows for two or more simultaneous pitches to sound on what is otherwise a monophonic instrument
Slap Tongue	Articulation	Adds to the available palate of sonorities available on note-beginnings
Vocalizing	Breathing/Pitch	Allows for polyphony on what is otherwise a monophonic instrument

Justification

There is no lack of etude books available to saxophonists. As demonstrated above, there is also ample resource for the discussion of extended techniques. Furthermore, there are several examples of works that include these techniques. The author is entirely unaware of non-concert etudes that are purely pedagogical (yet still musically satisfying) in their approach to extended techniques.

This document consists of two parts: exposition and development. The exposition is the basic review of available literature on extended techniques. The texts mentioned above, in addition to other specialized documents, form the core of this section. The development is a discussion of original etudes entitled *Pushing Boundaries: 40 Etudes*

on Extended Techniques by Patrick Murphy (see appendix C). These etudes tackle selected extended techniques directly. Each technique is approached in four different and unique manners that offer the performer multiple styles and methods to learn these techniques.

Limitations and Assumptions

Pushing Boundaries: 40 Etudes on Extended Techniques by Patrick Murphy limits itself by focusing on only a few techniques, namely: voicing, beginning altissimo, circular breathing, double tongue, microtones, timbre shifts and bisbigliando, multiphonics, slap tongue, furthering altissimo, and vocalization. A second limitation is that they do not include descriptions on how to accomplish each technique; this is beyond the intended scope of this work.

In composing these works, the author consciously assumed several facts. The first assumption is that the performer has had success at a basic level with each extended technique. These are not quite beginning studies, rather, they are to be attempted as a step in the perfection of each technique. A second assumption is that the performer is under the guidance of a competent instructor. These etudes can be approached without assistance, but one will have more success with an instructor experienced in advanced techniques. Finally, this work is one intended for performance on the alto saxophone. Many of the etudes translate well to other instruments in the saxophone family (perhaps even the woodwind family as well). Some etudes, especially those with special fingerings for specific multiphonics or microtones, require significant adjustment before they can be performed on other instruments.

Chapter 2

REVIEW OF RELATED LITERATURE AND REPERTOIRE

Literature on the saxophone's extended techniques can be traced back as early as the publication of Henri Weber's *Sax-Acrobatix* in 1926.[17] Since this publication, many other texts have become available. Some of these texts were intended solely for the sake of the performer (i.e. pedagogical documents) while some also proved valuable for composers. While this document will focus on texts in the "classical" tradition, it would be a mistake to ignore those dealing jazz or popular music.

Weber devoted this text to the jazz and popular saxophonist.[18] It is by no stretch of the imagination that Weber found inspiration from vaudeville star Rudy Wiedoeft: topics in the Weber's book correspond with those identified by Thomas Liley as being key characteristics of Wiedoeft's technique.[19] What exists of this book is an invaluable historical and practical resource. Unfortunately, at the time of writing this document, a full copy of *Sax-Acrobatix* has yet to be found: a few excerpts are available on several web pages.[20]

Topics presented below form the basis of *Pushing Boundaries: 40 Etudes in Extended Techniques*. (See Appendix B) Although many other techniques exist, the author of this document chooses to highlight nine specifically because of either their widespread presence in saxophone literature, or their pedagogical importance.

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[17] Henri Weber, *Sax-Acrobatix: The Book of Saxophone Stunts and Tricks* (New York: Belwin, Inc., 1926). http://tamingthesaxophone.com/saxophone-effects.html (accessed January 12, 2013).

[18] Ibid.

[19] Thomas Liley, "The Repertoire Heritage," in *The Cambridge Companion to the Saxophone*, ed. Richard Ingham (Cambridge: Cambridge University Press, 1998), 54. These include pitch bends, "laughing" into the horn, and slap tongue.

[20] N.B., The author of this text recalls obtaining a copy of *Sax-Acrobatix* in 2004, but it has since been lost.

Voicing and Altissimo

In his text, *Voicing: An Approach to the Saxophone's Third Register*, Donald Sinta states, "Voicing refers to an awareness and control of the muscles and soft flexible tissue in the oral cavity and vocal tract."[21] Sinta's text, arguably the most complete work for voicing study on the saxophone, consists of exercises primarily based on overtone production. Though he acknowledges that voicing, in and of itself, is a preliminary process, Sinta indicates the importance of its study quite succinctly:

> Voicing study is intended as a training procedure, not as a technical skill directly applicable to normal saxophone performance. The benefits of a study of this kind are not limited to the acquisition of altissimo and daily practice is recommended for even the most advanced players. The skills acquired through the study of voicing will undoubtedly aid the saxophonist in improving tone quality, intonation, and overall control of the instrument.[22]

Thus, voicing appears to be a means to an end.

Voicing can simply be described as the manipulation of the oral cavity, specifically the soft tissue, when performing. It is a technique that is not unique to the saxophone – the pronunciation of vowels in everyday speech requires the use of the same muscles. Applying voicing to the saxophone allows for manipulation of tone color, control of intonation, and ease in the altissimo register.

While several authors refer to the oral cavity and the manipulation thereof, their focuses tend to be in the context of altissimo production. Rosemary Lang's recommended techniques for altissimo production include such steps as, "Maintain an arch in the tongue, but keep the arch high, -- near the roof of the mouth," with additional steps including, "Maintain a large vacant area behind the teeth and in front of the

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[21] Donald J. Sinta and Denise C. Dabney, *Voicing: An Approach to the Saxophone's Third Register* (Radford, Virginia: Sintafest, 1992), 2.

[22] Ibid., 3.

tongue," and, "Think the sound 'urr' silently while blowing."[23] Her text does not acknowledge any other use of this technique.

Eugene Rousseau's *Saxophone High Tones*, first published in 1978 and republished in 2002, makes reference to air-stream direction and air pressure, though there is little mention of tongue position.[24] In spite of this, Rousseau's "Closed Tube Exercises"[25] are quite similar to the introductory exercises presented in Sinta's text.[26] Sigurd Raschèr's work, *Top-Tones for Saxophone*, includes a reference to the importance of overtone study (along with exercises) without a full discussion of oral cavity awareness.[27]

Voicing serves as a good jumping point into the extended range of the saxophone. As one searches through the history of the saxophone, the exact performance range on the instrument is subject to debate; historical texts and conjecture differ. Berlioz, in his seminal work *A Treatise on Modern Instrumentation and Orchestration*, indicates the range as a written B3 to F6.[28] Curiously, Thomas Liley suggests that Berlioz heard Adolphe Sax himself perform notes higher than F6:

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[23] Rosemary Lang, *Beginning Studies in the Altissimo Register* (Indianapolis: Lang Music Publication, 1988), i.

[24] Eugene Rousseau, *Saxophone High Tones*, 2nd ed. (Saint Louis: MMB Music, Inc., 2002), 1-2.

[25] Ibid., 2-7

[26] Sinta and Dabney, *Voicing: An Approach to the Saxophone's Third Register*, 11-32.

[27] Sigurd Raschèr, *Top-Tones for Saxophone,* 3rd. ed. (New York: Carl Fischer, 1977), 12.

[28] Hector Berlioz, *A Treatise on Modern Instrumentation and Orchestration*, Ed. Joseph Bennett, Trans. Mary Cowden Clarke (London: Novello and Company, Limited, 1882), 233. It is important to note that Berlioz included the range of six saxophones: "high" or sopranino, soprano, alto, tenor, baritone, and bass. The range of B3 to F6 corresponds only to the alto, tenor, and baritone saxophones. While B3 is given as the standard written lowest note, sopranino and soprano are indicated as having an upper extreme of D6. Bass is defined with a slightly wider range of written B3 to E-flat6.

> We have no reason to doubt that Berlioz (and others) heard a three-octave compass from Sax, but apparently the upper range was infrequently used, and remained so for several decades. Sax assisted Kastner in creating his *Méthode complete et raisonnée de saxophone*, the first saxophone method book, published in 1845… The book, 142 pages in length, presents fingerings for a written range of b to f^3. Not until the third decade of the twentieth century did the topic reappear in method books and pamphlets by writers such as Bolduc, Eby, Lyon, and Winn.[29]

A brief review of Paul DeVille's *Universal Method for Saxophone* (one of the earlier saxophone methods published in America) confirms a dearth of notes higher than F6. DeVille introduces the Auxiliary-F key and includes exercises employing that key,[30] yet, there is no evidence of any further range extension. Bruce Ronkin sheds some light on the lack of documentation of high notes:

> The upper range [of the saxophone], called the altissimo register, is identical, in theory, to the upper register of the flute or clarinet. However, owing to the nature of saxophone construction, these upper partials are considerably more challenging to produce than their clarinet or flute equivalents. Being an expert acoustician and clarinetist, Sax was obviously aware that the saxophone was capable of producing tones above high F [F6]…
>
> Although these high notes are not notated in any of the Sax publications, it is possible that Sax taught altissimo notes to his more advanced student.[31]

It was not until 1941 that Raschèr published the first edition of *Top-Tones for Saxophone* – one of the earliest texts devoted to notes above F6 (hereafter referred to as altissimo). Several texts, already referenced in this document, followed. Works, notably those commissions by Sigurd Raschèr, began to employ notes in the altissimo register. As the altissimo range gained popularity, pedagogies developed. Raschèr's *Top Tones*

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[29] Thomas Liley, "Invention and Development," in *The Cambridge Companion to the Saxophone*, ed. Richard Ingram (Cambridge: Cambridge University Press, 1998), 15. Liley's pitch indications of b and f^3 correspond to B3 and F6.

[30] Paul DeVille, *Universal Method for Saxophone* (New York: Carl Fischer, 1908), 91-92.

[31] Bruce Ronkin, "The Music for Saxophone and Piano Published by Adolphe Sax," D.M.A. diss., The University of Maryland (1987), 61-62.

favored an approach based on the fundamental fingers.[32] Sinta and Rousseau's texts betray an approach based on a combination of fundamental fingerings along with invented altissimo fingerings.[33] In France, Jean-Marie Londeix credits Donald Sinta for providing an introduction to the altissimo range. Londeix altered the French approach to altissimo from that of relative indifference to compulsory. Based largely on his own invented fingering system, Londeix's pedagogy thrives.[34]

Altissimo began to be explored in significant detail beginning with the commissions by Sigurd Raschèr. Works such as *Ballade* by Frank Martin, *Concerto* by Ingolf Dahl, *Konsert* by Lars-Erik Larsson, and, perhaps notoriously, *Concertino da Camera* by Jacques Ibert[35] delve greatly into the altissimo register largely by Raschèrs request.[36] It is because of Rascher that altissimo became accepted by composers and saxophonists alike.[37]

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[32] Raschèr, *Top-Tones for Saxophone*, 19.

[33] Both authors include fingering charts of their own inventions (Sinta, 60-65; and Rousseau 37-46) but Sinta's text devotes significantly more time to overtone study (47 pages as opposed to Rousseau 4 pages).

[34] James Umble, *Jean-Marie Londeix: Master of the Modern Saxophone* (Cherry Hill, NJ: Roncorp Publications, 2000), 123.

[35] Frank Martin, *Ballade* (Vienna: Universal Press, 1938). Ingolf Dahl, *Concerto*, ed. Harvey Pittel (New York: European American Music Corporation, 1979). Lars-Erik Larsson, *Konsert* (Stockholm: Carl Gehrmans, 1931). Jacques Ibert, *Concertino da Camera* (Paris: Alphonse Leduc & Cie, 1935).

[36] Raschèr, *Top-Tones for Saxophone*, 19.

[37] Thomas Dryer-Beers, "Influential Soloists," in *The Cambridge Companion to the Saxophone*, ed. Richard Ingram (Cambridge: Cambridge University Press, 1998), 42.

Circular Breathing

The art of circular breathing is one that can be traced through many cultures. Vladimir Machmarchik points to evidence of ancient Greeks using the technique while performing on the aulos.[38] His description of the technique, while brief, is a valuable general resource for instrumentalists.[39]

Jean-Marie Londeix devotes only a brief space to the discussion of circular breathing – a mere three paragraphs – in his brilliant *Hello! Mr. Sax*.[40] The work was published prior to volume one of Christian Lauba's cycle *Neuf Etudes* – a works with dedications to Londeix that features circular breathing as a major component.[41] A second edition might be appropriate.

Another text with a better definition of circular breather, as it applies to the saxophone, is that by Jean-Denis Michat.

> La "respiration circulaire" ou "respiration continue" est une technique permettant de prolonger la durée naturelle d'expiration. Elle utilise les joues comme un ballon de baudruche se vidant pour prendre le relais de l'expiration pulmonaire. Pendant ce temps, une inspiration nasale (ou plusieurs) permet de ravitailler les poumons de l'instrumentiste. [42]
>
> "Circular breathing" or "continuous breathing" is a technique that allows for the prolonging of the natural exhalation. The cheeks are inflated like balloons to take the place of pulmonary exhalation. At the same time, breathing in through the nose (nasal inhalation) can provide air to the lungs of the instrumentalist.[43]

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[38] Vladimir Kachmarchik, "Some Mysteries of Ancient Greek Aulets," *The Journal of the International Double Reed Society*, no. 22 (July, 1994), http://www.idrs.org/publications/hcontrolled/DR/JNL22/JNL22.Kachmarchik.html (accessed January 12, 2013).

[39] Ibid.

[40] Londeix, *Hello! Mr. Sax, or Parameters of the Saxophone*, 82.

[41] Christian Lauba, *Neuf Études,* vol. 1-4 (Paris: Alphonse Leduc & Cie, 1988-1994).

[42] Michat, "Un Saxophone Contemporain," 30.

[43] N.B., Translation was completed by the author of this paper.

Michat provides five exercises, four of which are to be done without instrument.[44]

It is in America that the most detailed text, as it applies to wind instrument performers can be found. Trent Kynaston's *Circular Breathing for the Wind Performer* details the art and act of circular breathing and provides numerous exercises for perfecting the technique.[45] Kynaston does not identify works that specifically employ circular breathing, though he does make that curious assertion that "the wind performer can now approach the musical phrase as do all other instrumentalist, and not be bound by a single breath."[46] The author of this paper is uncertain of the implications of that sentence. Perhaps it is a poor choice of words, but it does, on the surface, appear rather disparaging towards wind instrumentalists and their music.

Circular breathing can be applied to any music. It is in the author's experience that simple pieces (e.g., folk songs, popular tunes, hymn tunes) work well for practicing the technique. The first works with the explicit instructions of circular breathing are the compositions of Christian Lauba.[47]

Double-Tongue

Although the scope of *Pushing Boundaries* is double-tonguing, perhaps a better term to use is multiple tonguing. Multiple tonguing refers to the technique of rapid articulation using both the anterior and posterior of the tongue in alternation. This is analogous to vocalizing "t-k-t-k" or "d-g-d-g." There are many ways to achieve multiple

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[44] Ibid., 30-31.

[45] Trent Kynaston, *Circular Breathing for the Wind Performer* (Van Nuys, CA: Alfred Publishing Co., Inc.), Kindle edition.

[46] Ibid., postlude

[47] Christian Lauba, *Neuf Études,* vol. 1.

tongue (tah-kah, dah-gah, tuh-kit, and duh-git are among the authors favorites) and Joshua Gardner gives an excellent account and study of efficiency.[48]

Saxophone literature contains relatively little information regarding this technique. Larry Teal, in *The Art of Saxophone Playing,* references it only briefly,[49] Marcus Weiss and Giorgio Netti devote only two passages to it,[50] and Londeix doesn't mention it at all.[51] The most valuable resource is probably Jean-Denis Michat.

Michat's text emphasizes the importance of multiple styles of double-tongue: "d-g-d-g" for the middle range (G4 to C6), "t-k-t-k" for the lower range (below G4), and "d-y-d-y" for the upper range (above C6).[52] Regarding the upper register, Michat points to excessive tongue movement as a risk for tonal stability.[53]

The author of this text can find few compositions in which the technique of double/multiple tonguing is mandated. The use of double tongue tends to be at the discretion of the performer in relation to his or her own strengths and weaknesses. A performer who lacks the ability to single-tongue at a high speed might find double-tonguing a viable alternative.

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[48] Joshua Gardner, "Ultrasonic Investigation of Clarinet Multiple Articulation," D.M.A. diss., Arizona State University (2010).

[49] Larry Teal, *The Art of Saxophone Playing* (Secaucus, NJ: Summy-Birchard, 1963), 85-86.

[50] Marcus Weiss and Giorgio Netti, *The Techniques of Saxophone Playing*,141.

[51] Londeix, *Hello! Mr. Sax or Parameter of the Saxophone*.

[52] Michat, "Un Saxophon Contemporain," 32-33.

[53] Ibid., 33. It should be noted that the muscular movement involved in double tongue is remarkably similar to that of voicing. In such a high range, excessive tongue will result in a pitch bend or other similar distortion.

Microtones

Although microtonality is a feature of much of today's world music, this discussion will encompass only western classical usage of the twentieth century. Under this parameter, microtones are pitches that fall acoustically between semitones. Accomplishing microtones generally requires the adoption of alternate fingerings for pitches. One method used for achieving a microtone is performing a pitch and then pressing, or raising, a non-essential key. It is fortunate that there is an ample discussion of microtones in several sources. These are almost all accompanied by fingering charts.

Marcus Weiss and Giorgio Netti offer detailed explanation of the process of producing microtones. Their advice applies equally to both performers and composers. Additionally, they present complete microtonal fingering charts for soprano, alto, tenor and baritone saxophones. These charts divide into eighth, quarter, and half (semi) tones. The charts also contain helpful indications of dynamic limitations due to mechanical properties of the instrument.[54]

Londeix devotes a large portion of his text to microtones, as well. He offers no advice or discussion but, while his charts are limited to quartertones, they include fingerings for bass and sopranino saxophone. He makes passing mention of third- and fifth-tones, but this is only in regards to the limitations of saxophone construction.[55]

Jean-Denis Michat also includes substantial information on microtones in addition to a very generalized fingering chart. He offers a few exercises, but these again are very general. Interestingly, Michat employs a notation system similar to that found in *Pushing Boundaries*.[56]

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[54] Weiss and Netti, *The Techniques of Saxophone Playing*, 15-32.

[55] Londeix, *Hello! Mar Sax or Parameter of the Saxophone*, 24-30.

[56] Michat, "Un Saxophone Contemporain," 42-43.

It is generally accepted that Alois Hába is the first western composer to employ microtones regularly in his works.[57] Among the saxophone repertoire is a work by Haba, entitled "Partita," which exploits microtonality to great effect.[58] In a similar vein, Sander Germanus' *Microphobia* relies entirely on microtones.[59] In terms of chamber music, two of the most notable works employing microtones are Iannis Xenakis' *XAS*[60] and Martin Bresnick's *Every Thing Must Go*.[61] Luis Naón's *Alto Voltango* is another fantastic duet with vibraphone that expertly combines the shimmering microtonal intervals between the saxophone and vibes.[62] Historically, uncertainty exists over whether works prior to the publication of Hába's use microtonality on the saxophone.

Timbre and Bisbigliando

The saxophone displays great capability in generating many different tone colors (timbres). Many of these can be accomplished by shifting the embouchure or throat muscles. Other times, by use of specialized fingerings, different timbres can be produced.

With regards to fingerings, there are generally two ways of accomplishing a timbre change on the saxophone. The first method is similar to microtone production: perform a pitch while lowering, or raising, a non-essential key. It is not uncommon for

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[57] Jiri Vyzlouzil, "A Note on Alois Hába," *The Musical Times*, vol. 114, no. 1564 (June, 1973), 590-592.

[58] Alois Haba, *Partita* (London: Faber Music, Ltd., 1968).

[59] Sander Germanus, *Microphobia* (Amsterdam: Donemus, 2005).

[60] Iannis Xenakis, *Xas* (Paris: Editions Salabert, 1987).

[61] Martin Bresnick, *Every Thing Must Go* (New York: Carl Fischer, Inc., 2007). Bresnick's use of microtones is to "correct" pitches from equal temperament to just temperament.

[62] Luis Naón, *Alto voltango* (Paris: Henri Lemoine, 1999).

timbre fingering and microtone fingerings to overlap. A second method is by voicing overtones off a low fundamental fingering.

Londeix and Netti offer very differing accounts of timbre. Londeix speaks of timbre changes primarily as adjustments of the embouchure. He does devote quite some time to bisbigliando (that is, timbre trills) but this is a section of the book distinct from timbre.[63] His approach in timbre describes the ideal sound of the saxophone and the general capabilities of the instrument. Netti on the other hand treats timbre and bisbigliando as a single entity. His method relies entirely on alternate fingerings. The approach that Netti offers is significantly more technical than Londeix's. Whereas Londeix gives a general discussion of ideal saxophone timbre, Netti deals entirely with the mechanics of the instrument. Michat, surprisingly, is silent on the topic.

Saxophonist's will encounter several works that employ timbre shifts and bisbigliando. William Albright's *Sonata* uses this technique is a very limited fashion.[64] Luciano Berio also uses timbre shifts in both of his saxophone *Sequenzas*.[65] A notable early study (early in both the sense that it is an earlier work and a work appropriate for students early in their studies of extended techniques) in timbre shifts is located in Ronald Caravan's *Paradigms 1*.[66]

It should be noted that several other methods of timbre change are available on the instrument that are not fingering related. François Rossé's *Le Frêne Égaré*, for example, requires the performer to use "breathy" sounds, fluttertongue, tight vibrato,

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[63] Londeix, *Hello! Mr. Sax or Parameters of the Saxophone*, 44 and 46-64.

[64] Willaim Albright, *Sonata* (New York: C. F. Peters Corporation, 1984).

[65] Luciano Berio, *Sequenza VIIb* (Vienna: Universal Editions, 1995) and *Sequenza IXb* (Vienna: Universal Editions, 1980).

[66] Ronald Caravan, *Paradigms I*.

loose vibrato, and entirely timbreless sounds (pure breath).[67] The works of Japanese-American composer and saxophonist Rio Noda, are very similar, though they are on a much smaller scale.[68]

Multiphonics

Multiphonics refer to the simultaneous performance of multiple pitches. Multiphonics are often accomplished by using special fingerings, though, they can also be accomplished by singing in the instrument while playing a pitch. Multiphonics can consist of anywhere from two to four recognizable pitches.

Each multiphonic must be treated as a separate and unique entity – each individual multiphonic fingering brings with it a set of unique limitations. Of these limitations, Londeix states:

> Requiring a special technique of fingering, but sometimes also of embouchure (by placing more or less of the mouthpiece in the mouth), the simultaneous sounds are affected by the mouthpiece or reed used, and also by the make and model of the instrument itself. The performer practices and is trained to correct the variables.[69]

Weiss and Netti are even more specific. Their discussion of mulitphonics identify embouchure, dynamic, pitch stability, threshold tones (tones by which the multiphonic may be approached or departed, "shadow" sounds.[70]

No discussion on multiphonics would be complete without mention of Daniel Kientzy's contribution to the pedagogy of the instrument. Kientzy created the first, and probably most complete, text on multiphonics with fingerings for sopranino, soprano,

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[67] François Rossé, *Le Frêne Égaré* (Paris: Gérard Billaudot, 1981).

[68] The earliest work of this sort that a student is likely to encounter is *Improvisation 1* (Paris, Alphonse Leduc & Cie., 1972).

[69] Londeix, *Hello! Mr. Sax or Parameters of the Saxophone*, 31.

[70] Weiss and Netti, *The Techniques of Saxophone Playing*, 57-63.

alto, tenor, and baritone saxophones. This text is instrumental for the young saxophonist in providing a guide and fingering method.[71]

Several different categories of multiphonic are available and they have been compiled and identified by Weiss and Netti: Two levels are identified each consisting of several families. See Table 2.

Table 2

First Level of Multiphonics[72]

Category	Description
A	Layer of natural overtones over a fundamental fingering
B	Sound with strong oscillation
C	Wide dyad, stable
D	Aggregate of two or more partials over a fundaments
E	Narrow dyad

Categories B-E are subdivided in the Second Level of overtones.[73]

One work that utilizes multiphonics is Edison Denisov's *Sonata*. Other notable works include Steven Galante's "Shu Gath Manna," and Christian Lauba's *Steady Study on the Boogie*.[74] Thanks to the efforts of the composers of these works, multiphonics appear with greater frequency than in the past.

[71] Daniel Kientzy, *Les Sons Multiples* (Paris: Éditions Salabert, 1982). This text, while an excellent resource, is a bit confusingly arranged. The author finds that Londeix and Weiss/Netti offer a more guided approach in comparison to Kientzy.

[72] Weiss and Netti, *The Techniques of Saxophone Playing*, 60.

[73] Ibid., 61.

[74] Edison Denisov, *Sonata* (Paris: Alphonse Leduc & Cie., 1970). Steven Galante, "Shu Gath Manna," score, 1987. Christian Lauba, *Steady Study on the Boogie* (Paris: Gérard Billaudot, 1993).

Slap Tongue

Weiss and Netti identify three varieties of slap tongue: standard, secco, and open.[75] Though this project deals with the standard variety (and to a very limited extent, the secco variety), a few words of note must be made of open slap. While the standard and the secco slaps (referred to as closed slaps) are generated by tongue motion, the open slap is created with the embouchure. To achieve the open slap, one rapidly draws the lower jaw away from the mouthpiece resulting in an abrupt percussive effect. This effect can best be described as explosive and powerful; it cannot be performed at soft dynamics. Perhaps the most prominent work that uses the open slap is Russell Peck's *Drastic Measures*.[76]

The sound generated by closed slaps is quite different from that of the open slap – it takes on a pizzicato sound. By creating a vacuum between the tongue and the reed, the performer can draw the reed away from the mouthpiece. The sound of the slap is the reed releasing from that vacuum and hitting the tip-rail of the mouthpiece. The secco and the standard slap are identical except that, for the secco, air is not blown (or, is minimally blown) into the saxophone. The standard slap can be performed at almost any dynamic, while the secco slap is performed with lower dynamics.

It is important to identify the relative lack of discussion regarding slap tongue. Londeix mentions it, but he doesn't deal too much with it aside from a simple identification.[77] Michat, on the other hand, give a detailed description along with a

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[75] Weiss and Netti, *The Techniques of Saxophone Playing*, 143.

[76] Russell Peck, *Drastic Measures* (Greensboro, NC: Pecktacular Music, 1979).

[77] Londeix, *Hello! Mr. Sax or Parameters of the Saxophone*, 92-94.

diagram identifying tongue motions.[78] The earliest significant pedagogical approach to slap tongue can be found in Steven Mauk's article, "Teaching Students to Slap Tongue."[79]

Works using slap tongue are numerous. Thierry Escaich's *Lutte* exploits both the secco and the standard slap. Christian Lauba uses the secco slap it to great effect in *Jungle* and prior to that, Edison Denisov's *Sonata*. Ibert incorporated the slap tongue in the cadenza of his *Concertino da Camera* from 1931.[80]

Vocalization

Vocalization is refers to any type of simultaneous playing and singing (or vocalizing) into the saxophone. The technique of growling is a category that falls within vocalization. The technique is difficult to produce and discussion of it is relatively lacking. Weiss and Netti discuss it, and the process around perfecting it in detail. Their comments indicate the necessity of proper balance of dynamics between the sung part and the played part, specifically, "one must play *p* to *mf* and "sing" *f*."[81]

Londeix does not discuss this technique in detail but Michat does, including a few logical exercises in attempting this technique. These exercises are scale based and are brief, though they are very helpful and can the transposed in numerous ways.[82] Works

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[78] Michat, "Un Saxophon Contemporain," 28-29.

[79] Steven Mauk, "Teaching Students to Slap Tongue," *Saxophone Journal* 14, no. 1 (July/Aug. 1989): 41.

[80] Thierry Esciach, *Lutte* (Montreuil, France: Misterioso, 1995). Christian Lauba, "Jungle," from *Neuf Etudes*, vol. 1. Edison Denisov, *Sonata*. Ibert, *Concertino da Camera*.

[81] Weiss and Netti, *The Techniques of Saxophone Playing*, 179.

[82] Michat, *Un Saxophone Contemporain*, 36.

employing this technique include William Bolcom's *Lilith*[83] (specifically the growl) and Fuminori Tanada's *Mysterious Morning III*.[84]

[83] William Bolcom, *Lilith* (Milwaukee: Hal Leonard Corporation), 1989.

[84] Fuminori Tanada, *Mysterious Morning III* (Paris: Editions Henri Lemoine), 1999.

Chapter 3

A PERFORMANCE ANALYSIS OF "PUSHING BOUNDARIES: FORTY ETUDES ON EXTENDED TECHNIQUES" BY PATRICK MURPHY

While not a pedagogical document per se, the etudes of *Pushing Boundaries: Forty Etudes on Extended Techniques* by Patrick Murphy offer a practical application of extended techniques for saxophonists. Divided into ten units of four etudes, each unit focuses on one particular extended technique. This focus on a single technique per unit is entirely intentional: slow methodical mastery deems combination of multiple techniques inappropriate for the purposes of this project.

Each etude within a unit employs the chosen extended technique in a unique manner. In the case of the first unit, for example, the first etude focuses on simply mastering the performance of the first and second partials through the use of oral cavity manipulation. The second etude takes a preexisting melody[85] and, using similar techniques gained from the first etude, expands into the third and fourth partials. With this further understanding of the oral cavity, the third etude changes focus from partials to pitch-bends and the fourth branches into the altissimo register. Stated at the very beginning of each etude is the purpose or "usage" of the extended technique.

Individual etudes progress logically from one to the next and each unit behaves in a similar fashion. See Table 3. Though intended for study in a sequential fashion, many benefits can be gained regardless of order.

[85] Francis Lützow, *The Hussite Wars* (London: J. M. Dent & Sons, 1914), 30-31.

TABLE 3

Etude units with stated usage(s)

Number	Unit	Stated Usage
1	Voicing	Mastery of the first and second overtones
2	Voicing	Multiple and mixing overtones melodically
3	Voicing	Pitch-bends not exceeding a minor third
4	Voicing	Voicing as a means to achieve altissimo
5	Beginning Altissimo	Slow, melodic passages
6	Beginning Altissimo	Repetitive, conjunct passages
7	Beginning Altissimo	Rapid, conjunct passages
8	Beginning Altissimo	Expressive, conjunct and disjunct passages
9	Circular Breathing	Slow, gradual extension of circular breathing ability
10	Circular Breathing	Repetitive scalar and arpeggiated passages
11	Circular Breathing	Rapid, arpeggiated, and repetitive passages
12	Circular Breathing	Rapid, non-repetitive, quiet passages
13	Double Tonguing	Study and awareness of the oral muscular mechanism
14	Double Tonguing	Legato, repeated passages
15	Double Tonguing	Rapid, conjunct, chromatic passages
16	Double Tonguing	Repeated notes with varying velocity
17	Microtones	Slow, “microchromatic” passages
18	Microtones	Slow, disjunct passages
19	Microtones	Hybrid conjunct and disjunct passages
20	Microtones	Rapid, conjunct passages
21	Bisbigliando	Melodic passages
22	Bisbigliando	Utilizing multiple fingerings in rapid ostinato passages
23	Bisbigliando	Repetitive patterns with varying dynamics
24	Bisbigliando	Timbral “trills”
25	Multiphonics	Isolation of individual pitches with a focus on dyads
26	Multiphonics	Using threshold tones to precede articulated multiphonics
27	Multiphonics	Rapidly shifting multiphonics
28	Multiphonics	Rapid, melodic passages
29	Slap Tonguing	As a contrapuntal technique
30	Slap Tonguing	Low tessitura in pointillism
31	Slap Tonguing	In the higher tessitura
32	Slap Tonguing	Sustaining a pitch after a slap
33	Furthering Altissimo	Rapidly articulated passages
34	Furthering Altissimo	Rapid disjunct passages
35	Furthering Altissimo	Extending altissimo via cadenza
36	Furthering Altissimo	Flexibility
37	Vocalizing	Singing pitches both above and below a performed drone
38	Vocalizing	Singing a drone while performing a moving, melodic passage
39	Vocalizing	Simultaneous pitch changes on both the instrument and in the voice
40	Vocalizing	Simultaneous parallel melodic motion

There are three distinct divisions in the entire work. The first division is etudes based on tongue and throat control. The first unit, voicing, leads directly into the second unit, beginning altissimo. This is a logical progression given voicing’s nature as a

preliminary exercise. Beginning altissimo leads to circular breathing. Circular breathing, though largely based on the lungs, is a technique that employs the tongue and palate in conjunction with the cheeks to maintain control of the pitch. Finally, circular breathing leads to double tongue, an exercise based on tongue and oral soft-tissue control.

The next division is those etudes based upon complex fingerings. First, microtones are introduced which serves as an ideal point-of-departure for atypical fingerings. Second, timbre and bisbigliando are explored; many fingerings used for microtones can be applied to timbre and bisbigliango fingerings. Finally, multiphonics are brought in: Instead of dealing with simply one pitch, the performer is required to accurately use a combination of complex fingerings and voicing to achieve successful multiphonics.

The final three etudes are those that advance techniques covered in the previous seven. Slap tongue and advanced altissimo both require even more control of the tongue and, in altissimo's case, the soft tissue of the mouth. Vocalizing expands upon multiphonics with the requirement of two simultaneously sound pitches.

It would be remiss to ignore a few of the peculiarities that accompany these etudes. First, and probably most evident, is the favor of the English language over traditional Italian. Eschewed terms such as Andante, Allegro, and Largo are replaced with terms such as Mysteriously, Optimistic, and Cascading. In conjunction with this, the English terms chosen tend not to indicate exact tempos[86] - they simply imply a mood or emotional state to be associated with the piece. For the purposes of this work, exact tempo markings are not simply unnecessary, but in fact detrimental. The eleventh etude, for instance, poses different sets of challenges when performed using different tempi. These challenges are legitimate and should not be ignored.

[86] Metronome markings are left entirely, and purposely, absent.

In etudes requiring special fingering notations, the notation system indicated is relatively unique to this work.[87] The selected fingerings are based on a combination of personal experience and Marcus Weiss and Giorgio Netti's *The Technique of Saxophone Playing*. The author of this text whole-heartedly concurs with Weiss and Netti on the statement "Small variations might occur in certain cases with other makes of saxophone…"[88] In all cases, the author of this text used his own alto saxophone to test each fingering.[89]

Etudes 1-4: Voicing

Channeled in the first two etudes is the spirit of the initial Sinta exercises: the focus is on the first few overtones available on the lowest pitches of the instrument. See Figure 1. The first etude makes the assumption of success in preliminary exercises of voicing. Paramount is the matching of timbre and intonation. In accordance to Sinta's directive, use of a tuning device would be tremendously beneficial.[90]

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[87] A fingering chart may be found at the very beginning of Appendix A.

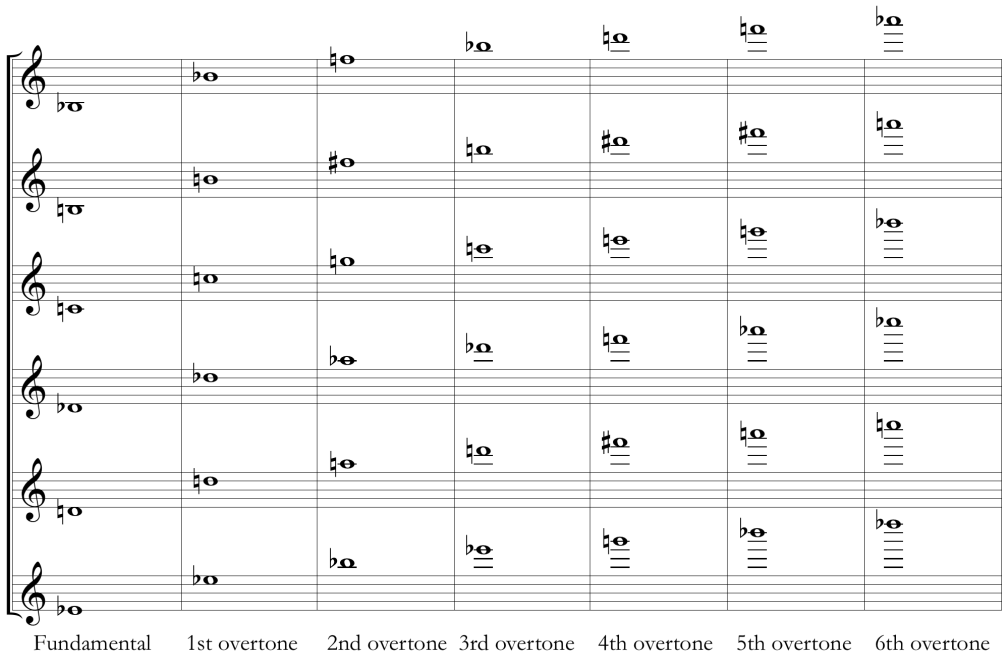
[88] Weiss and Netti, *The Techniques of Saxophone Playing*, 10.

[89] The author of this text performs on a Yamaha YAS-875 Custom alto saxophone purchased new in October of 1999. This is prior to the "Z" and "EX" models of instruments. Students using other models (e.g., later Yamahas, Selmers, Keilworths, and Yanagisawas) should explore their instruments in determining the most accurate and convenient fingerings.

[90] Sinta and Dabney, *Voicing: An Approach to the Saxophone's Third Register*, 11.

FIGURE 1

Overtone Series



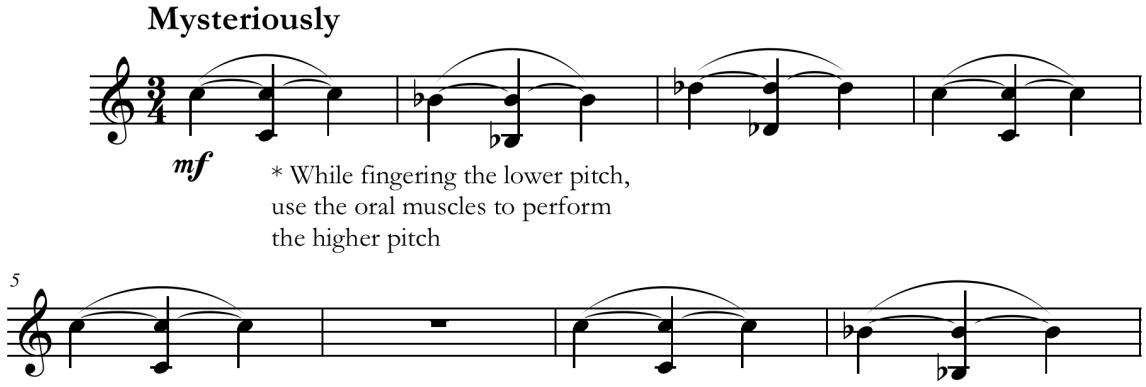
Looking at the first measure of the first etude, the performer plays a C5. Immediately following, the performer plays the same C5 while using the fingering for “low” C (C4). This pattern repeats over the next five measures on different notes. See Figure 2. Sinta, Raschèr, Lang, and Rousseau initially reverse this process. The author of this text believes that beginning on the unvoiced pitch is beneficial to the novice "voicer." Using a matching-pitch to precede the overtone (the voiced pitch) gives a student a model for intonation and timbre and allows for an easing into the process of oral muscular manipulation.

Measures 1 through 28 focus on the first overtone. These first twenty-eight measures can be viewed as a sub-etude; there is no requirement that each etude must be looked at as a single entity. In fact, sub-dividing works into smaller sub-works is a technique that can be applied to many of the etudes presented.

The second overtone makes its appearance beginning in measure 30. While the pitches may differ, the order of overtone fingerings remains identical: Measures 1 and 30 both are both based on an overtone off of the C4 fundamental; Measures 2 and 31 are both based on an overtone off of the B-flat3 fundamental; etc.... The stability of the fingering pattern allows for the focus to be placed on the actual process of voicing. Measures 30 through 57 can be viewed as a sub-etude similar to measures one through twenty-eight.

FIGURE 2

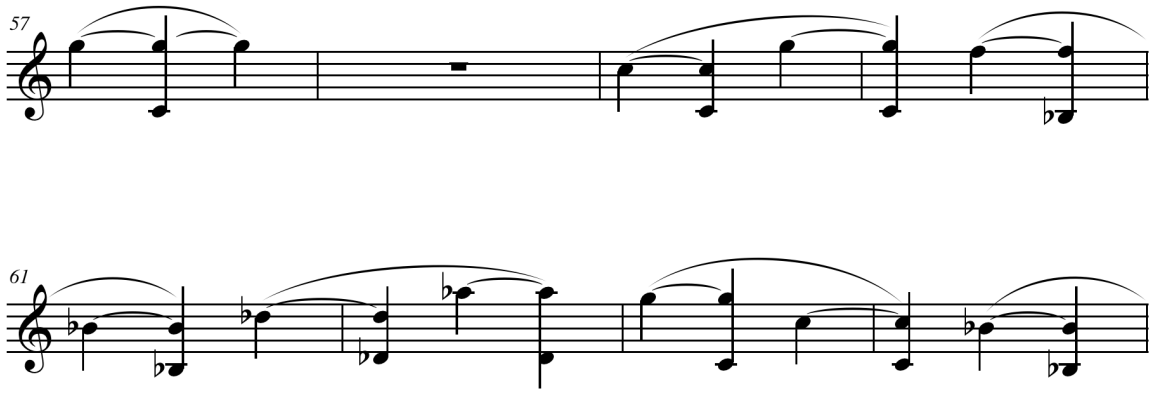
Etude #1: Voicing (mm. 1-8)



Measure 59 begins the process of combining the first and second overtones. The fingering pattern presented above is retained but augmented. See Figure 3. Again, a preceding pitch leads into each overtone allowing for a relatively smooth transition from one pitch to the next.

FIGURE 3

Etude #1: Voicing (mm.57-64)



Etude #2 (Czech), takes its melody from the tune of an ancient Bohemian battle hymn "Ktož jsú boží bojovníci," or "All Ye Warriors of God."[91] This piece is often referred to as the "Bohemian Marseillaise."[92] According to Ladislav Urban:

> The great battle hymn of the Czechs was a spiritual folk-song… Whenever this was sung in a charge it sowed terror and confusion broadcast among their enemies. The chorale contains two motifs: The first, assaulting, with its characteristic hammering rhythm, like repeated blows of weapons; the second, deeply religious, expressing in its restrained but sweet melodic form absolute faith in the final victory of truth.[93]

Sung frequently during the Hussite Wars in Bohemia (in what is now the modern-day Czech Republic), the hymn was a source of national pride. The wars were a pre-cursor to the Protestant Reformation and resulted in a fracturing of the church in Bohemia: The Church of Bohemian (Moravian) Brethren developed into a powerful influence. The

[91] Lütsow, *The Hussite Wars*, 30.

[92] Ibid., 31.

[93] Ladislav Urban, *The Music of Bohemia* (Boston: The Merrymount Press, 1919), 11. It is from this text that the author derived the hymn tune. Minor alterations including key and a few pitches in the melody were utilized to better suit the purposes of this project.

hymn tune features heavily into many works. Perhaps most notable is Karel Husa's *Music for Prague*.[94]

Etude #2 can ultimately be defined as a theme with "hidden" variations. The melody appears plainly in the opening seventeen measures. See Figure 4. This doesn't simply provide the "theme," it reinforces the melody for the performer. With regards to the hidden nature of the variations, while the melody remains unchanged throughout the course of the entire etude, the performer will utilize different fingerings to perform the same pitches. The specific fingerings are always indicated in the music. This is similar to the manner to the first etude.

Following this initial presentation, the melody repeats with fingering alterations that require the performer to voice in a similar manner to the first etude. The focus with this first repetition is entirely on the first overtones. Soon after, the work branches out to include the second, third, and fourth overtones.

When looking at Etudes #1 and 2, emphasis must be placed on musical expression. Though the works are somewhat pedantic, the performer must not abandon any sense of musicality. While these two etudes function as a single unit, Etude #3 employs voicing in a different manner.

Etude #3 changes focus from overtones to pitch bending.[95] The oral muscles used are the same, just to different affect. This etude focuses on bending pitches initially by an interval of a minor second, then a major second, and finally a minor third. To aide the performer, the pitch bends extend no further than a minor third. The aim of this etude is to gain flexibility and fluidity of the oral muscles.

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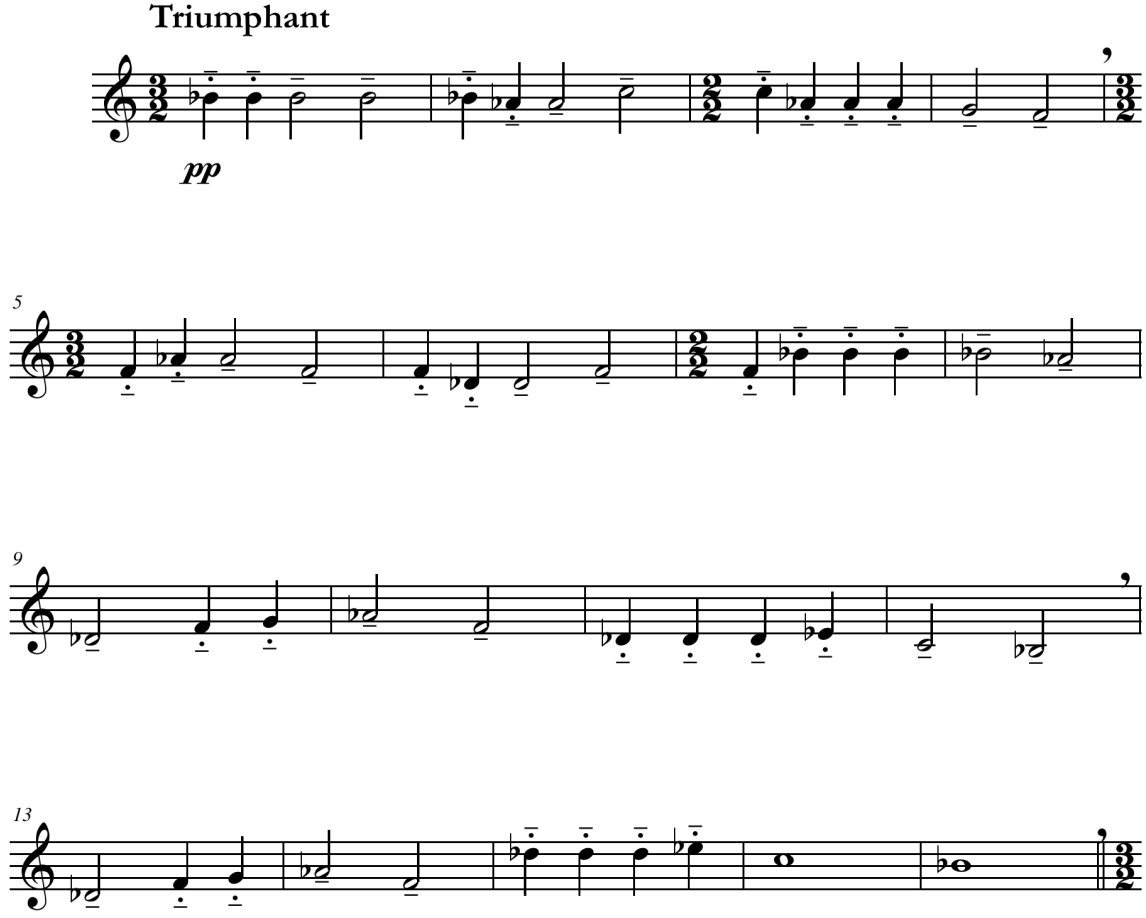
[94] Karel Husa, *Music for Prague* (New York: G. Schirmer, Inc. 1968).

[95] Sinta and Dabney, *Voicing: An Approach to the Saxophone's Third register*, 8-10. This section of the book introduces exercises in pitch bending on a high F (F6).

FIGURE 4

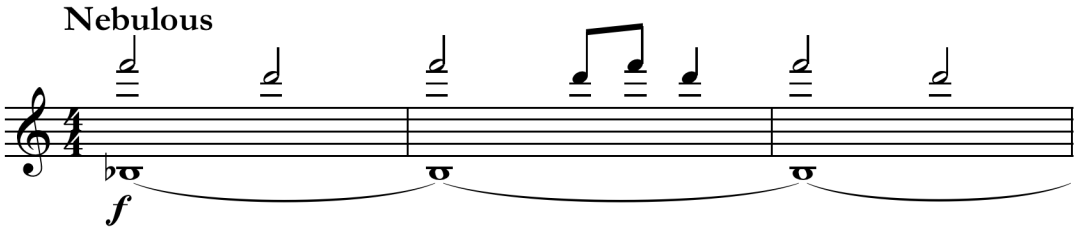
Etude #2: Voicing (Czech) (mm. 1-17)



The final etude of this unit combines overtone study with oral flexibility. The technical requirements of this etude are rather straightforward: the performer uses the oral muscles to attain different pitches in the overtone series (creating a melody) all-the-while fingering nothing but the fundamental, a low B-flat (B-flat3). See Figure 5.

FIGURE 5

Etude #4: Voicing (mm. 1-3)



This etude can easily be transposed such that the fundamental is a low B (B3), low C (C3) and further up to an E-flat or E (E-flat4 and E4). If that decision is made, the overtones can be adjusted the proper interval. This relates to the earlier discussion of tempo assignments: a student should be encouraged to feel free to perform etudes in different ways.

Initial study will prove difficult: creating a seamless transition from overtone to overtone is a skill that eludes many in the beginning. A performer should start by articulating each pitch (either with only air or with a "kuh" attached) and then, slowly and meticulously, work to "slur" between pitches. This etude is one of the few that combines two different extended techniques: voicing and altissimo. Given the preliminary nature of voicing study, combining techniques is appropriate.

When viewed as a unit, the first four etudes provide a pedagogically and musically sound performance experience. Voicing is used in multiple ways to give the performer multiple perspectives. Repetition is not shunned, rather, it is used in order to improve comfort. For those new to this technique, the gentle approach of the first etude gradually yields to increasing aggressiveness. Perhaps the use of the "Ktož jsú boží bojovníci" melody is appropriate.

Etudes 5-8: Beginning Altissimo

The most vital parameter of the next grouping of etudes is limited range: the melodic line at no point exceeds a B6. Another prominent feature is the use of altissimo in two ways: conjunct and disjunct. Saxophonists must have a veritable "arsenal" of altissimo fingerings dependent on context. Compared to fingerings used in conjunct passages (where the melodic line is relative scalar and altissimo pitches are located together), fingerings in disjunct passages (in the case of these etudes, isolated pitches approached and/or departed by a leap into the standard range) are likely to be rather distinct. Rousseau hints at this in his text with a discussion of the modes (or fundamental fingerings) of overtones.[96]

In the author's experience, conjunct passages benefit from modes based on higher fundamentals. Under these circumstances, the depression of fewer keys results in a lighter, faster technique. Disjunct passages, on the other hand, tend to favor fingers based on lower fundamentals. The presence of more depressed keys results in greater resistance causing a stable leap between intervals.

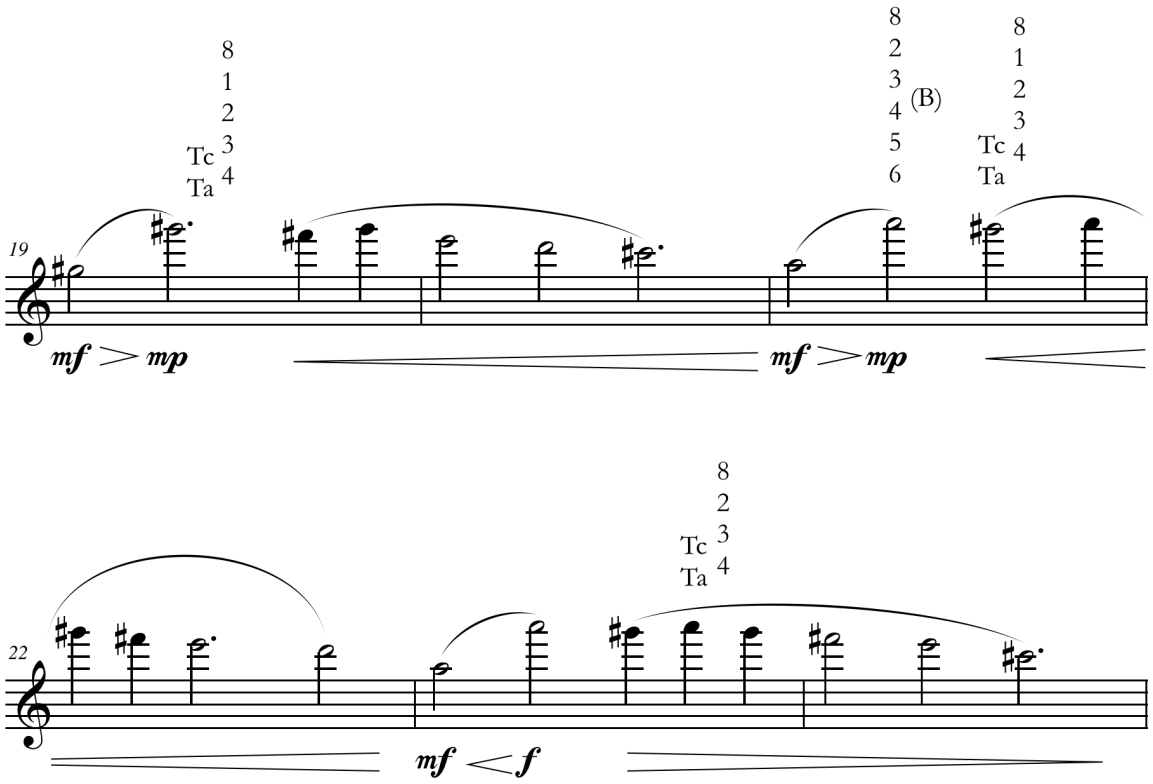
Etude #5 sets forth a straightforward melody in the upper tessitura of the instrument. This etude combines both conjunct and disjunct passages and, in the case of the latter, suggests relatively closed fingerings (that is, fingerings based on lower fundamentals with more keys depressed) in order to provide stability. See Figure 6.

Etude #5 introduces a number-and-letter shorthand to indicate depressed keys. Numbers 1, 2, and 3 for example correspond to the B-key, A-key, and G-key. "T" notations (Ta, Tc, and Tf) indicate trill/alternate keys. A full reference to this notation system can be found in Appendix A.

[96] Eugene Rousseau, *Saxophone High Tones*, 22.

FIGURE 6

Etude #5: Beginning Altissimo (mm. 19-24)



This etude should be approached at a relaxed pace especially when confronting the disjunct passages. Care should be taken that to avoid “cracks” (that an incorrect overtone) in between larger intervals. Melody should be approached naturally without being over-emotive. Vibrato might be a challenge in the early stages and, perhaps, should be avoided.

Etude #2 takes a similar approach to the first etude: areas of conjunct music contrast with areas of disjunct. This etude, however, takes a similar approach to the first two etudes. The music is scale-based and deals with bringing the so-called “standard” range with the altissimo range. Fingerings do not appear in this movement; many different approaches can yield success. This etude divides into three sections (scales that

bridge the standard and altissimo range – expanding intervals that bridge the standard and altissimo ranges – scales that promote fluidity entirely within the altissimo range) indicated by double bars at measures 39 and 63. Students should feel free to divide this work into sub-etudes as in Etude #1.

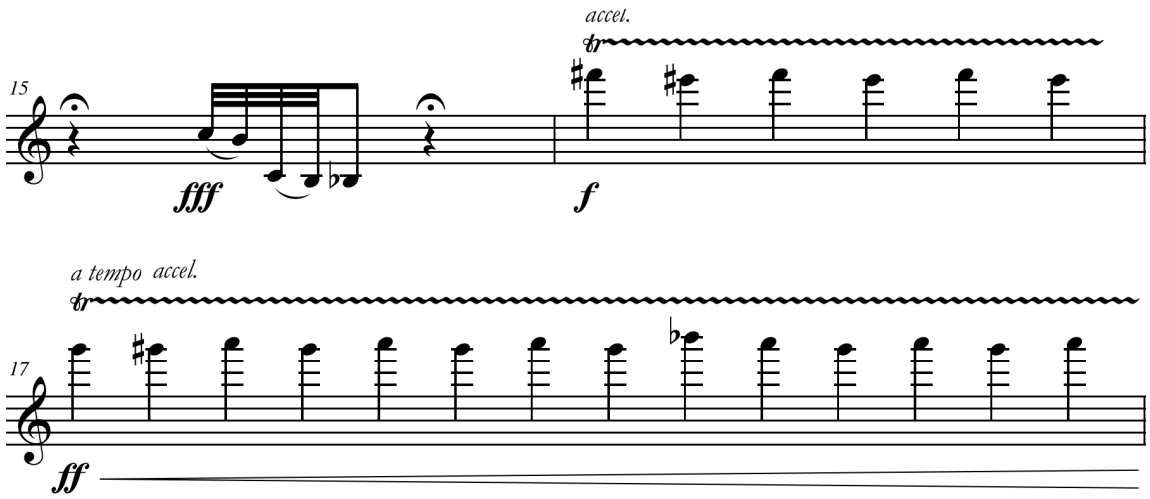
Etude #7 takes its lead from #6, though it is significantly more advanced, harmonically speaking. In this case, wide intervals disappear in favor of almost scalar passages. This etude enforces fluidity in fast, scalar passages. Again, notation of fingerings do not appear.

Etude #8 should be treated as a cadenza or improvisation with a fluid, almost exhausted tempo. Afforded to the performer is a degree of flexibility regarding dynamics: one should exploit the dynamics as deemed appropriate. In contrast to the first three etudes of this unit, Etude #8 presents octave leaps into the altissimo range almost immediately. The previous three etudes provide the performer with the skills necessary to achieve these leaps.

This etude differs from the others in its exploitation of altissimo trills at a half-step. See Figure 7. The trill from F-sharp6 to G6 will pose a challenge to the performer: alternative hand-placements are a practical suggestion. The left-hand index finger can be placed on the auxiliary F key, and the middle finger can be placed on the bis key. Using the bis as a trill key provides a perfectly acceptable G6. Furthermore, using the ring finger on "2" (that is, the A key) will allow for a seamless trill from F6 to F-sharp6. The performer will find ample opportunity to switch back to "standard" hand-placement beginning at measure 17.

FIGURE 7

Etude #8: Voicing (mm. 15-17)



Etudes 5 through 8 offer a study of altissimo that is of considerable use to the young saxophonist. A thoughtful, systematic approach allows for a paced process to extending one's abilities in the range.

Etudes 9-12: Circular Breathing

At the time of writing this document, the author can find no non-concert etudes of circular breathing on the saxophone. Undoubtedly, there are numerous guides and suggestions,[97] but there are not currently any etudes devoted solely to a progressive approach to the technique. The author hopes to remedy that situation.

Etude #9 is (very) loosely based on the chant for the graduale *Qui sédes, Dómine*.[98] From the Latin word *gradus*, meaning steps, this etude is a graduale in its stepwise approach to perfecting circular breathing. In this case, numbers of pitches are

[97] See Trent Kynaston, *Circular Breathing for the Wind Performer* (Van Nuys: CA, Alfred Publishing Co., Inc.).

[98] Benedictines of Solesmes, ed., *The Liber Usualis, with Introduction and Rubrics in English* (Tournai, Belgium & New York: Desclée, 1950), 335.

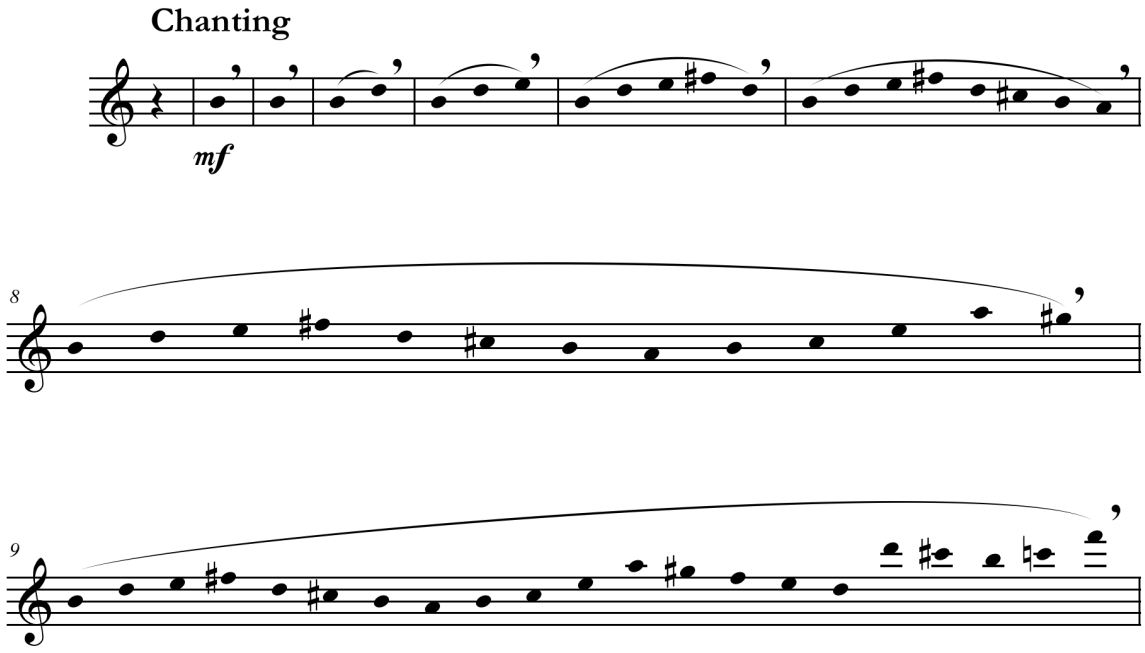
indicated (entire absent of duration) based on the Fibonacci sequence. In this case, one pitch sounds followed by a breath mark.[99] The pitch repeats, followed by the same breath mark. Next are two notes ending with a breath mark. Then three. Then five. Then eight. The sequence continues… See Figure 8. The performer should not breathe (in a conventional style) under a slur, rather, when necessary, employ circular breathing instead.

The elimination of rhythmic markings allows for focus on the circular breathing technique; rendered moot is a source of added difficulty. During initial studies, the performer should be at a relatively fast tempo (perhaps each note duration being as high as 100 BPM). As the performer gains more comfort with the piece, the tempo should be slowed down. The author cannot identify a minimum tempo but only suggest the performer goes as slow as he or she is capable (each duration could be as slow as 20-30 BPM, perhaps more or less…).

[99] The breath mark is to be taken at face value. The performer should pause, breathe naturally, and then continue to the next measure. Under no circumstances should these breaths be rushed – they are natural points of rest and rest must be taken.

FIGURE 8

Etude #9: Circular breathing (mm. 1-9)



In addition to being Fibonacci- and chant-based, Etude #9 is also a palindrome. The entire work repeats in reverse after going through the sequence of durations of 1-1-2-3-5-8-13-21-34-55-89. Not simply limited to durations, the palindrome also applies to the pitches themselves.

In a return to scale-based music, Etude #10 is an etude in the most basic of senses: a study. There are no remarkable composition techniques or secrets from which to gain insight. This etude is in three sections: entirely scalar in the mid-register, arpeggiated in the mid-register, and finally scalar in the upper register. The work is to be entirely circular-breathed. It would be advisable to treat each section as its own sub-etude, before combining the work into a single piece.

Entirely arpeggiated, Etude #11 in many ways owes its inception to Christian Lauba's *Balafon*.[100] This is especially true in the concluding sections. After a held D6, broken chords present themselves in eighth-notes for two measures. Broken chords continue, but the rhythmic durations change, first to eighth-note triplets, then sixteenth-notes, then quintuplets, then sextuplets, and finally returning to thirty-second-notes. The effect should be one that, to a hypothetical audience, is unmeasured. Walls of sounds suddenly change with no preparation.[101] Relatively simple and repetitive pitch patterns prevail. Dynamics vary, though, without any sudden changes.

Whereas Etudes 9-11 are all pattern-based, Etude #12 is relatively free. The goal of this etude is to challenge the performer with rapid, non-repetitive pitch patterns. Conjunct and chromatic, this etude finds its inspiration in another Lauba etude: *Jungle*.[102] The performer should carefully observe the single dynamic marking (pp) as this will ease the circular breathing process. At the performer's discretion, this can be treated as a sub-tone.

Etudes 13-16: Double Tongue

Etude #13 is a preliminary exercise that deals only with the mechanism of the double tongue. Rather than double-tonguing on pitches, the performer simply finds instructions to create a percussive sound (into the mouthpiece). See Figure 9. The performer must attempt this using only a "proper" embouchure. The intent is to prepare the performer to apply double-tongue to actual pitches.

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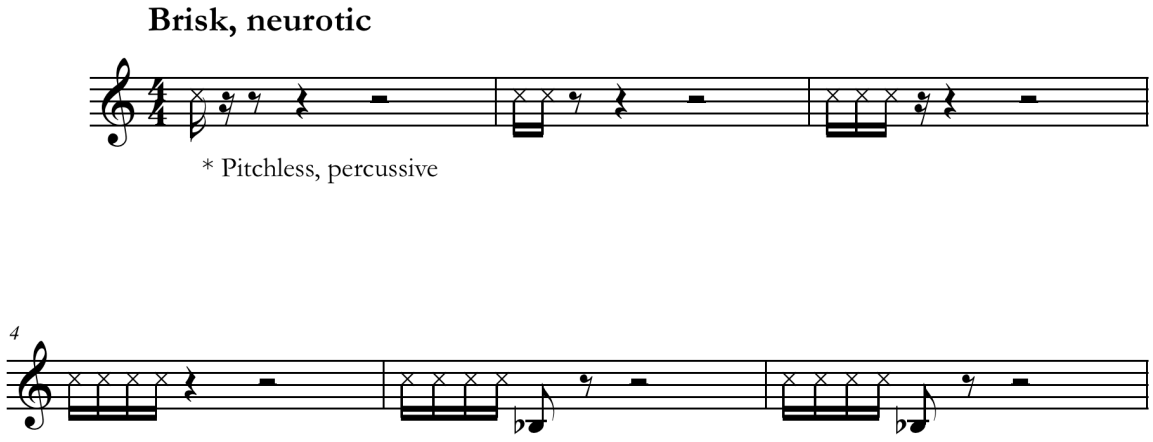
[100] Lauba, "Balafon," *Neuf Etudes*, vol. 1.

[101] Lauba accomplishes this effect, though, using complicated pitch patterns.

[102] Christian Lauba, "*Jungle*," *Neuf Etudes*, vol. 1.

Figure 9

Etude #13: Double Tongue (mm. 1-6)



It is the author's recommendation that the performer assign syllables to the subdivision of each beat. In the case of a beat consisting of four sixteenth notes, recommended syllables include "d-g-d-g" or "t-k-t-k." This should be consistent: where a beat begins with a sixteenth rest, "g-d-g" or "k-t-k" should be considered a viable option.

Little needs to be said of Etude #14 aside from its influence from Carl Baermann.[103] The performer must be certain to keep the airstream constant as the tempo increases. The choice of legato articulation is purposeful – a means to the end of constant airstream.

Another straightforward piece, Etude #15 poses more challenges than the previous etude. The work is a rapid piece that progresses chromatically throughout the upper and middle range of the instrument. The performer should adopt a technique similar to that used in the previous 2 etudes: consistent air stream flowing through the instrument. In this case, the articulation style in staccato.

[103] David Hite, *Foundation Studies for Saxophone: Scales, chords and intervals for daily practice patterned after Carl Baermann, Op. 63* (San Antonio: Southern Music Company), 92.

Etude #16 employs articulations of increasing and decreasing tempos. The performer should follow direction clearly, i.e., perform the number of notes as they appear. It is easy to treat the effect as just that, an effect. However, this intent of this etude is that the music be performed exactly as intended. See Figure 10.

Figure 10

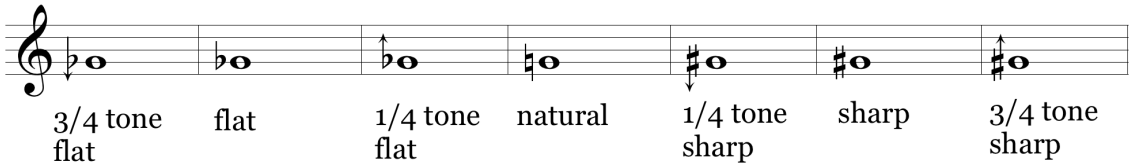
Etude # 16: Double Tongue (mm. 5-6)

Etudes 17-20: Microtones

Prior to discussion of these etudes, the method of notation must be identified. While Londeix and Weiss and Netti identify fifth tones, third tones, and eighth tones, these etudes concern themselves solely with quartertones.[104] The notation system chosen is similar to that identified by Jean-Denis Michat.[105] See Figure 11.

Figure 11

Microtone Notation System



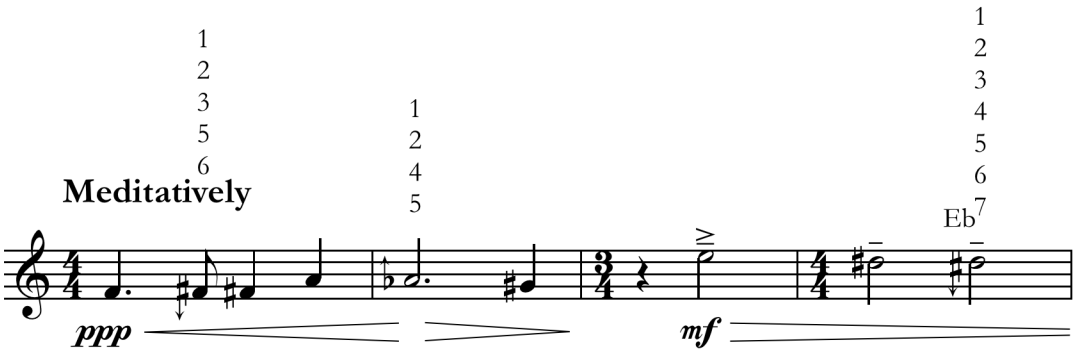
[104] Londeix, *Hello! Mister Sax or Parameters of the Saxophone,* 24; Weiss and Netti, *The Techniques of Saxophone Playing*, 15-32.

[105] Michat, *Un Saxophone Contemporain*, 42-43.

The stated goal of Etude #17 is performance of “microtones in slow microchromatic, conjunct passages.” The term microchromatic relates to the term "chromatic" in that each microtone is approached and departed by a semi tone. See Figure 12. At no point, in this etude, is a microtone isolated out of the context of either appearing as a passing tone or a neighbor tone. The integration of microtones into chromatic passages allows the application of microtone fingerings in relation to semitones. This has the dual effect of allowing the performer to hear the difference between a semitone and a quarter tone.

Figure 12

Etude # 17: Microtones (mm. 1-4)



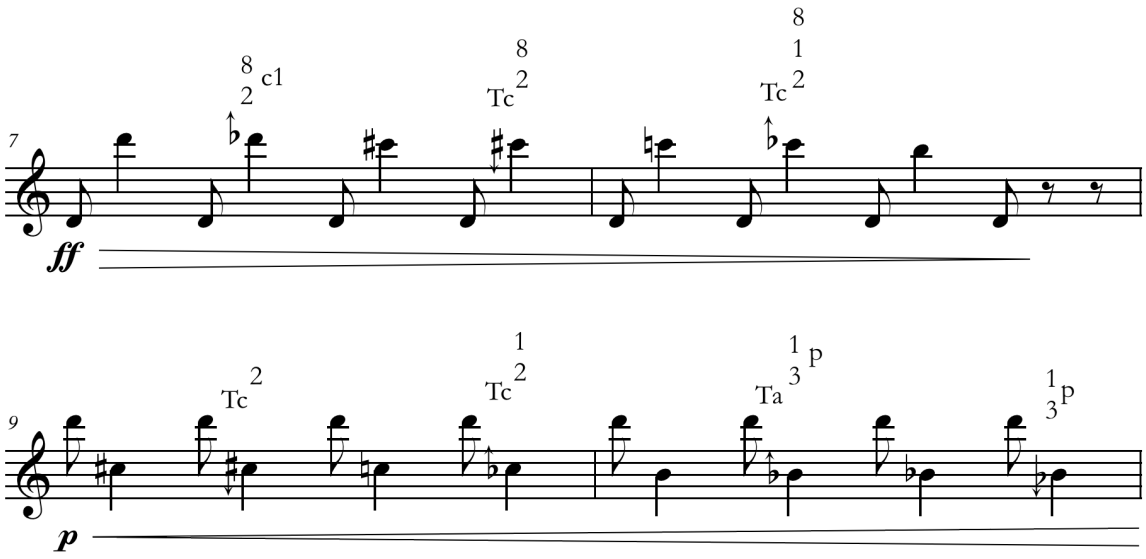
In contrast, Etude #18 takes the approach of almost entirely isolating quarter tones. By combining this with the slow, meditative tempo of #17, the level of difficulty increases. The effect should be that of a detuned hymn.

Of all the Microtone etudes, #19 is likely to pose the most challenge. This etude should be described as a hybrid of isolated and non-isolated microtones: microchromaticism, interspersed with pedal tones, provides a greater challenge when compared to the previous etude. See Figure 13. The pedal tone appears both above and below the moving quartertone line.

Etude #20 is simply returns entirely to microchromaticism without and interference. This etude is the fastest of the four with the pedagogical goal of fluidity with microtones. To this end, microtones group into either four or eight sixteenth notes. Rests allow the performer to “reset.”

Figure 13

Etude #19: Voicing (mm. 7-10)



A point of note is that the second two etudes in this unit are fairly static – especially when compared to the first two etudes. Given the complex nature of all four of these etudes, this is quite appropriate. The relative slowness of the first two etudes allows for 1) gaining comfort with new and ostensibly difficult fingerings, and 2) work with complex intervals while still at a novice level.

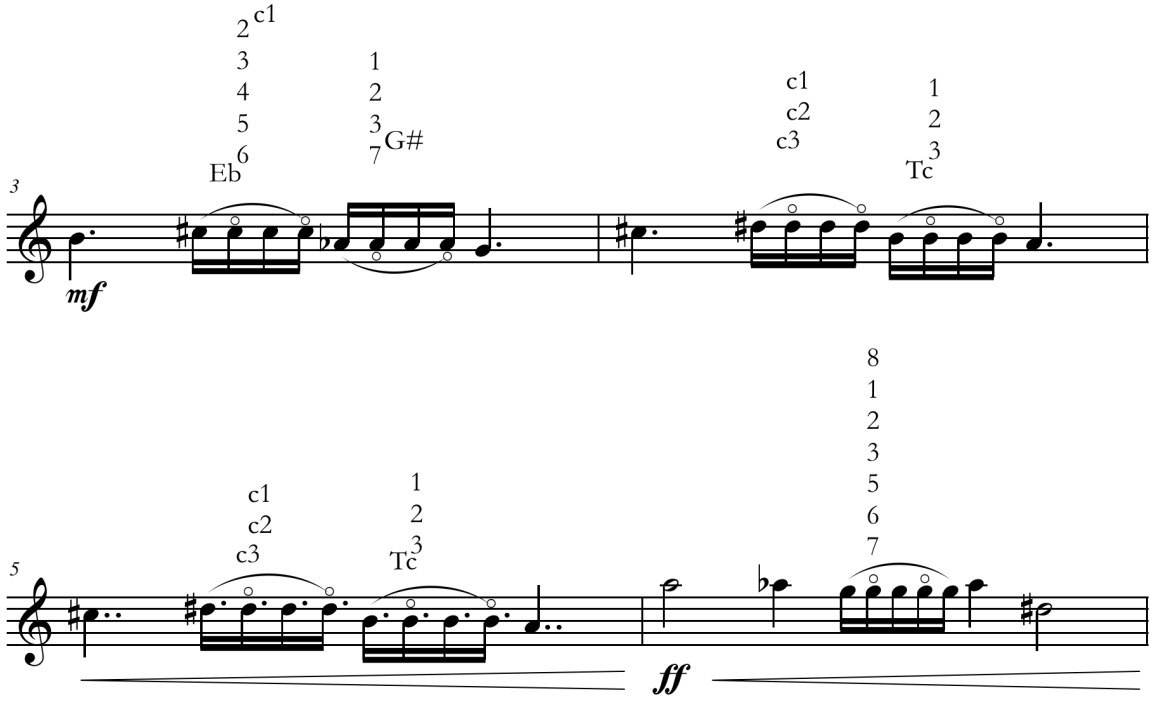
Etudes 21-24: Timbre and Bisbigliando

Etudes 21-24 see a change in the complexity of compositional technique. It is at this point that composers and works are recalled and, while not directly quoted, "channeled." The author was not interested in creating works based on musical quotations, rather he chose to create works that were entirely new.

Etude #21 draws its inspiration from the compositional techniques of Olivier Messiaen. The work alternates between subject areas of non-retrograde rhythms (palindromes) and a mode of limited transposition with areas of free composition.[106] This etude adds to Messiaen's musical language by including timbre changes. See Figure 14.

Figure 14

Etude # 21: Timbre and Bisbigliando (mm. 3-6)



[106] Olivier Messiaen, *The Techniques of My Musical Language* (Paris: Alphonse Leduc & Cie, 1944), 20-21 and 62.

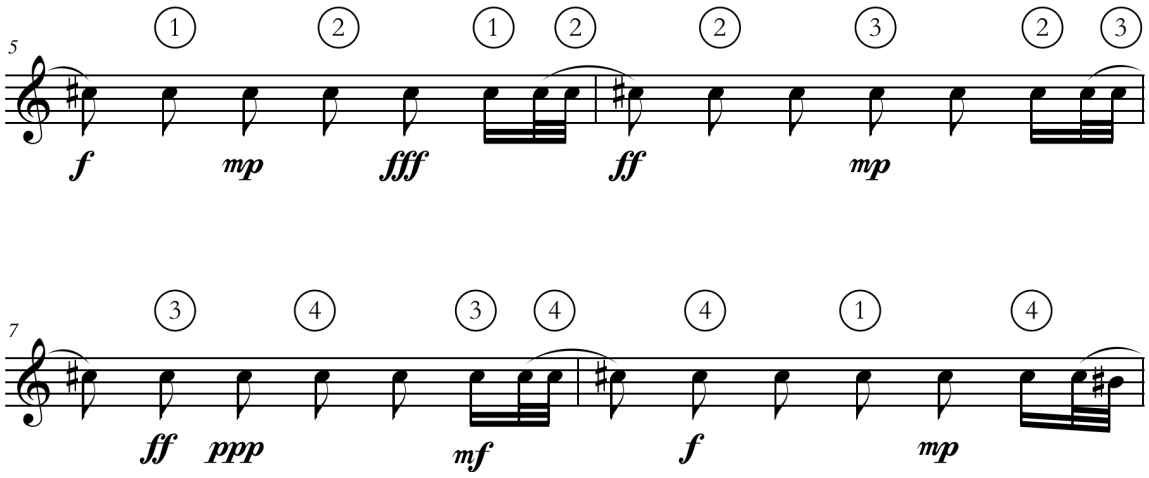
The main challenge that a performer will have in this etude is the alternation between standard and timbral fingerings for D5 and D-sharp5. As these will alternate between a very "closed fingering" (8-1-2-3-4-5-6 for the former, 8-1-2-3-4-5-6-Eb for the latter) and side-key-based fingerings (c2 for the former, c1-c2-c3 for the later), initial practice must be extremely slow. In order to aid the performer, these are the only two examples of such an alternation in the work. This etude features only two sets of fingerings per pitch: the standard fingering, and the timbral fingering.

Etude #22 expands into three different fingerings per pitch: a standard fingering, and two timbral fingerings. This etude is extremely static with only one pitch per measure and a seldom-ceasing ostinato. This simplicity counteracts the difficulty when combined with increased tempo. This etude uses the samba rhythm as its inspiration.

Etude #23 finds inspiration in Sequenza VIIb by Luciano Berio and even goes so far as adopting his notation style for timbral fingerings.[107] See Figure 15. A keyfollows the conclusion of this etude.

Figure 15

Etude #23: Timbre and Bisbigliando (mm. 5-8)



[107] Luciano Berio, *Sequenza VIIb* (Vienna: Universal Editions, 1969).

This etude expands the difficulty level by exploring four different possible timbral fingerings per pitch. Only 3 pitches (C-sharp5, C5, and B4) have timbral fingerings and, like the previous etude, the piece features an ostinato, offsetting the complexity of the fingerings. In common with the Berio, this etude features "hyper-notation" of a sort: Dynamic changes are frequent and erratic.[108]

The final etude of this unit features timbre trills (bisbigliando) exclusively. The performer is free to choose his or her own fingerings using as many timbral fingerings as desired. The author suggests limiting the selection or two possibilities. A special note must be made with the bisbigliando trill for D5 and E-flat5. Though the first etude alternates between open and closed fingerings, it is inappropriate to employ that option here. The speed of the trill proves daunting. Instead, simply adding the B or B-flat key would serve the purpose in a better manner.

Etudes 25-28: Multiphonics

Although not uncommon today, multiphonics are a fairly recent development in saxophone literature. Londeix points to Edison Denisov's "Sonata"[109] as the first work to use multiphonics in a significant way.[110] Since that time, several works have exploited multiphonics to varying degrees of success.

Achieving the proper combination of tongue placement, embouchure tension, and fingering is one of the greatest challenges to achieving a proper multiphonic. Etude #25 takes this challenge head-on. This etude focuses on multiphonics that are dyads (consisting of only two pitches). The performer finds a fingering that will span three

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[108] Ibid.

[109] Denisov, *Sonata*.

[110] Londeix, *Hello! Mr. Sax or Parameters of the Saxophone*, 31.

measures. The initial measure of the fingering is a single pitch. This pitch is the highest pitch available for the multiphonic fingering.[111] The next measure requires the performer to, using the physical combinations mentioned above, sound the actual multiphonic. The final measure requires the performer to isolate the lower pitch in the multiphonic. This isolation-based approach allows the performer to experiment with the necessary physical combinations to achieve the proper sound. This approach can be adopted for multiphonics of three or more pitches but, given the limited scope of this project, is a suggestion rather than a written etude.

Weiss and Netti identify threshold tones: "partials of the multiphonic with which one can enter or exit that mulitphonic."[112] Etude #25 requires the performer to enter the multiphonic from a high threshold tone. This allows for the construction of the multiphonic from the top down by use of voicing and soft-tissue manipulation. Etude #26 takes the opposite approach by requiring the performing to approach multiphonics from a low pitch and build the sound from the bottom up (there are only two circumstances when the chosen threshold tone is a mid-level pitch). A challenge added to this etude is the requirement of continuous articulations during multiphonics: multiphonics present as four successive eighth notes.

Etude #27 adopts an approach separate from the previous etudes. Rather than integrating the multiphonic into the melodic content, this etude focuses on the use of the multiphonic as merely a sound effect. In this case, multiphonics are brash, percussive exclamations performed at relatively strong dynamic levels. They appear isolated and

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[111] The several of these fingerings can result in multiphonics of more than two pitches. The dynamics, being relatively soft (not exceeding mezzo forte), limit the pitch possibilities available. This allows for multiphonics of only two pitches.

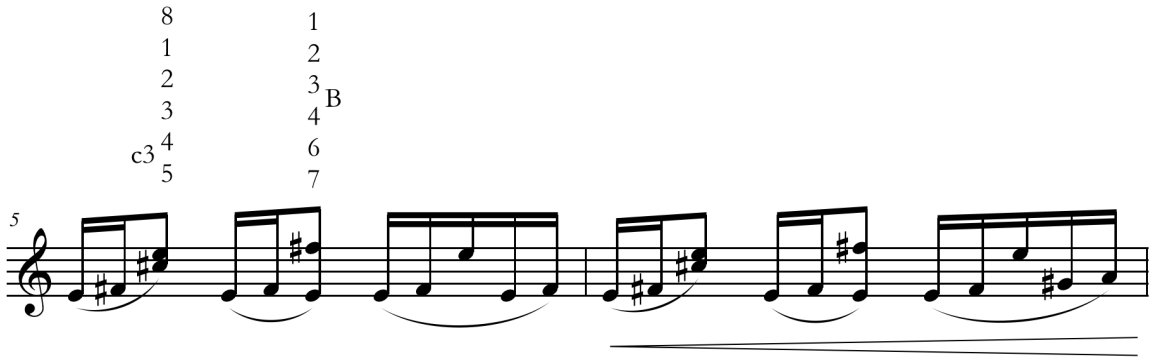
[112] Weiss and Netti, *The Techniques of Saxophone Playing*, 62.

distinct from the swirling sixteenth-note runs that they proceed; threshold tones are of little consequence.

The final etude of this unit reintegrates the multiphonic into the melody. It also requires the swift transition from multiphonic to standard single pitch in a short amount of time. By far the fastest etude of this unit, Etude #28 strikes a similar path as the previous etude in the removal of threshold tones from importance. The performer can feel free to adopt "alternative" hand positions. This is most notable in measure 5 where, on the first multiphonic, the performer can remove the right-hand thumb from the thumb rest and use it to strike the c3 key. See Figure 16.

Figure 16

Etude #28 (mm. 5-6)



Etudes #29-32: Slap Tongue

The slap tongue technique offers yet another sound to the color palette available on the saxophone. The variety of slap used here (the so-called closed slap) is ultimately the sonic equivalent to the pizzicato effect on a string instrument. The first two etudes focus on slap in the lower register while the second two focus on the higher range.

Etude #29 is presented in the style of a slow tango. In the case of this etude, slap pitches bring out the counterpoint. Slapped pitches serve as the harmonic basis for the

piece. Above, one can find the tango melody. Slaps remain in the low range purposefully: novice performers of the slap tongue will find ease in the lower range. A satisfactory and resonant tone can be produced in the lowest octave of the instrument. Slapped pitches initially stay a fair distance away from each other, though that distance decreases with time. At no point are three pitches in a row slapped.

Etude #30 is similar to #29 in the sense that slaps both stay in the lower range and feature as a contrapuntal technique. This etude differs dramatically in harmonic language, favoring a serialized approach. The tone row selected is identical to Webern's choice for the Quartet, op. 21.[113] This tone row determines not only pitch, but also pitch repetitions in the upper register. See Table 4.

For the opening section, P1, selected for those notes in the upper range, contrast with I5, selected for the slapped pitches in the lower range. These two rows exhibit hexachordal combinatoriality. The middle section uses only P0 and, while beginning slurred, moves forward to include slaps at the end of each run. This section's serialism only dictates the pitches; rhythm and repetition are now independent elements. The third section is similar to the opening featuring rows P1 and RI2.

The third etude in this unit exploits slap tongue in the upper range. Each measure features a nearly identical articulation pattern: two slurred pitches followed by either a "normally" articulated or a slapped pitch (these two elements alternate), followed to two repeated pitch in the lower range. The added challenge of slapped articulation incorporated in the melodic line will prove difficult at first. Initially, the performer should eliminate some elements: perhaps the final two pitches in each measure. After attaining comfort, these elements can be reincorporated.

[113] Anton Webern, *Quartet, op. 22,* (Vienna: Universal Editions: 1930).

Table 4

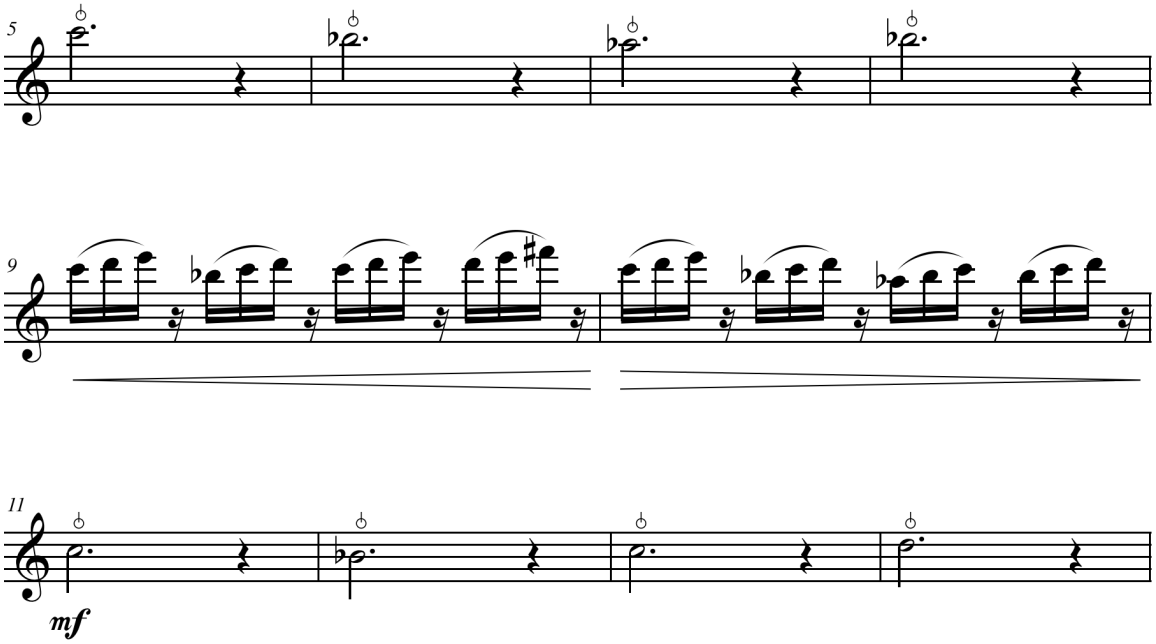
Tone Row Matrix for Etude #30

P/I	0	9	8	11	10	2	3	4	5	7	1	6	R
0	C#	A#	A	C	B	D#	E	F	F#	G#	D	G	0
3	E	C#	C	D#	D	F#	G	G#	A	B	F	A#	3
4	F	D	C#	E	D#	G	G#	A	A#	C	F#	B	4
1	D	B	A#	C#	C	E	F	F#	G	A	D#	G#	1
2	D#	C	B	D	C#	F	F#	G	G#	A#	E	A	2
10	B	G#	G	A#	A	C#	D	D#	E	F#	C	F	10
9	A#	G	F#	A	G#	C	C#	D	D#	F	B	E	9
8	A	F#	F	G#	G	B	C	C#	D	E	A#	D#	8
7	G#	F	E	G	F#	A#	B	C	C#	D#	A	D	7
5	F#	D#	D	F	E	G#	A	A#	B	C#	G	C	5
11	C	A	G#	B	A#	D	D#	E	F	G	C#	F#	11
6	G	E	D#	F#	F	A	A#	B	C	D	G#	C#	6
RI	0	9	8	11	10	2	3	4	5	7	1	6	

The final etude in this unit reintroduces slap tongue in the lower register in addition to the higher. The primary goal of this etude is the performance of a sustained pitch following the slap tongue. In all cases, the slapped pitches are unimpeded – isolated from quickly moving lines. See Figure 17.

Figure 17

Etude #32: Slap Tongue (mm. 5-14)



Sustaining a pitch following a slap is a challenge. Many novices attempt to move the jaw or shift the embouchure when attempting a slap tongue: This will cause a distortion in the tone. The student must maintain a stable and unmoving embouchure in addition to a constant air stream. The tempo should be brisk, yet comfortable.

Etudes #33-36: Furthering Altissimo

The next unit of etudes considered an extension of the previous unit (Beginning Altissimo). Extension of range, while a noble goal, is not the primary goal of the etudes of this unit. These etudes examine different parameters of altissimo, of which range is only one.

Etude #33 focuses on the parameter of rapid articulation in the altissimo register. The tempo should be quick but comfortable. Articulation is at different dynamic levels

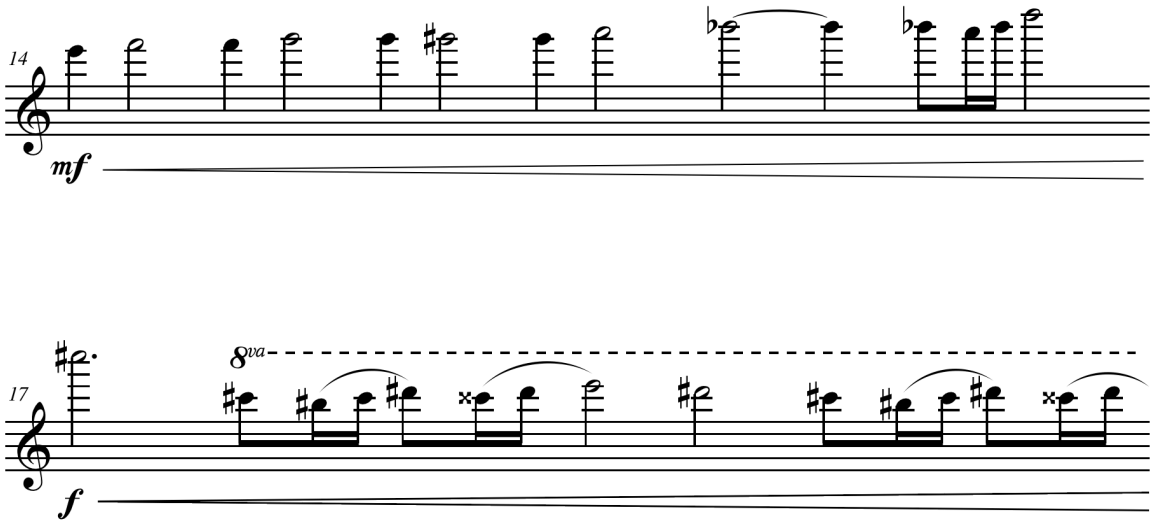
requiring a stable embouchure and constant air stream, similar to the previous slap tongue etude.

Etude #34 picks up where Etude #8 left off: altissimo in disjunct passages. In this case, altissimo pitches are in the context of octave intervals. The tempo is quicker than Etude #8 and nimble technique is required. In all cases, suggested fingerings are notated. Just as before, relatively "closed" fingerings will provide the resistance needed to perform these pitches.

Etude #35 is the first of which that extends the range; the required extension is up to G7. The performer should feel free to use rubato in this etude given its label as a Cadenza. Altissimo extends through chromatic, scalar passages. See Figure 18. The dynamic level increases as the tessitura raises: this will make the performance of the altissimo-extremes easier for the performer.

Figure 18

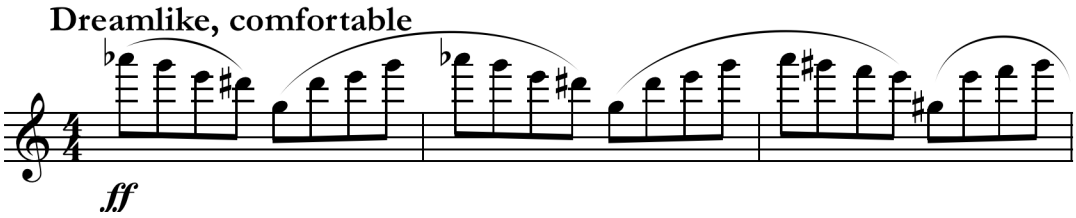
Etude #35: Furthering Altissimo (mm. "14-18")



The final Etude of this unit the author considers the most difficult in the entire collection. This work requires extreme flexibility and finger-versatility. Bridge the standard range and the altissimo range, broken chords appear. Ranges are approached both from above and below. See Figure 19. The rhythms are relatively constant (eighth notes) which perhaps adds to the difficulty.

Figure 19

Etude #36 (mm. 1-3)



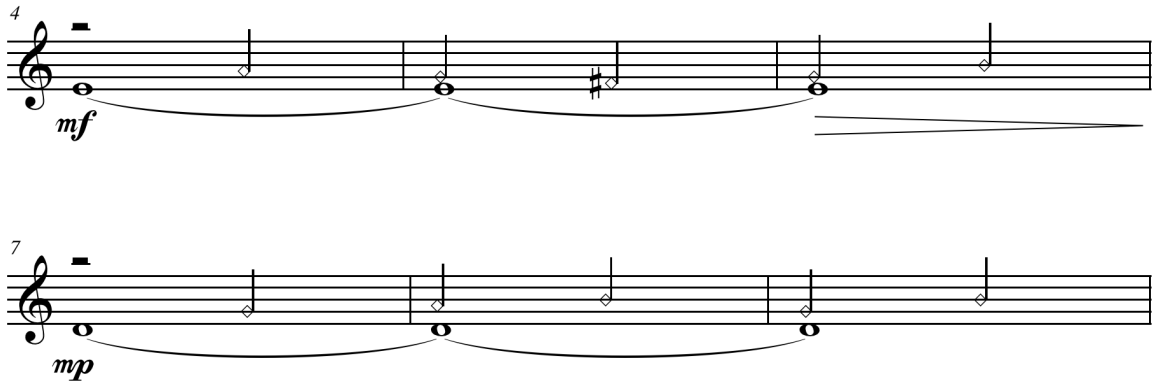
Etudes # 37-40: Vocalizing

This final unit of etudes focuses on simultaneously singing and performing on the instrument. It should be noted that, in cases where exact pitches appear in the music, the performer should sing those pitches in a range that is comfortable. Ideally, the range indicated will be the result. Human limitations, of course, cannot be dismissed.

Etude #37 takes the initial steps of performing a drone on the saxophone while simultaneously singing a moving melodic line. See Figure 20. In all cases, the drone appears first, followed by the sung pitch two beats later. The performer must sing both above a drone and below a drone. A male voice (especially a tenor) should be able to accommodate each sing pitch. A lower female voice can accomplish this as well, though a higher voice might find difficulty. As stated above, the performer should do what ever is necessary to sing the pitches, even if it means taking them up an octave.

Figure 20

Etude # 37: Vocalizing

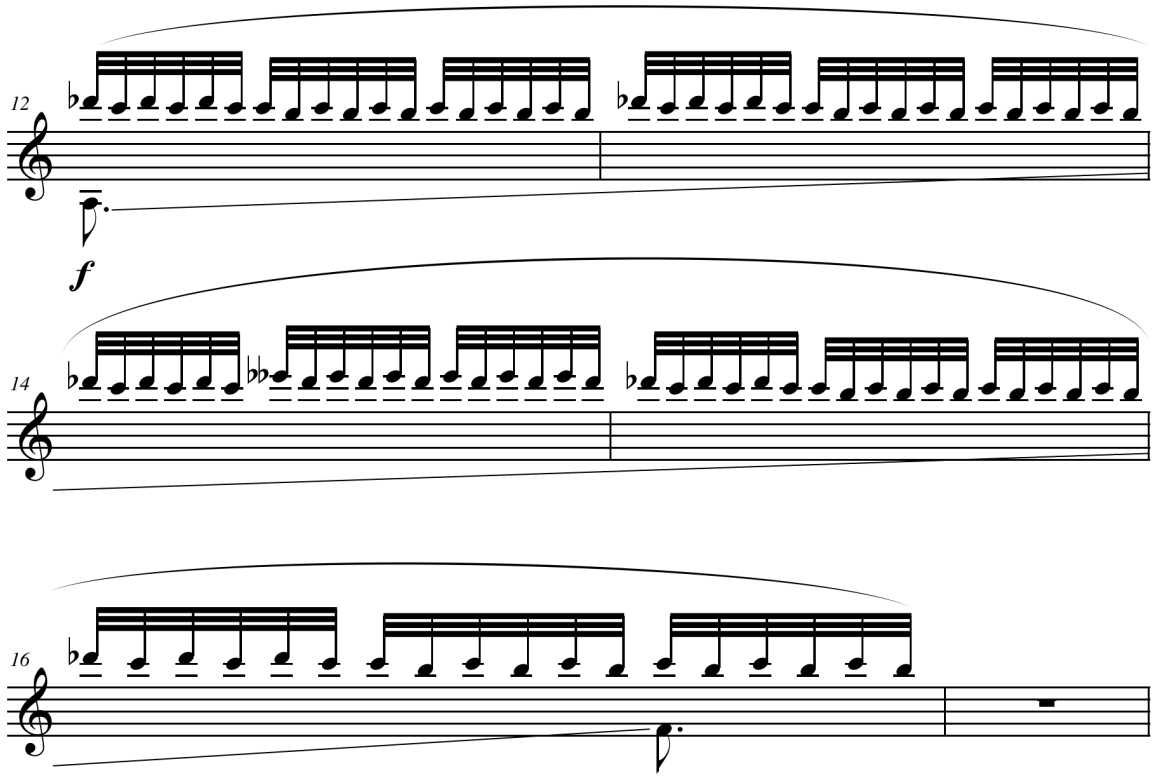


Etude # 38 takes the opposite approach: singing a drone while performing a moving melodic line on the saxophone. The challenges are similar to the previous etude though now the performer must begin the sound at the same time. Shifting octaves should not be necessary for any voice types. The melodic line is simple enough so as not to bog the performer down with additional requirements.

Etude # 39 (Obvious Evening) is an inversion of the title of the work Mysterious Morning by Fuminori Tanada. This etude borrows techniques that Tanada uses in his work, especially the vocalizing technique. This technique requires a gradually ascending (or descending) sung pitch while performing oscillating pitches on the instrument. See Figure 21. It should be noted that while exact sung pitches are indicated, these are merely suggestions. Low pitches should be sung as low as is comfortable and gradually rise. Higher pitches should be sung in a relatively comfortable range and then descend.

Figure 21

Etude # 39: Vocalizing (mm. 12-17)



The final etude of this unit is much easier when compared to the difficulty number 40. In this case, the performer sings and plays the instrument in parallel thirds. Higher female voices might encounter difficulty with the low range and should take the melodic line up an octave (inverting the thirds into sixths). Thus ends Pushing Boundaries, simply and quietly on a major third.

Chapter 4

CONCLUSIONS AND CLOSING REMARKS

The composition of *Pushing Boundaries: 40 Etudes on Extended Techniques*, was an absolute joy. Writings these works not only challenged the author/composer, but also added a newfound appreciation for the compositional technique. The author/composer hopes that these etudes provide newcomers to extended techniques with a logical and progressive approach to these wonderful sounds and methods.

These etudes are not by any means exhaustive. The performer is encouraged to seek out other works or methods that exploits these sounds. Multiple approaches to these ideas will only serve his or her benefit.

The author cannot overstate the importance of slow, purposeful practice when attempting these etudes. Because these are not concert etudes, the performer should not feel restricted to any timelines. The development of these techniques is a slow process and the performer should relish in the joy of slow progression with a goal of mastery.

The author likens these etudes to a playground. The playground is the place where are child learns how to use his or her body in conjunction with large and fanciful toys (jungle gyms, monkey bars, swing sets, slides, etc…). The child learns how to use each toy, allowing for a sense of accomplishment. Eventually, the child is required to leave the boundaries of the playground for the "real world." In the case of *Pushing Boundaries*, the real world is actual repertoire.

Ultimately, the success or failure of these works is dependent on their usefulness. As this type of etude book is not yet widely available to young saxophonists, it is the author's hope that a niche is filled. It is with extreme happiness and hopefulness that the author humbly introduces these works into the pedagogy of the saxophone.

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APPENDIX A

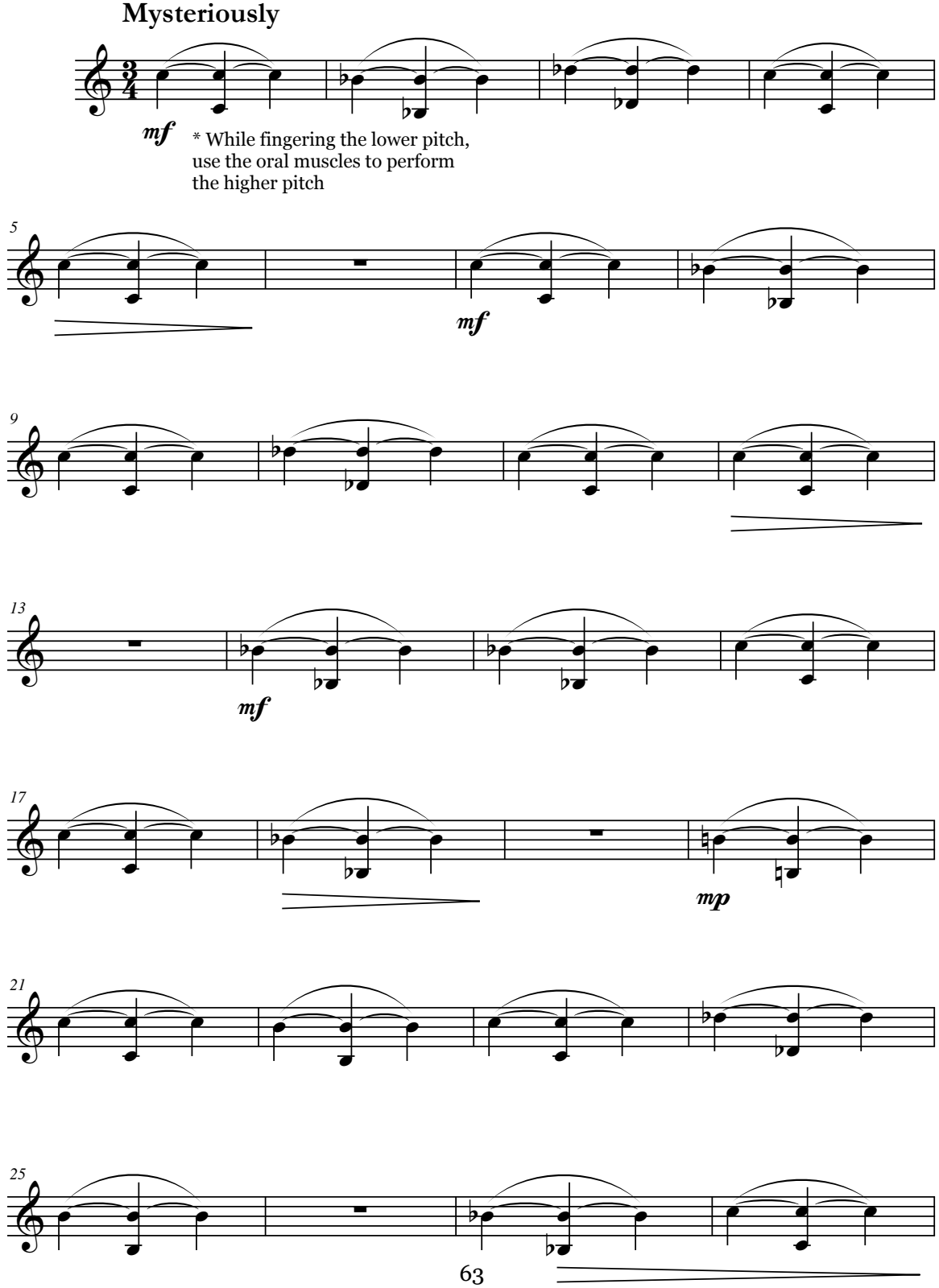
SAXOPHONE FINGERING CHART

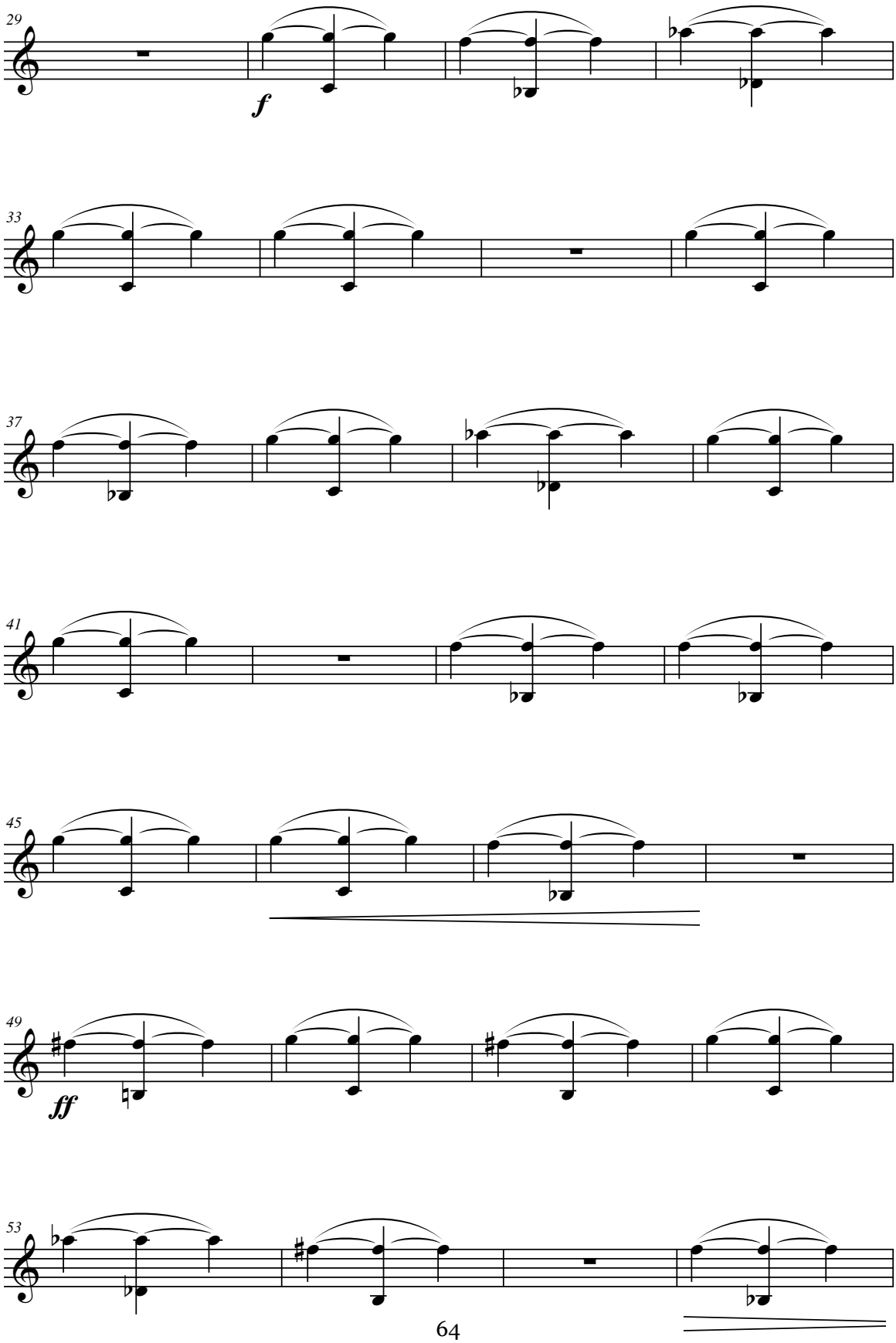
APPENDIX B

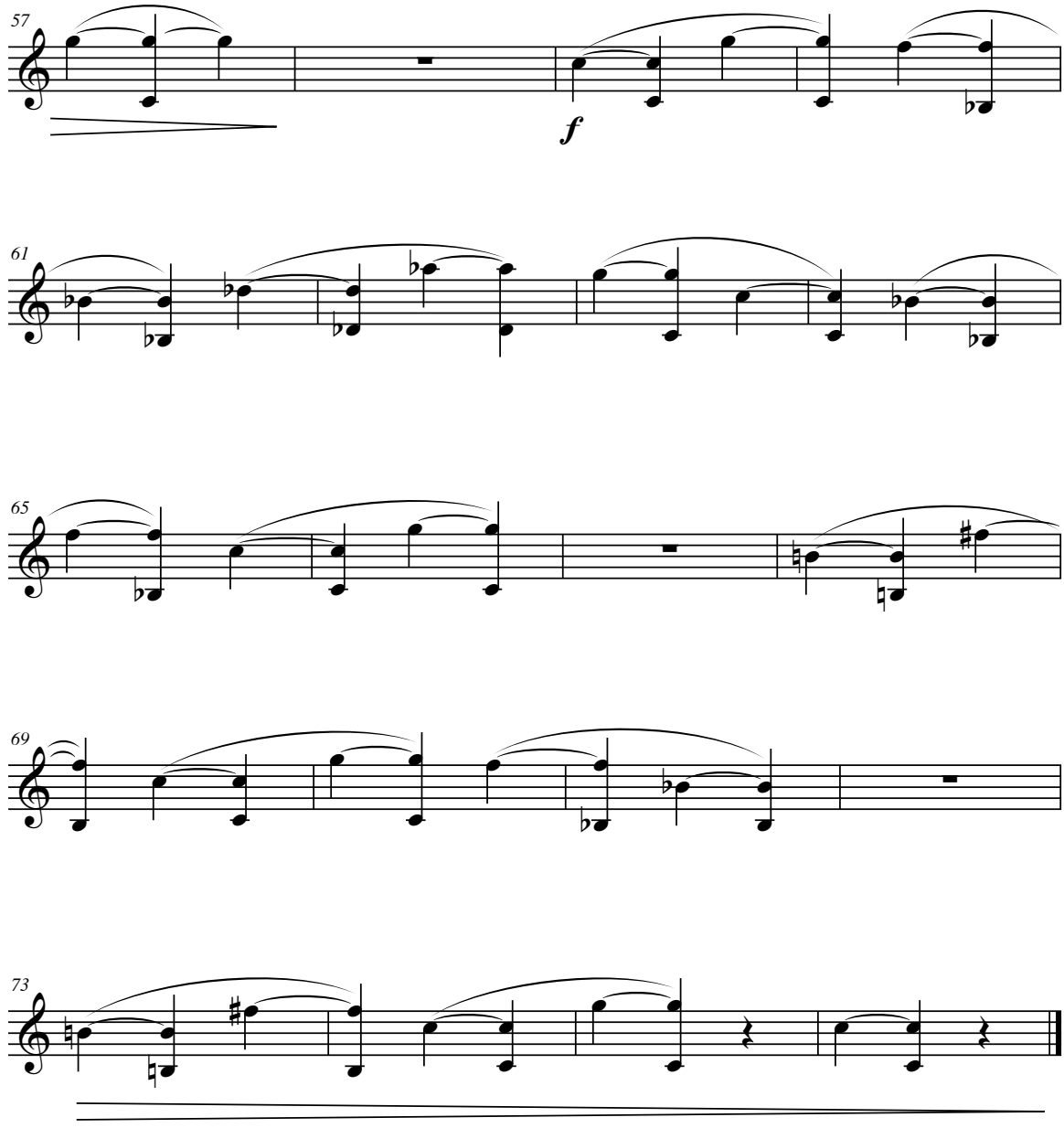
PUSHING BOUNDARIES: FORTY ETUDES IN EXTENDED TECHNIQUES

ETUDE # 1: Voicing

Mastery of the First and Second Overtones



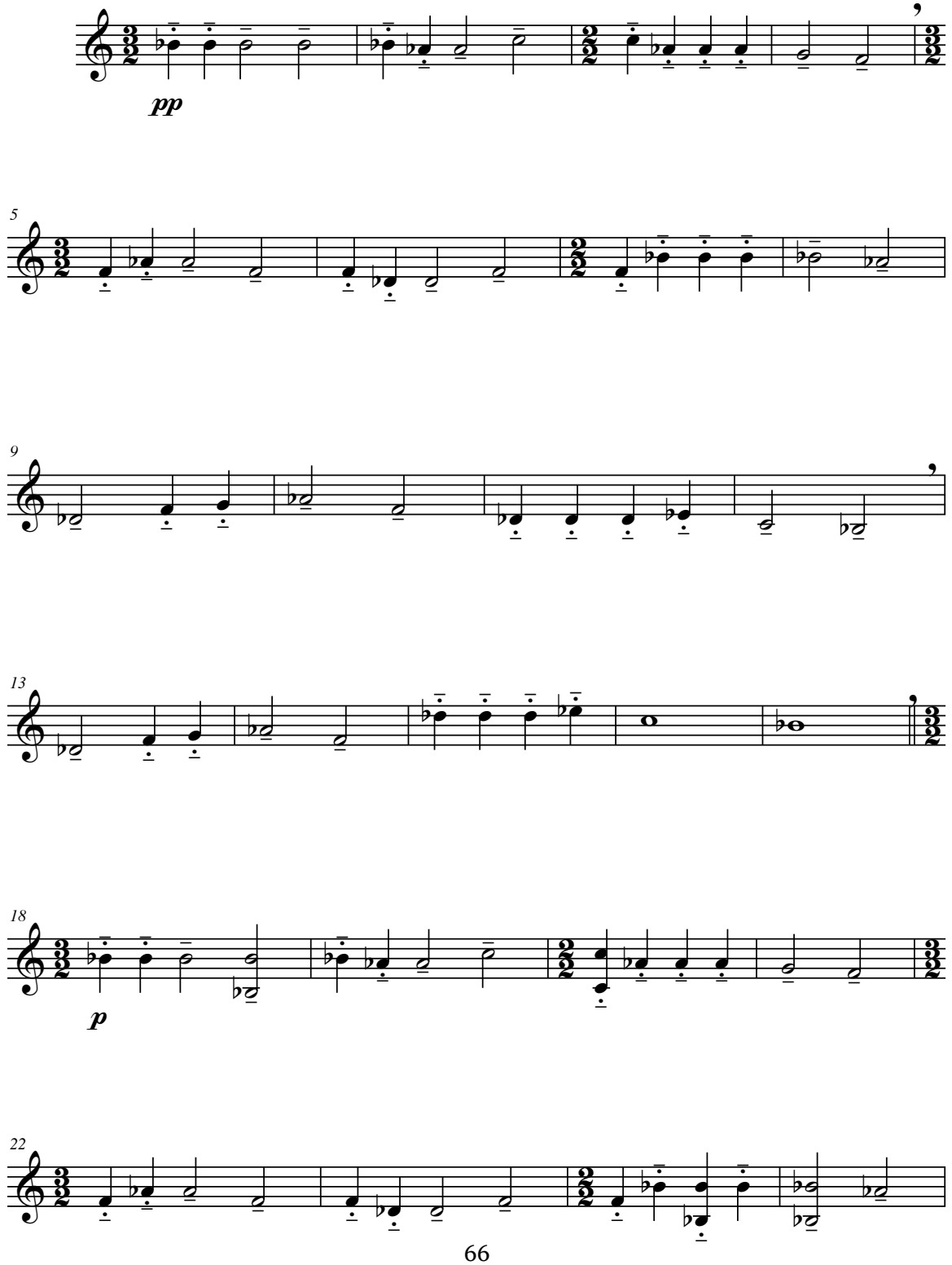

29
f
33
37
41
45
49
ff
53

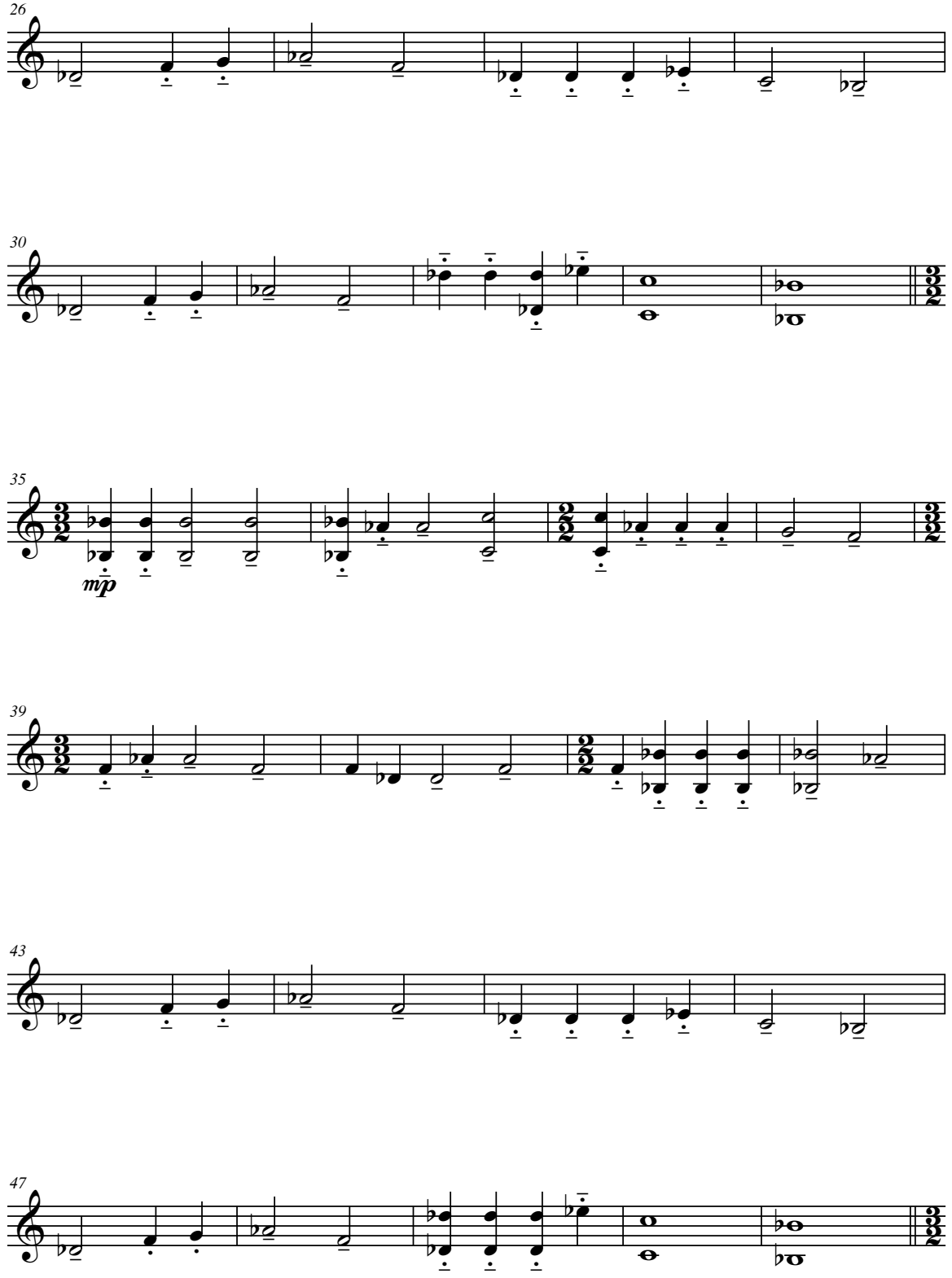

57
f
61
65
69
73

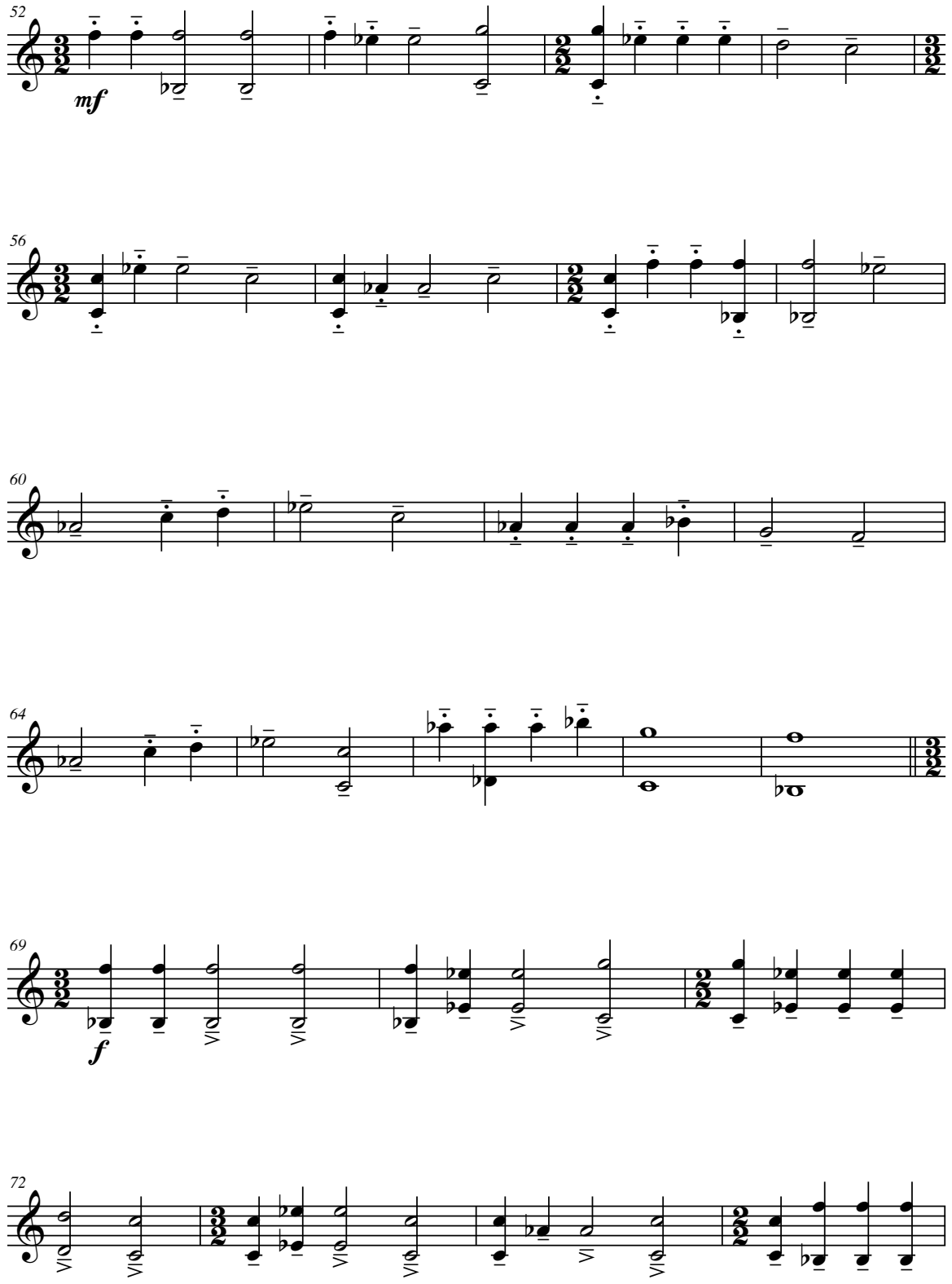
ETUDE # 2: Voicing (Czech)

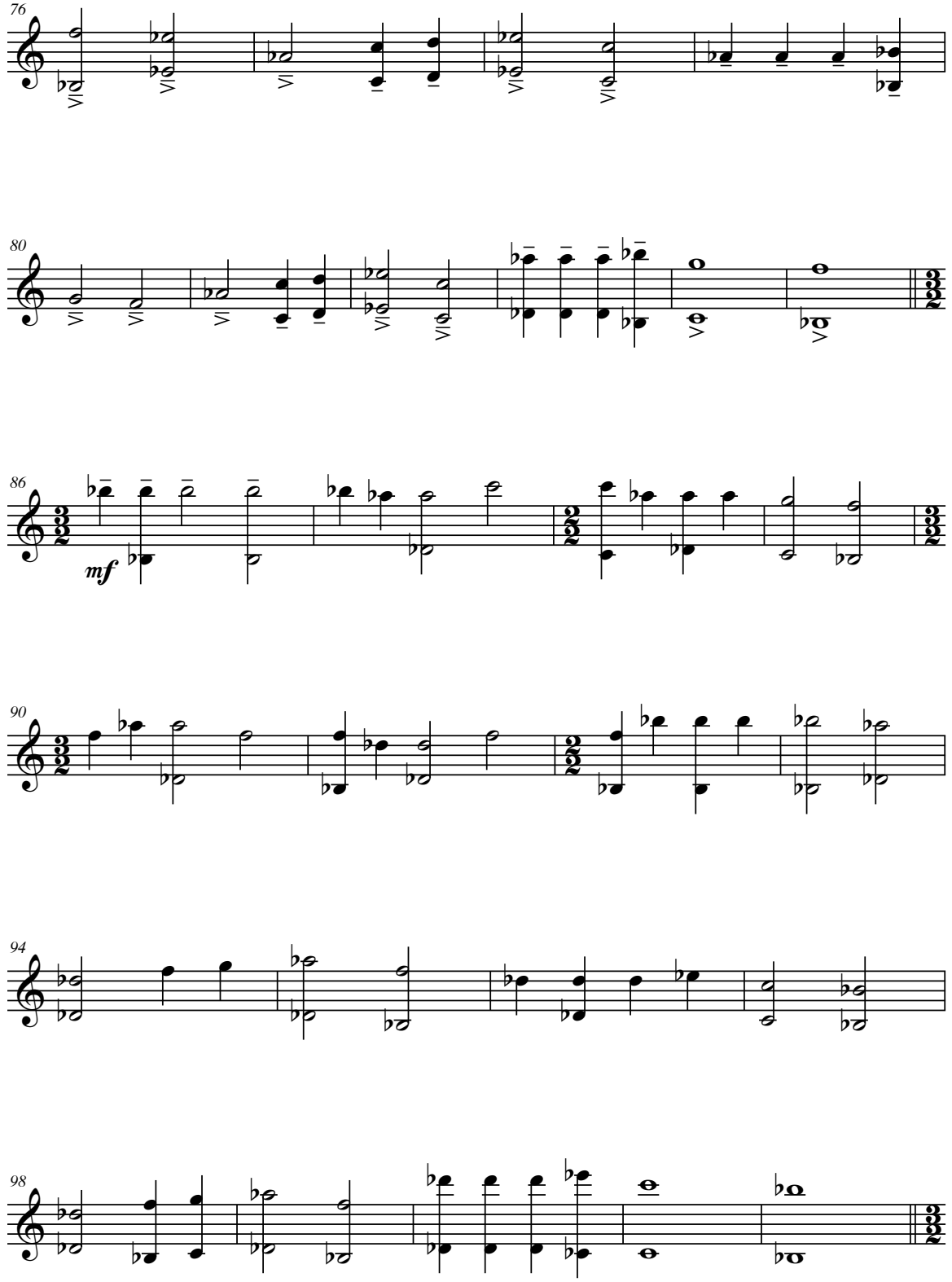
Multiple and Mixing Overtones Melodically

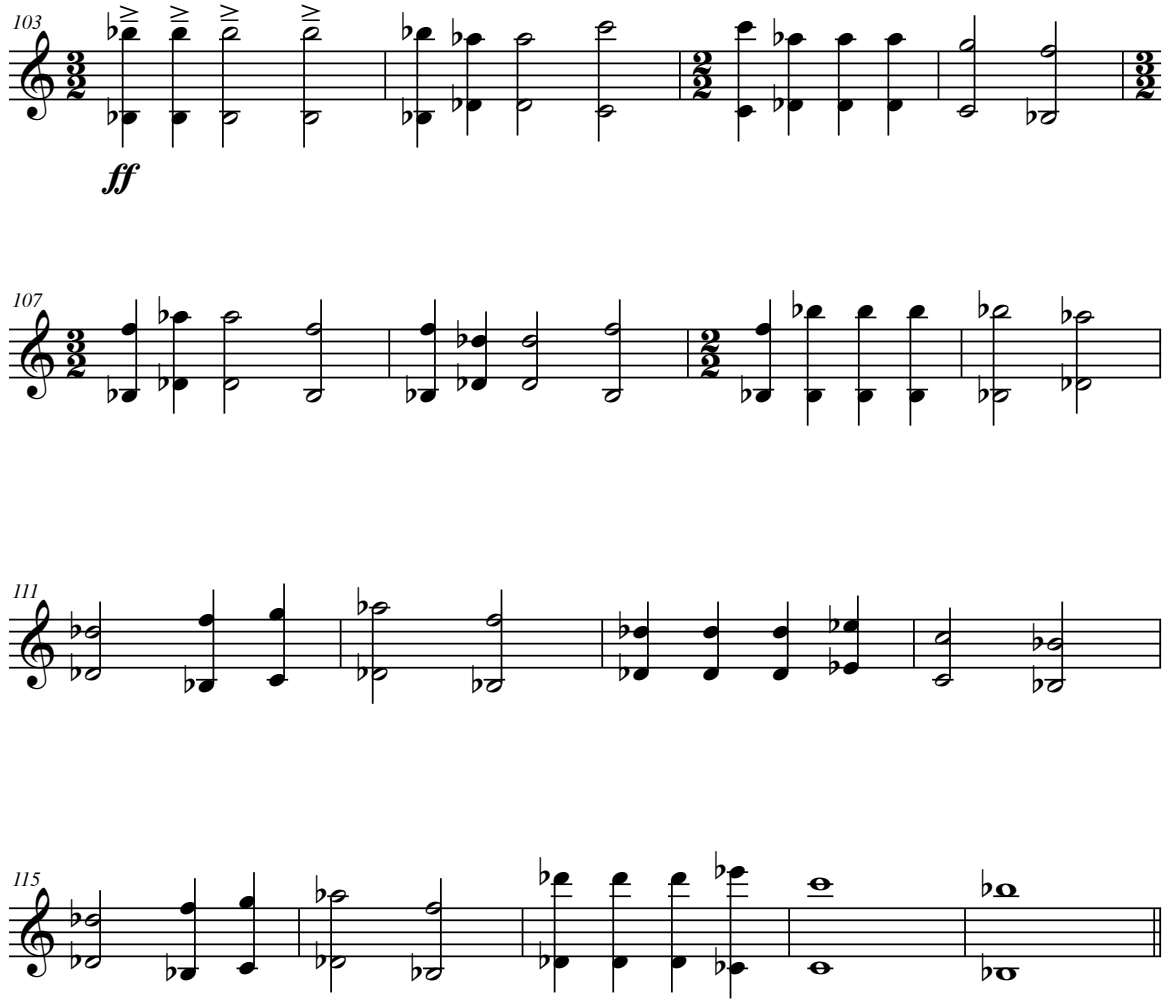
Triumphant




26
30
35
mp
39
43
47

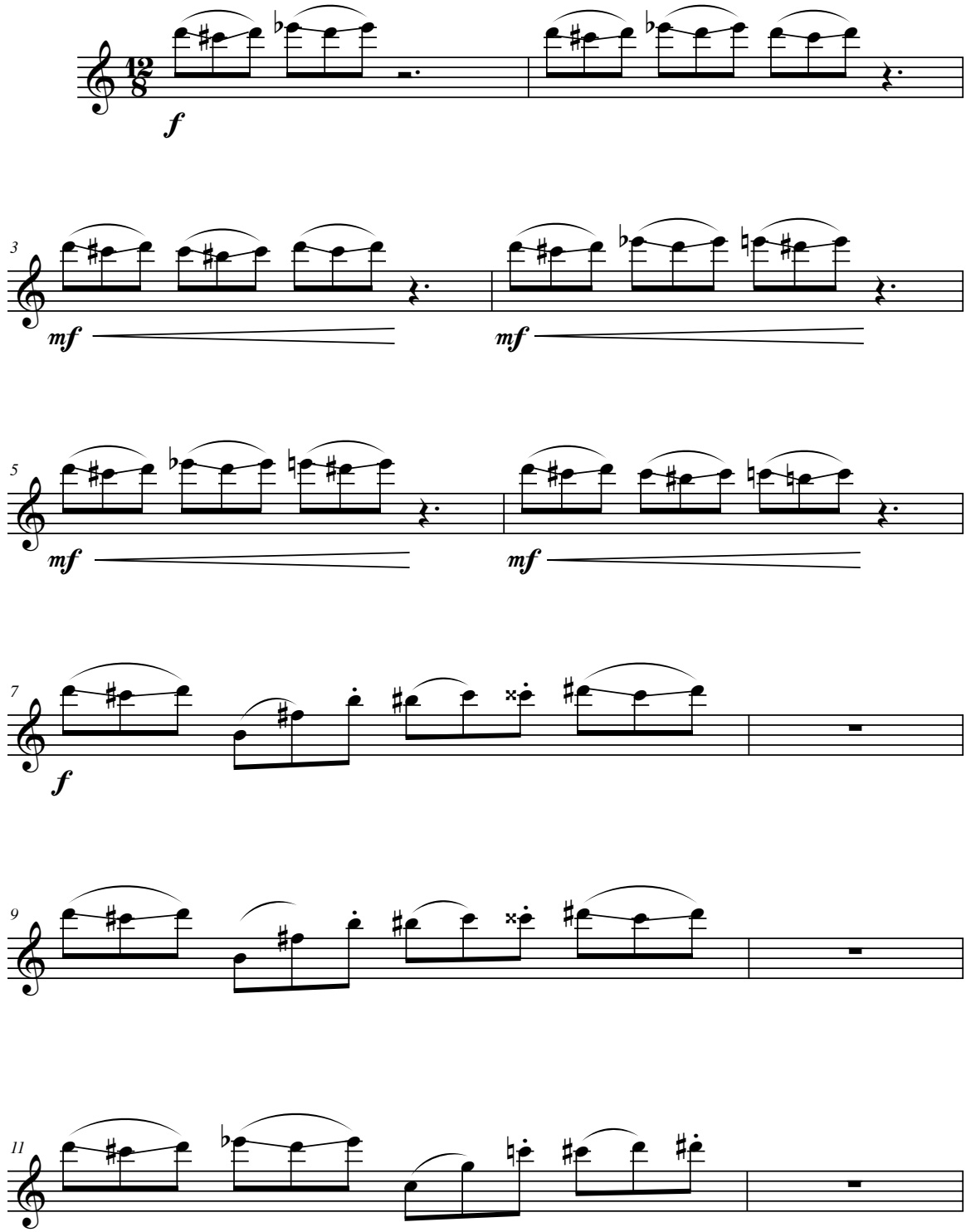

52
mf
56
60
64
69
f
72

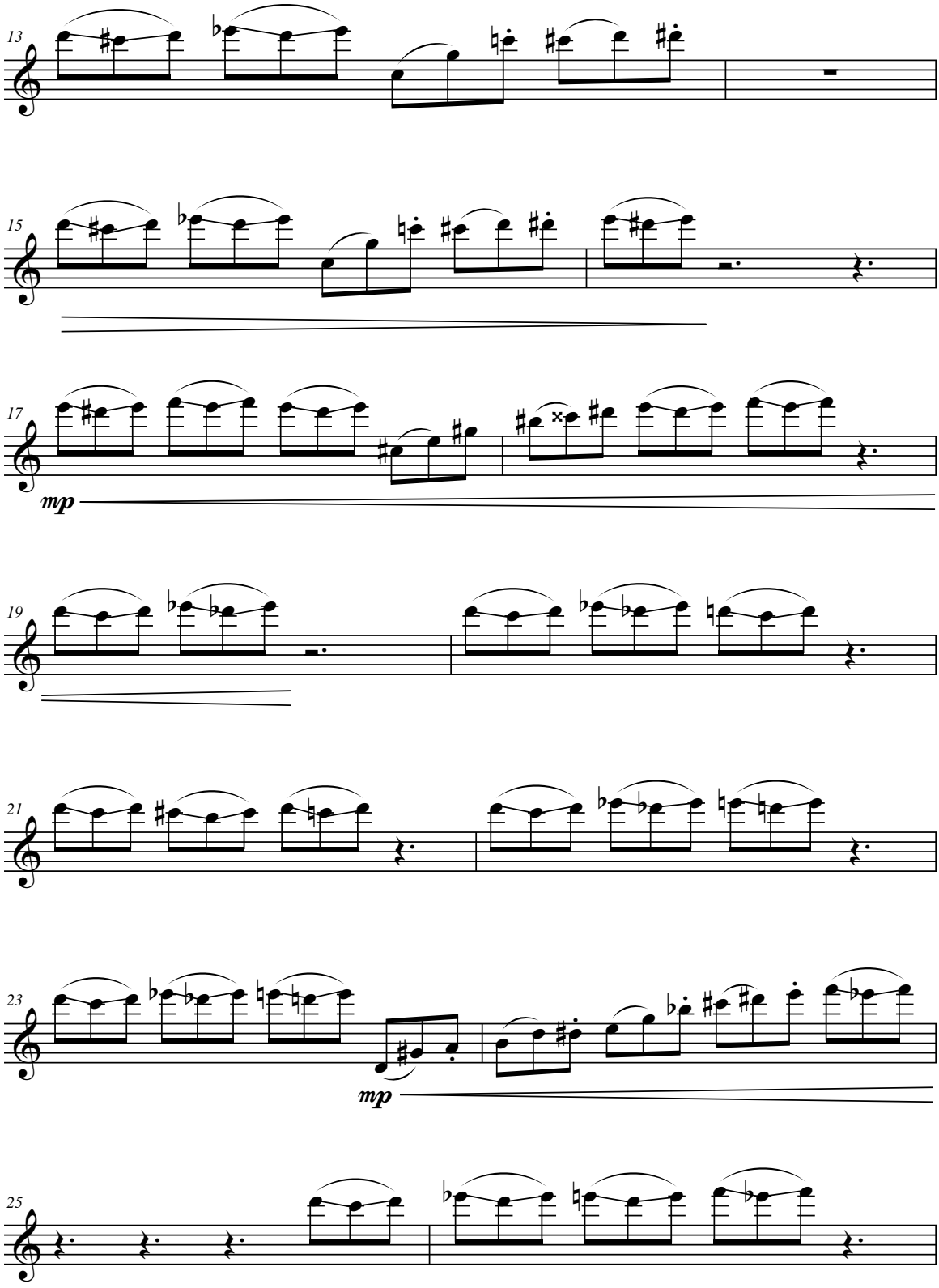

76
80
86
mf
90
94
98

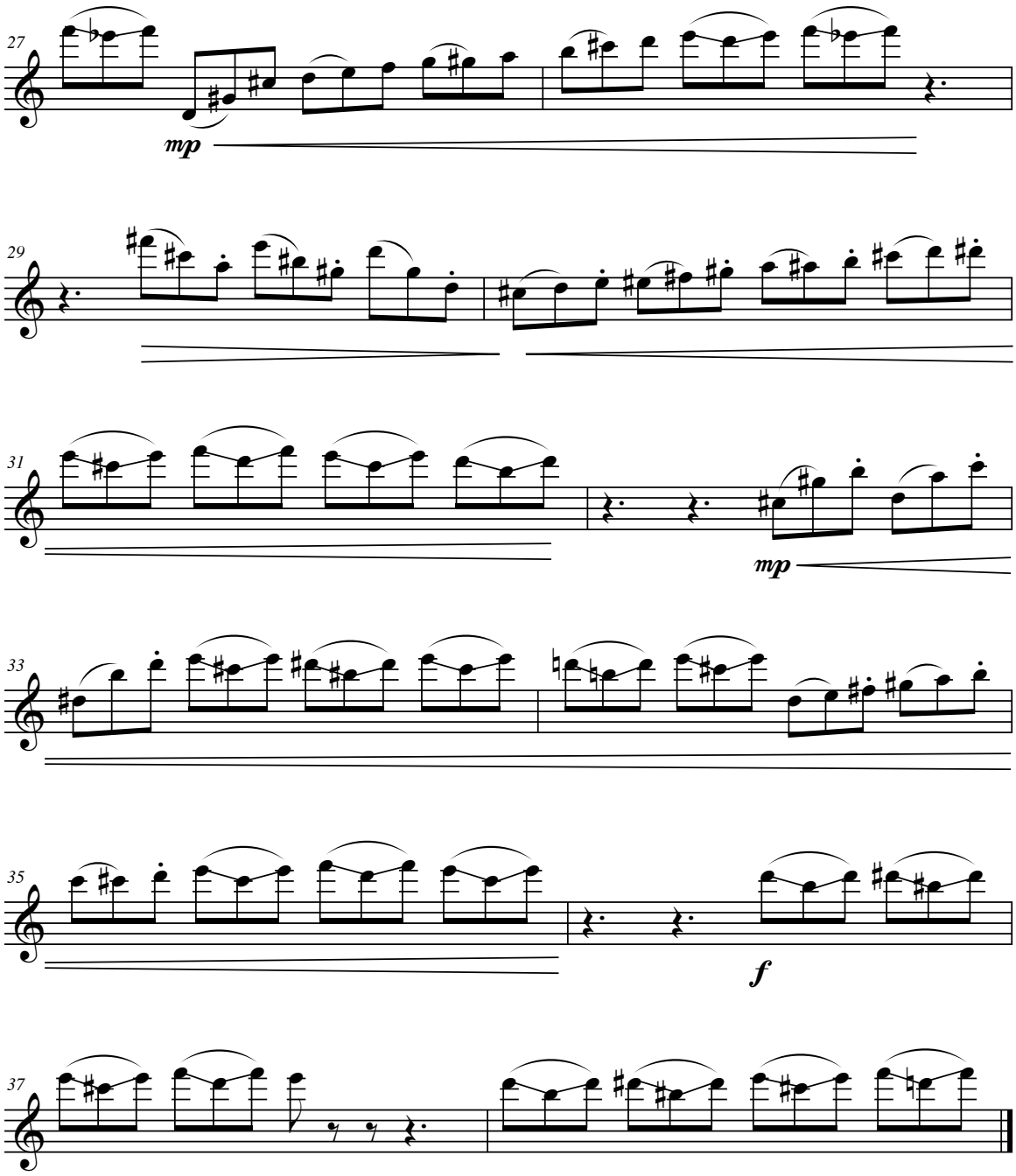

103
ff
107
111
115

ETUDE # 3: Voicing

Pitch Bends Not Exceeding a Minor Third

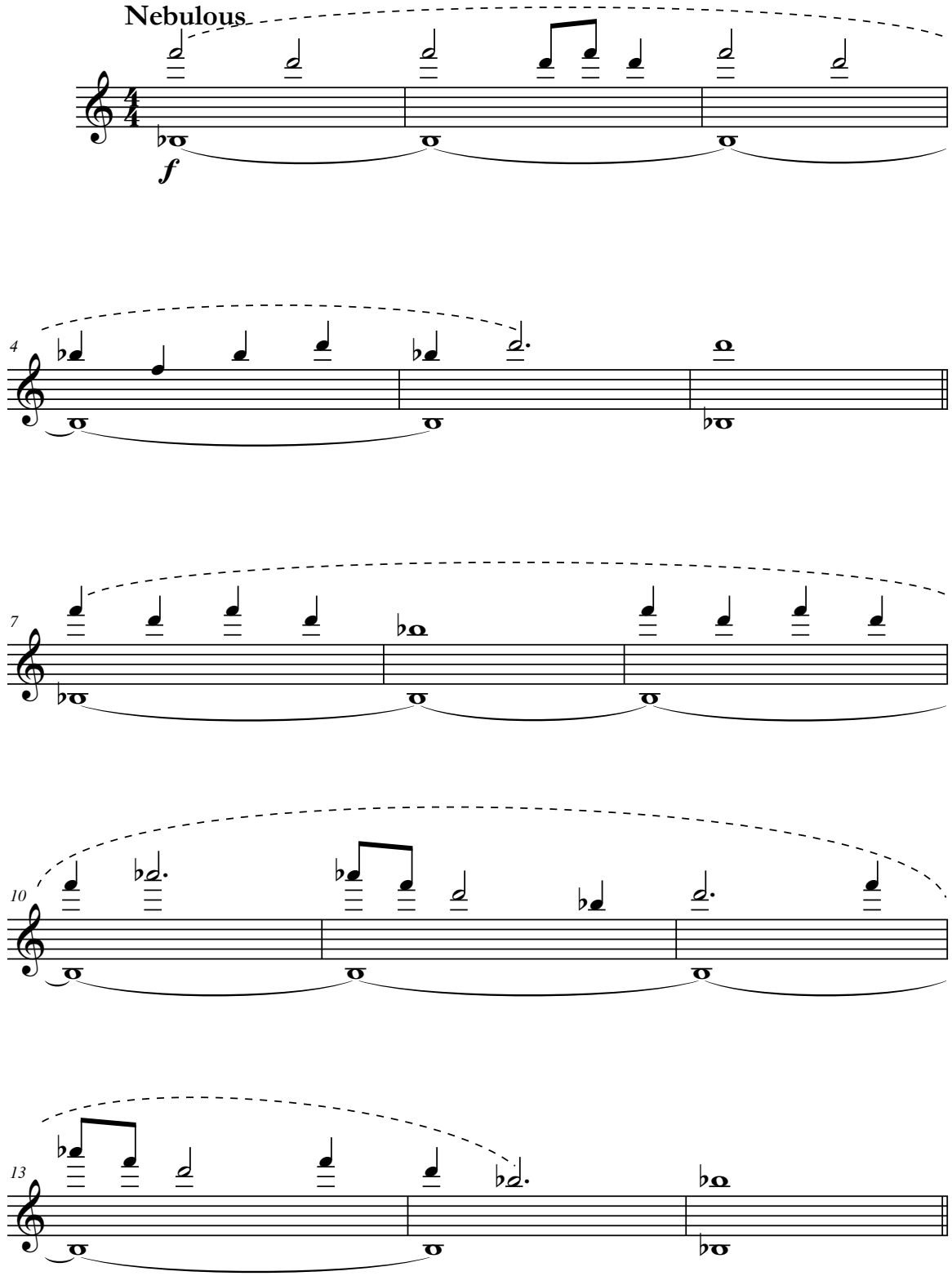


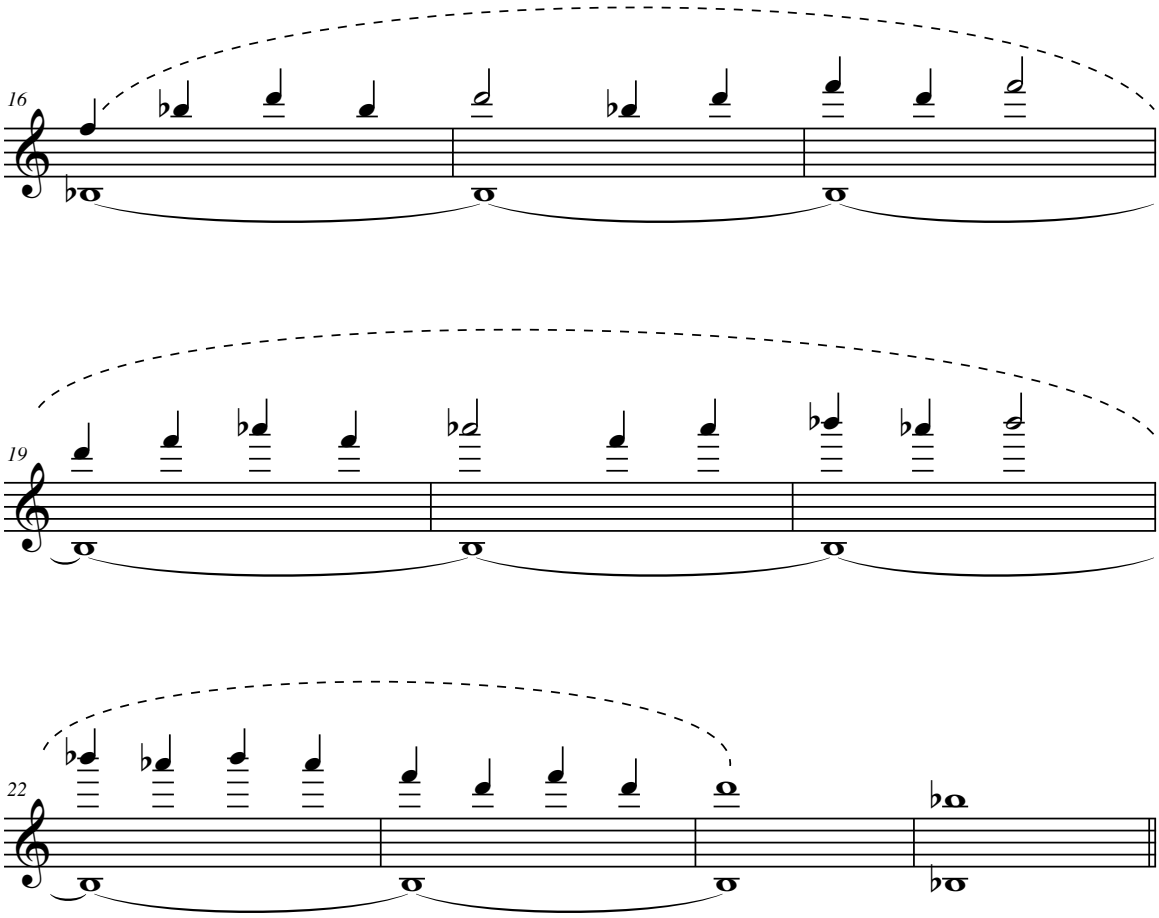

13
15
17
mp
19
21
23
mp
25


27
mp
29
31
mp
33
35
f
37

ETUDE # 4: Voicing

Voicing as a Means to Achieve Altissimo

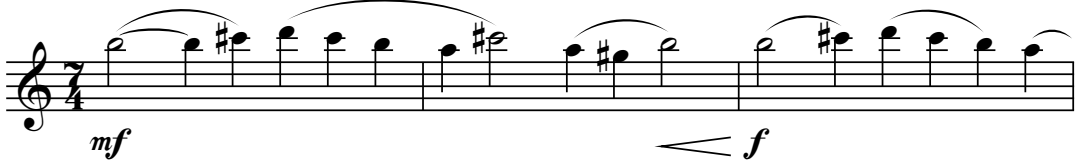



16
19
22

ETUDE # 5: Beginning Altissimo

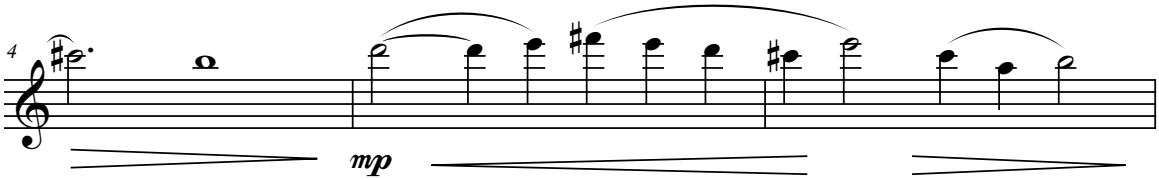
...for the performance of altissimo in slow, melodic passages.

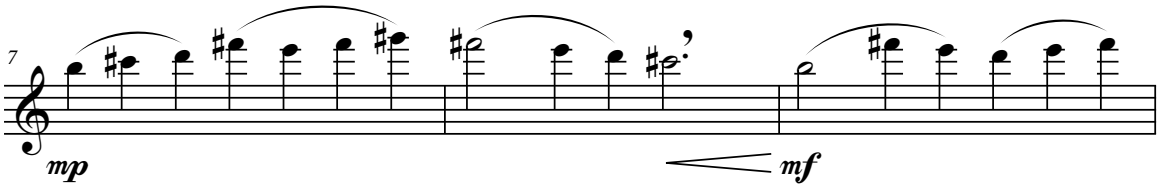
Relaxed, expressive but restrained

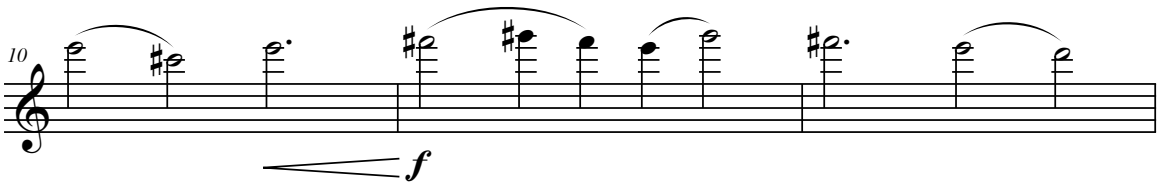


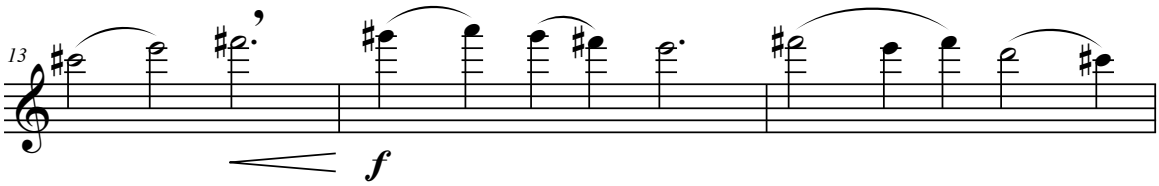
8*
x 8*
2 x
3 Ta 2

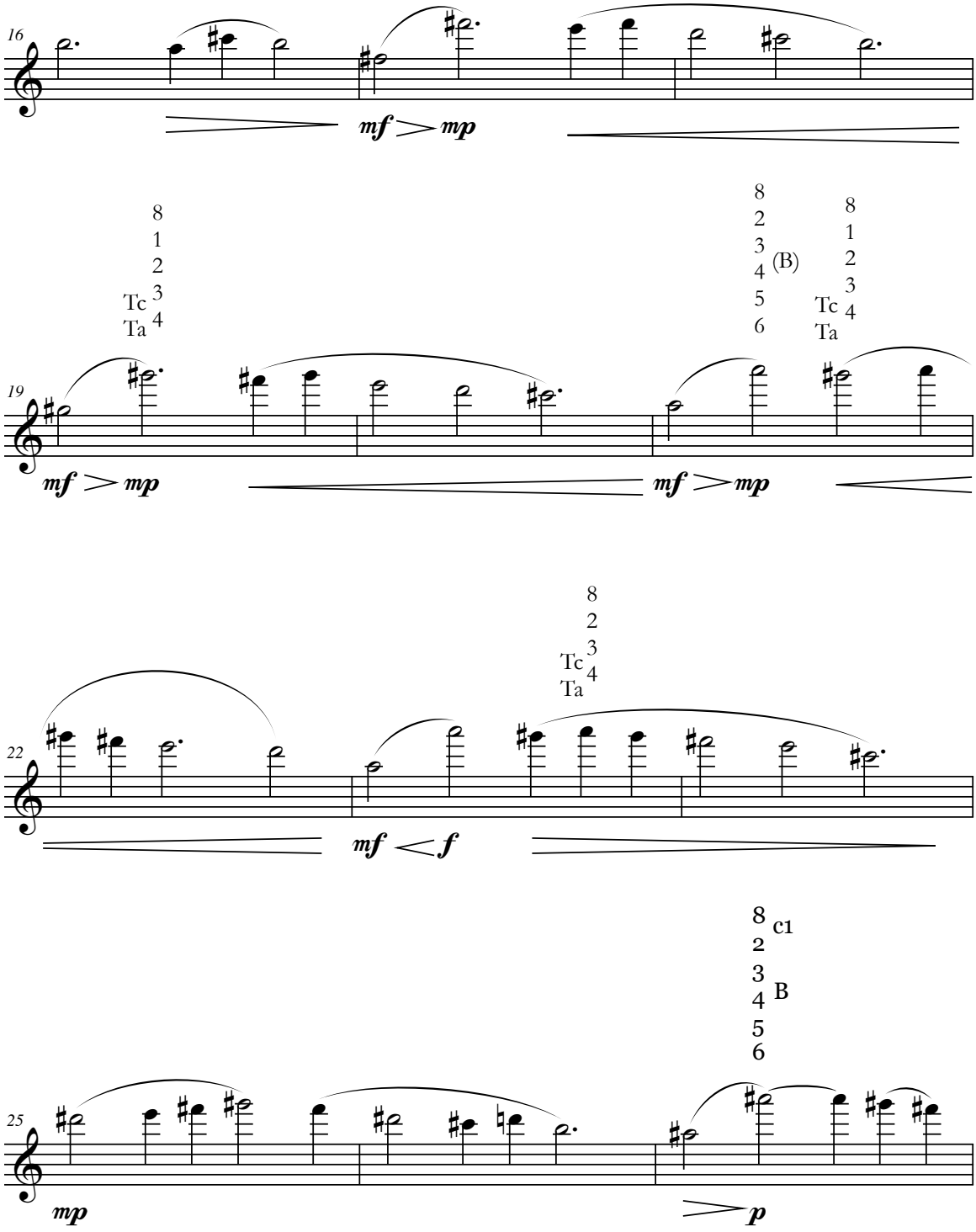
*For the purposes of this etude, all E 6's and F-sharp 6's should be performed using the auxiliary key.

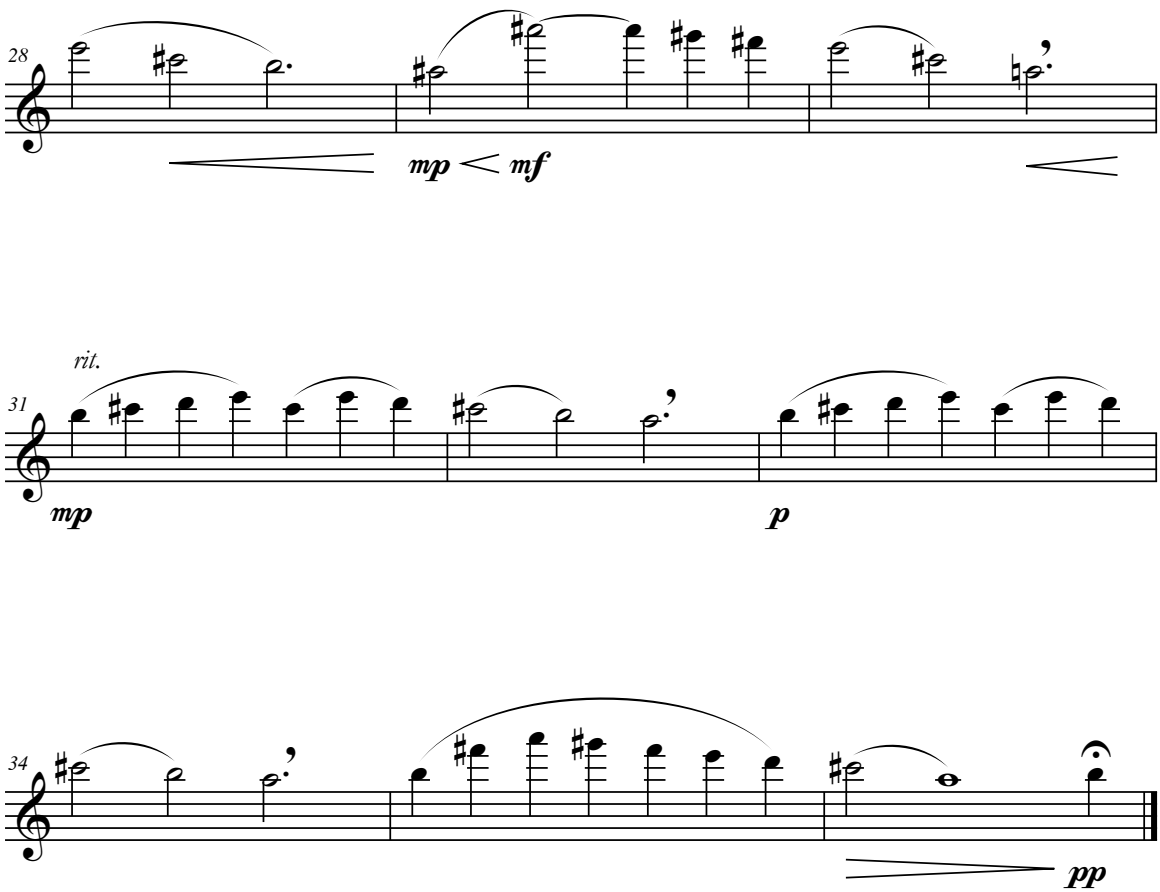






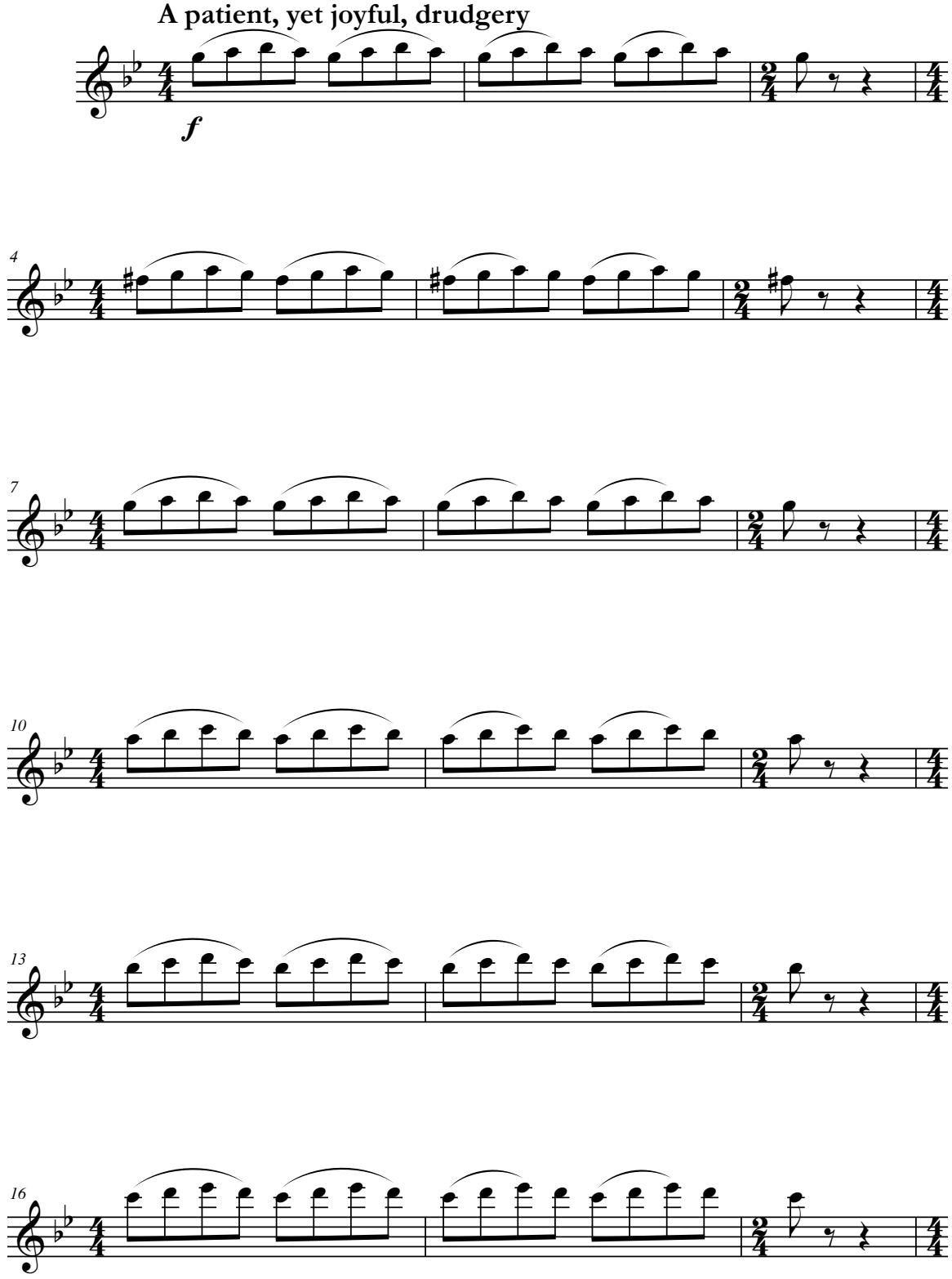


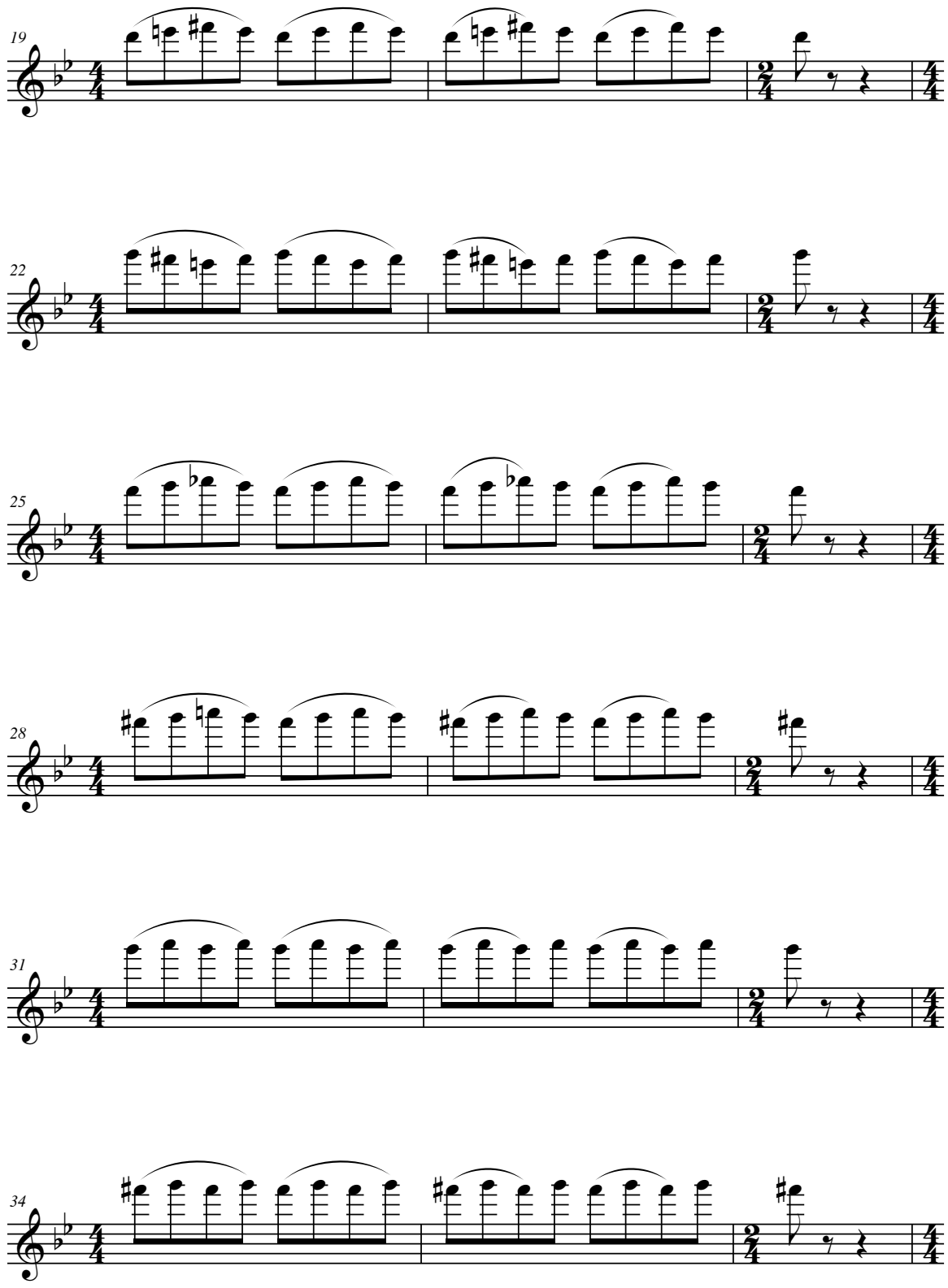

16
mf mp
19
8
1
2
3
Tc
Ta 4
mf mp
8
2
3
4 (B)
5
6
8
1
2
3
Tc
Ta 4
mf mp
22
8
2
3
Tc
Ta 4
mf f
8 c1
2
3
4 B
5
6
25
mp
p

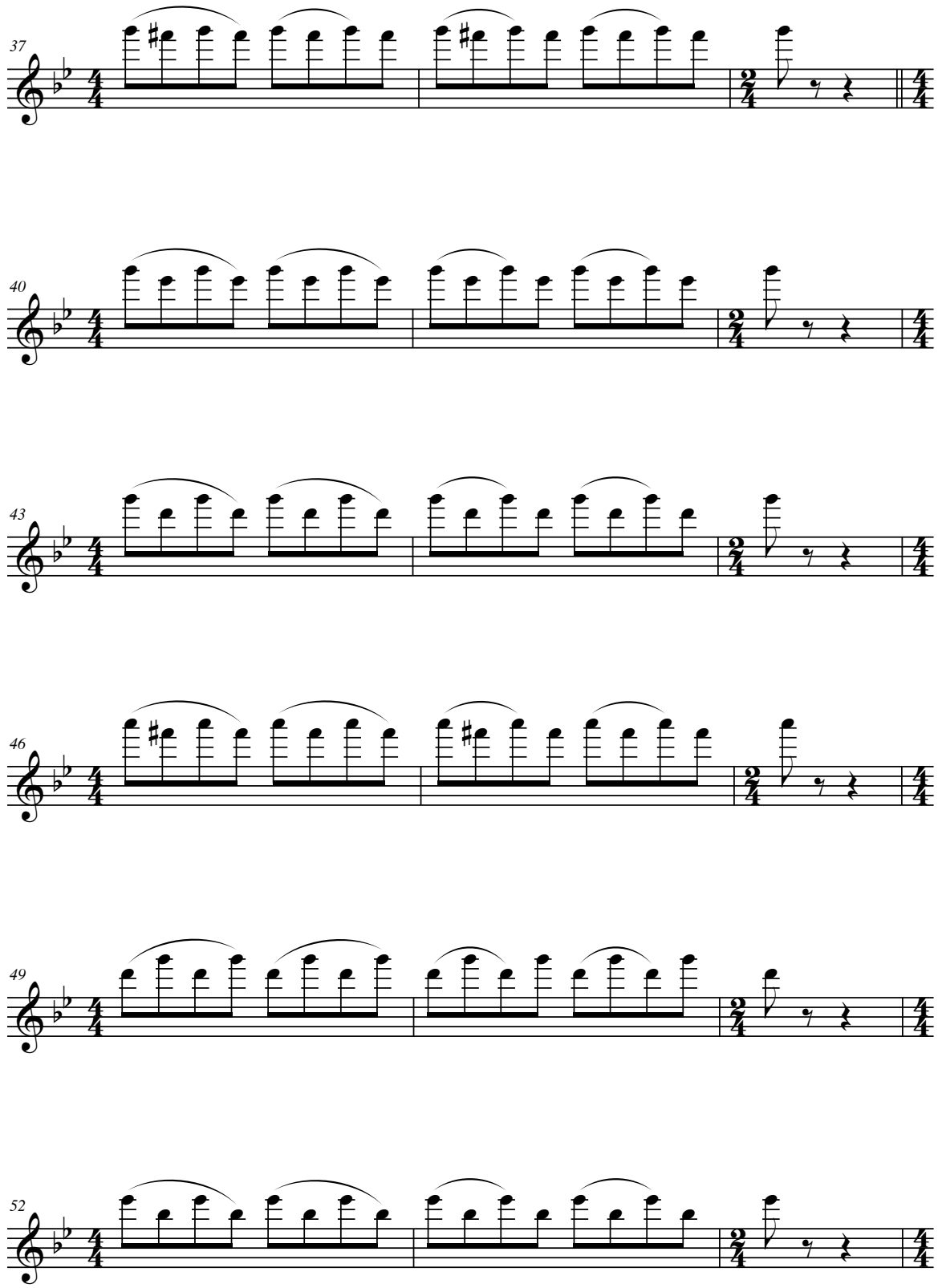

28
mp < mf
rit.
31
mp
p
34
pp

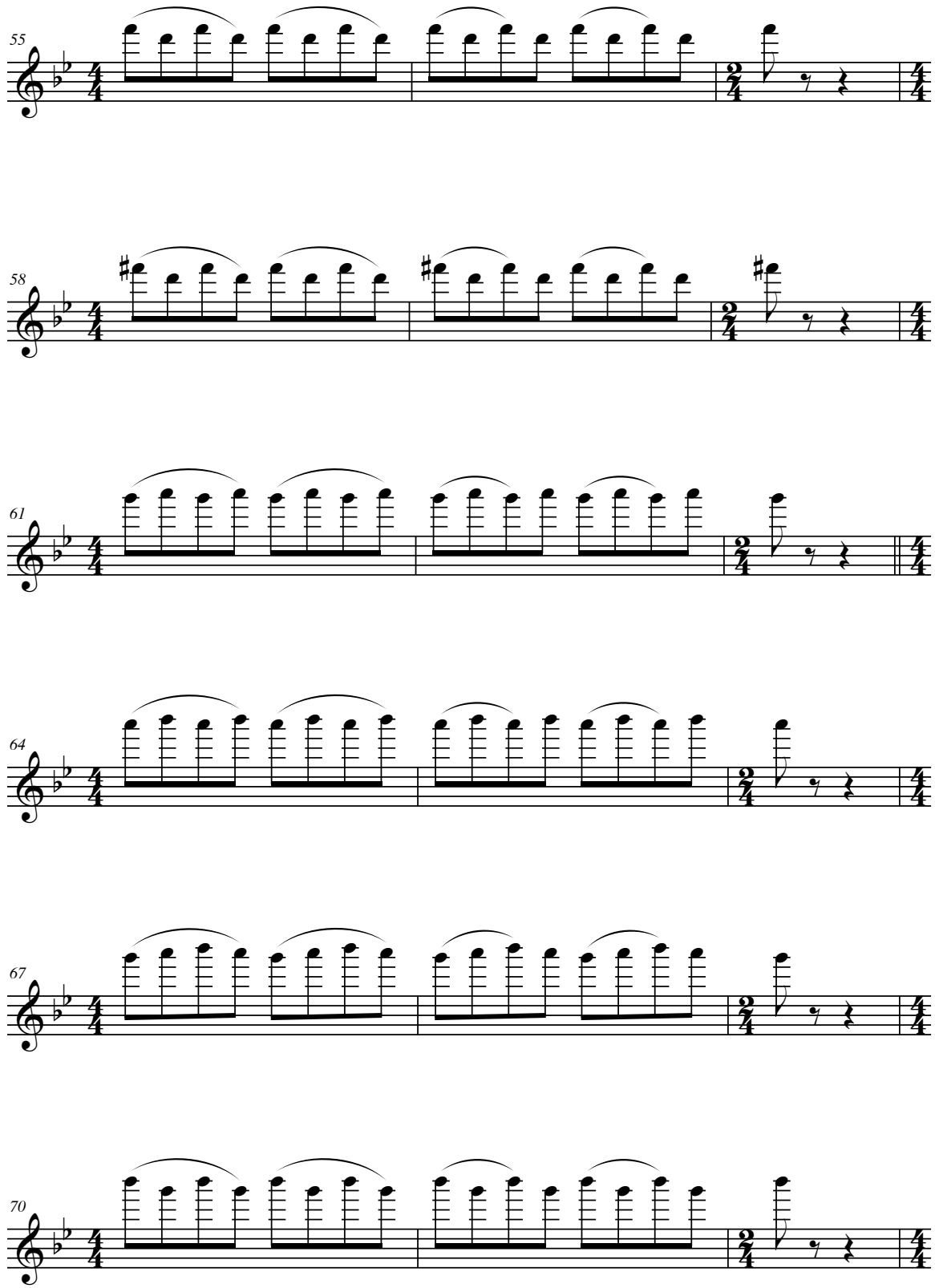
ETUDE # 6: Beginning Altissimo

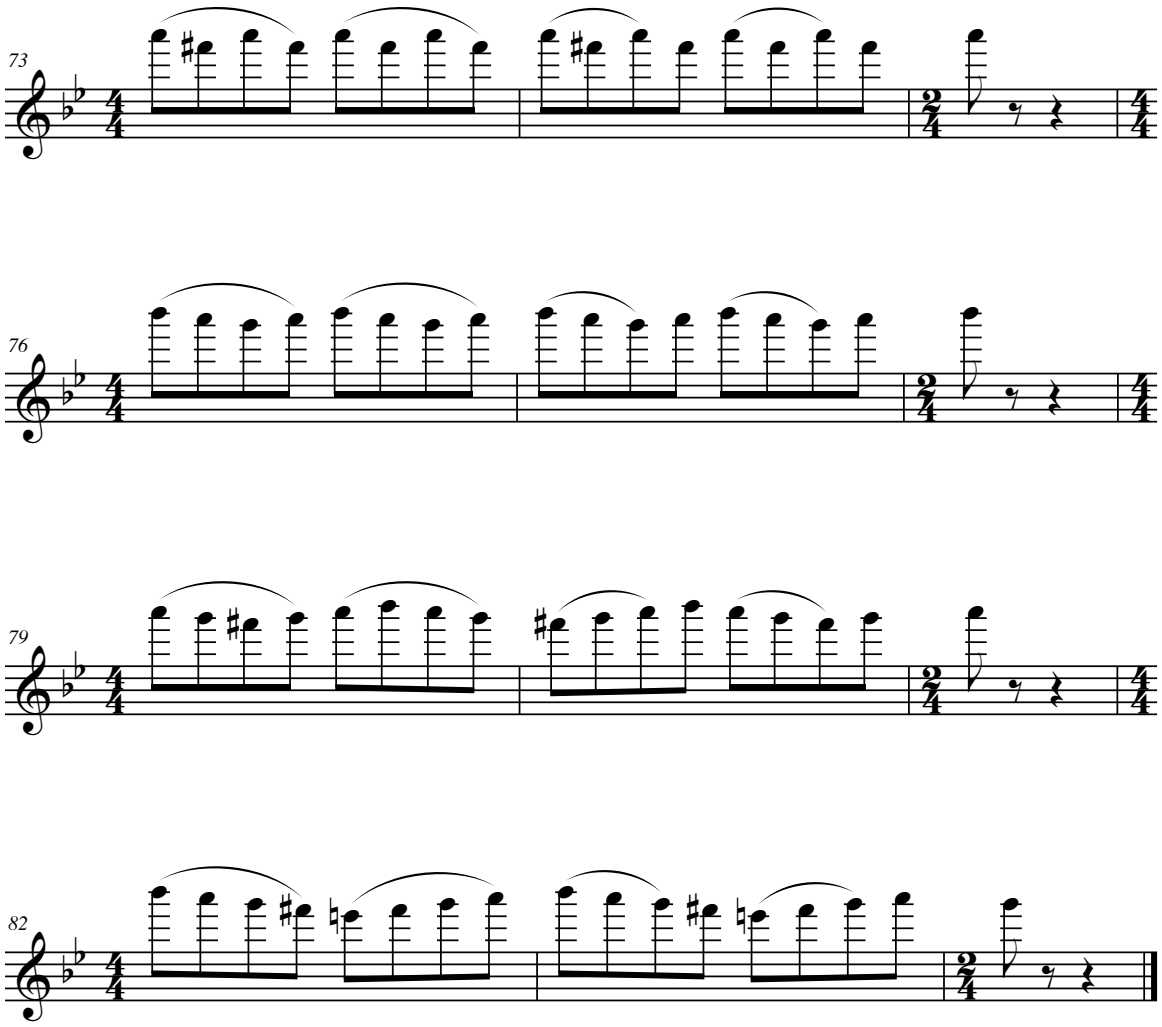
Repetitive, Conjunct Passages




19
22
25
28
31
34

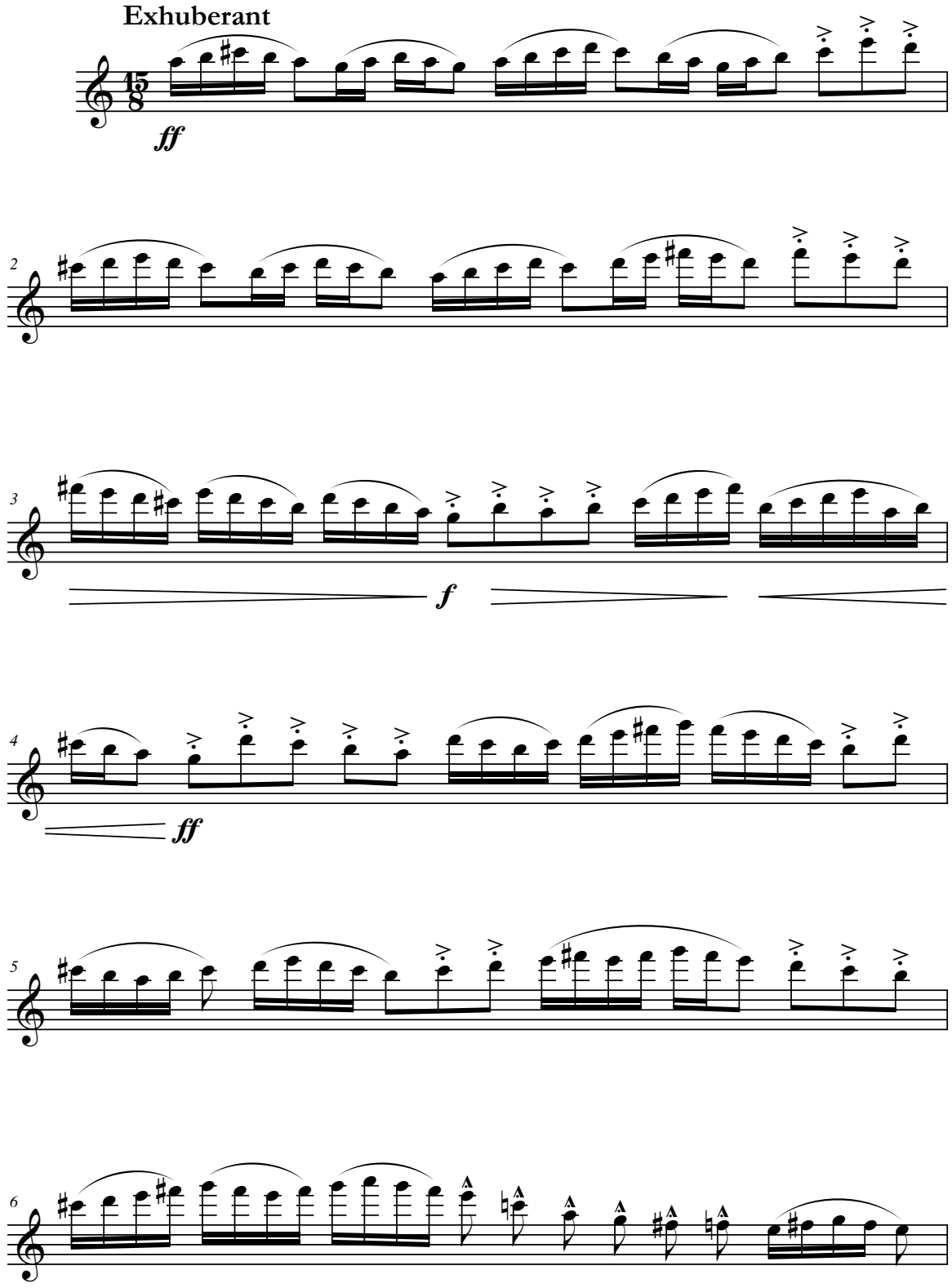

37
40
43
46
49
52

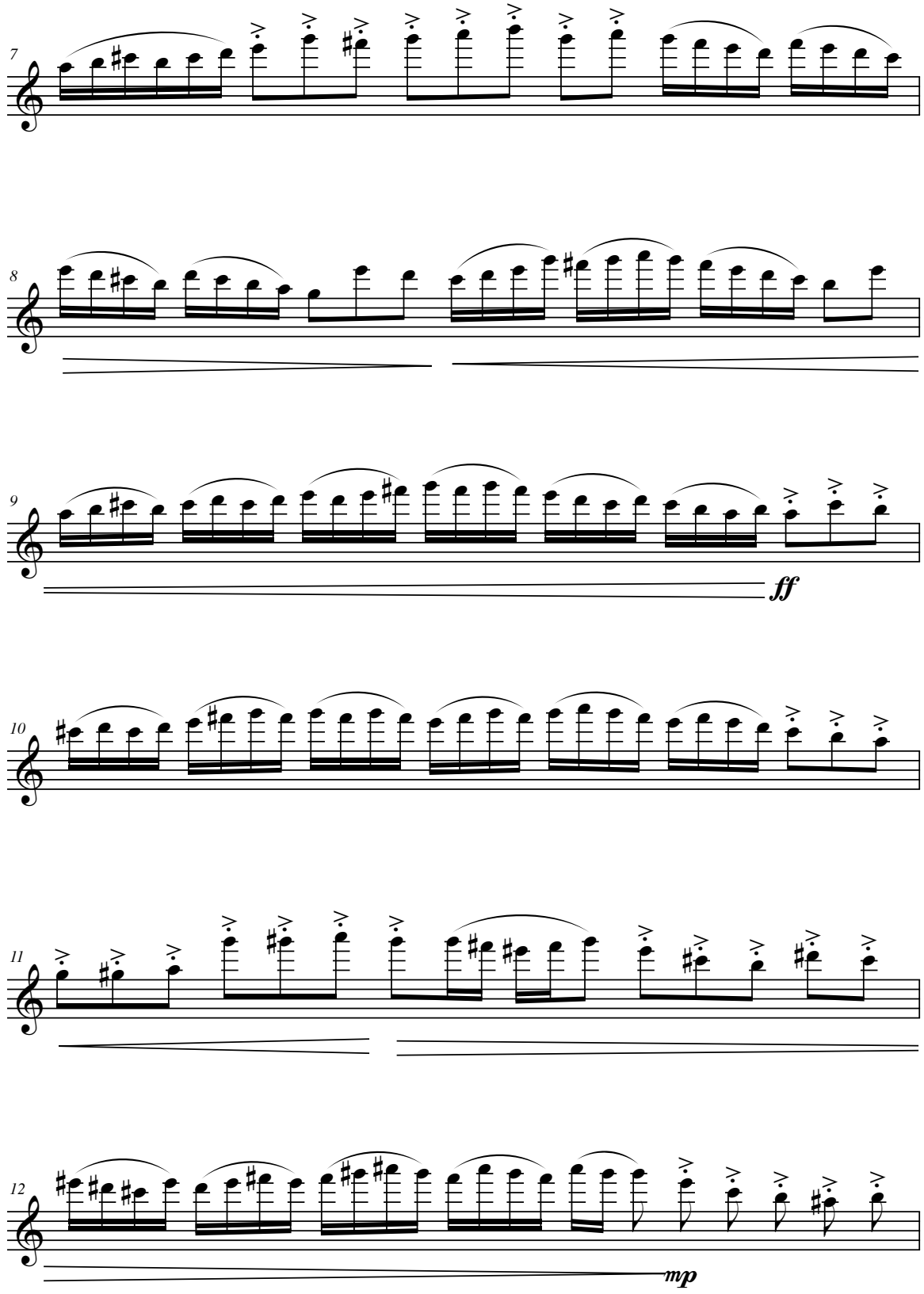

55
58
61
64
67
70

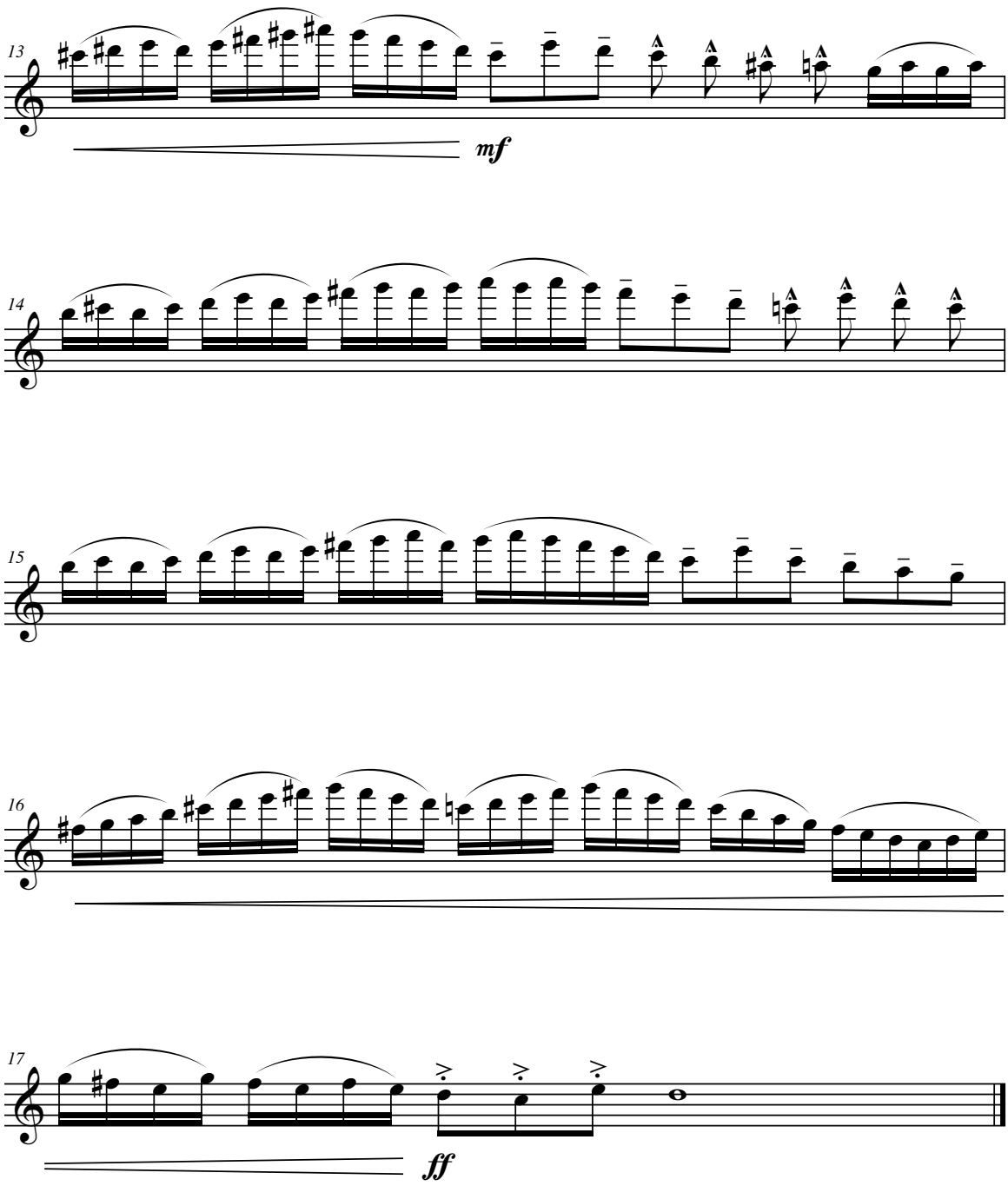

73
76
79
82

ETUDE # 7: Beginning Altissimo

Rapid, Conjunct Passages

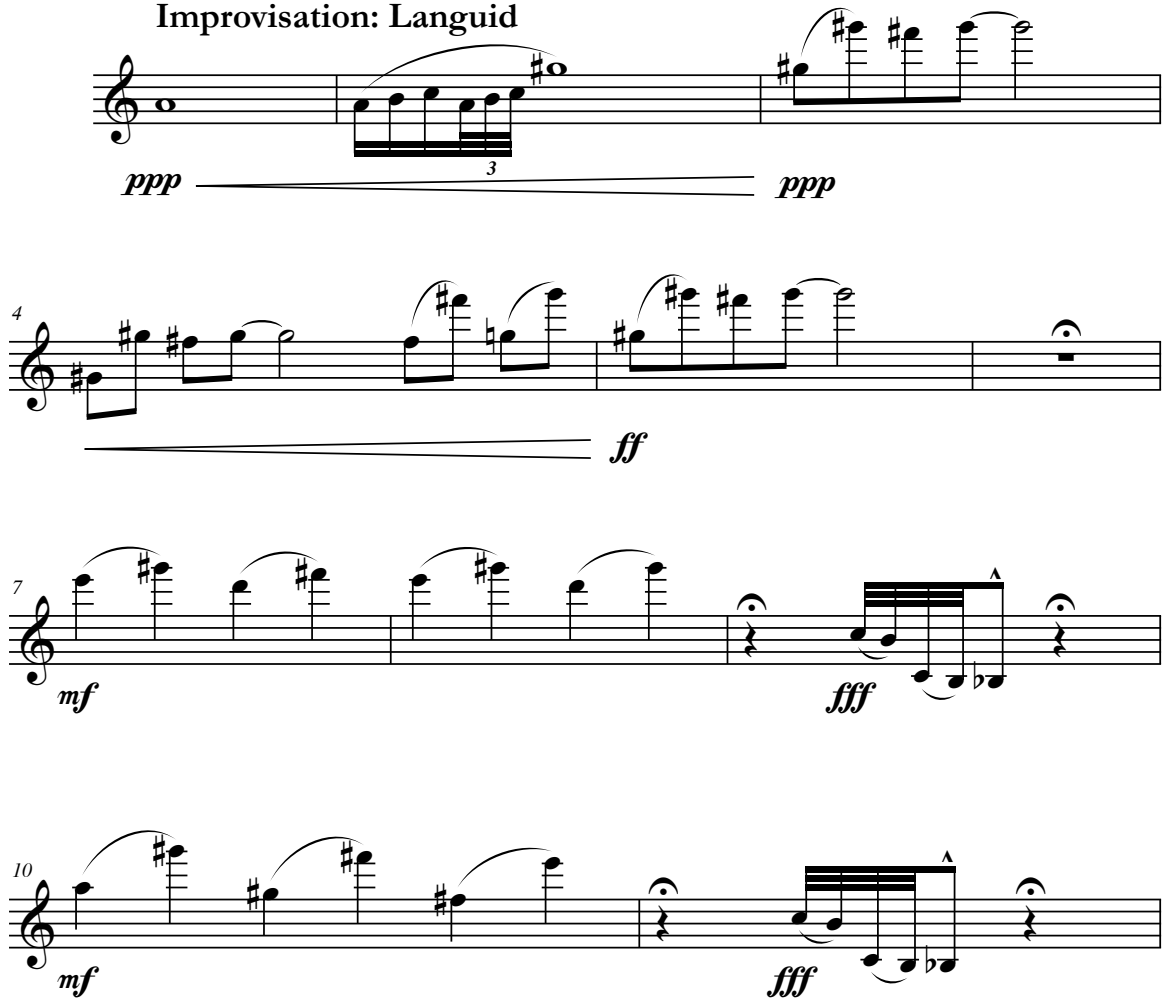



7
8
9
ff
10
11
12
mp

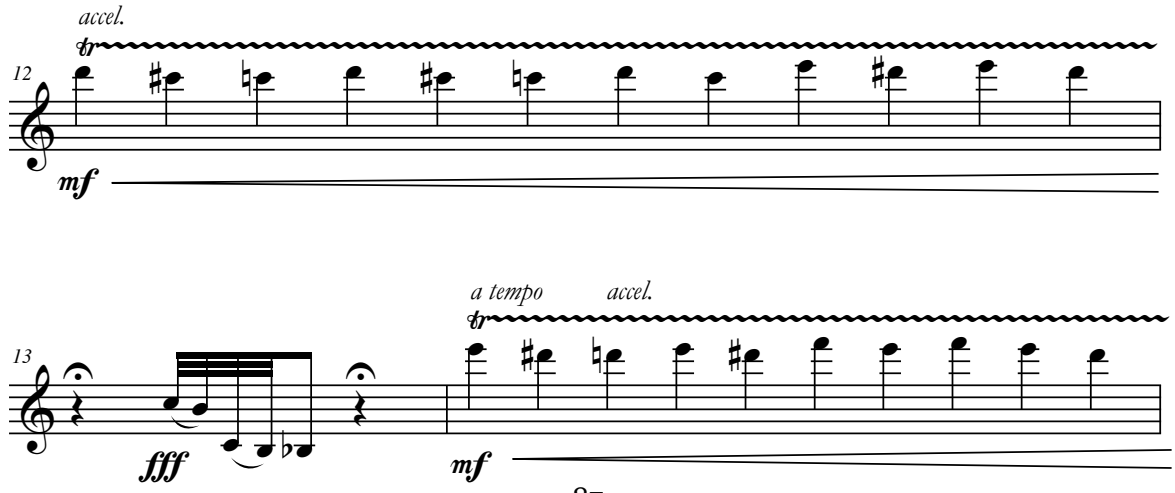

13
mf
14
15
16
17
ff

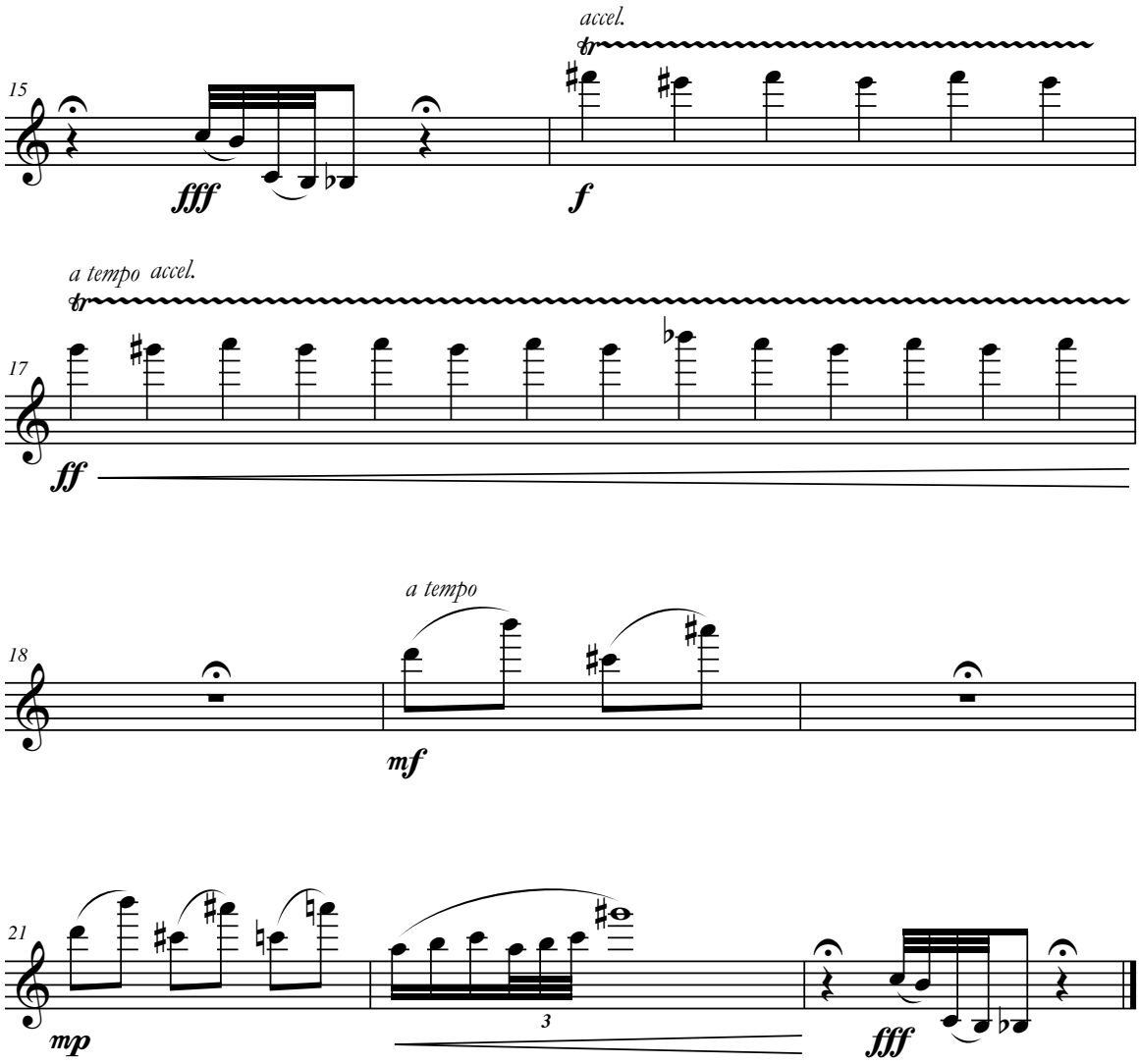
ETUDE # 8: Beginning Altissimo

Expressive Passage (Both Conjunct and Disjunct)



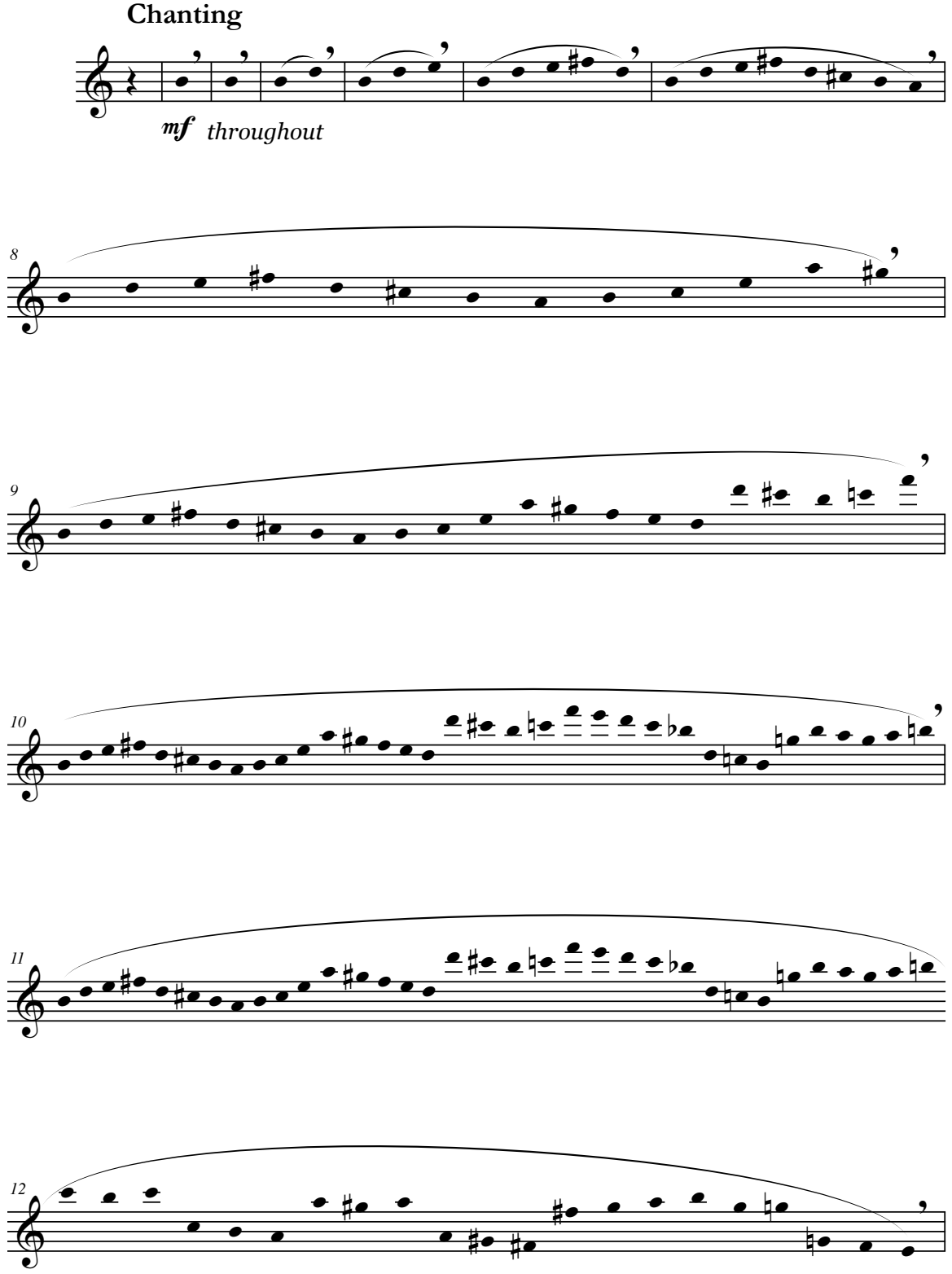
*All trills throughout this etude are to be to a half-step above the indicated pitch

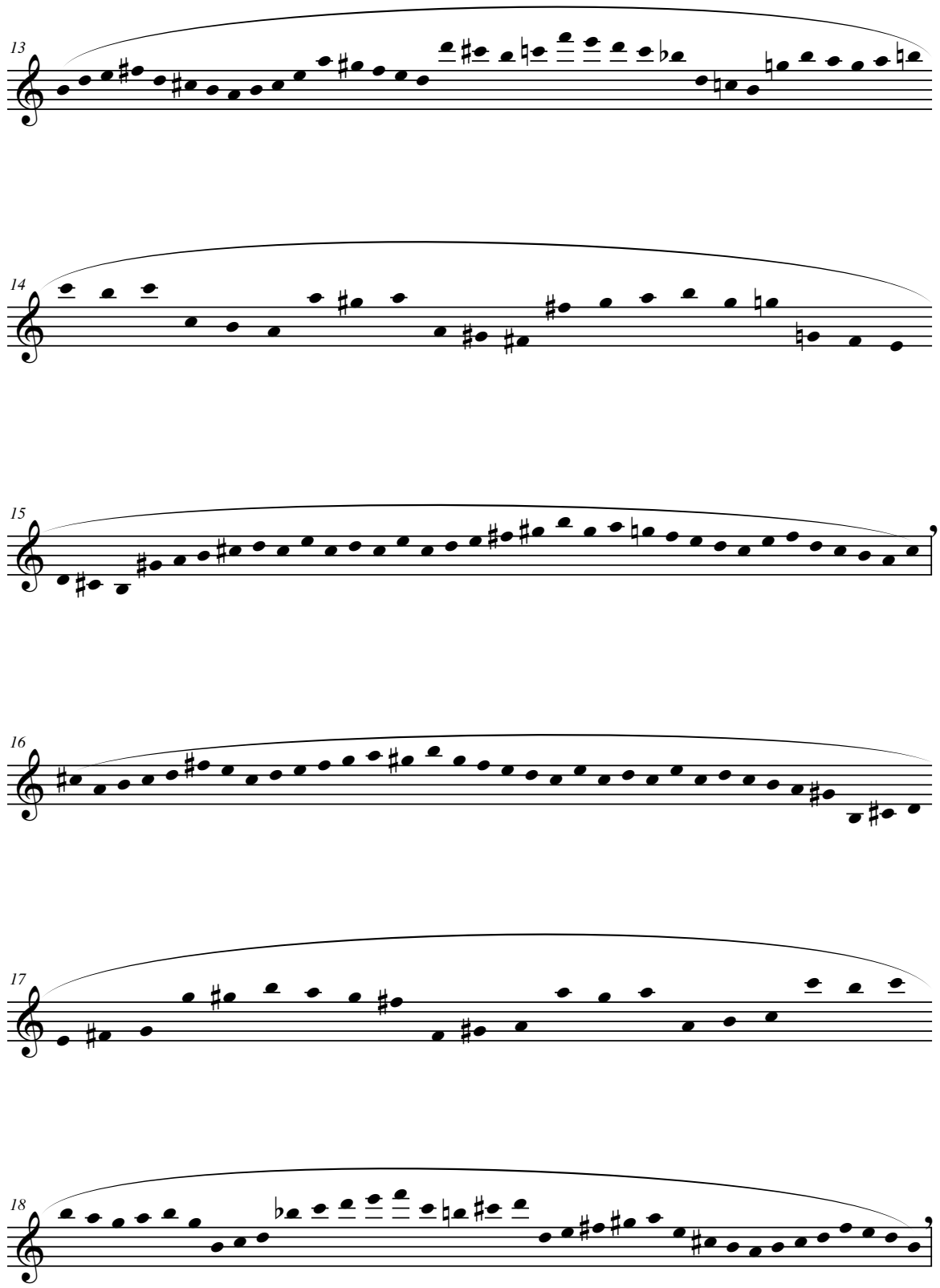



15
accel.
tr
fff
f
a tempo accel.
tr
17
ff
a tempo
18
mf
21
mp
3
fff

ETUDE # 9: Circular Breathing

Slow, Gradual Extension of Circular Breathing Ability

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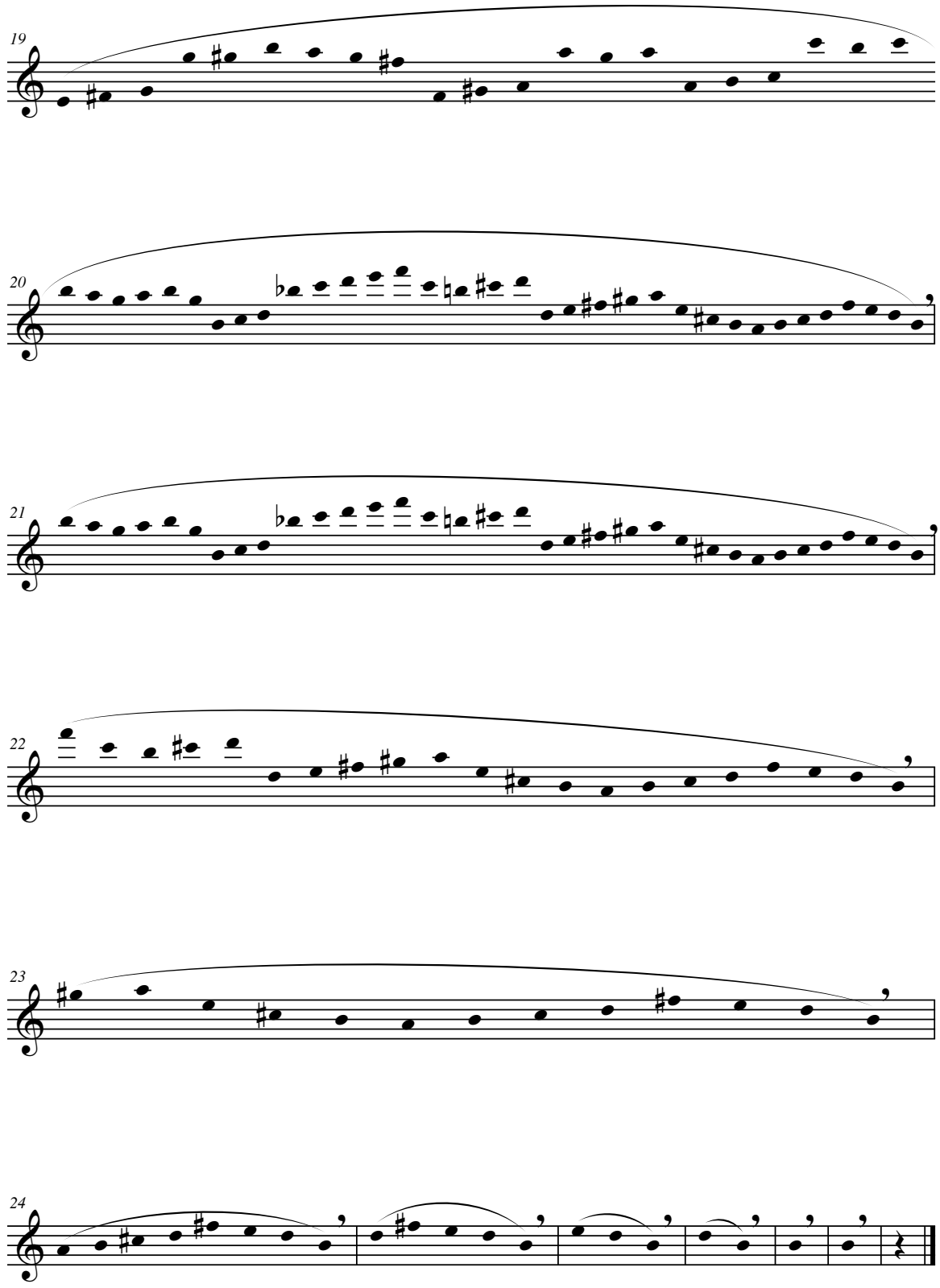
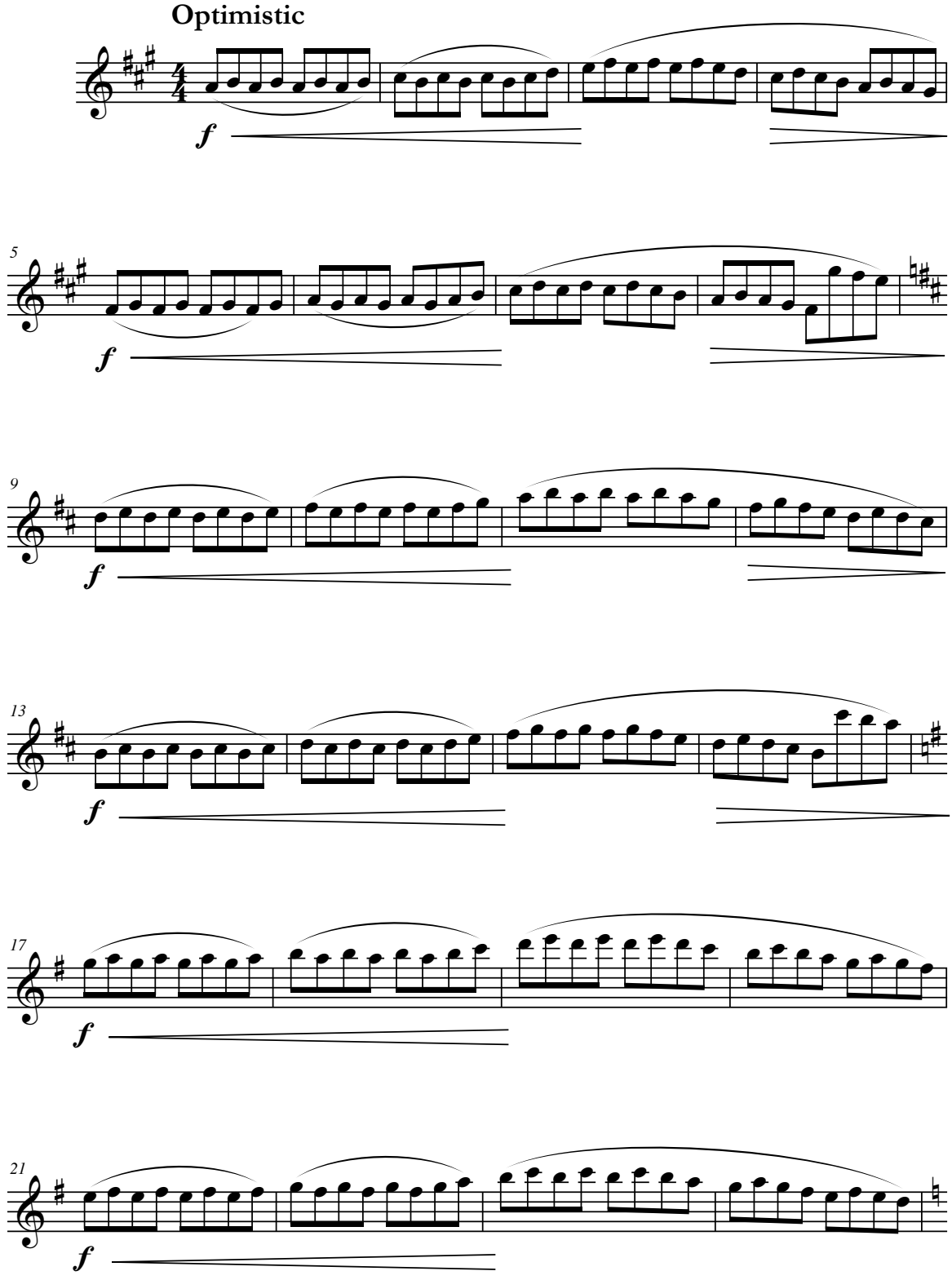
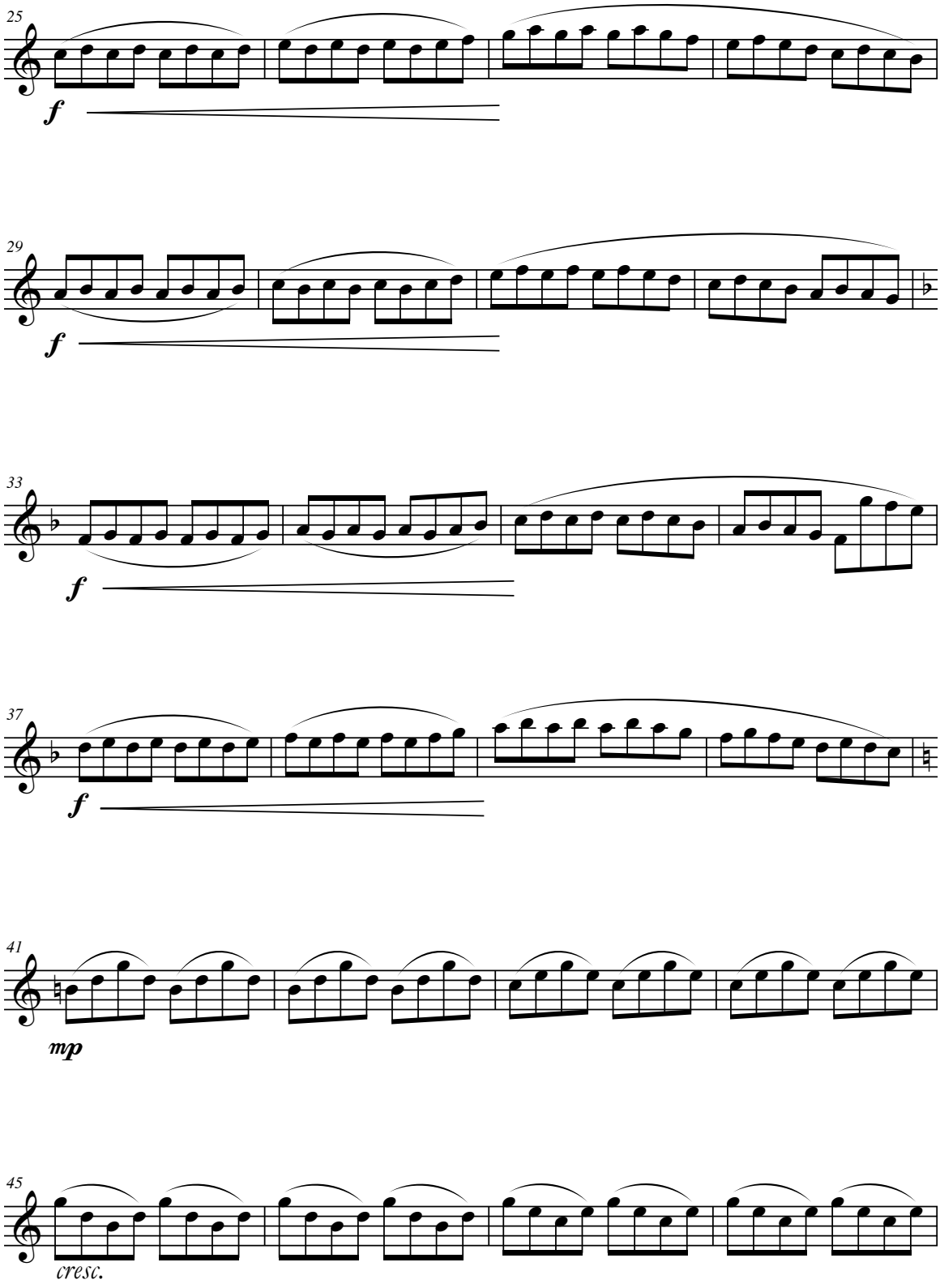
14
15
16
17
18

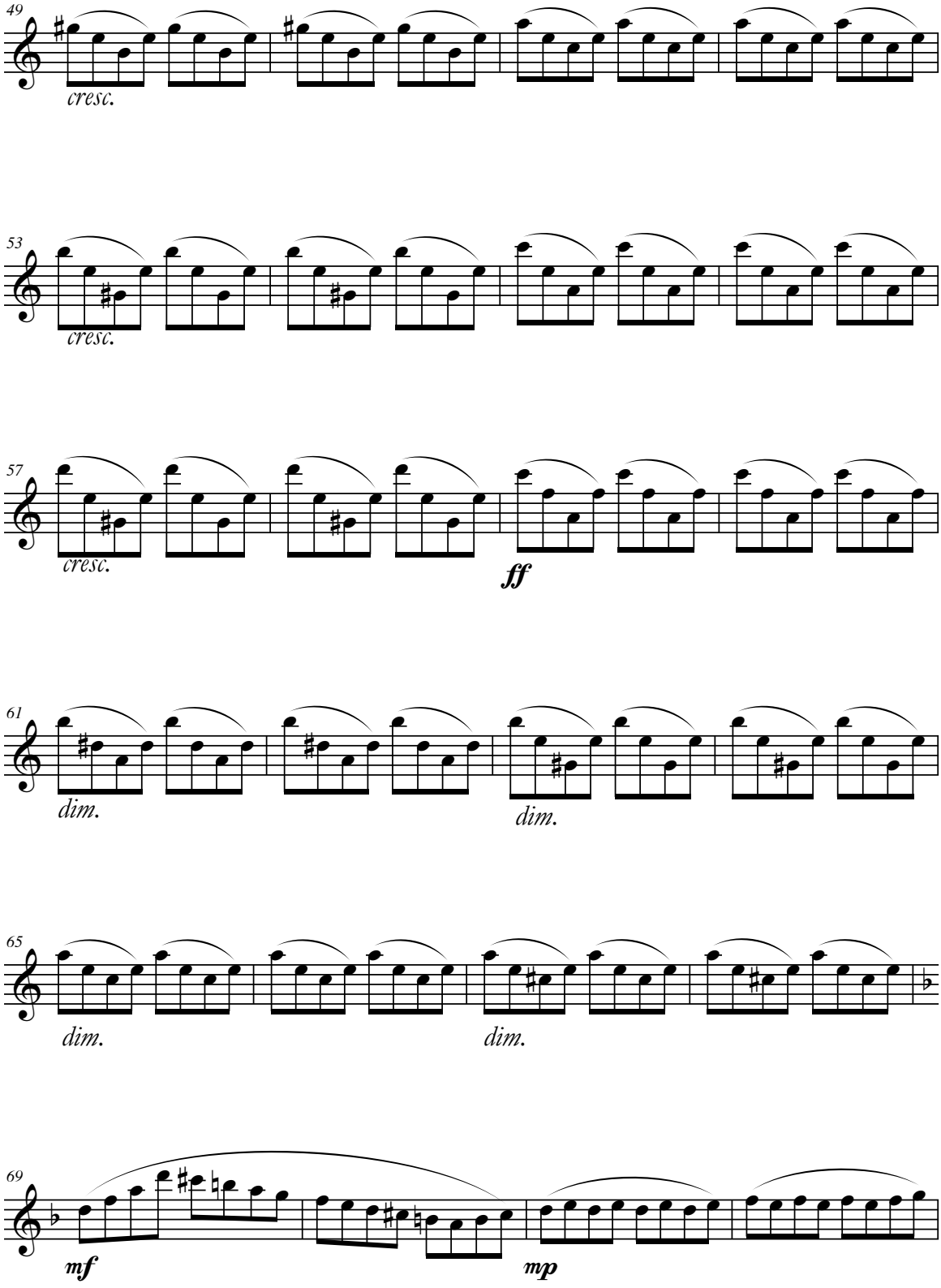

19
20
21
22
23
24

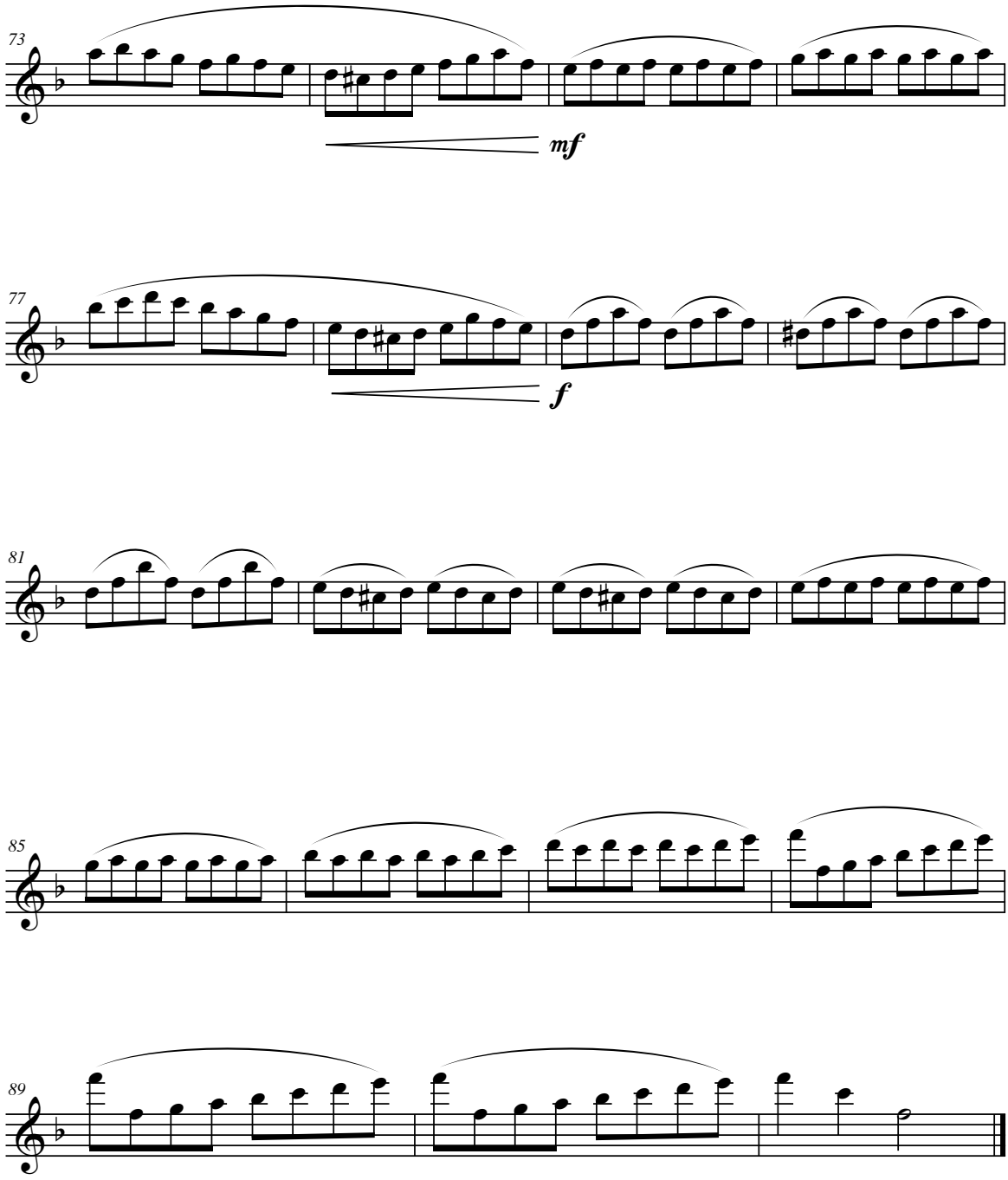
ETUDE # 10: Circular Breathing

Repetitive Scalar and Arpeggiated Passages




25
f
29
f
33
f
37
f
41
mp
45
cresc.

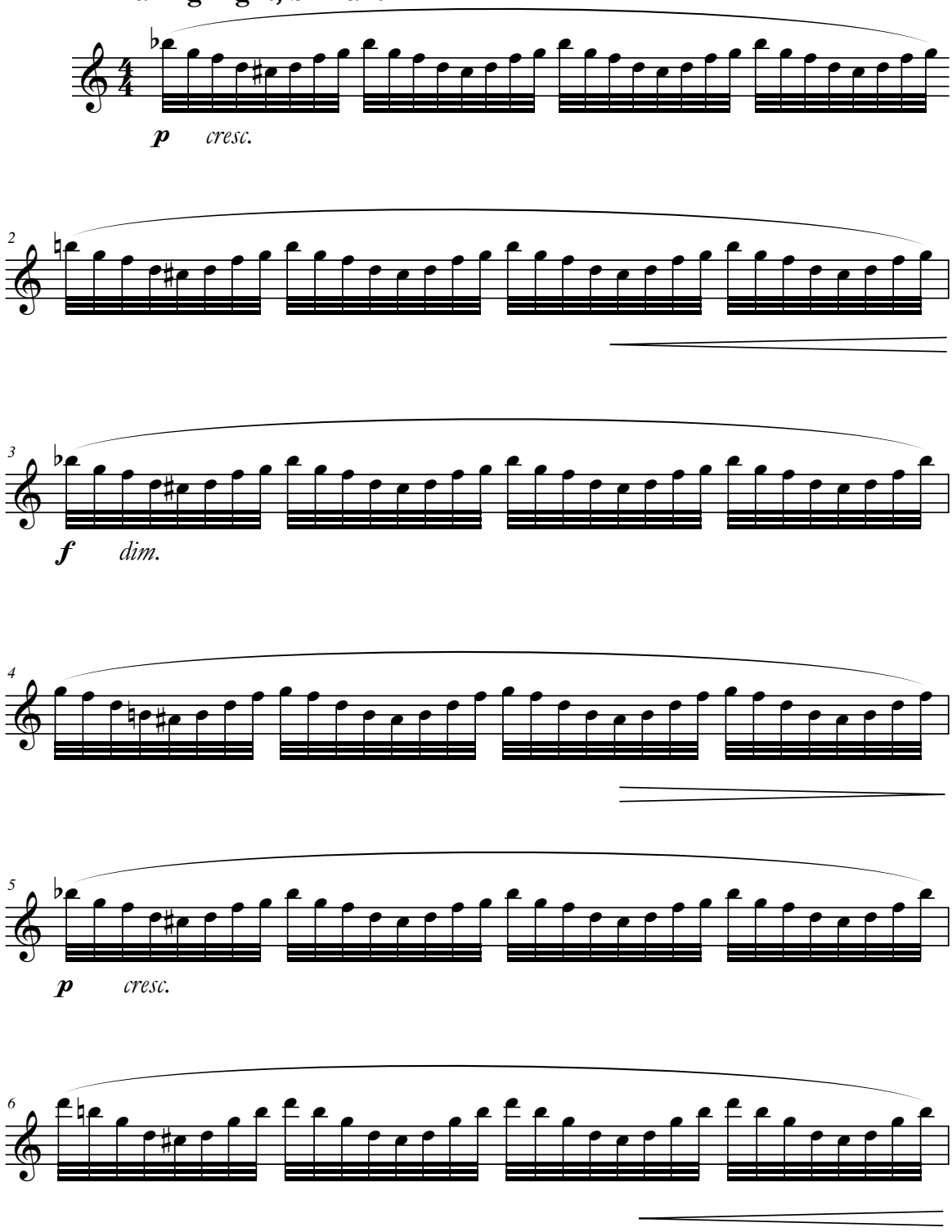

49
cresc.
53
cresc.
57
cresc.
ff
61
dim.
dim.
65
dim.
dim.
69
mf
mp

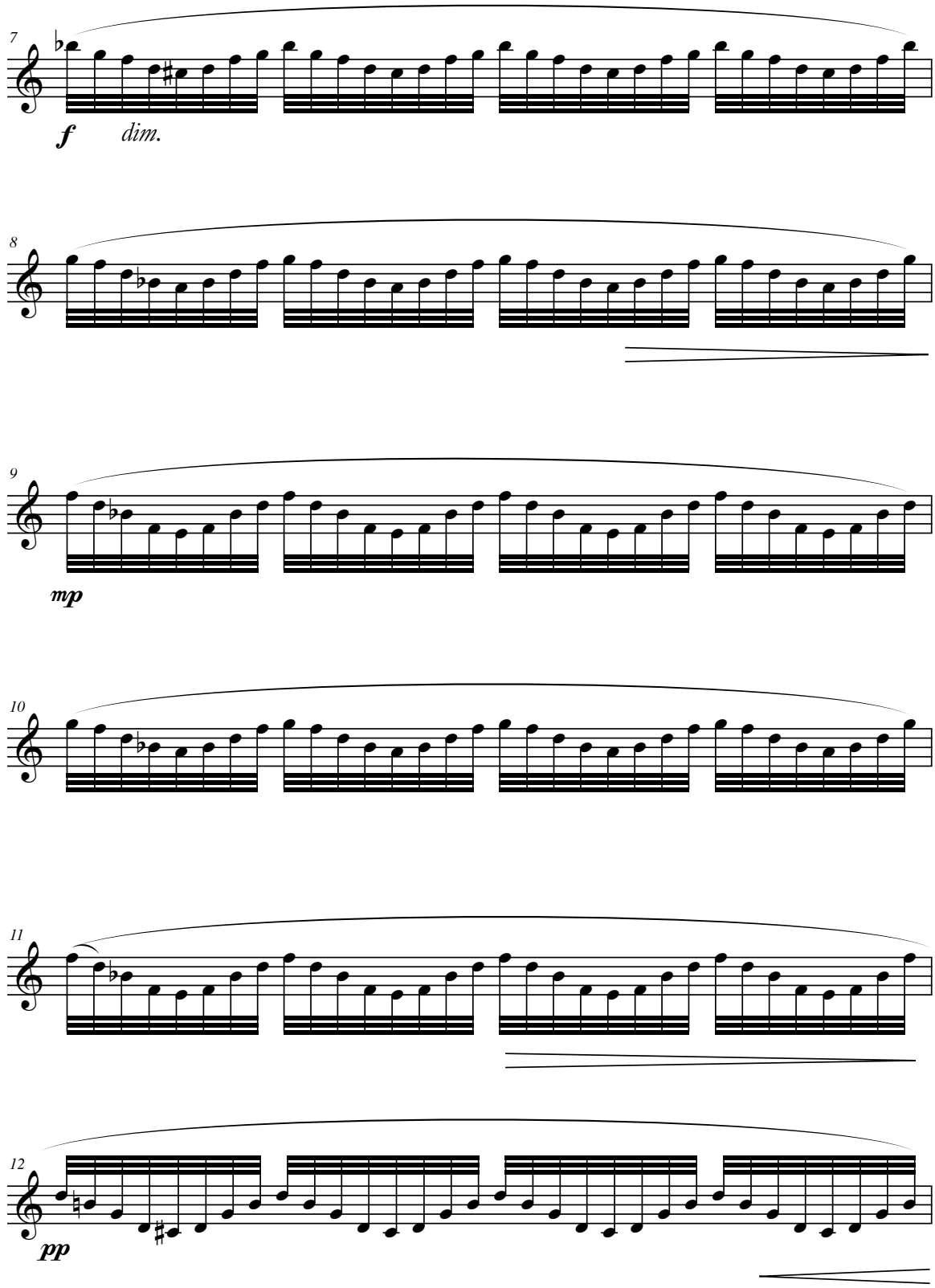

73
mf
77
f
81
85
89

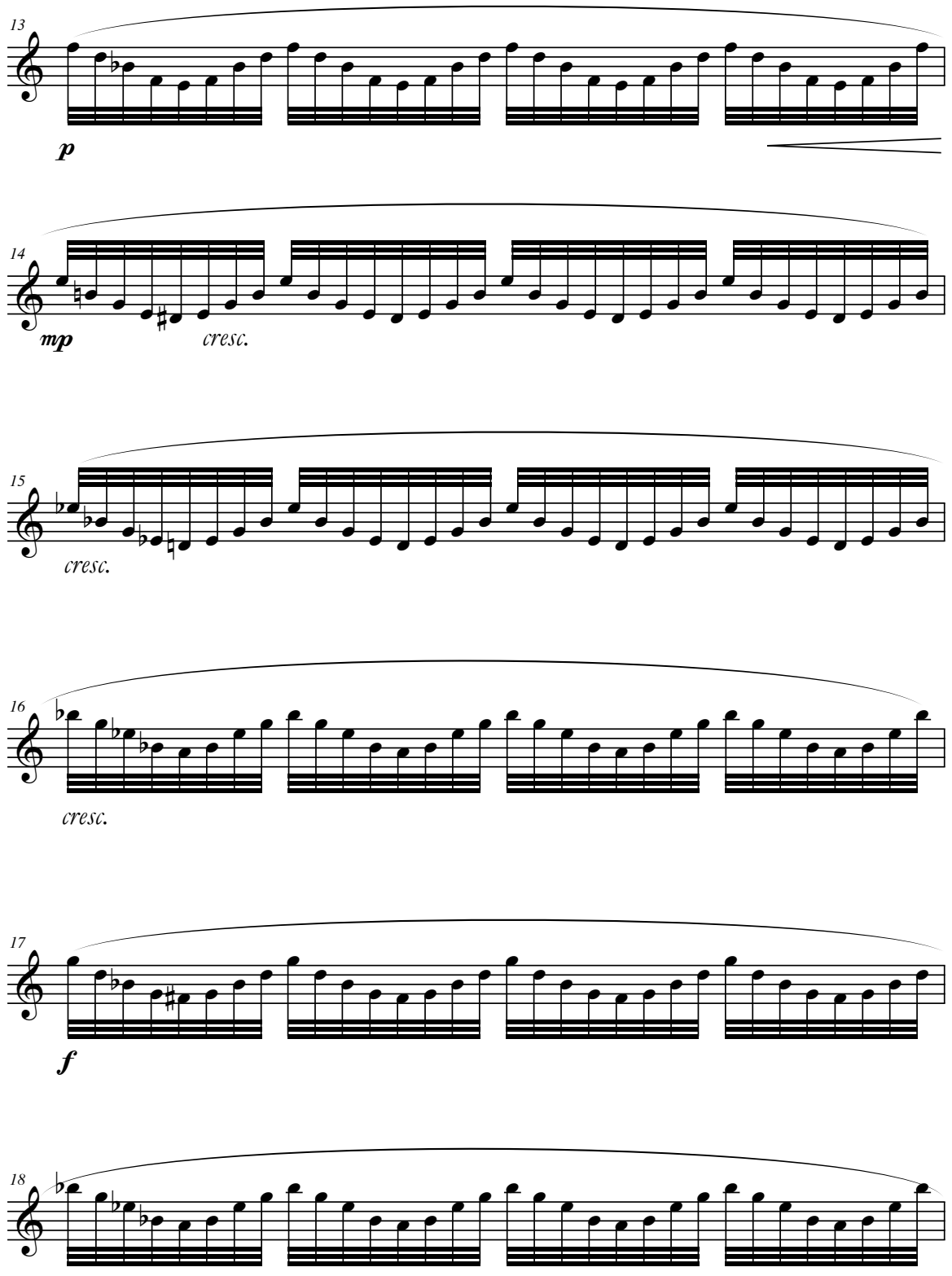
ETUDE # 11: Circular Breathing

Rapid, Arpeggiated, and Repetitive Passages

Taking flight, brilliant




7
f
dim.
8
9
mp
10
11
12
pp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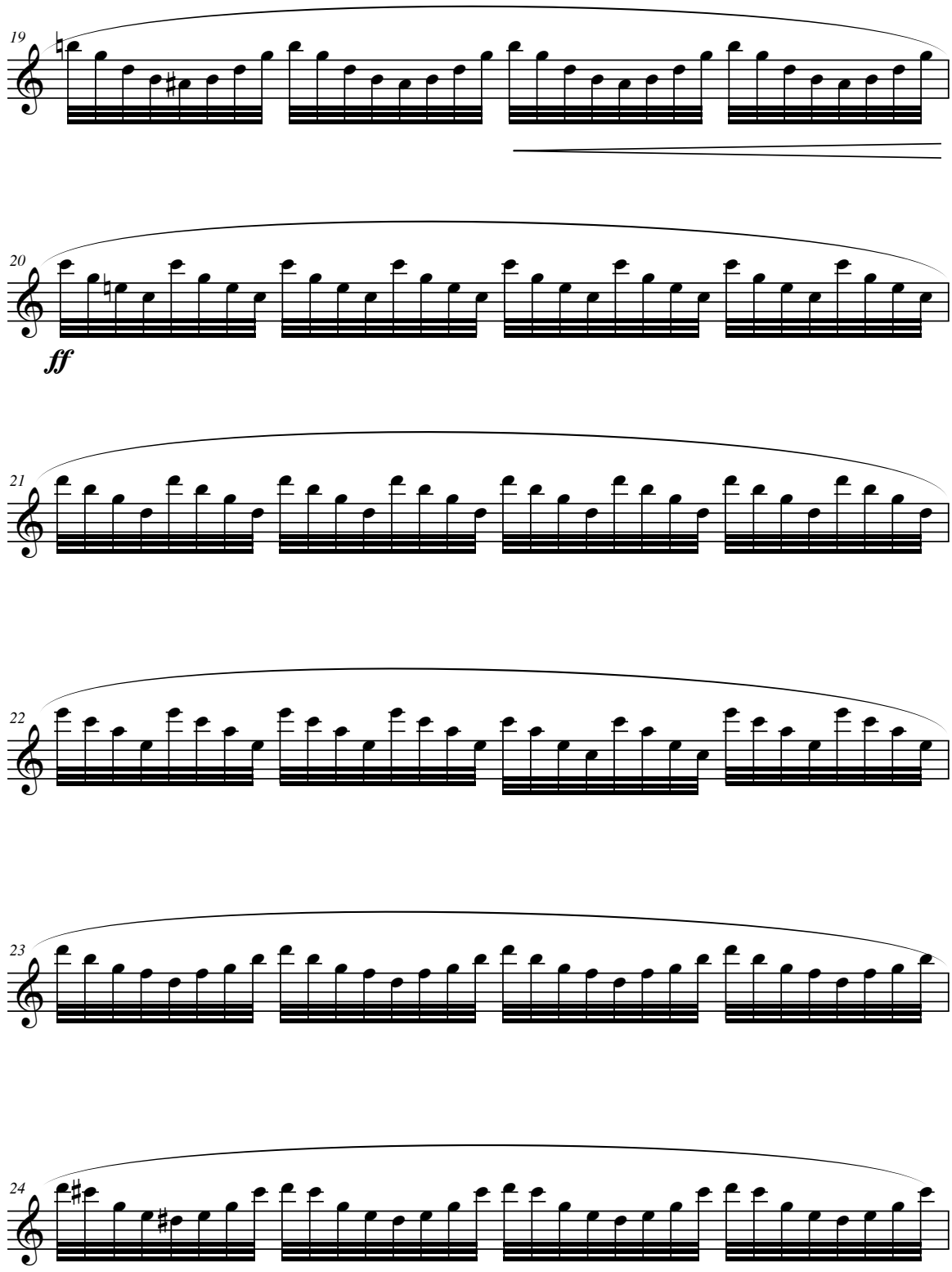
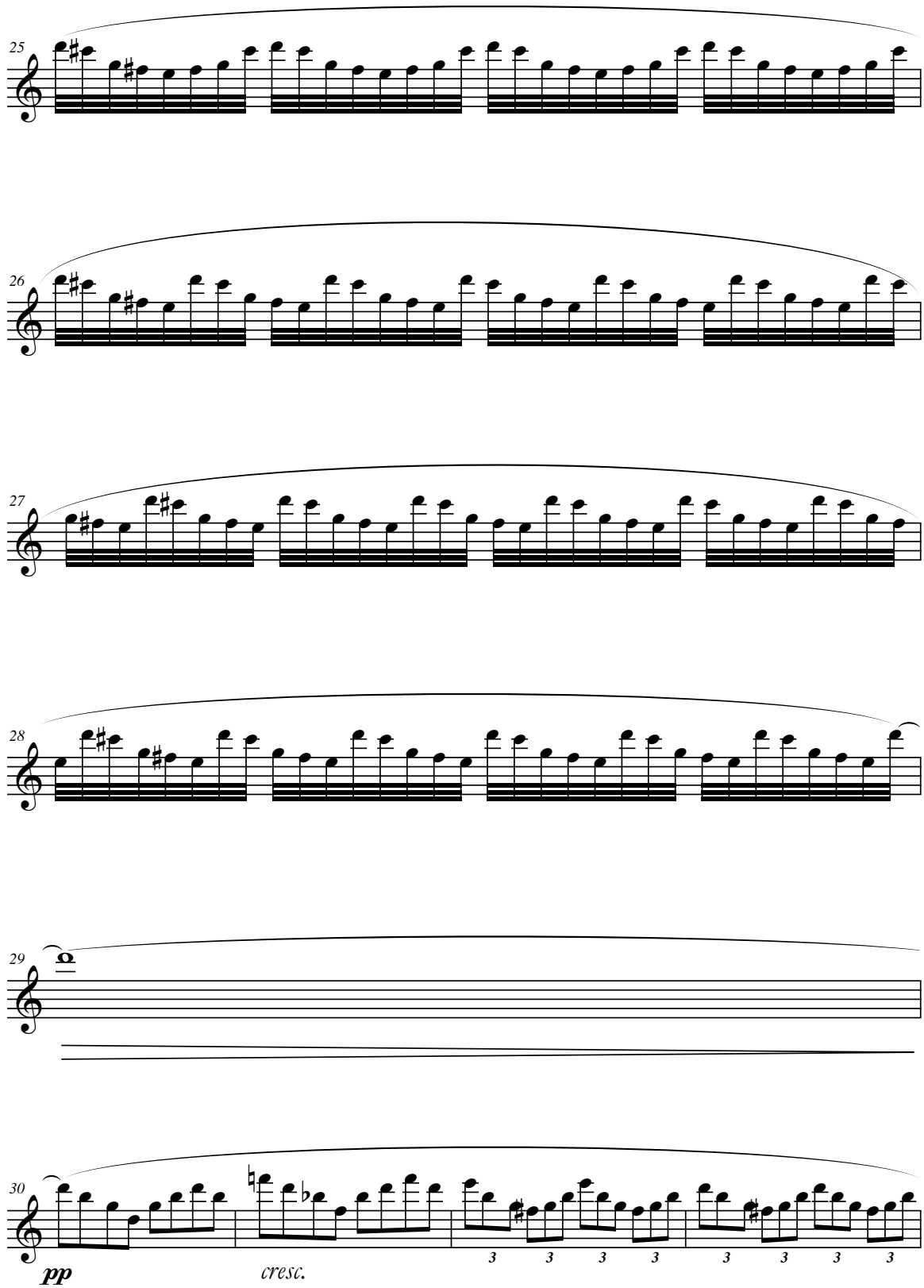
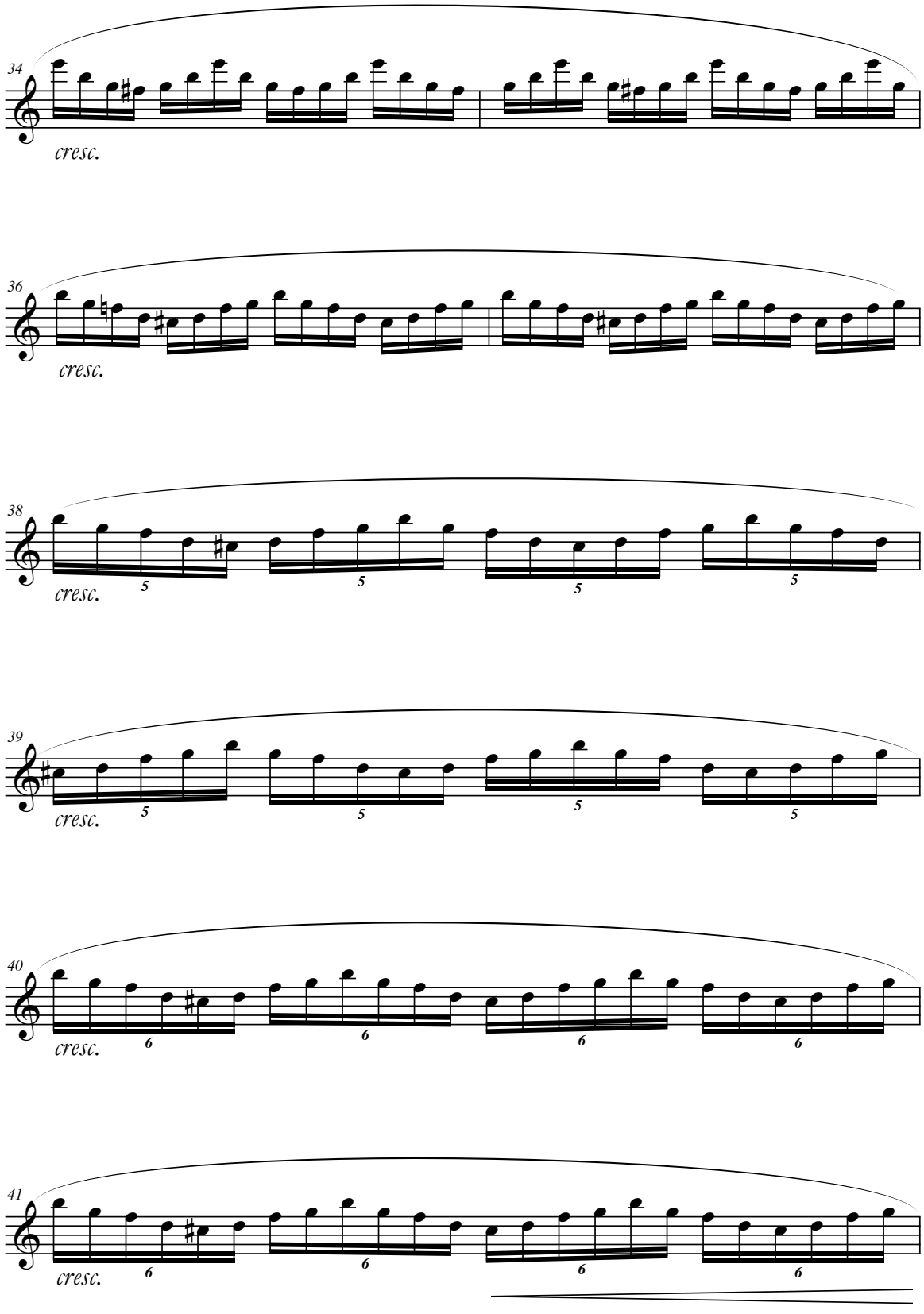
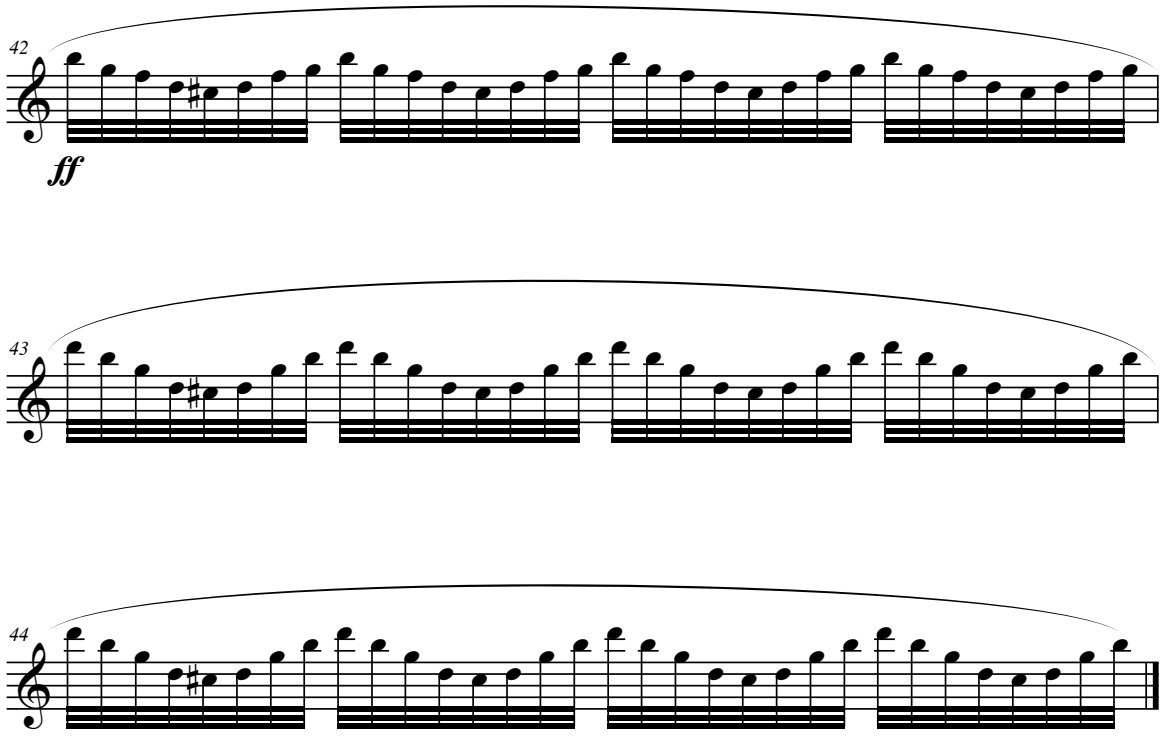
p
14
mp
cresc.
15
cresc.
16
cresc.
17
f
18


19
20
ff
21
22
23
24

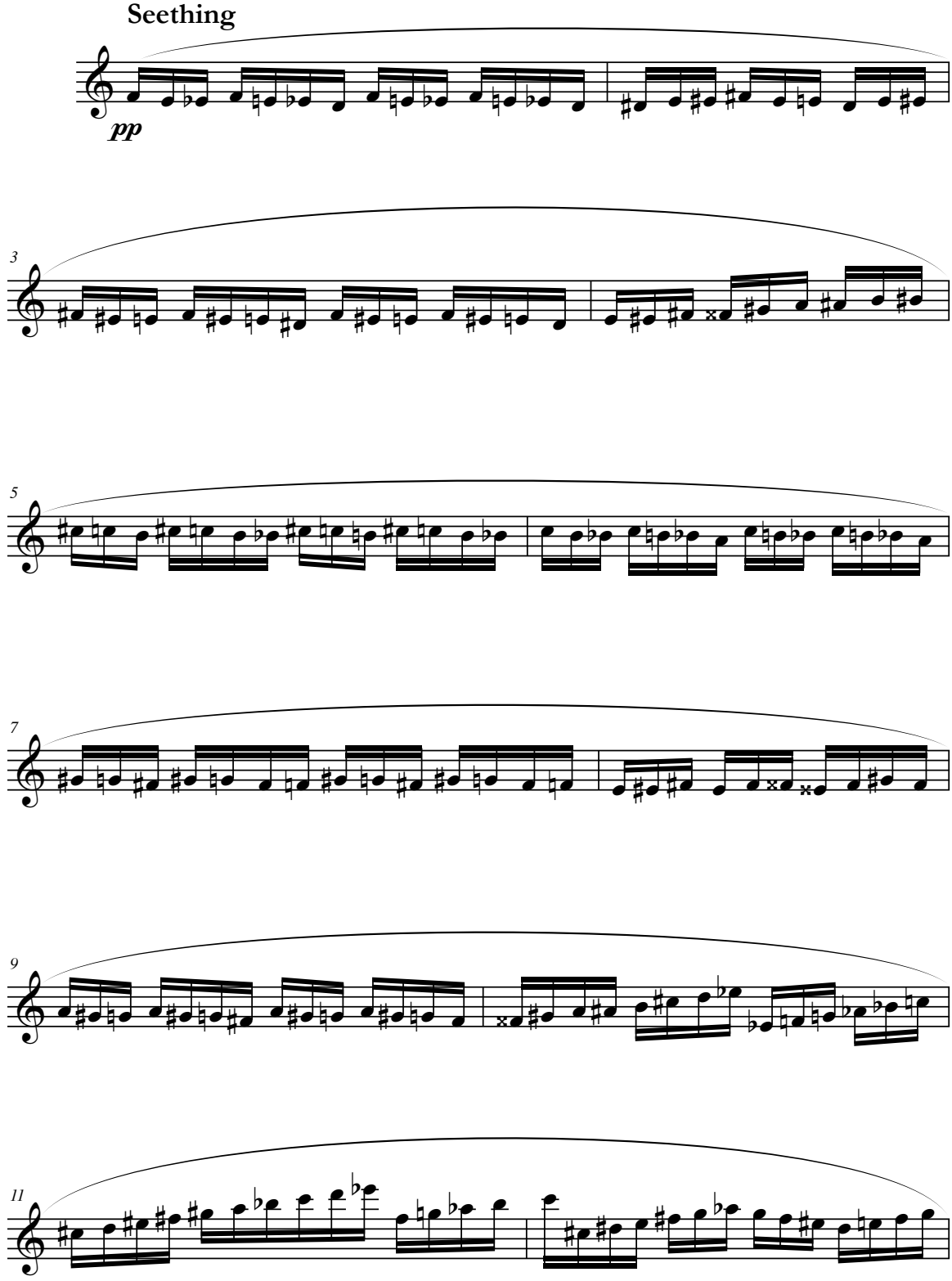

25
26
27
28
29
30
pp
cresc.

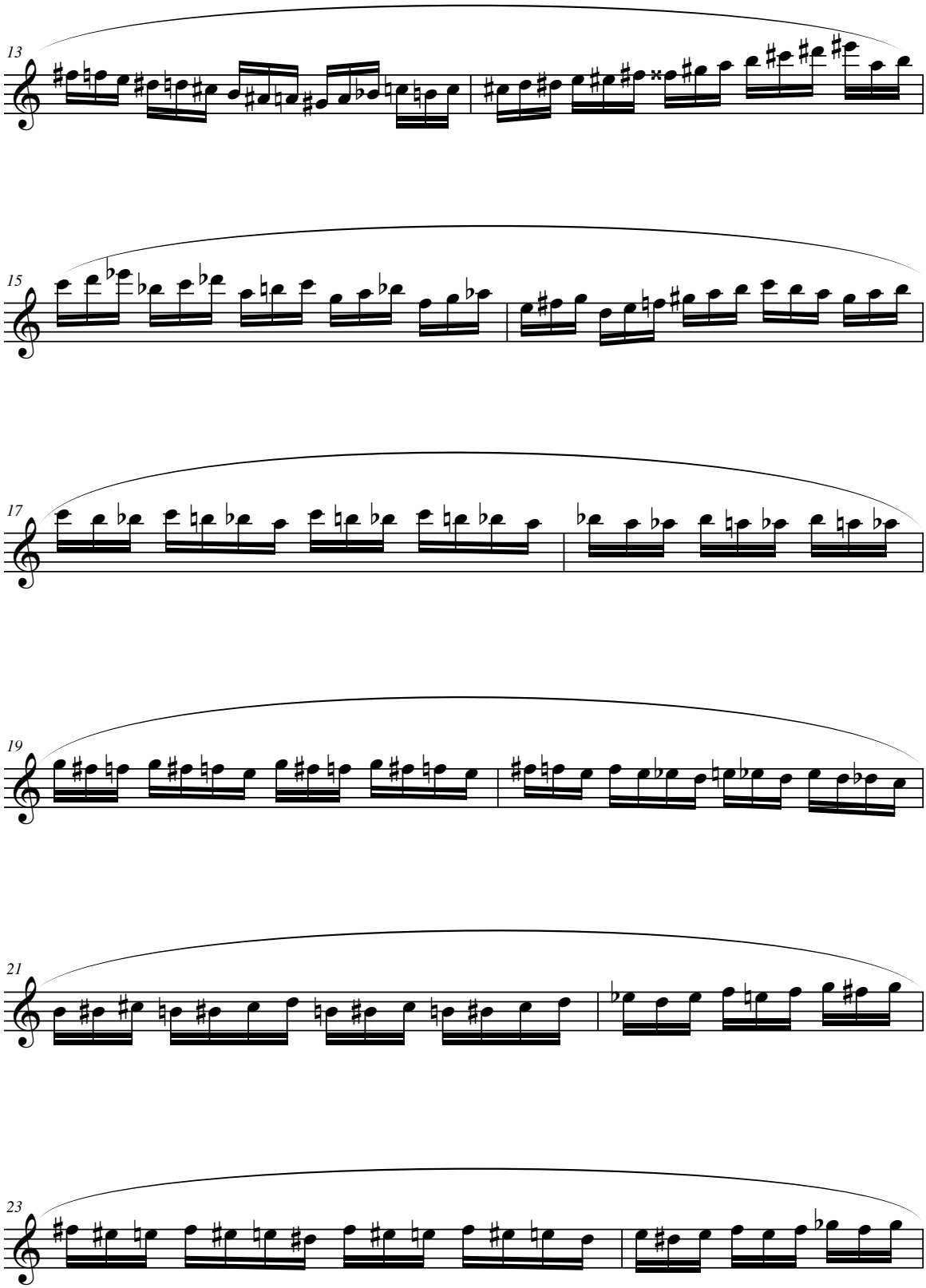

34
cresc.
36
cresc.
38
cresc.
5
39
cresc.
5
40
cresc.
6
41
cresc.
6

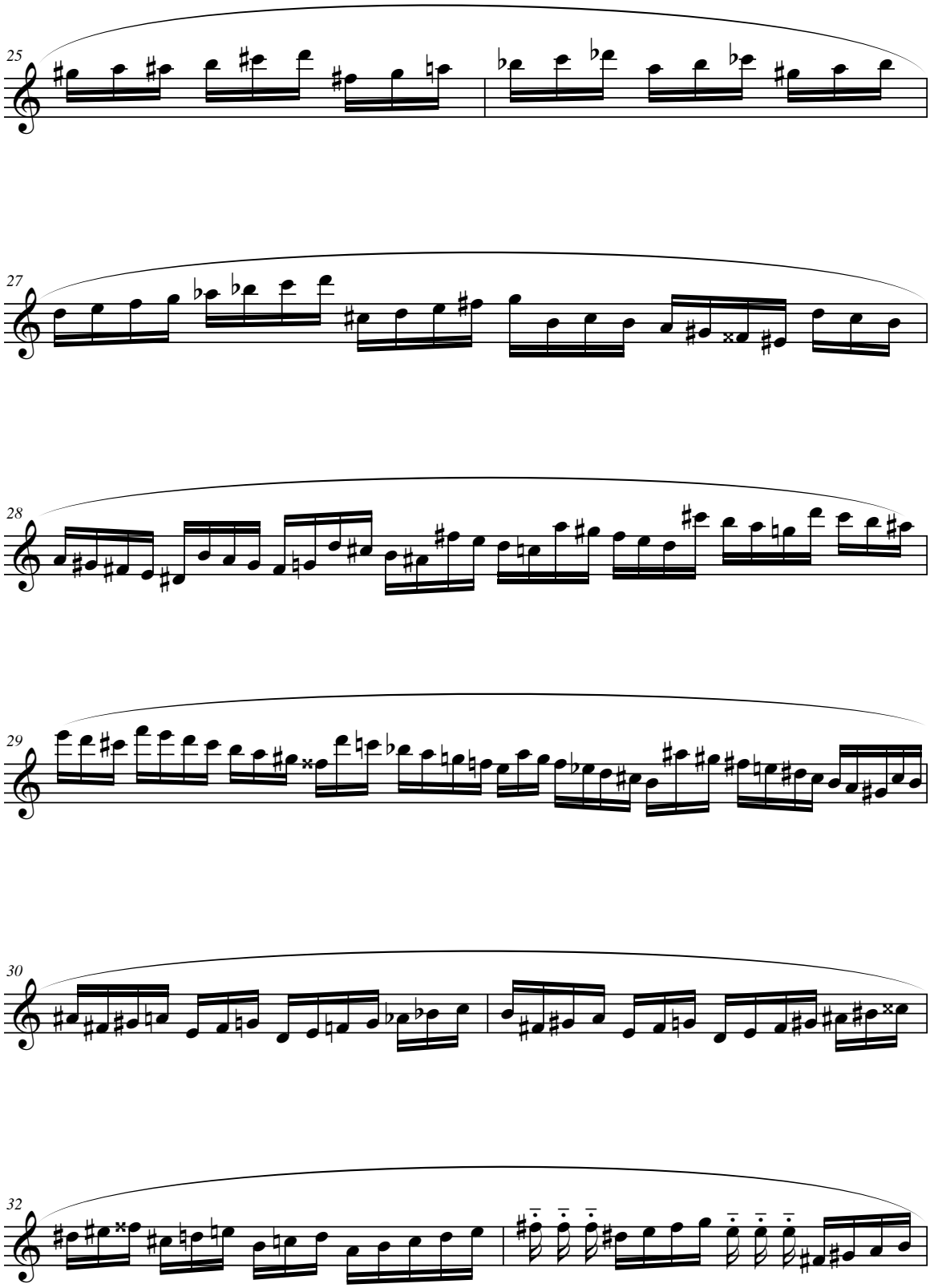

42
ff
43
44

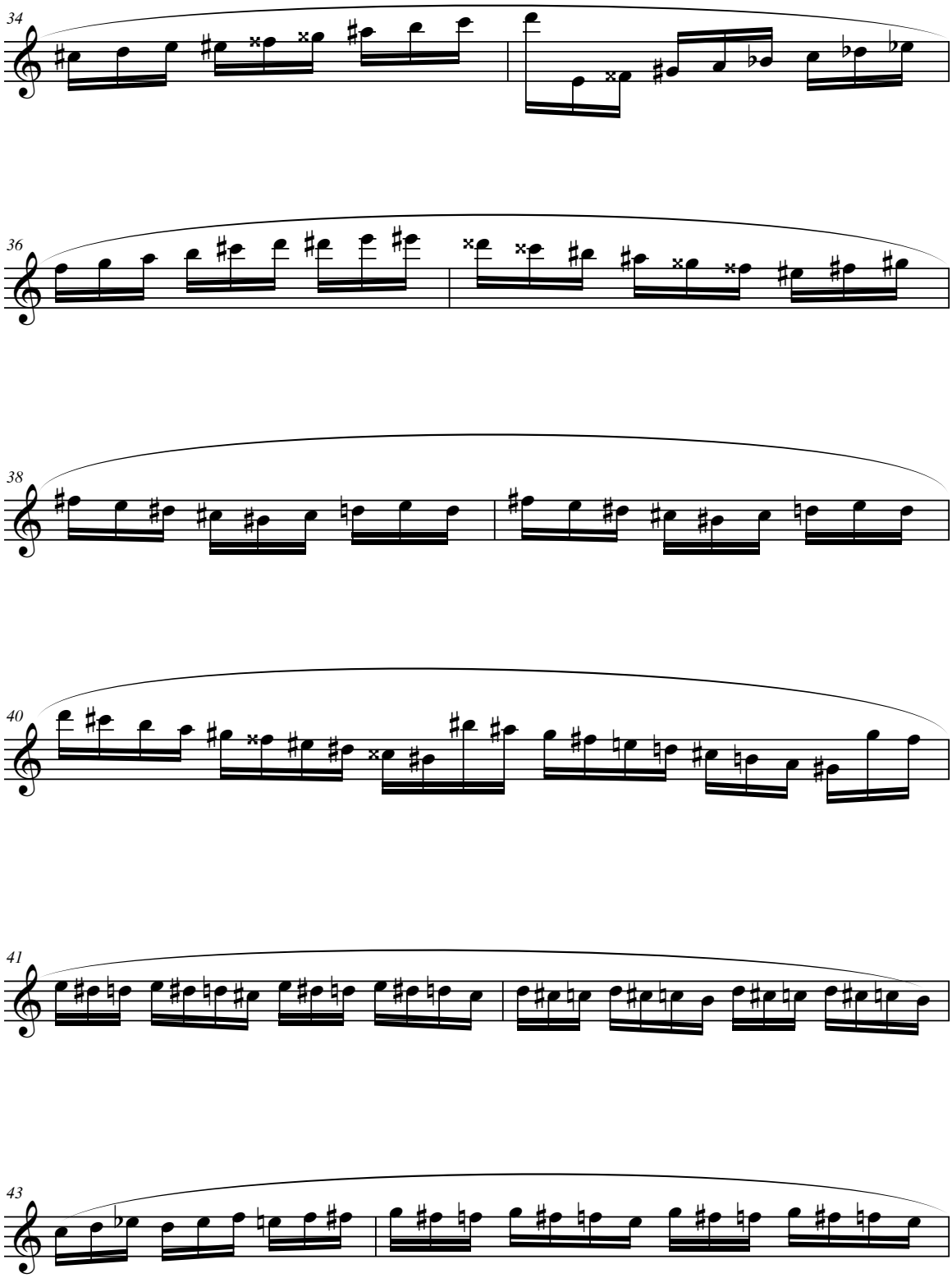
ETUDE # 12: Circular Breathing

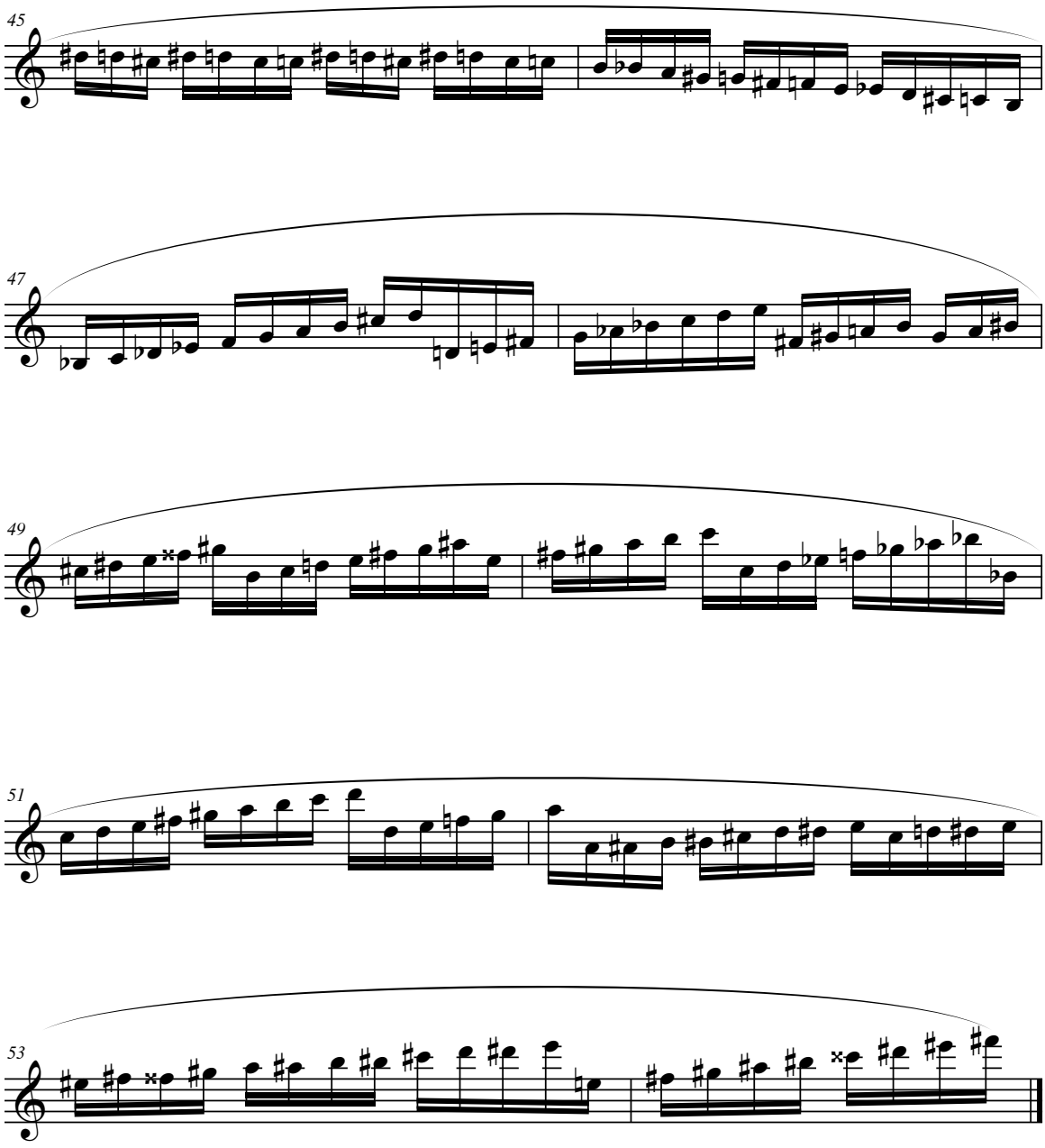
Rapid, Non-Repetitive, and Quiet Passages




13
15
17
19
21
23

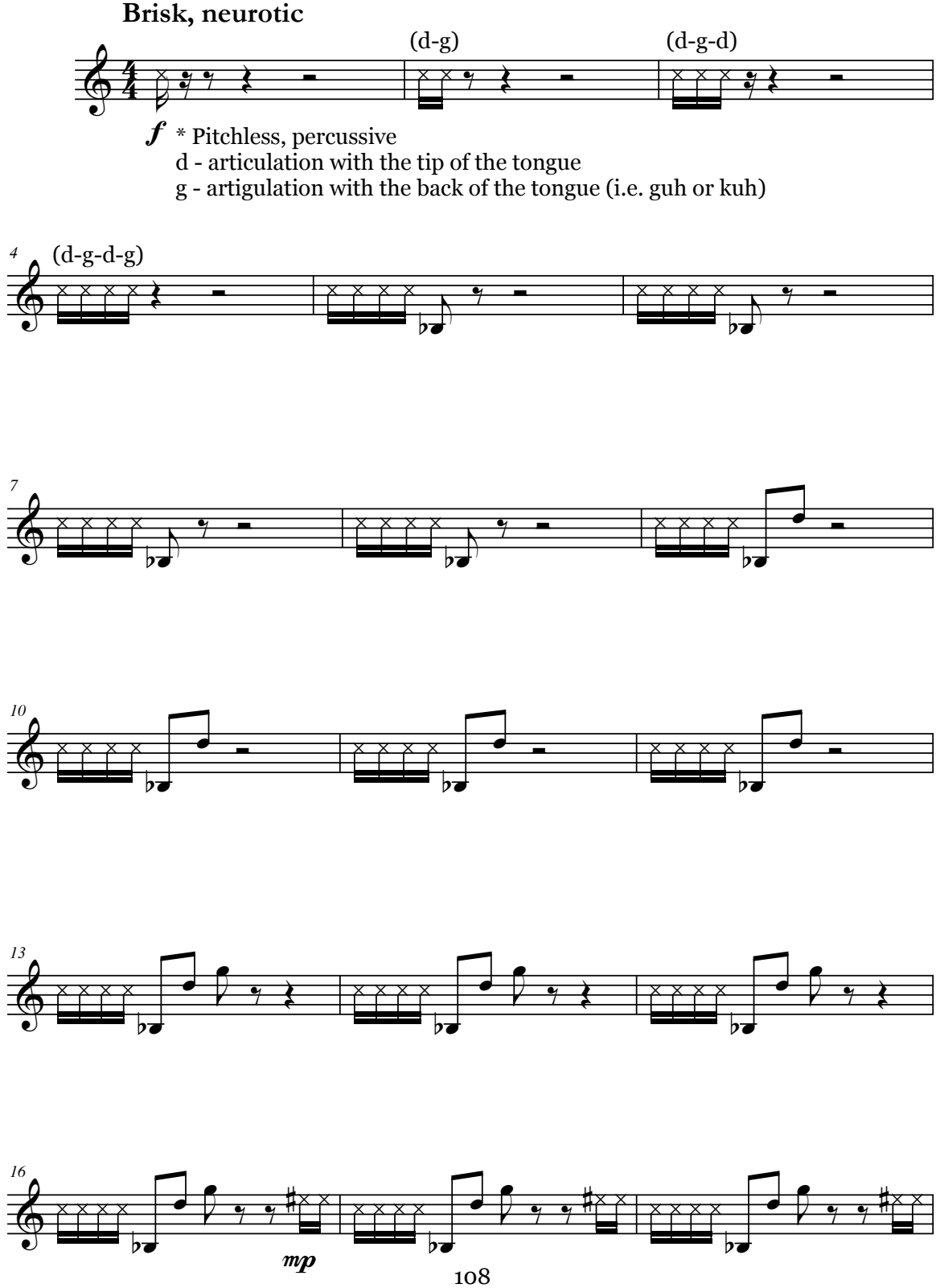

25
27
28
29
30
32

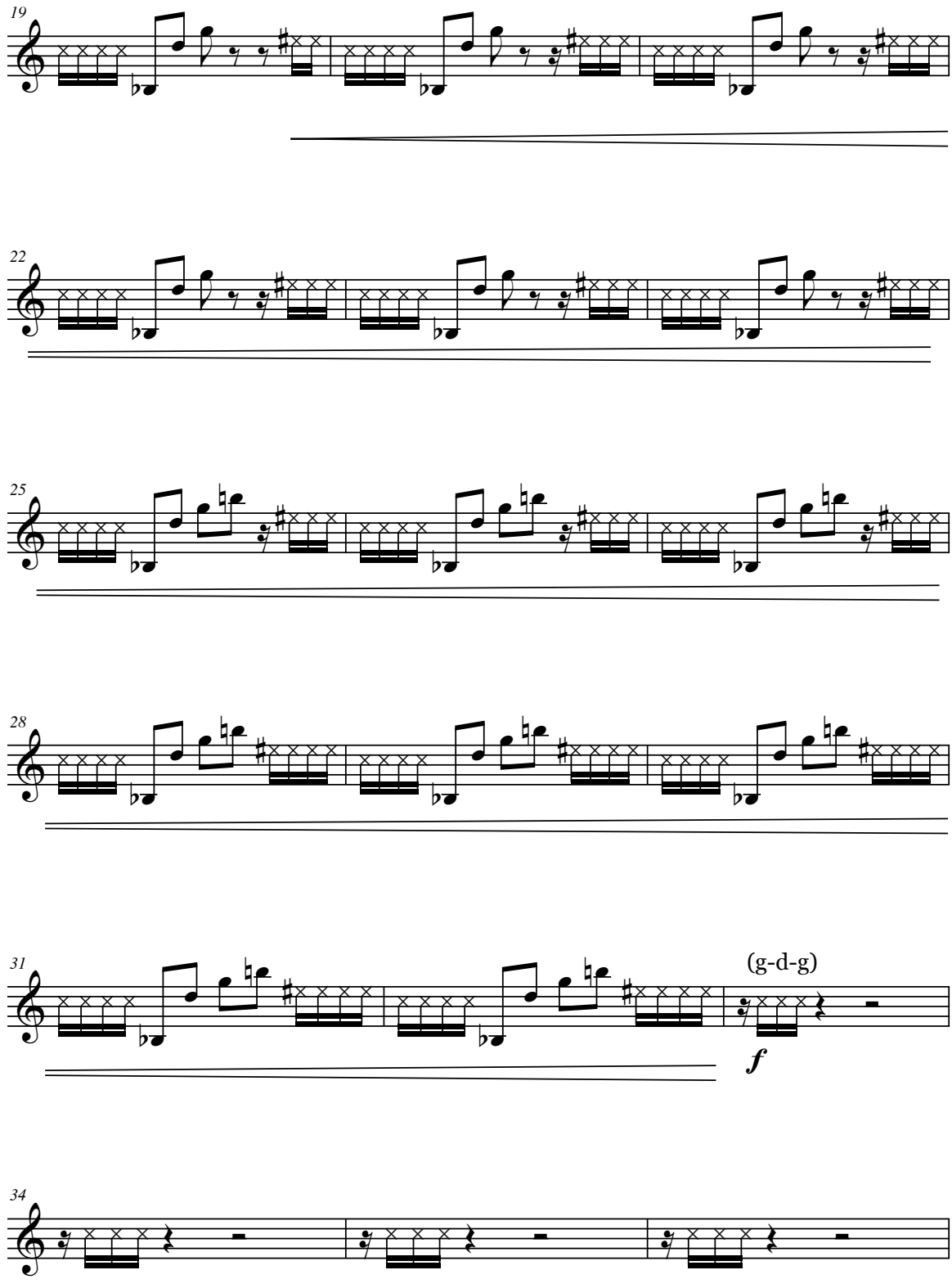

34
36
38
40
41
43

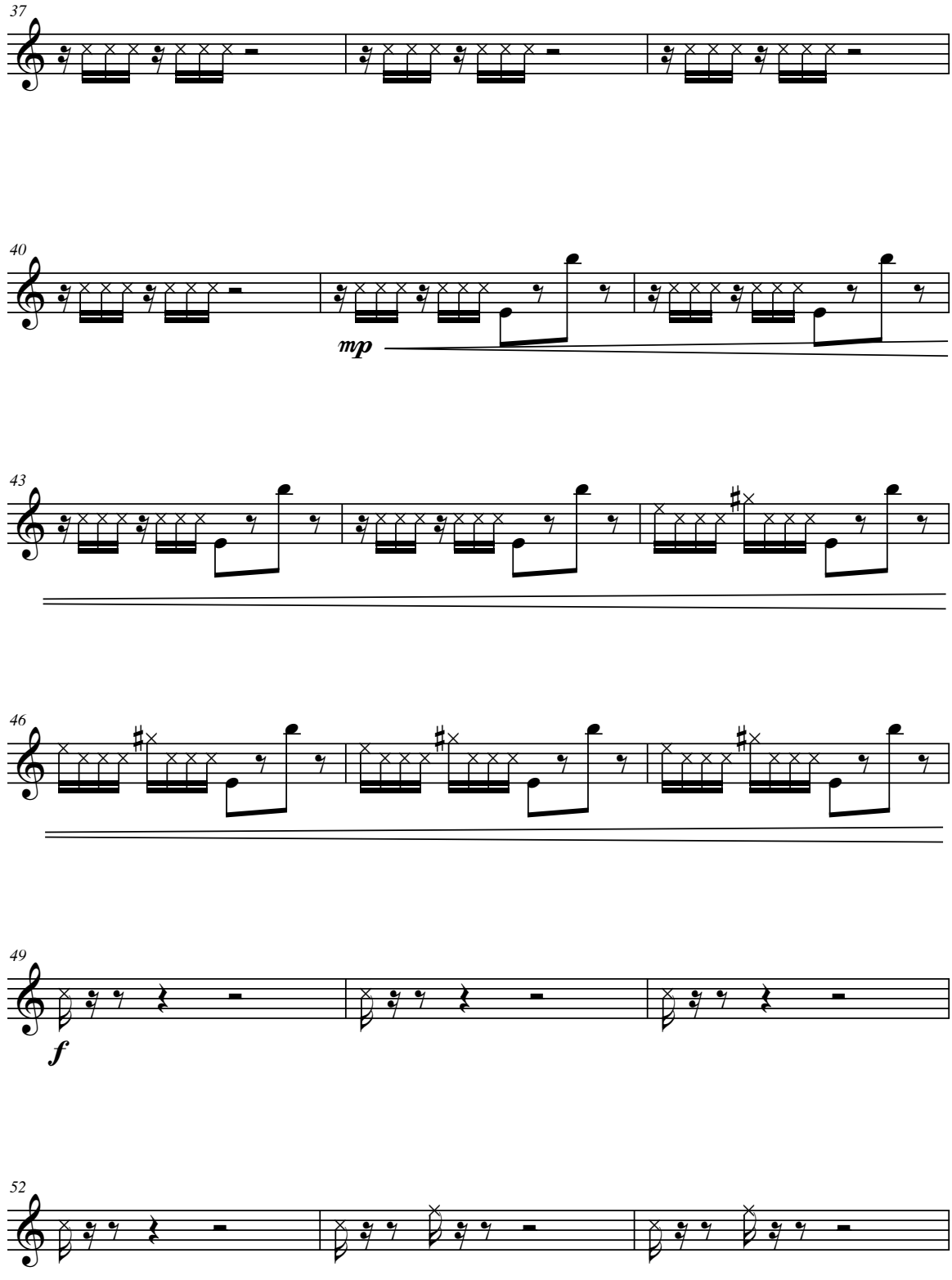

45
47
49
51
53

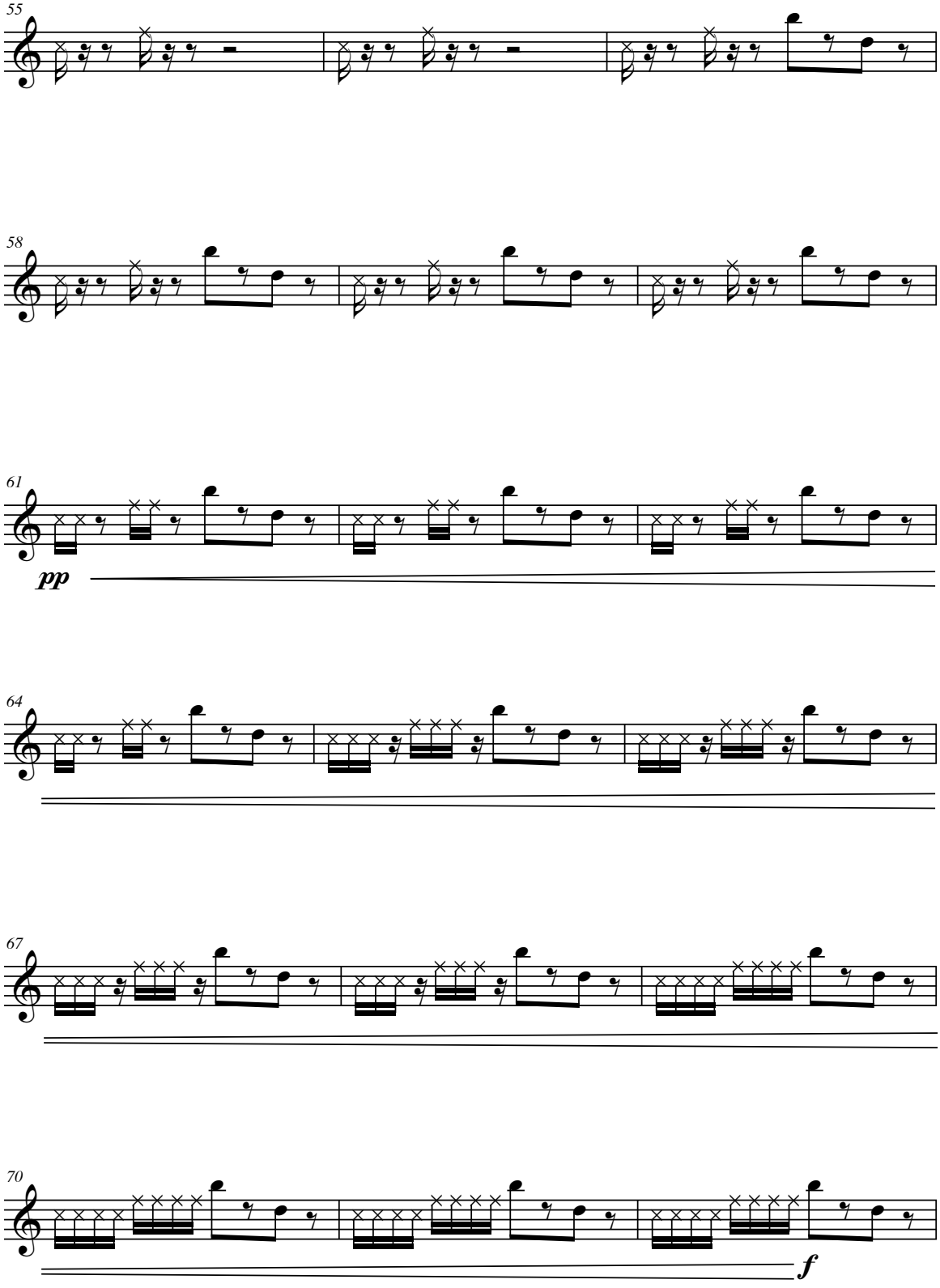
ETUDE # 13: Double tonguing

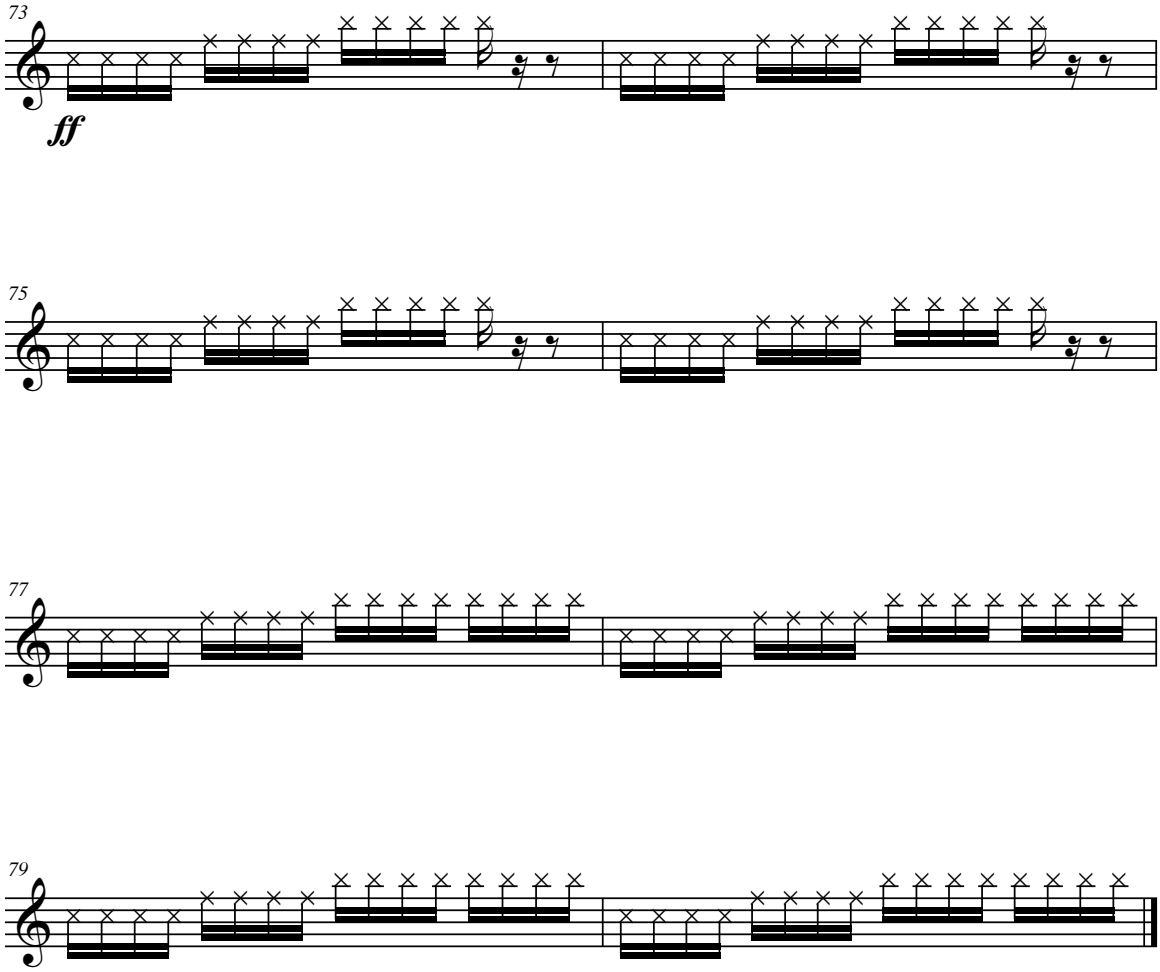
Study and Awareness of the Oral Muscular Mechanism




19
22
25
28
31
(g-d-g)
f
34


37
40
mp
43
46
49
f
52

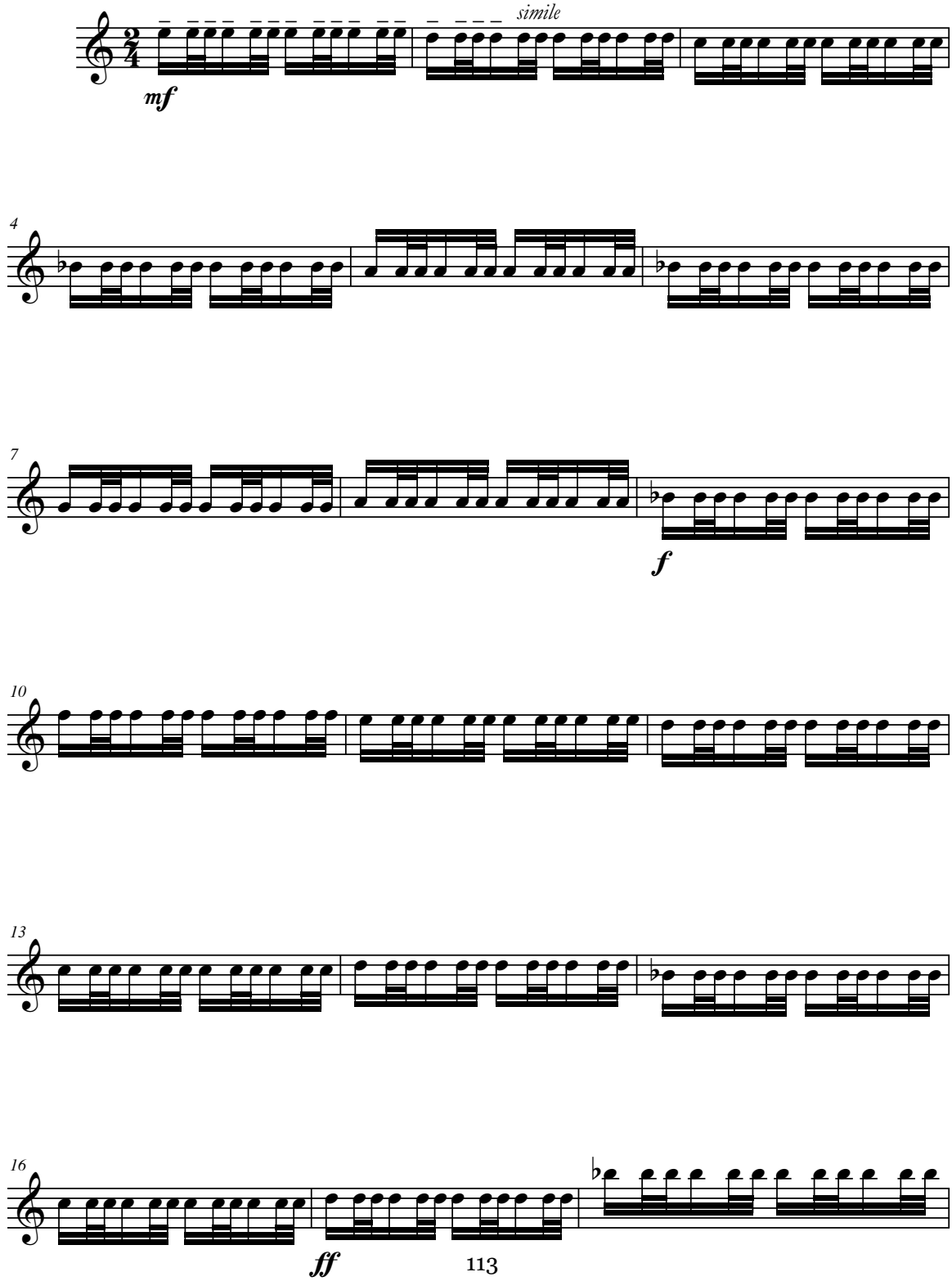

55
58
61
pp
64
67
70
f

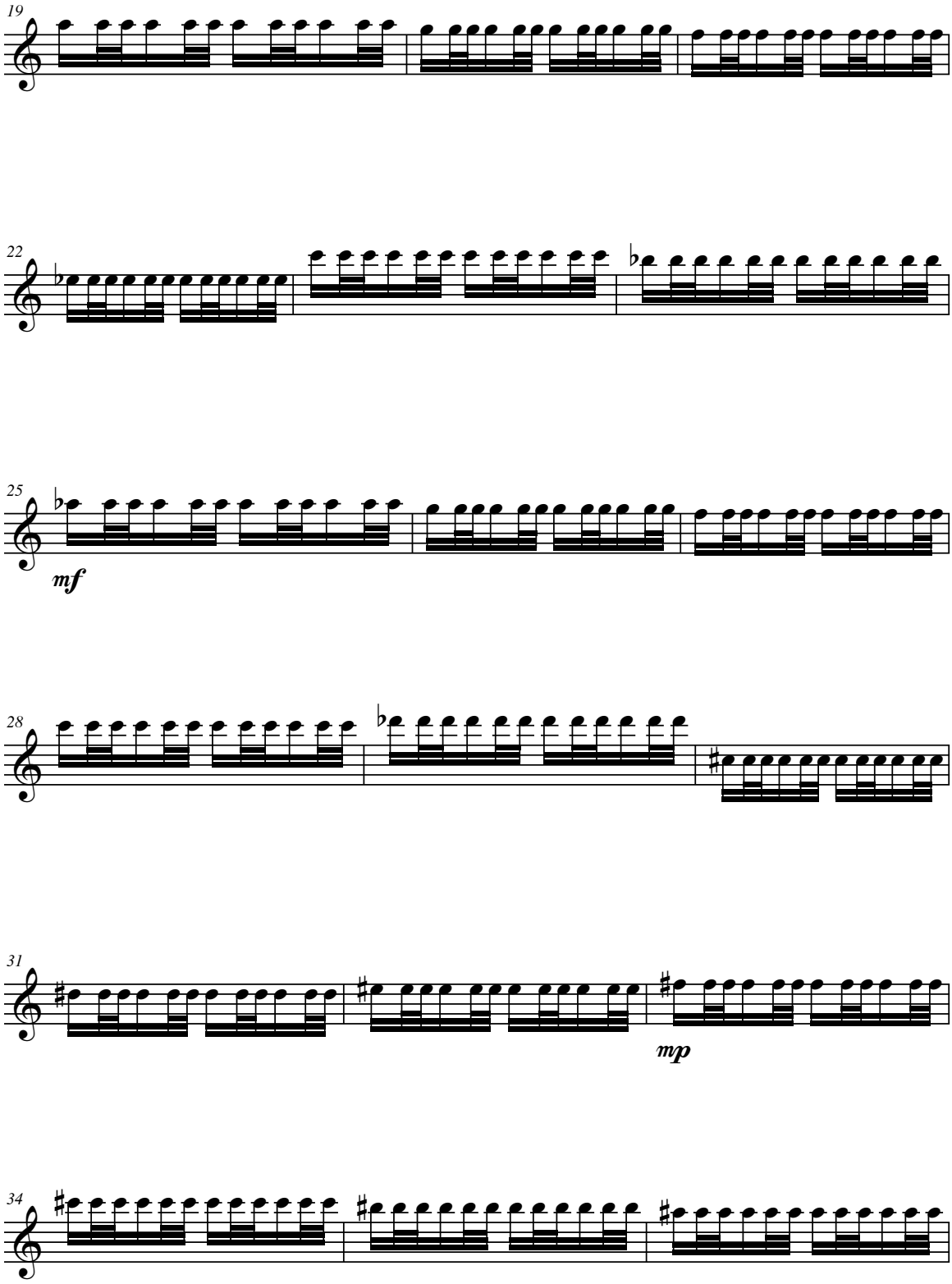

73
ff
75
77
79

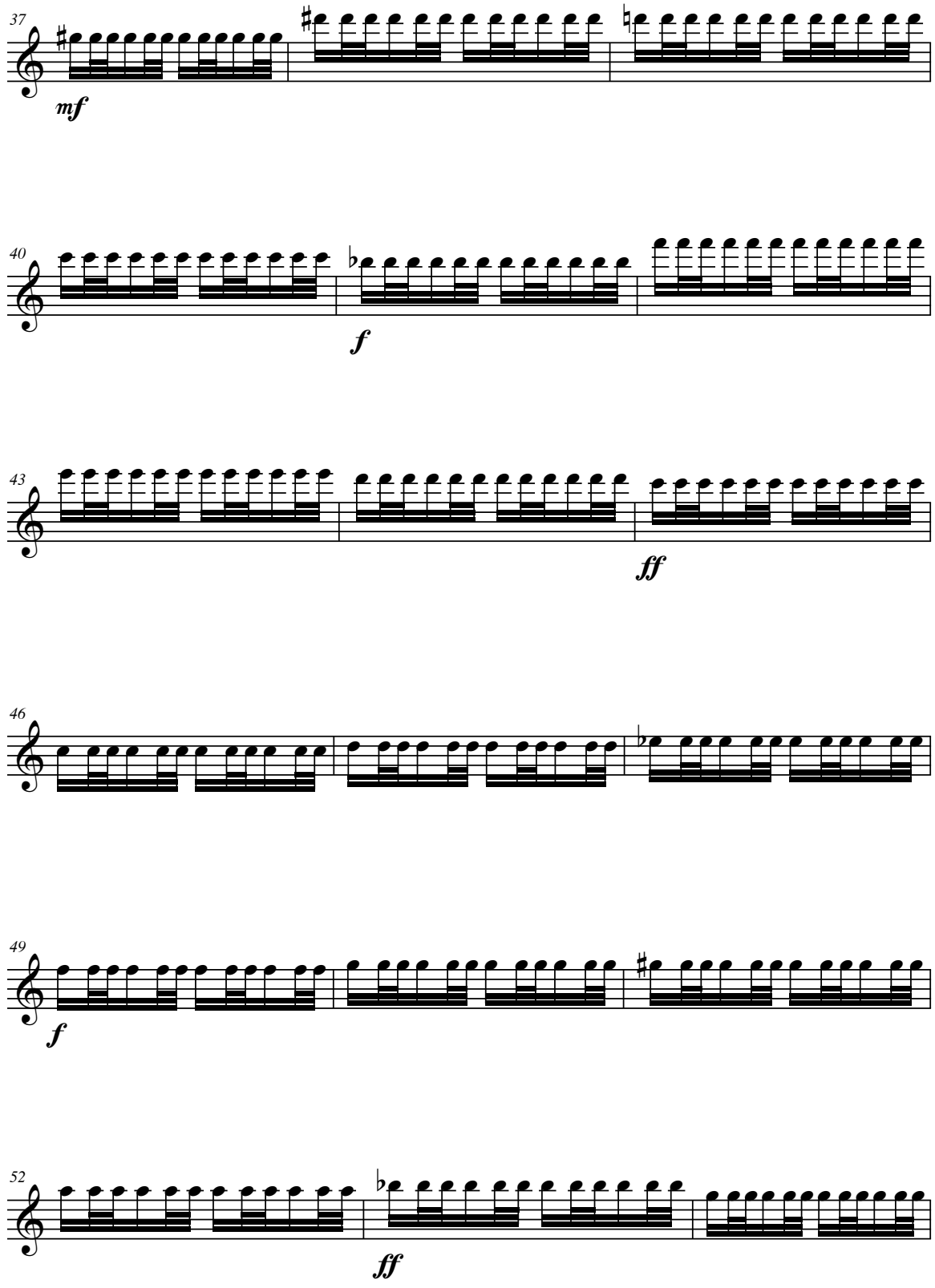
ETUDE # 14: Double Tonguing

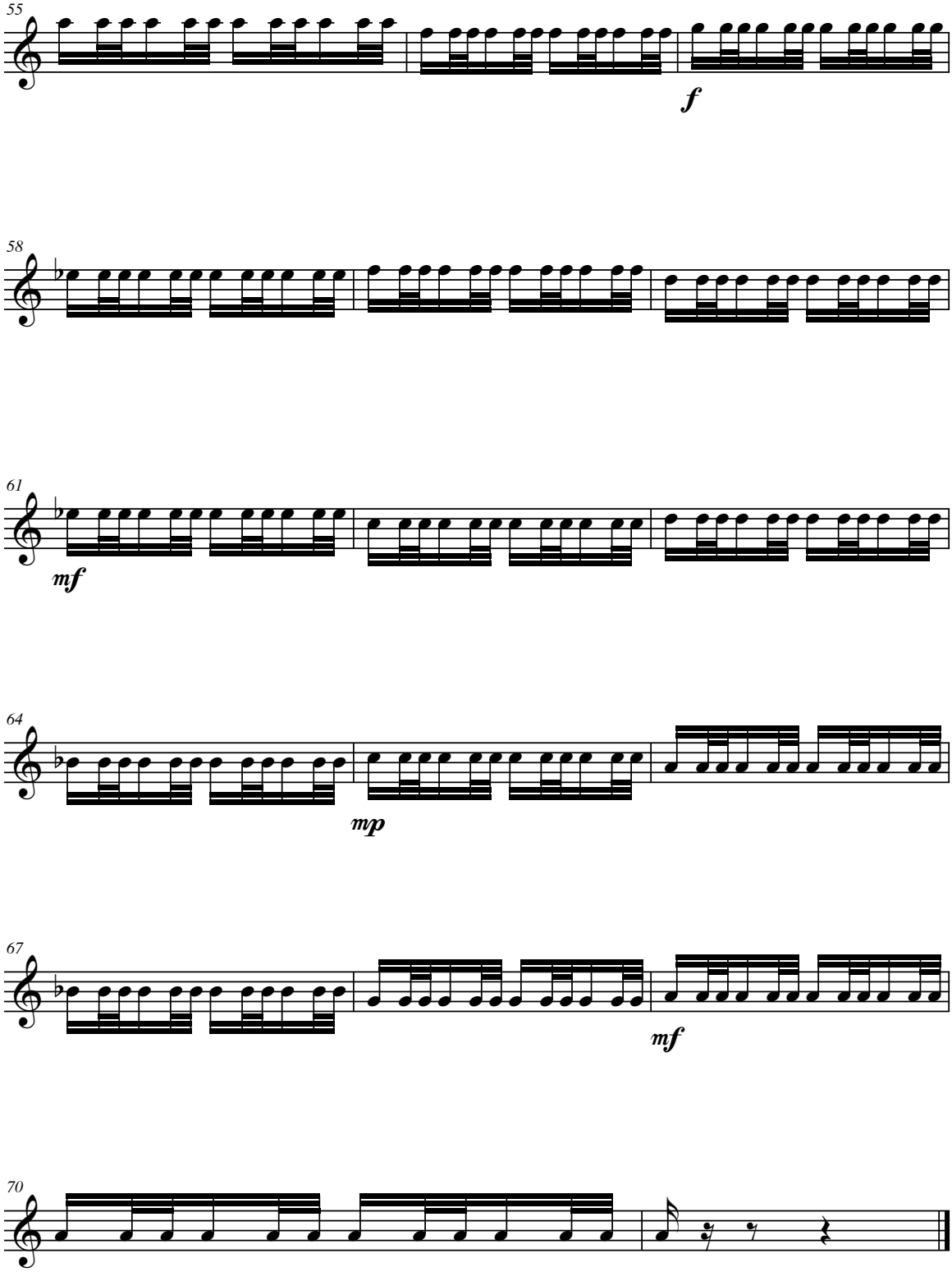
Legato, Repeated Passages

Intent, driving




19
22
25
mf
28
31
mp
34

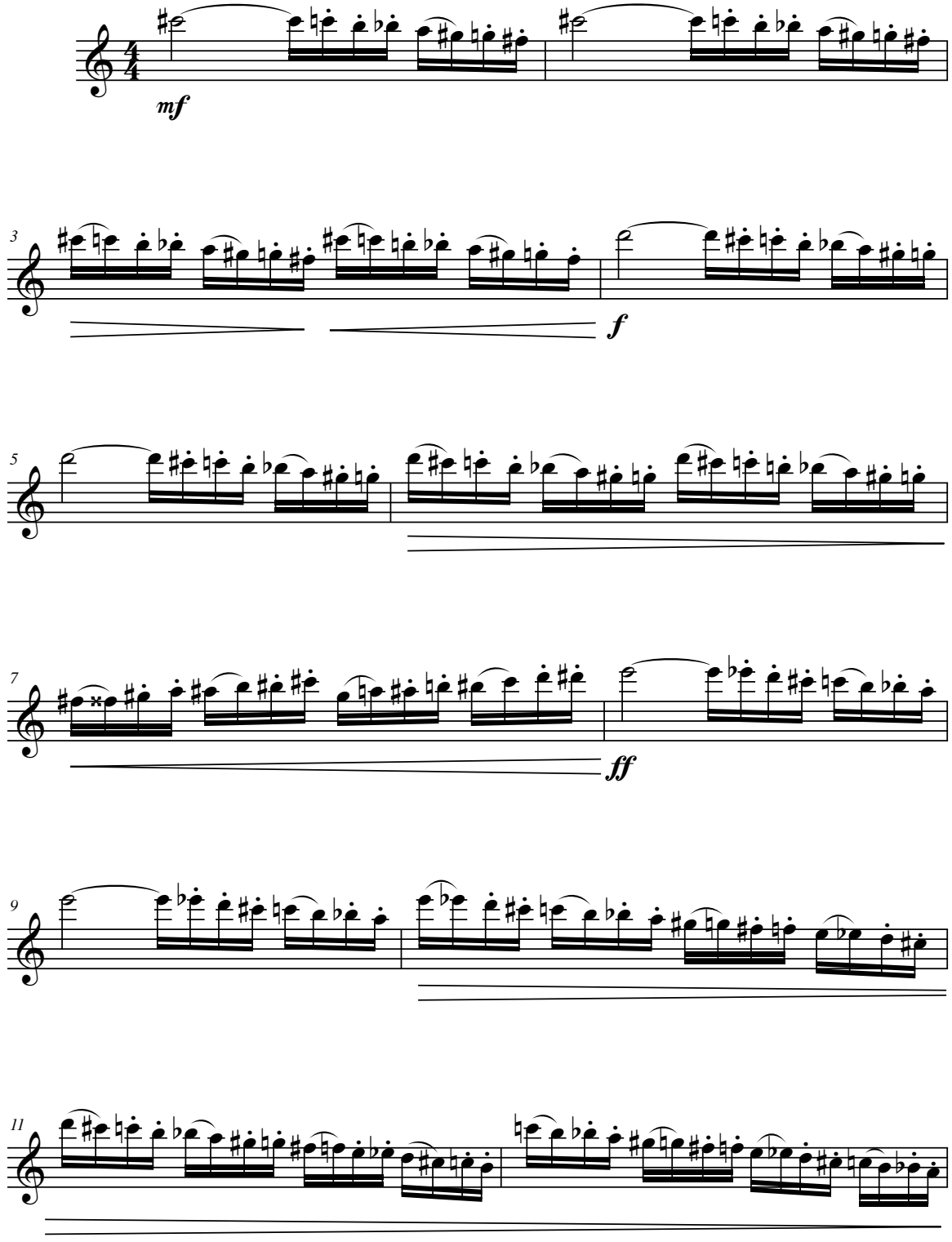

37
mf
40
f
43
ff
46
49
f
52
ff

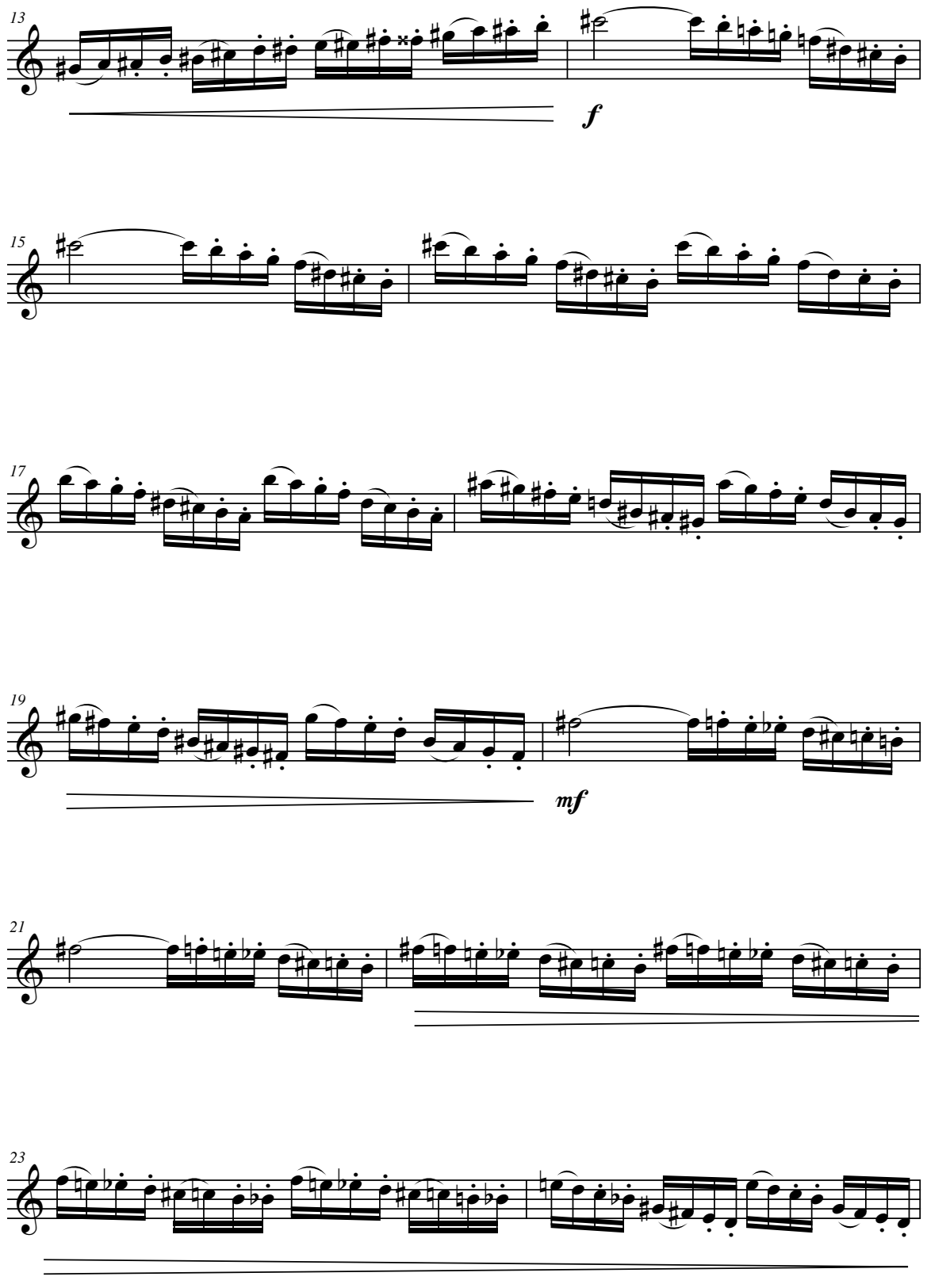

55
f
58
61
mf
64
mp
67
mf
70

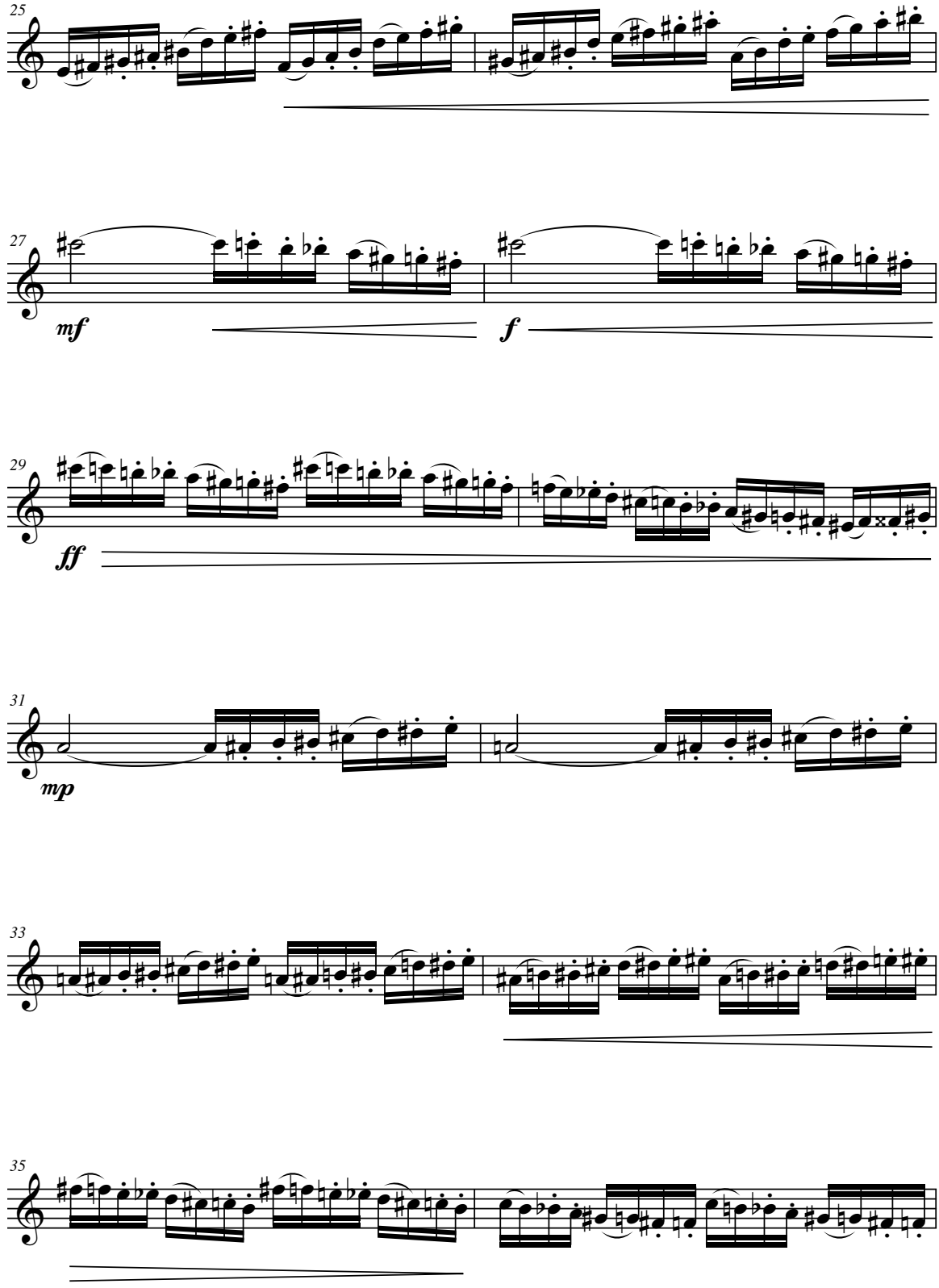
ETUDE # 15: Double Tonguing

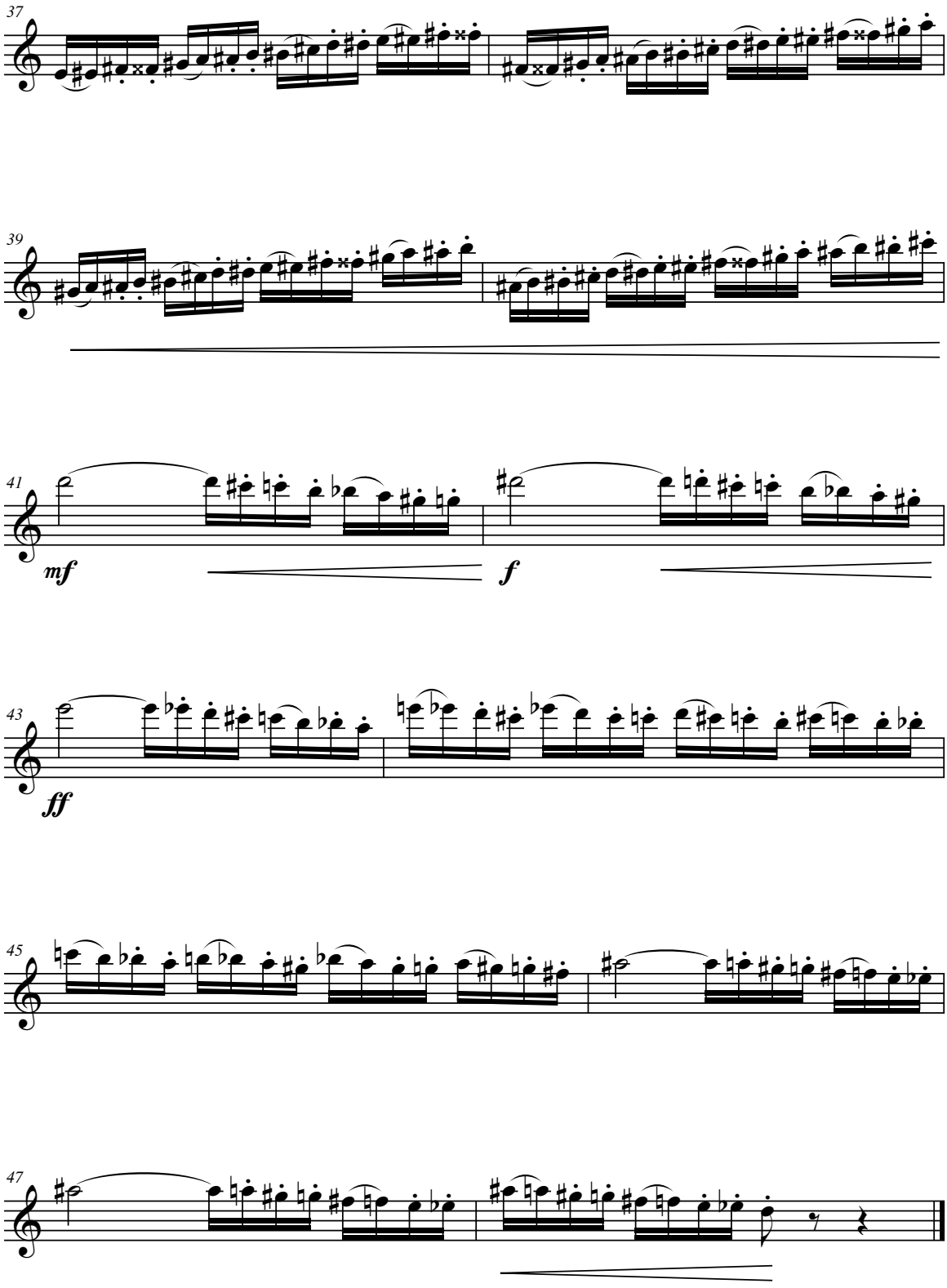
Rapid, Conjunct, Chromatic Passages

Cascading



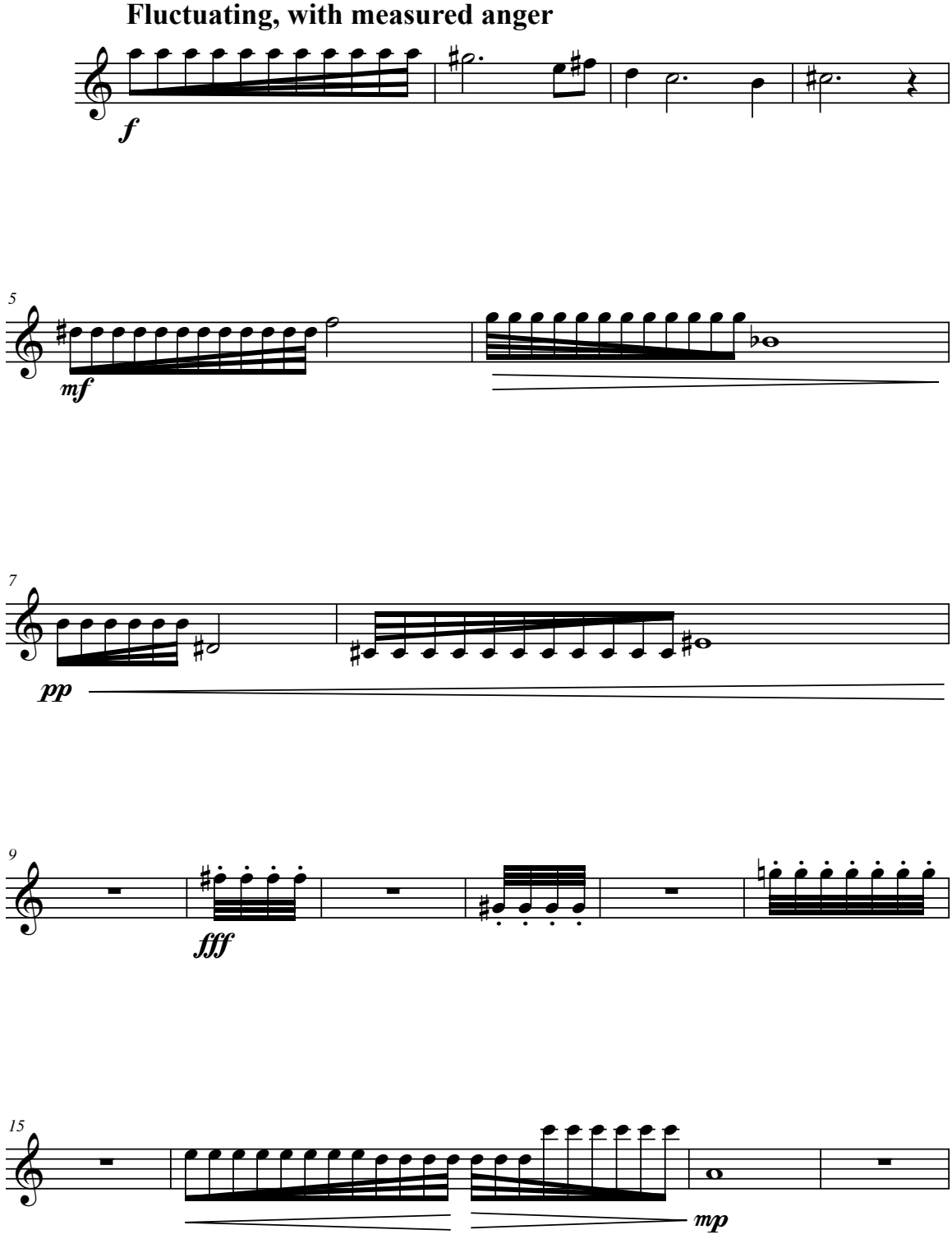

13
f
15
17
19
mf
21
23

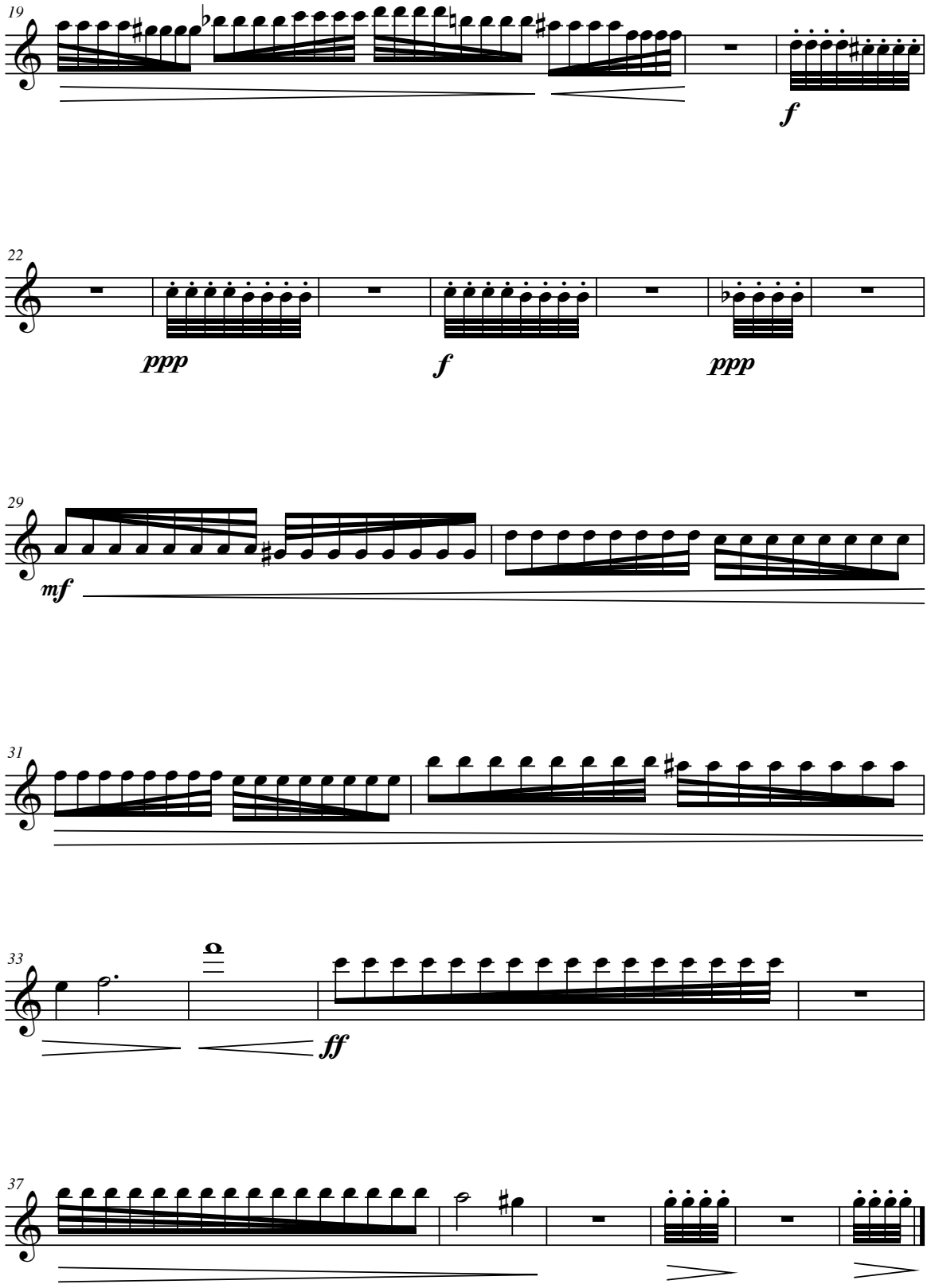

25
27
mf
f
29
ff
31
mp
33
35


37
39
41
mf
f
43
ff
45
47

ETUDE # 16: Double Tonguing

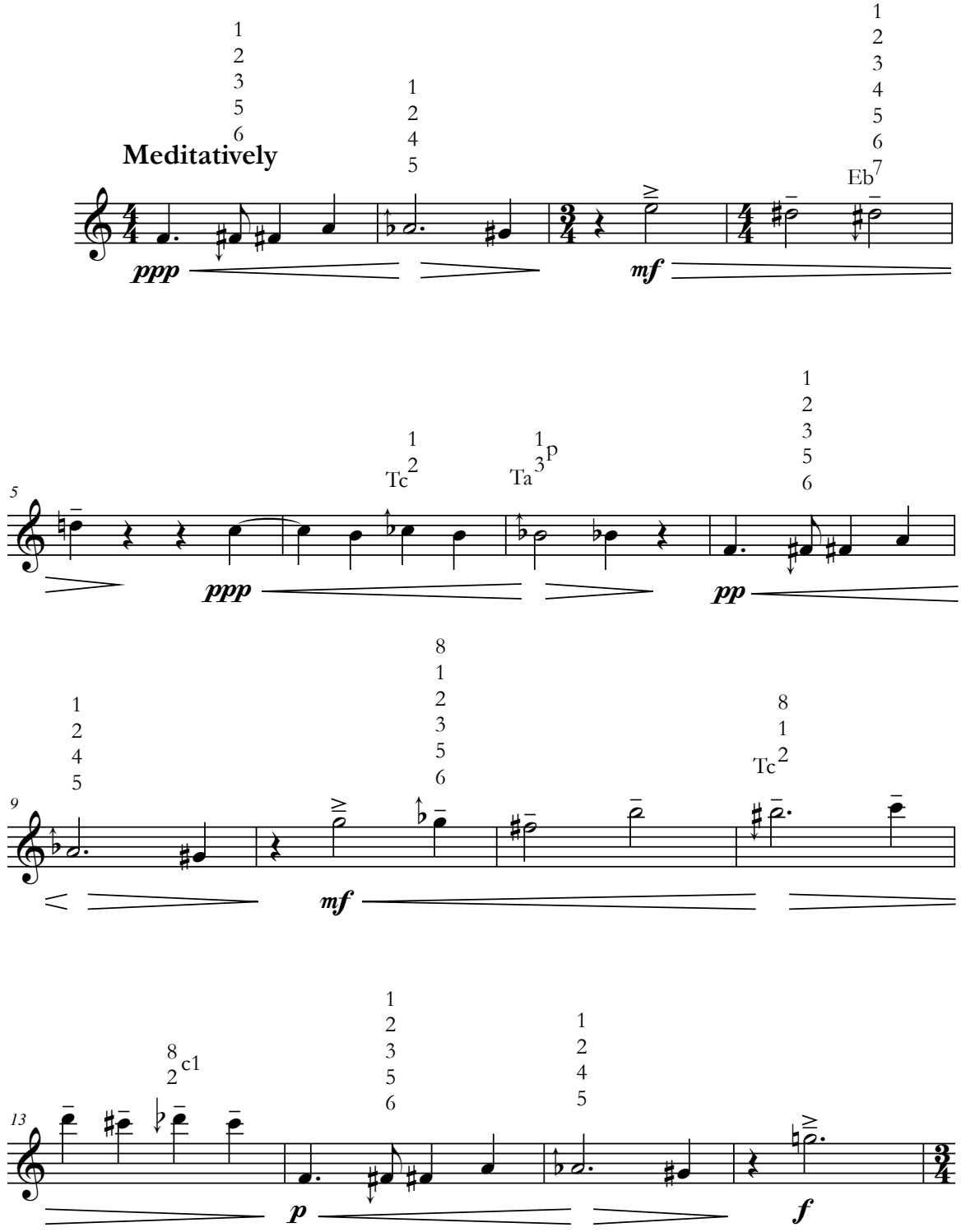
Repeated Notes with Varying Velocity

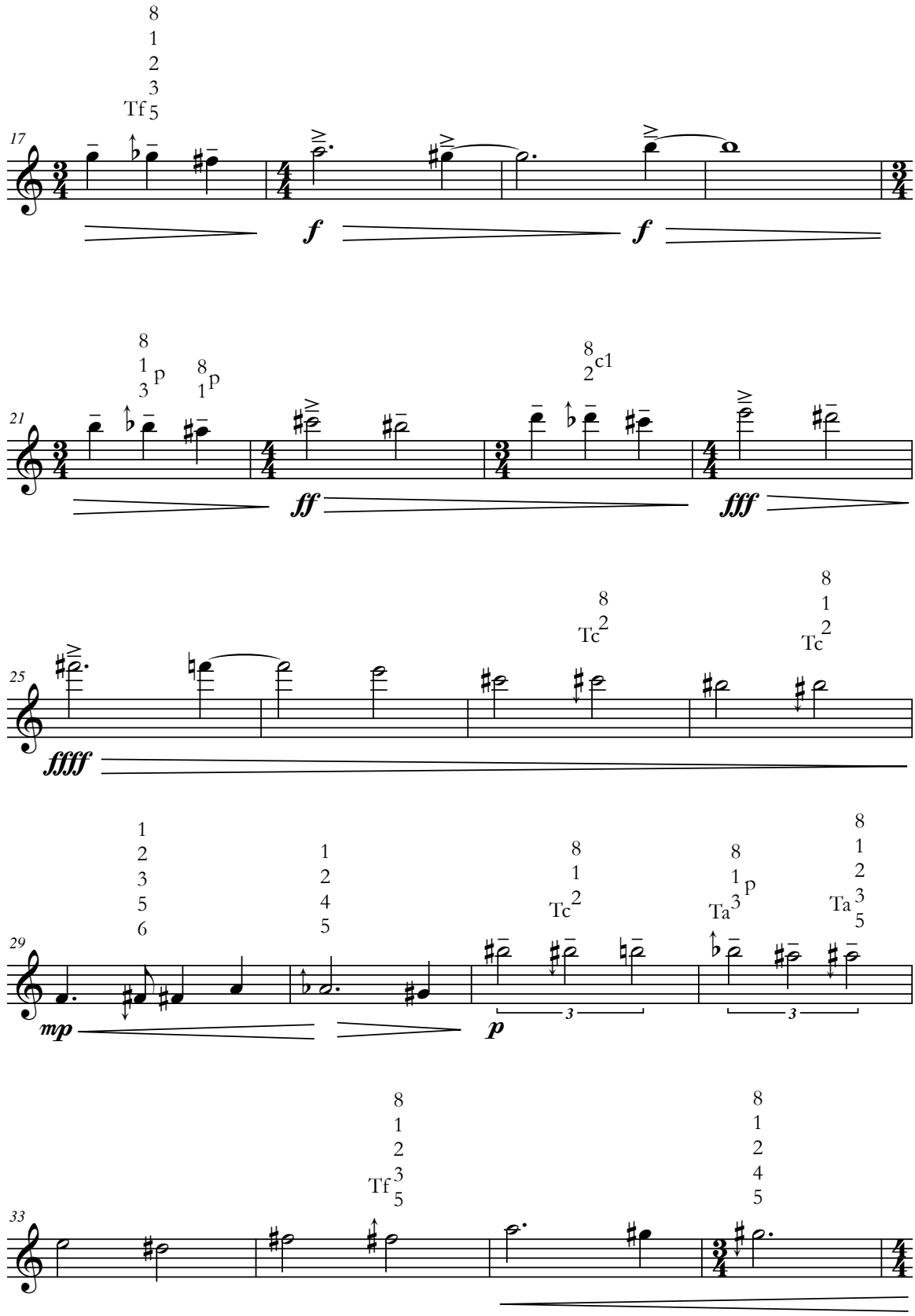


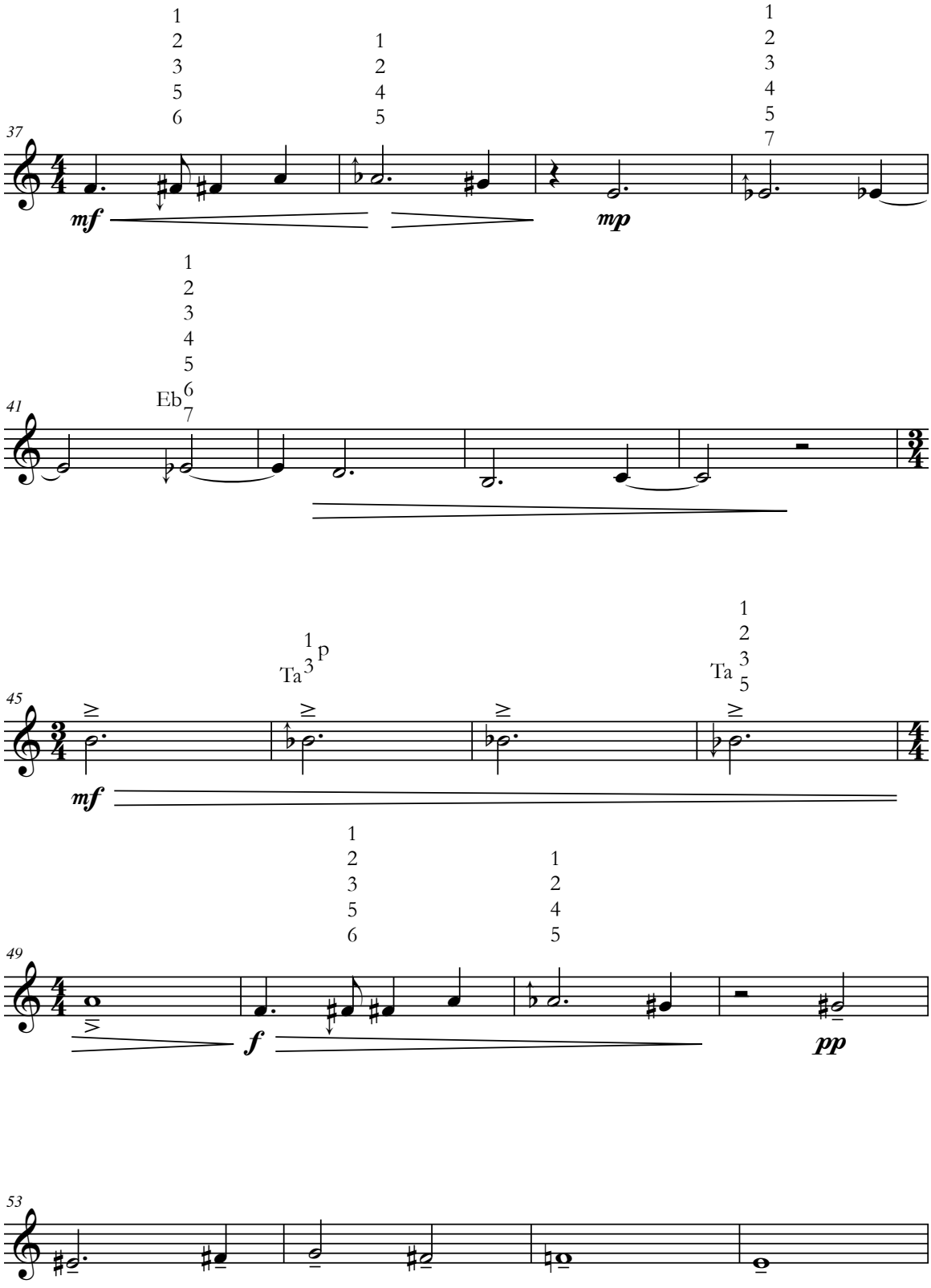

19
f
22
ppp
f
ppp
29
mf
31
33
ff
37

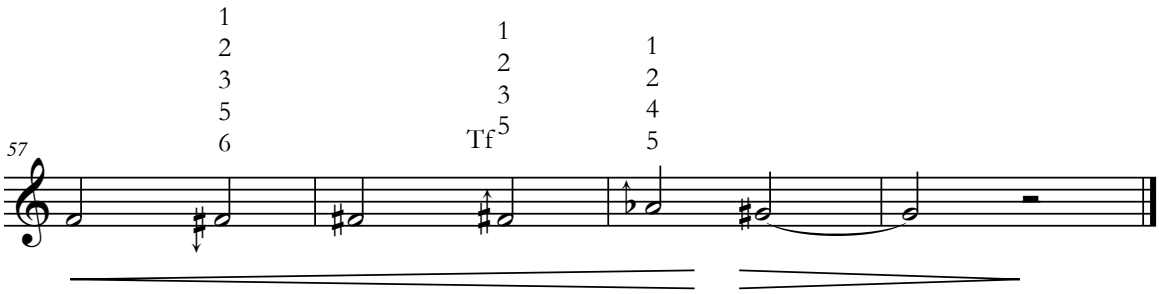
ETUDE # 17: Microtones

Slow, "Microchromatic" Passages



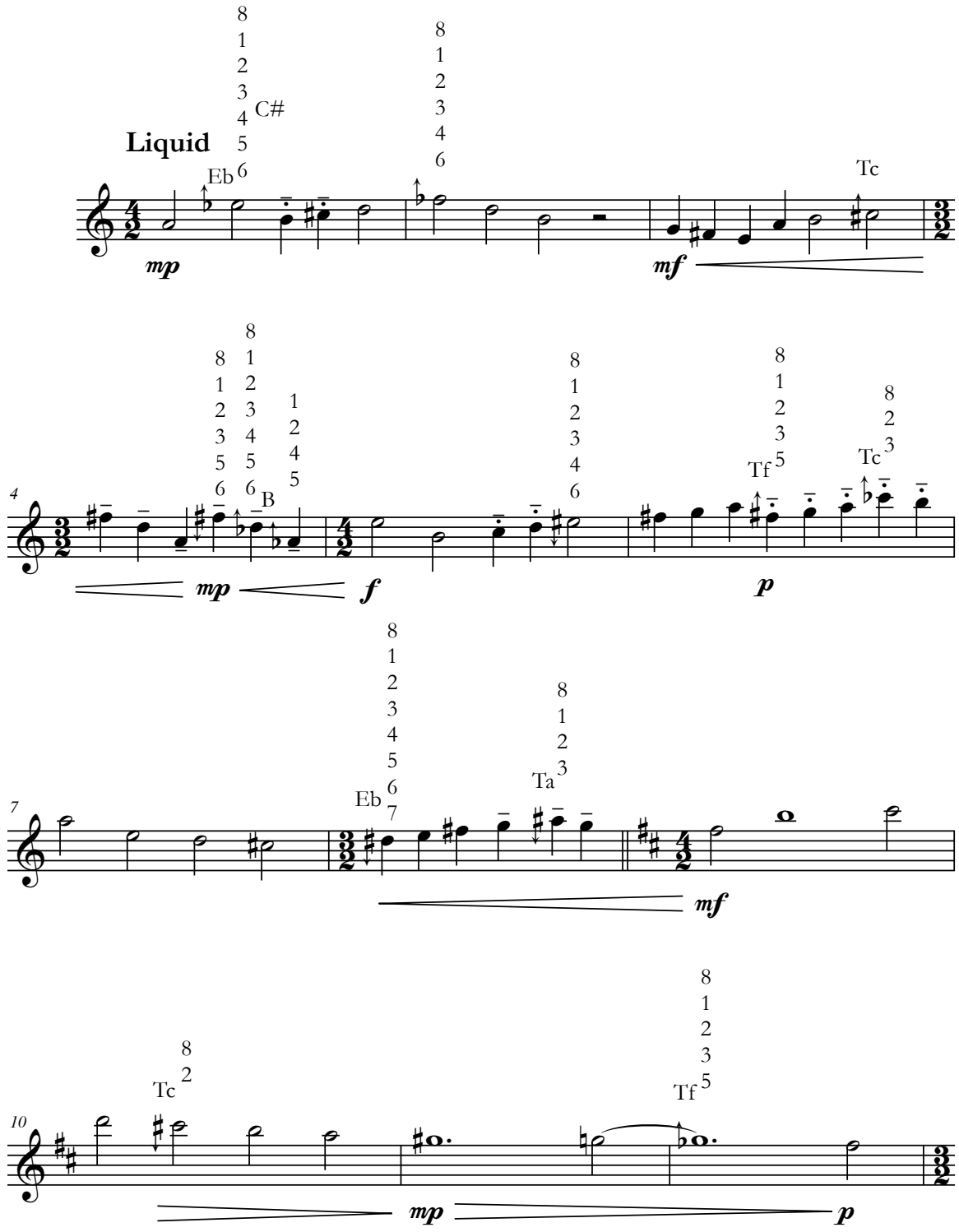

17
8
1
2
3
Tf 5
f
f
21
8
1
3 p
8
1 p
8
2 c1
ff
fff
25
8
Tc 2
8
1
Tc 2
ffff
29
1
2
3
5
6
1
2
4
5
8
1
Tc 2
8
1 p
Ta 3
8
1
2
3
Ta 5
mp
p
3
3
33
8
1
2
3
Tf 5
8
1
2
4
5

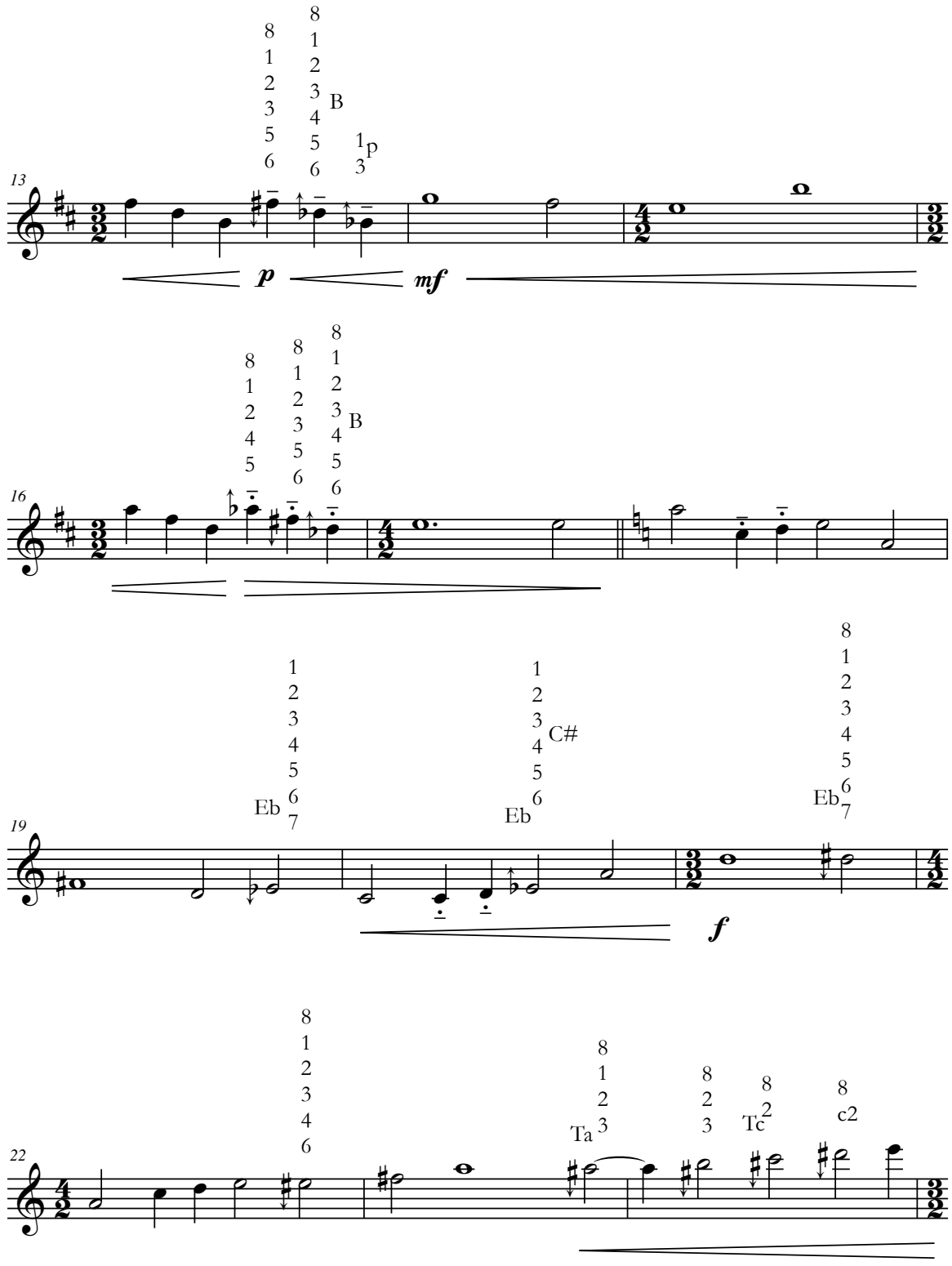

37
mf
mp
41
Eb
45
mf
Ta
Ta
49
f
pp
53

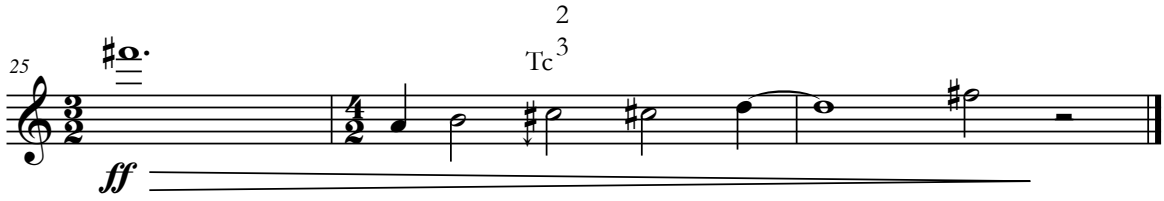

57
1
2
3
5
6
1
2
3
5
Tf
1
2
4
5

ETUDE # 18: Microtones

Slow, Disjunct Passages

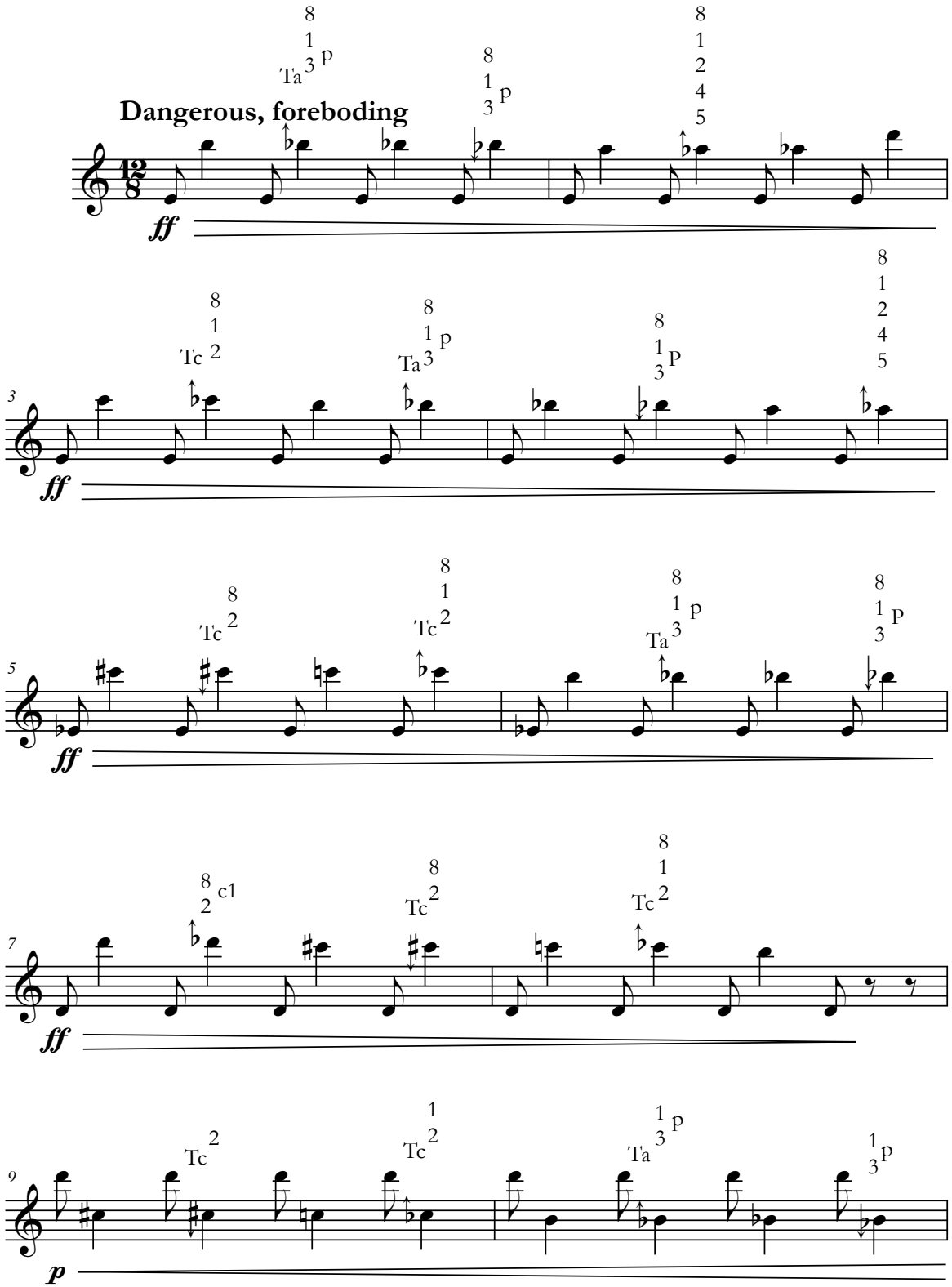


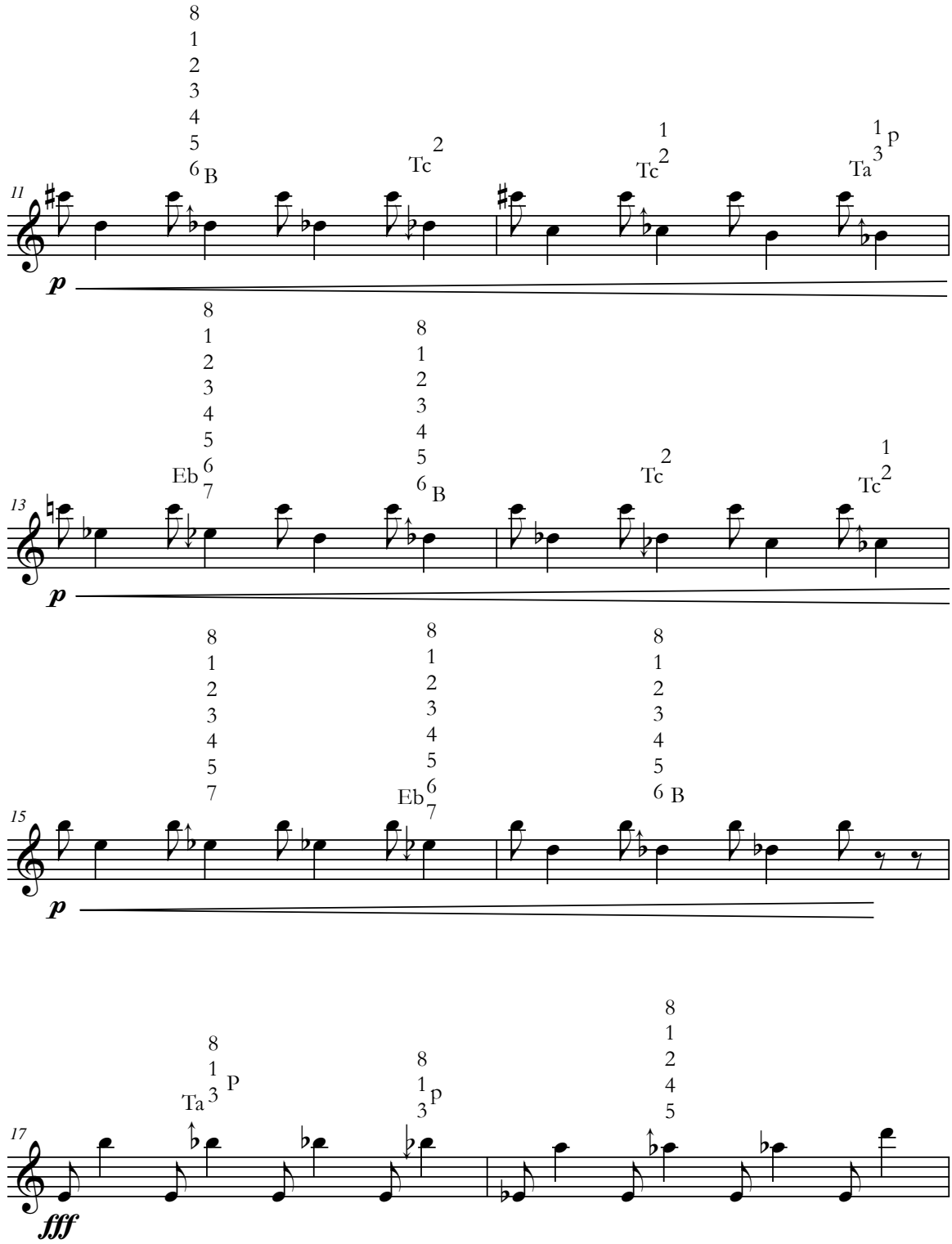

13
p
mf
16
19
f
22

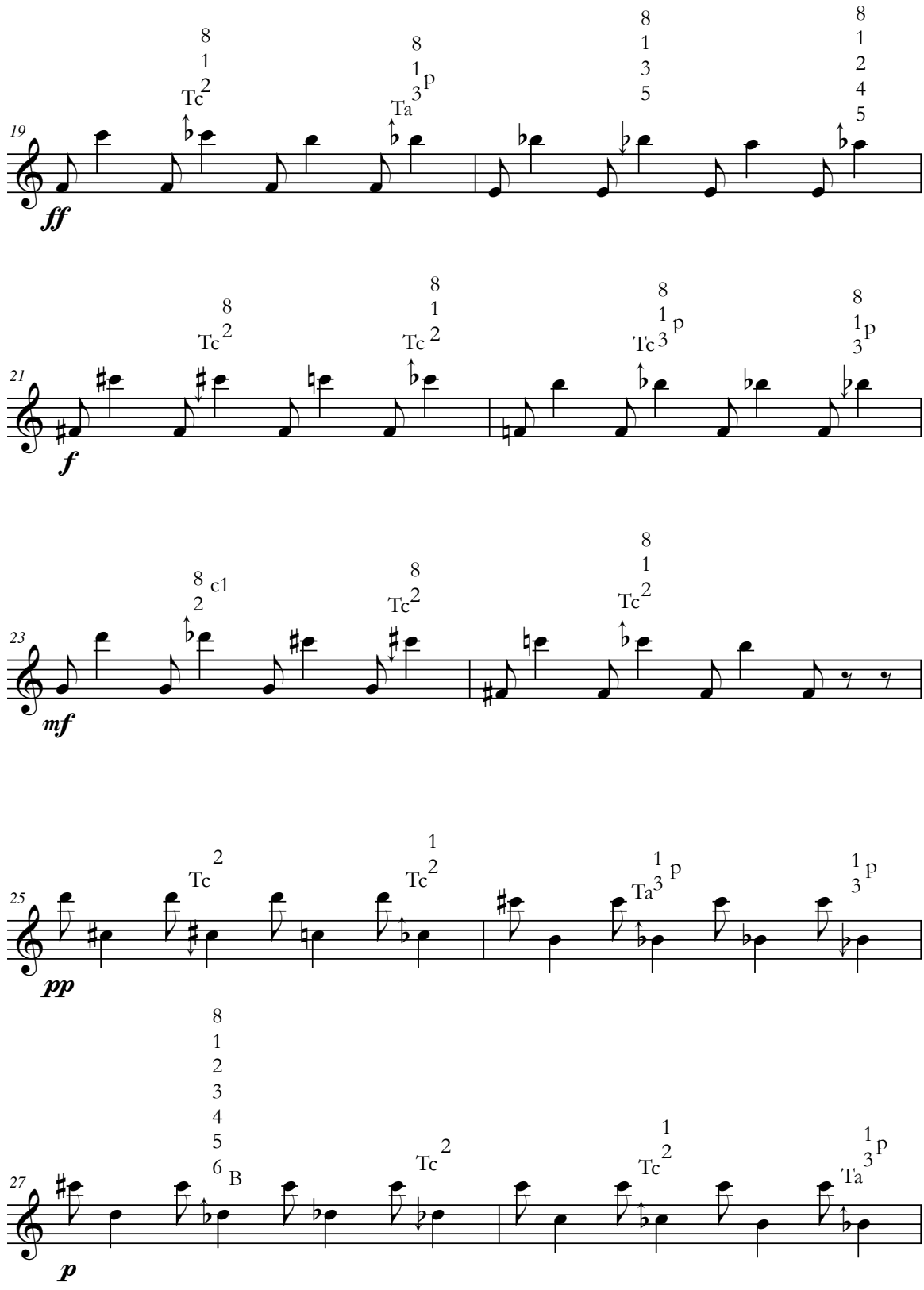

25
Tc
2
3
ff

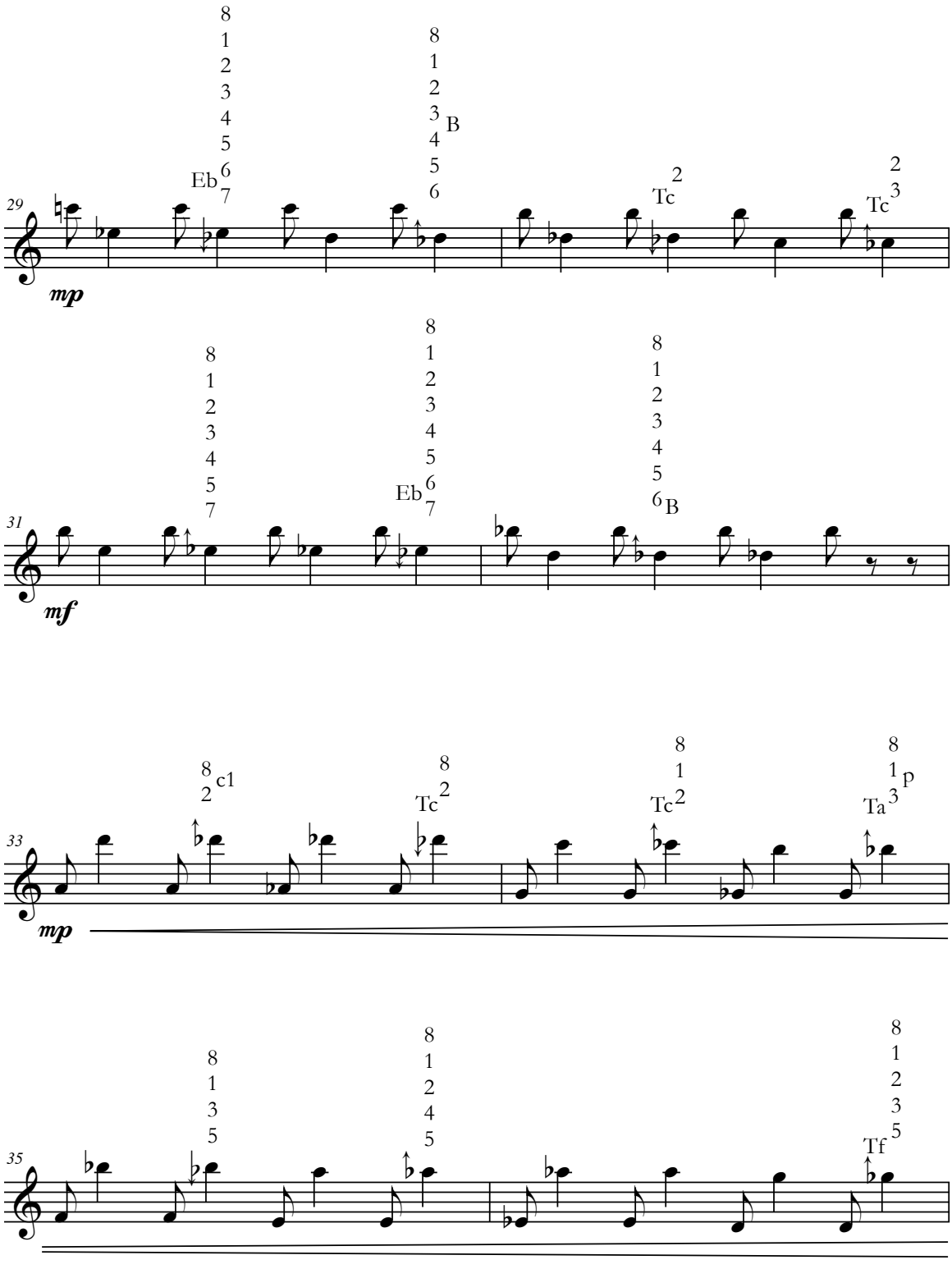
ETUDE # 19: Microtones

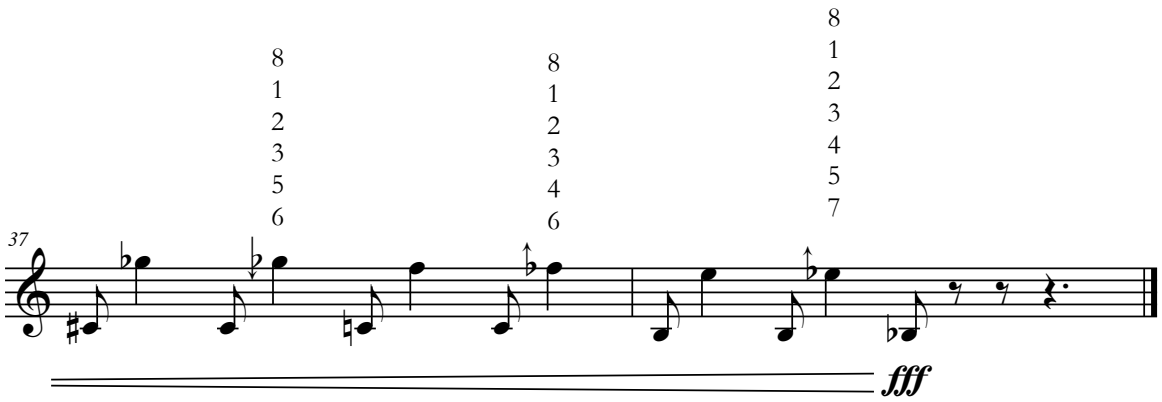
Hybrid-Conjunct and -DIsjunct Passages




11
p
13
p
15
p
17
fff

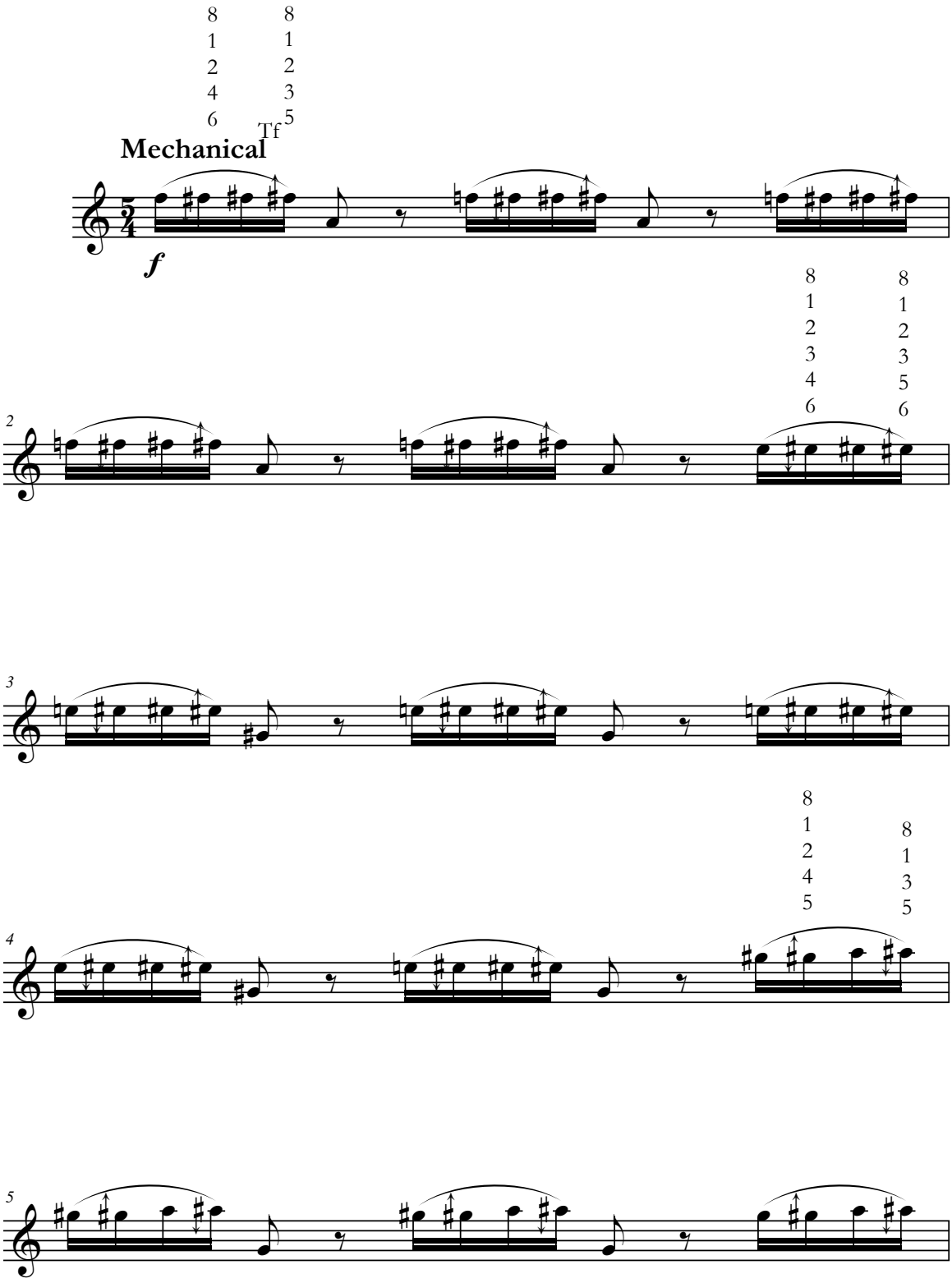

19
ff
8
1
Tc 2
8
1
Ta 3 p
8
1
3
5
8
1
2
4
5
21
f
8
Tc 2
8
1
Tc 2
8
1
Tc 3 p
8
1
3 p
23
mf
8 c1
2
8
Tc 2
8
1
Tc 2
25
pp
2
Tc
1
Tc 2
1
Ta 3 p
1 p
3
27
p
8
1
2
3
4
5
6 B
Tc 2
1
Tc 2
1 p
Ta 3

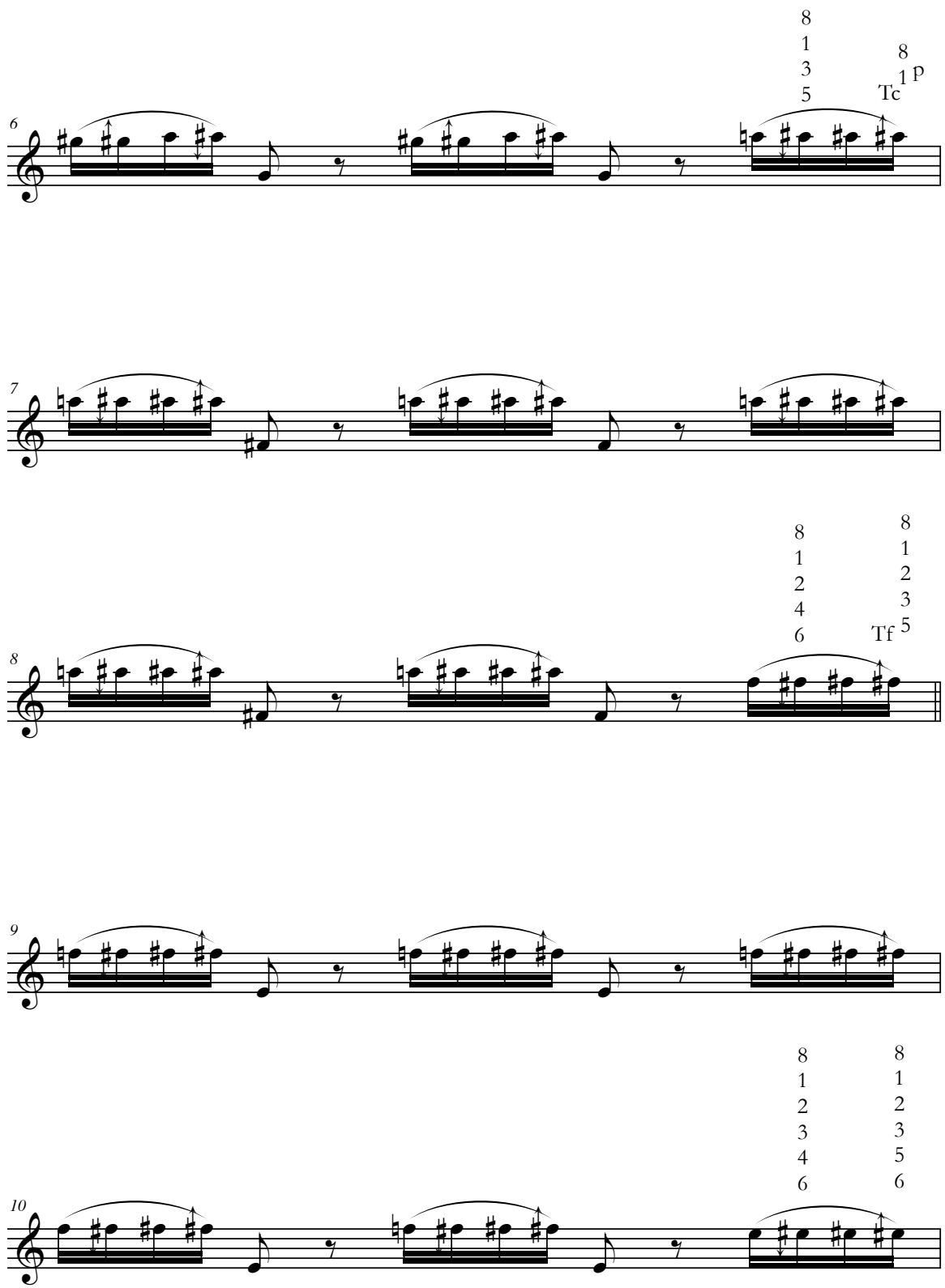

29
mp
Eb
B
Tc
Tc
31
mf
Eb
B
33
mp
c1
Tc
Tc
Ta
p
35
Tf

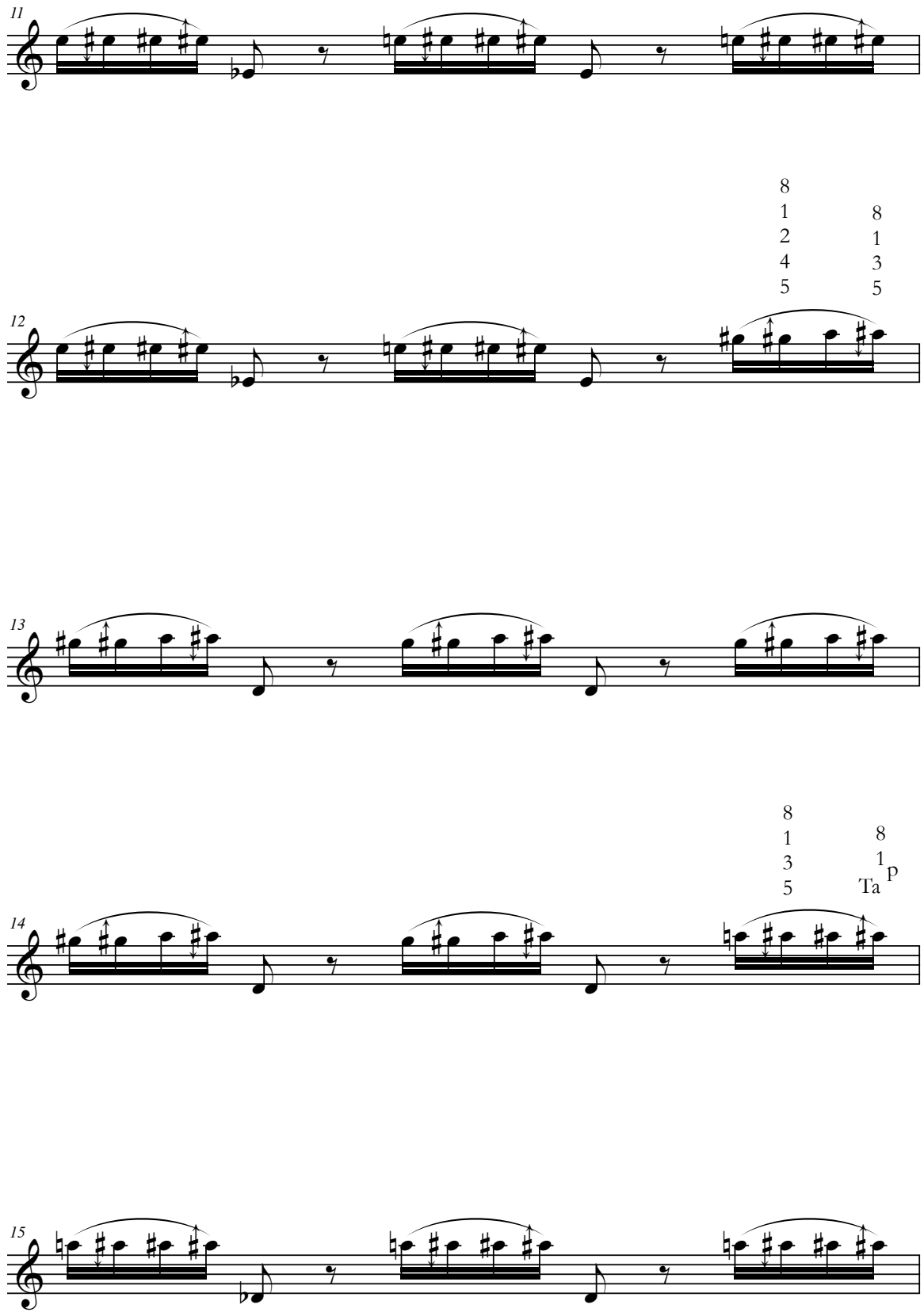

37
8
1
2
3
5
6
8
1
2
3
4
6
8
1
2
3
4
5
7
fff

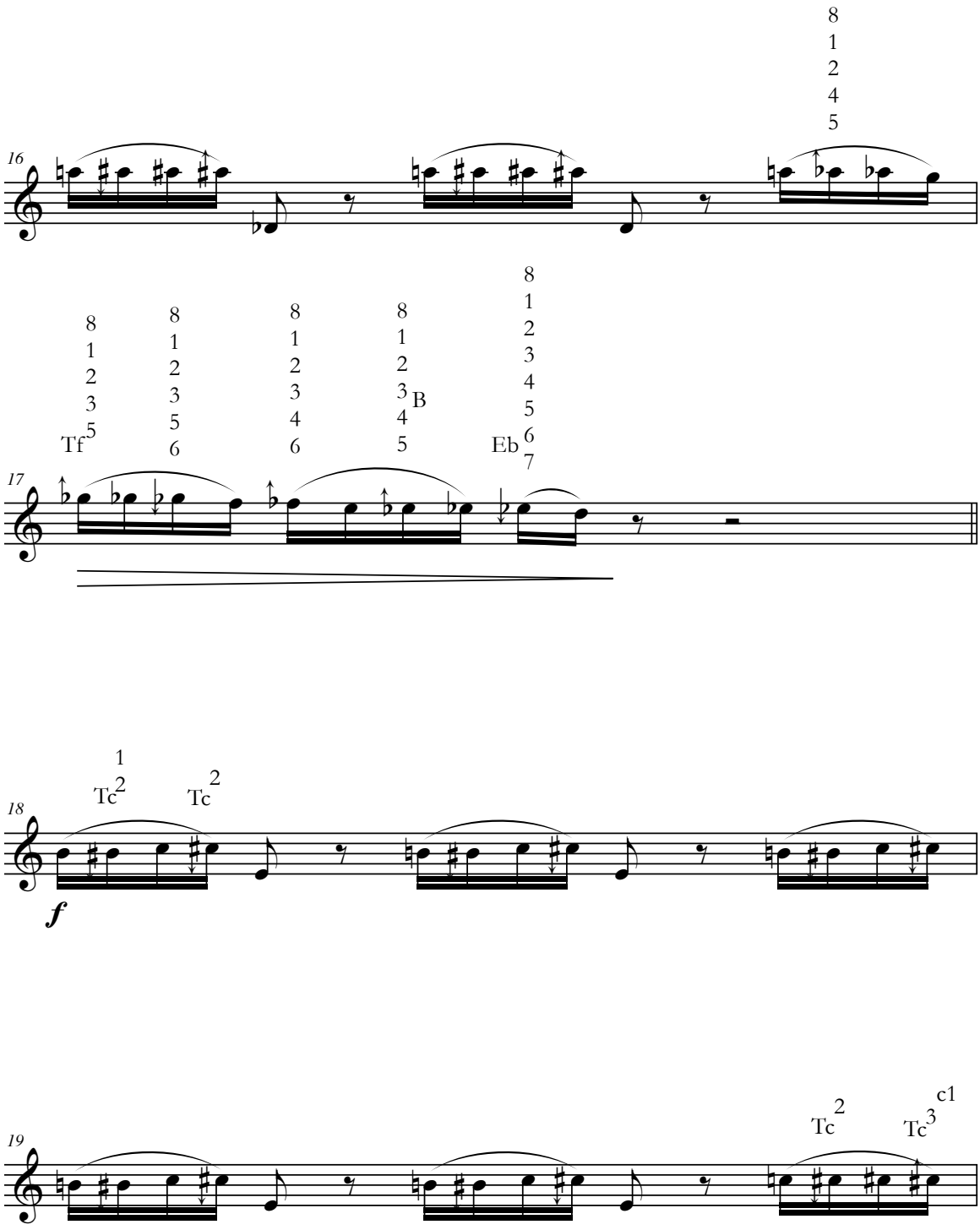
ETUDE # 20: Microtones

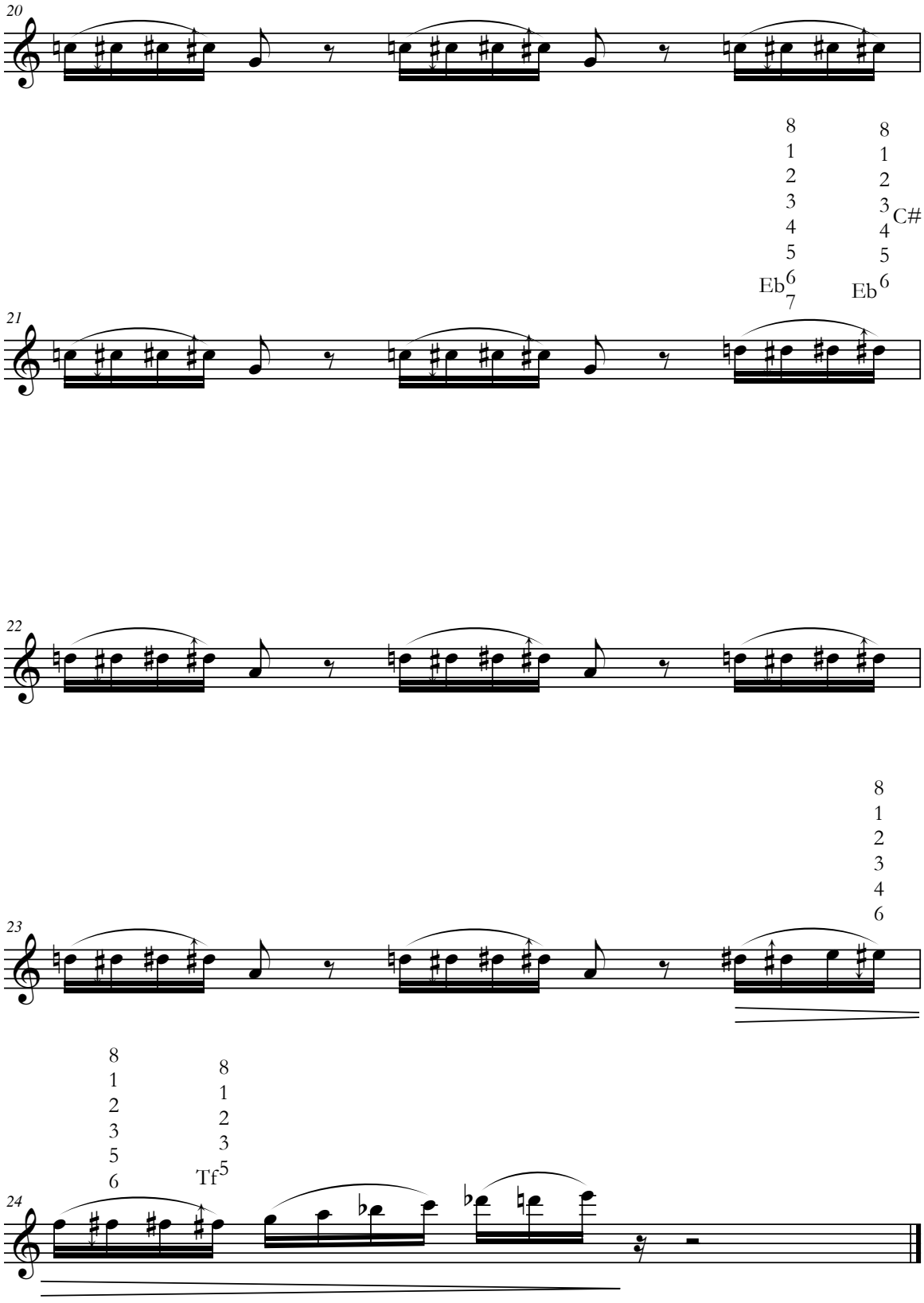
Rapid, Conjunct Passages




6
8
1
3
5
8
1
Tc
p
7
8
8
1
1
2
2
4
3
6
5
Tf
8
9
8
8
1
1
2
2
3
3
4
5
6
6
10

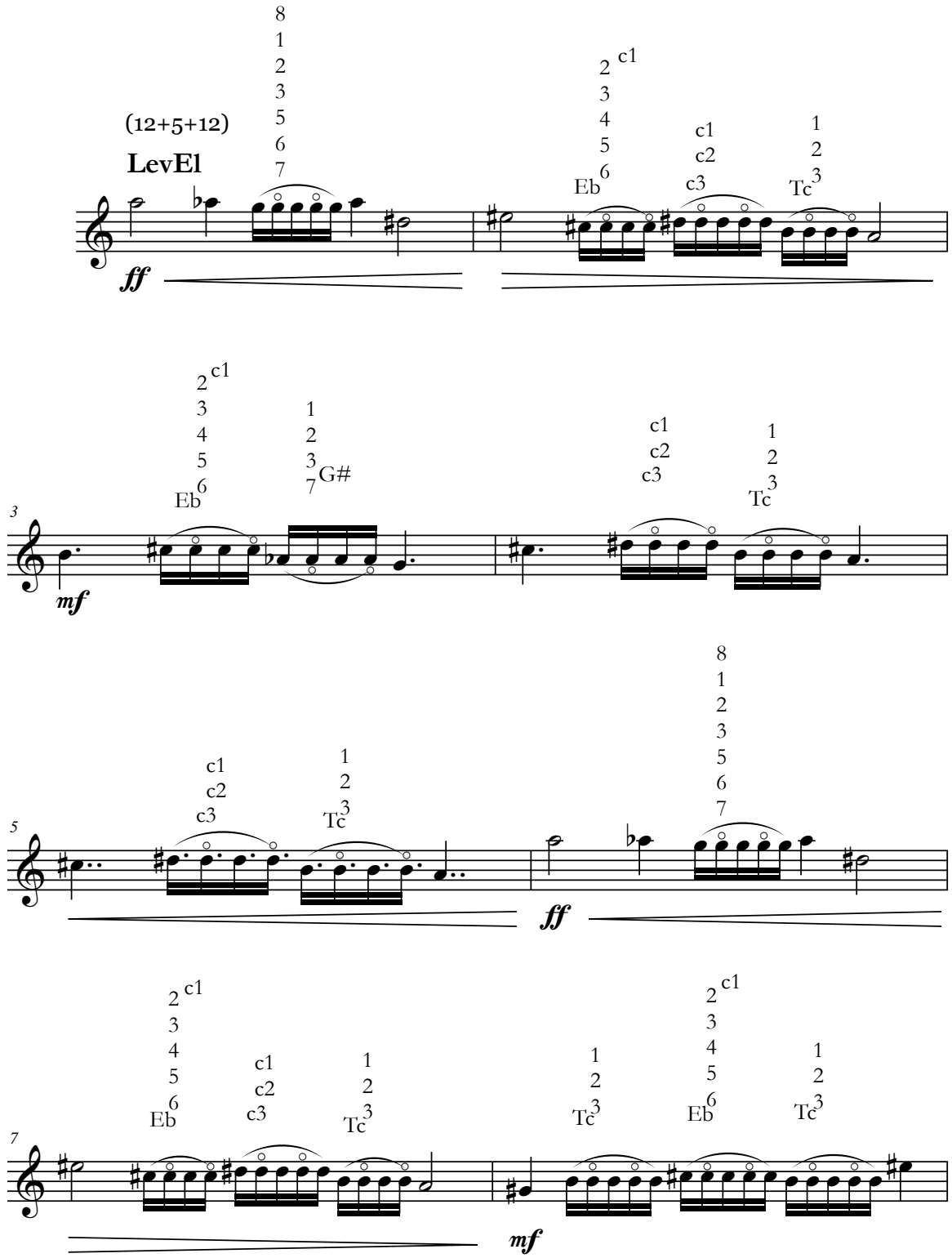

11
8
1
2
4
5
8
1
3
5
12
13
8
1
3
5
8
1
Ta
p
14
15

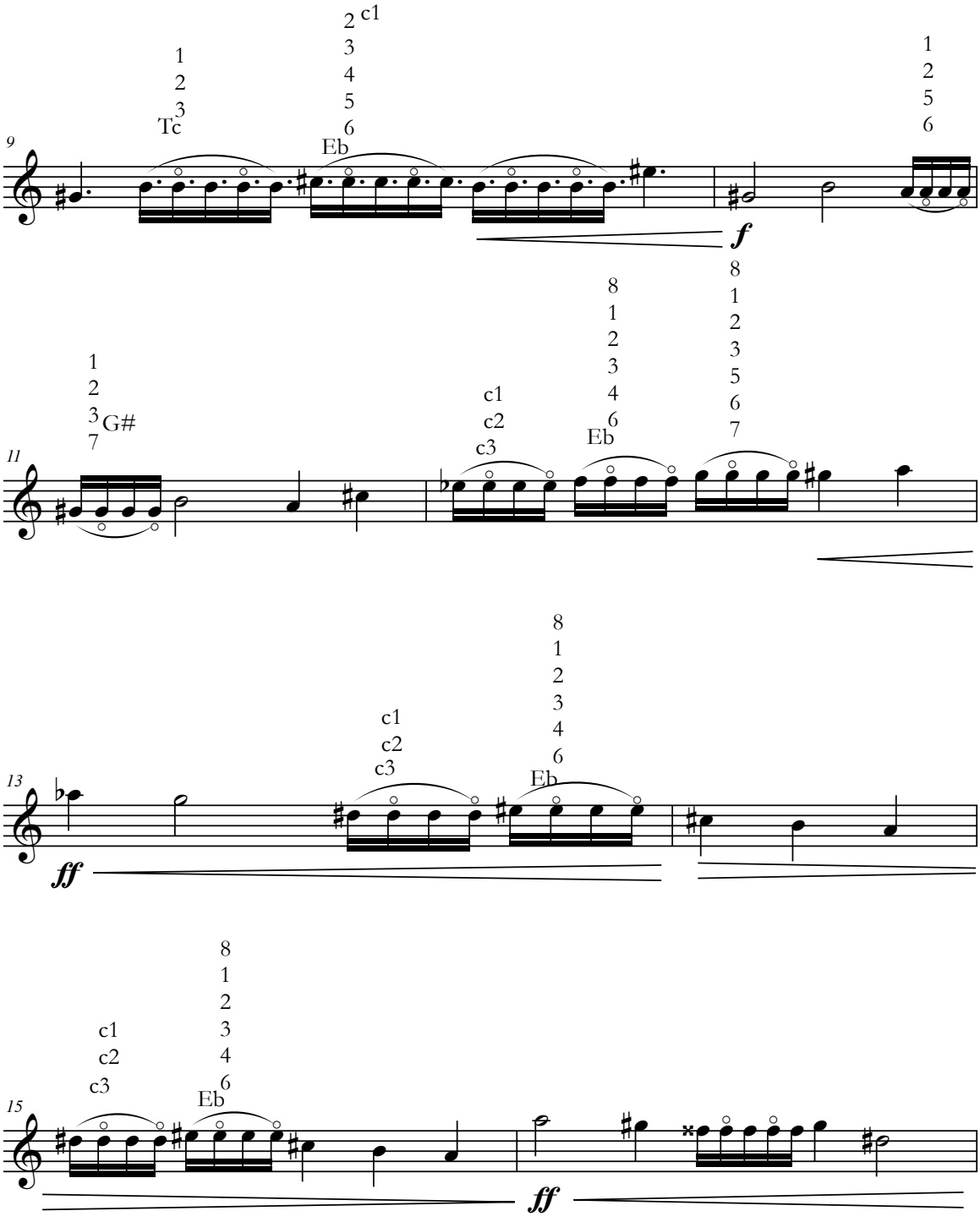

16
8
1
2
4
5
8
1
2
3
5
Tf
8
1
2
3
5
6
8
1
2
3
4
6
8
1
2
3
4
5
B
8
1
2
3
4
5
6
7
Eb
17
1
Tc 2
Tc 2
18
f
Tc 2
Tc 3
c1
19

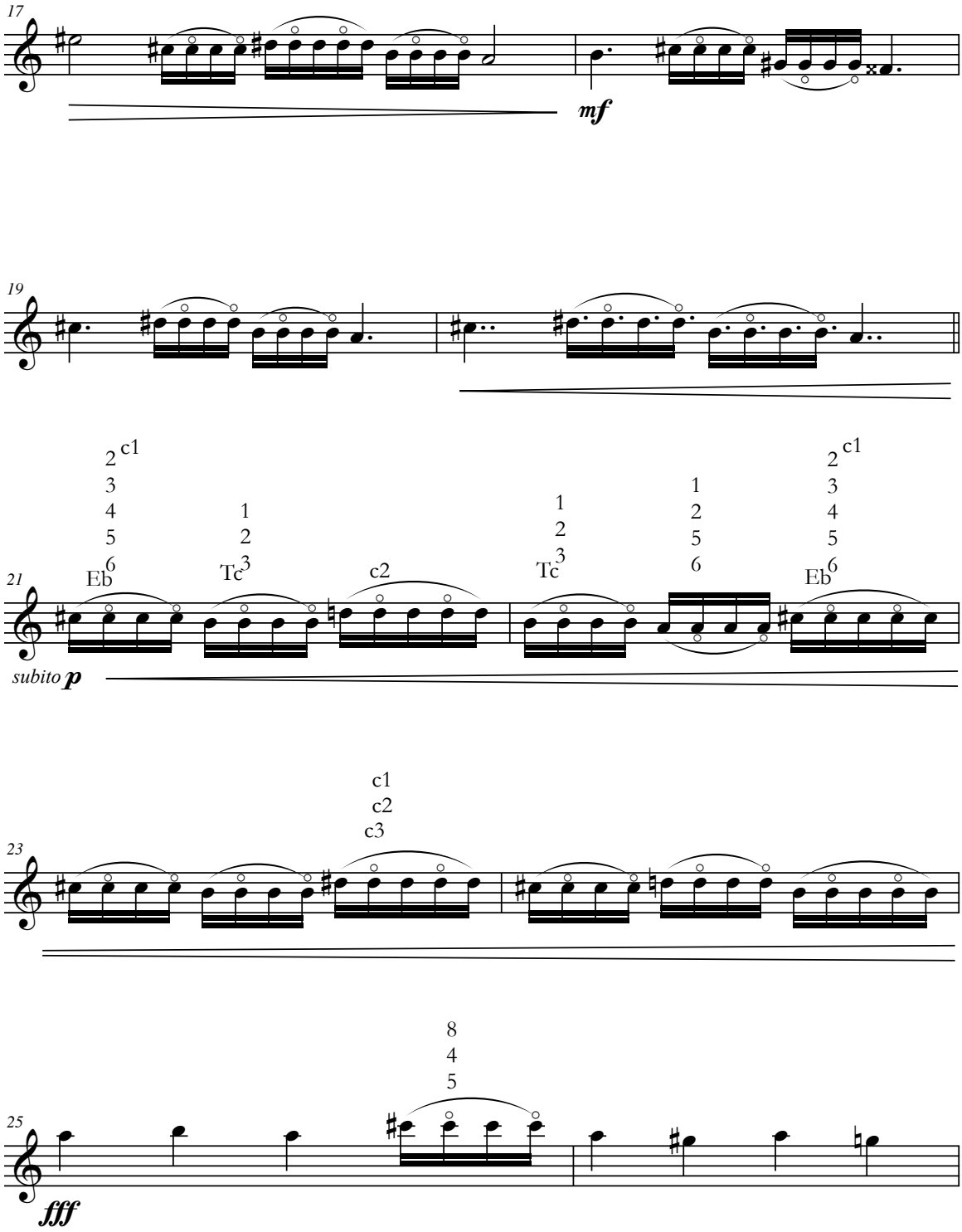

20
8
1
2
3
4
5
Eb 6
7
8
1
2
3
4
5
C#
Eb 6
21
22
8
1
2
3
4
6
23
8
1
2
3
5
6
8
1
2
3
Tf 5
24

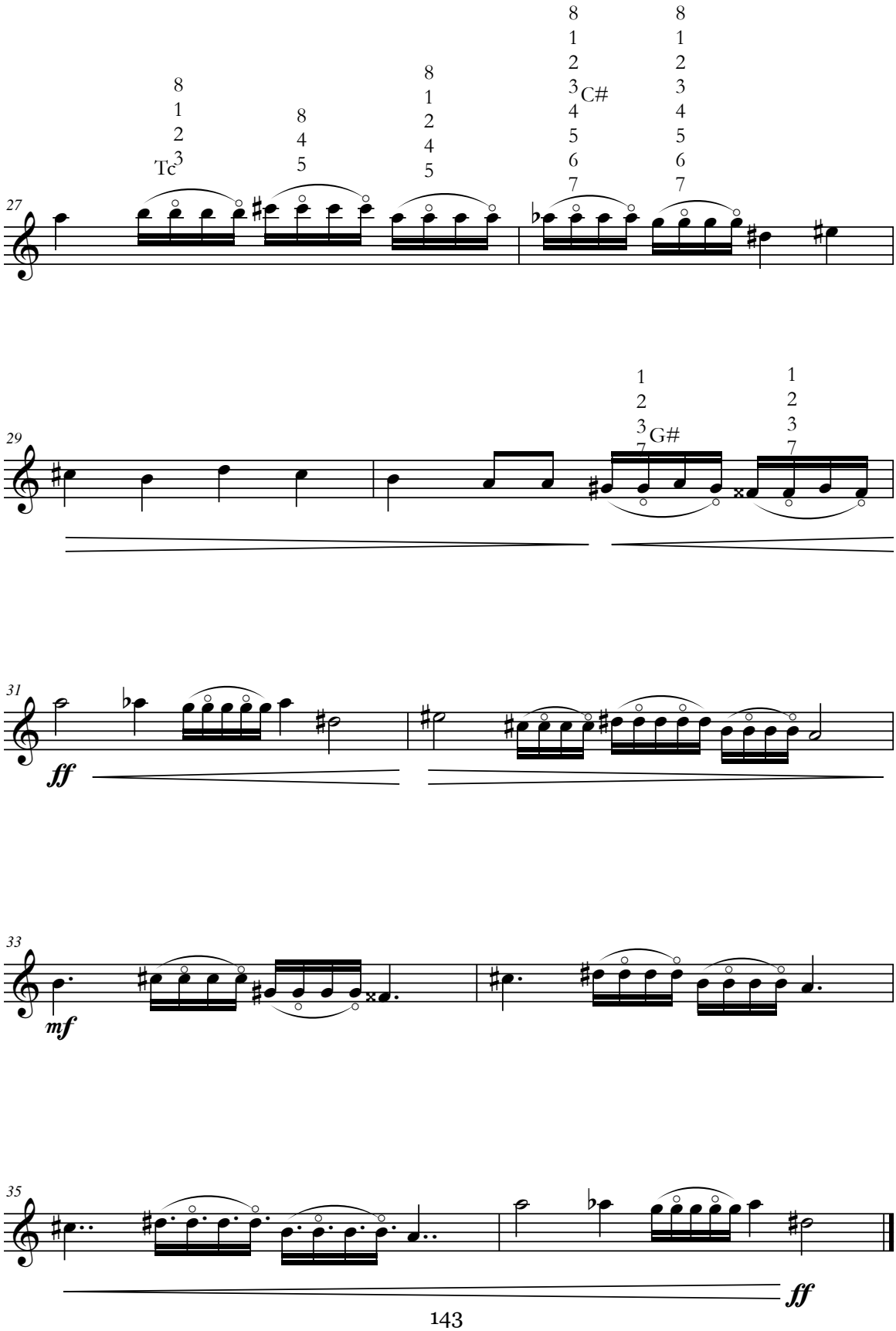
ETUDE # 21: Timbre and Bisbigliando

Melodic Passages



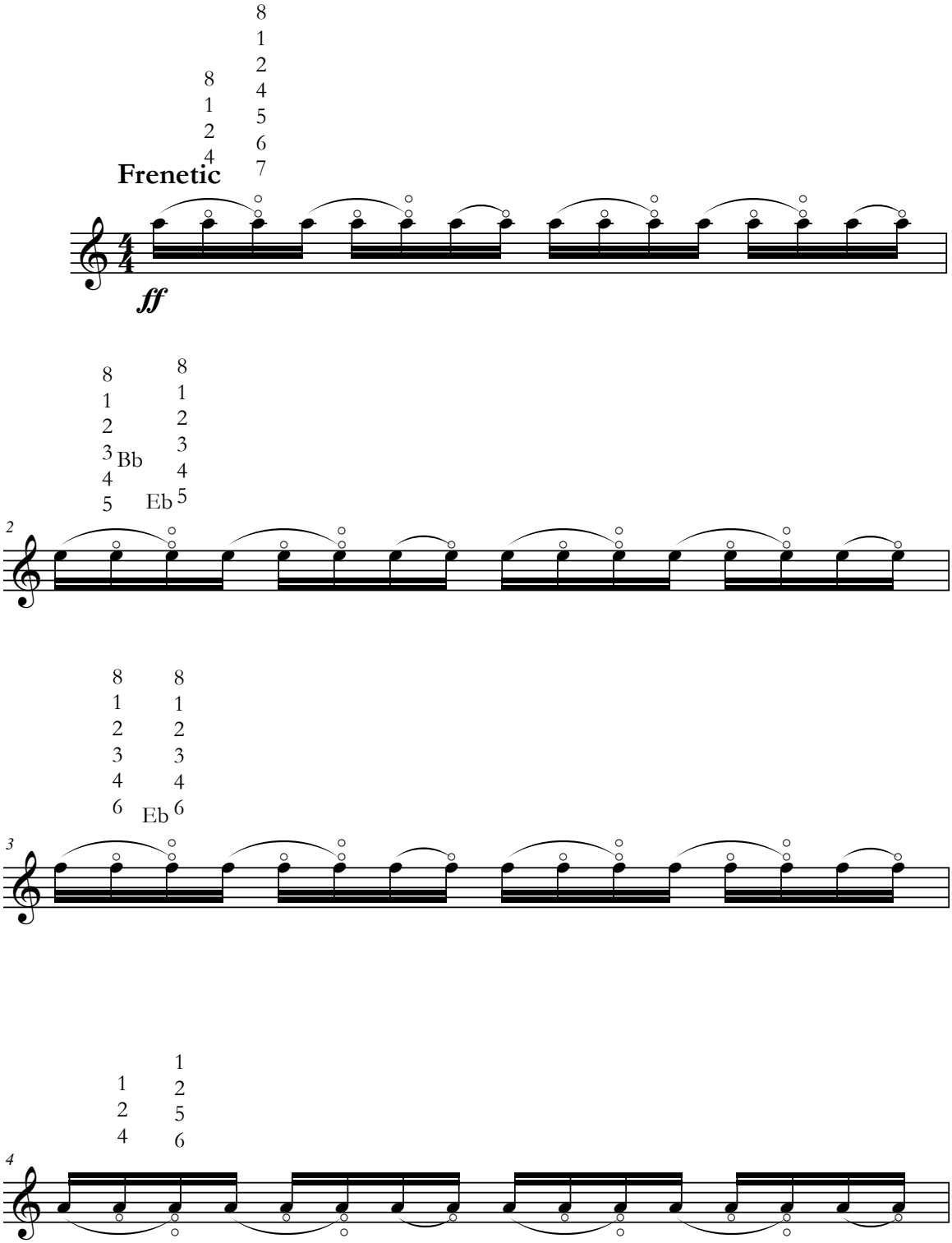

9
1
2
3
Tc
2
3
4
5
6
c1
Eb
1
2
5
6
f
11
1
2
3
7
G#
c1
c2
c3
8
1
2
3
4
6
Eb
8
1
2
3
5
6
7
13
c1
c2
c3
8
1
2
3
4
6
Eb
ff
15
c1
c2
c3
8
1
2
3
4
6
Eb
ff

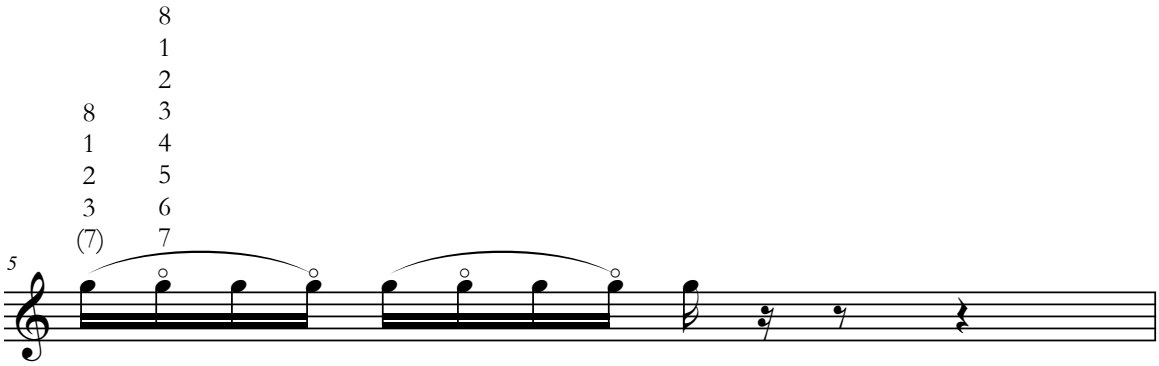

17
mf
19
21
2 c1
3
4
5
6
Eb
1
2
3
Tc
c2
1
2
3
Tc
1
2
5
6
2 c1
3
4
5
6
Eb
subito p
23
c1
c2
c3
25
8
4
5
fff

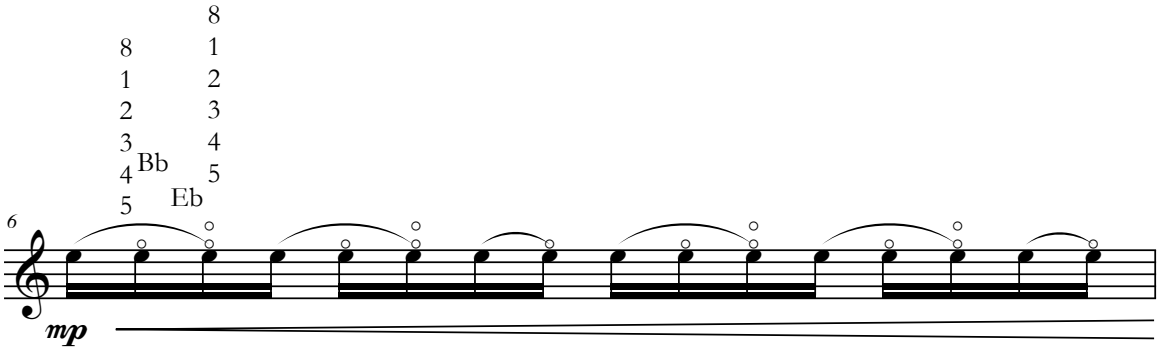

27
Tc
C#
29
G#
31
ff
33
mf
35
ff

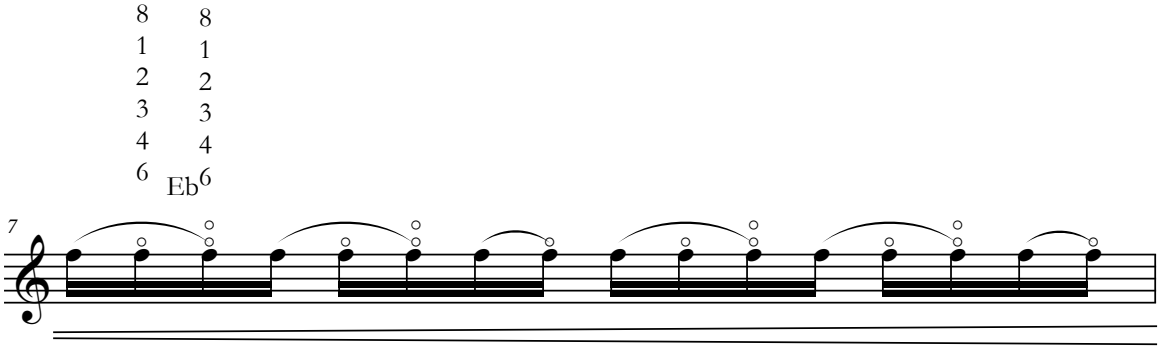
ETUDE # 22: Timbre and Bisbigliando

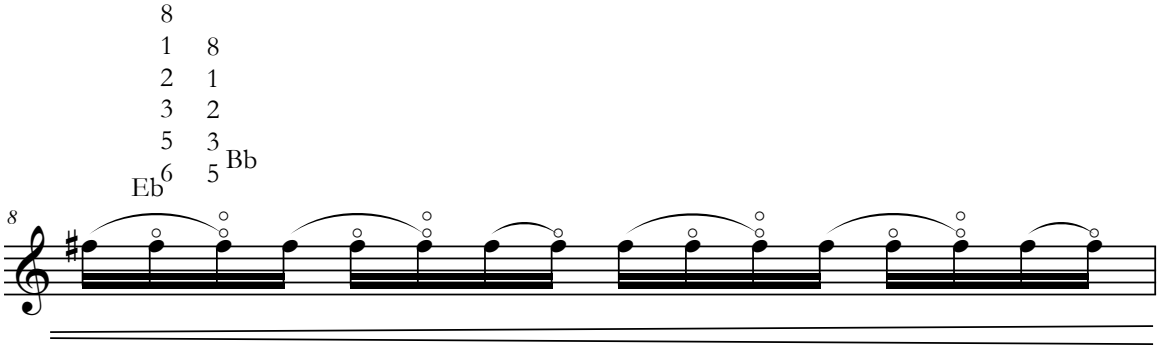
Utilizing Multiple Fingerings in Rapid Ostinato Passages

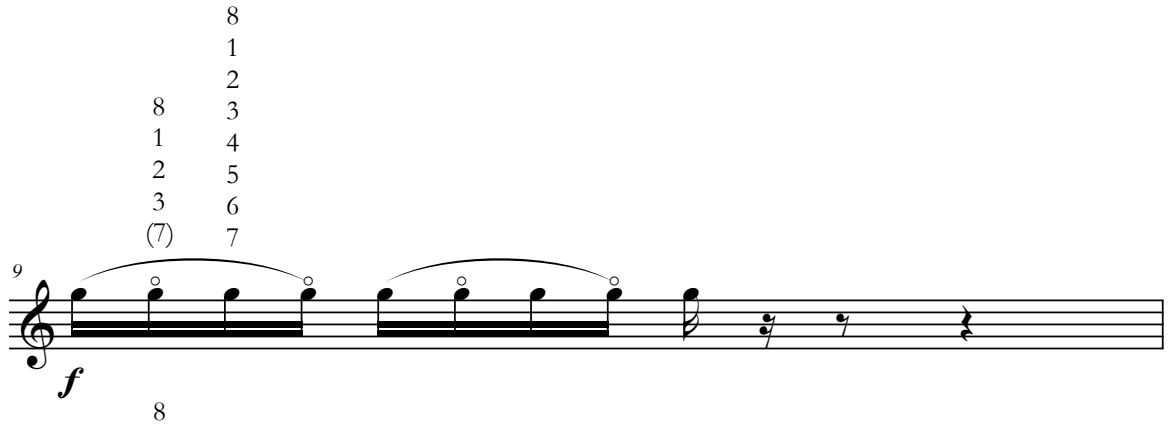


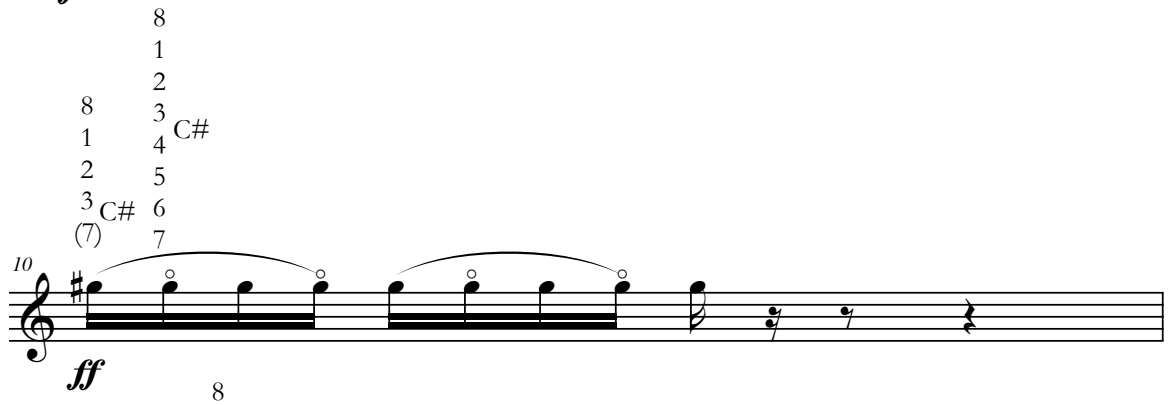

8
1
2
3
4
5
6
7
8
1
2
3
(7)
5

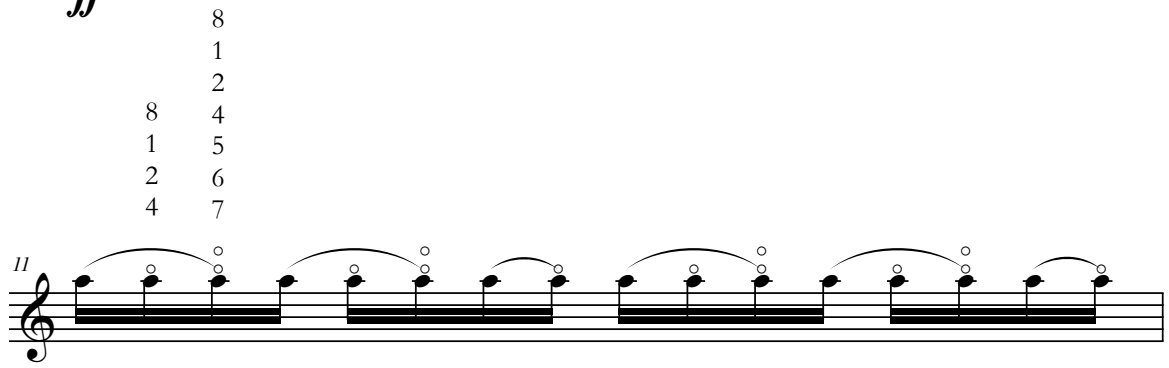

8
1
2
3
4
5
Bb
Eb
8
1
2
3
4
5
6
mp

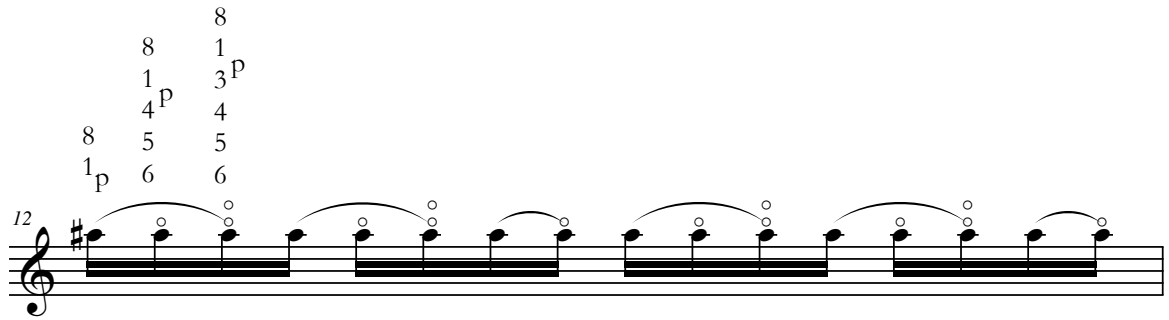

8
1
2
3
4
6
Eb
8
1
2
3
4
6
7

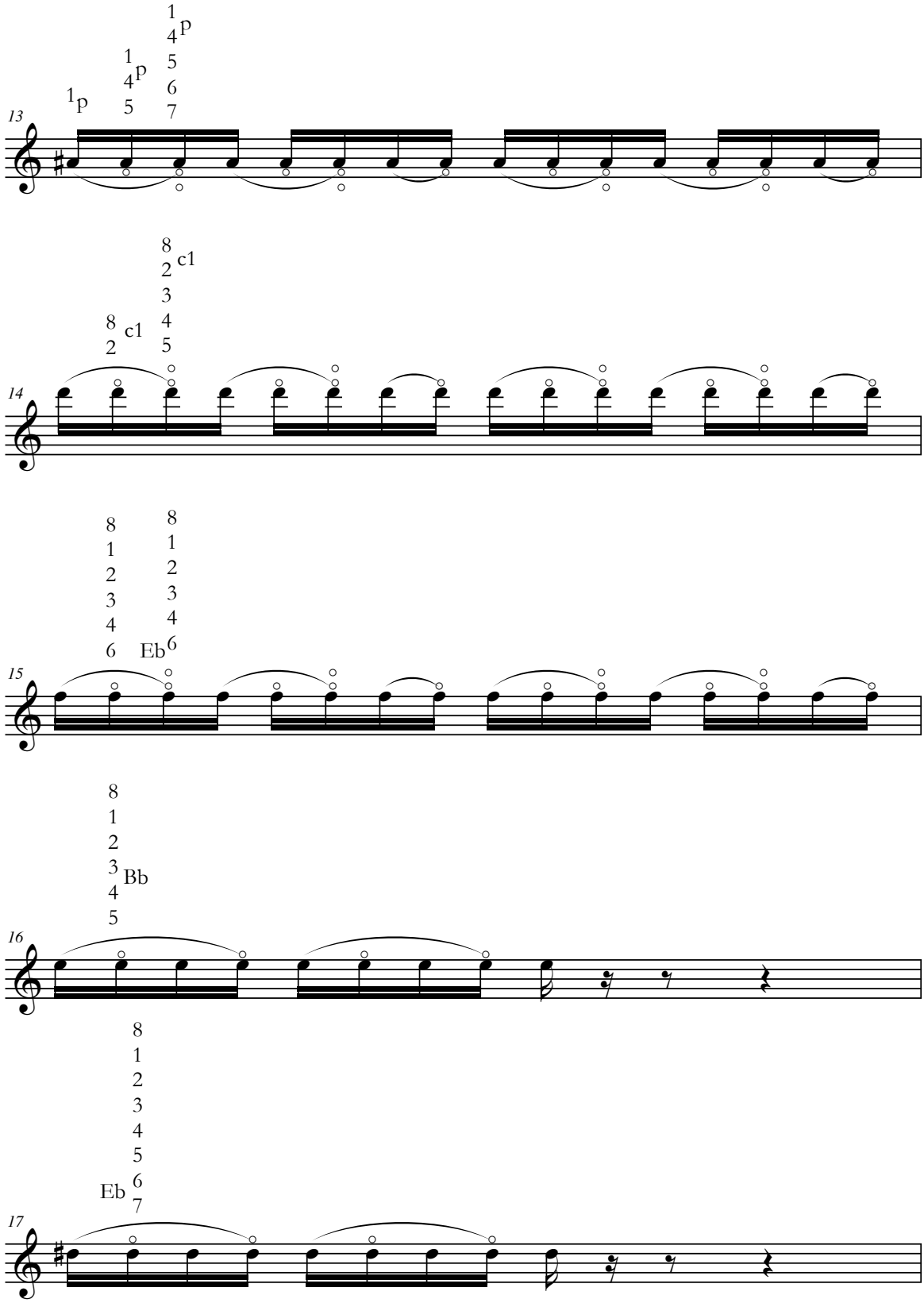

8
1
2
3
5
6
Eb
8
1
2
3
5
Bb
8

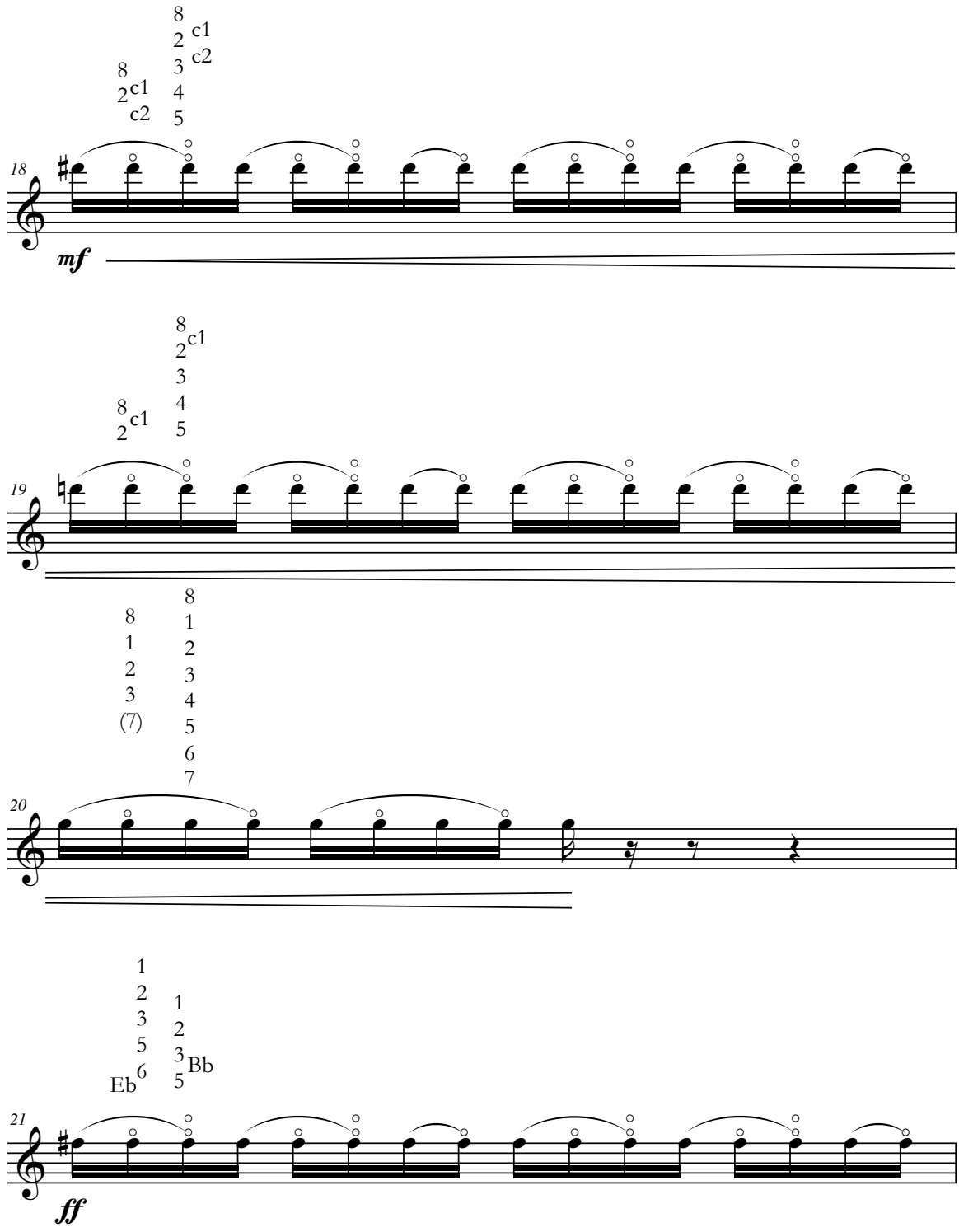

9
f

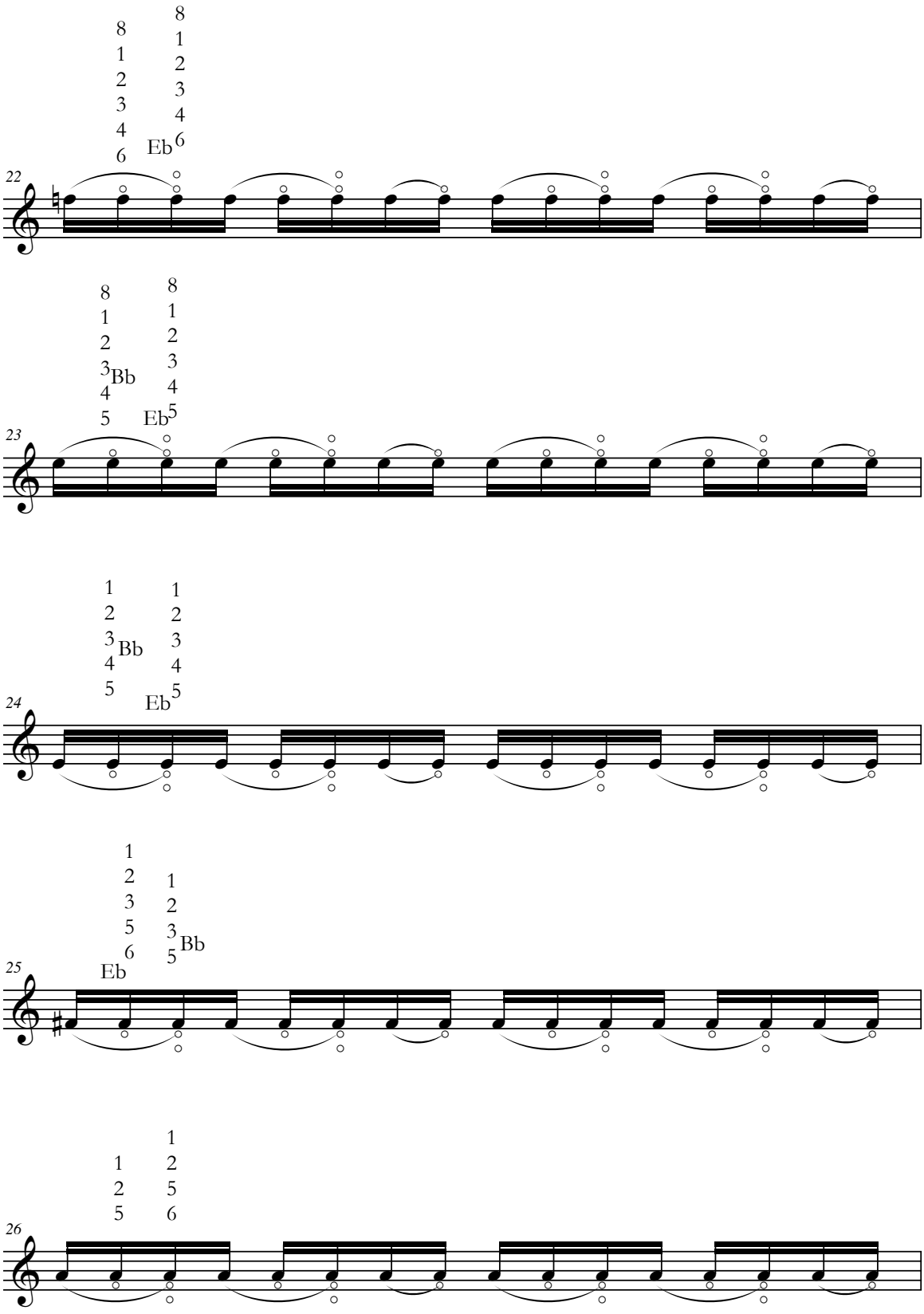

10
C#
C#
ff

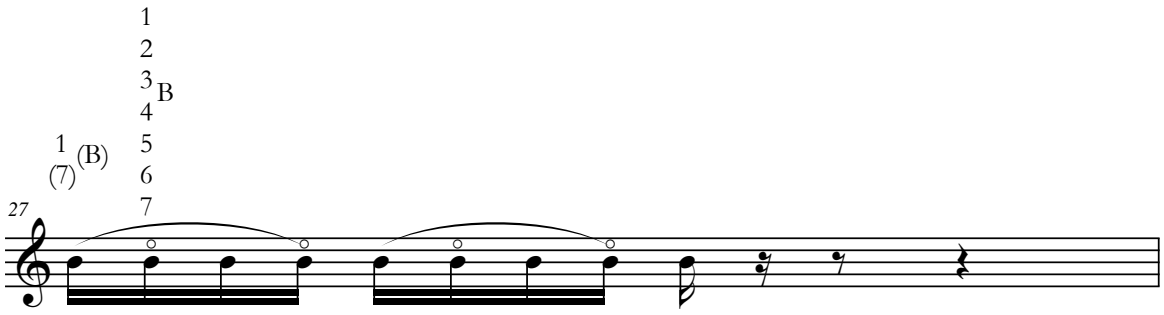

11

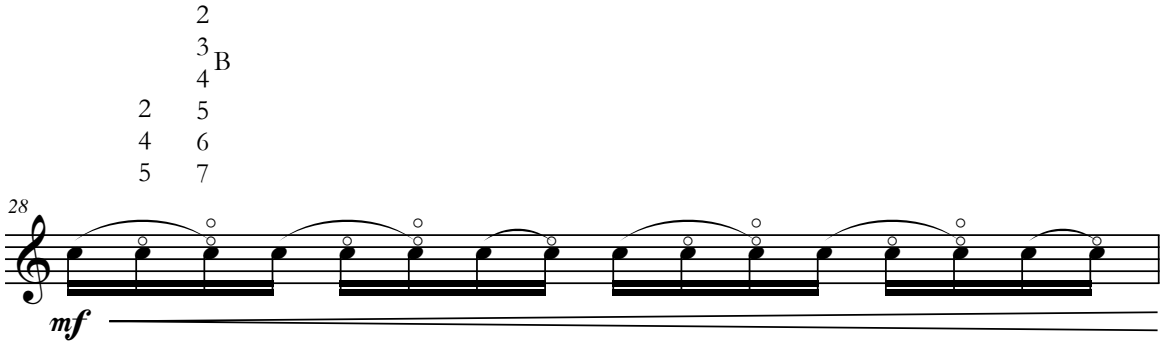

12
p
p
p

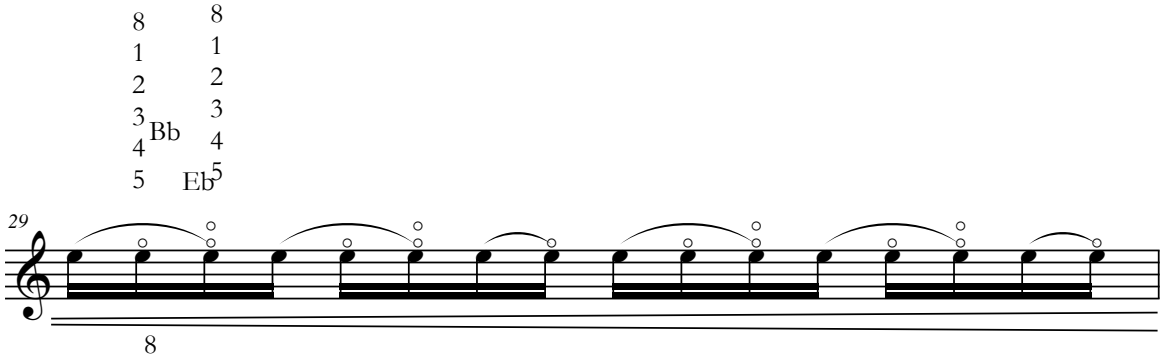

13
1p
1
4p
5
6
7
1
4p
5
6
7
14
8
2
c1
8
2
c1
3
4
5
15
8
1
2
3
4
6
Eb
8
1
2
3
4
6
16
8
1
2
3
4
Bb
5
17
8
1
2
3
4
5
Eb
6
7

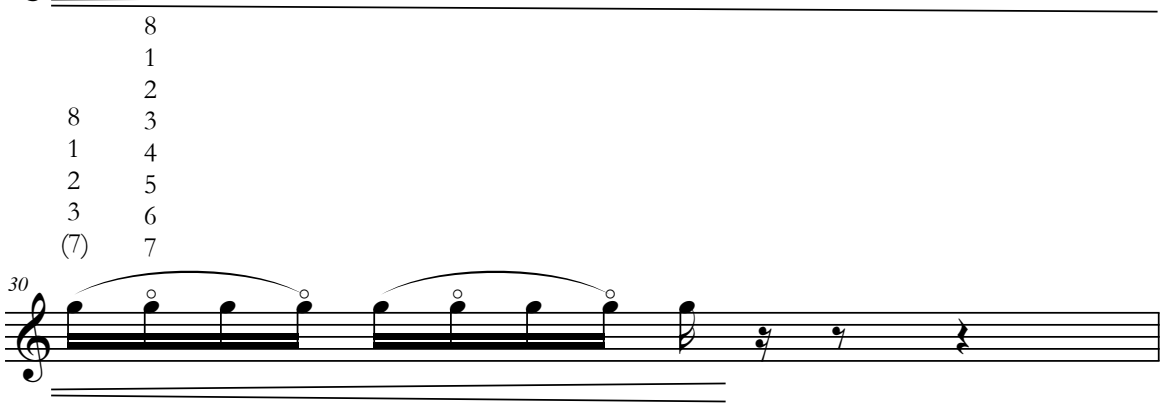

18
mf
19
20
21
ff
Eb
Bb

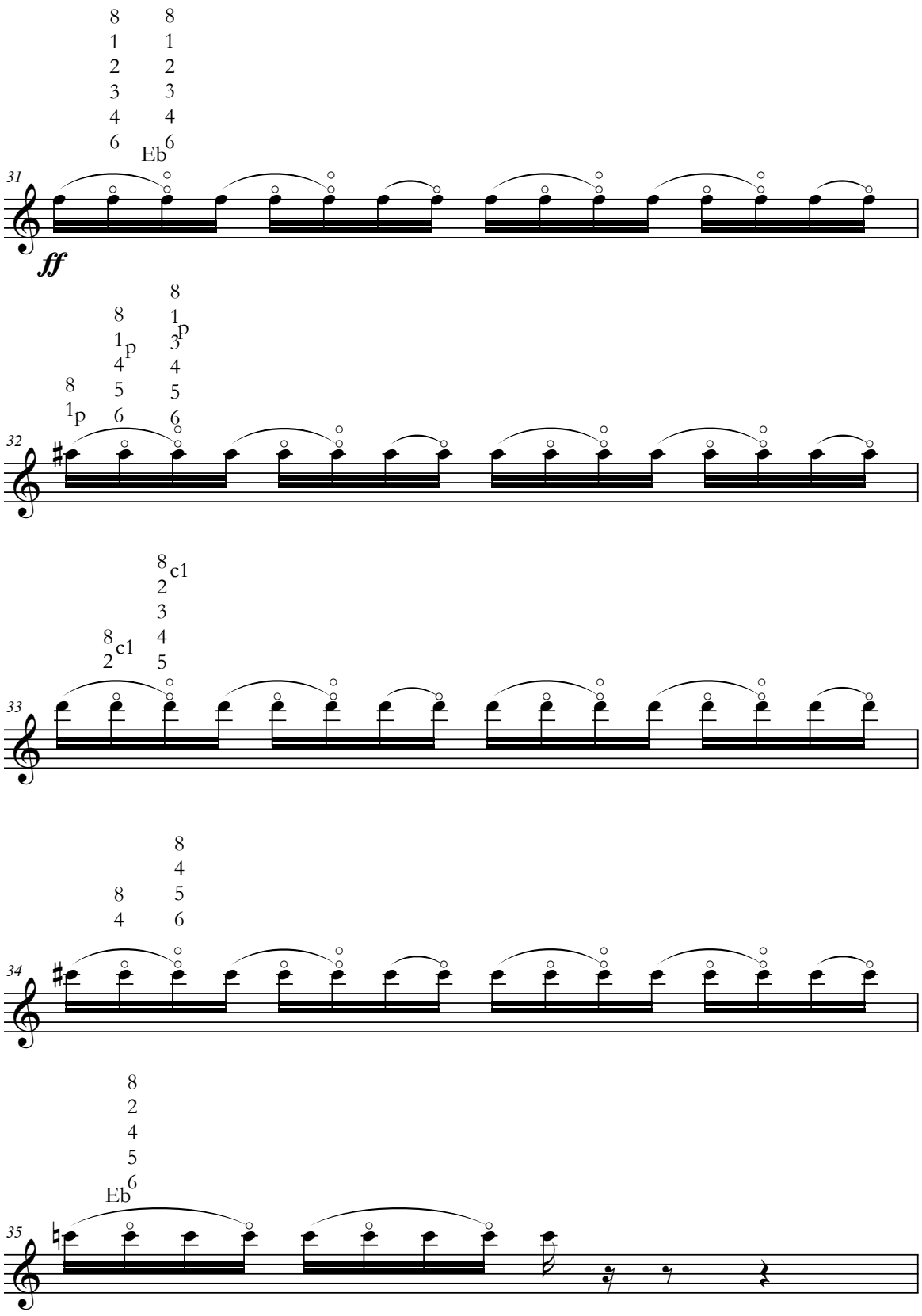

22
8
1
2
3
4
6
Eb
8
1
2
3
4
6
23
8
1
2
3
4
5
Bb
Eb
8
1
2
3
4
5
24
1
2
3
4
5
Bb
Eb
1
2
3
4
5
25
1
2
3
5
6
Eb
Bb
26
1
2
5
1
2
5
6

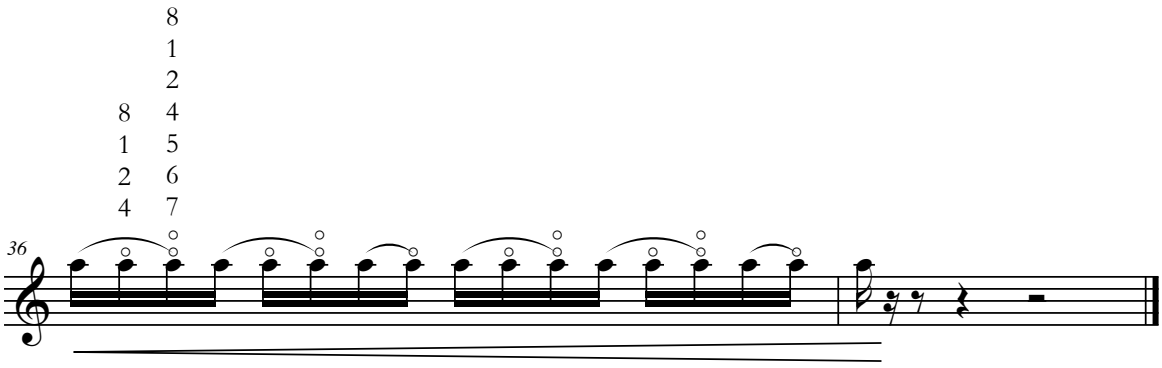

1
2
3
4
B
5
6
7
1
(7)
(B)
27


2
3
4
B
2
5
4
6
5
7
28
mf


8
1
2
3
4
5
Bb
8
1
2
3
4
5
Eb
29


8
1
2
3
4
5
6
7
8
1
2
3
(7)
30

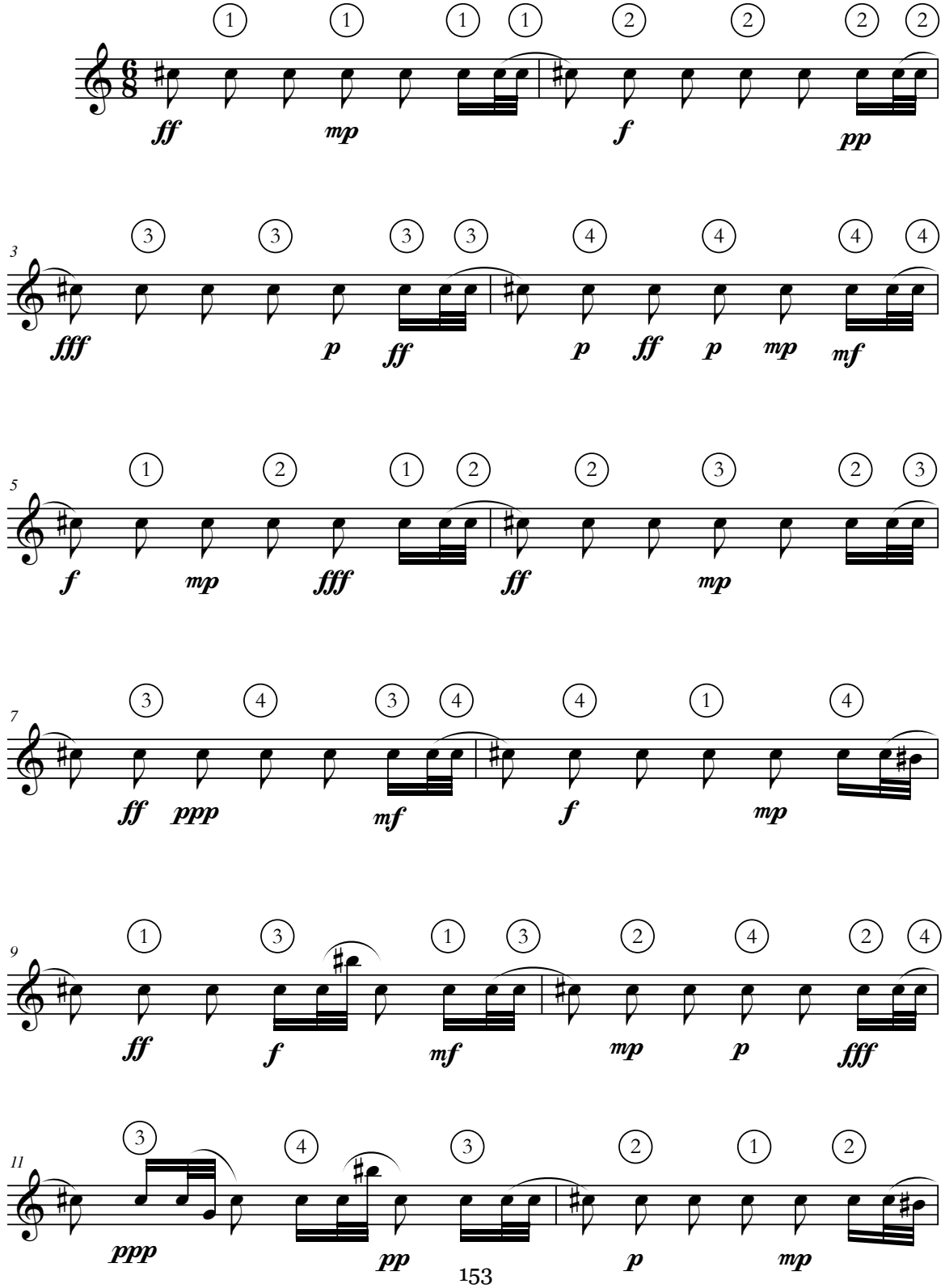

8 8
1 1
2 2
3 3
4 4
6 6
Eb
31
ff
8 8
1p 1p
4 3
5 4
6 5
6
8
1p
32
8 8
2 c1
c1 3
4
5
33
8 8
4 4
5
6
34
8
2
4
5
6
Eb
35

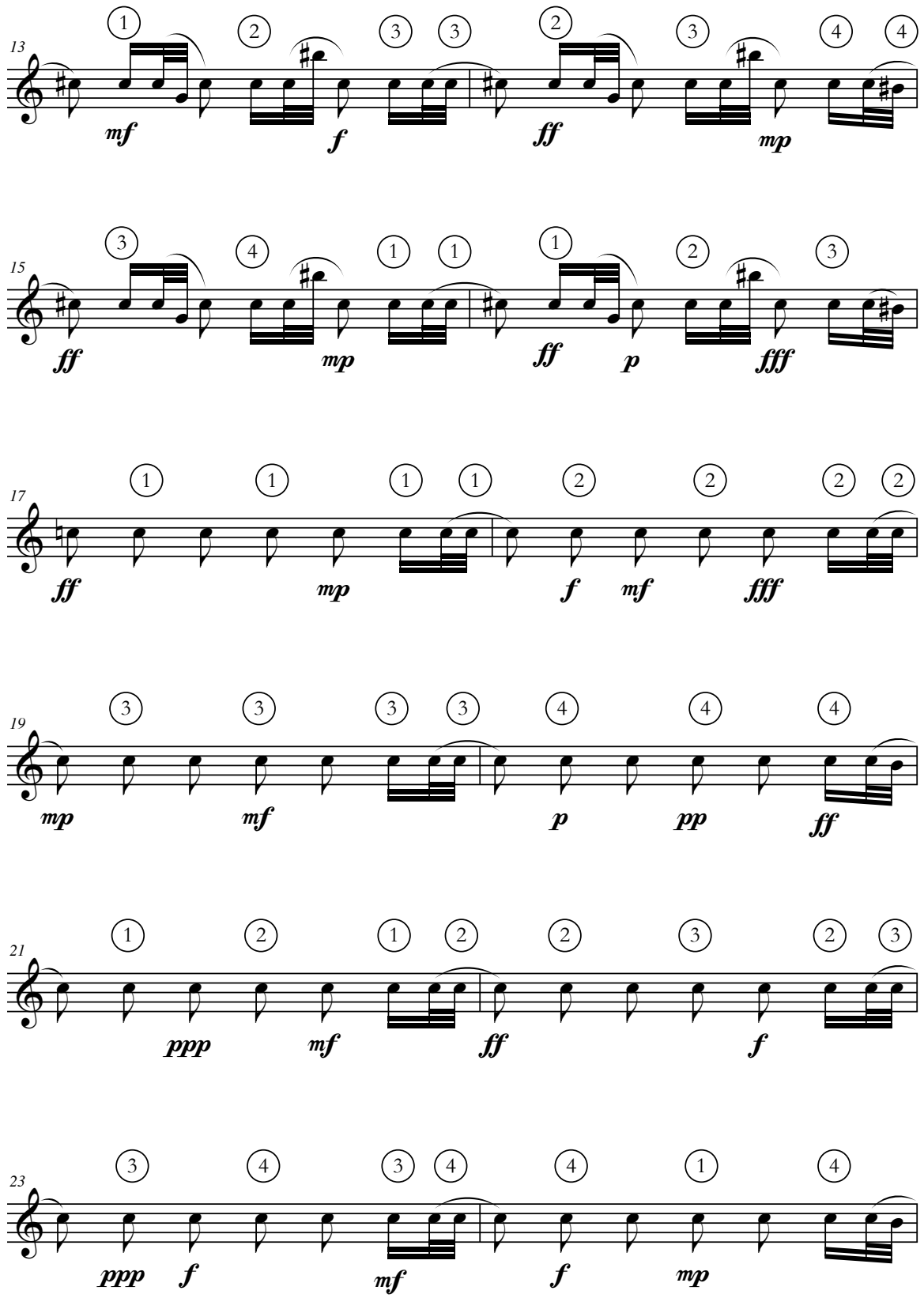

8
1
2
4
8
1
2
4
5
6
7
36

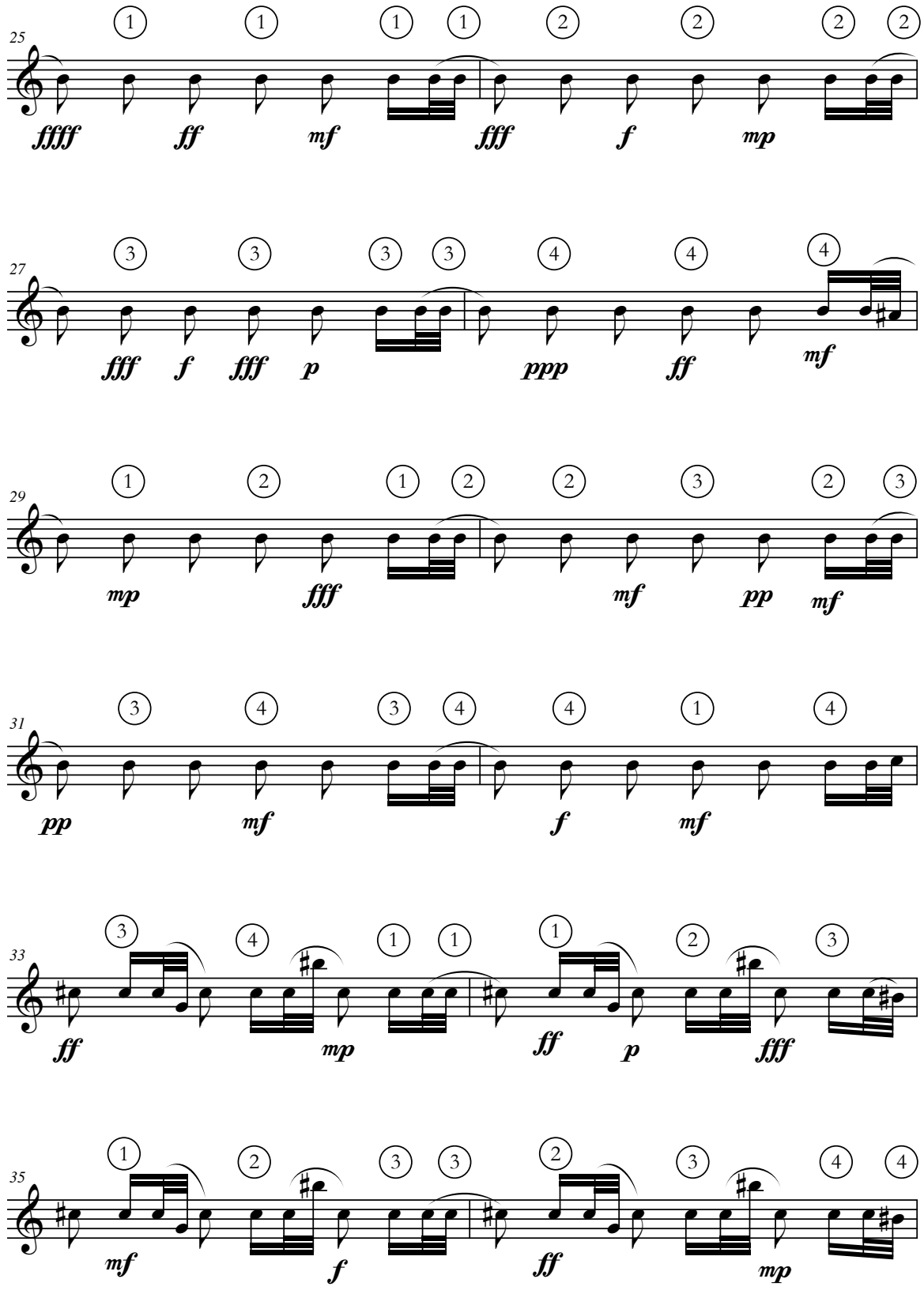
ETUDE # 23: Timbre and Bisbigliando

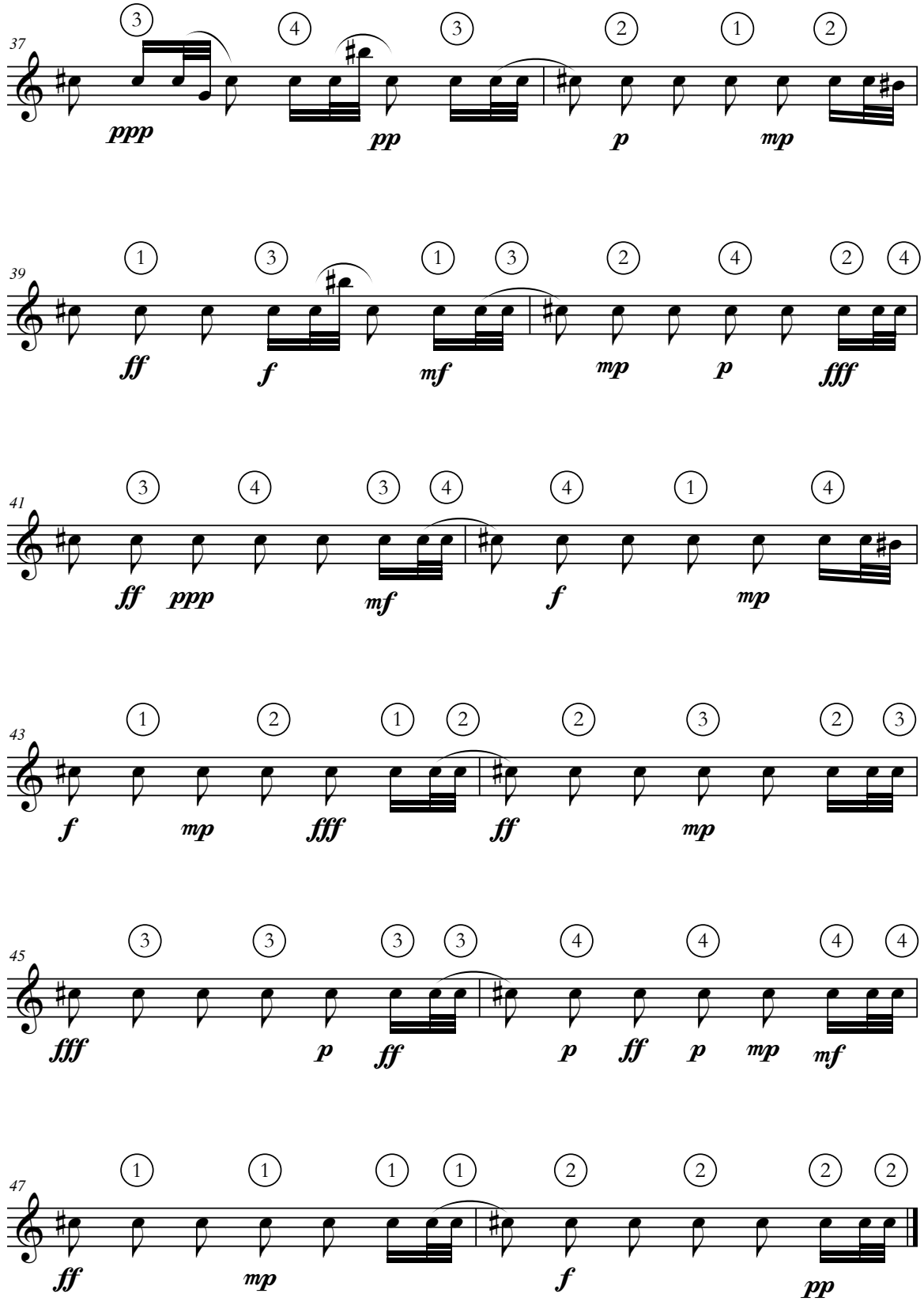
Repetitive Patterns with Varying Dynamics

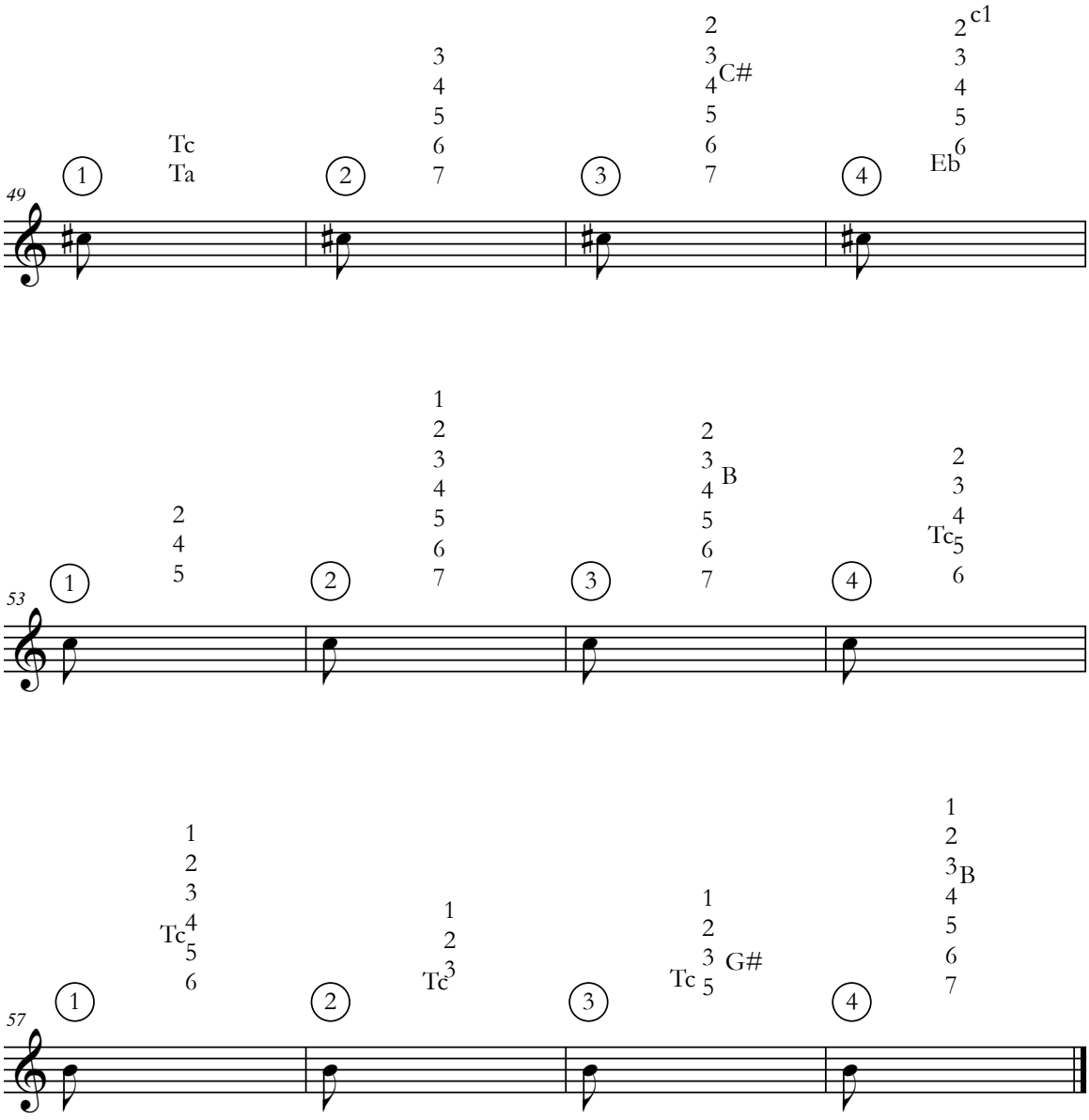
Authoritative




13
mf
f
ff
mp
15
ff
mp
ff
p
fff
17
ff
mp
f
mf
fff
19
mp
mf
p
pp
ff
21
ppp
mf
ff
f
23
ppp
f
mf
f
mp

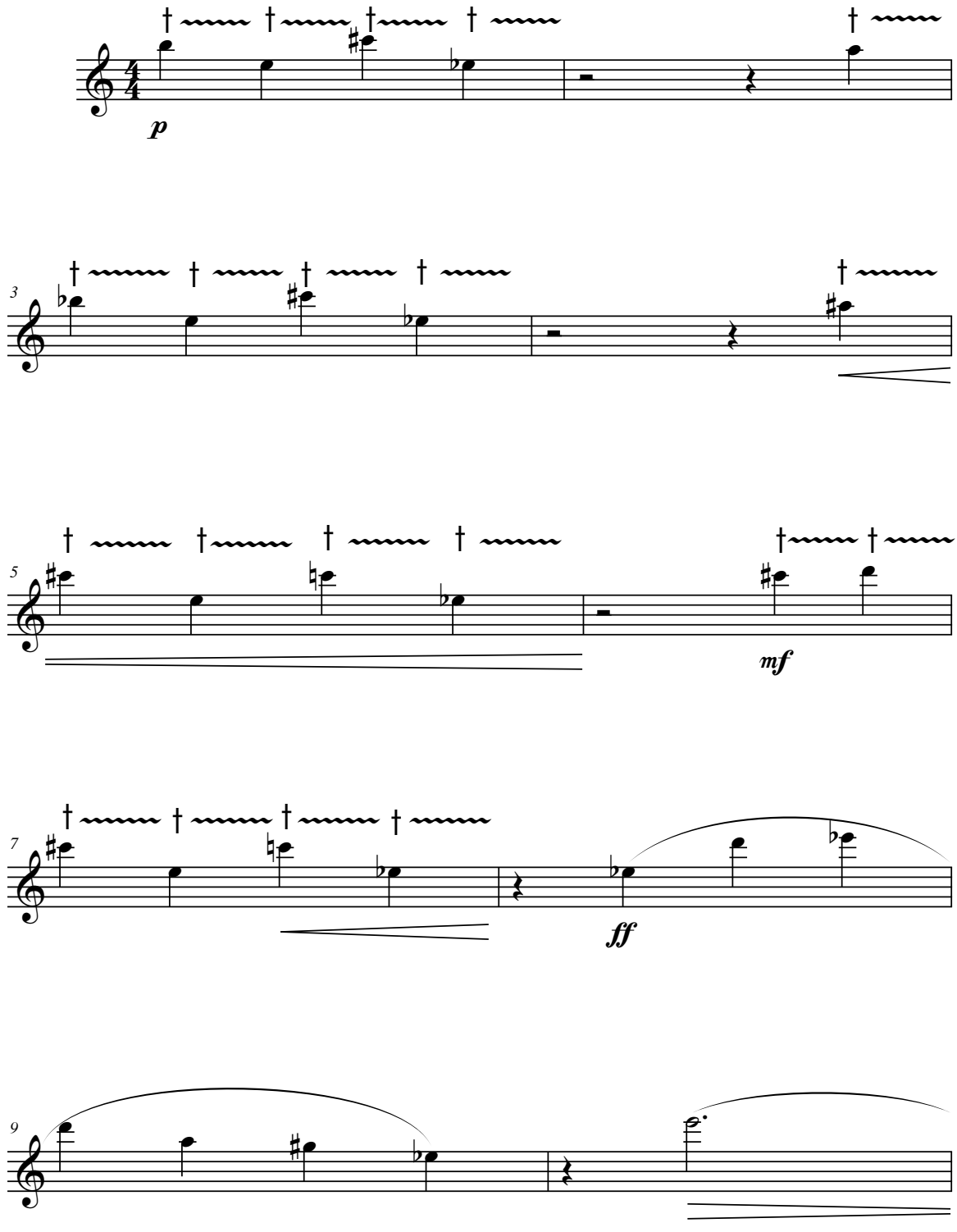

25
1 1 1 1 2 2 2 2
ffff ff mf fff f mp
27
3 3 3 3 4 4 4
fff f fff p ppp ff mf
29
1 2 1 2 2 3 2 3
mp fff mf pp mf
31
3 4 3 4 4 1 4
pp mf f mf
33
3 4 1 1 1 2 3
ff mp ff p fff
35
1 2 3 3 2 3 4 4
mf f ff mp

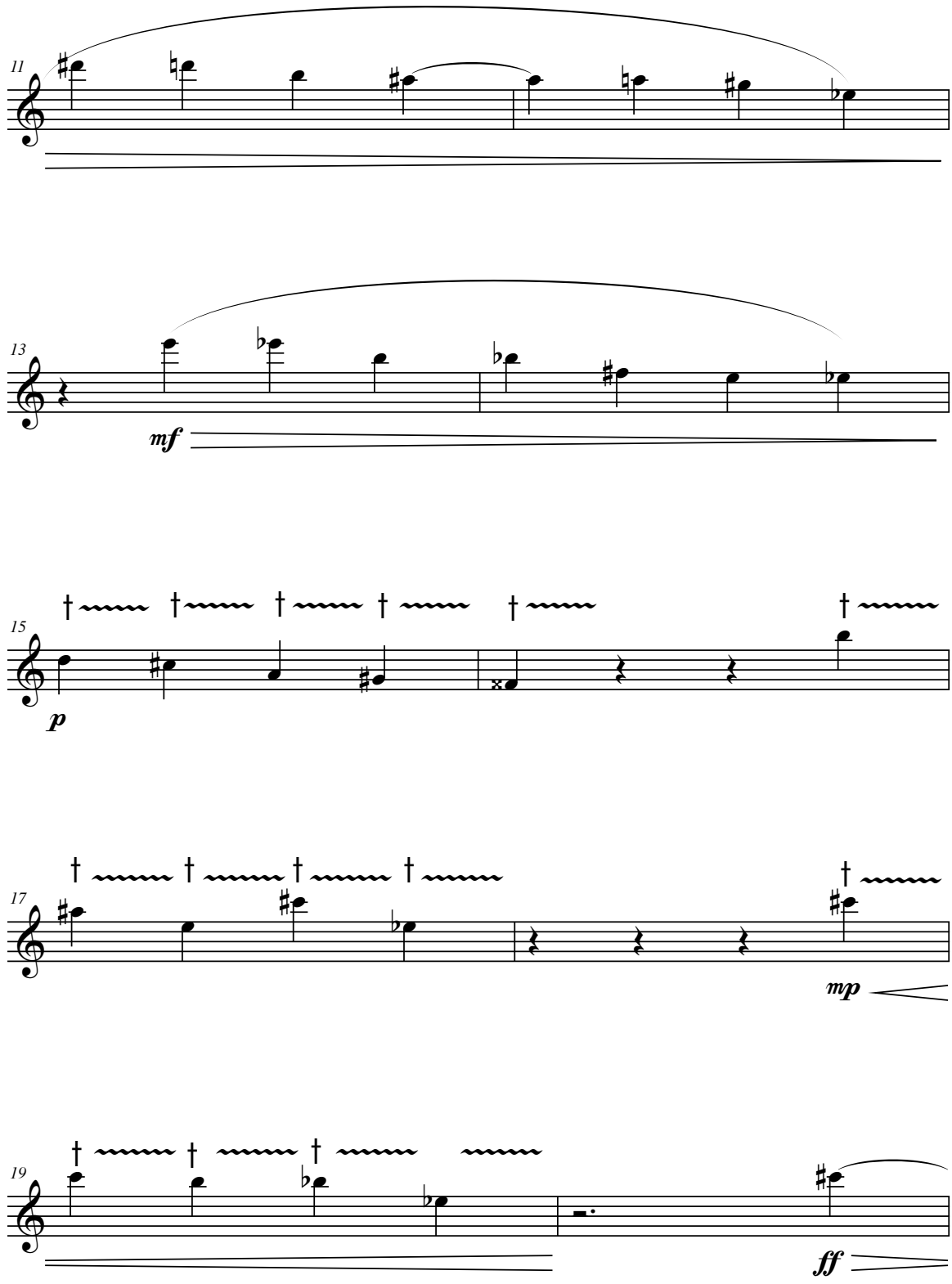

37
3 4 3 2 1 2
ppp pp p mp
39
1 3 1 3 2 4 2 4
ff f mf mp p fff
41
3 4 3 4 4 1 4
ff ppp mf f mp
43
1 2 1 2 2 3 2 3
f mp fff ff mp
45
3 3 3 3 4 4 4 4
fff p ff p ff p mp mf
47
1 1 1 1 2 2 2 2
ff mp f pp

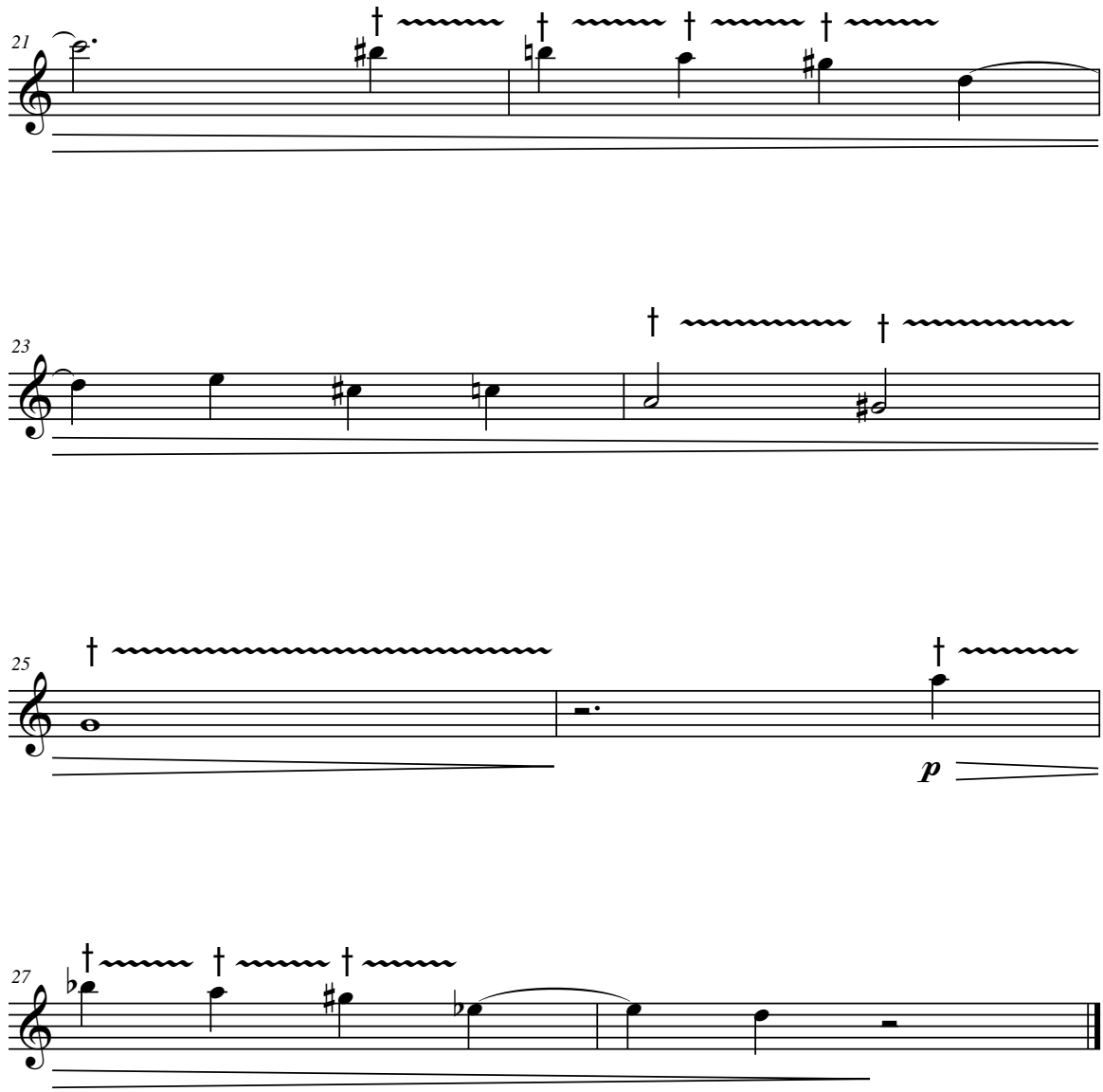

49
1
Tc
Ta
2
3
4
5
6
7
3
4
5
6
7
2
3
4
C#
5
6
7
2
3
4
5
6
Eb
c1
53
1
2
4
5
2
3
4
5
6
7
1
2
3
4
5
6
7
2
3
4
B
5
6
7
2
3
4
Tc
5
6
57
1
2
3
4
Tc
5
6
1
2
3
Tc
1
2
3
Tc
5
G#
1
2
3
B
4
5
6
7

ETUDE # 24: Timbre and Bisbigliando

Timbral "Trills"

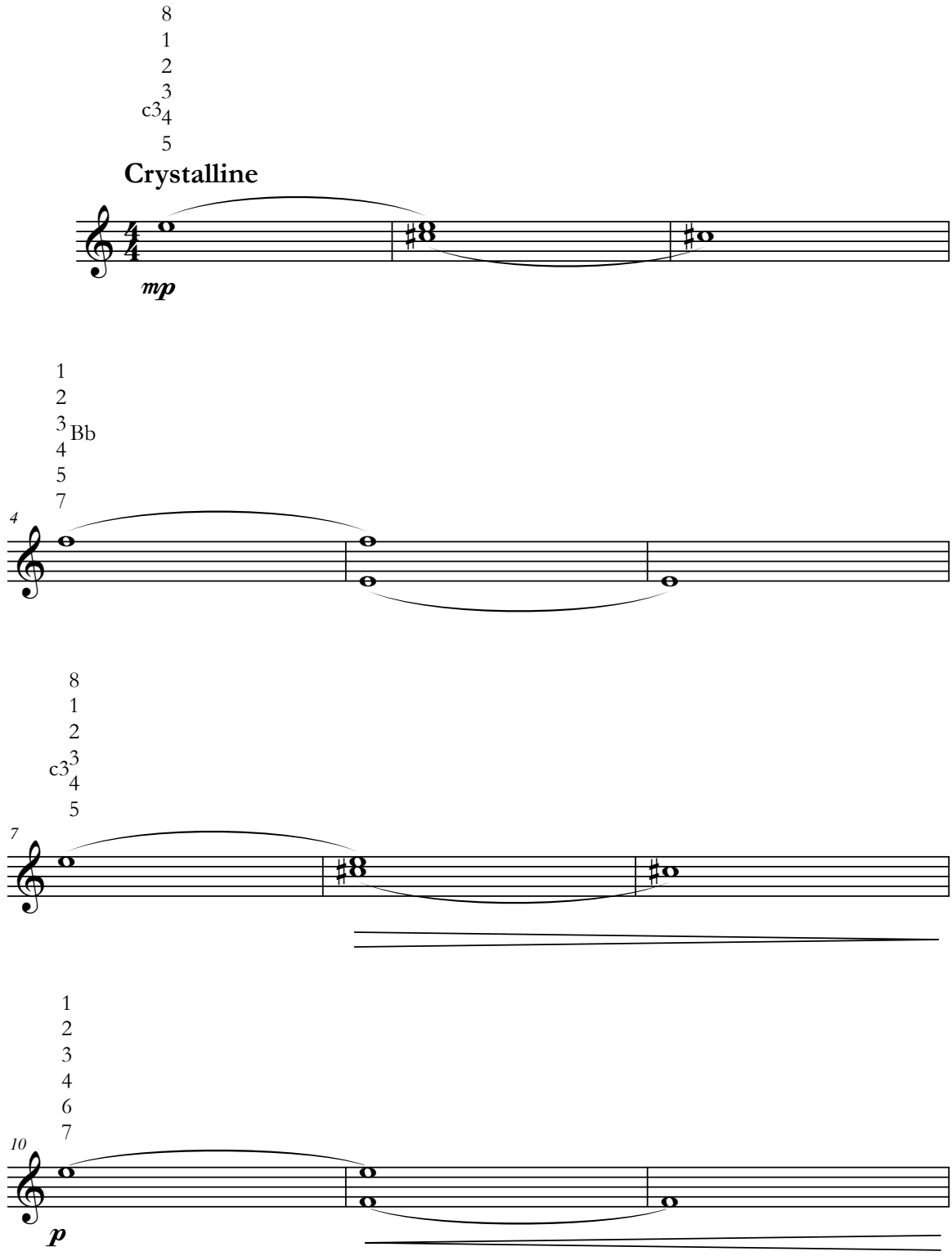


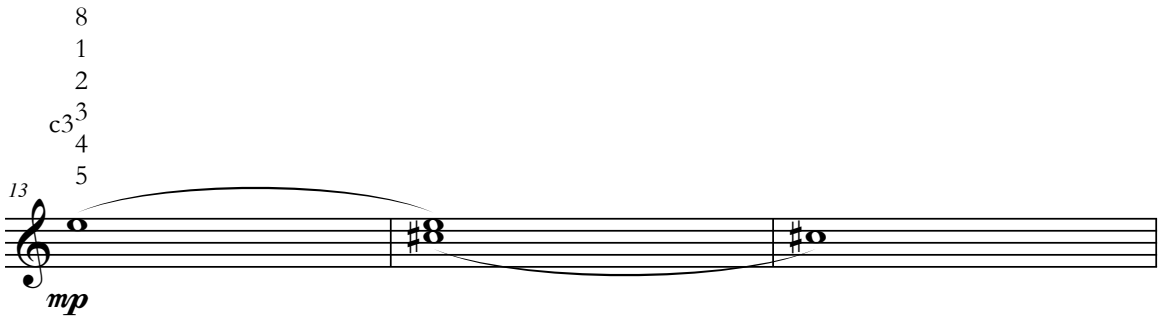

11
13
mf
15
p
17
mp
19
ff

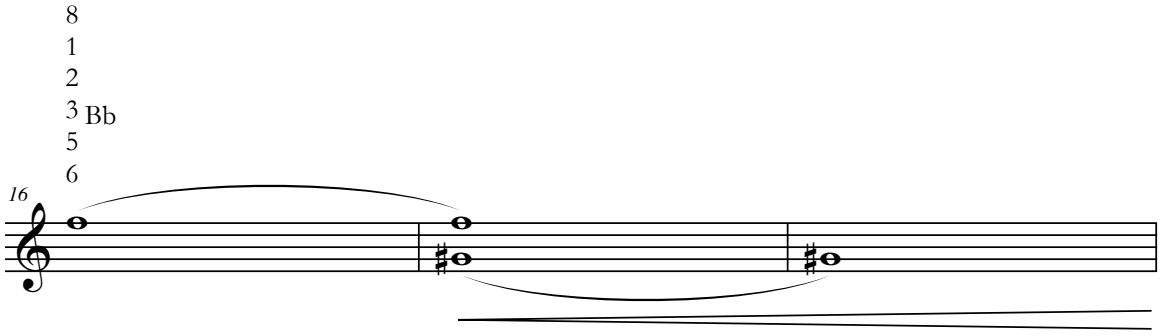

21
23
25
p
27

ETUDE # 25: Multiphonics

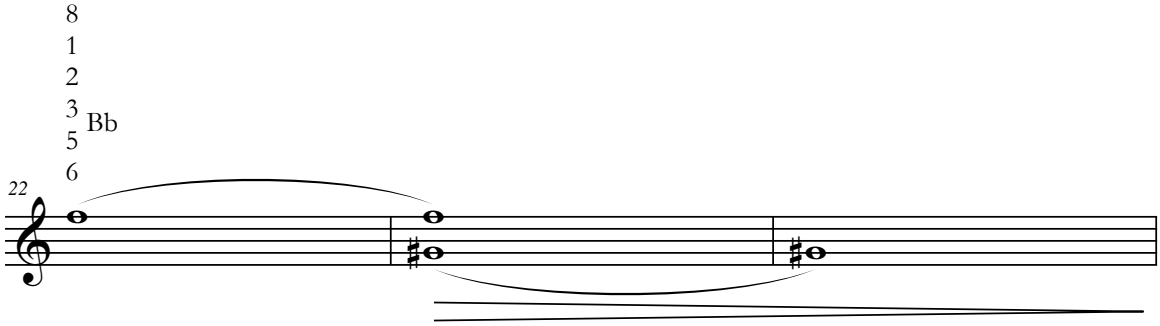
... for the isolation of individual pitches using multiphonic fingerings with a focus on dyads

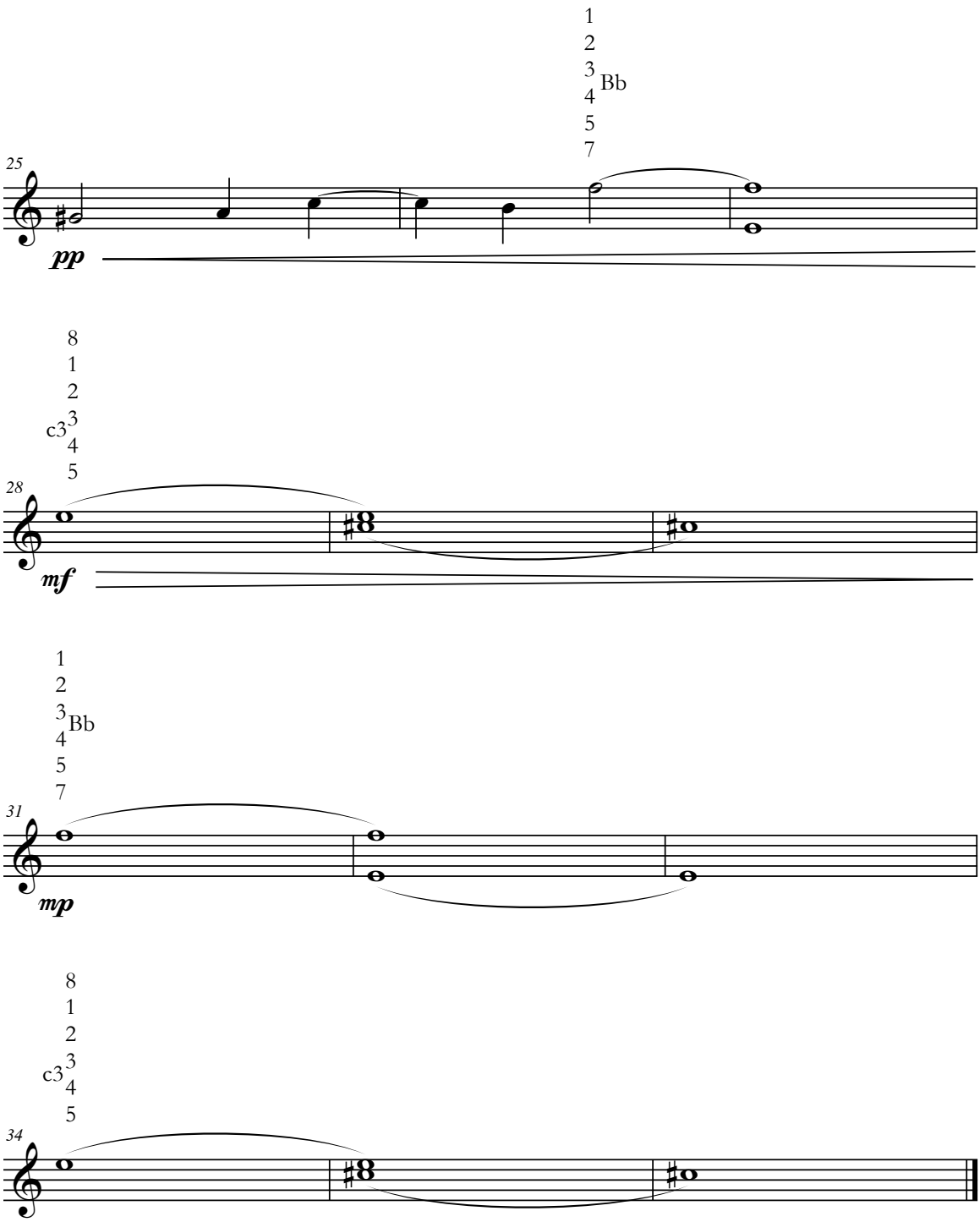



8
1
2
3
c3
4
5
13
mp


8
1
2
3
Bb
5
6
16

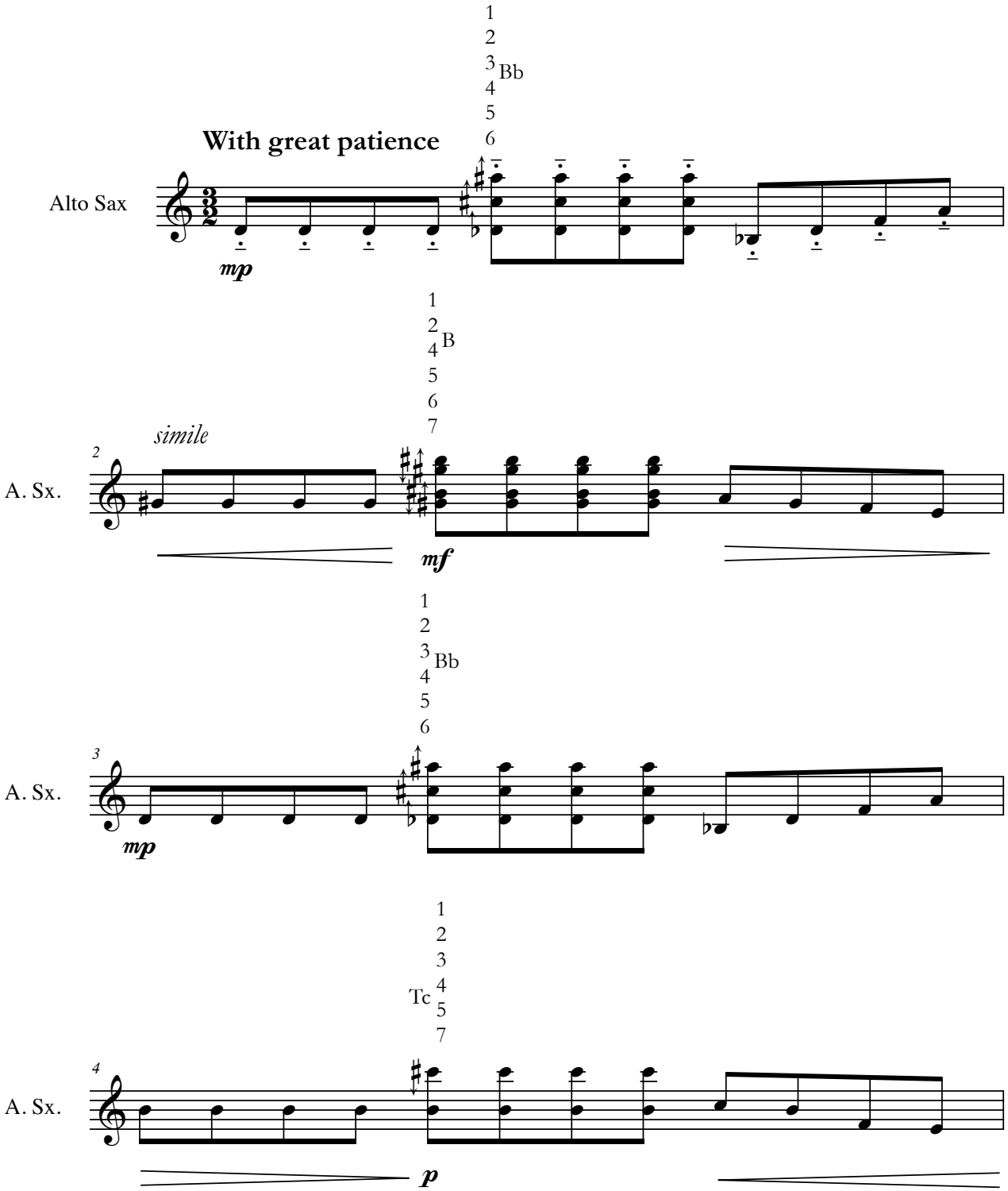

1
2
3
4
6
7
19
mf

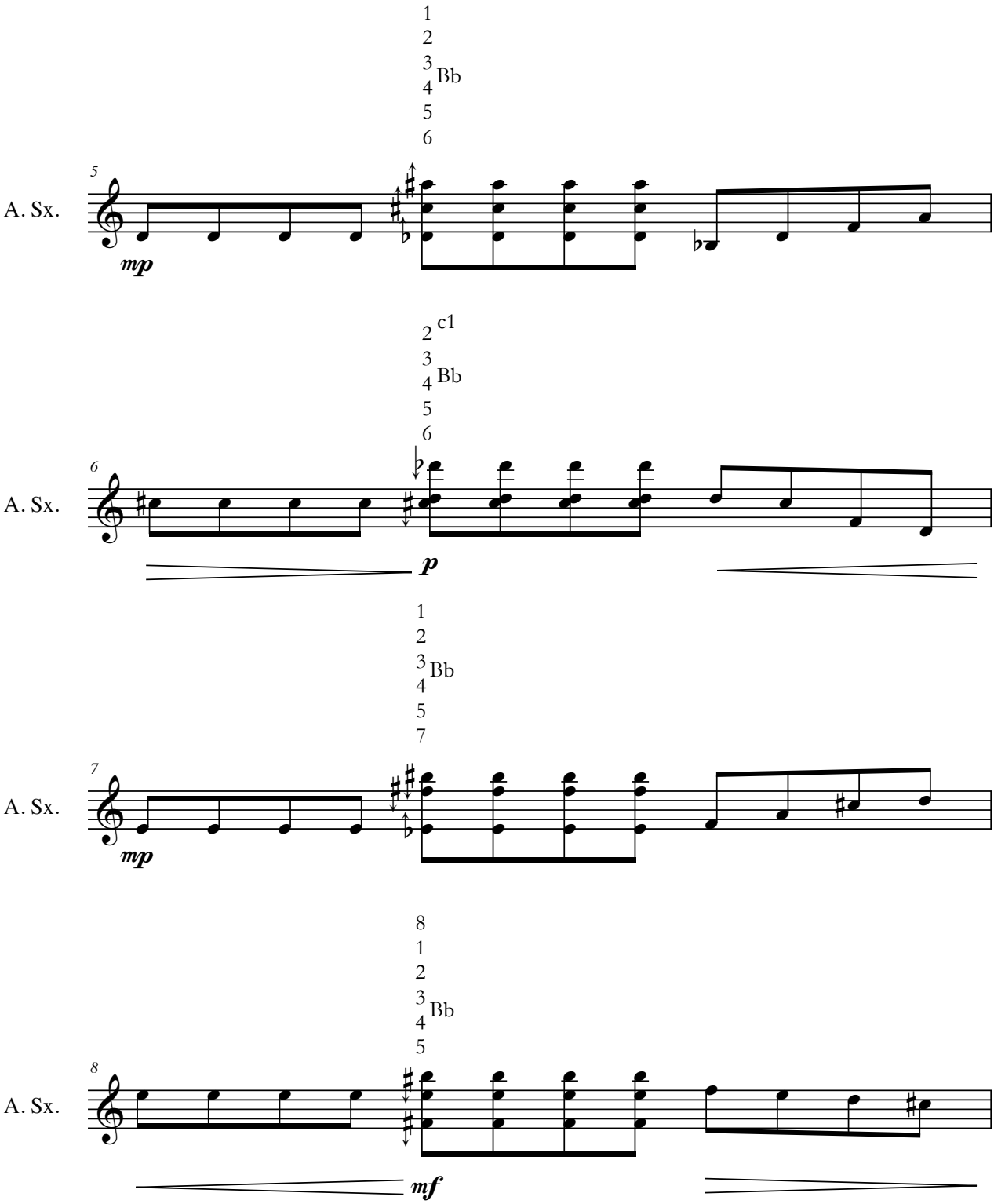

8
1
2
3
Bb
5
6
22

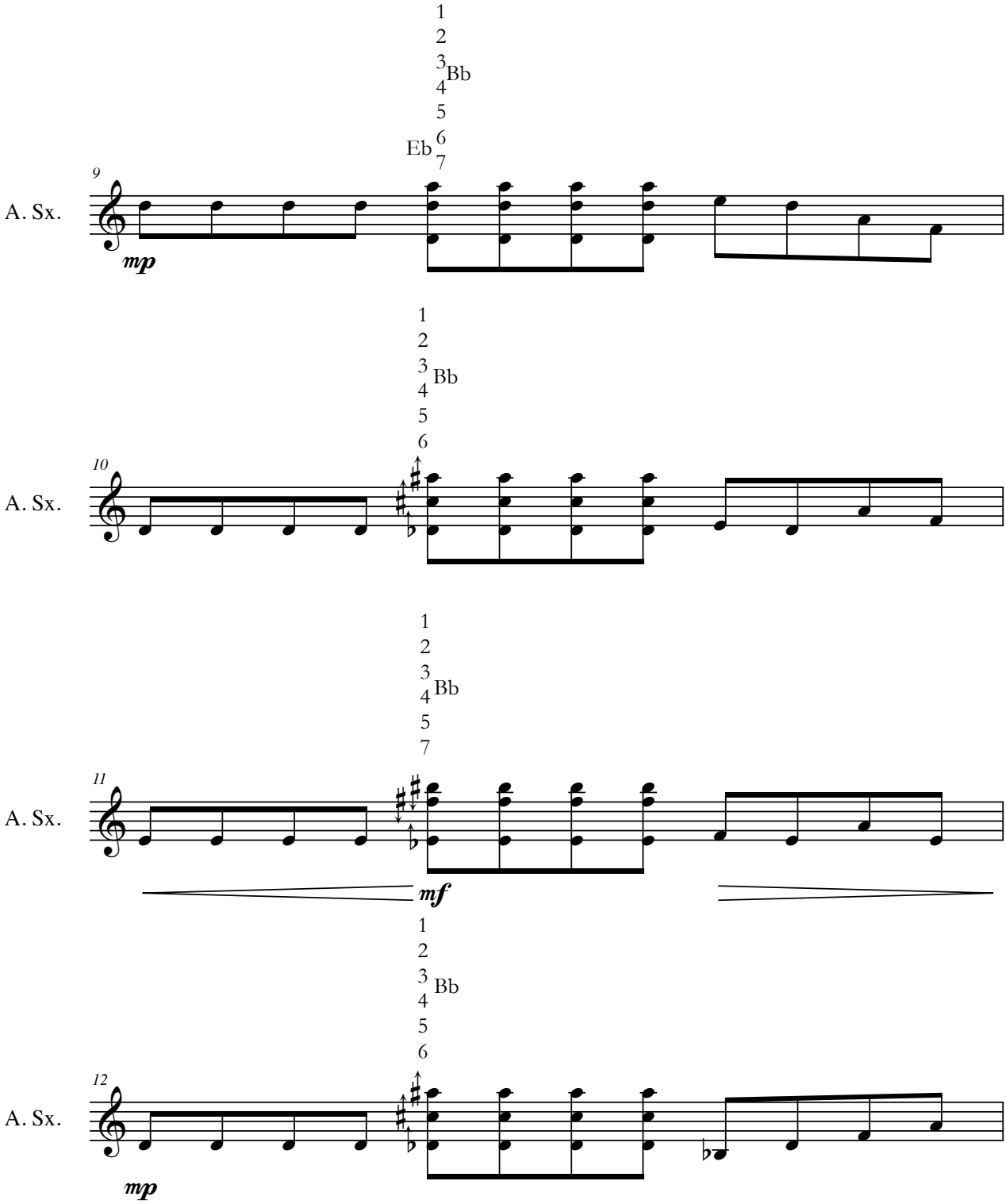

1
2
3
4 Bb
5
7
25
pp
8
1
2
c3 3
4
5
28
mf
1
2
3
4 Bb
5
7
31
mp
8
1
2
c3 3
4
5
34

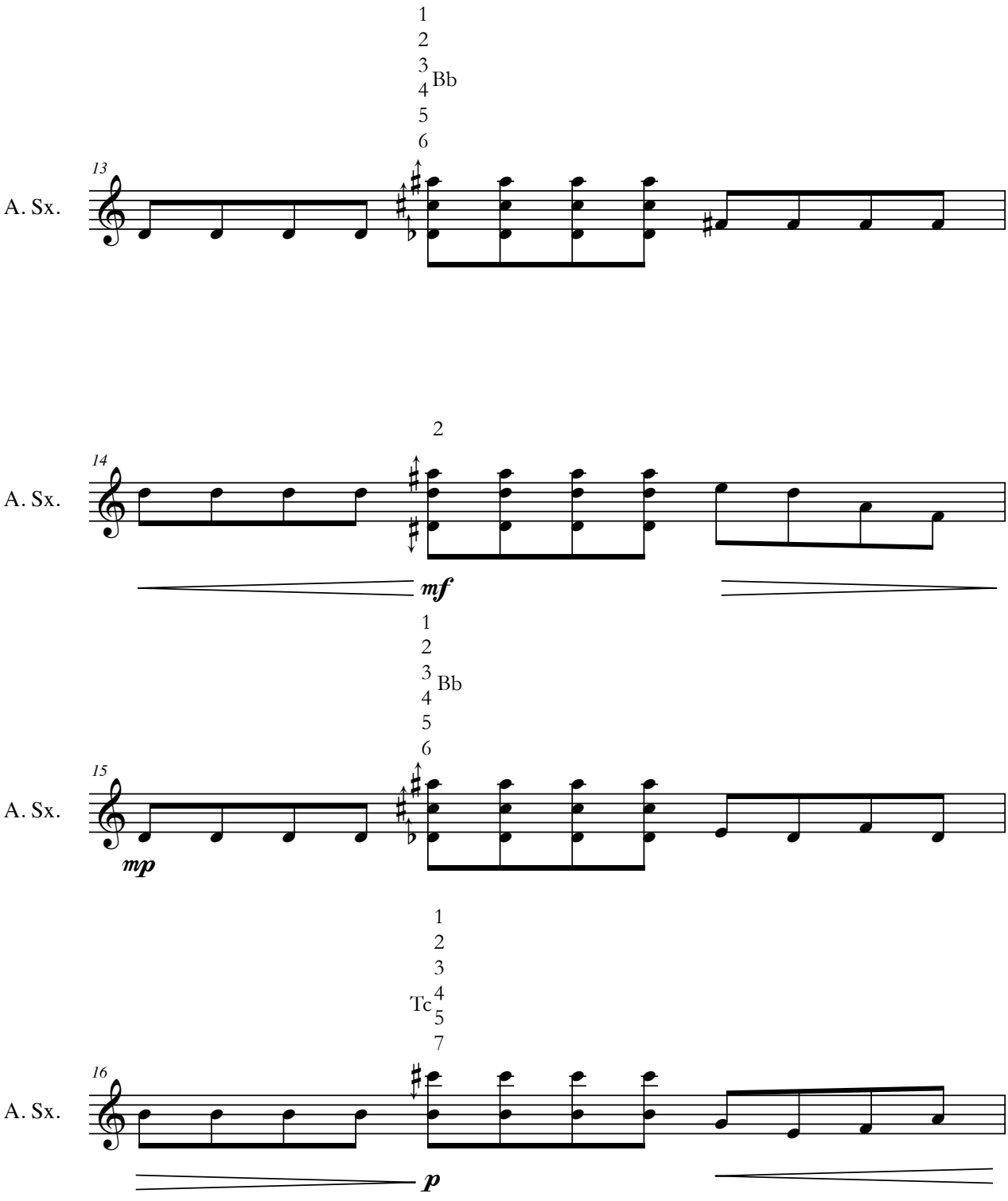
ETUDE # 26: Multiphonics

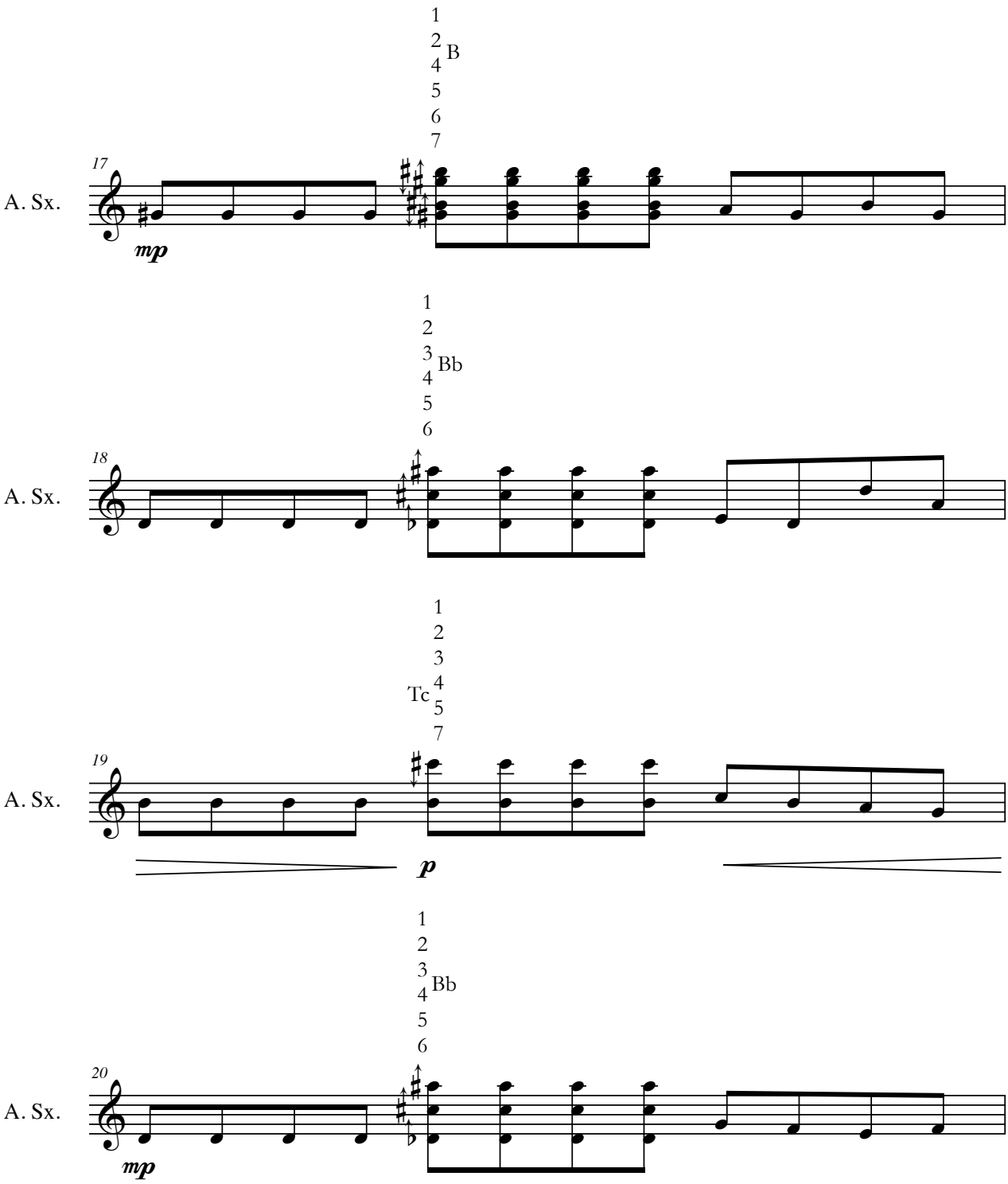
Using Threshold Tones to Precede Articulated Multiphonics

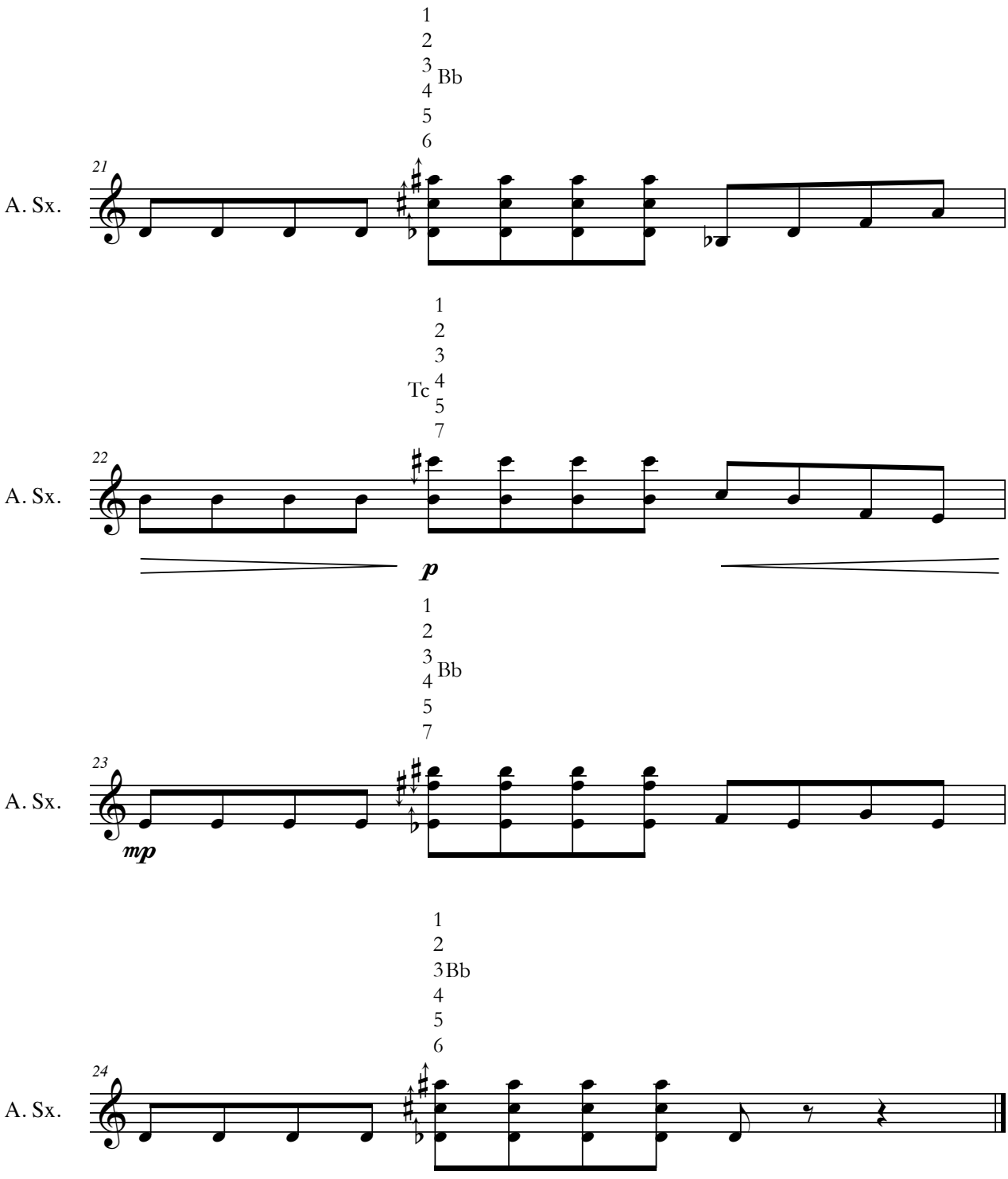



A. Sx.
5
mp
Bb
A. Sx.
6
p
c1
Bb
A. Sx.
7
mp
Bb
A. Sx.
8
mf
Bb


1
2
3
4
Bb
5
6
Eb
7
9
A. Sx.
mp
1
2
3
4
Bb
5
6
10
A. Sx.
1
2
3
4
Bb
5
7
11
A. Sx.
mf
1
2
3
4
Bb
5
6
12
A. Sx.
mp

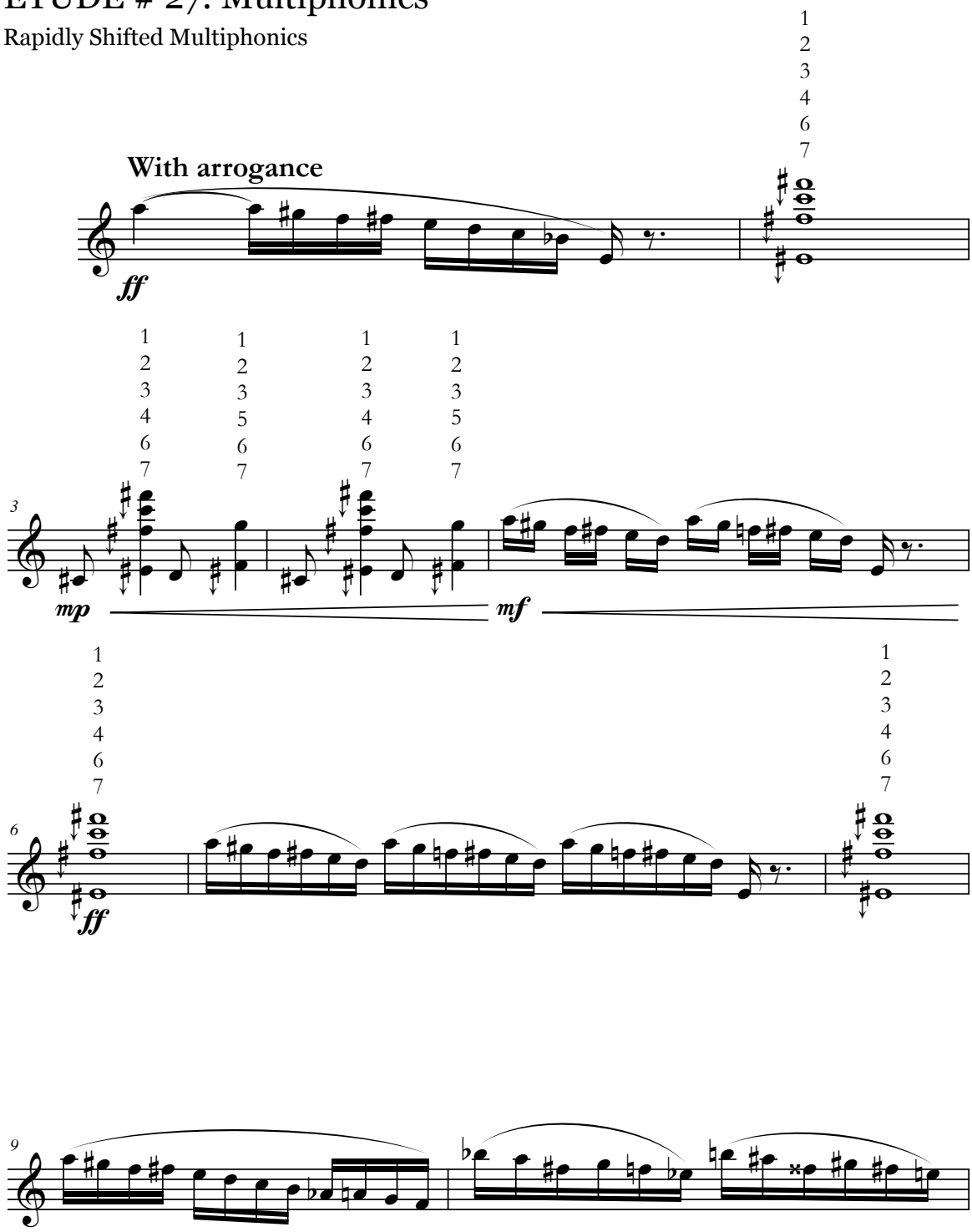

13
A. Sx.
1
2
3
4 Bb
5
6
14
A. Sx.
2
mf
15
A. Sx.
1
2
3
4 Bb
5
6
mp
16
A. Sx.
1
2
3
Tc 4
5
7
p

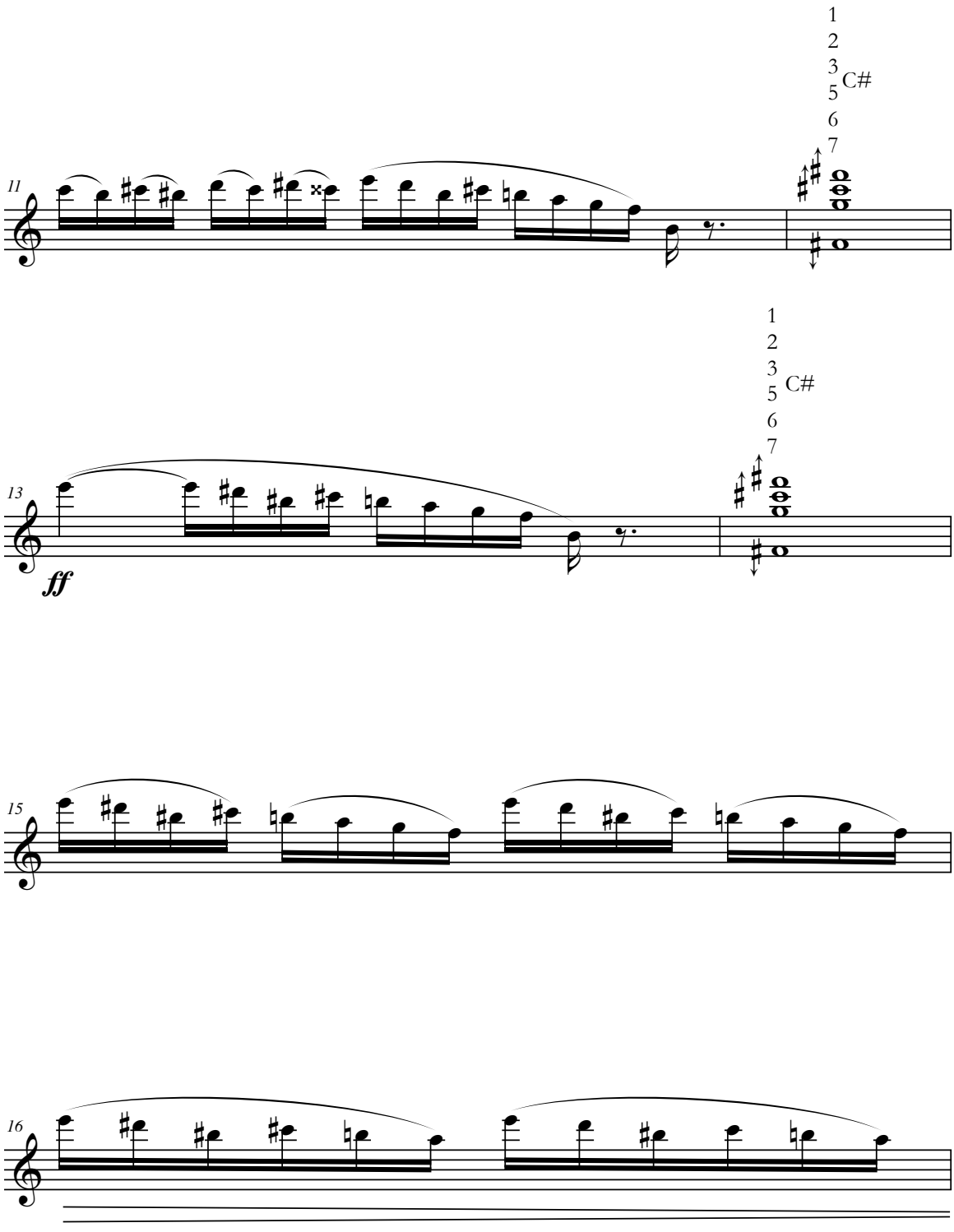

1
2
4
B
5
6
7
17
A. Sx.
mp
1
2
3
Bb
4
5
6
18
A. Sx.
1
2
3
Tc
4
5
7
19
A. Sx.
p
1
2
3
Bb
4
5
6
20
A. Sx.
mp

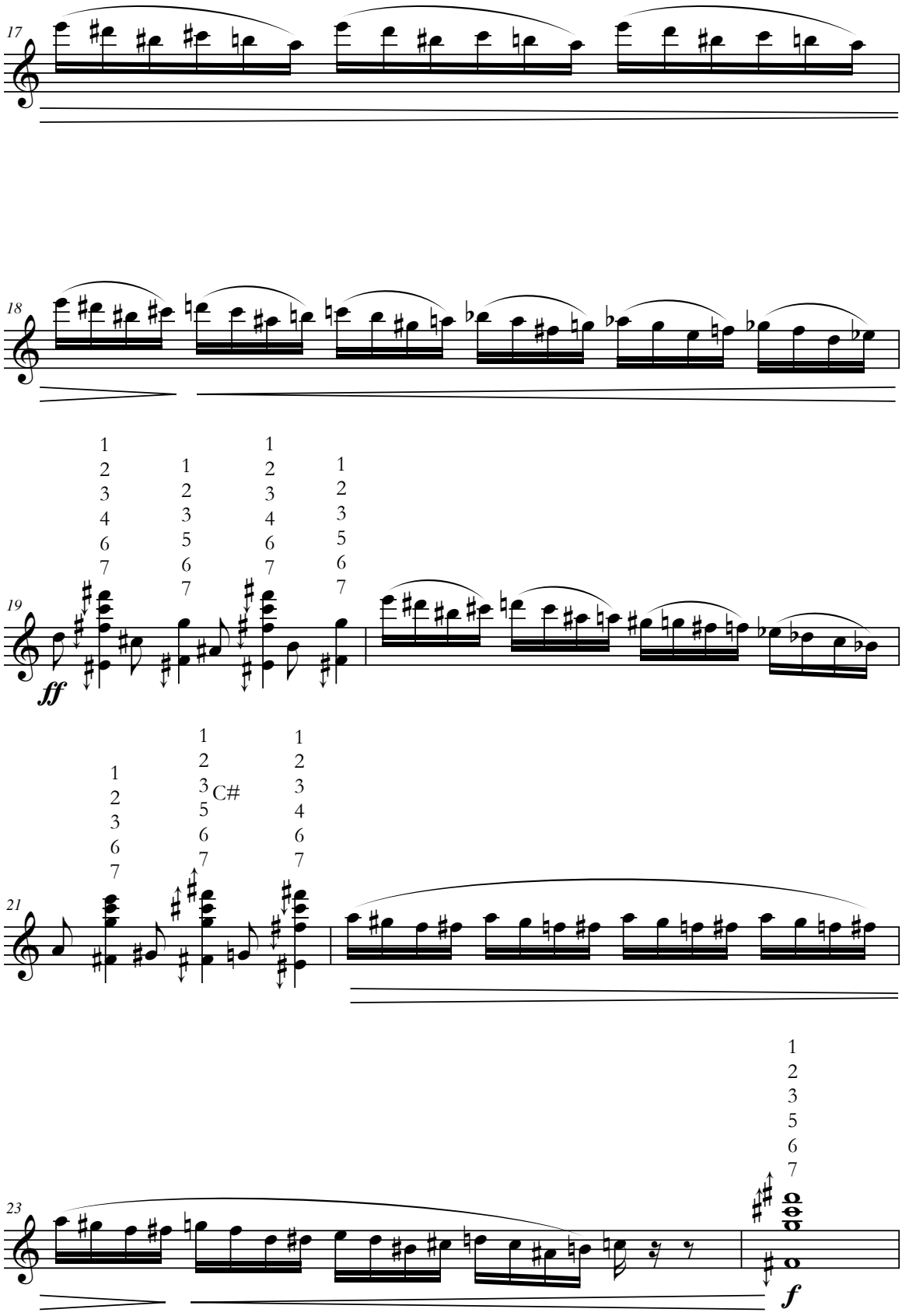

1
2
3
4
Bb
5
6
21
A. Sx.
1
2
3
Tc
4
5
7
22
A. Sx.
p
1
2
3
4
Bb
5
7
23
A. Sx.
mp
1
2
3Bb
4
5
6
24
A. Sx.

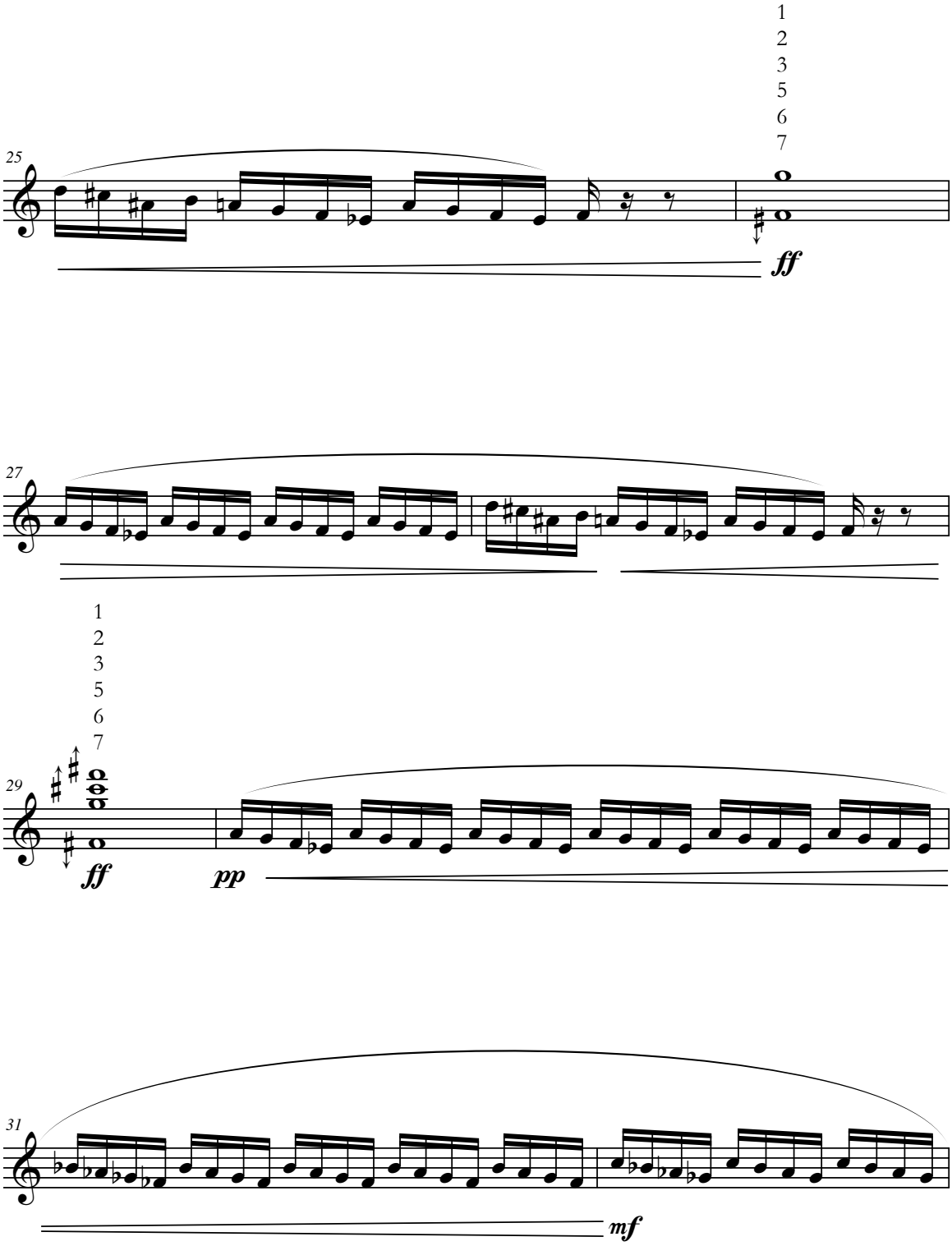
ETUDE # 27: Multiphonics

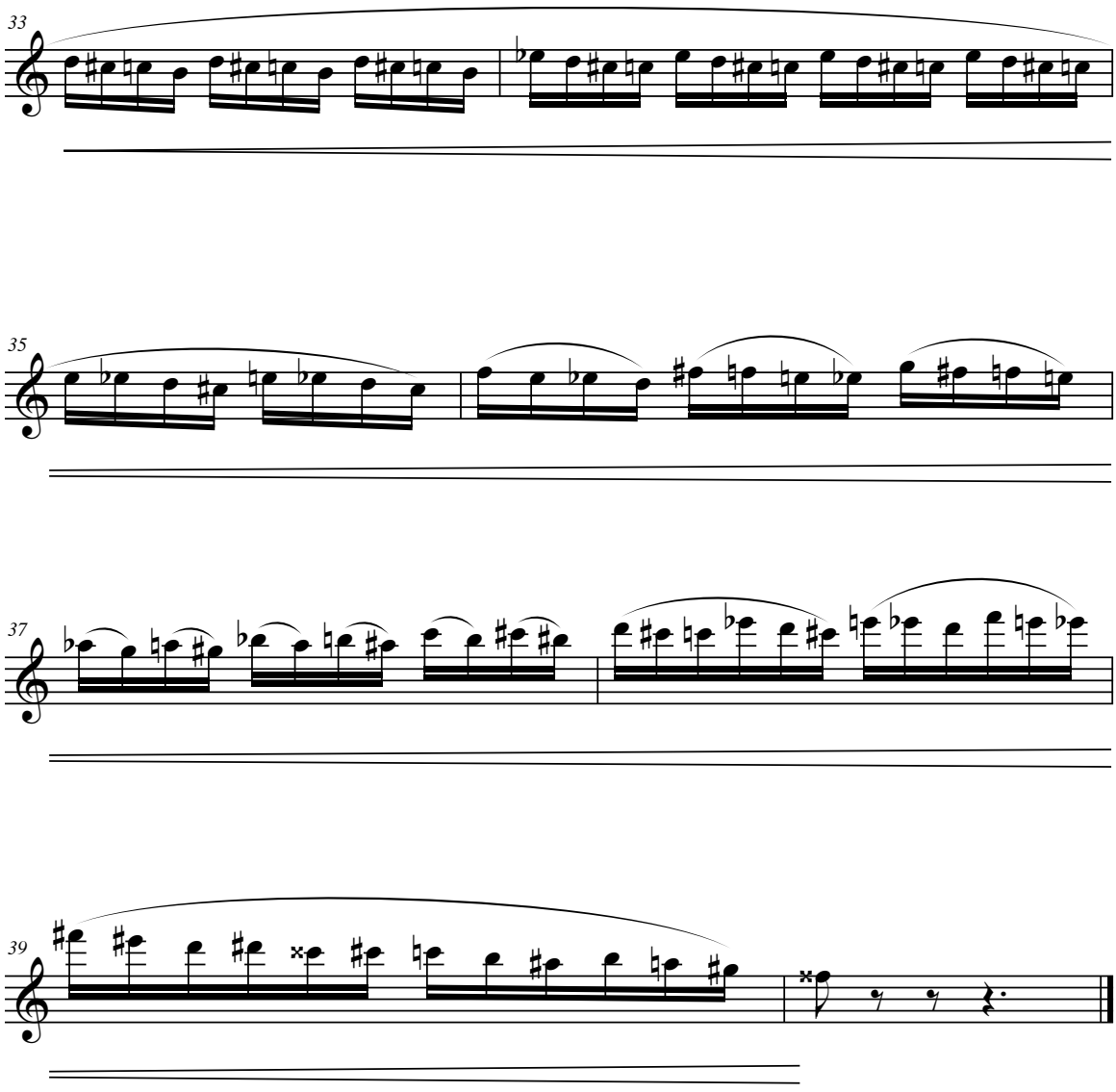
Rapidly Shifted Multiphonics




11
1
2
3
5
C#
6
7
13
ff
1
2
3
5
C#
6
7
15
16

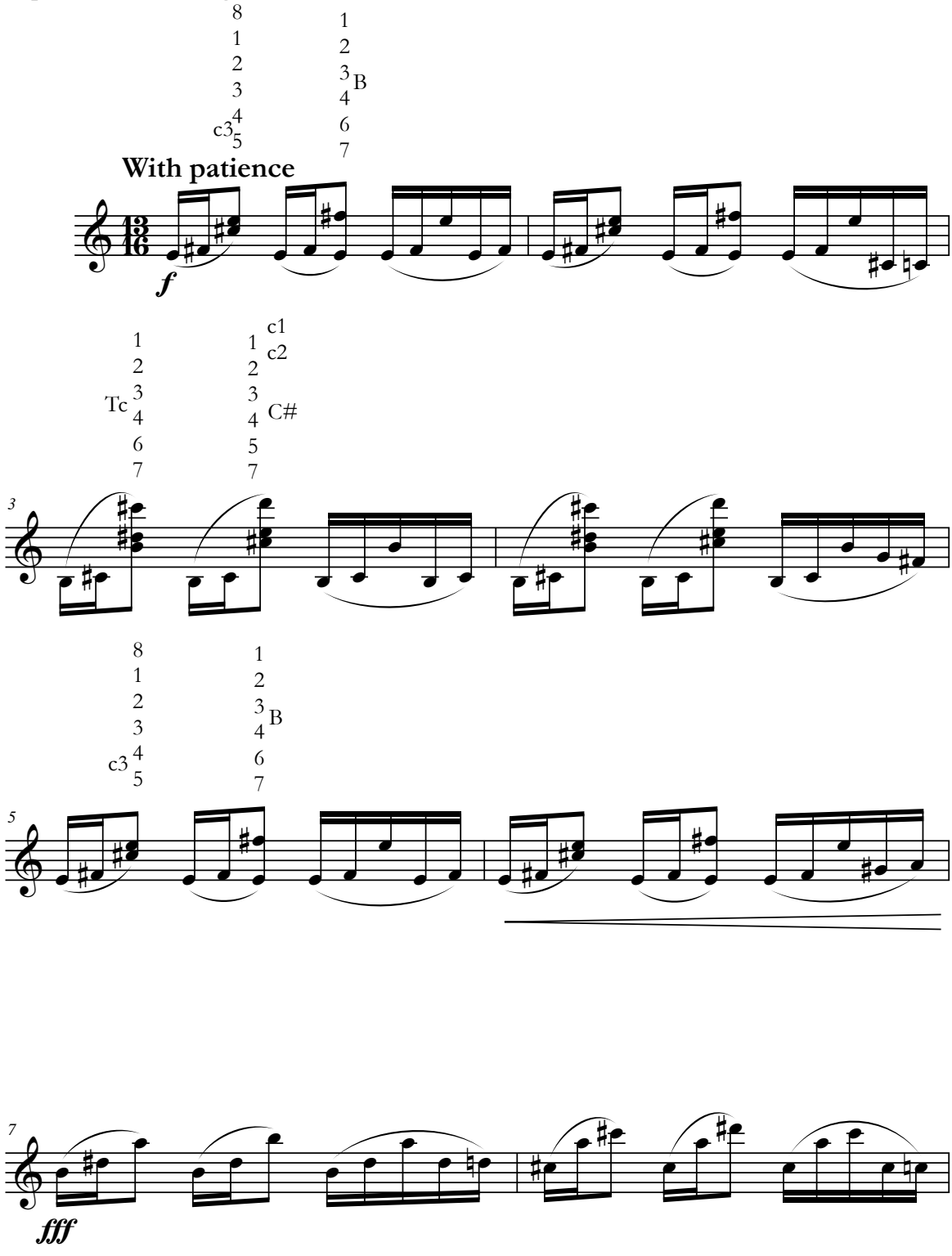

17
18
19
ff
1 2 3 4 6 7
1 2 3 5 6 7
1 2 3 4 6 7
1 2 3 5 6 7
21
C#
1 2 3 6 7
1 2 3 5 6 7
1 2 3 4 6 7
23
1 2 3 5 6 7
f

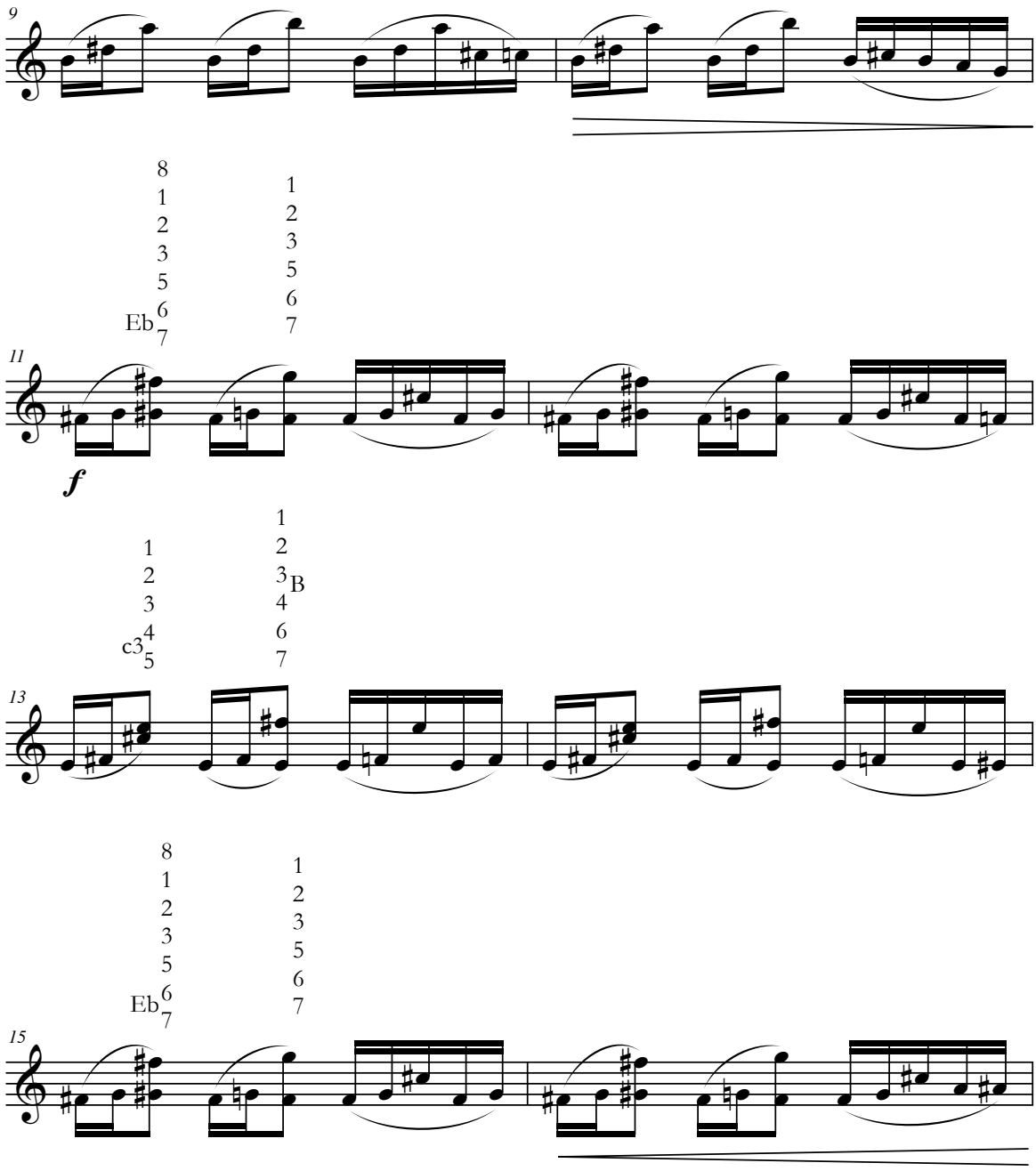

25
1
2
3
5
6
7
ff
27
29
1
2
3
5
6
7
ff
pp
31
mf

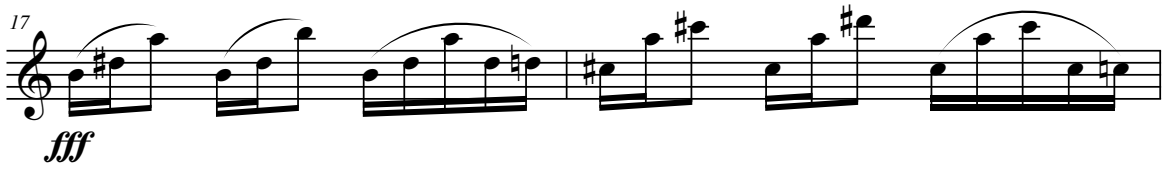

33
35
37
39

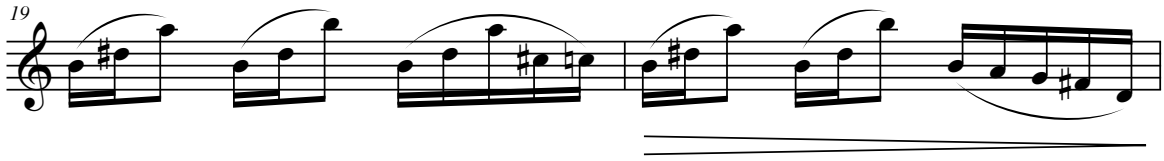
ETUDE # 28: Multiphonics

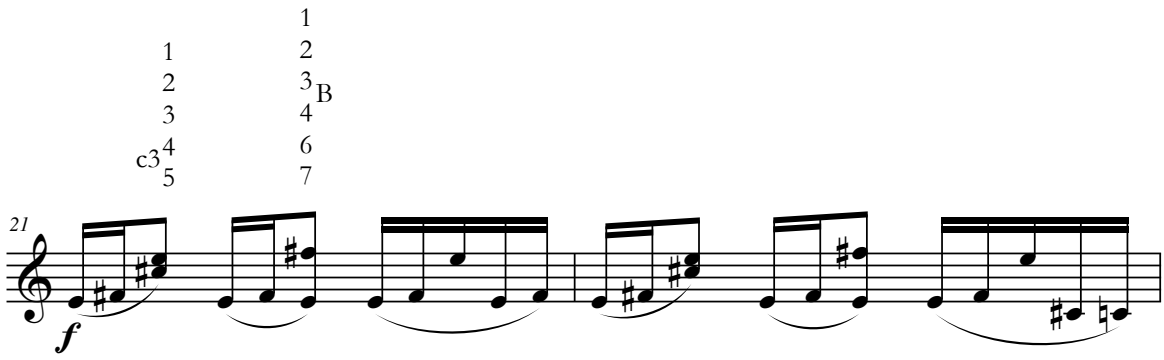
Rapid, Melodic Passages

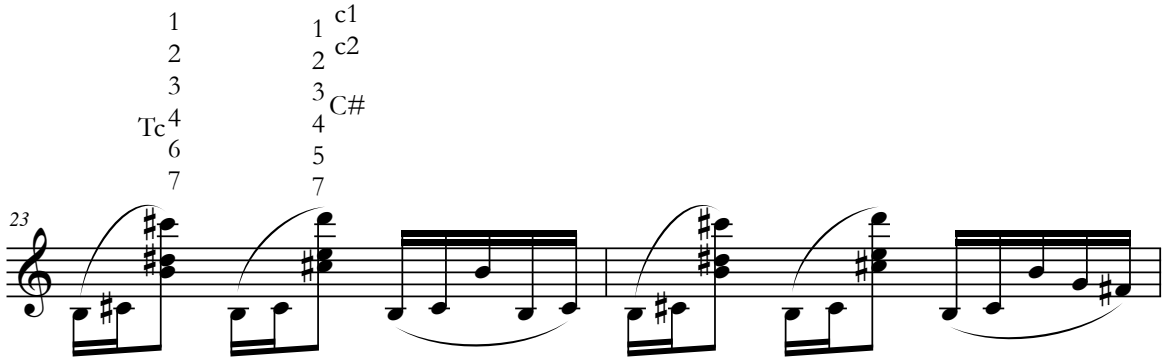


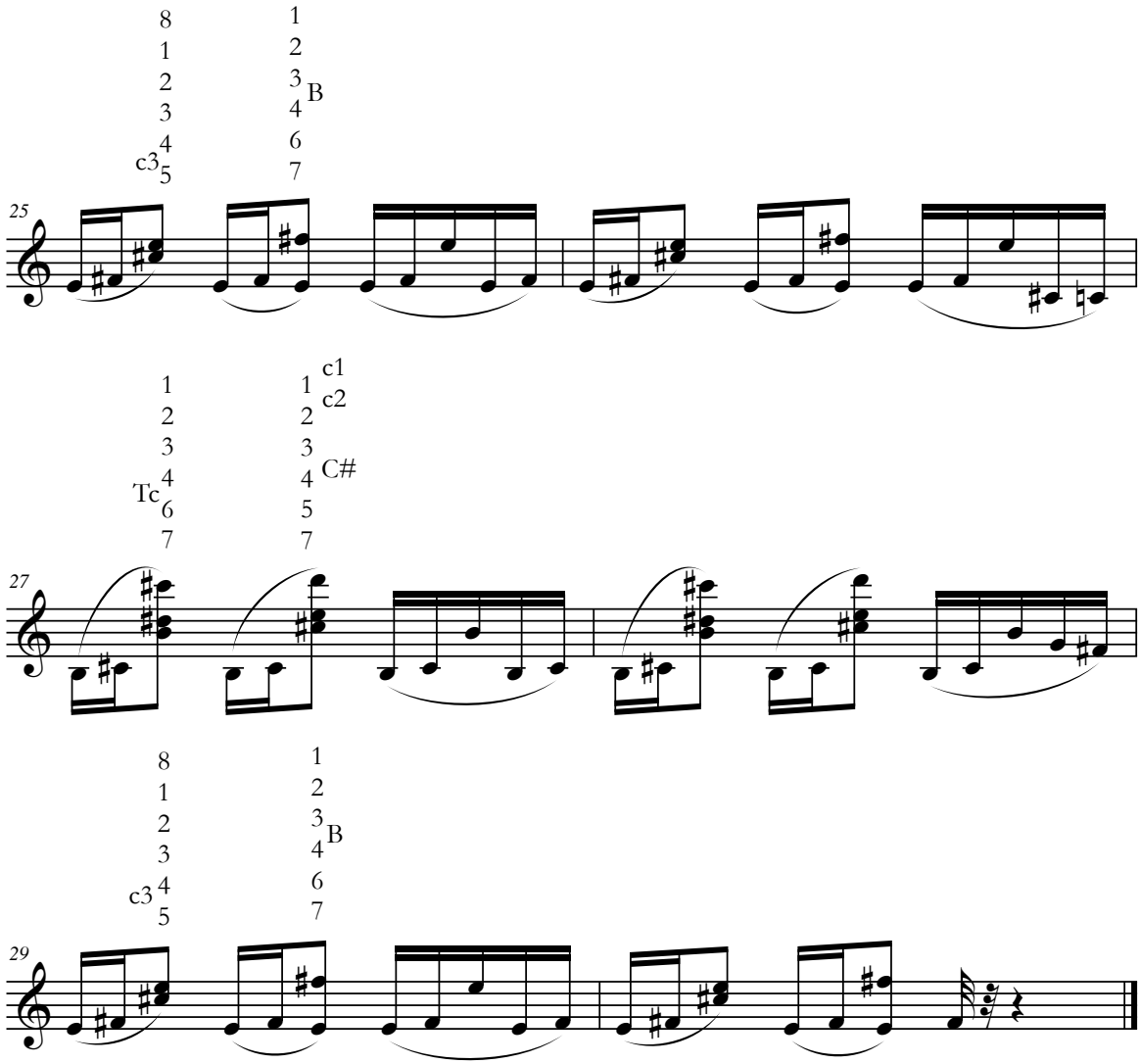

9
11
f
13
15


17
fff


19

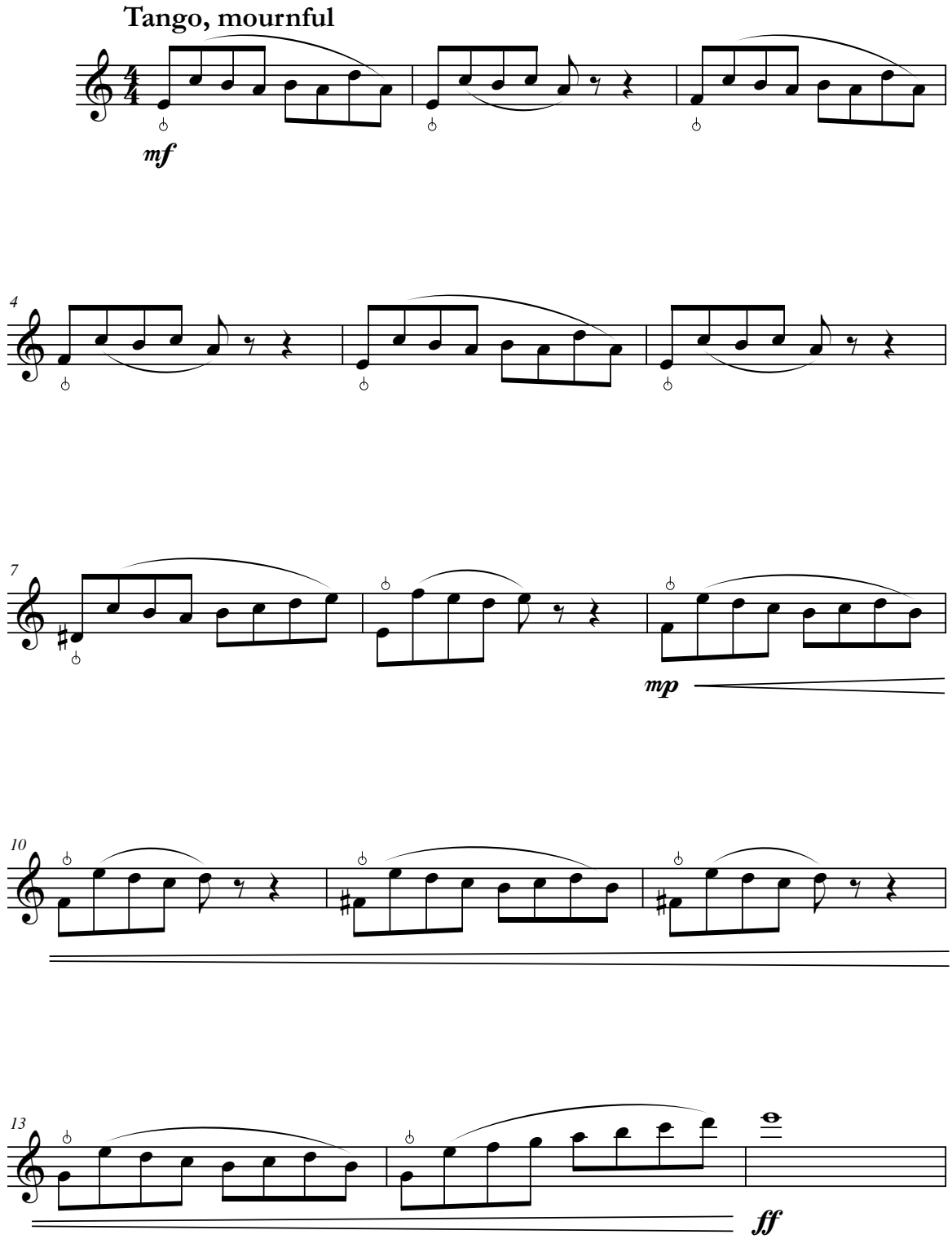

1
2
3
4
c3
5
1
2
3
B
4
6
7
21
f

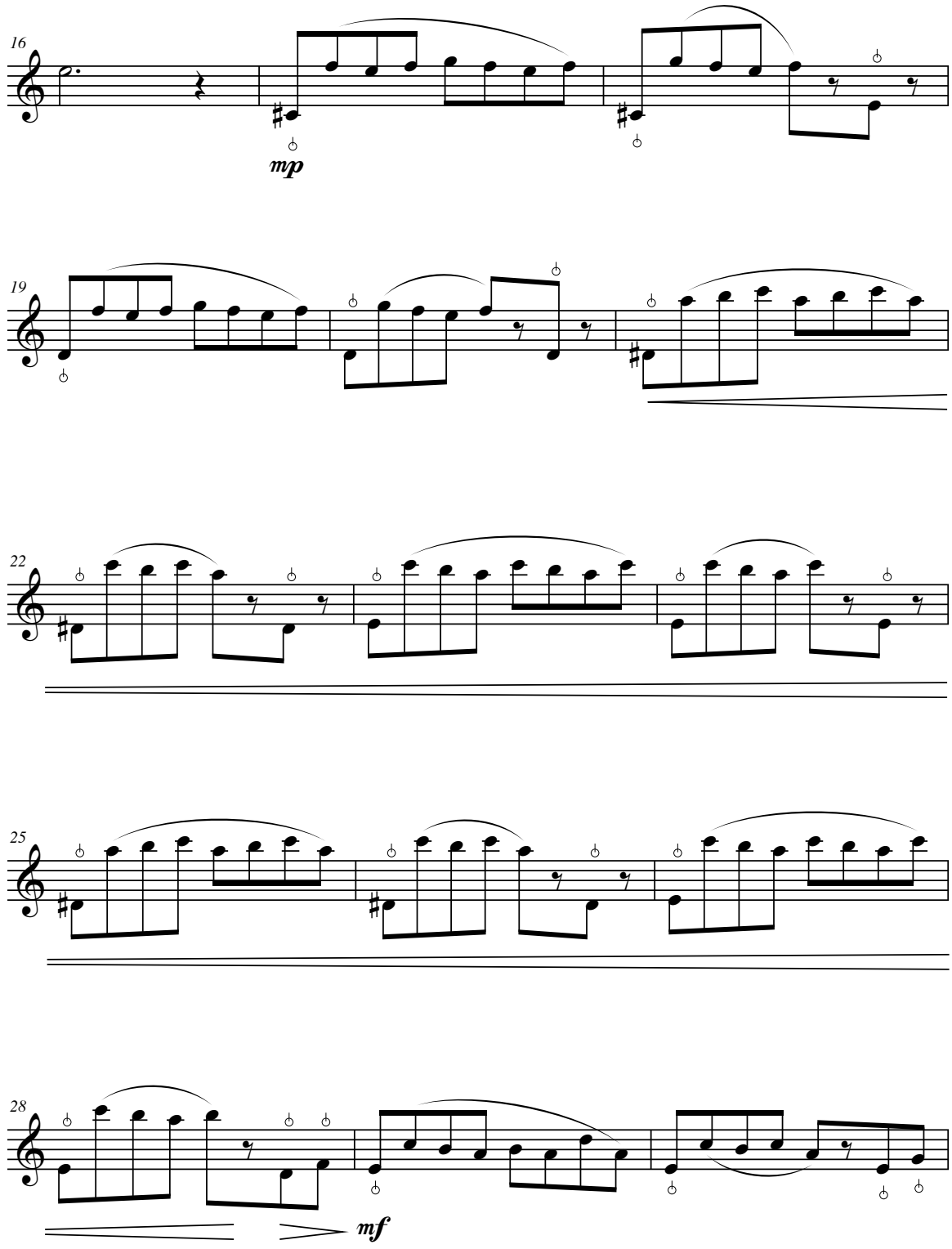

1
2
3
Tc
4
6
7
1
c1
2
c2
3
C#
4
5
7
23

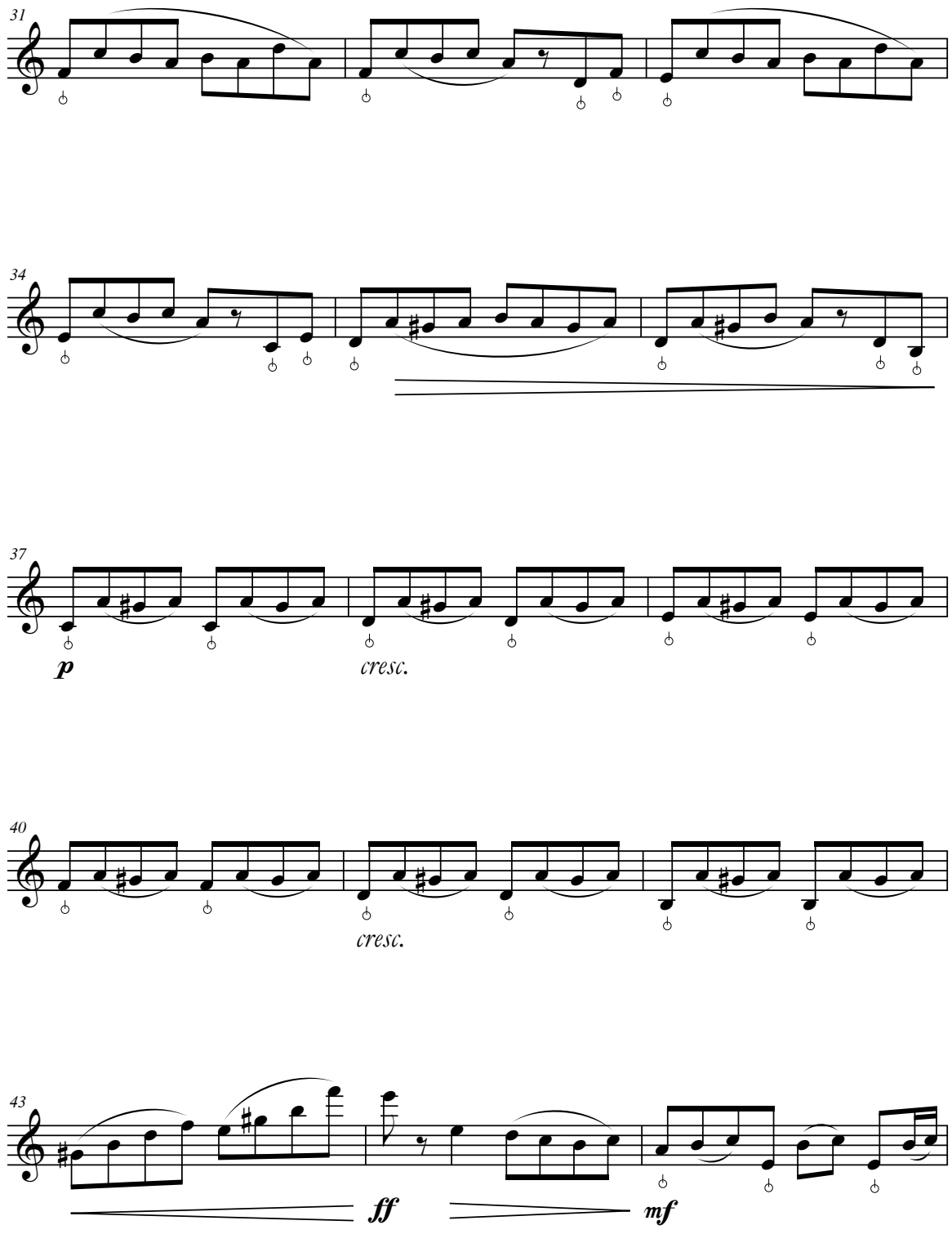

25
c3
B
27
Tc
c1
c2
C#
29
c3
B

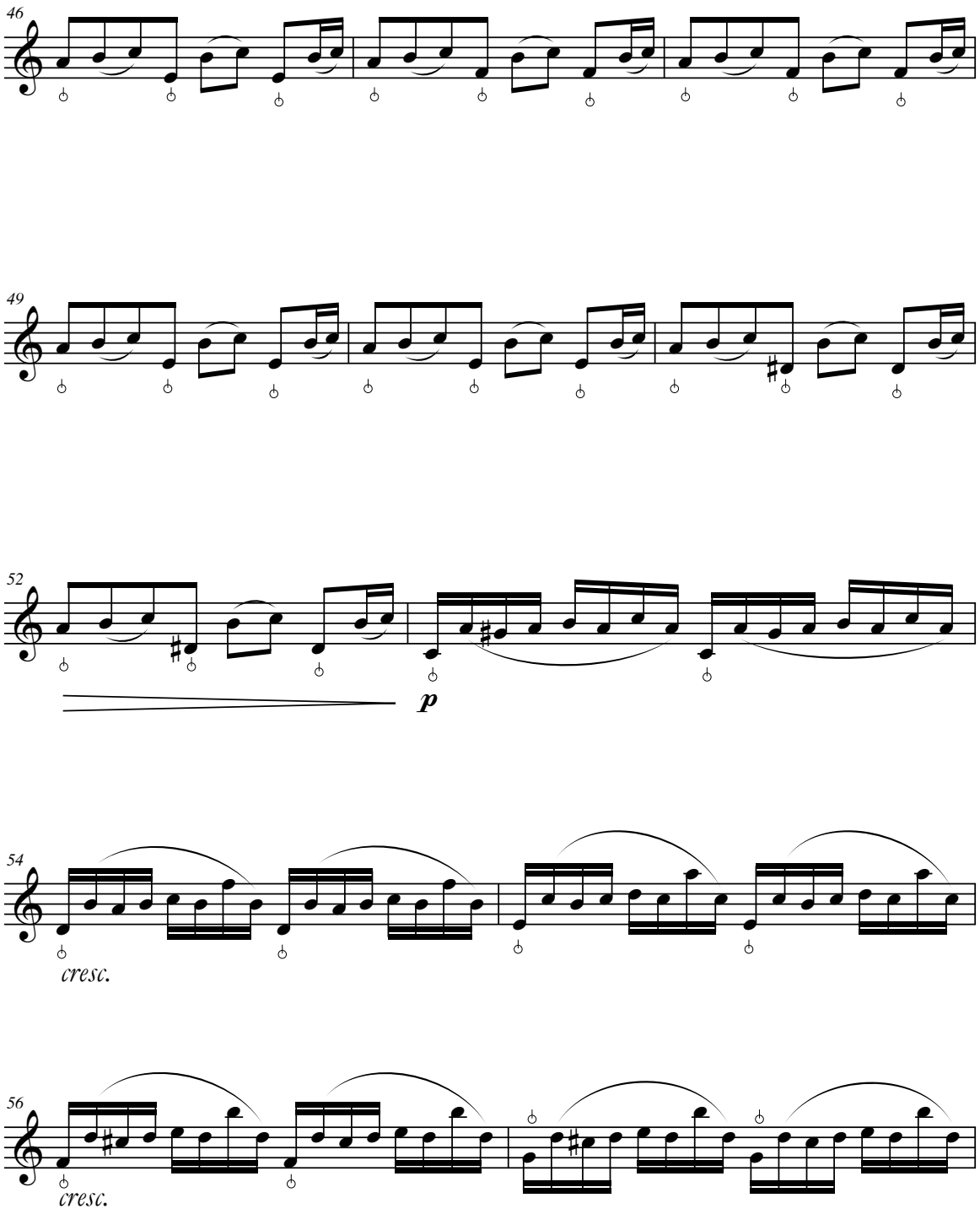
ETUDE # 29: Slap Tonguing

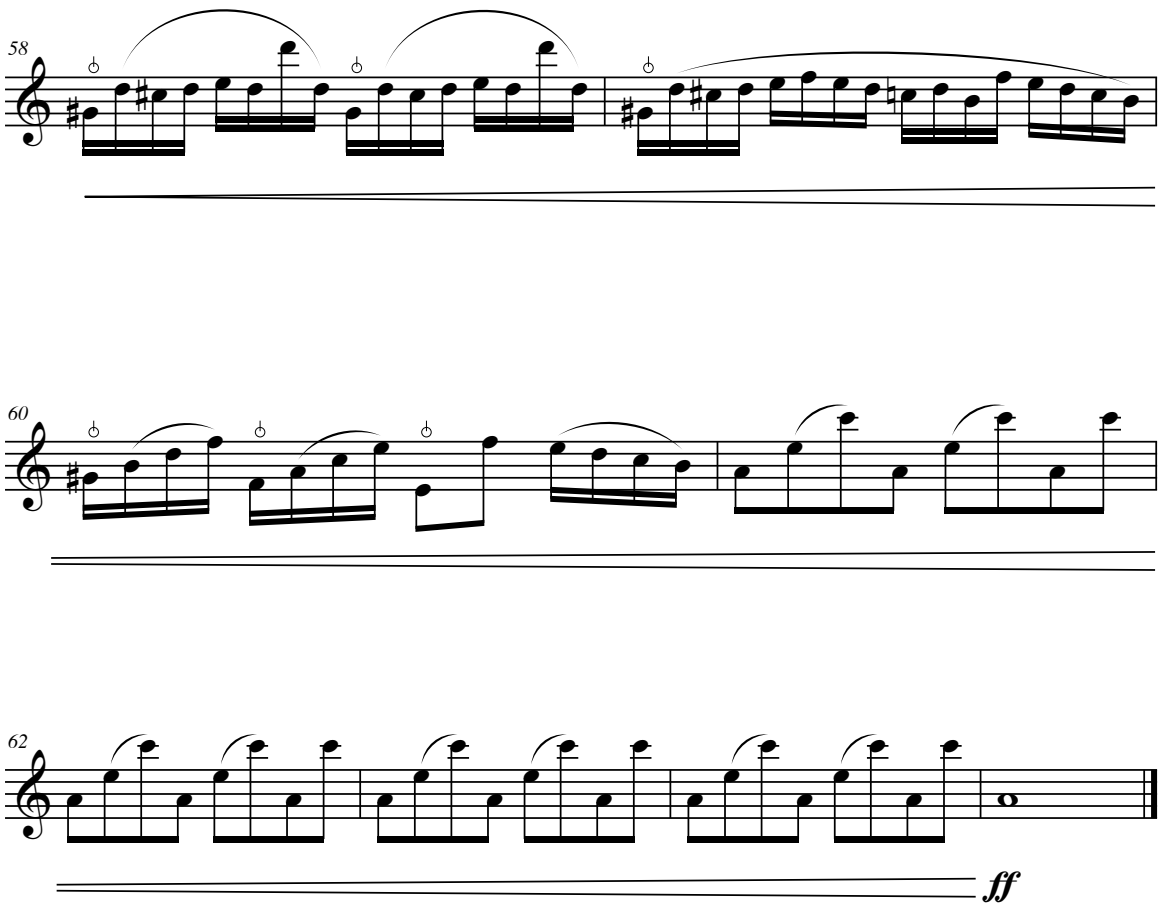
As a Conrapuntal Technique




16
mp
19
22
25
28
mf

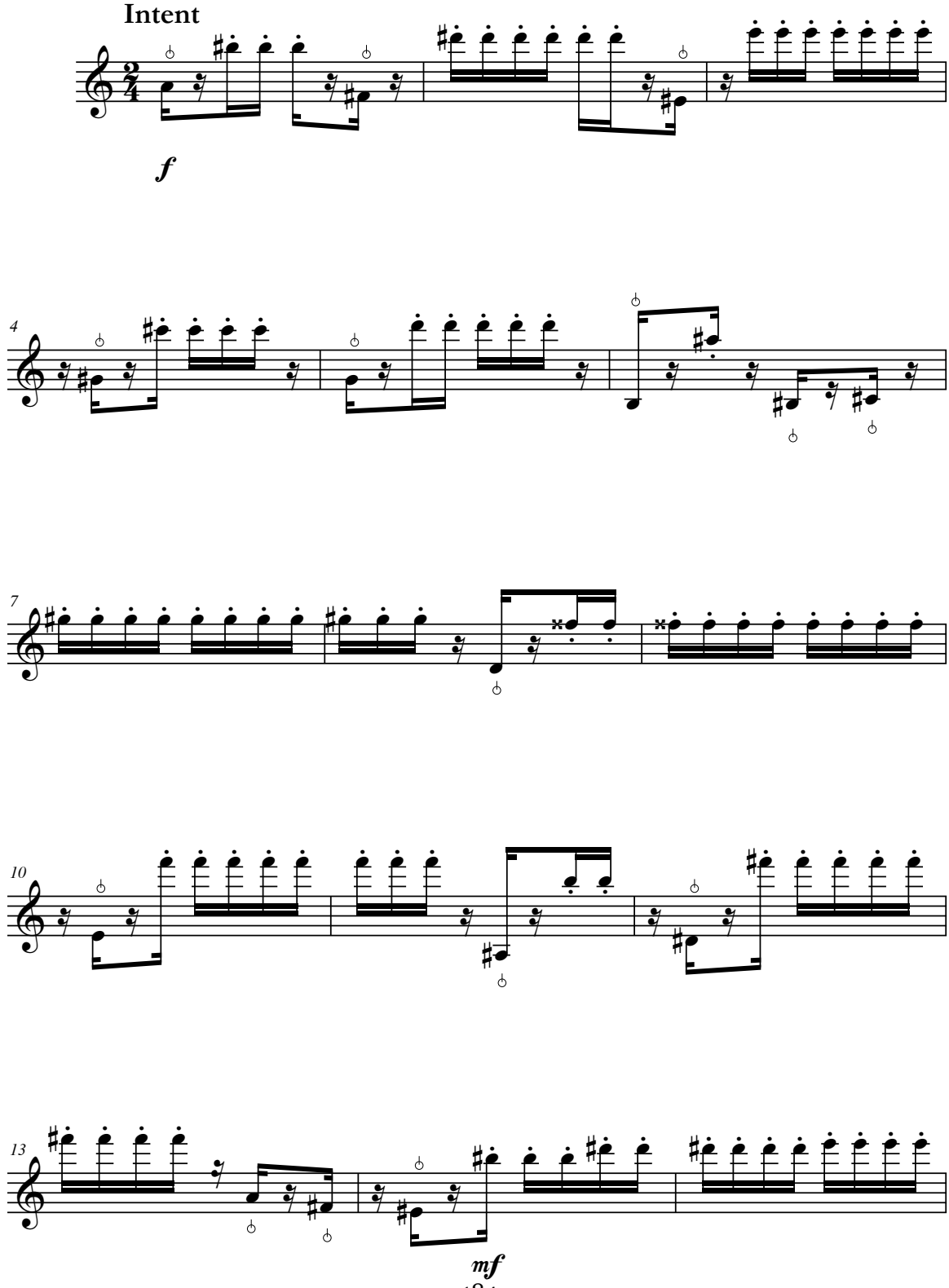

31
34
37
p
cresc.
40
cresc.
43
ff
mf

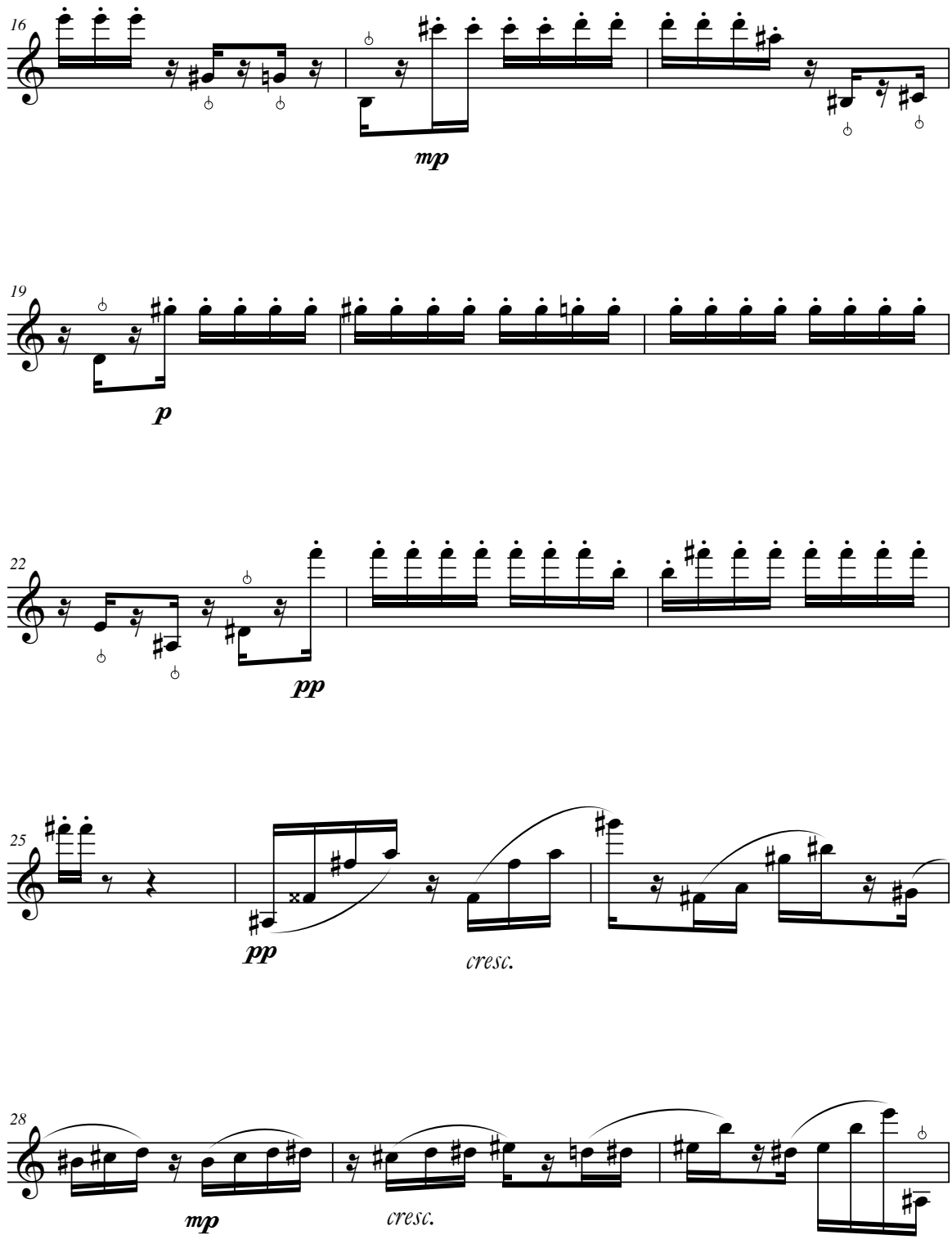

46
49
52
p
54
cresc.
56
cresc.

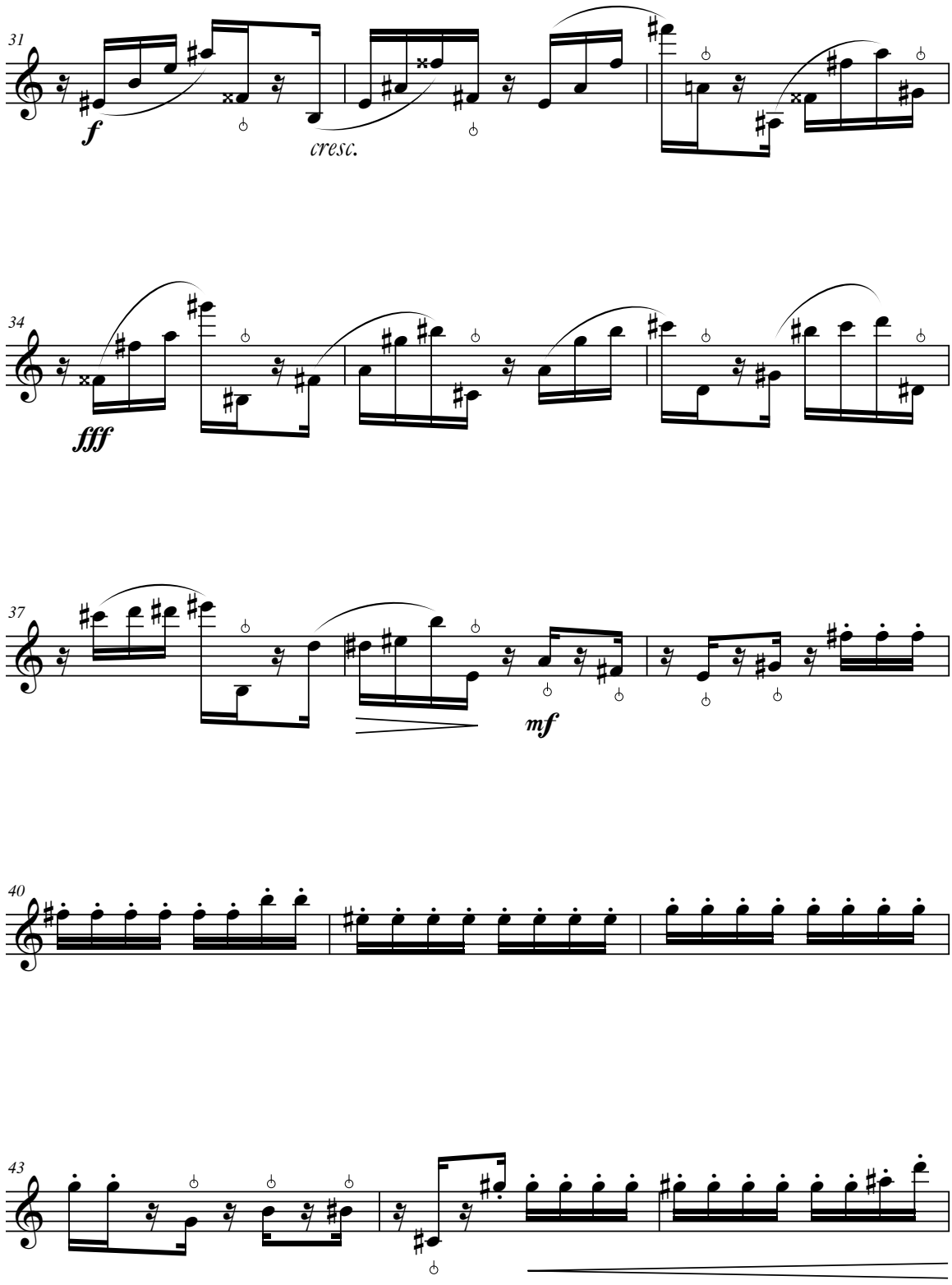

58
60
62
ff

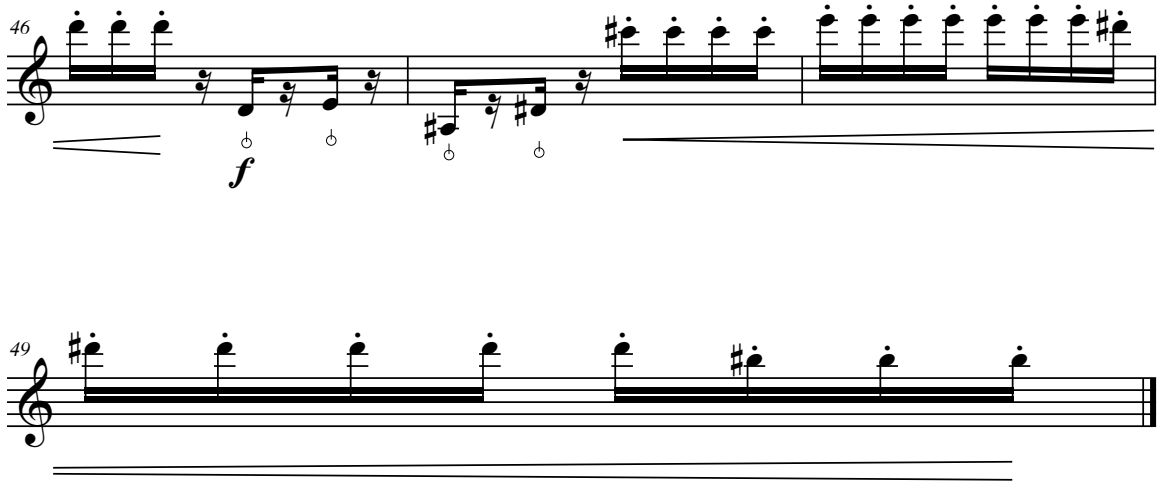
ETUDE # 30: Slap Tongue

Low Tessitura in Pointillism




16
mp
19
p
22
pp
25
pp
cresc.
28
mp
cresc.

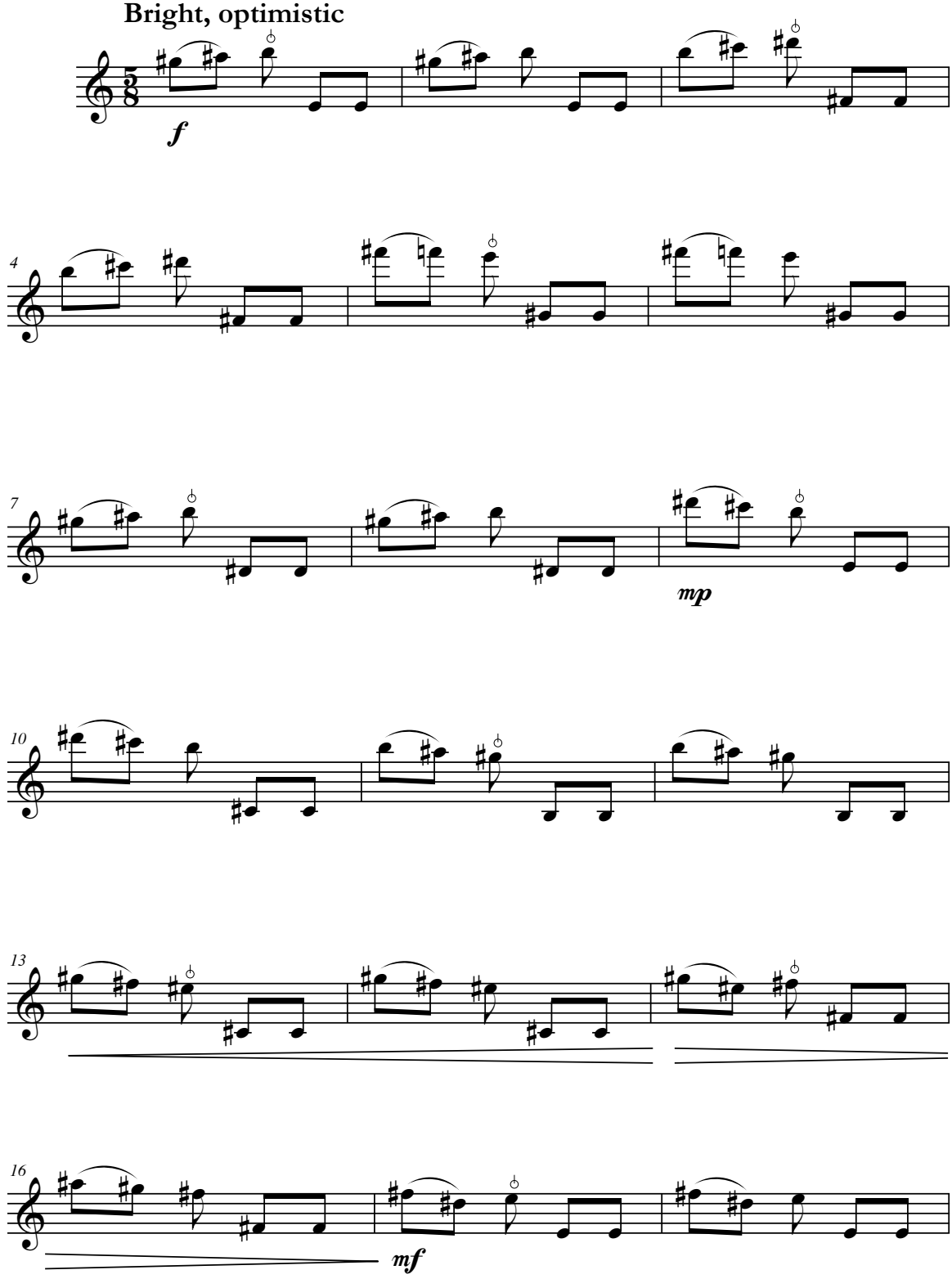

31
f
cresc.
34
fff
37
mf
40
43

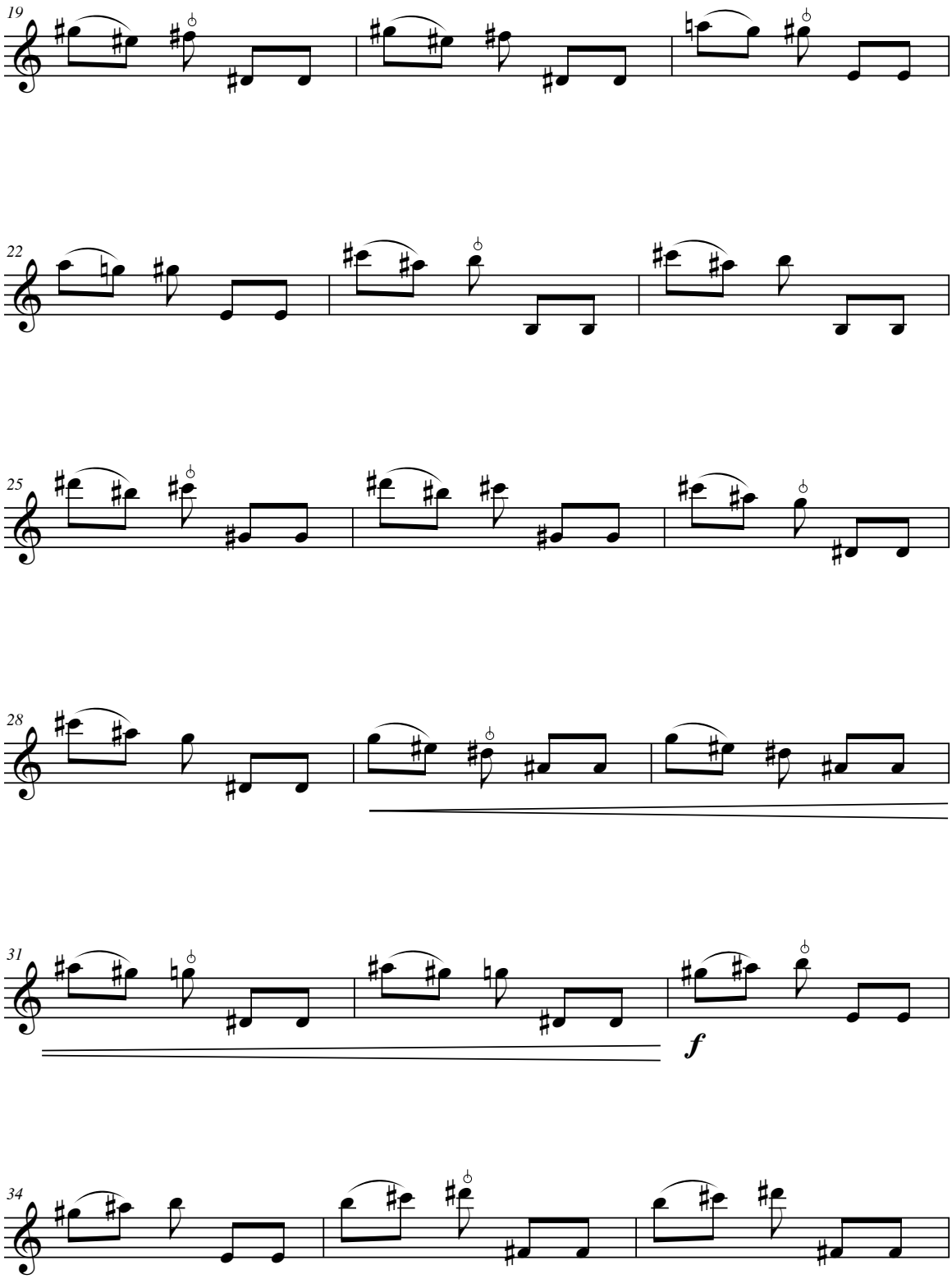

46
f

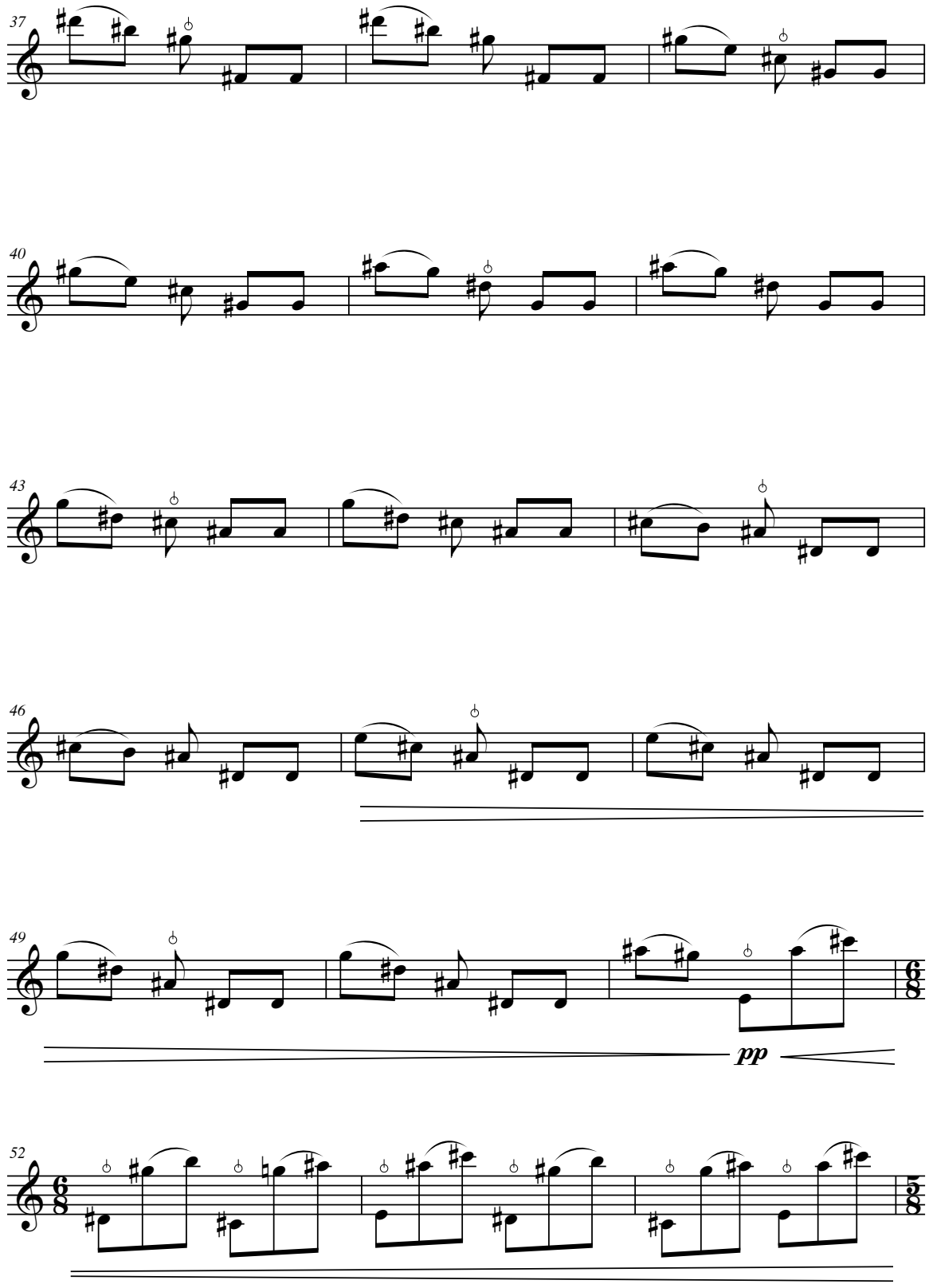
49

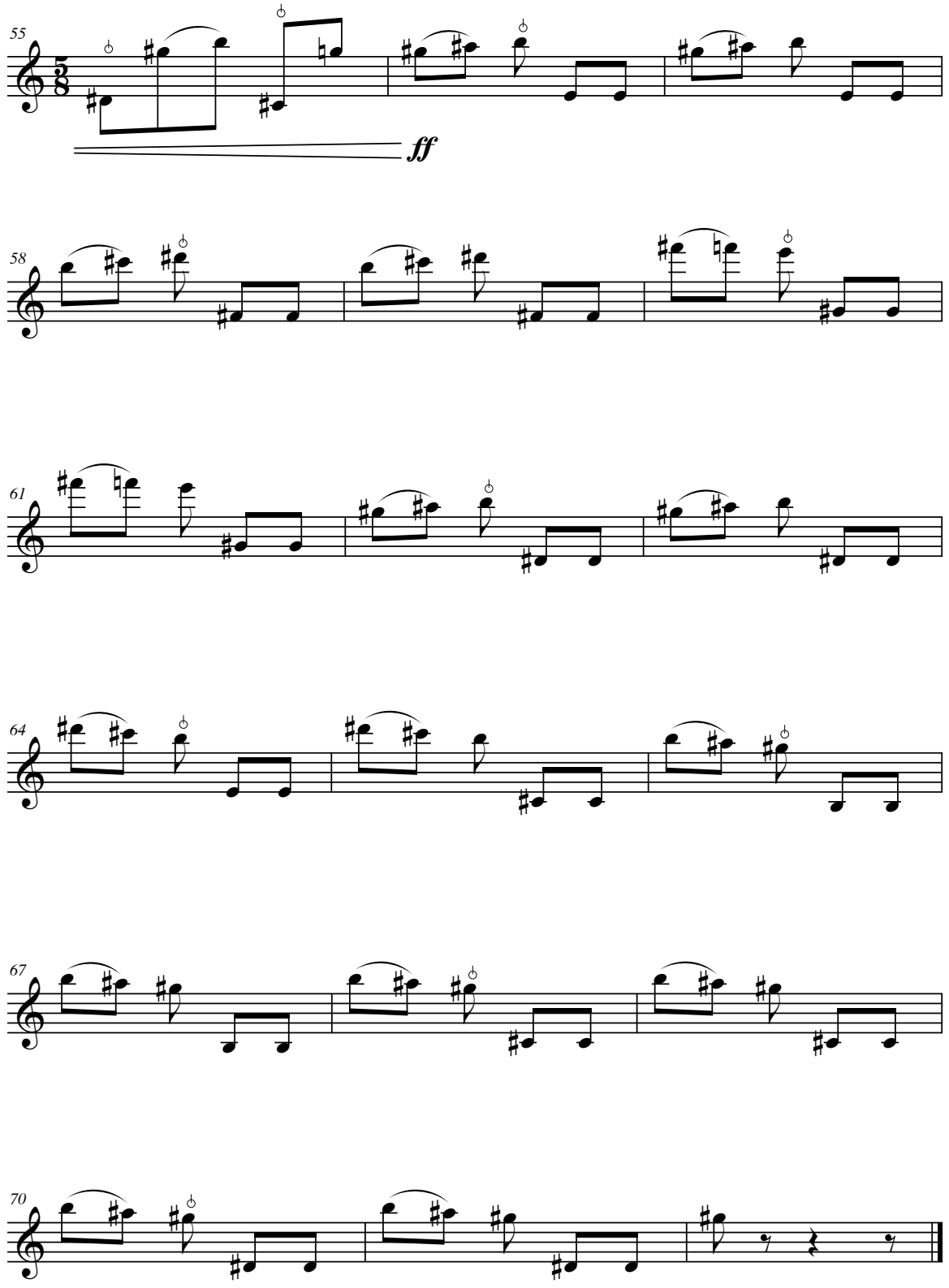
ETUDE # 31: Slap Tongue

In the Higher Tessitura



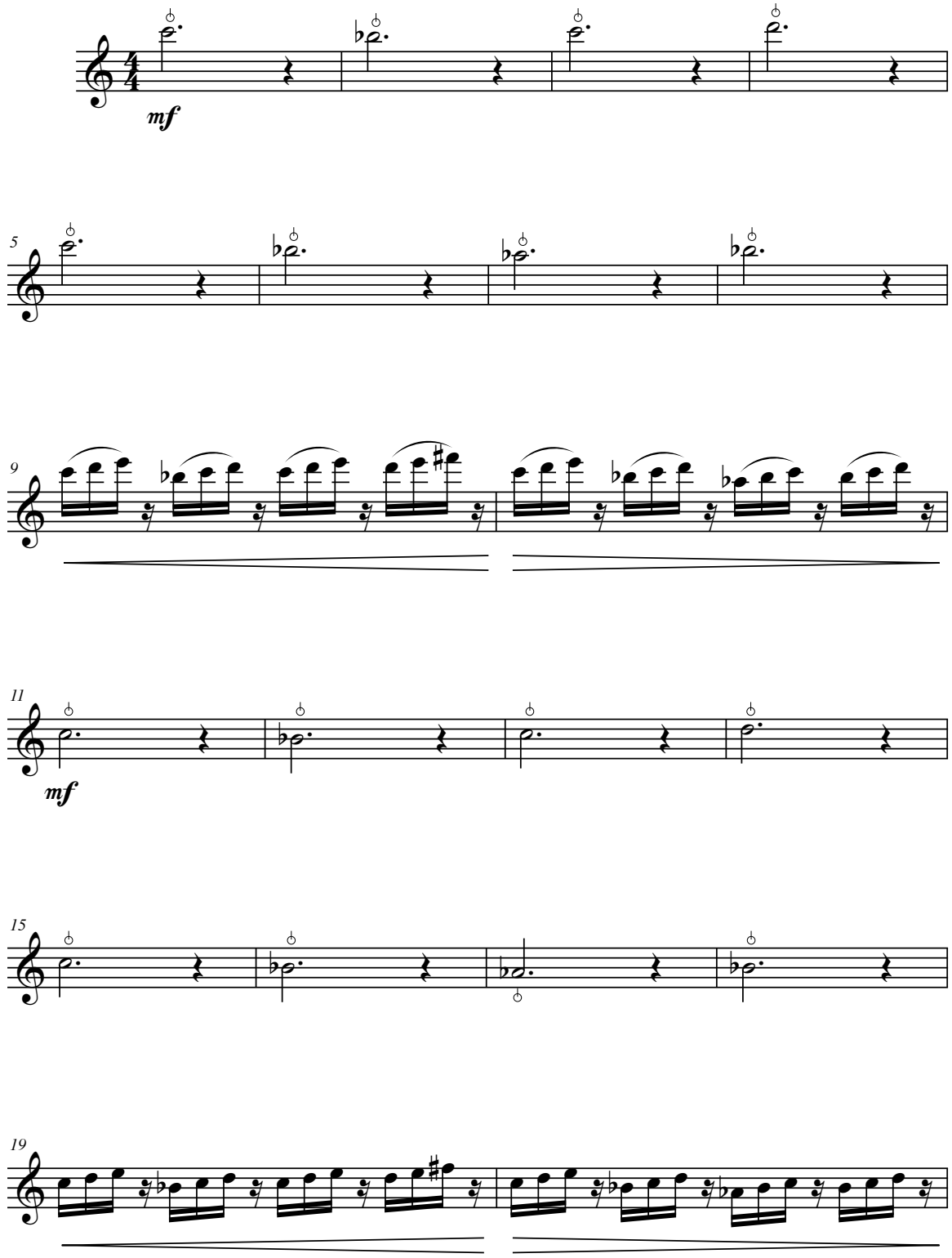

19
22
25
28
31
f
34

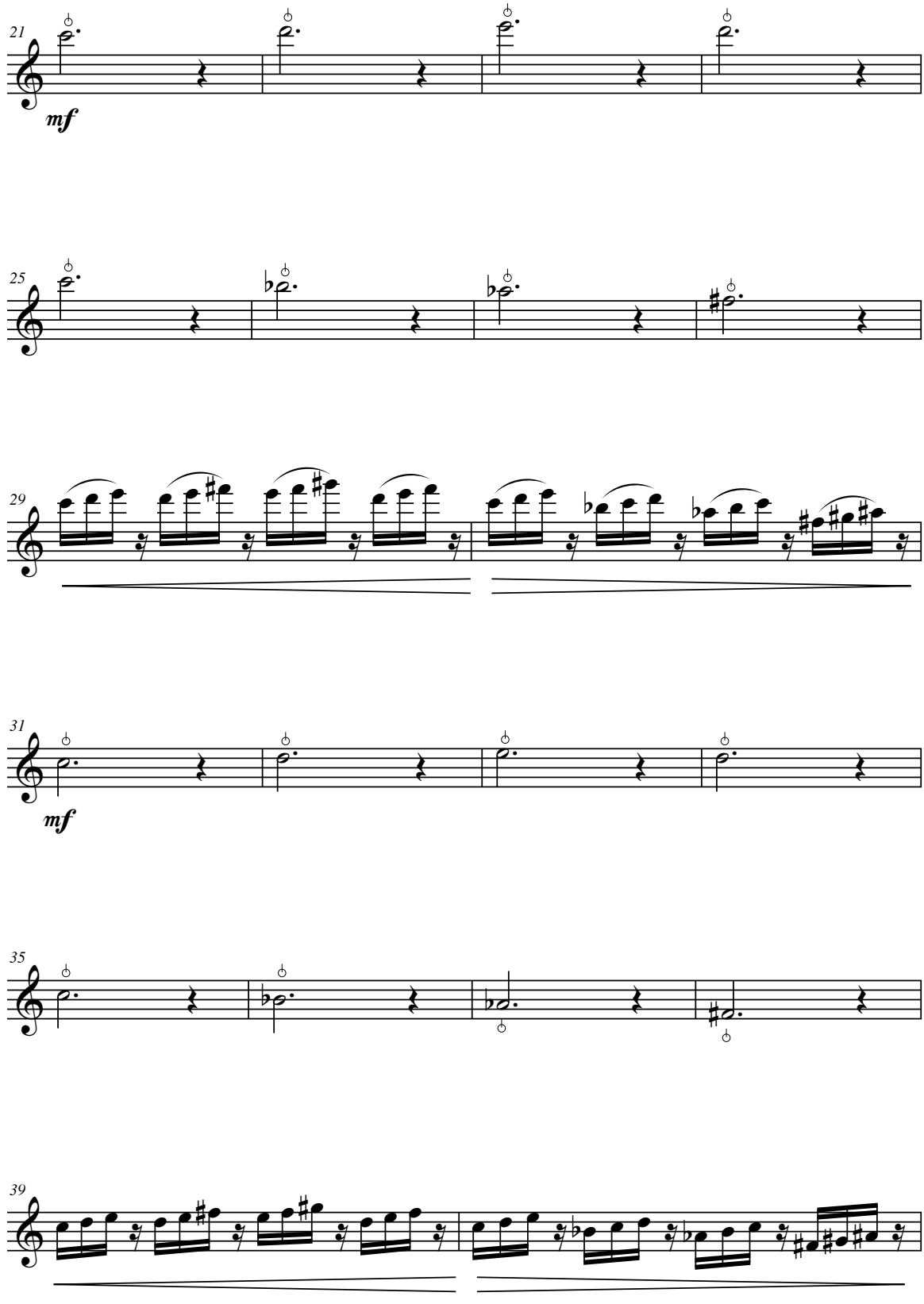

37
40
43
46
49
pp
52

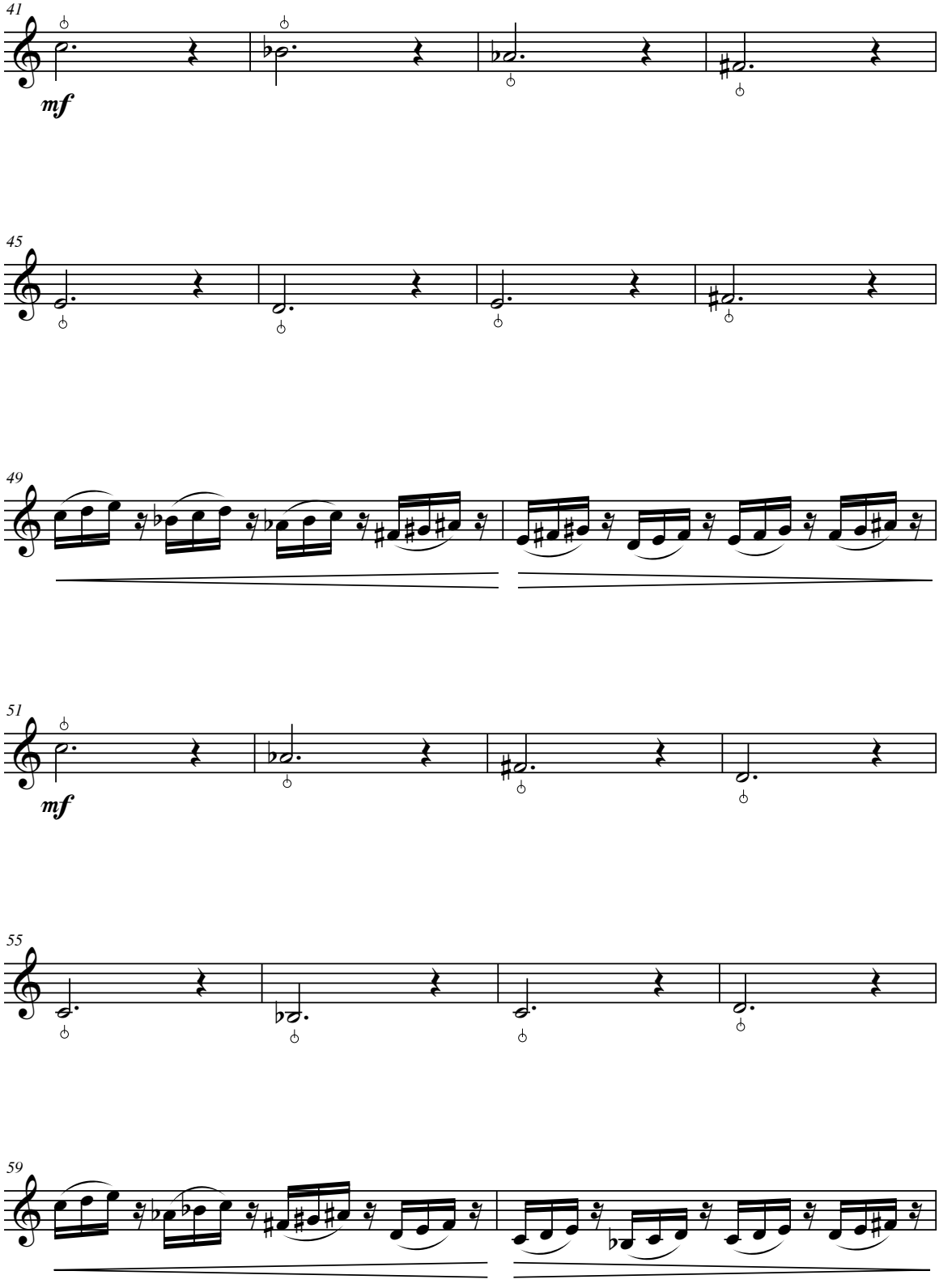

55
ff
58
61
64
67
70

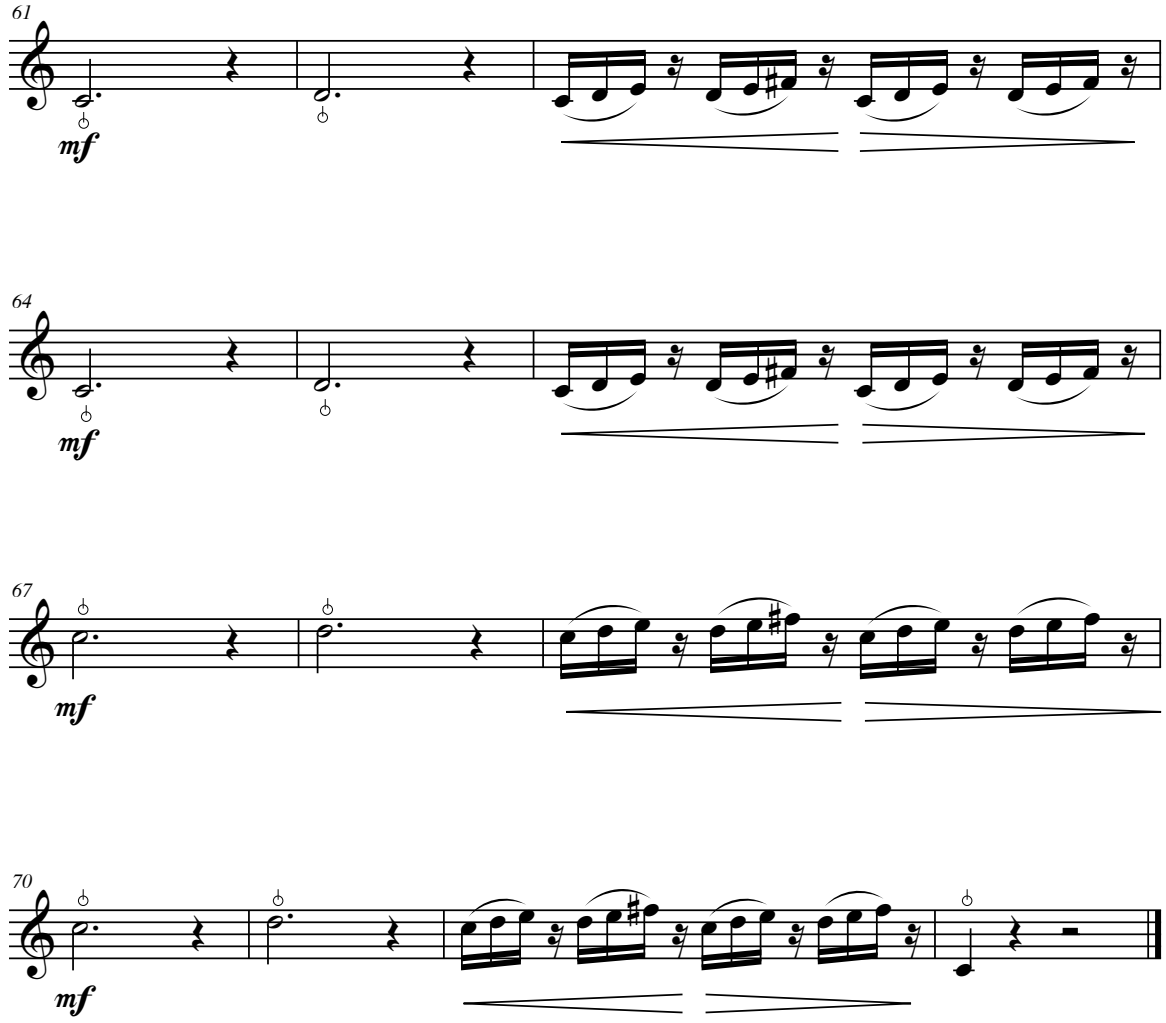
ETUDE # 32: Slap Tonguing

Sustaining a Pitch After a Slap



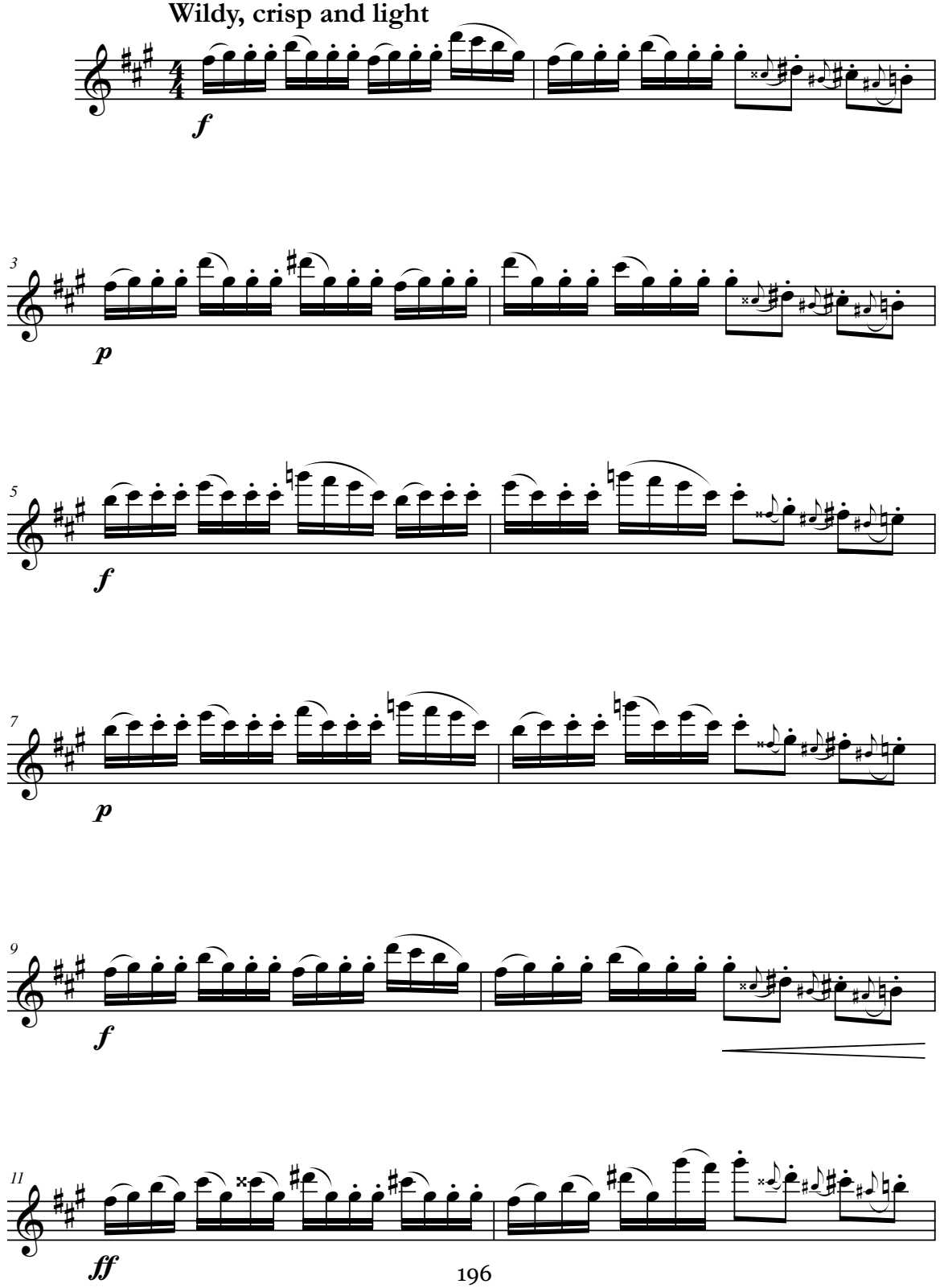

21
mf
25
29
31
mf
35
39

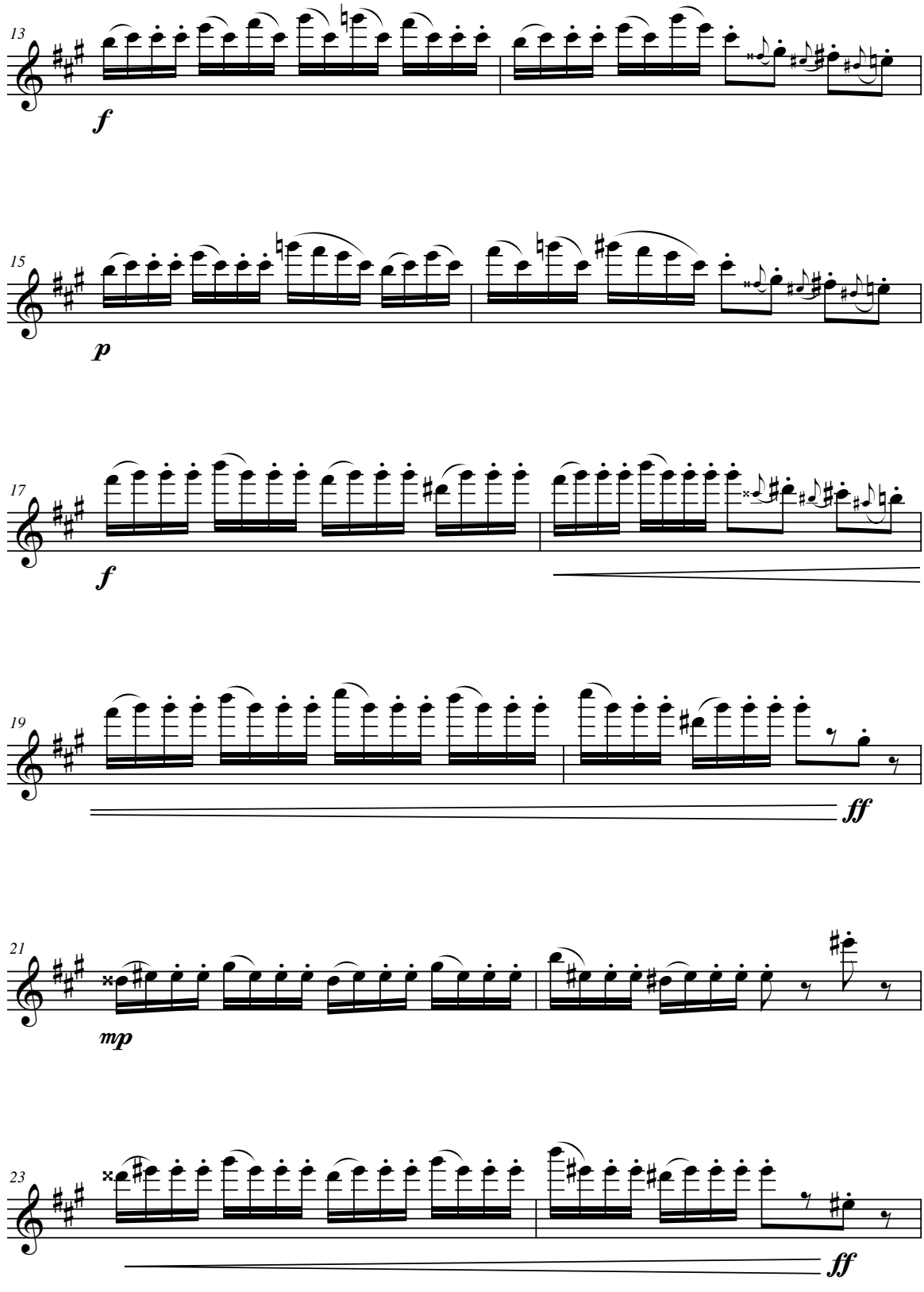

41
mf
45
49
51
mf
55
59

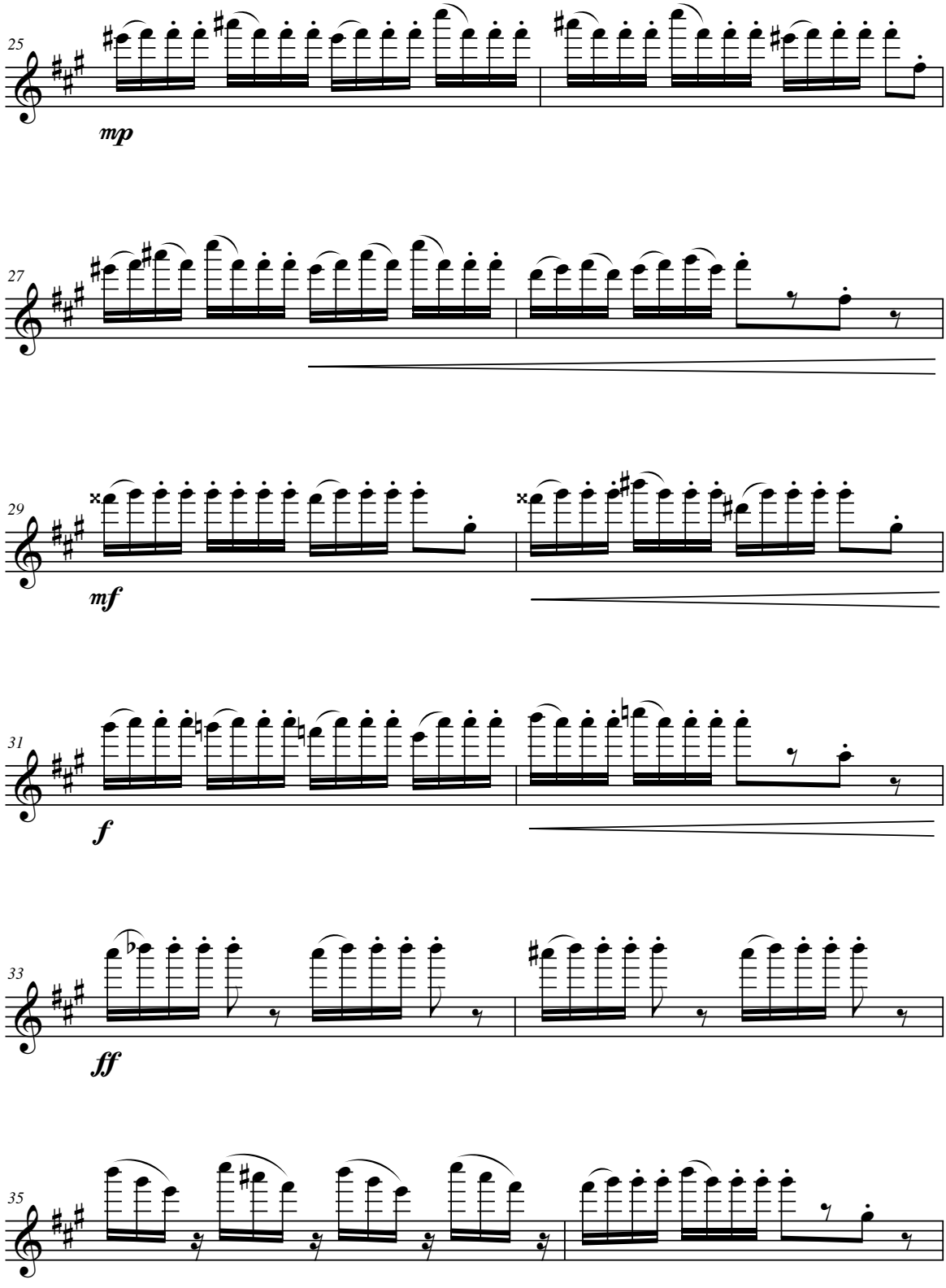

61
mf
64
mf
67
mf
70
mf

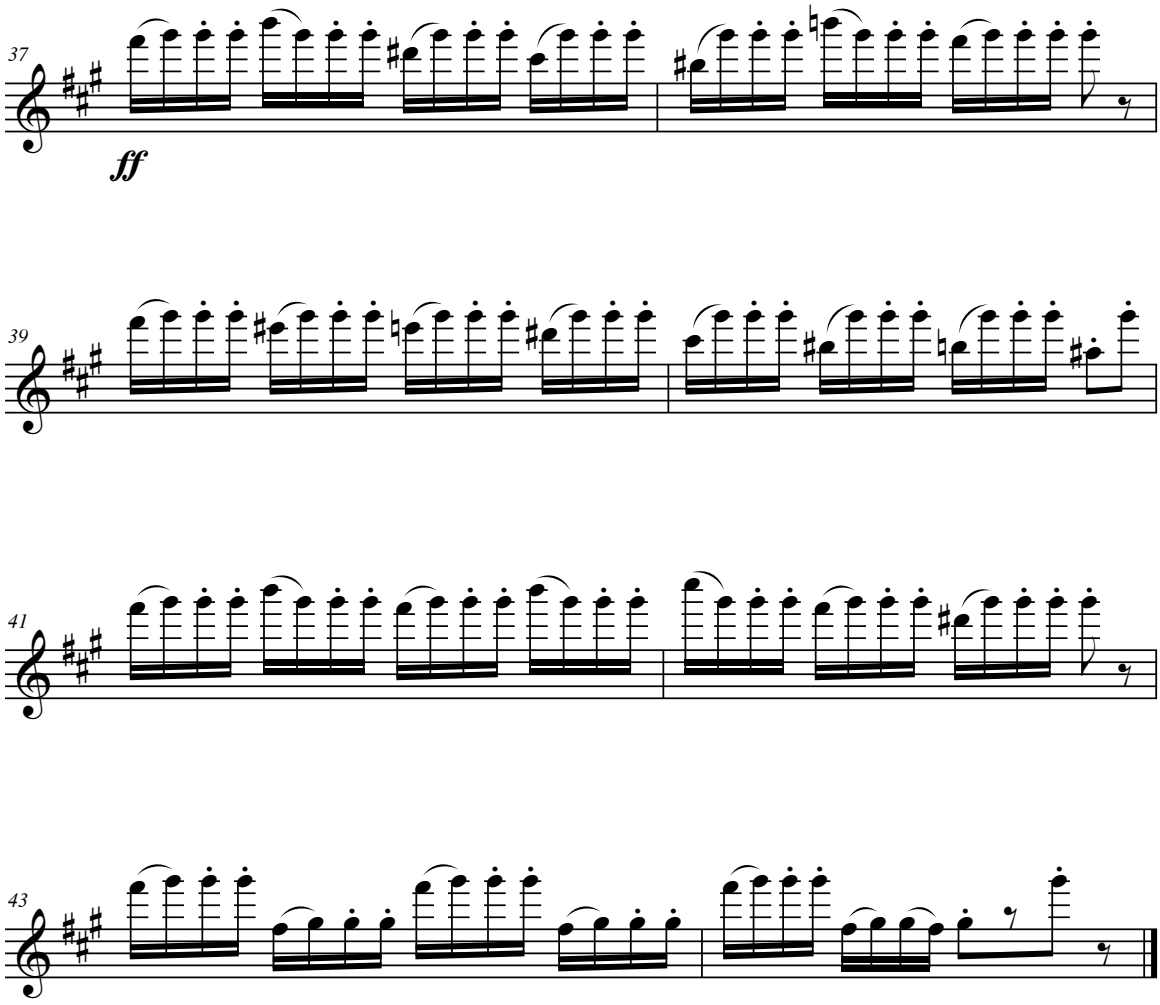
ETUDE #33: Furthering Altissimo

Rapidly Articulated Passages



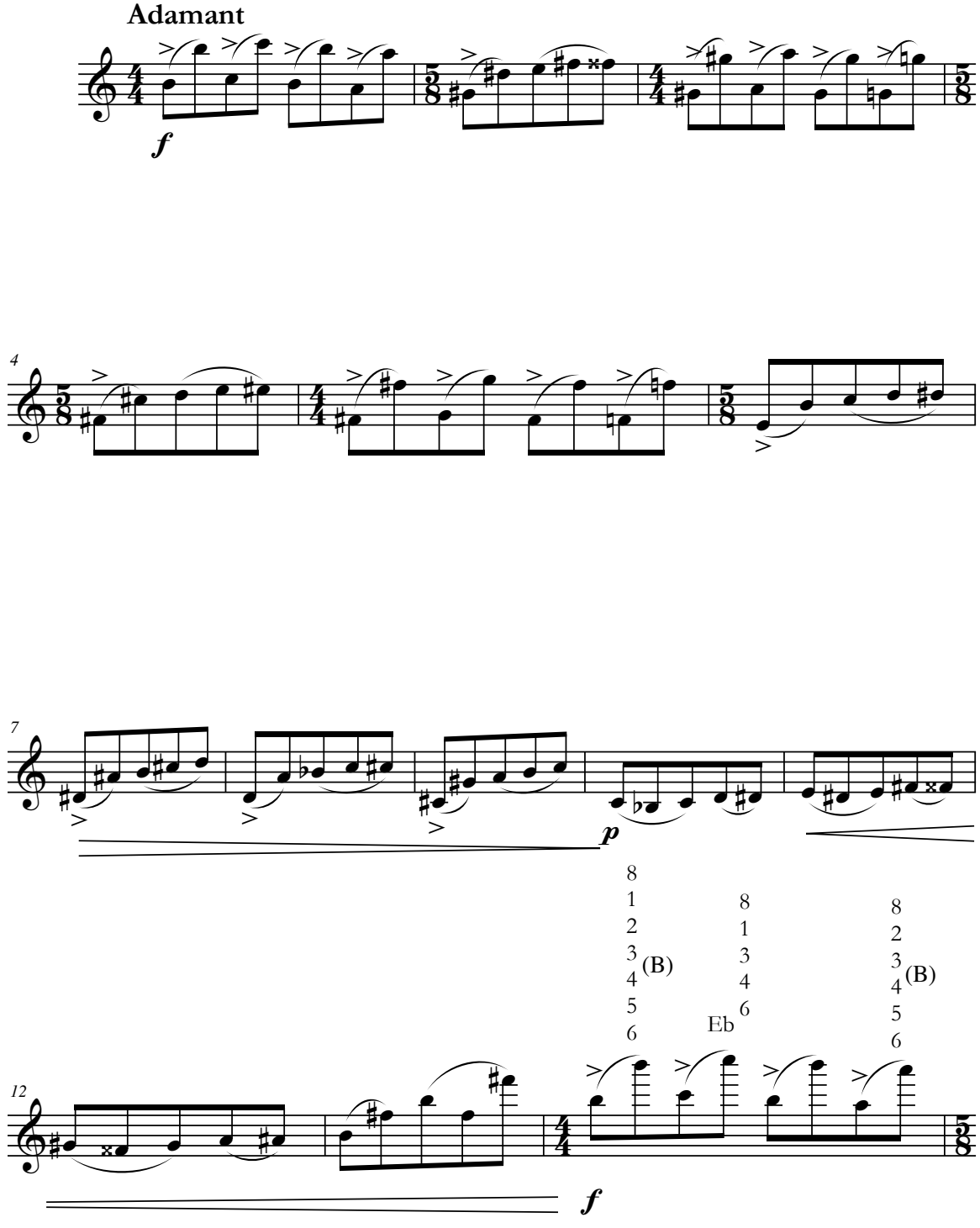

13
f
15
p
17
f
19
ff
21
mp
23
ff

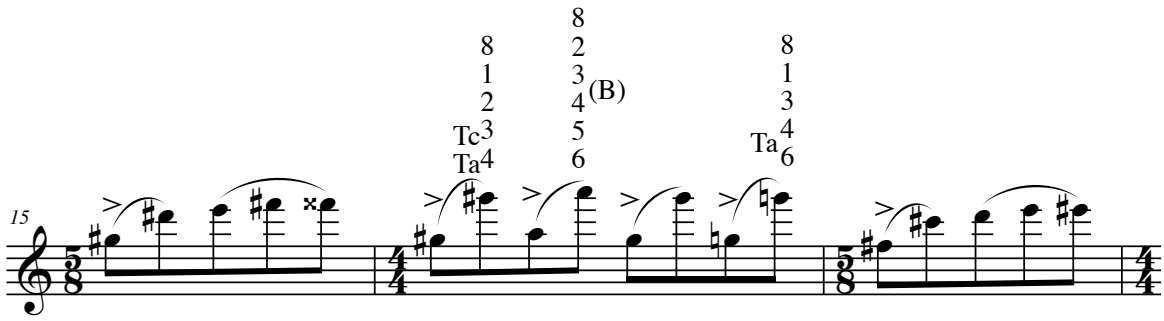

25
mp
27
29
mf
31
f
33
ff
35

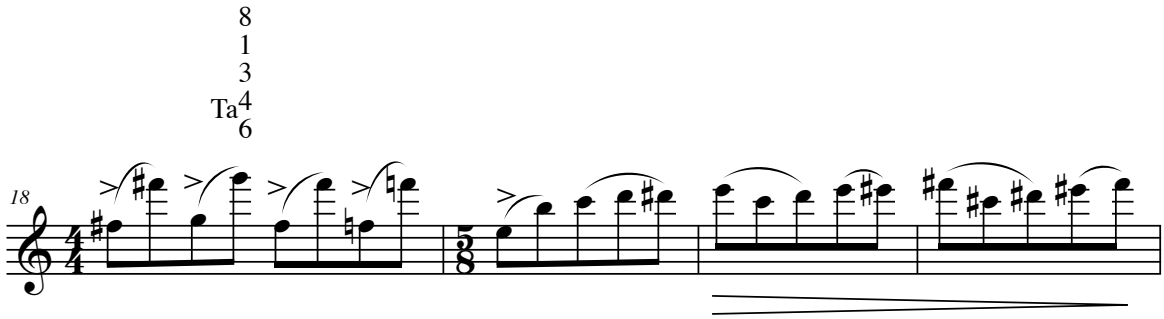

37
ff
39
41
43

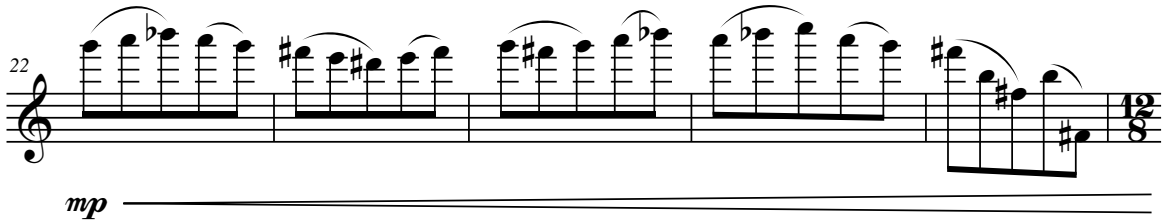
ETUDE # 34: Furthering Altissimo

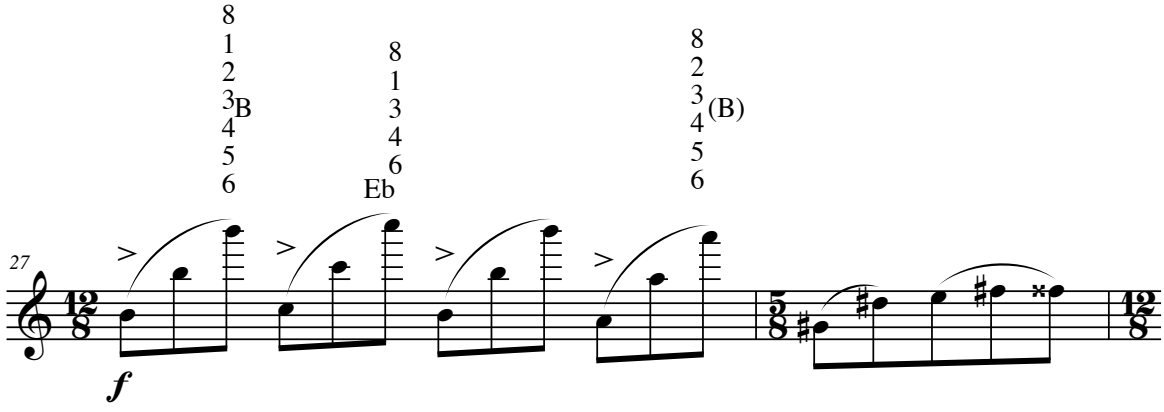
Flexibility

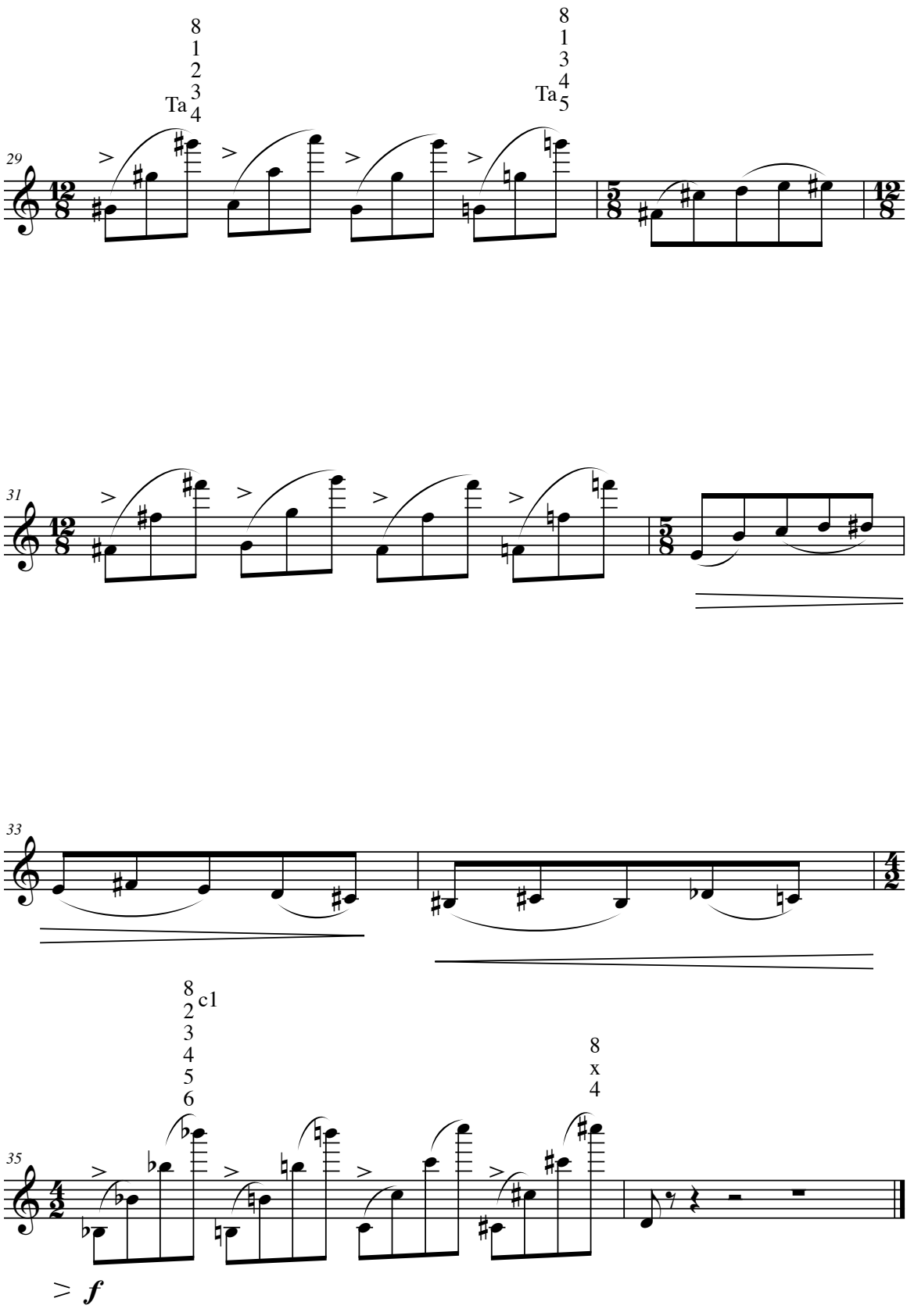



15
8
1
2
Tc 3
Ta 4
8
2
3
4 (B)
5
6
8
1
3
4
Ta 6


18
8
1
3
Ta 4
6

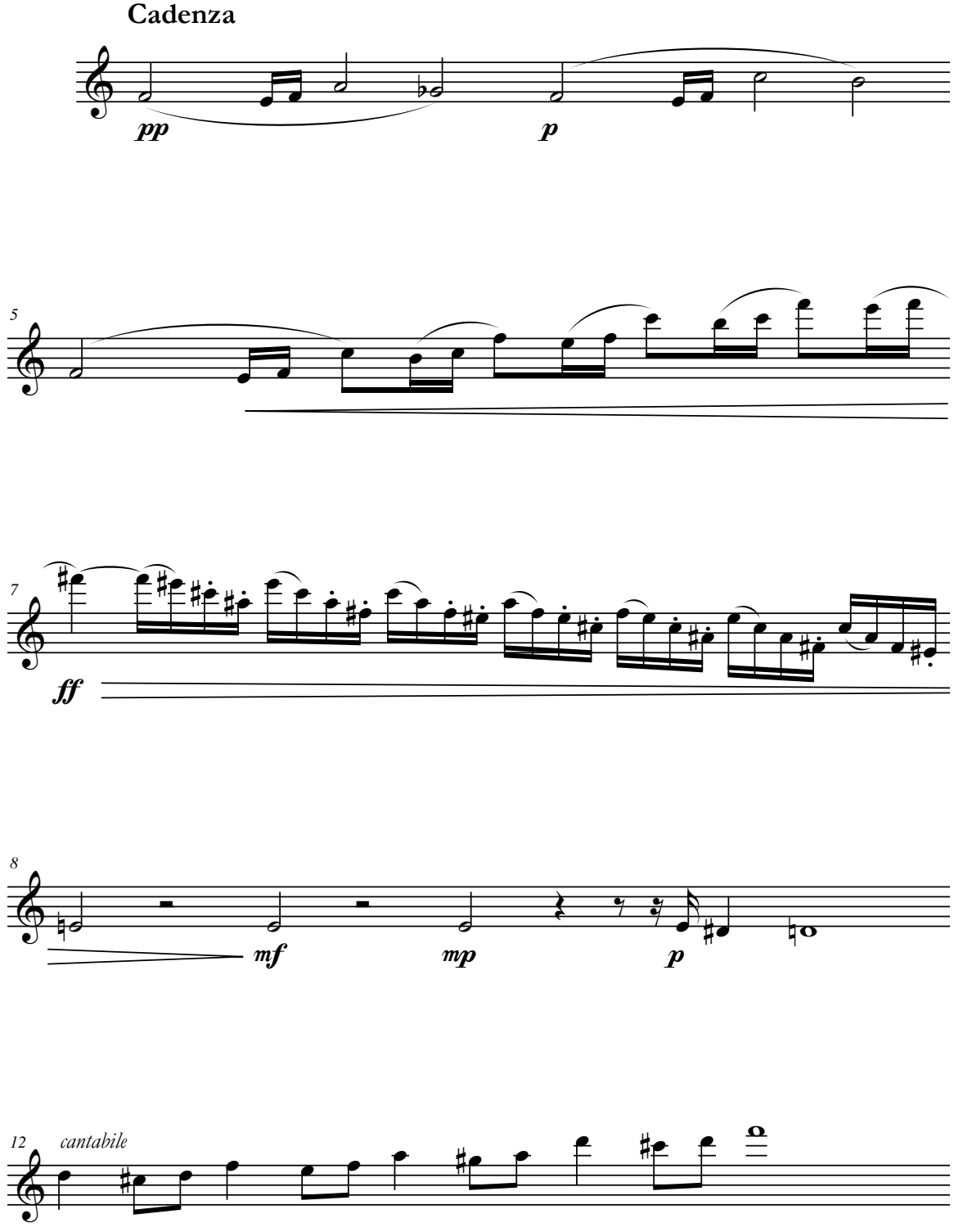

22
mp

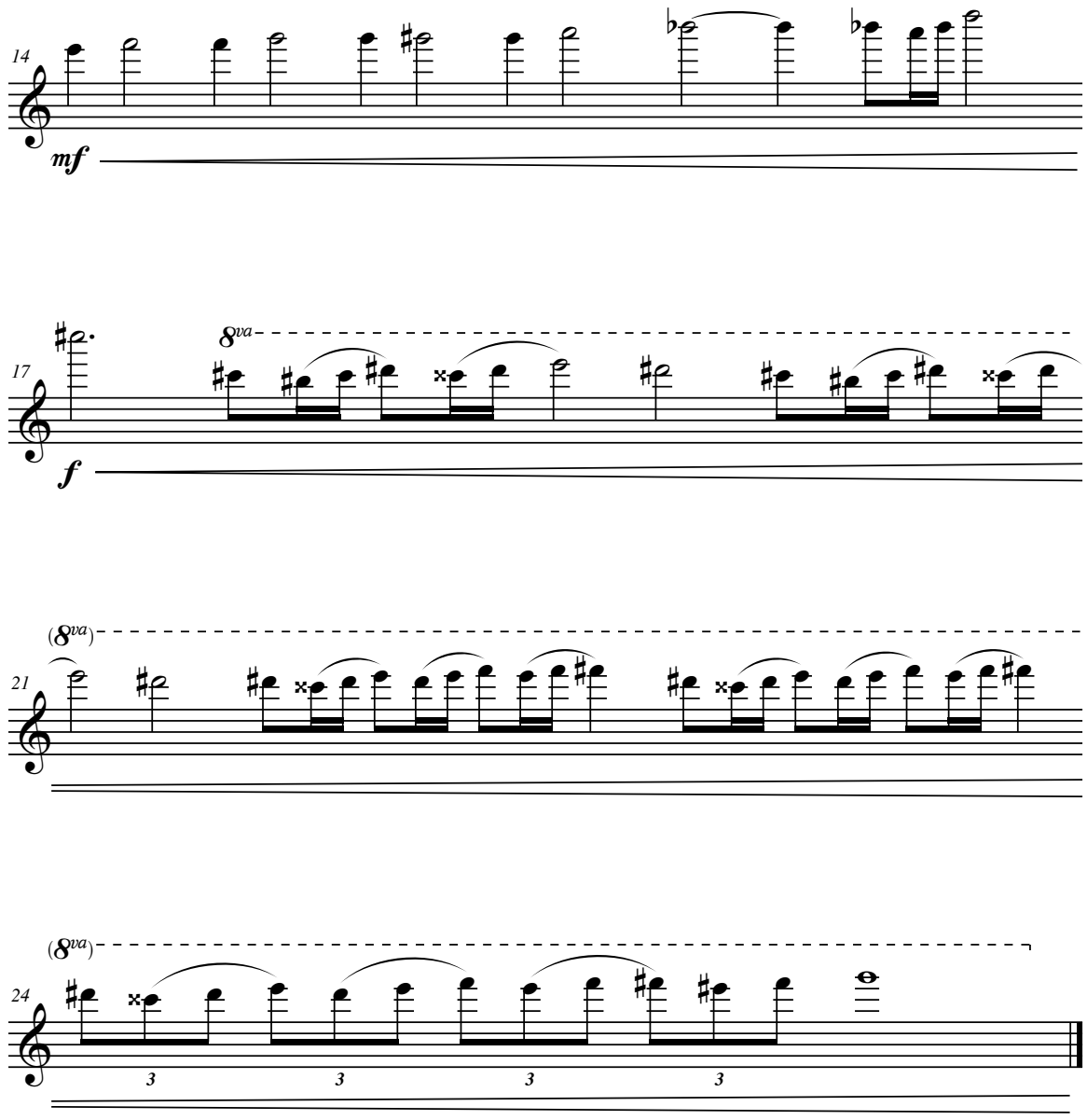

27
8
1
2
3
B
4
5
6
f
8
1
3
4
6
Eb
8
2
3
4 (B)
5
6


29
8
1
2
3
4
Ta
8
1
3
4
5
Ta
31
33
8
2
3
4
5
6
c1
8
x
4
35
> f

ETUDE # 35: Furthering Altissimo

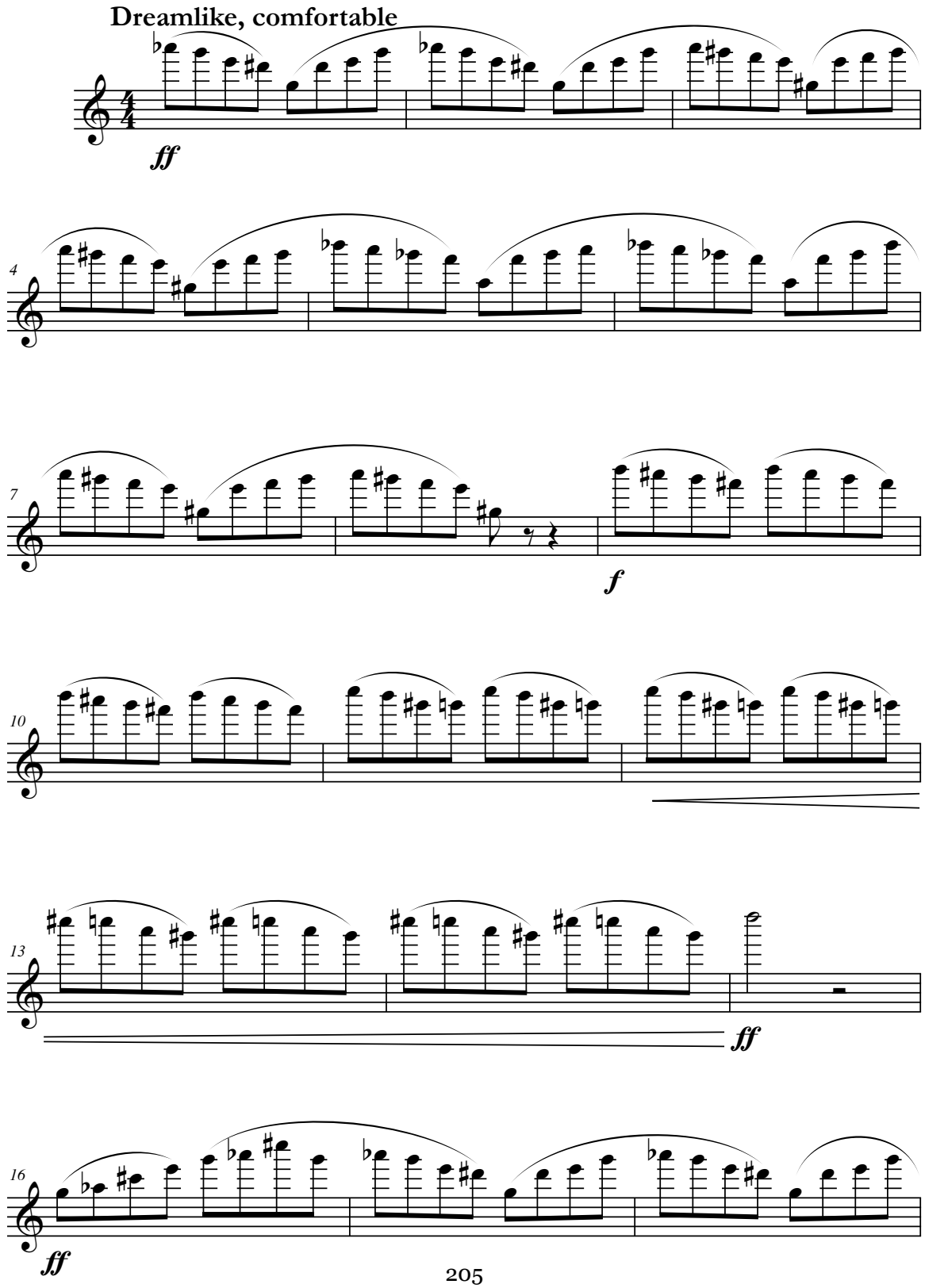
Extending Altissimo via Cadenza

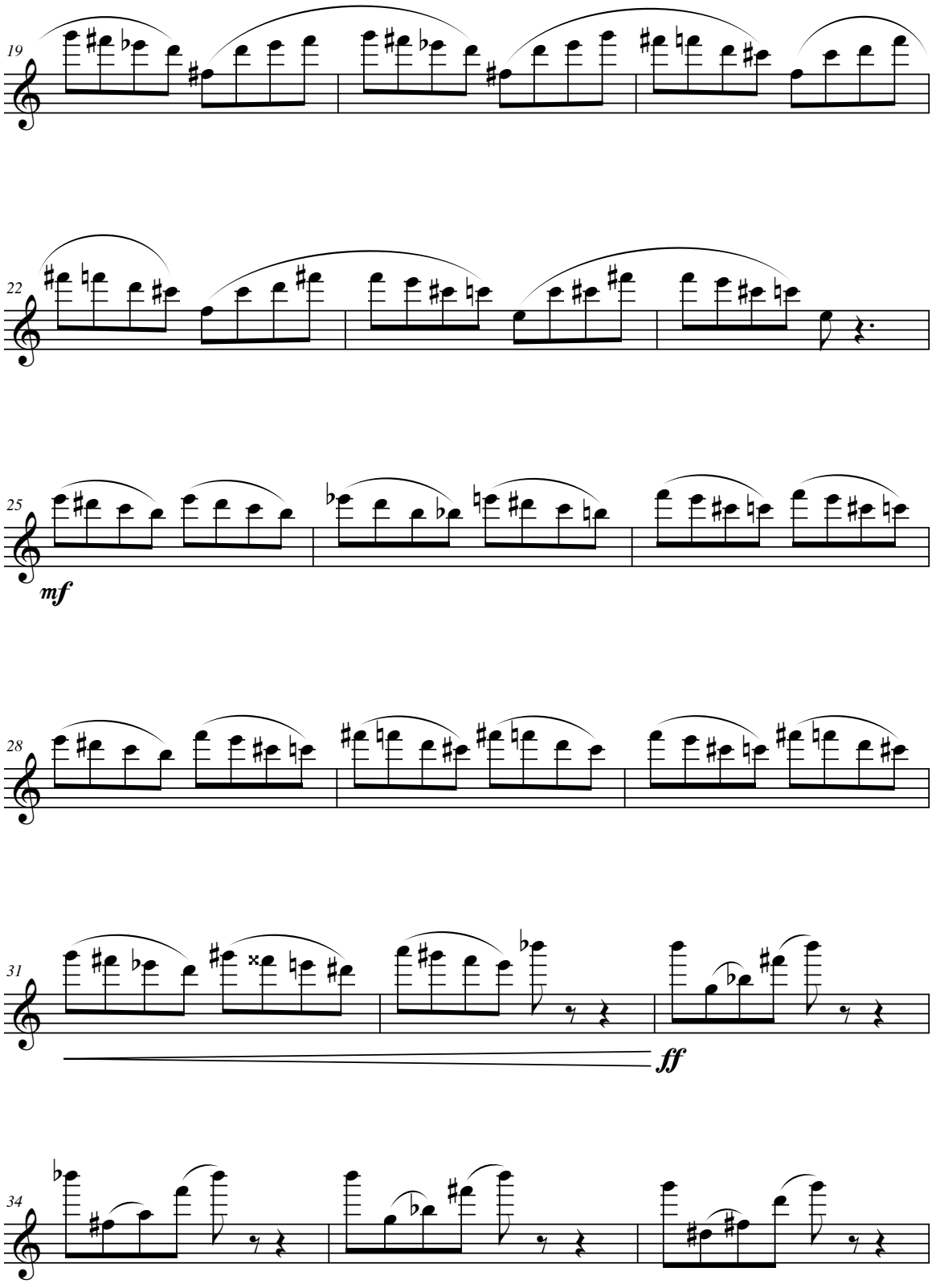


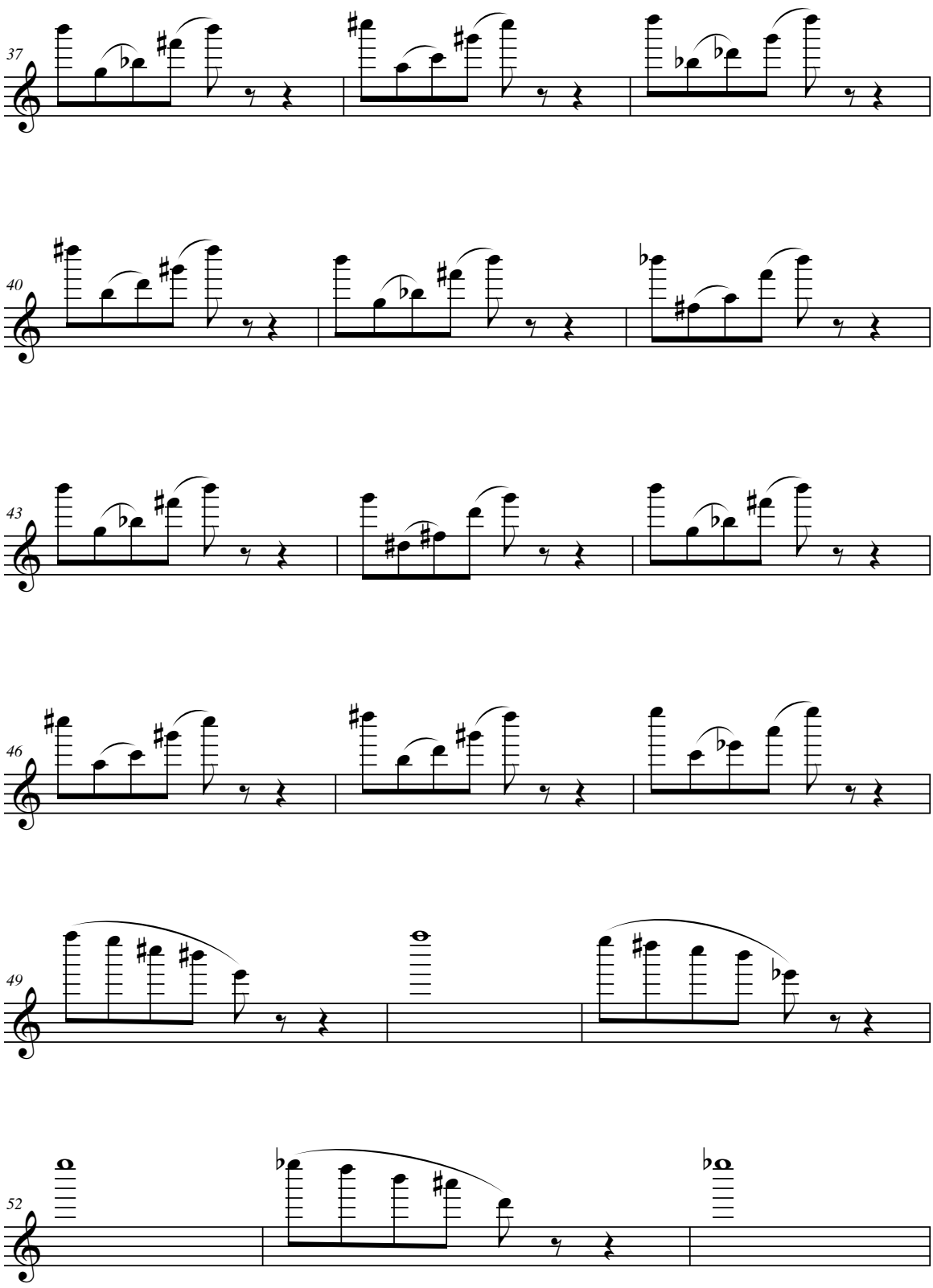

14
mf
17
8va
f
(8va)
21
(8va)
24
3
3
3
3

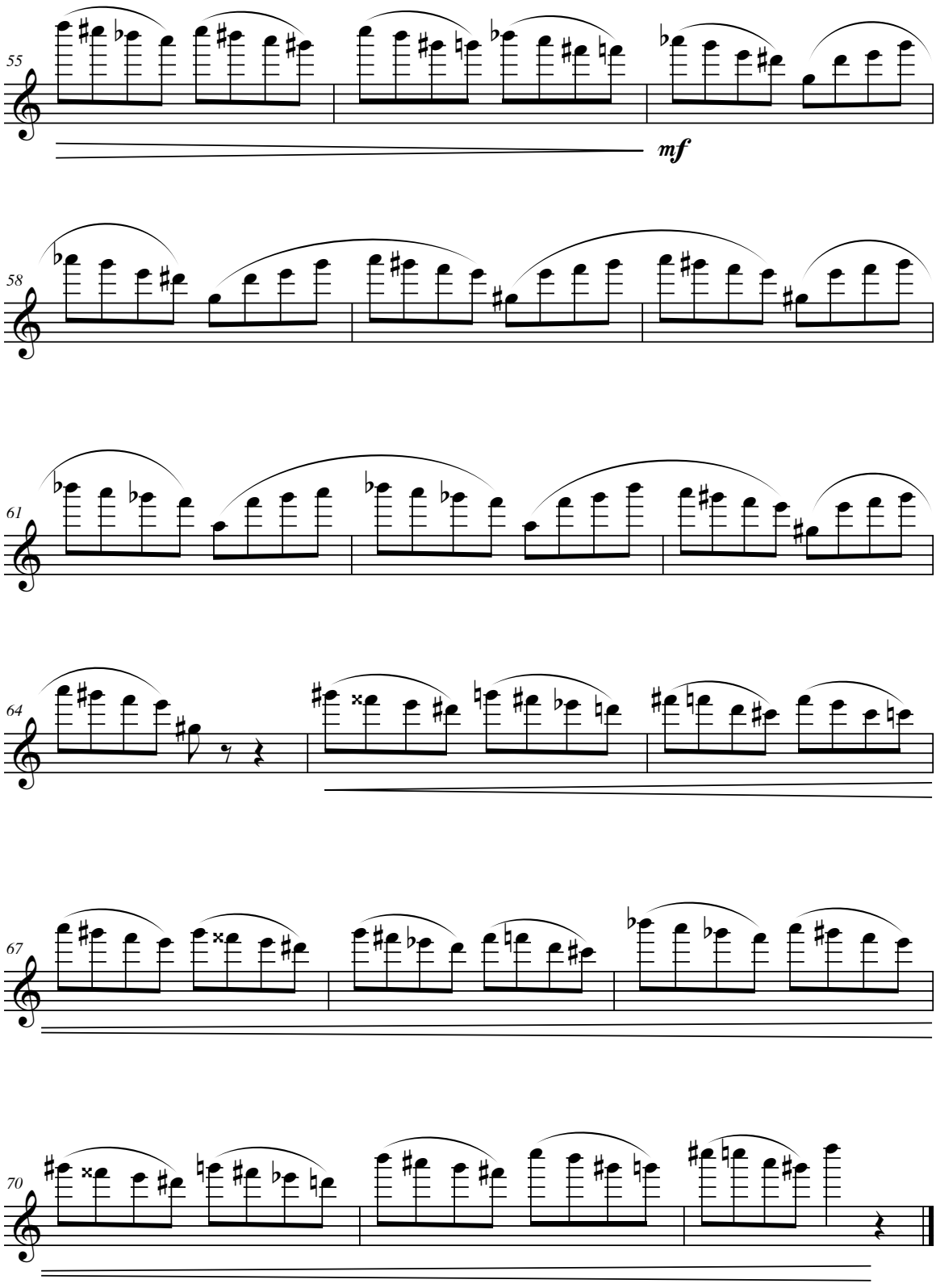
ETUDE # 36: Furthering Altissimo

Flexibility



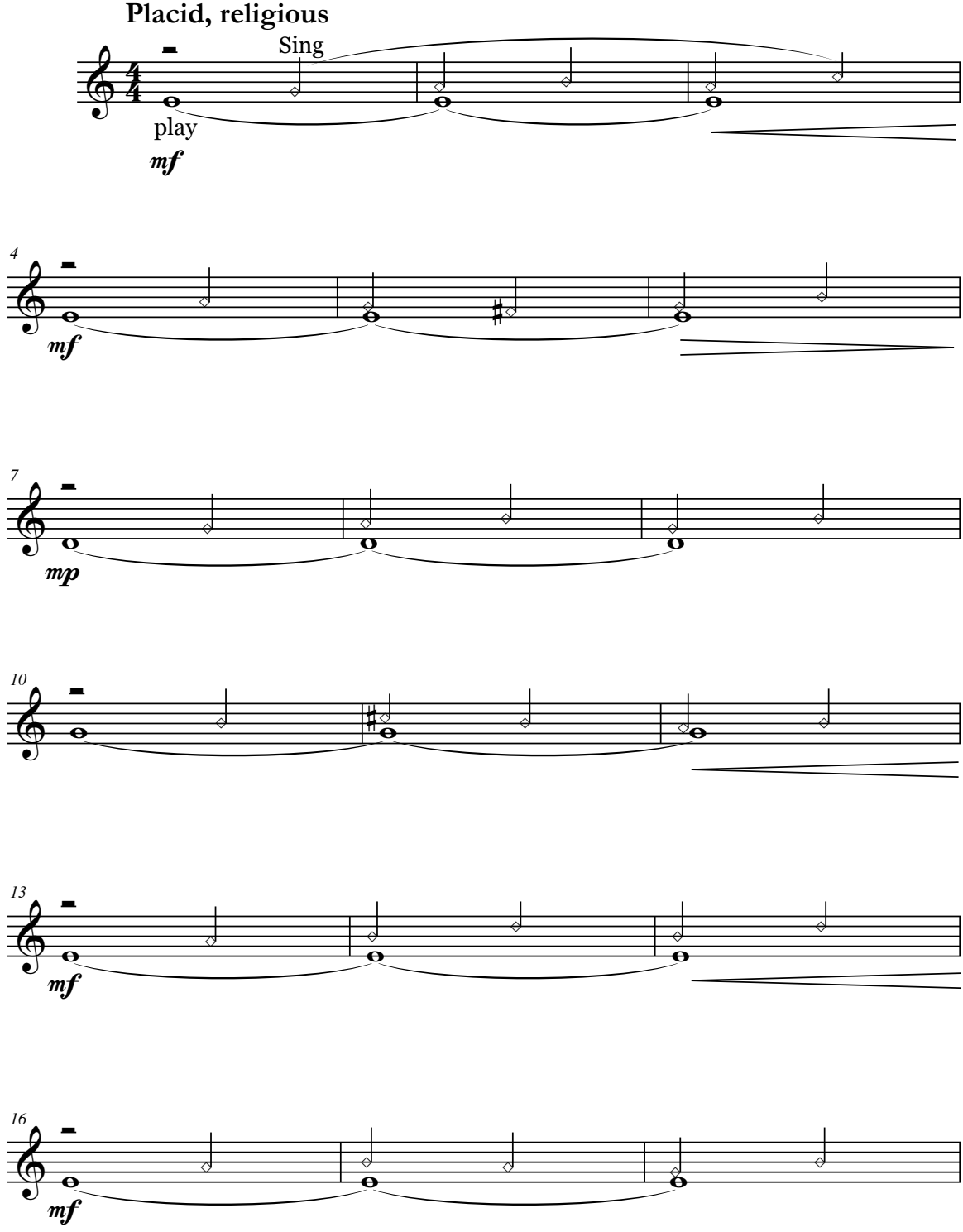

19
22
25
mf
28
31
ff
34

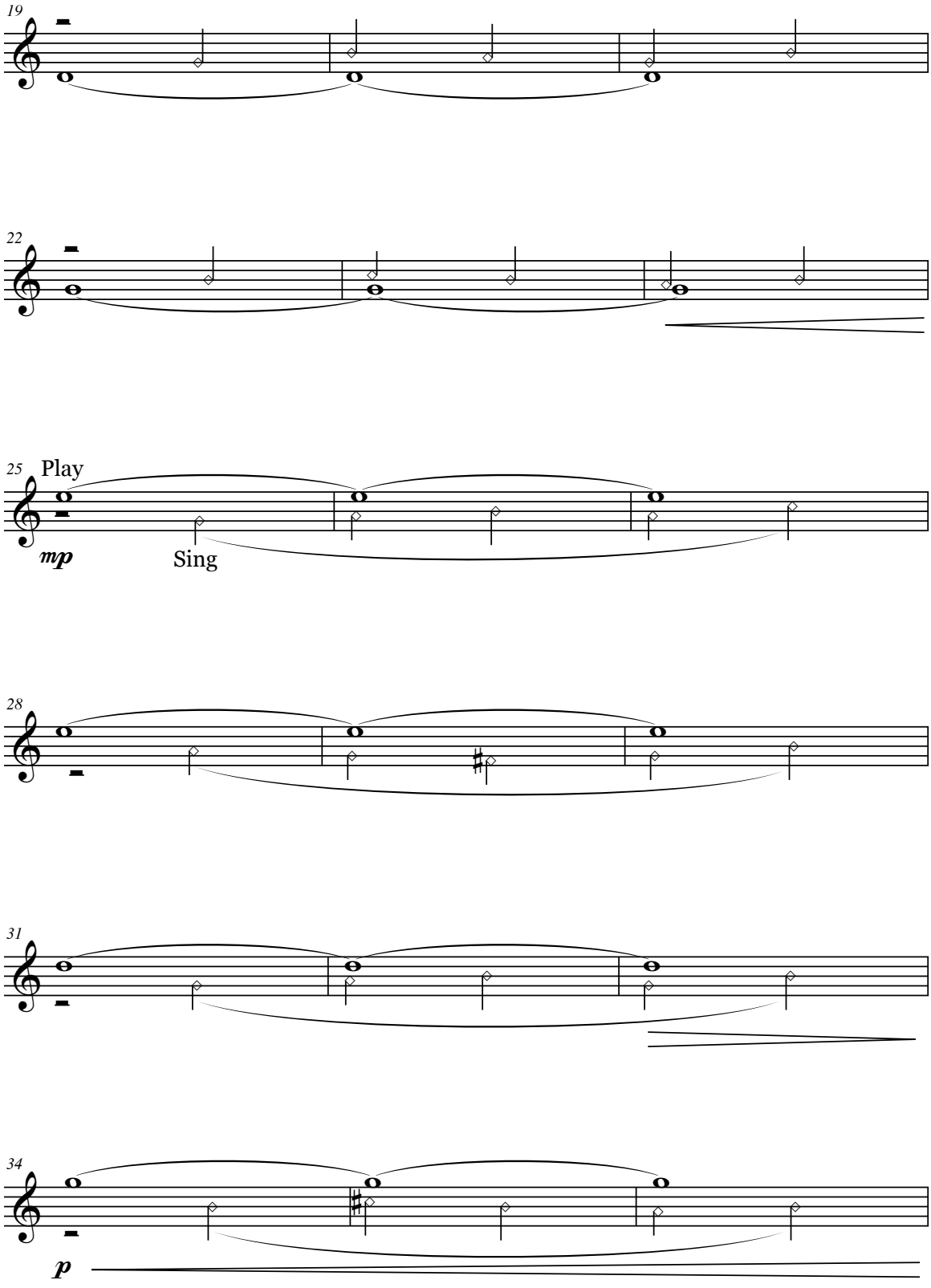

37
40
43
46
49
52

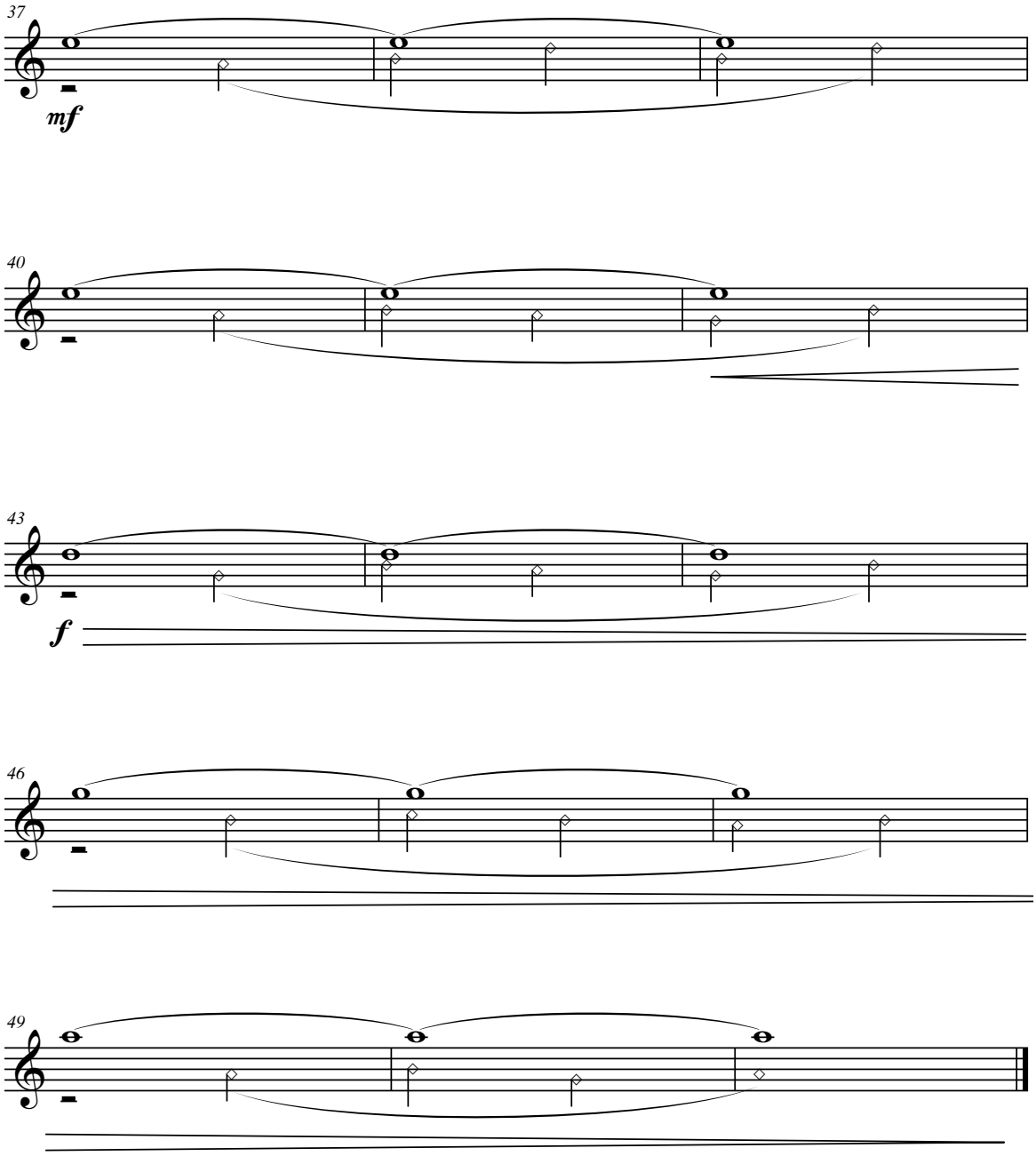

55
mf
58
61
64
67
70

ETUDE 37: Vocalizing

Singing Pitches Both Above and Below a Performed Drone

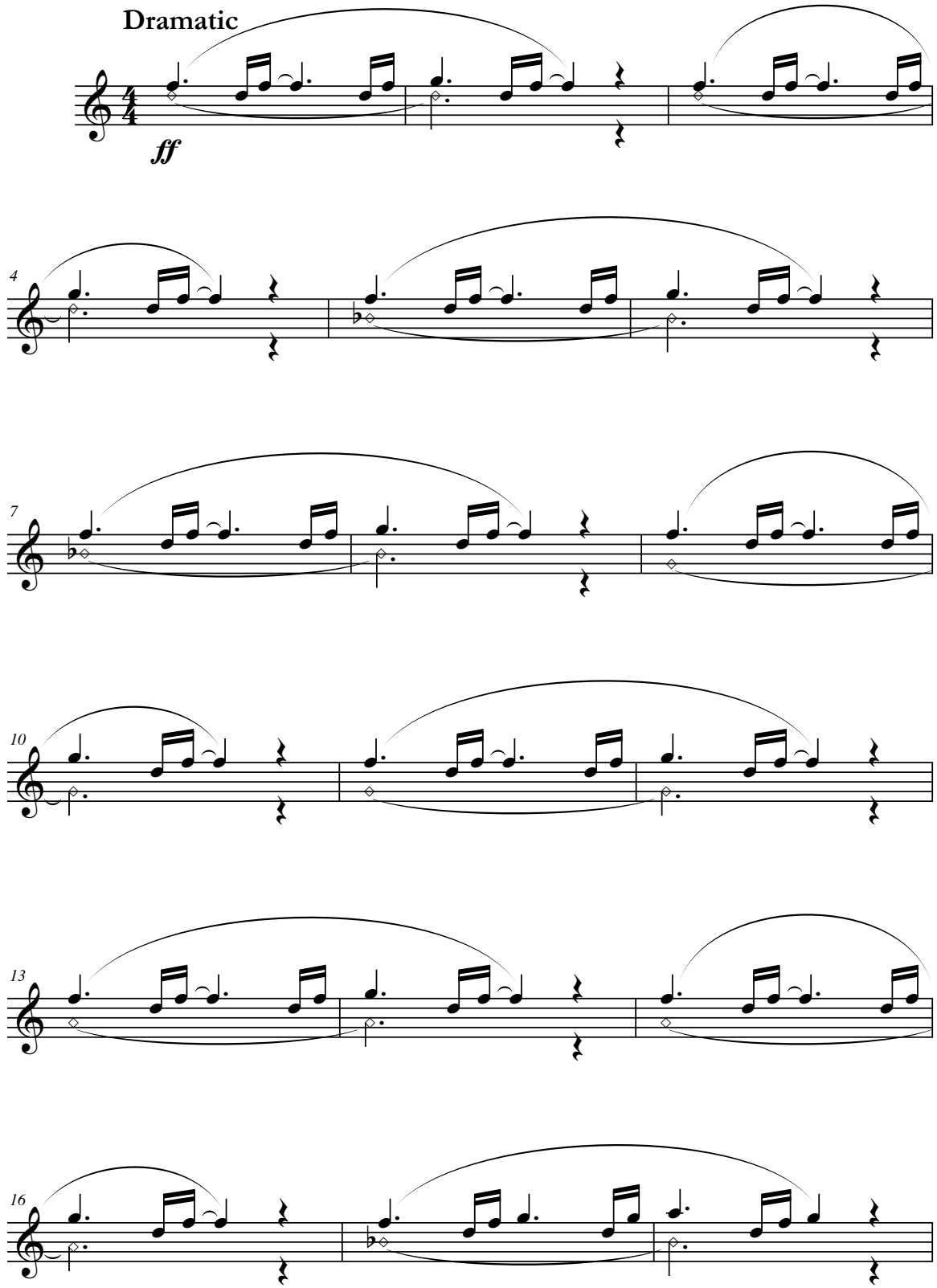


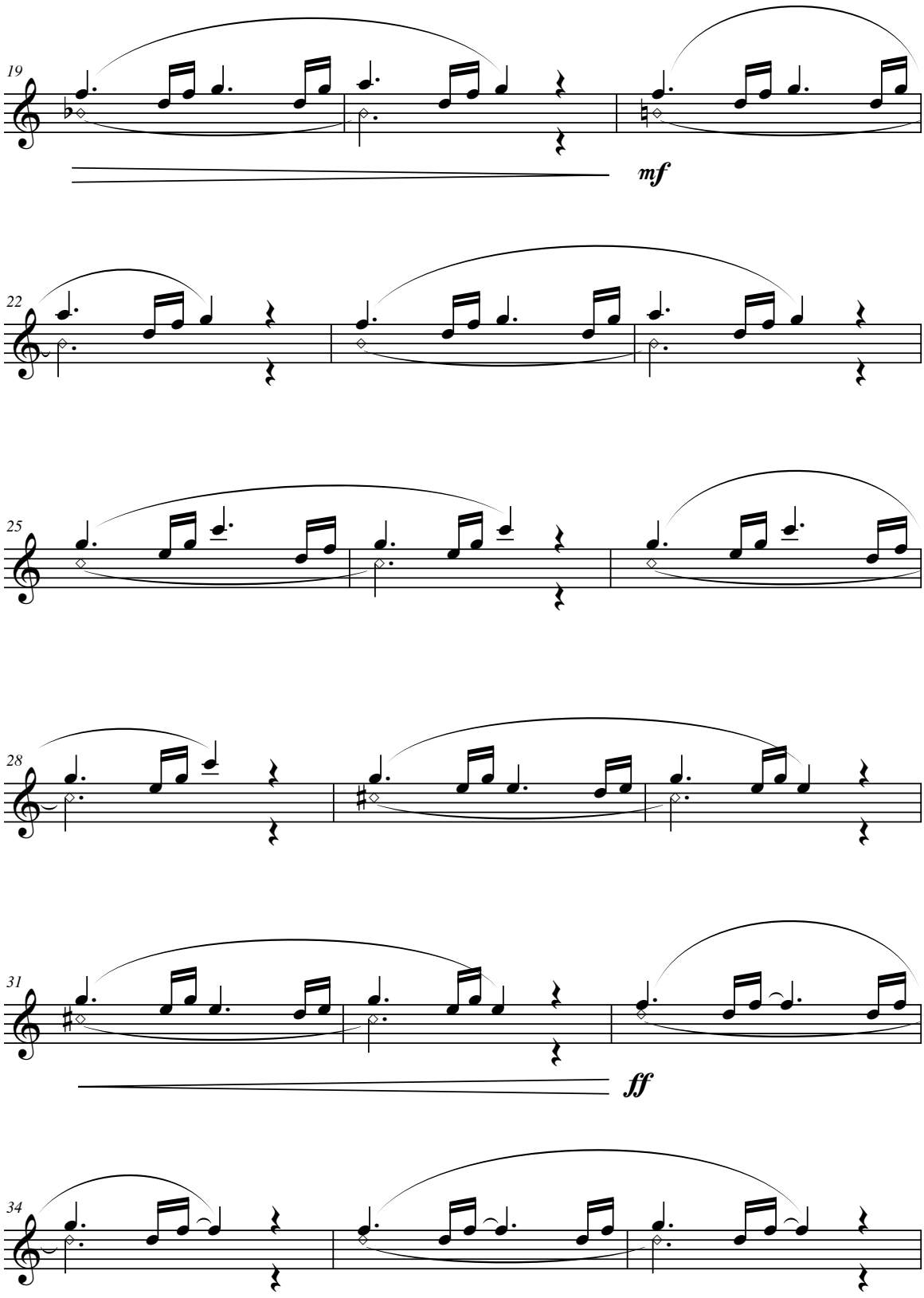

19
22
25
Play
mp
Sing
28
31
34
p

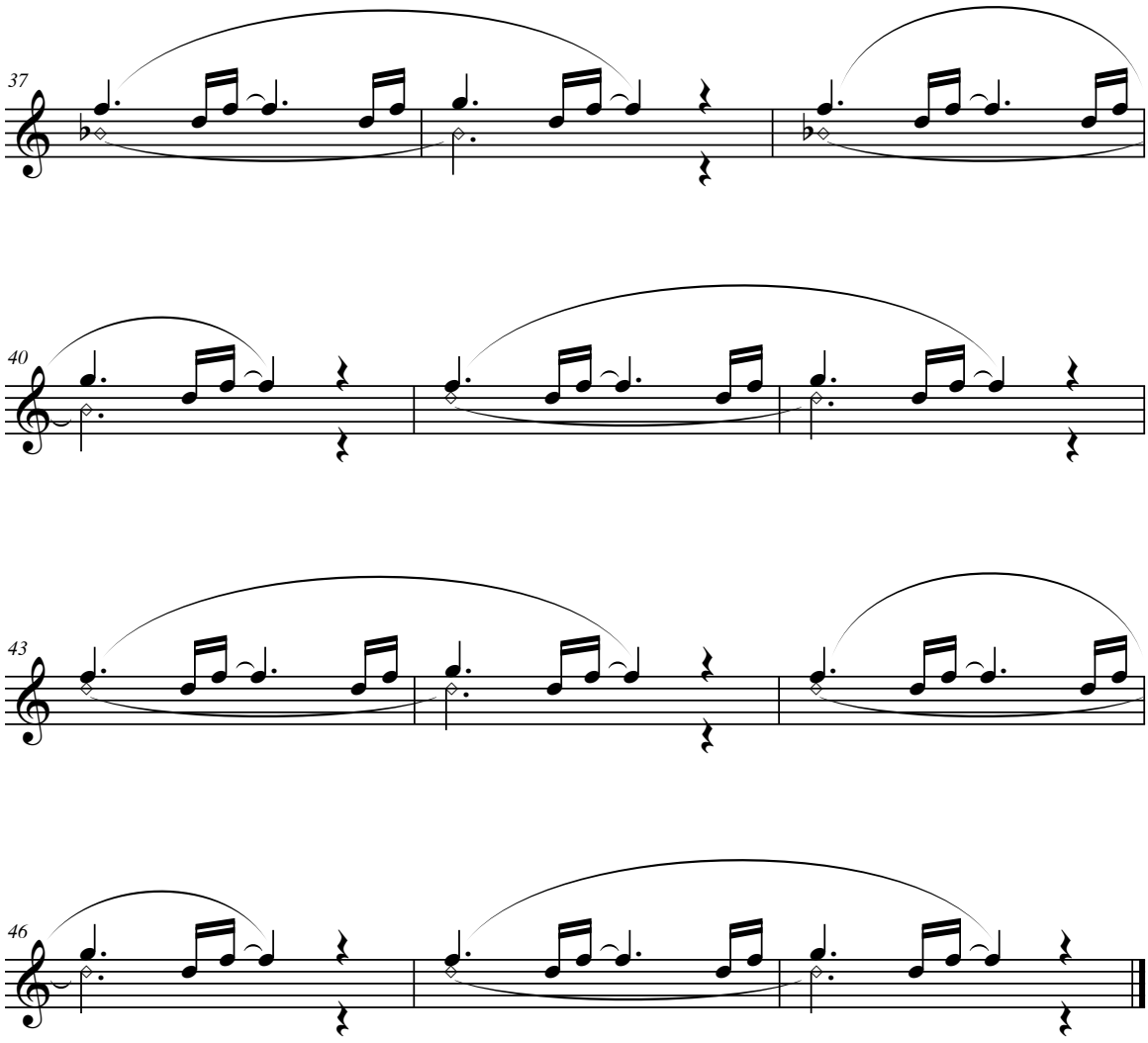

37
mf
40
43
f
46
49

ETUDE # 38: Vocalizing

Singing a Drone While Performing a Moving, Melodic Passage



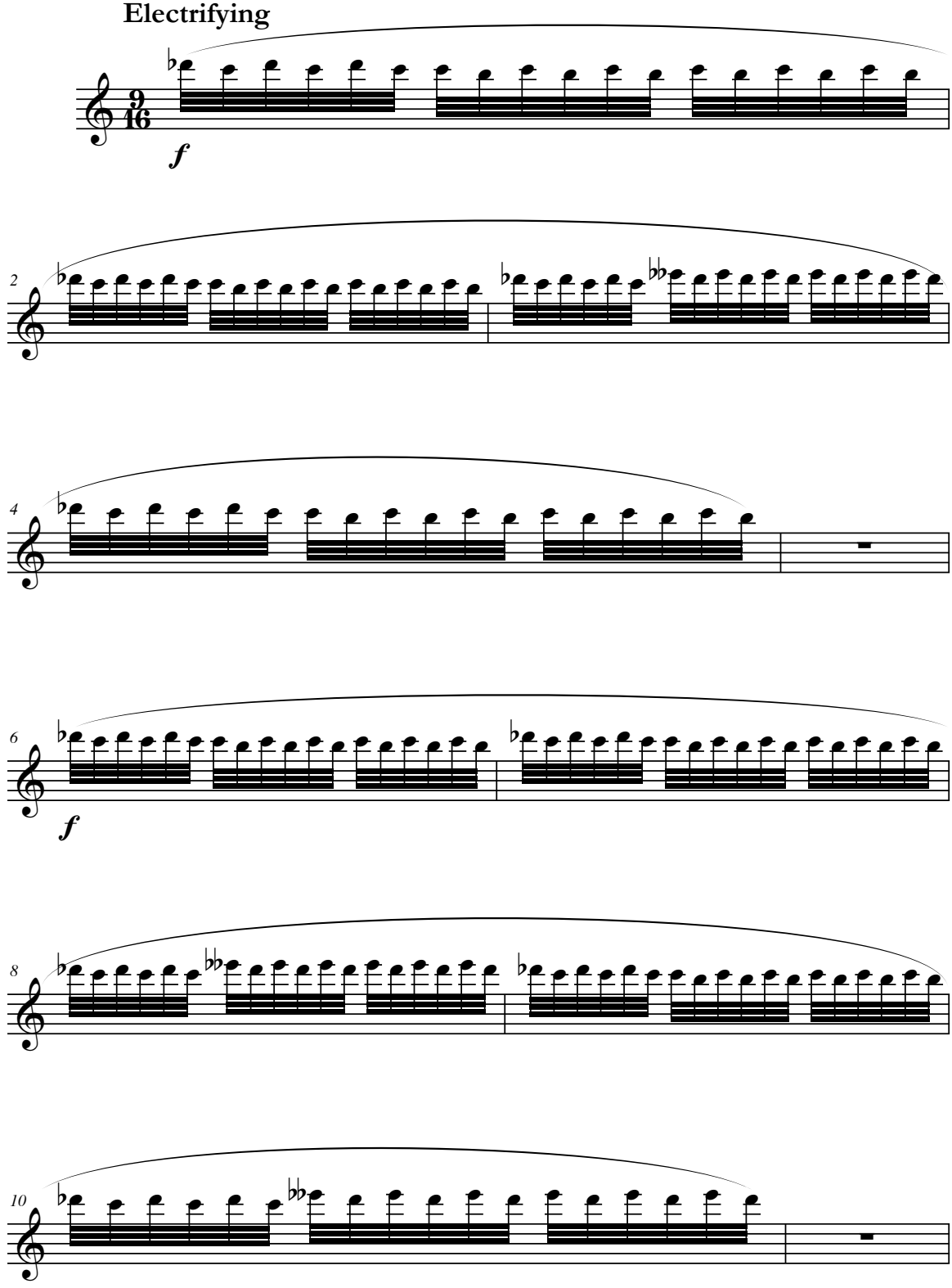

19
mf
22
25
28
31
ff
34

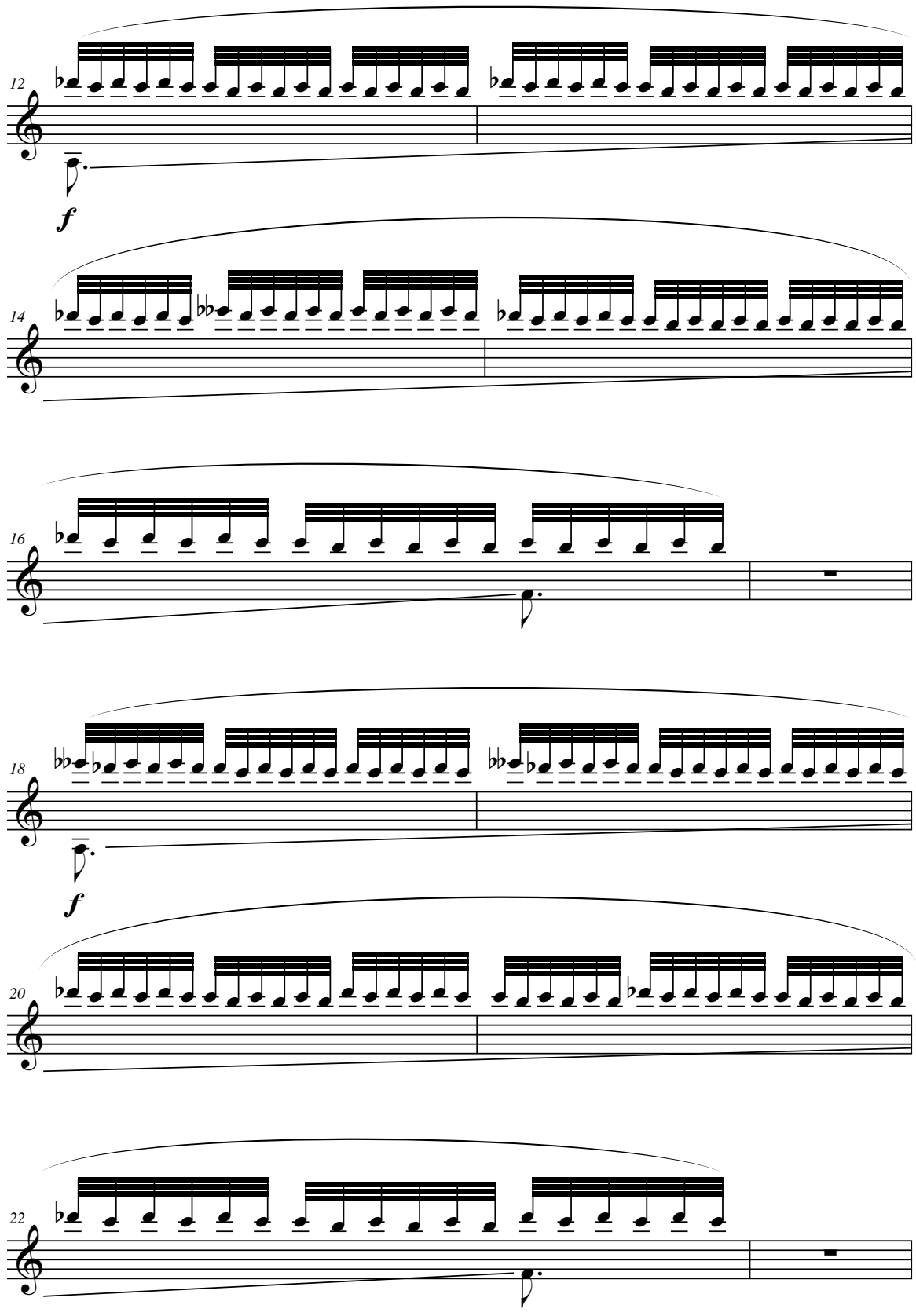

37
40
43
46

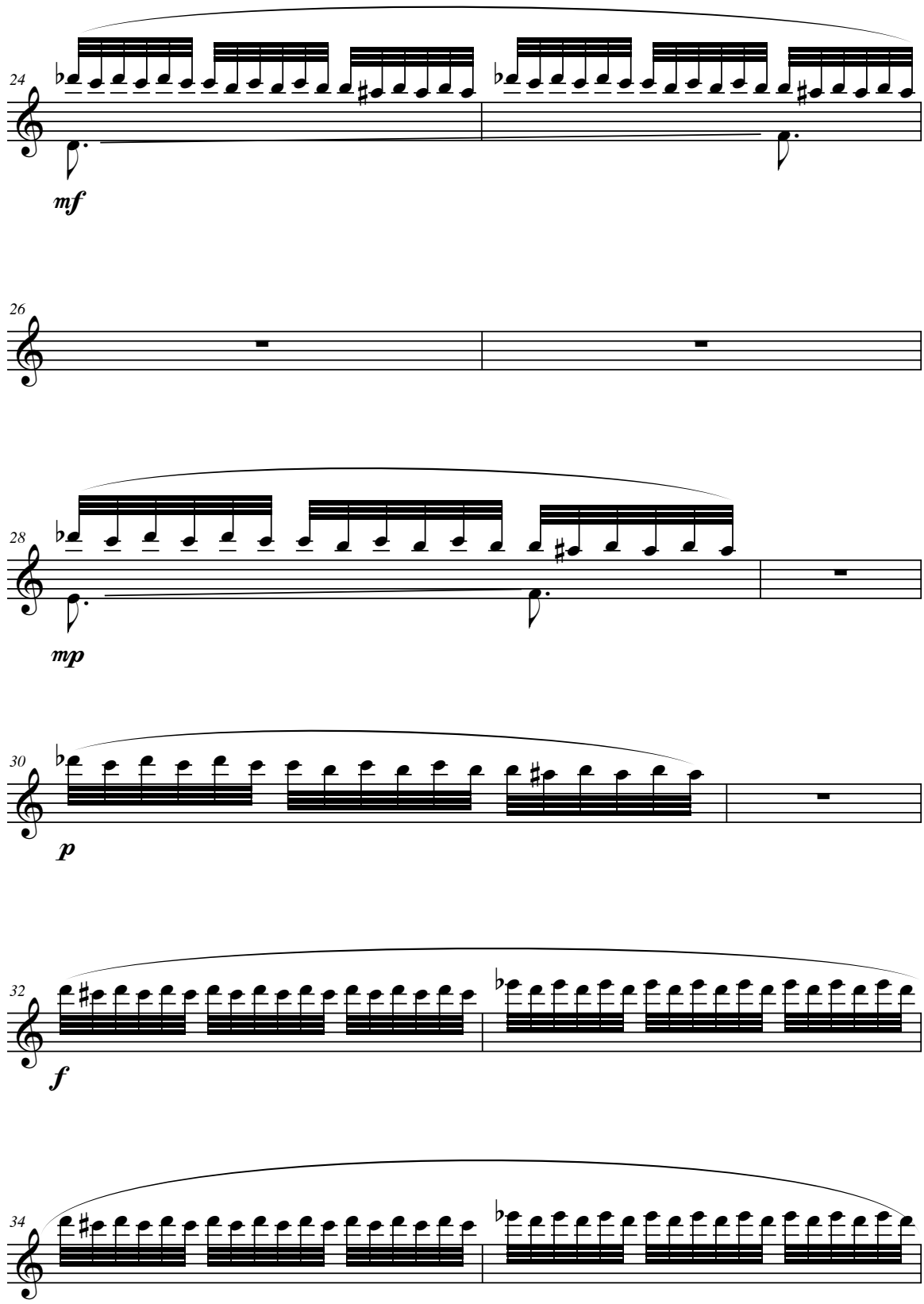
ETUDE # 39: Vocalizing (Obvious Evening)

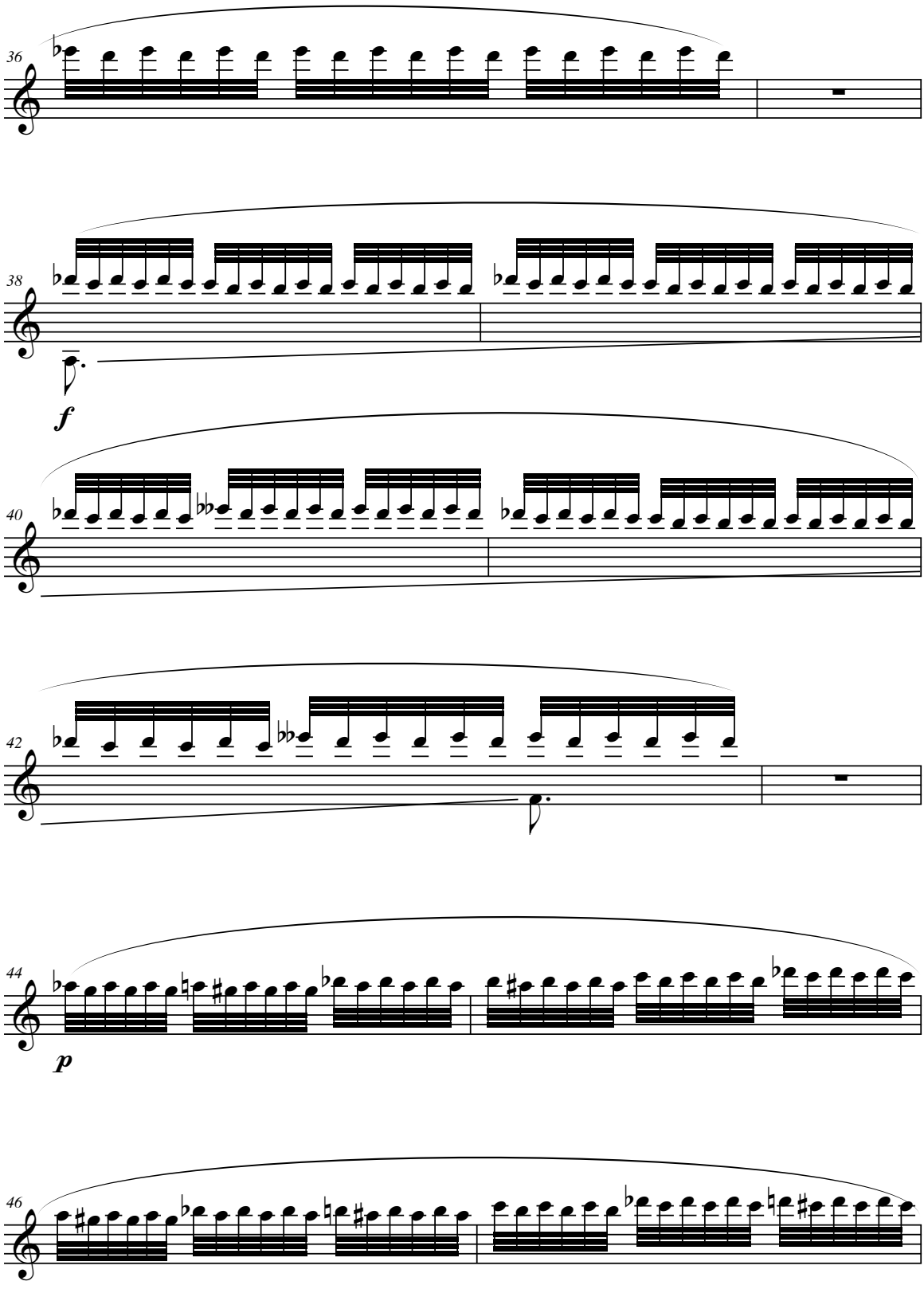
Simultaneous Pitch Changes on Both the Instrument and in the Voice

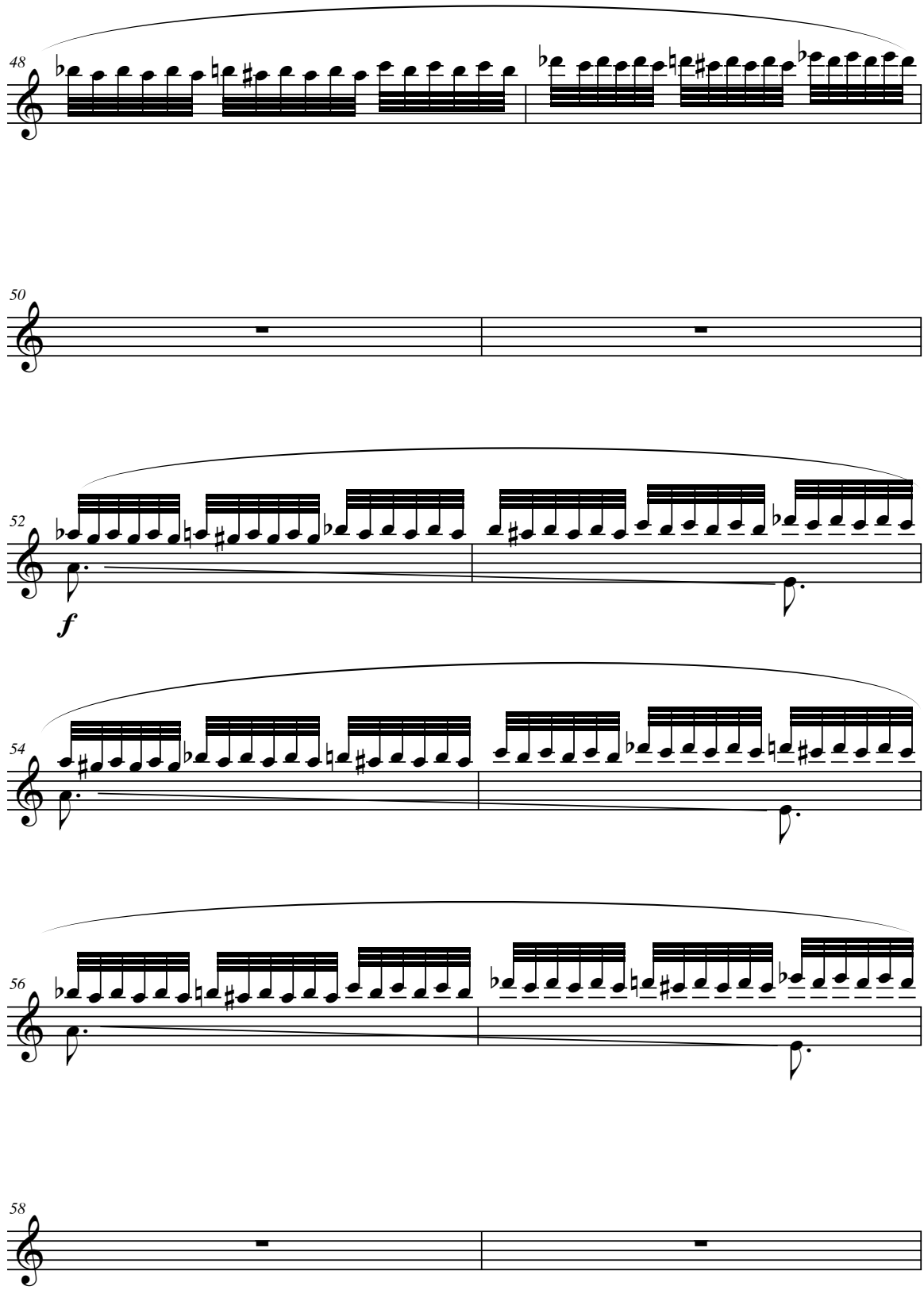
Electrifying

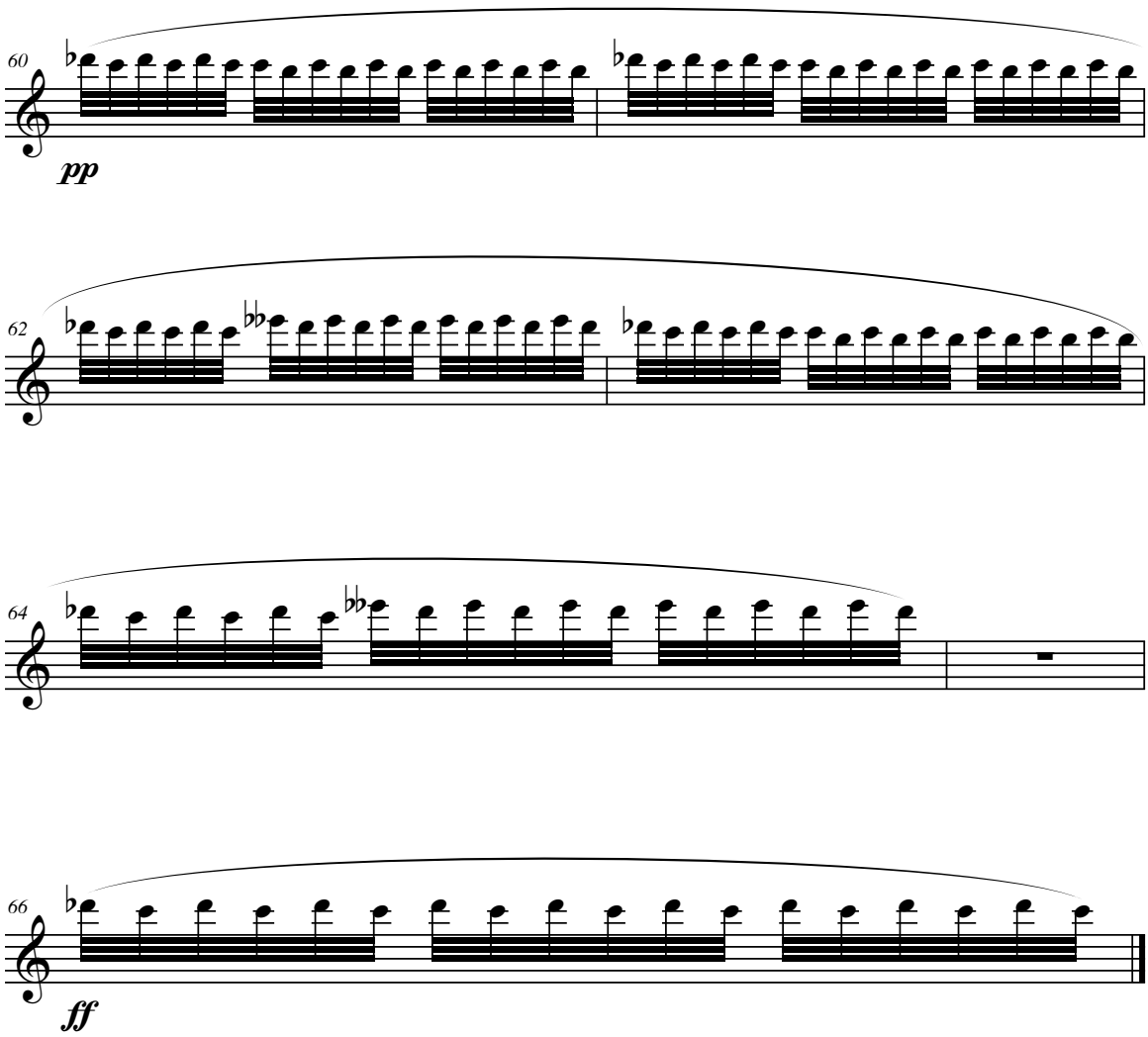



12
f
14
16
18
f
20
22


24
mf
26
28
mp
30
p
32
f
34


36
38
f
40
42
44
p
46

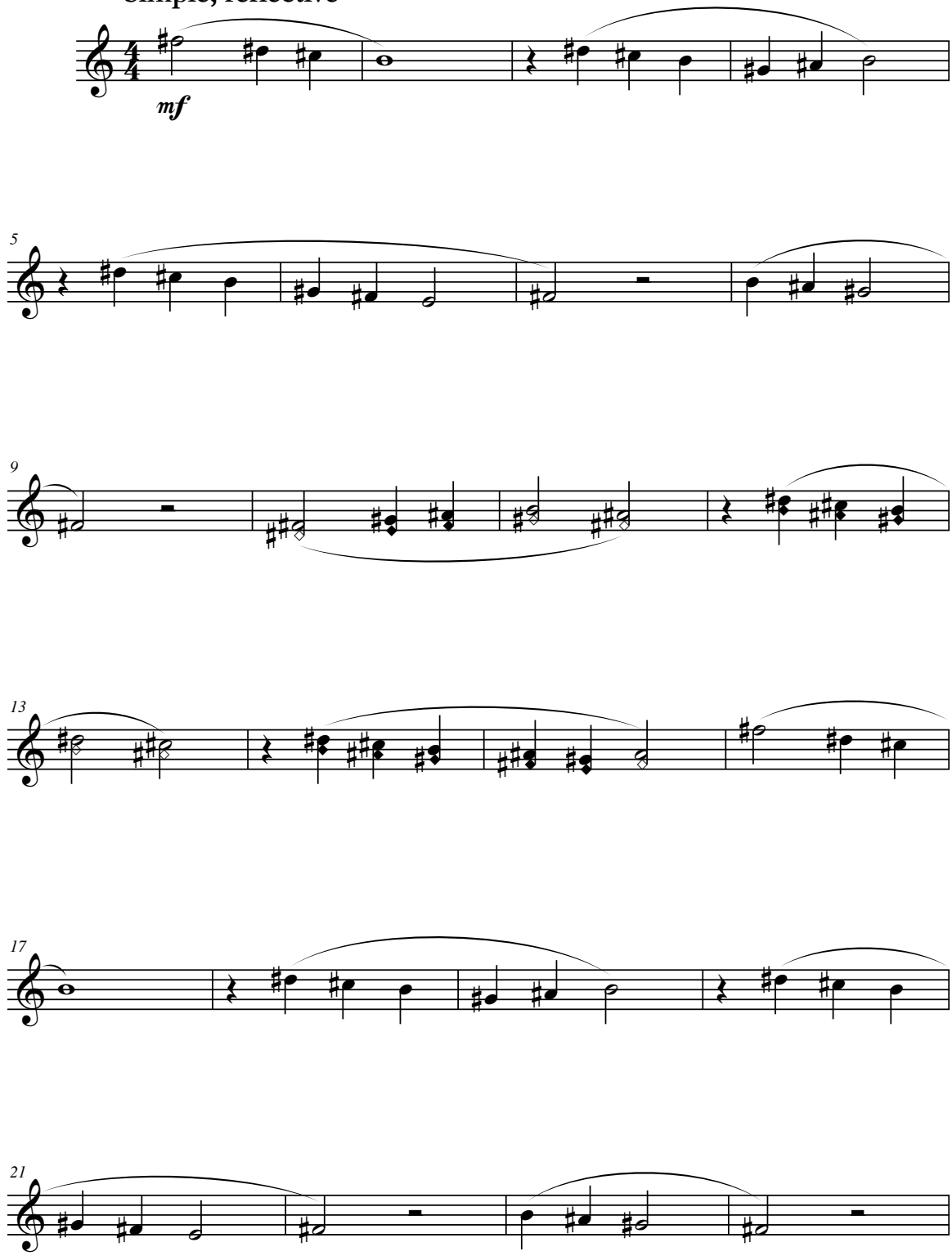

48
50
52
f
54
56
58

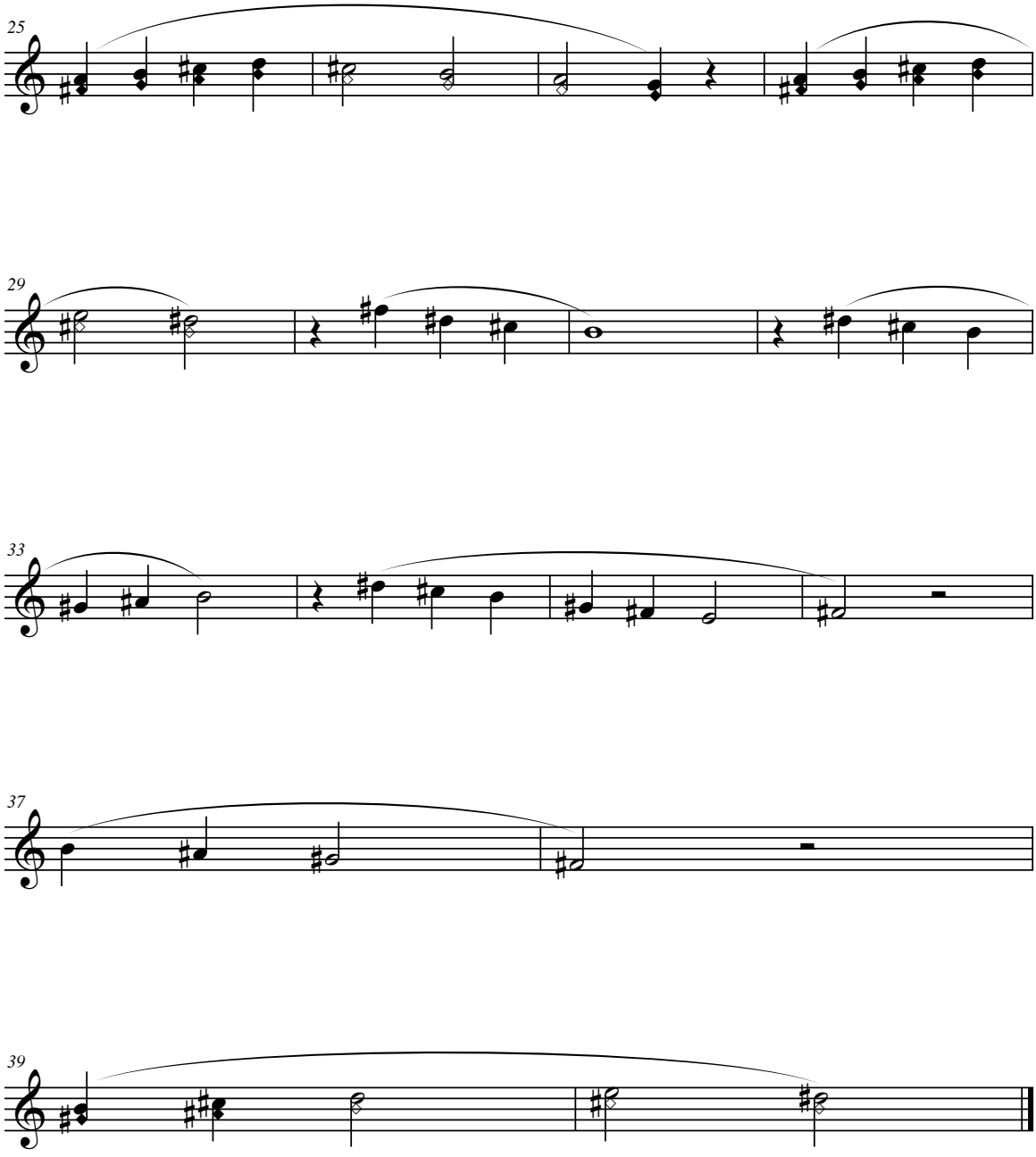

60
pp
62
64
66
ff

ETUDE # 40: Vocalizing

Simultaneous Parallel Melodic Motion

Simple, reflective

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BIOGRAPHICAL SKETCH

Patrick Murphy, a native of Wappingers Falls, NY, currently serves as Artist Coordinator at the ground-breaking Musical Instrument Museum in Phoenix, AZ. Previously, he has served on the faculty of the Crane School of Music, State University of New York, College at Potsdam. He will complete his doctorate from Arizona State University, and holds degrees from The University of Michigan, and The State University of New York, College at Potsdam. He has studied saxophone with Timothy McAllister, Donald Sinta, and Eric Lau and composition with David Heinick. He has performed throughout North and South America, most recently having completed a three-city tour of Ecuador with his quartet, The Estrella Consort. He was the last saxophonist to perform with the New World Symphony in their previous residence – The Lincoln Theater – and the first saxophonist to perform in their new Frank Gehry-designed New World Center.