Pietro Aaron on *musica plana*:
A Translation and Commentary on Book I of the
*Libri tres de institutione harmonica* (1516)

Dissertation

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Abstract

Historians of music theory long have recognized the importance of the sixteenth-century Florentine theorist Pietro Aaron for his influential vernacular treatises on practical matters concerning polyphony, most notably his *Toscanello in musica* (Venice, 1523) and his *Trattato della natura et cognizione de tutti gli tuoni di canto figurato* (Venice, 1525). Less often discussed is Aaron’s treatment of plainsong, the most complete statement of which occurs in the opening book of his first published treatise, the *Libri tres de institutione harmonica* (Bologna, 1516). The present dissertation aims to assess and contextualize Aaron’s perspective on the subject with a translation and commentary on the first book of the *De institutione harmonica*.

The extensive commentary endeavors to situate Aaron’s treatment of plainsong more concretely within the history of music theory, with particular focus on some of the most prominent treatises that were circulating in the decades prior to the publication of the *De institutione harmonica*. This includes works by such well-known theorists as Marchetto da Padova, Johannes Tinctoris, and Franchinus Gaffurius, but equally significant are certain lesser-known practical works on the topic of plainsong from around the turn of the century, some of which are in the vernacular Italian, including Bonaventura da Brescia’s *Breviloquium musicale* (1497), the anonymous *Compendium musices* (1499), and the anonymous *Quaestiones et solutiones* (c.1500).
The topic of plainsong remained fertile ground for discussion and controversy among theorists in the fifteenth and sixteenth centuries, as arguments over solmization, tuning, and mode attest. Aaron, because of his overriding concern with practical matters, offers unique insight into many of these issues in the *De institutione harmonica*, the only one of his publications to appear in Latin. The treatise frequently has been overshadowed in part because of its uneven quality and numerous errors, characteristics that have prompted some scholars to question the rigor of Aaron’s early training in theoretical matters. Despite these deficiencies, Aaron’s first treatise deserves a fresh look, for it has much to tell us about an important period in the history of music history as well as about Aaron himself, an earnest musician who was striving to reconcile theory and practice, insofar as he understood both at the time.
Dedication

Dedicated to Stefanie,
my wife, my companion, and my best friend
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Introduction

The sixteenth-century Italian music theorist Pietro Aaron¹ (c.1480–after 1545) remains an intriguing figure in the history of Renaissance music theory. Evidently born of humble beginnings and trained primarily as a singer, he eventually rose to prominence among the theorists of his generation, enjoying considerable fame as one of the earlier theorists to write a major treatise in the vernacular on polyphonic music, the Toscanello in musica of 1523.² Despite this renown only one of his five published treatises (the Toscanello) has been translated into English in its entirety, and as yet none of his works has appeared in a complete critical edition.³

Aaron is best known for his practical observations on the composition and performance of polyphonic music, so it is no surprise that the greater amount of scholarly attention has been focused on the two treatises in the middle of his career spectrum, the Toscanello in musica and the Trattato della natura et cognizione de tutti gli tuoni di canto

¹ Aaron alternated between two different spellings of his surname, Aron and Aaron, throughout his treatises and letters. Both versions continue to be used by scholars today. Because ‘Aaron’ is the spelling that appears throughout the Libri tres de institutione harmonica, that is the spelling that will be used throughout the present dissertation.
² The most comprehensive study of Aaron’s life and works remains Peter Bergquist’s 1964 dissertation, “The Theoretical Writings of Pietro Aaron.” Throughout the commentary, bibliographic references will be given in short form, with the exception of those items that do not have their own entry in the bibliography, such as reference works and reviews.
³ A critical text and translation of Book 2 of the Libri tres de institutione harmonica appears in Bester, “Book Two of Pietro Aaron’s Libri tres de institutione harmonica.” Additionally, a translation of the first seven chapters of Aaron’s Trattato della natura et cognizione de tutti gli tuoni di canto figurato (1525) is in Strunk, ed., Source Readings in Music History.
figurato (1525). In contrast, Aaron’s first treatise, the *Libri tres de institutione harmonica* (1516), has often been overshadowed, particularly the first book, which covers the topic of plainsong. The present study, a translation and commentary of the first book of the *De institutione harmonica*, aims to show that Aaron’s first treatise deserves greater attention, for the work offers many interesting clues about the state of theory and practice in the first decades of the sixteenth century.

The commentary is divided into five chapters. The first chapter discusses Aaron’s background and provides context for the treatise, including its reception by some of Aaron’s peers. The second chapter examines Aaron’s introduction to the topic of plainsong, including his discussion of an unusual five-part classification system for chant. The third chapter explores Aaron’s approach to the gamut and its division, demonstrating the importance of hexachords to his conception of the tone system. The fourth chapter deals with Aaron’s treatment of solmization and mutation in plainsong, demonstrating links to certain printed handbooks on plainchant that were circulating during his time. The fifth chapter examines Aaron’s treatment of intervals and modal classification in plainsong. Throughout the commentary, all translations are my own unless otherwise noted.\(^4\)

Following the commentary is a text and translation of the first book of the *De institutione harmonica*. Also included is the text and a translation of all the introductory material in the treatise, including the Prefaces by Aaron and his translator, Giovanni Antonio Flaminio,\(^5\) as well as the work’s complete table of contents. Following the

\(^4\) All quotations in the commentary are given both in their original language and in translation.

\(^5\) The circumstances that led to this unusual collaboration will be discussed in chapter 1.
conclusion of the first book, I have included the relevant portions of a small book of corrections that Aaron published separately some months after the treatise first appeared.\(^6\)

The source for the Latin text is the 1516 printed edition, published in Bologna by the printer Benedetto di Ettore. As far as is known, there was only one print run for the treatise.\(^7\) A collation of three readily available copies of the work revealed no significant variants within the treatise’s first book, other than minor print quality issues. A full critical text, incorporating a collation of all 28 surviving copies of the print (see Appendix A for a full list), would be necessary to determine whether there are any significant variants in surviving copies due to stop-press or other corrections.\(^8\)

The critical apparatus appears as footnotes to the text and translation. The three sources that were consulted in preparing the Latin text include two original prints and a facsimile edition, as follows:

- A - The Broude Brothers 1976 facsimile edition\(^9\)
- R - Rochester, NY, Sibley Music Library, Eastman School of Music, ML171 .A11L

\(^6\) Most of the corrections that Aaron published apply to books two and three of the treatise. More will be said about this book of corrections in Chapter 1.

\(^7\) Bonnie Blackburn hypothesizes “a second printing of Aaron’s treatise that includes a list of corrections” based on a letter from Giovanni Spataro to Marc’Antonio Cavazzoni, dated 1 August 1517 (see Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 203 and 203n3; the letter also is discussed below in Chapter 1). However, Spataro mentions only that someone (presumably Aaron) is working to print certain errors which the work contains (“. . . perché fa imprimere certi errori che essa opera [contiene]”), undoubtedly a reference to the four-page list of corrections that survives with many of the extant copies of the treatise (discussed further in Chapter 1). There is no reason to believe that the entire treatise was reprinted. Rather, the manner in which the list of corrections was produced, without folio numbers, suggests that it was a separate document, meant to accompany the treatise as originally printed. The date of Spataro’s letter suggests that the treatise was sold for the better part of a year or more before the corrections appeared (Aaron’s dedication letter is dated 15 January 1516, but the exact date of printing is unknown).

\(^8\) An excellent introduction to this and to other issues related to early book production is Gaskell, A New Introduction to Bibliography. Gaskell discusses proof correction on pp. 110–16 and 351–57.

\(^9\) According to a representative at Broude Brothers, the facsimile was based on a copy held by a private collector who wishes to remain anonymous (personal communication).
The critical apparatus also includes variant readings found in two other modern transcriptions, namely those of the Center for the History of Music Theory and Literature’s online *Thesaurus Musicarum Latinarum* (TML) and Peter Bergquist’s dissertation on Aaron’s theoretical writings (labeled ‘TML’ and ‘Bergquist,’ respectively, in the critical apparatus).\(^8\)

In the transcription, the many abbreviations used in the original have been expanded, with italics used to indicate the abbreviated letters. The letter ‘i’ has been maintained throughout the transcription for both vocalic and consonantal usage, but the letter ‘u’ has been converted to ‘v’ for consonantal usage.\(^9\) The use of Roman numerals has been maintained in the transcription, as has the original capitalization.\(^10\) Slashes in the original text have been preserved in the transcription because of their grammatical significance.\(^11\)

Several symbols in the Latin text and translation are editorial additions. Vertical lines (|) in the Latin text designate the beginning of each new page in the original print, while folio numbers are indicated in the far left margin. Sentence numbers have been added in the margins of both the Latin text and the translation for reference and to

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\(^8\) The TML homepage is http://www.music.indiana.edu/ml/start.html. The source for the TML transcription was the Broude facsimile. Bergquist transcribed only Aaron’s dedicatory preface and a large portion of Flaminio’s translator’s preface. See Appendix A of “The Theoretical Writings of Pietro Aaron,” 487–94.

\(^9\) The TML retains the letters ‘i’ and ‘u’ throughout. The resulting differences between the present transcription and that of the TML (i.e., from the use of ‘u’ versus ‘v’) are not noted in the critical apparatus.

\(^10\) The TML preserves the use of Roman numerals in title headings but writes out the numbers in words when they occur within the text.

\(^11\) Slashes serve a number of purposes in the text, from setting off whole grammatical clauses to separating two items joined by a conjunction (e.g., “Quanto autem studio / ac diligentia id a me factum sit tecum iudicent ii / quicunque legerint”). The TML converts all slashes to commas, a practice that sometimes distorts the flow of the Latin.
facilitate a comparison of the two versions; the numbers restart at the beginning of each chapter. The dagger (†) that appears in the Latin text indicates the passage that is subject to Aaron’s one correction for the first book, which can be found at the conclusion of the text and translation.

Whenever possible, obvious errors in the Latin text have been emended, with the original text given in the critical apparatus. More problematic is the question of orthographical variation, a strict preservation of which sometimes impedes clarity. Examples include the inconsistent use of ‘e’ for ‘ae’ (and, on occasion, the reverse), as well as the interchangeability of ‘ci’ and ‘ti.’ Further complicating the matter is the role of the compositor, who often had his own approach to the issue of orthographical variation. An argument can be made for preserving the text as is, considering that such variations, pervasive in medieval Latin, continued to exist well into the Renaissance. For the sake of clarity and consistency, however, spellings generally have been emended to classical norms, with the original orthography noted in the critical apparatus.

For the translation, I have endeavored to find middle ground between a strict, literal approach and a freer, sense-based one. On the one hand, I have tried to preserve something of the flowery nature of Aaron’s and Flaminio’s style, with its labyrinth of

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14 References to the text in the commentary are in the form book, chapter, sentence number (e.g., I.5.10 = book 1, chapter 5, sentence 10). The author’s dedicatory preface and the translator’s preface are denoted as ‘Author’s Preface’ and ‘Translator’s Preface,’ respectively, followed by the sentence number (e.g., Author’s Preface, sentence 2). References to the book of corrections are labeled as ‘Corrections,’ followed by the sentence number.

15 For a discussion of compositors and orthographical variation, see Gaskell, A New Introduction to Bibliography, 343–51. Among other factors, line length and word spacing frequently affected a compositor’s decisions about orthography and abbreviation.

dependent and relative clauses. At the same time, I have endeavored to make the authors’ dense prose easier to follow, particularly by dividing up longer sentences into two or more smaller ones. In some instances, I have preferred modern English usage to strict grammatical equivalence. A salient example is Aaron’s frequent use of the future perfect tense in future conditions. Instead of translating each instance with the cumbersome formula “If you will have done this,” I have preferred instead the simple “If you do this,” which more accurately reflects modern American English.\footnote{For example, a phrase such as “Quod si dicto in loco nota non fuerit” will be translated as “But if there is not a note on the said place” and not as “But if there will not have been a note on the said place.”}

The translation of certain technical terms is sometimes troublesome either because a suitable English equivalent is lacking or because a word may have different meanings depending upon the context.\footnote{Margaret Bent thoughtfully addresses these difficulties in her article “Diatonic Ficta,” 1–3.} One notable example is the word vox, which can mean “hexachord syllable,” “sound,” or “voice.” Another occasionally vague term is clavis, which can stand for the combination of note name and hexachord syllable or for the pitch-determining clef placed at the head of a staff.\footnote{When appropriate, the present translation will follow Karol Berger’s English equivalents for the terms ‘vox’ (syllable) and ‘clavis’ (letter name). Berger presents a concise summary of the usual terms and their equivalents as they relate to discussions of the medieval gamut in his essay “Musica ficta,” in Performance Practice: Music before 1600, ed. Howard Mayer Brown and Stanley Sadie, 109 (New York: W. W. Norton, 1989). Bent includes an interesting discussion of these terms in “Diatonic Ficta,” 8–9. For more on the term ‘clavis,’ see Handwörterbuch der musikalischen Terminologie, s.v. “Clavis” (by Fritz Reckow).} Less problematic are the terms tonus and modus, for Aaron preserves a distinction between them throughout. He uses modus only to describe the highest mensural level in polyphonic notation or to mean “manner” or “way.” He uses tonus for the whole tone and when discussing modal classification and psalm tones.\footnote{Charles Atkinson traces the beginnings of the use of the word tonus as the preferred term for modal classification to the thirteenth century, when the term modus began to be used widely for rhythmic categories. Only in the sixteenth century did modus return as the preferred term for modal classification,}
The *De institutione harmonica* consists entirely of written text. It includes neither musical notation nor illustrations, with the exception of the illustrated border of the title page and the printer’s stamp at the conclusion of the treatise (the title page is reproduced as Figure 38 on page 244).\(^1\) However, Aaron does frequently provide musical examples in the form of verbal descriptions, many of which I have rendered in musical notation within the commentary when appropriate.

\(^{21}\) Cristle Collins Judd writes that Benedetto di Ettore, the printer of the *De institutione harmonica*, had never printed music prior to the publication of Aaron’s treatise. See “Pietro Aron and Petrucci’s Prints,” 41. In n. 12 she incorrectly remarks that Spataro’s *Errori de Franchino Gafurio* (1521), also printed by Benedetto di Ettore, is similarly lacking in musical examples.
Chapter 1: Biography and Works

Although Pietro Aaron long has been regarded as one of the chief figures between Franchinus Gaffurius and Giosseffo Zarlino in the history of music theory, many of the details about his life and career remain uncertain. In particular, very little is known about Aaron’s life prior to the publication of his first treatise, the *Libri tres de institutione harmonica*, in 1516. To date scholars have been unable to locate any record of Aaron’s birth, childhood, or musical training. What little we do know about these early years comes mainly from brief references in primary source material that dates from 1516 and afterward.

Among the most important primary source materials are Aaron’s five published music theory treatises: *Libri tres de institutione harmonica* (1516); *Toscanello in musica*

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22 Much of the material of this introductory chapter has been borrowed or adapted from my master’s thesis, “Book Two of Pietro Aaron’s *Libri tres de institutione harmonica*.”

23 The most complete study of Aaron’s life remains Peter Bergquist’s 1964 dissertation, “The Theoretical Writings of Pietro Aaron,” for which he consulted all the primary source material that was known at the time, including Aaron’s treatises and correspondence. Bonnie Blackburn supplemented Bergquist’s account in 1991, incorporating findings from newly discovered archival material and her own investigation of the correspondence between Aaron and fellow theorists Giovanni Spataro and Giovanni Del Lago (discussed below). See Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, esp. chap. 4, “Pietro Aaron.” Bergquist and Blackburn also have written most of the principal encyclopedia articles about Aaron in recent decades. Bergquist penned the article for the 1980 edition of the *New Grove Dictionary of Music and Musicians*, while Blackburn composed the article for both the 2nd edition of the *New Grove* and the 2nd edition of the *Musik in Geschichte und Gegenwart*.

24 About this early period, Blackburn writes, “We know next to nothing about this period of [Aaron’s] life; his family, his friends, his early musical experiences, his teachers, his occupation are all shrouded in mystery. . . .” Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 74.
Trattato della natura et cognizione de tutti gli tuoni di canto figurato (1525; supplement issued separately in 1531); Lucidario in musica (1545); and Compendiolo di molti dubbi, segreti et sentenze intorno al canto fermo, et figurato (no date, after 1545). In addition to these, there survives a short treatise in manuscript, not autograph, entitled Delli principii di tutti li tono secondo mi Pietro Aron (no date, after 1531).

Also of great value is the wealth of surviving correspondence between Aaron and fellow theorists Giovanni Spataro (1458?–1541) and Giovanni Del Lago (c.1490–1544). These letters form a large part of the so-called Spataro Correspondence, a collection of 110 letters by fifteen different authors that span the years 1517 to 1543. Aaron and Spataro, in particular, engaged in a lengthy and convivial dialogue on all matters musical. Unfortunately, only Spataro’s side of the conversation has survived, and that in incomplete form. In fact, just nine letters written by Aaron have come down to us, several of which are addressed to Del Lago. Peter Bergquist transcribed all of Aaron’s surviving letters, as well as several written to Aaron, in an appendix to his dissertation.

Throughout his study he also quoted liberally from many of Spataro’s letters to Aaron. In

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25 Originally published as Thoscanello de la musica. Revised edition of 1529 published as Toscanello in musica, the preferred title in use today.
27 Spataro, represented by 53 letters, was at the center of most of these discussions, but it was Del Lago who collected them into a single manuscript. Knud Jeppesen was the first to publish a scholarly study of the correspondence, including a complete inventory of the manuscript, in his “Eine musiktheoretische Korrespondenz des früheren Cinquecento.” A comprehensive history of the correspondence, including its manuscript tradition and reception, can be found in Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 3–50.
1991, Bonnie Blackburn, Edward Lowinsky, and Clement Miller published a complete edition of the Spataro Correspondence, with transcriptions and English translations.²⁹

Among many other things, the letters of Spataro attest to Aaron’s activity as a composer. Indeed, Blackburn reports that “At least eleven compositions by Aaron were sent to Spataro” for his inspection.³⁰ Unfortunately, only one work attributed to Aaron survives, the four-voice frottola Io non posso più durare, which was published in Ottaviano Petrucci’s Frottola libro quinto of 1505.³¹ Although it is not known with certainty that the ‘Aron’ to whom the work is ascribed was indeed the theorist Pietro, Blackburn argues that the attribution “seems certain,” noting the extreme rarity of the surnames “Aron” and “Aaron.”³² Lost works mentioned in the surviving correspondence include a mass for five voices, a Credo for six voices, and miscellaneous motets and madrigals.³³

The surest bit of information that is known about Aaron’s early background is his nationality, for each of the title pages of his treatises asserts a Florentine origin.³⁴ The clearest statement of his national pride is the very title of the Toscanello in musica, chosen, in Aaron’s words, “in honor of my home and native land.”³⁵ Less certain is the

²⁹ Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians. Many of the translations in their edition are abridgments of the originals. Throughout the present dissertation, all translations from the correspondence are my own.
³⁰ Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 12.
³² Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 75.
³³ See Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, which indexes all the references to Aaron’s compositions in the correspondence.
³⁴ Blackburn posits that “Aaron may have been a choirboy in one of the Florentine churches,” but reports that “thus far his name has not turned up among singers of polyphonic music in the main Florentine establishments.” Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 75.
³⁵ “... il nostro Thoscanello, che così ho voluto farle il titolo in gratia della terra patria et nativa...” (Toscanello, I.6.). As Bergquist observes, “His pride in his native Florence is natural enough, considering
exact year of the theorist’s birth, a topic that has been explored extensively by Bergquist, who proposed circa 1480, both on the basis of the 1505 frottola and because of several clues in the *De institutione harmonica*.\(^{36}\)

One such hint is found in Aaron’s dedicatory preface, in which the author boasts that “the witnesses are practically innumerable who glory in the fact that they have had me as a teacher and who profess that they developed to the greatest extent.”\(^\text{37}\) As Bergquist argues, this statement implies that Aaron’s teaching career was already well advanced by the time he wrote his first treatise.\(^\text{38}\) Another clue appears in the third book of the same treatise, where Aaron makes the tantalizing claim that he enjoyed “the utmost intimacy and friendship in Florence” with the composers Josquin des Prez, Jacob Obrecht, Heinrich Isaac, and Alexander Agricola.\(^\text{39}\) As Bergquist observed, this statement need not mean that all four were present in Florence at the same time.\(^\text{40}\) Nevertheless, if we take Aaron’s assertion at face value, the biographies of these composers impose certain constraints on Aaron’s possible birth date. Bergquist summarizes these limitations that he must have grown up in that city’s heyday under the leadership of Lorenzo de’ Medici.” See “The Theoretical Writings of Pietro Aaron,” 18.

\(^{36}\) See Bergquist, “The Theoretical Writings of Pietro Aaron,” 18–28. About the frottola, he conceded that “No positive proof for or against Aaron’s authorship of this composition can be advanced. If he did write it, he must have been at least in his twenties and therefore born in 1485 or earlier.” See p. 19.

\(^{37}\) “Testes quidem extant paene innumerabiles qui quod me doctorem habuerint glorientur, et se plurimum profecisse fateantur.” Aaron, *De institutione harmonica*, Author’s Preface, sentence 4. Only one of Aaron’s pupils, Illuminato Aiguino, is known to have published a music theory treatise. In all, Aiguino published two works, *La illuminata de tutti i tuoni di canto fermo* (Venice, 1562) and *Il tesoro illuminato di tutti i tuoni di canto figurato* (Venice, 1581).


\(^{39}\) “Nostri tamen temporis compositores facile deprehenduntur, hanc non servare veterum consuetudinem, ut partes, quas diximus, quattuor tali semper ordine concinnent, quod nos quoque crebro facimus, summos in arte viros imitati praecipua vero Isosquinum, Obret, Isaac, & Agricolam, quibus cum mihi Florentiae familiaritas & consuetudo summa fuit” (III.10.6).

\(^{40}\) For Bergquist’s extensive consideration of possible dates for these acquaintances, see “The Theoretical Writings of Pietro Aaron,” 22–26. Blackburn also has discussed this passage in *A Correspondence of Renaissance Musicians*, 74–75. She notes that with respect to Josquin and Obrecht, their time in Florence “can have been no more than visits, so it seems likely that in their case Aaron was stretching the definition of friendship and familiarity.”
as follows: “In short, it is uncertain when Aaron might have known Josquin, on only two occasions could he have met Obrecht, he had ample opportunity to know Isaac, and he must have met Agricola before 1500.”\(^{41}\) Following the assumption that Aaron was at least an advanced student if not a young colleague when he enjoyed his acquaintance with these men, Bergquist suggests a possible range of 1465–1480, preferring the latter because of the overall length of the theorist’s life.\(^{42}\)

By Aaron’s own testimony, he seems to have been born into poverty, and his financial situation seems not to have improved significantly during the early part of his career. This interpretation is based in large part on Aaron’s preface to the Toscanello, in which he reveals that he was “born in tenuous circumstances” and that, by producing the treatise, he sought “by some honest means to sustain [his] modest lifestyle in the study of music.”\(^{43}\) His main source of income during these early years seems to have come from teaching music, as he intimates in his preface to the De institutione harmonica:

> Accordingly, I have had that constant and perpetual custom to cultivate the art continually to the best of my ability and to desire that it be perpetuated to the greatest extent. For this reason, it has happened that wherever I have been up to now I have taught that art both willingly and faithfully.\(^{44}\)

\(^{41}\) Bergquist, “The Theoretical Writings of Pietro Aaron,” 23–24.

\(^{42}\) Bergquist, “The Theoretical Writings of Pietro Aaron,” 28. Prior to Bergquist’s study, a birth date of ca. 1489/90 generally was assumed, after Fétis, Biographie universelle des musiciens, 1. Fétis cited a letter, dated October 7, 1539, which stated that Aaron was 26 when he published the De institutione harmonica in 1516. According to Fétis, the letter appeared at the head of the 1539 edition of the Toscanello, but Bergquist was not able to find any trace of it. Bergquist concludes: “The letter Fétis describes does not seem to exist. . . . It is not at all clear where Fétis could have found the statement, save in some manuscript source now lost or in a garbled second-hand report.” See “The Theoretical Writings of Pietro Aaron,” 20–21.

\(^{43}\) “. . . in tenue fortuna nato recercando per alcuna honesta via di sostenare la mia tenuità negli studii di Musica . . .” (Toscanello, Preface). Of course, Aaron may have been exaggerating his misfortune, for the statement appears in the context of his dedication to his newly acquired patron, Sebastiano Michiel.

\(^{44}\) “Fuit igitur mos ille mihi constans atque perpetuus excolere pro virili parte artem assidue, et cupere propagari maxime. Hinc factum est ut ubicunque hactenus fuerim, et libenter et fideliter illam docuerim.” Aaron, De institutione harmonica, Author’s Preface, sentences 2–3. This passage also suggests that Aaron
In the same preface he boasts that he has already acquired some amount of fame as the result of his devotion to the musical art (Author’s Preface, sentence 1), an assessment echoed by his friend and translator, Giovanni Antonio Flaminio, at the outset of his own preface (Translator’s Preface, sentence 2). Nevertheless, Aaron seems never to have advanced to the prestigious position of maestro di cappella at any point during his lifetime. Elsewhere in the treatise we learn that Aaron’s friends in Imola admired him “on account of [his] priesthood” (ob sacerdotium, Translator’s Preface, sentence 26), but which type of holy orders he might have taken by that point is unclear.

At some point after the publication of the De institutione harmonica, Aaron was hired as a singer and teacher at the cathedral in Imola, where he seems to have remained until late 1522. Unfortunately, some nineteenth- and twentieth-century writers have mistakenly placed Aaron in Rome during part of this period because of a passage in

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45 Giuseppe Massera lists him as “Maestro di cappella at Imola in 1521” (Dizionario della musica e dei musicisti, s.v. “Aaron, Pietro.”) This appears to be inaccurate, however. Blackburn discovered a document from the deliberations of the General Council of the city of Imola, dated 3 April 1521, that affirms Aaron’s role as singer and music teacher at the cathedral but does not name him maestro di cappella. See A Correspondence of Renaissance Musicians, 78–80. Aaron’s atypical career path will be further discussed below.

46 According to a document discussed by Blackburn, a benefice was conferred upon Aaron at the Cathedral in Imola on 11 October 1521. As a result of this, he was appointed chaplain and obligated to say three masses per week. As Blackburn points out: “This benefice confirms that Aaron was a priest, for only priests could say mass. Flaminio’s remark that Aaron was loved ‘because of his priesthood’ can now be taken literally.” A Correspondence of Renaissance Musicians, 80. Blackburn suggests that this odd statement about Aaron’s priesthood may relate to her hypothesis that Aaron was of Jewish origin, as will be discussed below.

47 According to Blackburn: “As far as we know, Aaron continued living in Imola. He may soon thereafter, on the strength of his publication, have obtained his position as singer and teacher in the cathedral in Imola. The first contract extant dates from February 1521, but towards the end of it we learn that Aaron is being re-engaged for another year.” Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 78.
Aaron’s dedicatory preface to the Toscanello, in which he discloses that he was one of many musicians who attempted to curry favor with the music-loving Pope Leo X.\(^4^8\)

Whence it happened that under his pontificate many people exerted themselves, each according to their strengths, to profit from [music] by the ample rewards that they saw being offered for their labors. Among these I was one. . . . I exerted myself no small amount, if not as profitably as I would have desired, at least as much as my talent and my industry allowed.\(^4^9\)

However, both Bergquist and Blackburn have concluded that there is no evidence that Aaron lived and worked in Rome.\(^5^0\) As Bergquist points out, “the reference to Leo says nothing more than that Aaron had some hope of a reward from Leo, perhaps a reasonable hope in view of his own Florentine ancestry, since Leo was of the Medici family.”\(^5^1\) Instead, both Bergquist and Blackburn suggest that Aaron, still living in Imola, may have hoped to dedicate the Toscanello to Leo, a reasonable hypothesis considering that Imola itself was under the control of the Papal State.\(^5^2\)

\(^{48}\) Pope Leo X (1475–1521), the second son of Lorenzo de’ Medici, held the pontificate from 1513 until his death.
\(^{49}\) “Donde è proceduto, che sotto il suo pontificato molti si sono affaticati, ciascuno secondo le lor forze, di far profitto in essa per gli ampi premii, che alle loro fatiche vedevano essere proposti. Tra gli quali io sono stato uno. . . . Mi sono non poco affaticato, se non così delicemente, come harrei voluto, almen quanto lingegno, et la industria mia ha potuto.” Aaron, Toscanello, Author’s Preface. Solely on the strength of this passage, Fétis assumed that Aaron had gone to Rome sometime in the 1510s in order to pursue opportunities at Leo’s court. Noting a document that placed Aaron in Imola in 1521 as singer at the cathedral, Fétis further hypothesized that Aaron had returned to Rome later that year, only to be disappointed by the pontiff’s death in December (Biographie universelle des musiciens, 1–2). Nearly a century later, Alfredo Bonaccorsi wrote that in 1516 Aaron founded a music school in Rome, “where he enjoyed the favor of Leo X” (“. . . dove godette del favore di Leone X . . .”) See the Dizionario biografico degli italiani, vol. 1 (Rome: Istituto della Enciclopedia italiana, 1960), s.v. “Aaron, Pietro.” This line of reasoning has occasionally found its way into more recent writings, as when Moyer reports that Aaron worked, among other places, in “Rome (under Leo X).” See Musica Scientia, 119.
\(^{50}\) See Bergquist, “The Theoretical Writings of Pietro Aaron,” 35–38; and Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 81–83.
\(^{51}\) Bergquist, “The Theoretical Writings of Pietro Aaron,” 37. Bergquist goes on to argue that “The reference may not say even this much, since Aaron might have mentioned Leo simply in order to flatter Michiel [the dedicatee of the Toscanello], the rest of the statement being embroidery.”
\(^{52}\) Imola came under Papal control in 1504 and remained so until unification in the nineteenth century (with the exception of the Napoleonic period).
Regardless of his original intention, Aaron instead dedicated the *Toscanello* to Sebastiano Michiel, the Grand Prior of the Knights of St. John of Jerusalem. Although he does not mention it in his treatise, Aaron had left Imola for Venice in the second half of 1522 to take the comfortable position of tutor for Michiel’s sons.\(^{53}\) The title page of the *Toscanello* also describes Aaron as ‘canon of Rimini’ (‘canonico da Rimini’), a benefice that may have been secured by his new patron.\(^{54}\) However, considering the distance between Venice and Rimini (approximately 100 miles along the coast), this must have been purely an honorary appointment. Aaron himself joined Michiel’s Knights of St. John sometime before 1529, as the title page of the revised version of the *Toscanello* attests.

While living in Venice, Aaron had contact with many prominent musicians and theorists, including Del Lago, Marc’Antonio Cavazzoni, and Adrian Willaert.\(^{55}\) It was during this period that Aaron published both the *Toscanello* (1523) and the *Trattato* (1525), as well as supplements to each (in 1529 and 1531, respectively). Unfortunately, Spataro’s response to both treatises was less than enthusiastic, resulting in a rift between

\(^{53}\) Blackburn reports that “On 19 June 1522 [Aaron] appointed a procurator to resign his benefice, which probably meant that he was leaving Imola. By February 1523, the date of Spataro’s next extant letter to him, he was in Venice, living with . . . Michiel.” In the title of the *Trattato*, published during his time in Michiel’s household, Aaron calls himself ‘maestro di casa,’ a title that Blackburn calls “an elegant fiction.” See *A Correspondence of Renaissance Musicians*, 81 and 83. Bergquist hypothesizes that “An eminent figure such as Michiel would probably have had some sort of private musical establishment, though, and it would seem likely that Aaron would have been involved with it in some way.” See “The Theoretical Writings of Pietro Aaron,” 40. Unfortunately, as both Bergquist and Blackburn point out, our only knowledge of Aaron’s duties comes from Spataro’s surviving letters.

\(^{54}\) According to Bergquist, Michiel had the authority “to distribute the benefices of the priory himself.” See “The Theoretical Writings of Pietro Aaron,” 38.

\(^{55}\) See Bergquist, “The Theoretical Writings,” 45–46.
the two theorists that lasted for the remainder of the decade.\textsuperscript{56} Writing to Del Lago in 1527, Spataro expressed his frustration with Aaron’s frosty reaction to his comments:

\begin{quote}
But recommend me to Pietro Aaron, to whom I have not written for some time, because of course he was complaining about me, saying that in my letters I always used to give him some beating. But if his Excellency had attended to that which had been written by me, perhaps in the end he would have understood that my beatings have more value than the praises given to him by those who know little, who have made him fly up to heaven (without wings). But he used to call me ‘father’ and ‘teacher’, and thus I carried myself as father and teacher toward his Excellency, because the duty of a father and a teacher is to teach the child and the disciple such that they do not fall into error. But he believed that I was moved by spite and envy. In fact I was moved by compassion, which I carried for his blindness and for his followers, who are many, because they give too much credence to that which they find written, and they fall into a snare because of fetid ignorance.\textsuperscript{57}
\end{quote}

Two years later, again writing to Del Lago, Spataro likewise complained: “. . . I still desire to learn, and also I do not want to run into the error into which (as I have written) has fallen our excellent and venerable Brother Pietro Aaron, who (relying too much on himself) has produced three music treatises from which he has received very little honor

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\textsuperscript{56} Spataro’s dissatisfaction with certain parts of the Toscanello is recorded in a series of letters to Aaron from September 1523 to May 1524 (see letters 7–12 in Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}). At least three other letters by Spataro about the Toscanello are missing (\textit{A Correspondence of Renaissance Musicians}, 300n3). In a letter to Del Lago dated 23 August 1529, Spataro also claims to have written 100 folios to Aaron in an attempt “to dissuade him from publishing his treatise on the modes [i.e., the Trattato].” According to Spataro, despite this effort, the treatise was published “without order and truth.” (“Al venerabile Petro non voglio scrive[re] de tale cosa, perché lui è al tuto sdegnato con me, et que[sto] nasce perché io asai cercai retrarlo da la impresa de quello suo tractato de tonis ultimamente da lu impresso, el quale è reuscito proprio come io li scripsi, cioè senza ordine et verità, contra el quale ho scripto a cento foglii, li quali scripti sono apresso di me.”) See \textit{A Correspondence of Renaissance Musicians}, 374.
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\textsuperscript{57} “Ma al mio Messer Petro Aron me recomandareti, al quale più giurni sono passati che non li ho scripto, perché già lui se dolea de me, dicendo che cempre in le mie littere io li dava qualche bastonata. Ma se sua Excellentìi havesse ateso a quello che gli era scripto da me, forsas che al fine lui haria compresheso che più gli hariano valute le mie bastonate che non li sono valute le laude a lui date da quilli che poco sciano, li quali (senza ale) l’hano facto volare sino al celo. Ma lui me chiamava patre et preceptore, et così io da patre et da maestro me portava verso sua Excellentìa, perché lo officio del patre et del preceptore è de amaestrare el figliolo et el discipulo, in modo che non cada in errore. Ma lui credeva che io fusse mosso da livore et invidia. Ma io era mosso da compassione, la quale portava a la sua cecità et a li successori, li quali aliquando, perché prestano tropo fede a qu[ello che] trovano scripto, cadeno nel latio de la fetida ignorantia.” Spataro to Del Lago, Bologna, 30 October 1527, in Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 326.
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among the intelligent.” 58 Their relationship seems to have improved only after the publication in 1529 of the revised edition of the *Toscanello*, in which Aaron incorporated some of Spataro’s suggestions. 59

After Michiel’s sudden death in November 1534, Aaron spent some time in nearby Padua living with the Friars of Santa Giustina. 60 Blackburn offers the following appraisal of Aaron’s bleak career prospects at this time:

> Then about fifty-five years of age, Aaron knew it was too late to find a position as a singer, apart from the fact that it would have entailed an unacceptable loss of reputation. Nor could he hope to become a *maestro di cappella*, having been away from the profession so long. 61

This uncertainty may have played a role in Aaron’s decision to join the Order of the Crutched Friars in Bergamo in March 1536, a move that seems to have surprised his friends. 62 In a letter to Del Lago, Aaron emphasizes the satisfaction and security that he felt in his new environment:

> . . . at present I find myself to be more content than I have ever been. First, I have a patron who is so magnanimous and generous, as much as one can imagine, and who truly has the highest opinion of me. I am honored by all here. Here there are many worthy men in every discipline, and especially in music. I have meals at the table of my patron, a doctor, medicine—God protect me—a barber, a very beautiful room, nice and clean, and a boy that serves me, with twenty ducats a

58 "... et etiam per non incorrere in lo errore nel quale (come scritti) è caduto el nostro excellente et venerabile Frate Petro Aron, el quale (fidandosi tropo in sé stesso) ha producto in luce tri musici tractati de li quali lui n’ha havuto asai poco honore apresso a li intelligenti.” Spataro to Del Lago, Bologna, 23 August 1529, in Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 373.


60 A letter from Aaron to Del Lago places Aaron in Padua on 12 May 1535. It is not known how long he remained in that city. See Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 83–84 and 707–8.

61 *A Correspondence of Renaissance Musicians*, 83.

62 According to Blackburn, “It certainly astonished Giovanni del Lago, who could not understand why a priest should even consider becoming a mere monk.” *A Correspondence of Renaissance Musicians*, 84. Indeed, Del Lago did not write to Aaron for three and a half years after Aaron joined the Crutched Friars.
Aaron’s hyperbolic account certainly can be read as defensive, and indeed he seems to have anticipated that his friends would not approve of his decision. Near the close of the same letter he writes: “If it appears to you and to others to be a mistake, so be it. I am content, and I believe that I am the same Pietro Aaron as otherwise.”64

In 1545 Aaron published his *Lucidario*, an unusual collection of specialized theoretical problems.65 He presents each topic in three parts, with an opinion, an opposition, and a resolution.66 Bergquist characterizes the work as “rather a mixed bag,” saying, “It appears that Aaron towards the end of his life gathered all his miscellaneous notes on every aspect of theory and put them on record in *Lucidario*.”67 The treatise also includes Aaron’s responses to some of the criticisms that Franchinus Gaffurius had leveled against the *De institutione harmonica* nearly 30 years earlier in a bitter exchange of letters, a circumstance that will be discussed below. Aaron’s last published work, the *Compendiolo*, appeared sometime after the *Lucidario*, for Aaron mentions the earlier treatise by name in the text. Bergquist notes that the book contains “a much larger

63 “... al presente mi trovo in migliore essere et contento che mai fusi. Prima, io ho un patrone tanto magnanimo et da bene quanto si possa uno immaginare, et uno che veramente fa grandissimo conto di me. Io sono da tutta questa terra honorato. Qua sono molti degni huomini in ogni facultà, et massimamente in musica. Io ho le spese alla tavola del mio patrone, medico, medicinie—che Idio mi guardi—il barbiere, tenuto in una camera bellissima, et tenuto mondo et netto, et il mio putto che mi serve, con venti ducati l’anno da potermi vestire, de una mansioneria perpetua de una scuola del corpo di Christo.” Aaron to Del Lago, Bergamo, 13 March 1536, in Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 709.
64 “Se a voi et agli altri vi parrà cosa non ben fatta, tal sia di voi. Io mi contento et credo essere quel Piero Aaron così come altrimenti.” Aaron to Del Lago, Bergamo, 13 March 1536, in Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 710.
65 For an introduction to the *Lucidario* as well as a summary of the contents and external references, see Ceulemans, “*Le Lucidario in musica* de Pietro Aaron.”
66 Aaron preserves this format in the first three books of the treatise, but in the final book he abandons that method and addresses each problem in continuous prose sections.
67 Bergquist, “The Theoretical Writings of Pietro Aaron,” 68.
number of approving references” to Gaffurius, possibly due to the fact that this was Aaron’s only work to be published in Gaffurius’s city of Milan. 68 Blackburn characterizes the Compendiolo as “curiously elementary,” 69 concluding that it is “of less interest” than his other writings. 70

Little else is known about Aaron’s last years. Neither the date nor place of his death has been identified. The only thing known with certainty is that Aaron was already deceased when his Toscanello was reprinted in 1562, for the title page of the treatise includes the phrase “before he died” (innanzi che morisse”). 71 Blackburn suggests that the Compendiolo also may have been published posthumously, for the dedication lacks his name in the heading, while the title page includes the words “Aaron will exist in eternal memory, and his name will never be destroyed” (“In memoria aeterna erit Aron, Et nomen eius nunquam destruetur”). 72

Despite his success as a theorist and singer, Aaron followed a rather atypical career journey for men of his profession. As Blackburn has noted:

The standard sequence of events was choirboy, singer, holy orders or university study, and eventually maestro di cappella. The only certain knowledge we have in these respects is that Aaron was a priest by 1516 and that he was a singer in the Cathedral of Imola from at least early 1520 to June 1522. Unlike other theorists, he never speaks about his teacher, and indeed his musical education seems to have been deficient. In the preface to his Toscanello he mentions that he was born in

68 Bergquist, “The Theoretical Writings of Pietro Aaron,” 53. Bergamo is located approximately 30 miles northeast of Milan.
69 Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 85.
71 See Bergquist, “The Theoretical Writings of Pietro Aaron,” 54–56 and 59–60. See also Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 85.
72 Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 85–86. Bergquist also considered this possibility, but his conclusion was more equivocal: “This could mean that Aaron was recently dead, but it might equally well be an encomium of the sort that now appears on dust-jackets.” See “The Theoretical Writings of Pietro Aaron,” 54.
tenuous circumstances. His prose style shows that he received little, if any, formal instruction in grammar and rhetoric.\textsuperscript{73}

To explain this unusual path, Blackburn has advanced the intriguing hypothesis that Aaron may have had a Jewish ancestry.\textsuperscript{74} She points to his uncommon surname, for instance, which was very rare in either spelling (Aaron and Aron). As a Hebrew name, however, it “would be immediately recognizable to Christians.”\textsuperscript{75} She also emphasizes the often anti-Semitic sentiment that existed in Florence during the years 1475–1508, suggesting that the threat of expulsion may have prompted Aaron to leave his native city.\textsuperscript{76} She proposes that Aaron could have been a convert to Christianity, with the apostolic name Pietro having been chosen at the time of conversion.\textsuperscript{77} Furthermore, she argues that Flaminio’s statement that the men in their circle love and revere Aaron “on account of [his] priesthood and virtue” (\textit{ob sacerdotium ac virtutem}, Translator’s Preface, sentence 26) may have been “a veiled reference to a sincere conversion.”\textsuperscript{78} Yet as Blackburn herself notes, Aaron makes no direct reference to a Jewish ancestry in his treatises or letters. Although her hypothesis is thought-provoking and persuasive, the case remains circumstantial.\textsuperscript{79}

\begin{footnotes}
\item[73] Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 88–89.
\item[74] See \textit{A Correspondence of Renaissance Musicians}, 89–92. In a footnote, Blackburn explains that her hypothesis was inspired by notes belonging to Lowinsky, who was intrigued by this possibility. See 89n47.
\item[75] Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 89.
\item[76] Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 90–91.
\item[77] Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 90.
\item[78] Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 91–92.
\item[79] Blackburn’s \textit{New Grove} article on Aaron is somewhat misleading about the certainty of this hypothesis: “Apart from his brief stay at Imola, Aaron held no formal position as singer or choirmaster, an unusual situation that might be due to his Jewish origin (a hypothesis explored in Blackburn, Lowinsky and Miller).” See \textit{The New Grove Dictionary of Music and Musicians}, s.v. “Aaron, Pietro.”
\end{footnotes}
The Treatise in Context

In the continuum of speculative versus practical theory, Aaron’s *De institutione harmonica* lies solidly in the practical realm. Although it is the only one of his treatises to be published in Latin, the work treats both plainsong and polyphony in a manner aimed more toward singers and composers than toward philosophers and mathematicians. The first book deals exclusively with plainsong theory, including the gamut, hexachords, mutations, melodic intervals, modal classification, and psalm-tone differentiae. In the second book, the focus shifts to mensural music, with discussions of solmization and mutation in polyphony, the three Greek genera, mensural notation, and the proper division of the whole tone. The third and final book, which is nearly as long as the first two combined, explores issues related to counterpoint and composition, including the construction of consonant harmonies, proper voice leading in certain parallel progressions, *musica ficta*, canons, and proportions. Preceding the main content of the treatise are two prefaces, one by Aaron, the other by Flaminio.

As was noted in the Introduction, the *De institutione harmonica* historically has often been overlooked both in studies about Aaron and in broader discussions about the history of music theory. Commentators have tended to focus their attention instead on his

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80 Aaron calls the practice *imitatio* or *fugatio*, but in each of his examples he preserves the same solmization syllables in both the leading and the following voice, essentially describing strict canons.

81 The final chapters of the work deal with ligatures, which, as Bergquist noted, would have found a better home in the second book, with its emphasis on notation. See “The Theoretical Writings of Pietro Aaron,” 59. Perhaps the topic was added after the second book had already been printed. This hypothesis is supported by the opening sentence of Aaron’s first chapter about proportions, which begins, “I come now to the last and most difficult part of this work, which is concerning proportions. . . .” (Venio nunc ad ultimam huius operis partem ac difficillimam, quae est de proportionibus. . . .”) Aaron, *De institutione harmonica*, III.53.1.
next two theoretical works, the *Toscanello* and the *Trattato*. Undoubtedly, part of the attraction of these later works is their place among the first major music theory treatises to be printed in the vernacular. On top of this, many of Aaron’s most important ideas and observations have their fullest exposition either in the *Toscanello* or in the *Trattato*, including such oft-discussed topics as the simultaneous composition of voice parts, mean-tone temperament, *musica ficta*, and mode in polyphonic works. The *Toscanello* also includes Aaron’s well-known “Tavola del contrapunto” (Table of Counterpoint), his quick visual guide to building four-part consonant harmonies.

Yet Aaron first explored many of these topics in his *De institutione harmonica*. He makes an apparent reference to the simultaneous composition of voice parts in book 82

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82 The *Toscanello* was particularly popular during Aaron’s lifetime, appearing in at least four editions. It was the only one of Aaron’s treatises to be reprinted. See Bergquist, “The Theoretical Writings of Pietro Aaron,” 62.

83 Important precursors in Italian include Bonaventura da Brescia’s *Breviloquium musicale* (1497) and Franchinus Gaffurius’s *Angelicum et divinum opus musicae* (1508). Gaffurius evidently considered the *Angelicum* to be a concession to those who could not read Latin. According to Bonnie Blackburn, “No concession is made in the topics, however, since the first treatise is a complete treatment of mathematical proportions as applied to intervals, tetrachords and genera, and there is only one musical example in the whole work.” *The New Grove Dictionary of Music and Musicians*, 2nd ed., s.v. “Gaffurius, Franchinus” (by Bonnie J. Blackburn).

84 See *Toscanello*, book II, chapter 16. See also Lowinsky, “The Concept of Physical and Musical Space,” esp. p. 11; Bergquist, “The Theoretical Writings of Pietro Aaron,” 325–31; and Blackburn, “On Compositional Process,” 212–19. Jessie Ann Owens has argued that Aaron instead “was concerned with the division of musical space into distinct realms in which each voice had its own place, a practice that was still relatively recent when he was writing.” See *Composers at Work*, 22–24.


86 See especially the supplement to the *Toscanello*, which was published with the revised edition of 1529. See also Bergquist, “The Theoretical Writings of Pietro Aaron,” 388–461; Berger, *Musica ficta*; and Bent, “Accidentals, Counterpoint, and Notation.”


88 See the table at the end of *Toscanello*, book II, chapter 30, which summarizes chapters 21–30. See also Bush, “The Recognition of Chordal Formation,” 238 and 243; Bergquist, “The Theoretical Writings of Pietro Aaron,” 347–57; and Owens, *Composers at Work*, 24–33. Such charts are sometimes called ‘chord tables,’ a term that will be avoided in the present study so as not to encourage any anachronistic associations with the modern notion of the word ‘chord.’
III, chapter 10. He briefly mentions the practice of temperament at the end of book III, chapter 16. In book III, chapters 17 through 23, he devotes considerable time to laying out some of the various possible positions for different voice parts in consonant sonorities. Although the list in the De institutione harmonica is not as extensive as the one in the Toscanello, nevertheless it is of a similar nature.

In a previous study, I demonstrated that the second book of the De institutione harmonica also includes other valuable observations on the theory and practice of polyphonic music that had not received much previous attention by historians of music theory. One of the most interesting, perhaps, is his treatment of solmization and mutation in polyphonic music, topics not often addressed by his predecessors or contemporaries except within the context of musica ficta. Aaron’s approach, most likely borrowed from practice, advocates a simplification of the many possibilities of mutation available in plainsong. Aaron also devotes a full five pages to the practice of combining differing mensuration signs, a discussion that provides useful information about contemporaneous practice.

Overall, the content of the treatise emphasizes practical matters at the expense of abstract theorizing. Aaron writes not so much for other theorists as for professional

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89 Lowinsky evidently was the first to note Aaron’s apparent reference to the practice in the De institutione harmonica. See Lowinsky, “The Concept of Physical and Musical Space,” 11. Bergquist notes the lack of clarity in Aaron’s reference to this practice in the De institutione harmonica. “This passage is sufficiently ambiguous that it might be taken to refer to the order of entrance of the voices, as for instance in a point of imitation, but the explicit statement of Toscanello unquestionably refers to the order of composition, and it follows that the earlier work probably does also.” See “The Theoretical Writings of Pietro Aaron,” 329.

90 See Bergquist, “The Theoretical Writings of Pietro Aaron,” 113–15. As will be discussed in Chapter 5 of the present study, Aaron also discusses an unusual division of the whole tone in I.17. See Herlinger, “Fractional Divisions of the Whole Tone,” 80–81.

91 As Bergquist rightly notes, “The chords [in De institutione harmonica] are described only in laborious prose, whereas Toscanello gives both concise verbal descriptions and a table which uses Roman numerals to list the intervals from one voice to another.” See “The Theoretical Writings of Pietro Aaron,” 350.

92 Bester, “Book Two of Pietro Aaron’s Libri tres de institutione harmonica.”
musicians. More specifically, he targets the budding composer, for whom he reserves the term ‘musician,’ elevating him above the ranks of the mere singer. Early in the second book he explains the essential difference between the two groups:

Magnam igitur dicimus inter musicum et cantorem esse distantiam, Musicus enim est qui artem callet, qui excogitat et cum arte disponit illa quae cantor excipit atque pronunciat. . . . Ergo compositor est musicus.

Cantor vero qui sibi a musicum tradita pronunciat.

Therefore we say that the difference between the musician and the singer is great. For the musician, properly, is the one who knows the art, who thinks out and arranges with artistry those things which the singer receives and recites. . . . Therefore a composer is a musician. But a singer is one who recites things that have been handed down to him by the musician.

The treatise’s lengthy third book, with its many observations about compositional practice, certainly is aimed at this specialized audience. But Aaron does not ignore the

93 Writing about Aaron and Spataro, Ann Moyer offers the following assessment: “The professional musicians whose writings on music followed those of Gaffurio did not exhibit a breadth of scholarly interests, education, or intellectual contacts to equal his. Their major concerns lay in the realm of practical music; they entered the more general discourse about the discipline as a result of practical questions and debates that served both to direct and to limit their investigations.” Musica Scientia, 113.

94 Aaron, De institutione harmonica, II.2.2 and 6–7. Such a comparison between the knowledgeable musician and the lowly singer had a long tradition, going back to Boethius, De institutione musica, I.34. Aaron’s source clearly stems from Guido of Arezzo, for in the same chapter he adapts a verse by Guido that in Aaron’s version appears to say the same thing. According to Aaron, Guido writes “The distance of musicians and singers is great. The former, who compose, know, while the latter recite” (“Musicorum et cantorum magna distantia est, illi sciunt, qui componunt, hi dicunt,” II.2.5). In fact, Guido’s verse most likely read as follows: “The difference of musicians and singers is great. The latter recite, the former know the things which music composes” (“Musicorum et cantorum magna est distantia / Iste dicunt, illi sciunt, quae componit musica.” Guido of Arezzo, Regulae rhythmicæ in antiphonarit sui prologum prolatae, lines 1–2). One surviving manuscript of Guido’s treatise, Monte Cassino, Biblioteca Abbaziale 318, reads ‘qui componunt.’ (See Smits van Waesberghe, ed., Guidonis Aretini “Regulae rhythmicæ,” 95. Smits van Waesberghe does not note a variant for the word ‘musica’ in Biblioteca Abbaziale 318.) A similar reading is found in the late-fourteenth-century Quatuor principalia musice by John of Tewkesbury, in which the second line of Guido’s poem reads: “Isti dicunt, illi sciunt qui componunt musicam.” The same wording appears in the anonymous fifteenth-century Pro themate presentis operis (c.1463), also known as the Bartha Anonymous. It is not clear from Aaron’s adaptation whether he was working from one of these alternative traditions or whether he may have misread Guido’s text or changed it purposefully to suit his own purposes.

95 Out of the three books in the De institutione harmonica, the third book generally has received the most scholarly attention precisely because of its observations about the compositional process. For an excellent study of composition in the Renaissance, see Owens, Composers at Work.
singer. On the contrary, he seems to have written much of the first and second books with the performer, not the composer, in mind.  

Scholars rightly have noted that the *De institutione harmonica* contains a number of glaring errors, ranging from the superficial to the serious. Some of these mistakes may have been the fault of the compositor or the corrector, as Aaron himself claimed at the head of a list of corrections that was printed in the following year. It is also quite possible that some of the errors were introduced into the work when it was translated from Aaron’s original Italian into Latin by the humanist Flaminio, who seems to have possessed only a rudimentary knowledge of music. Nevertheless, many of the more glaring mistakes likely originated with Aaron himself, an assumption that has led some scholars to question the rigor of Aaron’s theoretical training. As keenly observant as he was about matters of common practice, his knowledge both of speculative theory and of more obscure practices seems to have been somewhat less than comprehensive at this stage in his career.

Aaron’s own colleagues also recognized problems in the *De institutione harmonica*. His friend and fellow theorist Giovanni Spataro, who was among the first to examine a draft of the finished treatise, pointed out numerous mistakes, some of which

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96 A salient example in book II is Aaron’s simplified approach to solmization in polyphony, which would have held little practical value for a composer.
97 See, for instance, Bergquist, “The Theoretical Writings of Pietro Aaron,” 31–32 and 125, and Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 88–89.
98 The list of corrections is included as part of the Broude Brothers facsimile.
99 For instance, Blackburn offers the following assessment about Aaron’s discussions of counterpoint: “If we can judge from the way he discusses counterpoint, he did not learn music from a composer who had been trained in the north. Rather, he seems to have gained his knowledge mainly from practical experience.” Blackburn, Lowinsky, and Miller, eds., *A Correspondence of Renaissance Musicians*, 75.
were corrected before publication.\textsuperscript{100} But the harshest critic of Aaron’s effort was Franchinus Gaffurius, to whom Spataro sent a copy of the published treatise. As Bergquist relates, “[Gaffurius] thereupon wrote to Aaron about various errors he thought the book contained, not too temperately, according to Flaminio, and Aaron answered in kind.”\textsuperscript{101} The exchange between Aaron and Gaffurius is now lost, but some details of the dispute survive in a slightly later correspondence between Gaffurius and Flaminio.\textsuperscript{102} For his part, Spataro was reluctant to defend the treatise at first, but eventually he joined the fray on Aaron’s behalf.\textsuperscript{103} The dispute ultimately became intertwined with Spataro’s ongoing defense of his own teacher, Bartolomeus Ramis de Pareia.\textsuperscript{104} In his 1521 publication \textit{Errori de Franchino Gafurio}, Spataro rebukes Gaffurius with these words:

\textsuperscript{100} According to Flaminio in a letter to Franchinus Gaffurius, discussed below.
\textsuperscript{101} Bergquist, “The Theoretical Writings of Pietro Aaron,” 31.
\textsuperscript{102} Bergquist transcribed the letters by Gaffurius and Flaminio, which were written in Latin, in Appendix B of “The Theoretical Writings of Pietro Aaron,” 504–10. He offers a concise account of the sequence of events on pp. 30–33. The letters were published in \textit{Joannis Antonii Flaminii Forocorneliensis Epistolae familiares} (Bologna, 1744). Blackburn posits that Aaron’s discussion of counterpoint and composition in the third book of the treatise may have been a chief point of concern for Gaffurius. As she explains: “Gaffurio was trained in the northern tradition by Johannes Bonadies, a Fleming, and his exposition of counterpoint in the \textit{Practica musicae} of 1496 is thorough, with numerous music examples. He must have viewed Aaron’s sketchy and unsystematic treatment of counterpoint with dismay. The attempt to instruct the beginner in chord progressions must have struck him at the least as premature.” See “On Compositional Process,” 220.
\textsuperscript{103} Spataro distanced himself from Aaron and his treatise in a letter to Marc’Antonio Cavazzoni dated 1 August 1517, writing “A certain Pietro Aaron has published a work here in Bologna which I neither praise nor berate.” (“Uno Pietro Aron fiorentino ha fatto stampare qui in Bologna una opera la quale non laudo né vitupero.”) Blackburn, Lowinsky, and Miller, eds., \textit{A Correspondence of Renaissance Musicians}, 203. Bergquist discusses this initially ambivalent response in “The Theoretical Writings of Pietro Aaron,” 32.
\textsuperscript{104} Spataro’s first publication in defense of Ramis was against the theorist Nicolò Burzio and was entitled \textit{Bartolomei Ramis Honesta defensio in Nicolai Burtii Parmensis opusculum} (1491). Spataro’s dispute with Gaffurius culminated in 1520–21, with three publications between them. First there was Gaffurius’s \textit{Apologia adversus Ionannem Spatarium & complices musicos Bononienses}, published in Turin in 1520. Spataro countered with two pamphlets, both published in Bologna in 1521: \textit{Dilucide et probatissime demonstratione de Maestro Zoanne Spatario musico bolognese contra certe frivole et vane excusatione da Franchino Gafurio (maestro de li errori) in luce aducte and Errori de Franchino Gafurio da Lodi da Maestro Ioanne Spatario musico bolognese in sua deffensione e del suo preceptore Maestro Bartolomeo Ramis hispano subtilemente demonstrati}. Moyer explores these publications in \textit{Musica Scientia}, 114–19, but only in the context of Spataro’s defense of Ramis, leaving aside the Aaron-Gaffurius dimension.
It came to my mind that in the year 1516 (through your envy and impertinence) a musical quarrel arose between you [i.e., Gaffurius] and Pietro Aaron, a most learned Florentine musician. And because Pietro Aaron (in his own defense) showed you many of your errors, you wrote to me that you understood that I was the one who was answering you and not Pietro. Because of this, you gave up writing to the excellent Pietro and wished to continue the quarrel with me. For those reasons (as you know), many disputes took place between us.\footnote{"... me venuto a memoria che de lanno 1516 (per la tua invidia et petulantia) tra te et Petro Aron Florentino Musico doctissimo naque litigio Musico: et perche Petro Aron (per sua diffessa) te demonstro multi toi errori, Tu scrivesti a me, che da te era comprepheso, che io era quello, che te respondeva et non Petro, per tanto tu lassasti de scrivere al prelibato Petro et con meco volesti la lite, per laquelle cosa (come tu sciai) tra nui, acadete multe desputatione." Spataro, Errori de Franchino Gafurio, ff. 39r–39v.}

Although Gaffurius died just a year later in 1522, Aaron nevertheless felt it necessary to respond to some of the elder theorist’s criticisms as late as 1545, in his Lucidario in musica.\footnote{Blackburn identified three such places in the Lucidario, namely II.11, II.12, and III.2 (see \textit{A Correspondence of Renaissance Musicians}, 78n15). Elsewhere in the Lucidario Aaron cites Gaffurius in a more positive light, frequently using passages from Gaffurius’s \textit{Practica musicae} and \textit{De harmonia musicorum instrumentorum opus} in support of his own arguments.}

Another apparent deficiency in Aaron’s educational background was his inability to write fluently in Latin.\footnote{In the translator’s preface to the \textit{De institutione harmonica}, Aaron originally had written a treatise in Italian, but he ultimately held back from publishing it, self-conscious about the lingering prejudice against writings in the vernacular.\footnote{Black, \textit{Humanism and Education}, 336–38.} This led him to collaborate with the humanist scholar and poet Giovanni Antonio Flaminio (1464–1536), a fellow resident of Imola, who assisted Aaron as translator of the \textit{De institutione harmonica}.\footnote{See Aaron, \textit{De institutione harmonica}, Translator’s Preface, sentences 9–14.} See Aaron, \textit{De institutione harmonica}, Translator’s Preface, sentences 9–14.} According to the translator’s preface to the \textit{De institutione harmonica}, Aaron originally had written a treatise in Italian, but he ultimately held back from publishing it, self-conscious about the lingering prejudice against writings in the vernacular.\footnote{For a biography of Flaminio, see the \textit{Dizionario biografico degli italiani}, vol. 48 (Rome: Istituto della Enciclopedia italiana, 1997), s.v. “Flaminio, Giovanni Antonio” (by V. de Matteis).}
Flaminio supplies his own preface to the treatise, in which he purports to tell the story of the day that he and Aaron decided to work together on the treatise. In many ways the scene seems intended more to glorify the intellectual circle of which Flaminio was the head than to record events in any faithful fashion. In the middle of this scene, Flaminio undertakes an elaborate “praises of music” (laudes musices) section (Translator’s Preface, sentences 31–79). Although he portrays his speech as “spur of the moment” (“ex tempore,” Translator’s Preface, sentence 34), most of the material actually is skillfully adapted from Quintilian’s Institutio oratoria and Martianus Capella’s De nuptiis Philologiae et Mercurii (see Table 1).

Because the laudes musices material is placed in the translator’s preface, Bergquist assumed that Aaron had not intended to include such a section in the treatise, concluding, “Evidently Aaron had not intended to discuss these topics at all in Institutione Harmonica [sic].” Elsewhere I have argued that Aaron likely was involved in planning and writing this material, and that he and Flaminio may have placed it in the translator’s preface in order to illustrate the kinds of topics that were discussed by their circle. The most compelling evidence for such a conclusion comes from the Toscanello, in which Aaron claims to have taken pains to include the laudes musices section in the De institutione harmonica:

Many excellent writers, both ancient and modern, have collected the praises of music and have entrusted them with great care to those who will have to follow.

Molti excellenti scrittori et antichi, et moderni hanno raccolte le lode della Musica, et con buona cura a que, che succeder devranno, racomandate. Fra quali anche io

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110 For more on Flaminio’s preface and his role as translator and pseudo-dialogue partner, see Bester, “Book Two of Pietro Aaron’s Libri tres de institutione harmonica,” 21–37.
111 Bergquist, “The Theoretical Writings of Pietro Aaron,” 81.
Among those, I also, in my other work concerning harmonic instruction, took pains that it not be kept silent.113

Indeed, Aaron includes many of the same anecdotes from Quintilian and Martianus Capella in the lengthy laudes musices section in the Toscanello.

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<td>§41</td>
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<td>§45</td>
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Table 1: Sources for the laudes musices section of the Translator’s Preface of Pietro Aaron’s Libri tres de institutione harmonica.

113 Aaron, Toscanello in musica, I.1.
Flaminio also takes an active role in the treatise itself, occasionally interrupting with asides about Greek and Latin etymology and other classical allusions. Such interjections are rarer in the treatise’s first book, confined mainly to the chapters on intervals, as well as a few comments in the chapters on mode. It would be incorrect to call Flaminio a true dialogue partner, but Aaron does occasionally address him in a conversational way, especially when he himself attempts to demonstrate some classical knowledge.
Chapter 2: Aaron’s Introduction to Plainsong

Aaron begins the first book of his treatise with a general chapter on plainsong. Before taking up that topic, however, Aaron resumes the storytelling nature of Flaminio’s preface, continuing the dialogue in his own voice. He reinforces a conceit from the prologue that they began working on the project the day after the group’s gathering at Flaminio’s home (“That which I promised yesterday is considerable, Flaminius” [I.1.1]) and expresses confidence in his ability to tackle the lofty subject matter, quoting a Horatian precept about writers choosing topics that are equal to their strengths (I.1.3–5). He reiterates his desire to make known many of the secrets of his art (I.1.5, 15), noting that some are likely to disapprove of such disclosures, “as though sacred things are being desecrated” (I.1.9). Nevertheless, taking pride in his “virtuous intentions” (I.1.11), he pledges to include everything that is necessary for an understanding of music, noting that only those things that he has deemed “either less necessary or not worth consideration” have been omitted (I.1.6).

When Aaron finally turns to discuss plainsong, he begins dutifully with a definition: “Song is called plain whose notes are delivered with equal measure and with equal time.”\footnote{“Igitur cantus planus dicitur cuius notae aequali mensura et pari tempore pronunciantur. . . .” Aaron, \textit{De institutione harmonica}, I.1.16.} Aaron’s assertion that chant proceeds with equal measure and time
corresponds well to theoretical discussions of chant practice going back to at least the thirteenth century, when Hieronymus de Moravia wrote that “every song that is plain and ecclesiastical has notes that are first and foremost equal.”\textsuperscript{115} Closer to Aaron’s time, the German monk Conrad von Zabern argued similarly in his \textit{De modo bene cantandi}, printed in 1474, although Conrad’s complaint that many poor singers failed to preserve the proper rhythmic equality of chant suggests that not everyone achieved this ideal.\textsuperscript{116} Aaron’s own definition, offered without an alternative viewpoint or a reproach against careless peers, may suggest a strong uniformity in the rhythmic performance of the chant traditions with which he was familiar (or else a kind of refutation by omission). Aaron’s only exception to the even rhythmic style that he describes is the so-called Credo cardinalis (or cardineus, as Aaron calls it), a fifteenth-century melody that frequently appeared in mensural notation in manuscripts and printed books from the fifteenth century onwards.\textsuperscript{117}

Aaron then proceeds to introduce a problematic fivefold classification of chant that is quite rare in the surviving Latin theoretical tradition (I.1.17–26). Because Aaron’s

\textsuperscript{115}“Omnis cantus planus e\textit{t} ecclesiasticus notas primo \textit{e}t principaliter aequales habet. . . .” Hieronymus de Moravia, \textit{Tractatus de musica}, chapter 25. Rhythmic practice in chant before the thirteenth century is less clear. David Hiley summarizes the differing interpretations of earlier accounts in his article “Chant,” 42–49.

\textsuperscript{116}“Many countless persons in very many churches often do the opposite of this, dragging out one note more than the others and rushing another or others very much and more by far than the rest, and that is one of the most common abuses of the greater part of the clergy in singing.” (“Cuius contrarium in plerisque collegiatis ecclesiis plures personae sine numero saepe agunt unam notam plus ceteris protrahentes et aliam vel alias nimium et multo plus reliquis breviante\textit{s}, et illa est una de communissimis abusionibus maioris partis cleri in cantando.”) Conrad von Zabern, \textit{De modo bene cantandi}, chapter 2. On Conrad’s treatise, see Dyer, “Singing with Proper Refinement.”

\textsuperscript{117}David Hiley dates the melody, also known as Credo Vatican IV, to the fifteenth century in his monograph \textit{Western Plainchant: A Handbook}, 171. Franz Tack includes a facsimile of the melody in mensural notation, drawn from a gradual printed in Venice in 1499, in \textit{Der gregorianische Choral}, 50. In addition, Hiley notes that a small number of chant melodies are found in mensural notation from the thirteenth century onwards, but “these are almost exclusively chants with texts in regular accentual verse, such as sequences.” Hiley, “Chant,” 48.
own descriptions of the terms vary greatly in depth and clarity, it is necessary to examine the system’s origin and evolution in order to understand what Aaron is trying to say. The scheme divides chant into five species, namely differens, indifferens, communis, prosaicus, and metricus.\footnote{Aaron presents the terms in the order differens, indifferens, prosaicus, metricus, and communis. I have altered the order slightly here, grouping together differens, indifferens, and communis, for reasons that will become clear shortly.} Despite Aaron’s claim that the classification system was approved both by St. Augustine and Pope Gregory the Great, the earliest surviving discussion of the complete system appears in Johannes Ciconia’s Nova musica, from the first decade of the fifteenth century. It also appears in two later fifteenth-century treatises, Jacobus Theatinus’s De partitione litterarum monocordi and the Anonymous Quaestiones et solutiones advidendum tam mensurabilis cantus quam immensurabilis musica. Despite Ciconia’s claim that “every song” fits into one of these five categories,\footnote{“Omnis cantus aut est prosaicus, aut metricus, aut differens, aut indifferens, aut communis,” Ciconia, Nova musica, II.28.} the system is actually a combination of two disparate classification schemes of differing origin, for three of the categories (differens, indifferens, and communis) relate to ambitus and modal classification while the other two (prosaicus and metricus) concern the relationship of music and text.

The terminology relating to chant ambitus and modal classification actually has its origins in the writings of numerous eleventh-century South German theorists, particularly Bern of Reichenau, Wilhelm of Hirsau, and Frutolf of Michelsberg. Among other topics, each of these writers attempts to deal with the problem of how to classify chant melodies that do not fit comfortably within the confines of the eight-mode system of authentic and plagal modes, although none of them presents a fully developed tripartite
system such as appears centuries later in Ciconia. Writing between 1021 and 1036, Bern of Reichenau is the first to introduce one of the three terms in a modal context in his influential Prologus in tonarium, which Ciconia cites liberally in his own discussion of mode in plainchant. In a passage that Ciconia himself paraphrases, Bern takes up the issue of chants whose narrow ranges lack both the ascent of an authentic mode and the descent of a plagal one, calling their resulting ambitus, and thus the chants themselves, *communis* (common):

Si vero ad dyapente quidem pervenit et nec supra nec infra dyatessaron habet, quia dyapente amborum commune est, cantus quoque communis sit, ita tamen ut eorum alteri tribuatur, cuius et frequentior usus habetur.

But if a song extends to a diapente and has neither a diatessaron above nor below, because the diapente is common to both modes [i.e., authentic and plagal], the song also is *communis*, nevertheless it is such that it may be attributed to one of those, namely to the one whose use is regarded to be more frequent.

Writing not long afterwards, Wilhelm of Hirsau takes up a related but differing problem in his mid-eleventh-century Musica, that of chants whose modal classification is ambiguous because their range is too large, spanning both the authentic and plagal regions. To deal with such chants, Wilhelm argues that each authentic mode can be combined with its plagal to form a single mode that is a combination of the two:

Si vero ita disponuntur ut quisque autenticus iuncto sibi subiuagli suo unus indifferenter tropus habatur, et ex octo naturaliter quatuor fiant species quoque diapason quas autenticus et subiuagalis eius sibi vendicant, et unde constant, iungi

But if they are arranged in such a way that each authentic, with its plagal having been joined to it, is held to be one indifferent mode, and in such a way that four are made naturally out of eight, likewise the species of the octave,

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120 See Ciconia, Nova musica, II.24.
121 Bern of Reichenau, Prologus in tonarium, 7.16. Shortly thereafter Bern goes on to explain that some people prefer to classify such ambiguous chants as neither authentic nor plagal but rather as a separate category, called *medii toni*, “and because they can be found between the four individual authentic and plagal modes of this kind, they add these four to those eight and contend that they count 12 modes” (“et quia inter singulos quatuor autenticos et subiuagales huuismodi reperiri possunt, hos quatuor illis octo adiciunt, et duodecim tonos dinumerare contendunt”), 7.23.
et coadunari nesses est. Verbi gratia. In protum indifferenter statuendum quatuor priorum et quatuor sequentium specierum duae primae concurrunt, una quae est ab A. in a. altera quae est a D. in d.

which the authentic and its plagal claim for themselves, and from which they are composed, it is necessary that they be joined and united. For example, with respect to the protus that is to be built indifferently, the two first species of the four authentic and four plagal species come together, one that is from A to a, the other that is from D to d. ¹²²

Later in the treatise Wilhelm gives the name *tropus indifferens* to such a combination of authentic and plagal:

Quilibet autenticus tropus a finali suo in decimam chordam licenter, et non ulterius, praeter tetrardum, qui non nisi in nonum ptongum ascendent; infra finalem vero autenticus quisque in vicinum vel tertium, numquam in quartum descendit, nisi sit communis cantus, qui est tropus indifferens.

Any authentic mode ascends freely from its final to the tenth pitch and not beyond, with the exception of the tetrardus, which ascends only to the ninth pitch. But below the final each authentic mode descends to the neighbor or to the third, never to the fourth, unless the chant is common, which is the *tropus indifferens*. ¹²³

Like Bern, Wilhelm also discusses chants with limited ranges, but he does not give a name to the phenomenon as the former had done.¹²⁴ His approach to such chants differs from Bern’s in that he does not restrict himself to those that are confined to the range of the “common” diapente above the final. Instead Wilhelm describes how any narrow-range melody can be identified as belonging to either protus, deuterus, tritus, or tetrardus based on the correspondence of its range and melodic motion to certain principal pitches (*principalibus chordis*) of each modal pair (or *maneria*, although Wilhelm does not use the term). As Wilhelm reveals, his starting point for this explanation is Guido of Arezzo’s notion of *modi vocum* (“the modes of the pitches”),

which Guido introduces in his *Micrologus* (completed sometime between 1024 and 1033) in order to describe the modal affinity of certain pitches located a fourth below and a fifth above the finals of the protus, deuterus, and tritus pairs. Unmentioned by Wilhelm is his reliance as well on Hermannus Contractus’s *Musica* (likely written between 1048 and 1054), in which Hermannus takes up the topic of *modi vocum* and lays out a more comprehensive set of principal pitches for all the *maneriae*, including the tetrardus, as follows:

- **Protus:** A, D, A, D
- **Deuterus:** ♭, E, ♭, E
- **Tritus:** C, F, C, F
- **Tetrardus:** D, G, D, G.

Hermannus goes on to use these affinities as a means to identify the appropriate *maneria* for chants with a limited range:

> Accipe tetrachordum quocumque volueris, verbi gratia gravium, addito utrinque tono, habes terminos modorum qui sunt sedes troporum. Sunt autem quatuor tropi, et totidem vocum modi. Primus modus vocum est qui tono deponitur et prima specie diapente intenditur; hic habet aignmentem in hac antiphona, Prophetae praedicaverunt, et In tuo adventu, et similibus quaer sex chordas non

Take whatever tetrachord you like, for example, of the graves, and, with a tone having been added on both sides, you have the boundaries of the modes, which become the seats of the modes. But there are four modes, and there are as many *modi vocum*. The first *modus vocum* is that which descends by a tone and ascends by the first species of the diapente. This has its recognition in the antiphons

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125 Wilhelm defines the *modi vocum* as “certain properties of the species of song, that is, of the modes” (“*Modi vocum sunt proprietates quaedam specierum cantilenae, id est troporum*”). Wilhelm of Hirsau, *Musica*, 20.1. Wilhelm makes clear his debt to Guido shortly thereafter, saying “These diverse qualities of the neumes are named *modi vocum* by Guido, who ought to be mentioned, and who alone speaks about these things” (“*Quae neumarum diversae qualitates a memorando Guidone qui solus de his loquitur, modi vocum nominantur*,” Wilhelm of Hirsau, *Musica*, 20.4). For more on the implications of Guido’s *modi vocum* with respect to irregular finals and transposition, see Pesce, *The Affinities and Medieval Transposition*.

126 As Pesce notes, Guido recognizes affinities for only three of the basic modes (excluding the tetrardus) and limits affinity to the pitches a fourth below and a fifth above the final. Hermannus adds the appropriate affinities for the tetrardus and incorporates the pitches an octave above each final. Pesce, *The Affinities and Medieval Transposition*, 18–20 and 25–26. Richard Crocker also discusses the relationship between Hermannus and Guido in “Hermann’s Major Sixth,” 19–25.
excedunt. Hic modus in principalibus proti chordis, A, D, a, d, agnoscitur. *Prophetae praedicaverunt, In tuo adventu*, and in similar ones that do not exceed six pitches. This *modus* is recognized in the principle pitches of the protus, A, D, a, d.\(^{127}\)

Despite Wilhelm’s silence regarding his debt to Hermannus, he clearly is influenced by Hermannus’s adaptation of the *modi vocum* concept.\(^{128}\) Echoing Guido, Wilhelm first discusses the *modi vocum* as a means to explain unusual finals, but later he returns to the topic with respect to chants with a narrow range in a section that is very similar to Hermannus’s, including the use of most of the same chant examples:


The first *modus vocum* occurs wherever a pitch can be lowered by a tone and raised by the first species of diatessaron, as can be recognized on A, D, a, and d, the principal pitches of the protus, and therefore the same *modus* is joined indifferentely to the protus, just as this authentic antiphon, *Prophetae praedicaverunt,* shows.\(^{129}\)

Significantly, Wilhelm uses the adverb *indifferenter* (“indifferently”) to describe the connection of the first *modus vocum* to the protus *maneria*, suggesting that he viewed narrow-range chants as a phenomenon related to modal ambiguity. It is also worth noting that the example shared by Hermannus and Wilhelm, the antiphon *Prophetae praedicaverunt*, is a melody that also fits Bern’s definition of *communis*, being limited to a range that is shared by both authentic and plagal (i.e., C fa ut below the D final to A la

\(^{127}\) Hermannus Contractus, *Musica*, [Chapter 19].

\(^{128}\) There has been disagreement about whether Hermannus knew Guido’s work or arrived at the *modi vocum* concept independently. Pesce argues persuasively that Hermannus likely knew Guido’s formulation or something akin to it, for he notes that previous writers located the tetrardus only on G. See Pesce, *The Affinities and Medieval Transposition*, 26.

mi re a fifth above it). Some of the latter theorists’ other narrow-range examples are not restricted to Bern’s common diapente, however, such as their shared example for tritus, the antiphon Modicum, et non videbitis, which is a clear plagal melody, descending all the way to C fa ut below the F final but ascending only to A la mi re above it.

The noted theorist and compiler Frutolf of Michelsberg incorporates Wilhelm’s notion of indifferens into his own Breviarium de musica, written sometime after 1050. In his chapter on the modes, Frutolf copies Wilhelm’s description of indifferent authentic-plagal combinations nearly word-for-word. At the beginning of the next chapter, entitled “What the moderns think concerning the ascent of the modes” (“Quid moderni sentiant de ascensu troporum”), Frutolf again addresses indifferens, once more paraphrasing Wilhelm closely:

Omnis authentus a finali suo regulariter ascendit in octavum sonum, quod est diapason, licenter in nonum, raro autem, sed tamen aliquando in decimum, praeter septimum, qui non invent decimum locum; descendit autem quisque in secundum vel tertium, nunquam vero proprie in quartum, nisi sit cantus indifferens inter ipsum et plagin suum.

Every authentic mode regularly ascends from its final to the eighth pitch, which is a diapason, freely to the ninth pitch, and rarely, but nevertheless sometimes, to the tenth pitch, except for the seventh mode, which does not come upon the tenth pitch. But each descends to the second or the third pitch, but never properly to the fourth, unless the song is indifferent between the authentic and its plagal.

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130 Prophetae praedicaverunt is the first antiphon for lauds on the fourth day before Christmas (Antiphonale romanum, 210). Its modern classification is mode 1. Ciconia also cites this melody, as will be discussed below.

131 Modicum, et non videbitis, is the antiphon to the Magnificat for Vespers on the Saturday before the third Sunday of Easter (Antiphonale romanum, 397).

132 Alexander Rausch posits a date around 1070 in Die Musiktraktate des Abtes Bern von Reichenau, 123.

133 Frutolf makes only a few minor alterations to Wilhelm’s text, with no change in meaning: “Si vero ita disponantur, ut quisque authentus iuncto sibi subiugali suo unus indifferenter tropus habeatur, et ex octo quatuor naturaliter fiant, species quoque diapason, quas authentus et subiugalis eius sibi vindicant singulariter et unde constant, iungi necesse est et coadunari.” Frutolf of Michelsberg, Breviarium de musica, chapter 7.

134 Frutolf of Michelsberg, Breviarium de musica, chapter 8. Compare Wilhelm of Hirsau, Musica, 26.1, quoted above. Note that Frutolf trims Wilhelm’s passage “nisi sit communis cantus, qui est tropus
Significantly, the notion of *indifferens* also was incorporated into a branch of the surviving manuscript tradition of Bern’s *Prologus in tonarium*. Among the extant manuscripts is a group that includes numerous interpolations, which Rausch believes were written by Frutolf. Included among the additions is a lengthy passage after Bern’s summary of the eight modes in which the interpolator uses the words *indifferenter* and *indifferentes* in his discussion of chants whose ranges combine authentic ascent and plagal descent:

Antiquitus enim autenti cum plagis
etsi non aequaliter intendebantur,
indifferenter tamen omnes in
quartam vel quintam chordam
remittebantur, quod adhuc
multorum cantuum indifferentes
inter autentos et subiugales
descensus testantur.

For long ago authentics used to
ascend with plagals, although not
equally, nevertheless all used to
descend indifferently to the fourth
or fifth note [below the final], to
which the indifferent [natures] of
many songs, between authentic and
plagal descents, still testify.

The two terms (*indifferens* and *communis*) appear together in a small anonymous *Tractatulus* that survives as part of a collection of treatises and musical works assembled

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135 Rausch summarizes the surviving manuscript tradition of the treatise and presents a hypothetical stemma in *Die Musiktraktate des Abtes Bern von Reichenau*, 17–29.

136 “I view Frutolf . . . as author not only of the *Breviarium* but also of the interpolations in Bern’s *Prologus*” (“Frutolf betrachte ich . . . als Verfasser nicht nur des *Breviarium*, sondern auch der Interpolationen in Berns *Prologus*”). Rausch, *Die Musiktraktate des Abtes Bern von Reichenau*, 123. Rausch’s discussion of the interpolations is included in his evaluation of the authorship of Martin Gerbert’s Anonymous 1, which Joseph Smits van Waesberghe attributed to Bern in his 1979 edition of the treatise, giving it the title *De mensurando monochordo*. Rausch concludes that *De mensurando monochordo* was assembled later, perhaps around 1100, by an anonymous theorist who had access both to Frutolf’s *Breviarium* and to the interpolations in Bern’s *Prologus in tonarium* (Rausch, *Die Musiktraktate des Abtes Bern von Reichenau*, 117–27). Jane Warburton also rejects Bern’s authorship of *De mensurando monochordo* but posits an alternative relationship between it and the interpolations, suggesting that *De mensurando monochordo* may have been written by a contemporary of Bern and later served as a source for the interpolations. She does not discuss the authorship of the interpolations, however (Warburton, “Questions of Attribution and Chronology”).

at the monastery in Regensburg before the mid-fourteenth century.\textsuperscript{138} The origin of the short work is unclear. Marie Louise Göllner hypothesizes that the *Tractatulus* was a later addition to the collection, a complement to the main treatise on chant that was compiled in the last years of the thirteenth century.\textsuperscript{139} Göllner argues for the work’s later incorporation in part because of its unique contents, contending that “The differences [between the *Tractatulus* and the main treatise], in particular the importance attributed to the common and indifferent modes, may well reflect [the *Tractatulus*’s] slightly later date.”\textsuperscript{140} The source material for the *Tractatulus* seems to have been an interesting mix of old and new ideas. On the one hand, the treatise lays out a limited gamut (Γ to the A just over two octaves above it), one that recalls the gamut described in Pseudo-Odo of Cluny’s *Dialogus de musica* from the early eleventh century.\textsuperscript{141} On the other hand, the *Tractatulus* constructs the gamut with the more modern system of overlapping hexachords.\textsuperscript{142} The approach to hexachords in the *Tractatulus* is unorthodox, however, eschewing them on the upper F fa ut and G sol re ut but including a ficta hexachord on the F below Γ ut, thus allowing for a low B-flat (see Figure 1).\textsuperscript{143}

\textsuperscript{138} The collection survives as the manuscript Cln 5539 of the Bavarian State Library in Munich. For a discussion of the manuscript’s contents and provenance, see Marie Louise Göllner’s critical edition (Göllner, ed., *The Manuscript Cod. lat. 5539 of the Bavarian State Library*). According to Göllner, much of the manuscript’s content was assembled shortly before 1300. The *Tractatulus* seems to have been added later, along with copies of numerous theoretical works by Guido.

\textsuperscript{139} Göllner, ed., *The Manuscript Cod. lat. 5539 of the Bavarian State Library*, 57 and 109–10. The original collection seems to have included just two treatises, the first a treatise on chant (including a tonary), and the second an abbreviated version of Franco of Cologne’s treatise on mensuration.

\textsuperscript{140} Göllner, ed., *The Manuscript Cod. lat. 5539 of the Bavarian State Library*, 110.

\textsuperscript{141} As will be discussed in the next chapter, the gamut of Pseudo-Odo of Cluny extended from Γ to the A just over two octaves above it (Pseudo-Odo of Cluny, *Dialogus de musica*, chapter 18). Guido’s gamut, in contrast, extended an additional fourth, to D. The addition of E was not commonplace until the thirteenth century, a consequence of the conceptual shift from tetrachords to hexachords.

\textsuperscript{142} More will be said about the gamut and hexachords in the next chapter.

\textsuperscript{143} Göllner notes the absence of the hexachord on the upper G sol re ut but is silent about the synemmenon hexachords, including the ficta one.
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<tr>
<th>Hexachords</th>
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<td>A</td>
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<td>F fa</td>
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<td>A</td>
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<td>A</td>
<td>A re mi</td>
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<td>Γ</td>
<td>Γ re ut</td>
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<td>[F ut]</td>
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Figure 1: Hexachords and pitch names according to Anonymous, *Tractatulus*.\(^{144}\)

Whatever the origins of the *Tractatulus*, the work is significant in that it lays out succinct definitions for both *indifferens* and *communis* and presents them as alternatives for songs that are not definitively authentic or plagal:

- Cantus dicitur autenticus melodia cuius diapente recipit inferius et diatesseron superius. Recipit e converso plagalis diatesseron inferius et diapente superius. Commoris vero cantus est, qui autentico et plagali semper commune vel medium percurret diapente, aut aequo progreditur utroque. Est autem cantus indifferens, qui chordas
- A chant is called authentic whose melody is made up of a diapente below and a diatessaron above. Conversely, a chant is called plagal whose melody is made up of a diatessaron below and a diapente above. But a *communis* chant is that which runs through the diapente that is common or neutral with respect to authentic and plagal. But an *indifferens* chant is

\(^{144}\) Anonymous, *Tractatulus*, sentences 13–16. I have preserved the author’s unorthodox pitch names, which treats the ordering of *vox* syllables in an unsystematic way. The author does not discuss the ficta nature of the hexachord that begins below Γ ut, nor does he include the starting pitch in his list of pitches in the gamut. He merely notes that there are two synemmenon hexachords, then commences his list of pitches with Γ re ut, A re mi, B fa ♭ mi, etc.
indifferenter omnes autentici tangit et plagalis.

that which touches all the pitches of authentic and plagal indifferently.\(^{145}\)

When Ciconia takes up the terms in his *Nova musica* in the first decade of the fifteenth century, he incorporates a new category, *differens*, which describes those chants that are clearly differentiated as either authentic or plagal.\(^{146}\) If not for the further addition of the unrelated terms *prosaicus* and *metricus*, Ciconia would have a clear tripartite division of chant based on ambitus. As it is, he nevertheless presents very clear definitions for the ambitus-related terms, supplemented by distinctive musical examples. He defines the terms in two different sections of the work, but there is little substantial difference between the two sets of definitions.\(^{147}\) He introduces the concepts early in his second book:

\[
\text{Differens autem cantus est in autentis qui habet autenticam elevationem et caret plagali depositione, ut antiphona Gloria tibi trinitas, Similiter differens est in plagalibus qui assumit plagalem depositionem et caret autentica elevatione, ut antiphona O sapientia, O rex gloriae. Indifferens vero est qui assumit autenticam elevationem et capit plagalem depositionem, ut Graduale Anima nostra. Comunis est qui componitur ex comuni specie diatessaron vel diapente, ut antiphona Prophetae predicaverunt.}
\]

\[
\text{Now a differens song in the authentics is that which has an authentic ascent and lacks a plagal descent, as in the antiphon Gloria tibi Trinitas. Similarly a differens song in the plagals is that which adopts a plagal descent and lacks an authentic ascent, as in the antiphons O Sapientia and O rex gloriae. But an indifferent song is that which adopts an authentic ascent and assumes a plagal descent, as in the gradual Anima nostra. A communis song is that which is composed of the common species of the diatessaron or the diapente, as in the antiphon Prophetae praedicaverunt.}\(^{148}\)

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\(^{146}\) On Ciconia and the *Nova musica*, see the introduction of Oliver Ellsworth’s critical edition of the treatise, pp. 1–39. Barbara Haggh has identified a number of plausible manuscript sources for the work, many associated with Bologna, in her article “Ciconia’s Citations in *Nova musica*.”

\(^{147}\) The two locations in which Ciconia defines these terms in his *Nova musica* are II.28 and IV.4.

Ciconia’s definitions clearly follow in the tradition mapped out above. Thus, a *differens* chant is easily classifiable with respect to its mode, whether authentic or plagal, as defined by its range above and below the final. Ciconia cites at least one chant example of each type, although he does not actually include the notated examples in the treatise.149 His first example, the antiphon *Gloria tibi Trinitas*, is a prototypical mode 1 melody, with a range from C fa ut below the final to D la sol re an octave above.150 The antiphons *O Sapientia* and *O rex gloriae* both are clear mode 2 melodies, with ranges from A re below the final to b fa a sixth above the final.151 An *indifferens* chant, meanwhile, has both the ascent associated with the authentics and the descent associated with the plagals. Ciconia’s example is the gradual *Anima nostra*, a wide-ranging chant with an F final and a range from C fa ut below the final to F fa ut an octave above the final.152 A *communis* chant lacks both the ascent of the authentics and the descent of the plagals, spanning a range of only a fourth or a fifth above the final. As his example, Ciconia cites the now-familiar antiphon *Prophetae praedicaverunt*, a melody with a D final and a narrow range from C fa ut below the final to A la mi re a fifth above it.

After Ciconia, the definition of these three terms seems to have evolved, at least among those theorists, including Aaron, who discuss them as part of the full five-part system found in Ciconia. Unfortunately, the theorists’ discussions of these terms also

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149 For a complete list of Ciconia’s citations of chant and cross-references to surviving sources of these chants, see Barbara Haggh, “Ciconia’s *Nova musica*,” 8–12.
150 *Gloria tibi Trinitas* is the first antiphon for second vespers on Trinity Sunday (*Liber usualis*, 914).
151 *O Sapientia* is the Great Antiphon for December 17 (*Liber usualis*, 340). *O rex gloriae* is the antiphon to the Magnificat for second vespers on the feast of the Ascension (*Liber usualis*, 853). Although the melodies are of similar construction, they do not share the same melody, as Oliver Ellsworth erroneously states in *Johannes Ciconia: Nova musica and De proportionibus*, 297n57.
152 *Anima nostra* is the gradual for one of the masses for two or more martyrs (*Liber usualis*, 1167). It is classified as mode 5.
become markedly less clear. Among these is the Italian theorist Jacobus Theatinus, writing around the middle third of the fifteenth century, who describes them as follows:


Master: Why is it called differens? Disciple: It is called differens because it has a full difference in itself, as presently in the antiphon Ecce nomen Domini. Master: Why is it called indifferentes? Disciple: It is called indifferentes because it does not have a full difference in itself, as presently in the antiphon O Domine salvum me fac. Master: Why it is called communis? Disciple: It is called communis because it is composed from the common species of the diapente above, from the common species of diatessaron below. . . . Disciple: Why is it called differens? Master: It is called differens when there is a difference in authentic and plagal, that is, it is singular. Disciple: Why is it called indifferentes? Master: Because one does not at all differ from the other, that is, it is common.\textsuperscript{154}

In two separate definitions, Jacobus describes differens vaguely as having “a full difference in itself” and, later, as having a “difference in authentic and plagal.” His example, the antiphon Ecce nomen Domini, is a clear mode 1 melody, spanning a range from C flat one note below the final to the D la sol re an octave above.\textsuperscript{155} Although he is hardly clear on the point, one may infer that Jacobus agrees with Ciconia that a differens chant is easily classifiable as either authentic or plagal because of its distinctive ambitus. However, he provides an example only of an authentic chant, in contrast to Ciconia’s examples of both authentic and plagal. There is less agreement in Jacobus’s description

\textsuperscript{153} Angiolamaria Guarneri Galuzzi’s critical edition of the treatise reads “albero,” but “altero” seems to have been intended.

\textsuperscript{154} Jacobus Theatinus, De partitione litterarum monocordi, chapters 37 and 38.

\textsuperscript{155} Ecce nomen Domini is the antiphon to the Magnificat for vespers on the Saturday before the first Sunday of Advent (Liber usualis, 317).
of *indifferens*, which he says “does not have a full difference in itself,” such that “one does not at all differ from the other.” As his example, he cites the antiphon *O Domine, salvum me fac*, an ambiguous melody with a D final that spans a limited range from C fa ut below the final to A la mi re above.\(^{156}\) Thus Jacobus’s *indifferens* seems closer to Ciconia’s *communis*.\(^{157}\) As for *communis*, Jacobus says only that it “is composed from the common species of the diapason above, from the common species of the diatessaron below.” This definition seems slightly confused, for in this context it is not at all clear what Jacobus means by “the common species of diapente above.” Does he mean the diapente that is directly above the final? If so, the combination of the “common species of diapente above” and the “common species of the diatessaron below” would produce merely a plagal construction, which hardly requires its own category. If instead he is referring to the upper portion of each mode that is specific to the authentics (i.e., the region from a fifth above the final to an octave above the final), it would have been more appropriate for him to describe the space as a diatessaron, not a diapente. Nevertheless, the latter interpretation seems most likely, for it would describe a chant that has both the ascent of an authentic and the descent of a plagal, thus equating Jacobus’s *communis* with Ciconia’s *indifferens*. Unfortunately Jacobus does not supplement his definition with an example from the chant repertory, making a definitive answer difficult.

The three terms of classification also appear in the anonymous *Quaestiones et solutiones*, a practical handbook compiled in the last years of the fifteenth century or the

\(^{156}\) *O Domine, salvum me fac* is the second antiphon for lauds on the first Sunday of Lent (*Antiphonale romanum*, 307). It is classified as mode 2, perhaps because of the greater number of notes below the so-called ‘chord’ of the mode (F fa ut), a topic that will be discussed in chapter 5 of the present study.

\(^{157}\) Indeed, Jacobus concludes his second definition of *indifferens* with the words “it is common” (“commune”).

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first years of the sixteenth.\textsuperscript{158} The work is largely a compilation and reworking of other sources, as will be discussed more fully in the next chapter of the present study, regarding the gamut.\textsuperscript{159} Although there is no exact match for the author’s treatment of the three ambitus-related terms in previous works, there is good reason to believe that his source was in the tradition of Jacobus’s treatise, if not the \textit{De partitione} itself, for the author of the \textit{Quaestiones} describes these terms in a manner that is very similar to that in Jacobus’s work, though with greater succinctness and without reference to musical examples:

\begin{quote}
Indifferens quidem dicitur eo quod non habet plenam differentiam.

Differens quidem dicitur eo quod habet plenam differentiam.

Communis dicitur eo quod habet autenticam elevationem et plagalem dispositionem.
\end{quote}

It is called \textit{indifferens} because it does not have a full difference. It is called \textit{differens} because it does have a full difference. It is called \textit{communis} because it has an authentic ascent and a plagal descent.\textsuperscript{160}

In language that is strikingly similar to that of Jacobus, the author differentiates a \textit{differens} and an \textit{indifferens} chant by whether it possesses a “full difference,” but here the concept receives no elaboration or clarification. Only the description of \textit{communis} is unambiguous. In wording that diverges significantly from Jacobus’s, the author states clearly that a \textit{communis} chant has both “an authentic ascent and a plagal descent” with terms that are highly reminiscent of Ciconia’s description not of \textit{communis} but of

\textsuperscript{158} The \textit{Quaestiones et solutiones} survives in just one manuscript, copied by Johannes Materanensis in 1509 and now in the Biblioteca Augusta in Perugia. A critical edition was edited and published by Albert Seay in 1977.

\textsuperscript{159} For a discussion of the sources and relationships between the \textit{Quaestiones} and other works, see Seay’s introduction to his critical edition, pp. iii–iv, and Balensuela, “The Borrower Is Servant to the Lender.”

\textsuperscript{160} Anonymous, \textit{Quaestiones et solutiones}, f. 47v. The definitions of \textit{differens} and \textit{indifferens} are nearly identical to Jacobus’s, other than the addition of “quidem” to both definitions and the omission of any musical examples. The wording of the definition of \textit{communis} in the \textit{Quaestiones} is notably different, however, which may suggest a different source for the work, one that was in the same orbit as Jacobus but no longer survives.
indifferens.\textsuperscript{161} Thus, taken together, Jacobus and the Quaestiones appear to represent an evolution of the classification system that swaps the definitions of indifferens and communis.

Turning now to Aaron, the theorist’s discussion of these three terms in the De institutione harmonica is brief and vague, and, like the author of the Quaestiones, he does not provide any musical citations to help clarify his descriptions:

\begin{align*}
\text{Differens ordo dicitur quando antiphonae tota compositio perfecta est, ut iuxta suum terminum ad diapason usque ascendat.} \\
\text{Indifferens est quando cantilena eiusmodi compositionem non habet. . . . Communis demum ordo is dicitur qui ex Diapente et Diatessaron constat.}
\end{align*}

Although Aaron’s description of differens is the clearest of his three definitions, it is nevertheless incomplete, at least in comparison to Ciconia’s description of the term. Aaron describes the composition of a differens chant as being “perfect, such that it ascends all the way to the diapason with respect to its own final” (I.1.19). This is a serviceable description of an authentic chant, but it ignores the fact that (for Ciconia at least) a differens chant also may be plagal.\textsuperscript{163} About an indifferens chant, Aaron says only that it does not have the construction of a differens one, an extremely vague description

\begin{footnotes}
\item[161] Compare Ciconia’s “autenticam elevationem et . . . plagalem depositionem” with the anonymous author’s “autenticam elevationem et plagalem dispositionem.”
\item[162] Aaron, De institutione harmonica, I.1.19–20, 25.
\item[163] As was noted above, how plagals fit into Jacobus’s understanding of the classification system is not entirely clear. Recall that for differens, which Jacobus defines as having “a difference in authentic and plagal,” he gives an example only of an authentic melody. Recall too that his definition of communis is ambiguous, able to be read as describing either a plagal construction or something akin to Ciconia’s indifferens. The Quaestiones’ clearer definition of communis suggests that both authors likely incorporated plagal chants under the definition of differens, but a reader of Jacobus alone may fail to reach that conclusion.
\end{footnotes}
that could be taken to mean that any other melodic construction, including plagal, falls into this category. Aaron compounds the confusion by following his definition of *indifferens* with a discussion of *prosaicus* and *metricus* before concluding with *communis*.\footnote{The difficulty of Aaron’s discussion of these terms is exacerbated by its placement, well before Aaron has introduced the very concept of mode and its division into authentic and plagal.} Unfortunately, his description of a *communis* chant is similarly vague, for he says only that such a melody “consists of diapente and diatessaron.” Yet despite its brevity, the definition is at least reminiscent of Jacobus’s description of *communis* (“composed from the common species of the diapente above, from the common species of diatessaron below”). Consequently, although a contemporaneous reader may well have been befuddled by Aaron’s definitions, it seems reasonable to assume that they stem from the same evolved tradition reflected in the writings of Jacobus and the *Quaestiones*. Whether Aaron’s own understanding of the terms was accurate is another question, one that cannot be answered fully based on his brief discussion, but his incomplete definition of *differens* may suggest otherwise.

The other two elements of the overall five-part system, the terms *metricus* and *prosaicus*, have a less extensive pedigree. Indeed, the earliest surviving instance of the terms being used in this manner appears to be in Ciconia’s treatise. Unfortunately, Ciconia is much less clear with respect to *metricus* and *prosaicus* than he is about the ambitus-related terms. As he does with the terms regarding ambitus, Ciconia defines *metricus* and *prosaicus* in two different places. His lengthiest definitions are in book two, where he describes them as follows:

```plaintext
Prosaicus est multis verbis et sillabis abundans, ut in

A *prosaicus* chant is overflowing with many words and syllables, as
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Although Ciconia has much to say regarding the two types, his actual definitions are rather succinct. He describes a *prosaicus* chant simply as “overflowing with many words and syllables,” and a *metricus* chant as one that “does not overflow with many neumes but, as if scanning, with words with neumes.” Unfortunately, his brevity comes at the expense of clarity, for it is not entirely clear from these two definitions alone exactly how the terms relate to one another. Indeed, in his critical edition and translation of Ciconia’s treatise, Oliver Ellsworth suggests that Ciconia’s definition of *prosaicus* here may have been incomplete.

Ciconia provides a clearer link between the terms in the fourth book, where he presents a slightly different definition of *prosaicus*:

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166 Ciconia’s reference to “scanning” (“quasi scandens”) in his definition of *metricus* suggests a connection to the act of scanning Latin poetry, that is, the measurement of poetic feet, as will be discussed below.
A metricus chant is that which does not overflow with many neumes but, as if scanning, with words with neumes. A prosaicus chant is that which overflows with many neumes with words and syllables.168

Thus according to Ciconia’s second set of definitions, a prosaicus chant “overflows with many neumes with words and syllables,” while a metricus one does not. Based on Ciconia’s second set of definitions, Ellsworth offered the following interpretation of prosaicus and metricus:

On the basis of that more complete definition [of prosaicus in book four], it would seem that a prosaic chant has a very melismatic style in which the melody is not governed by text; a metric chant is less melismatic and the text and melody “flow” or progress together. There is nothing here to suggest that the distinction rests on the prose or verse nature of the text; the examples given for each are antiphons.169

But there is one potential problem with Ellsworth’s assumption that the overriding distinction between prosaicus and metricus is that the former is melismatic and the latter is less so: in Ciconia’s first discussion of the terms, he includes “the melodies of sequences” among his list of prosaicus genres, along with “processionals, antiphons, . . . and lengthier responsories.” Unlike the other genres that he names, sequences generally are syllabic, which suggests that there is more to Ciconia’s understanding of the terms than Ellsworth assumes. It may be that Ciconia includes sequences among the prosaicus genres because of the “prose” quality of earlier sequences, in which the texts of successive paired couplets tended to vary considerably in syllable length and lacked both a regular accent pattern and end-rhyme scheme (hence the oft-used term prosa).170 Even

168 Ciconia, Nova musica, IV.4.
169 Ellsworth, ed., Johannes Ciconia: Nova musica and De proportionibus, 297n56.
170 As Richard Crocker explains, “In earlier sequences the text was not governed by regular accent patterns or by end-rhyme, hence was indeed ‘prose’. After 1000 the texts scanned and rhymed to an increasing
later sequences, whose texts tended to be more verse-like, featured melodies whose successive phrases varied considerably in melodic contour, which may explain why Ciconia specifically cites the “melodies of sequences.”

Ciconia provides chant examples only with the first set of definitions. His sole example of a *prosaicus* chant, the antiphon *Isti sunt sancti qui habebant loricas*, is quite obscure. Indeed, Ellsworth was not able to identify the chant at the time of his edition. More recently, Barbara Haggh has located a version of the chant in an early-eleventh-century gradual and troper (Rome, Biblioteca Angelica 123), a manuscript with clear ties to Bologna, where she believes Ciconia may have visited in order to consult materials during his preparation of the *Nova musica*. The lengthy melody, which is notated with unheighted neumes, abounds in two- and three-note melismas. Lengthier melismas also are present, especially on the word “alleluia.” Thus the chant may be said to fit Ellsworth’s notion of *prosaicus* as a melismatic type of chant.

Ciconia offers two examples for *metricus*, the chants *Virgo Dei genitrix* and *Novit Dominus*. Ciconia’s citation of *Virgo Dei genitrix* is complicated by the fact that numerous surviving chants bear that incipit, including several different antiphons, a hymn, and verses for two graduals and an alleluia. Even if we accept Ciconia’s description of both his examples as antiphons, there are still multiple antiphons that begin with this incipit. In the notes to his edition, Ellsworth focused on just one antiphon...
version from the thirteenth-century Worcester Antiphoner, despite the fact that the same antiphoner contains two other antiphons with the same incipit but differing texts and melodies.\textsuperscript{173} Nevertheless, despite the uncertainty over which antiphon version of \textit{Virgo Dei genitrix} Ciconia may have had in mind, for the most part each agrees with Ellsworth’s notion of \textit{metricus}, with a generally limited number of notes per each textual syllable.\textsuperscript{174} The one exception, as Ellsworth notes, is a lengthy melisma in the version that he cites, at the conclusion of the text. Beyond the antiphons, there are several other settings of the “Virgo Dei genitrix” text that range from highly melismatic to rigidly syllabic. On the one hand, there are several highly melismatic settings of the most commonly used text that function as verses for two graduals and an alleluia.\textsuperscript{175} In contrast to these is a hymn version that is entirely syllabic.\textsuperscript{176} The text of the hymn consists of four strophic verses, of which the text that is most commonly used in antiphons and verses is merely the first. Significantly, each verse also scans as Latin poetry, in the form of elegiac distich (i.e., alternating lines of dactylic hexameter and dactylic pentameter), as follows:\textsuperscript{177}

\textsuperscript{173} Ellsworth cited the version of \textit{Virgo Dei genitrix} that is found on page 303 of the Antiphoner, bearing the text “Virgo Dei genitrix virga est, flos filius eius.” He gave no explanation for his choice. See Ellsworth, ed., \textit{Johannes Ciconia: Nova musica and De proportionibus}, 297n56. The other versions are on page 47 and 361, respectively. The former carries the more familiar text “Virgo Dei genitrix, quem totus non capit orbis,” while the latter is a setting of the incipit alone. For a facsimile of the Worcester Antiphoner with critical commentary, see \textit{Antiphonaire monastique de Worcester}.

\textsuperscript{174} Neumes of two and three notes are common, with the occasional grouping of four also present.

\textsuperscript{175} The two gradual verses, for the graduals \textit{Benedicta et venerabilis es} (\textit{Liber usualis}, 1264) and \textit{Dolorosa et lacrimabilis es} (\textit{Liber usualis}, 1633v), have similar but slightly differing melodies. The alleluia verse is for the feast of the Maternity of Mary (\textit{Liber usualis}, 1684).

\textsuperscript{176} The hymn is for feasts of the Virgin Mary (\textit{Liber usualis}, 1865).

\textsuperscript{177} The verse follows the ancient model of metrical composition, in which feet are constructed according to long and short vowel quantity. Dactylic verse uses mainly dactyls (long-short-short) and spondees (long-long). Each line of dactylic hexameter consists of six feet, with a caesura in the third or fourth foot (marked by a †). Each line of dactylic pentameter has two parts, each consisting of two and a half feet, with a dieresis between the two parts of the line (marked by a //).
Recalling that Ciconia himself refers to the act of scanning (“quasi scandens”) in both definitions of *metricus*, it is significant that even the abbreviated, antiphon- and verse-only version of the text scans as metric poetry.\(^{180}\)

Ciconia’s example of *Novit Dominus* is more straightforward, for just two texts survive that bear that incipit, one clearly a derivative of the other.\(^{181}\) The chant survives only as an antiphon, and neither text appears to scan in a recognizable Latin meter.

Among the variants readily available for examination, each shows a similar relationship between text and music, proceeding mainly with one or two notes per syllable as well as an occasional three- or four-note grouping.\(^{182}\) Thus *Novit Dominus* seems more in line with Ellsworth’s interpretation of the term *metricus*. Nevertheless, given Ciconia’s citation of sequence melodies as well as the verse nature of *Virgo Dei genitrix*, it seems

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178 The first foot of this line is irregular, with the long-by-nature ‘o’ of ‘Virgo’ standing in for an expected short syllable. Such irregularities often were employed by poets for special effect, and thus it is perhaps not coincidental that the irregularity coincides with the word ‘Virgo’.

179 The ‘Amen’ is appended both textually and musically and thus is not scanned.

180 Ellsworth seems not to have considered the possibility that such an antiphon text might be written in verse when he argued that “There is nothing [in Ciconia’s definitions] to suggest that the distinction rests on the prose or verse nature of the text; the examples given for each are antiphons” (Ellsworth, ed., *Johannes Ciconia: Nova musica and De proportionibus*, 297n56). For an introduction to such versified antiphons, see Björkvall and Haug, “Performing Latin Verse.”

181 Compare the text “Novit Dominus viam justorum qui in lege eius meditantur die ac nocte,” for the Feast of All Saints, with the similarly constructed text “Novit Dominus vias Innocentium qui non steterunt in vias peccatorum,” for the Feast of the Holy Innocents.

182 See, for instance, the version in the Worcester Antiphoner (p. 395).
that there is more to Ciconia’s definition of *prosaicus* and *metricus* than Ellsworth assumes.

Jacobus Theatinus is the next to discuss the two terms, again in conjunction with the three ambitus-related terms discussed above, in his *De partitio licterarum monocordi*. In two successive chapters, he presents two very different definitions of *metricus* and *prosaicus*:

Master: Why is it called *metron*?
Disciple: From the Greek. In Latin, it is *scandor*, as in the antiphon *Hodie intacta Virgo*. Master: Why is it called *prosaicus*? Disciple: It is called *prosaicus* because it does not retain a rule in itself, as nowadays in the sequence *Christi hodierna et autem: Ad templi huius limina*. . . Master: It is called *metricus* because there are as many neumes as there are syllables. Disciple: Why is a chant called *prosaicus*? Master: Because it is prolonged, in practice it is called *prosaicus* or *prolixus*.

In his first treatment of the terms, Jacobus is quite vague. He limits his explanation of *metricus* to etymology, connecting the term to the Greek word *metron* (measure, meter, verse) and offering a curious Latin alternative, *scandor*. Regardless of Jacobus’ intent with the word *scandor*, it clearly is related to the verb *scando*, -ere (to

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183 Angiolamaria Guarneri Galuzzi emends this to *metro* in his critical edition of the treatise, but the Greek word *metron* (μέτρον) makes more sense, as will be discussed below.
184 Galuzzi reads this as “. . . ut antiphona *Hodie* *intacta* *Virgo*,” but it seems more likely that Jacobus was referring to the antiphon *Hodie intacta Virgo*, from the Office for Christmas Day.
185 According to Galuzzi’s critical edition, the manuscript reads *Ad templi hec limina*, which most likely refers to the sequence *Ad templi huius limina* (see *Analecta hymnica* 7, 242–43). Galuzzi leaves the citation unchanged.
186 Jacobus Theatinus, *De partitio licterarum monocordi*, chapters 37 and 38.
187 Presumably Jacobus has in mind a hypothetical third-declension noun (scandor, -oris) rather than a first-person, passive, present-tense verb, although no lexicons that I have reviewed include such a noun. Either way, a search of the online *Thesaurus Musicarum Latinarum* yields no other instances of the word *scandor* in Latin music theory treatises.
scan, as in to analyze the metrical feet of poetry), which, as noted, Ciconia also uses in reference to this category. As an example of the type, Jacobus offers the antiphon *Hodie intacta Virgo*, a melody for the Office on Christmas Day that survives in numerous antiphonaries. The antiphon is largely syllabic, with occasional two- and three-note neumes, so it does fit Ellsworth’s basic interpretation of *metricus*. At the same time, however, the text of the antiphon consists of three lines of rhythmical late-medieval verse, in which stress accent typically replaces vowel quantity in the construction of metrical units. The meter is a rhythmical adaptation of trochaic septenarius, in which each line is divided into two parts, the first of which contains eight syllables in trochaic meter (long-short), the second seven:

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Hodi|e in|tacta| Virgo // Deum| nobis| genu|it
Tene|ris in|dutum| membris // quem lac|tare| meru|it
Omnes| ipsum| ado|remus // qui ve|nit sal|vare| nos.
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Moreover, in at least three surviving sources the melody appears in a quasi-strophic context. In these sources the antiphon melody appears three successive times, each with a different text but each beginning with the word “hodie.” Like the first antiphon “verse,” the two subsequent verses are written in the same rhythmical trochaic septenarius:

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188 See, for instance, the version in the Worcester Antiphoner (p. 32).
189 A search of the online Cantus database yields three antiphonaries that make use of the three successive antiphons. The earliest originated in Rome in the late eleventh or early twelfth century for the nuns of San Sisto Vecchio; the antiphoner was sent to the monastery of Sant’Eutizio di Norcia sometime around 1219 (Rome, Biblioteca Vallicelliana, C.5, ff. 28v–29r). They also appear much later in two antiphonaries from the Benedictine monastery of Saints Ulrich and Afra in Augsburg. The first is dated 1459 (München, Bayerische Staatsbibliothek, Clm 4303, ff. 57r–58v). The latter is dated 1501 and thus postdates Jacobus (München, Bayerische Staatsbibliothek, Clm 4306, ff. 17r–17v).
For *prosaicus*, Jacobus says only that such a chant “does not retain a rule in itself,” offering as examples the sequences *Christi hodierna* and *Ad templi huius limina*. Once again we find the unexpected citation of sequences, a typically syllabic genre, for *prosaicus*, which stands directly at odds with Ellsworth’s interpretation of the term as denoting a melismatic style. The text of the ninth-century sequence *Christi hodierna* is an excellent example of the early, prose-like sequence, with its highly variable syllabic counts and its lack of a regular accent pattern and end-rhyme scheme. The text of the sequence *Ad templi huius limina* is similarly irregular in construction. Given these examples for both *metricus* and *prosaicus*, it seems highly plausible that for Jacobus the terms do indeed include a distinction between prosaic and metric structures in the text.

On the other hand, Jacobus’s second set of definitions appears to be more in line with Ellsworth’s interpretation of the terms. Jacobus is particularly clear in his second definition of *metricus*, about which he says “there are as many neumes as there are syllables.” Jacobus’s explanation of *prosaicus* is less helpful, however, for he says only that “it is prolonged” and introduces an alternative name for the category, *prolixus*. The definition “it is prolonged” as well as the adjective *prolixus* (long, extended, stretched far

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190 The second half of this line is irregular, having one extra syllable (8+8). The expected accent pattern works best by taking the ‘ia’ of ‘iacentem’ as a quasi-pickup syllable.


192 For the text of *Ad templi huius limina*, which was used for the consecration of a church, see *Analecta hymnica* 7, 242–3.
out) may well suggest a melismatic style, in conjunction with Ellsworth’s interpretation. Unfortunately, Jacobus offers no additional chant examples in this chapter, leaving the “prolonged” nature of *prosaicus* without illustration. Nonetheless, it appears that for Jacobus, at least, the terms carry both structural and stylistic connotations.

The anonymous author of the *Quaestiones et solutiones* has even less to say about these terms, limiting his comments to just two short sentences:

<table>
<thead>
<tr>
<th>Metricus dicitur a metron193 graece, latine scandere, ut antiphona Facti sumus sicut consolati. Prosaiscus quidem dicitur eo quod non retinet regulam sequens, ut sunt Alleluya.</th>
<th>It is called <em>metricus</em> from the Greek <em>metron</em> and from the Latin <em>scandere</em>, as in the antiphon <em>Facti sumus sicut consolati</em>. It is called <em>prosaicus</em> because, carrying on, it does not retain a rule, as are the Alleluias.194</th>
</tr>
</thead>
</table>

Despite the passage’s brevity, it is clearly in the same tradition as Jacobus, as shown by the similarity of some of the wording. As Jacobus does in his first discussion of *metricus*, the author of the *Quaestiones* confines his explanation of the term to etymology, relating the word, as Jacobus had done, to the Greek noun *metron* and the Latin verb *scandere*. As his example, the author cites the antiphon *Facti sumus sicut consolati*, a chant that has qualities from both meanings of *metricus* already discussed. On the one hand, it is mainly syllabic, with occasional two- and three-note neumes. At the same time, the antiphon appears in a quasi-strophic manner in some sources, although the texts of the successive “verses” are too short to be any type of recognizable verse form.195 Regarding *prosaicus*,

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193 Albert Seay’s critical edition of the treatise reads ‘*meteon*’, but this is likely an error. There was an ancient city named Meteon, but the word has no relationship to meter or poetic structure. As in Jacobus, the Greek word *metron* seems more plausible. A search of the online *Thesaurus Musicarum Latinarum* yields no other instances of the word *meteon* in Latin music theory treatises.


195 In the Worcester Antiphoner (p. 66), the first two in a series of antiphons share a similar melody, varying slightly to fit the differing texts, followed by a second pair of antiphons that share a differing
the author says only that “carrying on, it does not retain a rule” (note again the similarity with Jacobus’s first definition). As an example, he gives not a specific chant but instead an entire chant genre, the Alleluias, which can be seen as satisfying both meanings of *prosaicus*. For one, Alleluias generally are highly melismatic, certainly in the jubilus but frequently in the verse as well. At the same time, Alleluias tend to have a very prose-like quality, particularly in earlier melodies in which repetition is rare. Even Alleluias of later origin, in which repetition is common, frequently employ a succession of varying repeated sections, not unlike, in David Hiley’s words, “miniature sequences.”

Having explored the use of these terms among Aaron’s predecessors, let us now turn to Aaron’s treatment of them. In contrast to the concision of the *Quaestiones*, Aaron has rather a lot to say about *prosaicus* and *metricus*. Significantly, he is the first to make explicit the twofold connotation of both terms:

| Prosaicus est quando verba super quibus est facta compositio prosa oratione contexta sunt, qualia sunt in sacris quae dicuntur offertoria, gradualia et iis similia, In quibus quidem plures sane abundant neumae, pauciora insunt verba. Non desunt qui putent quando in jubilus uni tantum syllabae notae plures applicantur, vel arbitrio compositoris fieri vel ut cantilena productor fiat. Sed errant ad modum, qui hoc asserrunt, Nam divus Gregorius inquit neumarum multitudinem paucitati syllabarum iccirco adiectam, non ut cantus prolixior fiat sed ut ille qui canit, dum diutius paucis immoratur syllabis, verborum diligentius sensum consideret ac coelestia | It is *prosaicus* when the words upon which the composition has been made have been assembled in prose, such as there are in sacred songs that are called offertories, graduals, and similar ones to those, in which more neumes surely overflow and fewer words are present. There are not lacking those who think that when in such compositions more notes are applied to only one syllable it arises either because of the inclination of the composer or in order that the song may become lengthier. But those who assert this err greatly, for divine Gregory says that a multitude of neumes was added to a small number of syllables for this reason, not in |

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196 Hiley discusses the differences between the early and late styles of the Alleluia in *Western Plainchant*, 130–39.
contempletur. Quartus ordo metricus dicitur, Cui nomen ideo tale inditum est, quia metris, hoc est versibus cantus ille subicitur, quales sunt hymni omnes, quos quidem constare versibus nemini dubium est, In quibus quidem modulationibus mos est, totidem quot sunt syllabae, notas adhibere.

order that the song may become lengthier but rather in order that the one who sings, by lingering for a longer time over a few syllables, may reflect more carefully on the meaning of the words and may contemplate heavenly things. The fourth order is called metricus, to which such a name was bestowed for this reason, because a song of that kind is made subject to metra, that is, verses, as all hymns are, which, it is doubtful to no one, consist of verses, in which songs it is the custom to use as many notes as there are syllables.¹⁹⁷

Regarding prosaicus, Aaron elucidates two separate qualities in the first sentence of the passage. First, he explains that a chant is prosaicus when “the words upon which the composition has been made have been assembled in prose,” a distinction that he does not clarify here but which seems to be meant to contrast with the verse structure that he later says is characteristic of metricus. He goes on to say that in a prosaicus chant “more neumes surely overflow and fewer words are present,” a description that clearly depicts a melismatic musical style. He does not give any specific examples from the chant repertory but instead cites “offertories, graduals, and similar ones to those.” Of course, both offertories and graduals are noted for their frequent use of melismas, some quite extended.¹⁹⁸ He goes on to mount a lengthy defense of melismatic chants, once again dubiously citing Pope Gregory the Great as an authority. Regarding metricus, Aaron writes that such a song “is made subject to metra, that is, verses,” and he offers the hymn genre as his example because of its typical verse structure. In addition, he notes that such

¹⁹⁷ Aaron, De institutione harmonica, I.1.21–24.
chants tend to be syllabic, explaining that “it is the custom to use as many notes as there are syllables.”

In summary, Aaron’s discussion of the five-part classification varies greatly in intelligibility and clarity. Regarding the ambitus-related terms, Aaron’s descriptions are vague and incomplete, suggesting that Aaron himself may have been confused about their meaning. Nevertheless, his definitions seem to be related to the evolved tradition also seen in Jacobus Theatinus and the anonymous Quaestiones et solutiones, in which the definitions of indifferens and communis are switched in relation to those found in Ciconia. Aaron is much clearer regarding prosaicus and metricus. Indeed, he is in many ways the clearest of the authors discussed, for he is the only one to describe explicitly the twofold meaning of both terms, which only can be inferred in the testimony of earlier writers. Unfortunately, Aaron’s source for the classification system, whether one of the surviving treatises, a lost source, or an oral pedagogical tradition, is not clear, for both the ordering of his terms and the wording of his definitions are essentially unique.199

199 Ciconia orders the terms differently in the two places in which he discusses them. In book II, he presents them in the order prosaicus, metricus, differens, indifferens, communis. In book IV, he strangely splits up the ambitus-based terms by moving metricus and prosaicus before communis, resulting in the order differens, indifferens, metricus, prosaicus, communis. In Jacobus the order is similar to Ciconia’s book II, the only difference being the transposition of metricus and prosaicus (i.e., metricus, prosaicus, differens, indifferens, communis). The anonymous Quaestiones et solutiones adds an additional transposition of indifferens and differens (i.e., metricus, prosaicus, indifferens, differens, communis). Aaron, meanwhile, uses an order similar to Ciconia’s book IV, but with prosaicus and metricus transposed (i.e., differens, indifferens, prosaicus, metricus, communis).
Chapter 3: The Gamut

In chapters two through five of the *De institutione harmonica*, Aaron introduces the gamut (which he calls the *manus*, or hand), establishing the essential materials of musical pitch, including its nomenclature and means of identification. Topics include the so-called “division of the hand,” that is, the theoretical partition of the tone system into registers, usually in relation to the octave-based letter names of the notes. He also enumerates the total number of pitches in the basic gamut and pinpoints the location of clefs. For many treatises of the period, these topics might not be worth more than a cursory mention, but Aaron’s approach to some of these subjects reveals his basic notions about musical space. In particular, Aaron’s two alternative methods for dividing the gamut show the importance that he attached to hexachords, not only as a pedagogical tool but also in his conception of the tone system. His first division is especially unusual, but even the simpler second division reveals something of Aaron’s ideas about the organization of the gamut.\(^{200}\)

\(^{200}\) Bergquist was left to wonder why Aaron would innovate in this area, and he suggested that it might be another sign of inadequacy in his training: “It is not clear why Aaron should have insisted on introducing new ideas into such an inconsequential subject. His system is no improvement over tradition, which starts each register on A, the logical place in alphabetical terms. Perhaps this is another instance of his faulty early training.” Bergquist, “The Theoretical Writings of Pietro Aaron,” 92. As I hope to show, however, there was both a precedent and a rationale behind Aaron’s approach to registral division in the *De institutione harmonica*. 61
Aaron’s description of the gamut (and its relationship to the gamuts of some of his immediate predecessors) thus has direct bearing on a significant scholarly debate of recent decades, namely, to what extent did the system of overlapping hexachords, as compared to the octave-based system of repeating pitch names (A–G), constitute a coexisting (or even dominating) conception of the tone system for late medieval and Renaissance musicians and theorists? Over the past half-century, a number of notable musicologists (e.g., Richard Crocker, Dolores Pesce, Karol Berger, and Margaret Bent) have argued that the hexachordal system did indeed play an important foundational role in the conceptualization of musical space during the period from the eleventh century to the seventeenth century, profoundly shaping contemporaneous musical thought about such fundamental topics as pitch (both within and outside of the gamut) and mode.201 For Karol Berger, for instance, the solmization system is regarded as an important means to define contextual “affinities” throughout the gamut on a more local level than the octave.202

Some scholars (e.g., Carl Dahlhaus, Gaston Allaire, Christian Berger, and Lionel Pike) have gone further, asserting that the hexachordal system was in fact the dominant conceptual basis for the gamut throughout this period, arguing that any analysis of music

201 See, for instance, Crocker, “Hermann’s Major Sixth”; Pesce, The Affinities and Medieval Transposition; K. Berger, “The Hand and the Art of Memory” and Musica ficta; and Bent, “Music Recta and Musica Ficta” and “Diatonic Ficta.”
202 “The system of the seven deductions serves to demonstrate the “affinities” (affinitates) between the individual steps of the gamut. The corresponding steps of different deductions are related in quality since, within the range of their deductions, they are surrounded by identical intervallic patterns.” K. Berger, “The Hand and the Art of Memory,” 92.
from that era must begin with a thorough understanding of the solmization system. In the introduction to his *Hexachords in Late-Renaissance Music*, for instance, Pike argues:

> The present-day listener has lost touch with some of the important elements of the language of late-Renaissance music: changing patterns of education and changes in musical style have led to the disappearance of at least two fundamental elements—rhetoric and the hexachord—which are essential to a true understanding of the music.

Others have been skeptical of this viewpoint, arguing against the presumed primacy of the hexachord system as a conceptual basis for the tone system throughout the entirety of this period. Alejandro Planchart, for instance, in his review of Allaire’s much-discussed 1972 book *The Theory of Hexachords, Solmization and the Modal System*, took issue with what he described as Allaire’s notion “that the hexachords are somehow the sources of the tonal structures of the Middle Ages and the Renaissance, rather than a means of dealing with such tonal structures,” challenging Allaire’s selective use of theoretical quotations and his invented concept of “hexachord orders.”

More recently, Stefano Mengozzi has sought aggressively to circumscribe the period during which the system of overlapping hexachords had a foundational significance for theorists, arguing that such a viewpoint did not become a widely shared tenet until the last quarter of the fifteenth century, through the influence of several prominent northern Italian theorists. Principal among these in Mengozzi’s view was Franchinus Gaffurius, whose humanistic historicizing of the solmization system in his

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204 Pike, *Hexachords in Late-Renaissance Music*, 1.

Practica musicae of 1496 had considerable influence. Mengozzi interprets Gaffurius’s agenda as a veiled rebuttal of Bartolomeus Ramis’s attack on Guidonian solmization in the latter’s Musica practica of 1482. Through a statistical analysis of surviving theoretical literature, Mengozzi asserts that theorists’ use of the hexachord syllables to describe the gamut was rather uncommon before that time, and he points to the relatively late introduction of the term hexachordum to mean the solmized hexachord (as opposed to the general interval of a sixth) as particularly significant. He concludes that before the time of Gaffurius the solmization system never seriously supplanted the octave-based heptachordal scale as the basis for the conception of the gamut and argues that it was but a small number of northern Italian theorists in the late fifteenth century who effectively elevated the solmization system from a pedagogical tool for beginning singers to a full-fledged foundational theory. Prior to this,

[Hexachords] represented nothing more than the virtual segmentation of the diatonic space that a singer performed in his mind when resorting to the thoroughly optional tool of solmization. Paradoxical as this might sound, the proprietates were thus a mnemonic paradigm for navigating the gamut, but without imposing an hexachordal logic unto the gamut itself.

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206 Mengozzi has developed his argument over a series of articles (see especially his “Virtual Segments” and “‘Si quis manus non habeat’”), culminating in his 2010 monograph The Renaissance Reform of Medieval Music Theory.

207 As Mengozzi explains, Ramis was the first to use the term “hexachord” in this fashion, and the term was adopted by those theorists who argued against him, including Gaffurius. Mengozzi regards this as a “momentous terminological shift” (“Virtual Segments,” 463), arguing that the pre-Ramis term for a solmized major sixth, deductio, suggests in Aristotelian terms not a material segment but rather a virtual one, and thus highlights the extent to which “the hexachord system was understood in the Middle Ages as a ‘soft’ superstructure overlaid on a ‘hard’ heptachordal layer that had long been in place as the foundation of the diatonic system” (The Renaissance Reform of Medieval Music Theory, 111).

208 Because of the dual nature of b and ʎ, an argument could be made for describing the octave-based scale as octochordal rather than heptachordal. However, because many theorists, including Aaron, write about “seven letters” (1.15.1), heptachordal will be used throughout the present study.

209 In “Virtual Segments,” for instance, Mengozzi argues that “the foundational interpretation of the hexachordal system may in fact be no older than the Renaissance and may represent a branch of Guidonian theory that is only feebly connected with the medieval tradition” (p. 428; emphasis in the original).

For my part, I believe that Mengozzi may be overstating his case as he seeks to swing the historiographical pendulum away from an overreliance on hexachords in musicological studies of medieval music. Although Mengozzi argues persuasively that the surviving theoretical evidence does not show the hexachordal system to be the overriding conceptual force behind the gamut for a majority of theorists before the late fifteenth century, I believe that he too greatly downplays its significance before that time as a coexisting framework for the ways in which musicians thought about and perceived the tone system. There is no question that octave equivalency was the crucial a priori feature of the gamut from the time of Pseudo-Odo’s early-eleventh-century Dialogus de musica, but it is equally clear that generations of singers, particularly from the thirteenth century onwards, were well schooled in solmization, a shared method of instruction that undoubtedly left an indelible mark on the way musicians perceived musical space. The coexistence of these two frameworks necessarily created subtle tensions that occasionally manifested themselves in theorists’ descriptions of the construction and division of the gamut, resulting in certain inconsistencies that are illustrative of that tension.

The influence of the hexachordal system on conceptions of the gamut would seem to be particularly strong among those theorists who wrote with a practical focus, a category to which Aaron certainly belongs. Indeed, although Aaron undoubtedly was influenced by Gaffurius’s discussion of the gamut in the latter’s Practica musicae, Aaron’s unusual division also shows clear signs of influence from a group of practically-oriented treatises from the late fifteenth century that reflect a certain pedagogical tradition that seems somewhat removed from the Ramis controversy and Gaffurius’s humanistic
defense of the hexachords. In short, whereas some might be tempted to read the importance of hexachords in Aaron’s treatise as purely a post-Gaffurius construction, I believe that it reflects a differing conceptual undercurrent, perhaps shared most keenly by those who made a living by teaching others to sing but inevitably retained as an implicit frame of reference by a large swath of musicians who through their training had internalized the system of hexachords even if they no longer had a regular need for solmization as an aid to their sight-singing. The very disdain exhibited by detractors of the solmization system, such as Johannes Gallicus and Ramis, not to mention the ensuing controversy over Ramis’s attacks, would seem to underscore how deeply rooted the hexachordal system was in the musical pedagogy of the fifteenth century.

In order to make sense of Aaron’s divisions, then, it will be useful to recall first some of the most important stages in the development of the medieval gamut, particularly as relates to the evolution of the two coexisting systems of pitch-space organization ultimately represented by the octave-based letter system and the hexachord-based solmization system. By establishing something like a “normative” gamut at the turn of the sixteenth century while also exploring some of the most common divergences from the norm, we can then compare Aaron’s own conceptions of musical space as evidenced in his descriptions of the tone system.

The history of the late-medieval and Renaissance gamut necessarily begins with the adoption of a coherent system of octave-based periodicity using the modern musical letters A–G. Such a nomenclature first appeared in its mature form211 in the early-

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211 The use of letters from the Latin alphabet as pitch labels began in the late tenth century, influenced by Boethius’s De institutione musica. Boethius used Latin letters both for his geometric division of the
eleventh-century treatise *Dialogus de musica*, formerly attributed to Odo of Cluny but now attributed to the anonymous author best known as “Pseudo-Odo.” Pseudo-Odo described a usable tone system of seventeen notes covering just more than two octaves, as shown in Figure 2 (with Pseudo-Odo’s numbering system). As can be seen in the figure, Pseudo-Odo differentiates the octaves of the gamut with variations of letter size and duplication, an approach that became standard for later music theorists. He represents the lowest octave with capital letters, the next octave by lower-case letters, and the sole note of the highest register by duplicate letters (i.e., aa). To the lowest note of his gamut, added below A, Pseudo-Odo gives the Greek letter Γ, presumably, as Charles Atkinson notes, for its octave relationship with the G above it, further highlighting the importance of that interval in Pseudo-Odo’s notion of musical space.

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212 Michel Huglo posits a northern-Italian origin of the treatise, which he deems likely to have been written by a Benedictine monk who was responsible for the musical training of children. He further localizes the treatise to the region near Milan, and thus the author is sometimes known as the “Lombard Anonymous.” See Huglo, “L’auteur du ‘Dialogue sur la Musique’ attribué a Odon.”

213 Pseudo-Odo numbered them as only fifteen notes, however, omitting Γ from his numbering and counting b and ½ as a subset of a single number. Pseudo-Odo of Cluny, *Dialogus de musica*, chapter 2.

It is important to note, however, that although Pseudo-Odo’s labeling of the pitches was novel, his tone system nevertheless maintains the essential structure of the ancient Greek two-octave system, as transmitted to the Latin West by Boethius. Indeed, the pitches of Pseudo-Odo’s core two octaves, from A to aa (in addition to the alternative step of b-flat in the upper octave), perfectly match the two octaves of the combined Greater and Lesser Perfect Systems. But Pseudo-Odo’s emphasis on octave periodicity suggests a different approach to his organization of the tone system. Whereas the Greater

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215 Although Pseudo-Odo writes this note as capital B, it is clear from his discussion that he is describing  rather than b. He first introduces the gamut by dividing the monochord, and he positions B as a ninth part of the string length from A, forming a 9:8 whole tone. Moreover, he positions  in the upper octave as half the string length of B, forming a 2:1 octave.

216 The addition of  is the only exception. This stands in contrast to the Dasian notational system of the mid- to late ninth-century Enchiriadis treatises, whose repeating disjunct tetrachords result in some augmented octaves, a clear departure from the ancient Greek system. See Atkinson, The Critical Nexus, 118–23 and 214.

217 The combined system was known by some Greek writers as the Immutable System (ametabolon systema), although Boethius never used the term. See Atkinson, The Critical Nexus, 11–14.
and Lesser Perfect Systems were assembled using tetrachords as the fundamental building blocks, Pseudo-Odo never uses the term “tetrachord,” and his system overtly highlights the essential equivalency of the octave.  

Contemporaries immediately recognized the usefulness of Pseudo-Odo’s system. In his Micrologus, Guido of Arezzo appropriated and expanded Pseudo-Odo’s octave-based gamut, adding four pitches at the top of the system (bb, ½, cc, and dd), for a total of 21 notes. Like Pseudo-Odo, Guido notates the differing registers with capital letters, lower-case letters, and duplicates. However, in addition to this method of differentiation, Guido introduces a name for each octave register, calling them graves, acutes, and superacutes, as shown in Figure 3, an important innovation that was widely adopted by later theorists.

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218 This fundamental change can be seen not just in the differing nomenclature of the pitches but also in the novel way that Pseudo-Odo divides the monochord. Boethius, in his influential geometric division of the monochord for the diatonic genus, derived the various pitches by a complex set of mathematical divisions, dissecting the string variously into 3:2 perfect fifths, 4:3 perfect fourths, and 9:8 whole tones, using varying starting points throughout the system. He begins by dividing the string into four equal parts, locating first the Proslambanomenos (Pseudo-Odo’s A), the Lichanos hypaton (C), the Mese (a), and the Nete hyperboleon (aa), and then fills in most (but not all) of the remaining pitches in reference to these four starting points. Boethius, De institutione musica, IV.5. Pseudo-Odo, in contrast, sets out each pitch of the lowest octave (from Γ to F) in turn (first by 9:8 whole tones between Γ, and A, and B, and then by 4:3 fourths from Γ, A, B, and C to locate C, D, E, and F) and then locates the remaining pitches above by means of octave equivalency with the already-derived pitches in the lower octave. Lastly he locates the pitch b, using a 4:3 fourth from F. Pseudo-Odo, Dialogus de musica, chapter 2. For more on these divisions of the monochord, including useful graphical depictions of the successive steps, see Atkinson, The Critical Nexus, 16–18 and 212–14.

219 Guido of Arezzo, Micrologus, chapter 2. Guido also adopts Pseudo-Odo’s basic method of dividing the monochord, but with a slight variation. Like Pseudo-Odo, Guido begins by laying out each pitch of the lower octave in turn, beginning with 9:8 whole tones between Γ, A, and B and continuing with 4:3 perfect fourths from Γ, A, B, and C to locate C, D, E, and F. However, whereas Pseudo-Odo then determined most of the remaining pitches using octave equivalency, going back at the end to locate b using a 4:3 fourth from F, Guido continues to use 4:3 fourths to locate the next three pitches in turn (G, a, and b). From there, he turns to Pseudo-Odo’s method of using octave equivalency for the remaining pitches above (including bb). By this sequence, in which the derivation of b is done in order (between a and ½) rather than as a quasi-afterthought, Guido seems to imply added legitimacy to b as a note in its own right, a notion that is supported further by Guido’s reckoning that there are 21 total pitches, a number that includes Γ, b, and bb (in addition to ½ and ½ ½), whereas Pseudo-Odo, as noted earlier, numbered just 15 of his 17 named pitches, leaving Γ unnumbered and counting b and ½ as a subset of the same number.
Sometime thereafter, another of Guido’s innovations, his pedagogical tool for sight-singing, became intertwined with the conceptual construction of the gamut. Guido’s own role in this evolution likely was limited. He merely described, in the famous letter now commonly known as the *Epistola de ignoto cantu*, his pedagogical technique for teaching singers to learn an unknown chant quickly, namely by comparing the final note of the unknown melody to the beginning of one of the first six phrases of the hymn *Ut*.

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220 Like Pseudo-Odo, Guido writes this note as capital B but clearly means $\flat$ rather than b. In the third chapter, Guido presents a division of the monochord in which, like Pseudo-Odo, he positions the B as a ninth part of the string from A and locates $\flat$ halfway along the string from B.
queant laxis, each of which begins on a successively higher pitch, and using this reference point as a means to locate the half steps in the unknown chant.\textsuperscript{221}

Within several generations after Guido, theorists had begun to associate the corresponding first textual syllable of each phrase of the Ut queant laxis melody with each of the six pitches, resulting in the familiar system of mnemonic solmization syllables spanning the interval of a major sixth (ut, re, mi, fa, sol, la).\textsuperscript{222} By the late eleventh or early twelfth century, theorists had begun to superimpose this unit of solmization spanning a sixth onto multiple places in the gamut, as shown in a north Italian manuscript of the Epistola, in which the scribe follows the Ut queant laxis melody with a depiction of the gamut in which he positions the six solmization syllables both from C to a and from G to e.\textsuperscript{223} By the second half of the thirteenth century, theorists such as Elias Salomon, Hieronymus de Moravia, and Engelbert of Admont were presenting a complete gamut made up of seven interlocking hexachords, beginning respectively on Γ, C, F, G, c, f, and g.\textsuperscript{224}

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\textsuperscript{221} Although the text for Ut queant laxis is found as early as c.800, the melody does not survive in any sources that predate Guido. It is not known whether he composed the melody himself, adapted an existing one, or borrowed it from a source that is now lost. See The New Grove Dictionary of Music and Musicians, 2nd ed., s.v. “Guido of Arezzo” (by Claude V. Palisca).

\textsuperscript{222} As Karol Berger has shown, it is doubtful that Guido himself used the solmization syllables (Berger, Musica Ficta, 7). However, as Pesce shows, the practice already was in use by the late eleventh or early twelfth century. See Pesce, Guido d’Arezzo’s “Regule rithmice,” “Prologus in antiphonarium,” and “Epistola ad Michahelem,” 20.

\textsuperscript{223} The manuscript is London, British Library, Add. 10335. See Pesce, Guido d’Arezzo’s “Regule rithmice,” “Prologus in antiphonarium,” and “Epistola ad Michahelem,” 20. Although there is no reason to believe that Guido himself used overlapping hexachords of solmization syllables in this manner, it is worth remembering that both he and Hermannus Contractus did place some importance on the hexachord in the context of modal classification, as a means to relate the local intervallic relationships between the four finals (D, E, F, and G) and the affinities of the first three (A, B, and C), i.e., the so-called modi vocum, as discussed in the previous chapter. See Crocker, “Hermann’s Major Sixth,” and Berger, Musica Ficta, 5–6.

\textsuperscript{224} According to Berger, the full system of interlocking hexachords first was found in Elias Salomon’s Scientia artis musicae, Hieronymus de Moravia’s Tractatus de musica, and Engelbert of Admont’s De musica. See Berger, Musica Ficta, 5 and 5n16. To this list may be added the reportatio prima of the so-called Musica plana Johannis de Garlandia, which has been dated variously to the end of the thirteenth
By the early fourteenth century, there is increasing evidence that the system of seven interlocking hexachords was becoming fully integrated as a co-existing means to conceptualize the organization of the tone system. A prominent example appears in Marchetto’s *Lucidarium* (1317 or 18), one of the most influential medieval music theory treatises.\(^2^{25}\) Marchetto’s full description of the gamut actually occurs very late in the work (treatise 14 out of 16), although many of the terminological quirks that demonstrate his dual conception of musical space also appear in earlier parts:

\begin{quote}
Dicimus quod vox gravis dicitur illa que in qualibet voce humana propinquior est silentio. . . . Et tales in constitutione manus sunt septem, scilicet A, \(\flat\), C, D, E, F, et G. Acute dicuntur eo quod acutum reddunt sonum respectu gravium predictarum. . . . Et tales sunt similiter septicum, que non sunt a primis gravibus nominibus differentes. Superacute dicuntur eo quod super predictas acutas sonum reddunt. . . . Et tales sunt quatuor, scilicet a, b\(\flat\), c, et d. Est et enim alia adiuncta, scilicet e la, ut perfectionem principii quod in g acuto incipitur compleamus.
\end{quote}

We say that that note is called “grave” that is nearer to silence in any human voice. . . . And there are seven such notes in the arrangement of the hand, namely A, \(\flat\), C, D, E, F, and G. Notes are called “acute” because they make a high sound with regard to the before-mentioned graves. . . . And similarly there are seven such notes, which are not different in name from the first graves. Notes are called “superacute” because they make a sound above the before-mentioned acutes. . . . And there are four such notes, namely a, b\(\flat\), c, and d. And indeed another note was added, namely e la, in order that we may complete the perfection of the starting point [i.e., the *deductio*, or hexachord] that begins on g acute.\(^2^{26}\)

In his description of the gamut Marchetto lists seven graves, corresponding to those of Guido (see Figure 4, below). Of the acutes, Marchetto says simply that

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\(^2^{25}\) According to Herlinger, Marchetto’s treatise survives in no fewer than 27 extant copies. Among medieval treatises on music, only the *Enchiriadis* treatises, the *Dialogus* of Pseudo-Odo, and the treatises of Bern, Guido, and Johannes de Muris survive today in more manuscripts. See Herlinger, “Marchetto’s Division of the Whole Tone,” 197–98.

“similarly there are seven such notes, which are not different in name from the first graves.” This description is somewhat problematic, for it fails to acknowledge the existence of both b and .directive in the acute register, although Marchetto makes use of both notes throughout the Lucidarium. His ensuing description of the superacutes clarifies the issue somewhat, for he lists b and .directive as a single position, initially counting just four notes among that category (a, b.directive, c, and d).

Significantly, he then goes on to explain that an additional note, which he conspicuously calls “e la,” has been added to the hand “in order that we may complete the perfection of the starting point [i.e., the deductio, or hexachord\textsuperscript{227}] that begins on g acute.” Marchetto’s rationale for the source of the added note is important, for here he explicitly associates the bounds of the gamut with the system of overlapping hexachords. Also in this passage Marchetto combines the two primary systems of note nomenclature that he uses throughout the Lucidarium (compare “e la” and “g acute”). The system that he uses most frequently in the treatise consists purely of the letter name and its appropriate register, without reference to hexachord syllables, a system that ultimately emphasizes octave-based periodicity (e.g., F gravus, a acutus).\textsuperscript{228} But Marchetto also intersperses a newer method in which the periodic letter names are joined to their corresponding solmization syllables according to their position within the gamut (e.g., Γ ut, A re, directive mi, C fa ut, etc.). Marchetto utilizes this hexachord-based nomenclature much less frequently, using it primarily in his lengthy section on hexachord mutation in book

\textsuperscript{227} As noted earlier, the term “hexachordum” was not applied to the grouping of six syllables until Bartolomeus Ramis’s \textit{Musica practica} in 1582, but I include the term here for the sake of clarity.

\textsuperscript{228} In contrast to the tradition of Guido, Marchetto does not use duplicated letters to represent superacute notes. In fact, because the treatise concerns plainchant, references to superacute notes are quite rare, being confined to books 9 and 14. However, Marchetto does differentiate consistently between graves and acutes, using capital and lower-case letters (usually in conjunction with the register name) throughout the treatise.

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eight. Its appearance here, Marchetto’s sole use of the hexachord-based nomenclature within his description of the gamut, highlights the markedly different way that Marchetto viewed this added note, not merely as a logical extension of the superacutes to the note an octave above e acute but specifically as the completion of an otherwise incomplete *deductio.*

![Diagram of pitch nomenclature](image)

Figure 4: Division of the hand according to Marchetto da Padova, *Lucidarium,* Treatise XIV, Chapter 1.

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229 Marchetto’s use of an alternative pitch nomenclature to mark e la as an addition to the gamut as transmitted by Guido is reminiscent of Pseudo-Odo’s use of the Greek letter Γ to mark his addition to the Greater and Lesser Perfect Systems as transmitted by Boethius.

230 Although it is reasonable to assume that Marchetto would count e la among the superacutes, he never describes it thus in the *Lucidarium,* instead acknowledging only four superacutes in two separate places (IX.1.46 and XIV.1.19).

231 According to Herlinger’s critical edition, only in one surviving manuscript are the letters of the superacutes doubled. In the other surviving manuscripts, the superacutes are represented using singular lower-case letters. See the critical note to *Lucidarium,* XIV.1.19.
For Marchetto, then, it could be said that the final hexachord does, in effect, “generate” the topmost note of the gamut, a notion that Mengozzi generally discounts in the late-medieval conception of musical space and instead attributes to the late-fifteenth-century humanists and their terminological shift from “*deductio*” to “hexachord.” Indeed, elsewhere Marchetto defines ‘propriety’ as “the derivation of many syllables from one and the same beginning.” Of course, one must be careful not to invest too much importance in a single passage, but the reach and influence of Marchetto’s treatise inarguably was considerable. Marchetto’s complete gamut, showing both hexachord- and octave-based nomenclature, is shown in Figure 5.

\[\text{232} \quad \text{"Est enim proprietas in cantu derivatio plurium vocum ab uno et eodem principio." Marchetto,}\\ \text{*Lucidarium*, VIII.3.3.}\]  
\[\text{233} \quad \text{For more on the considerable influence of Marchetto’s *Lucidarium* as demonstrated by the surviving manuscript evidence, see Herlinger, "Marchetto’s Influence."}\]
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Figure 5: Hexachord- and register-based note nomenclature according to Marchetto da Padova, *Lucidarium*.

Missing entirely from Marchetto’s description of the gamut in this treatise is Γ, although he frequently makes use of the note elsewhere in the work. His omission of Γ in this context complicates matters, for if e la is generated specifically by the *deductio* on g sol re ut, then Γ ut would seem to be an essential note for the generation of the notes of the lowest *deductio*, especially for the first three pitches (Γ, A, and ½). The exclusion of Γ in this context may well result from Marchetto’s ambivalence regarding the very role of Γ in the hand. In a previous chapter on intervals, for instance, he takes great pains to prove that A re occupies the first proper position in the hand, while also acknowledging that Γ has been situated at the beginning in honor of the Greeks, “the first teachers and philosophers of music itself”:
Nulli dubium esse debet quod philosophi a quibus Latini musicam habuerunt Greci fuerunt, et quicquid Latini habuerunt ab ipsis habuerunt. Latini quoque non ingrati, ut deferrent, ut decet, primis doctoribus et philosophis ipsius musicæ, a quibus ipsam musicam habuerunt, et huius rei ad perpetuam memoriam in principio manus litteram Γ, que apud nos G dicitur, posuerunt.

There should be no doubt that the philosophers from whom the Latins received music were Greeks, and whatever the Latins received they received from the Greeks. The Latins were not ungrateful, such that they deferred, as is proper, to the first teachers and philosophers of music itself, from whom they received music itself, and, in perpetual memory of this fact, they placed the letter Γ, which among us is called G, on the beginning of the hand.234

Thus by the time of Marchetto, nearly all of the principal features of the “normative” gamut of Renaissance theory, which could include both octave- and hexachord-based conceptions of the tone system, were in place. Nevertheless, although the two ways of thinking were highly compatible, producing nearly the same basic set of available pitches, there remained a certain underlying tension between the two systems that inevitably led to inconsistencies and disagreements among theorists.235 For instance, how does one account for Γ, as an added pitch from an octave-based perspective or as an integral one from a hexachord-based perspective? Also, how does one consider the pitches b and b, as two related inflections that share a single position in the gamut (as the notational system would suggest) or as two separate positions?

Other disagreements were more fundamental, particularly among those theorists, such as Johannes Gallicus and Bartolomeus Ramis, who railed against the system of solmization and mutation altogether, preferring a simplified approach to pitch

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234 Marchetto da Padova, *Lucidarium*, IX.1.72–75. Of course, Marchetto’s explanation echoes Pseudo-Odo’s own ambivalent treatment of Γ and A, for Pseudo-Odo left Γ, as an addition to the inherited Greek system, unnumbered and labeled A as the “first pitch” (*vox prima*). Pseudo-Odo, *Dialogus de musica*, chapter 2.

235 Mengozzi in particular has explored some of the tensions between these systems in his monograph *The Renaissance Reform of Medieval Music Theory*, although, as noted earlier, I do not agree with all of his conclusions.
organization that emphasized octave equivalency throughout. Most theorists eschewed such reforms, however, at least in reference to plainchant, and continued in the tradition of Marchetto, laying out a gamut that acknowledged both octave- and hexachord-based conceptions.236

Perhaps the most important and influential description of the gamut in the decades prior to Aaron’s *De institutione harmonica* was the one given by Franchinus Gaffurius in his *Practica musicae* of 1496. Here, in contrast to the mostly octave-based gamut of Marchetto, we see the hexachord-based conception of the gamut in full display, depicted famously with the clever illustration of the seven interlocking hexachords as organ pipes (see Figure 6, below). With the added importance of the hexachords, we see more clearly the tensions between the two coexisting conceptions as well as some of the inconsistencies that result from their juxtaposition. In the very first chapter of the treatise Gaffurius explains that the hand consists of twenty-two distinct pitches, which, as his diagram makes clear, begin with Γ' ut and include both b fa and ⌢ mi as separate pitches in the two upper octaves (but not in the lowest). In the text, Gaffurius describes the division of the hand as follows:

Verum ecclesiastici nostri Guidonis huiusmodi traditionem quam manum vocant: in grave: acutum et superacutum distinguunt: ut viginti ac duarum chordarum lineis et intervallis seu spaciis alternatim inscriptarum: connumeratis scilicet ipsius sinemenon tetrachordi causa et imitattione duabus coniunctis: But our clerics divide the teaching of the same Guido, which they call the hand, into grave, acute, and superacute, namely the tradition of the 22 notes written alternately with lines and intervals, or rather, spaces, with two coniunctae having been numbered with them, for the sake and the imitation of the

236 Very few, for instance, heeded Ramis’s controversial call, introduced in his *Musica practica* of 1482, for an octave-based solmization system (using the syllables psal-li-tur per vo-ces is-tas), not even Ramis’s pupil and frequent defender, Spataro. As Jeffrey Dean notes, Ramis himself continued to use the traditional Guidonian solmization syllables throughout much of his own treatise (*The New Grove Dictionary of Music and Musicians*, 2nd ed., s.v. “Ramis de Pareia, Bartolomeus” (by Jeffrey Dean).
octo priores quasi silentio et taciturnitati proximas: appellant graves. octo vero his superductas acutas vocant ac reliquas sex superacutas.

On the surface, Gaffurius’s description sounds simple and periodic, for he allots eight notes apiece to the grave and acute categories and assigns the remaining six to the superacutes. When combined with his illustration of the gamut, however, it betrays the lingering tension between the systems of octave-based letters and hexachords. As shown in Figure 7, Gaffurius has the graves span from Γ ut to G sol re ut; the acutes from A la mi re to G sol re ut; and the superacutes from A la mi re to E la. The discrepancy of span (but similarity of number) between the graves and the acutes results from both the inclusion of Γ ut and the exclusion of b fa in the graves, and the inclusion of b fa as a separate note in the acutes.

237 Gaffurius, Practica musicae, I.1.
Figure 6: Illustration of the interlocking hexachords of the gamut from Franchinus Gaffurius, *Practica musiceae*, Book I, Chapter 1.
This leads us to Aaron and his division of the gamut, in which the tension between octaves and hexachords is particularly evident. Aaron actually presents two different divisions of the hand, each of which in its own way reflects the importance of hexachords in Aaron’s conceptualization of the tone system. At first glance, Aaron’s first division, in which he overlaps portions of the grave, acute, and superacute registers, seems especially unorthodox, made more complicated by Aaron’s own lack of clarity. Indeed, Bergquist found Aaron’s discussion of this division entirely incomprehensible,
suggesting that it may have been the result of a printing error.\textsuperscript{238} Aaron begins as expected, explaining that the gamut frequently is divided into three parts, the graves, acutes, and superacutes. He goes on to say that some add a fourth category, the subgrave, which is found only on the lowest note, Γ ut. The addition of a separate subgrave category is actually quite rare in the Latin theoretical literature, and it actually works against Aaron’s division in this chapter, as will be discussed further below.

Despite the largely expected beginning to this discussion, Aaron proceeds to define the graves in a wholly unusual manner, saying:

\begin{footnotesize}
Post hanc igitur graves statim sequuntur quae ab A re incipientes usque in D la sol re naturae acutae protendentur, ibi enim la vocum ultima est gravium licet quaedam intermediae ac simul mixtae voces nomen acutarum habeant, quae a \textsuperscript{\textdegree} quadro acuto principium sumunt. \hfill After [the subgrave], then, the graves follow at once, which, beginning from A re, are extended all the way to D la sol re of the acute natural [hexachord], for there la is the last of the grave syllables, although certain intermediate and mixed syllables together have the name of acutes, which assume their beginning from the acute square \textsuperscript{\textdegree} [hexachord].\textsuperscript{239}
\end{footnotesize}

Although Aaron’s starting point for the graves, A re, is conventional, his endpoint at D la sol re, a full octave and a fourth above, is quite unexpected. He justifies the endpoint on the grounds that the syllable la on D la sol re is the “last of the grave syllables,” as if to say that the entire soft hexachord that runs from F fa ut to D la sol re is by its nature grave (even though he has not yet introduced the topic of hexachords at all). He goes on to state that the acute register actually begins below his endpoint of the grave register, saying that the acutes “assume their beginning from the acute square \textsuperscript{\textdegree} [hexachord]” (“a

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\textsuperscript{238} “The overlapping of the acute and grave registers leads to the suspicion that the printer might have made an error in this passage, but it is so unlike any usual division that no emendation seems possible.” Bergquist, \textit{The Theoretical Writings of Pietro Aaron}, 91.

\textsuperscript{239} Aaron, \textit{De institutione harmonica}, 1.2.4.
quadro acuto principium sumunt"), resulting in certain "intermediate and mixed syllables." Bergquist’s confusion about Aaron’s intention here seems to have stemmed in part from a misreading of this passage, for he believed that Aaron was locating the beginning of the acute register specifically on the note  \( \frac{2}{3} \) mi (and, similarly, the beginning of the superacutes on the note  \( \frac{2}{3} \) mi an octave above).\(^{240}\)

In fact, Aaron almost certainly is describing the entire hard hexachord that begins on G sol re ut as the beginning of the acutes, thus thinking not in terms of a threefold division of letter-based octaves but rather in terms of a threefold division of hexachords. Thus the lowest three hexachords (i.e., the hard hexachord beginning on G ut, the natural hexachord beginning on C fa ut, and the soft hexachord beginning on F fa ut) are the grave hexachords. The next three (i.e., the hard hexachord beginning on G sol re ut; the natural hexachord beginning on C sol fa ut; and the soft hexachord beginning on F fa ut) are the acute hexachords. The last hexachord (i.e., the hard hexachord beginning on G sol re ut) is the sole superacute hexachord (see Figure 8, below). Aaron makes this division of propriety and hexachords explicit in a later chapter (chapter 7), when he explains that

\[
\begin{align*}
\text{Quas tamen in septem sic nos dividimus, in } \frac{2}{3} \text{ quadrum triplicitur,} \\
\text{iderst in grave, Acutum,} \\
\text{Superacutum. In naturam duplicem} \\
\text{Gravem et Acutam. Eodem modo b} \\
\text{molle in grave simul et acutum.}
\end{align*}
\]

\[
\begin{align*}
\text{We divide [the three proprieties] into seven in the following way:} \\
\text{into square } \frac{2}{3} \text{ in three ways, that is} \\
\text{into grave, acute, and superacute;} \\
\text{into natural in two ways, grave and} \\
\text{acute; and in the same way soft b,} \\
\text{jointly into grave and acute.}\ ^{241}
\end{align*}
\]

Aaron’s own phrasing throughout the treatise further supports such an interpretation, for he frequently refers to hexachords both by propriety and register, as,

\(^{240}\) "[Aaron] describes two different divisions. The first is into four registers: G, subgrave; A–d’, grave; b–natural to b’ natural, acutes; b’ natural to e”, superacute.” Bergquist, *The Theoretical Writings of Pietro Aaron*, 91.

\(^{241}\) Aaron, *De institutione harmonica*, I.7.2.
for example, when he specifies a note as part of the “grave natural [hexachord].” However, he always omits the actual term “deductio” (Aaron’s term for a hexachord throughout) in this construction, opening the path for potential confusion.\footnote{Throughout the \textit{De institutione harmonica}, Aaron calls the hexachords by name just twice (both times in the brief chapter 8 in book I), using the term “deductio.” Otherwise, he leaves the term to be inferred, as noted above. He reserves the term “hexachordon” specifically for the interval of a major sixth. However, for the sake of clarity, the term \textit{deductio} (stated or implied) has been translated as “hexachord” throughout the translation of Aaron’s treatise.} As an example, consider the following passage from Aaron’s discussion of mutation in plainsong:

\begin{quote}
Illud autem in mutationibus faciendis advertendum est: ubi duae sint notae, duas fieri mutationes, Exemplo sit C fa ut, ubi ascendendo Fa § quadri gravis in ut naturae gravis mutatur atque transfertur. Now the following ought to be noted with respect to making mutations, that where there are two syllables, two mutations are made. Let C fa ut serve as an example, where, in ascending, fa of the grave square § [hexachord] is changed and is transformed into ut of the grave natural [hexachord].\footnote{Aaron, \textit{De institutione harmonica}, 1.10.6.} \end{quote}
Figure 8: First division of the hand according to Pietro Aaron, *Libri tres de institutione harmonica*, Book I, Chapter 2.\textsuperscript{244}

One interesting implication of Aaron’s hexachord-based register system, as Aaron himself explains, is that certain notes have a mixed or intermediate identity. Among these are all but the highest note of the acute hard hexachord (E la mi), including the notes from G sol re ut up to the last of Aaron’s graves, D la sol re, which are shared between the graves and the acutes. Aaron is less clear about the notes that are mixed between the acutes and superacutes, saying ambiguously that such notes “take their starting point from C sol fa ut of the acute natural [hexachord].” However, only two notes from the

\textsuperscript{244} As will be discussed below, Aaron uses lower-case and capital letters interchangeably, and he does not use duplicate letters.
acute natural hexachord (i.e., the hexachord that begins on C sol fa ut) overlap with the superacute hexachord that begins on G sol re ut, namely G sol re ut and A la mi re, and both also are part of the acute soft hexachord that begins on F fa ut. Doubtless several more notes from the acute soft hexachord that also mix with the superacute hexachord beginning on G sol re ut, namely B fa ♯ mi, C sol fa, and D la sol, also would be considered mixed. Perhaps Aaron’s point is simply that the hexachord on C sol fa ut acute is the first (or lowest) of the acute hexachords to mix with the superacute hexachord on G sol re ut, albeit briefly. Aaron’s lack of clarity leaves this meaning to be inferred, however.

Within the context of this hexachord-based approach to the division of the gamut, Aaron’s use of the subgrave category for Γ ut seems particularly out of place. As the starting note of the first grave hexachord, it logically ought to be part of the graves in Aaron’s system. Instead, Aaron sets it apart, marking it as an added note that seemingly lies outside the more traditional octave-based periodicity of the gamut that begins on A re. Aaron’s first division thus exhibits a certain conflict between an octave-based approach and a hexachord-based one, although Aaron’s emphasis in this division clearly leans more towards the hexachords. Significantly, Aaron’s seemingly contradictory combination of registrally-defined hexachords and the addition of a subgrave category is not unprecedented among some of his predecessors, as we shall see below.

I have found no direct precedent in the theoretical literature for Aaron’s unusual division, with its mixed registers, some of which span well over an octave. However, there is precedence for Aaron’s association of complete hexachords with the grave, acute,
and superacute registers, and, by implication, his association between the starting points of his registers and the first notes of those hexachords (i.e., the use of Gs as a starting point rather than As). The approach can be seen in at least three late-fifteenth-century handbooks on the topic of plainsong, namely Bonaventura da Brescia’s *Breviloquium musicale* and the two anonymous treatises *Compendium musices* and *Quaestiones et solutiones*, the last of which, significantly, we encountered in the previous chapter. All three works have a decidedly practical orientation, designed primarily as handbooks for the training of singers. Each covers the usual practical topics: the gamut, the *deductiones*, mutation, intervals, and the identification of mode in plainchant. There is very little of a speculative or philosophical nature, and what there is of that sort generally has the feel of an afterthought.

Despite the similarity of approach, the three works differed significantly in medium, language, and transmission. Bonaventura’s *Breviloquium musicale*, also known under the title *Regula musicae planae*, was an early incunabulum, first printed in Brescia in 1497. Written in Italian, the work enjoyed uncommon success and longevity; between 1497 and 1570 it was reprinted at least 18 times. Nearly half of these reprints appeared in the first two decades after the first edition. Thus at least eight reprints (1505, 1507, 1509, 1510, 1511, 1513, 1514, and 1516) had appeared by the year of Aaron’s *De institutione harmonica*, most originating in Venice.

The *Compendium musices* was another early incunabulum, first printed in Venice in 1499. Written in Latin, it also enjoyed tremendous popularity throughout the sixteenth

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245 See the introduction to Albert Seay’s English translation of the treatise (*Bonaventura da Brescia: Rules of Plain Music*), p. i.
In his critical edition of the treatise, David Crawford reports 29 separate editions between 1499 and 1597. For the first three printings, between 1499 and 1509, the work was published by itself as a separate treatise; thereafter, it frequently was incorporated into larger reference works aimed for use by clergy. In one notable collected work, the *Cantorinus romani*, which was published six times between 1513 and 1566, the *Compendium* served as the preface to a collection of plainchant for use in the Mass and the Office.

The *Quaestiones*, on the other hand, survives in just one manuscript source (Perugia, Biblioteca Comunale Augusta, ms. 1013 [m. 36]), now located in Perugia but evidently copied in Venice by the copyist Johannes Materanensis in 1509. The work is written in a mixture of Latin and Italian, reflecting some of the different sources from which it was compiled. Significantly, all three share a connection with Venice, which may help to explain some of the connections between them, as will be discussed below.

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246 On the *Compendium musices*, see David E. Crawford’s critical edition of the text as well as Crawford, “A Chant Manual in Sixteenth-Century Italy”; Crawford, “The *Compendium musices*: Musical Continuity among the Sixteenth-Century Italian Clergy”; and Balensuela, “The Borrower Is Servant to the Lender.” Bonnie Blackburn has hypothesized that the compiler of the treatise may have been Petrus Castellanus, a Dominican friar from Venice who served two stints as maestro di cappella at the Venetian church of SS. Giovanni e Paolo and who collaborated with Ottaviano Petrucci in the preparation of the *Odhecaton* (and quite possibly on subsequent publications as well) as supplier and editor of the musical selections. See Blackburn, “Petrucci’s Venetian Editor,” 25–27.


250 For a discussion of Perugia 1013, including a complete list and description of its contents, see both Seay’s introduction to the critical edition of the *Quaestiones*, pp. i–ii, and Blackburn, “A Lost Guide to Tinctoris’s Teachings Recovered,” 32–35.

251 Matthew Balensuela makes this point regarding the *Compendium musices* and the *Quaestiones* in his article “The Borrower Is Servant to the Lender,” 10.
The three works also differ in relation to their source material. Writing for a more general audience of beginners, Bonaventura distilled the vernacular *Breviloquium* from his own larger, more comprehensive treatise in Latin, the *Brevis collectio artis musicae*.\(^{252}\) Though condensed, much of the *Breviloquium* represents a fairly close translation into Italian of material from the *Brevis collectio*, but there are also moments of fresh novelty in the later work.

Both the *Compendium musices* and the *Quaestiones*, meanwhile, are heavily derivative of earlier works; indeed, each is in many ways an edited compilation of previous writings. For the *Compendium musices*, David Crawford identified the sources for much of the material in his critical edition of the treatise, published in 1985. The two most notable are Ugolino of Orvieto’s *Declaratio musicae disciplinae* and Marchetto’s *Lucidarium*.\(^{253}\) The relationship of the *Compendium* text to these two sources is rather free, however, with much paraphrase and many moments of departure, as well as a good deal of jumping around both within and between the two sources.

As for the *Quaestiones*, Albert Seay noted some of the work’s indebtedness to earlier writings in his critical edition, published in 1977. In particular, he noted strong connections in the Latin beginning of the treatise to the compilation *Introductio musicae planae*, which was attributed to the late-thirteenth-century Parisian *magister* Johannes de

\(^{252}\) The *Brevis collectio artis musicae* survives in only one manuscript source (Bologna, Civico Museo Bibliografico Musicale, Ms. A 57), which, owing to the number of errors contained therein, Seay suspected to have been a copy of the treatise and not the original. Bonaventura completed the treatise after 1487 (the date of Nicolò Burzio’s *Florum libellus*, which Bonaventura cites) and no later than 1489, the date given in the explicit of Bologna Ms. A 57. See the introduction to Albert Seay’s 1980 critical edition of the treatise, pp. i–ii.

\(^{253}\) See Crawford’s preface to his critical edition, pp. 30–33.
Garlandia but substantially revised several times into the fourteenth century.\textsuperscript{254} Alberto Gallo also noted this connection about a decade before Seay in an article on the surviving manuscript tradition of the two main works attributed to Johannes de Garlandia.\textsuperscript{255} As Gallo noted, the first three sections of the \textit{Quaestiones} show a strong relationship with portions of the \textit{Introductio musicae planae}, although considerable revision often is evident.\textsuperscript{256}

Seay also noted a significant number of citations in the \textit{Quaestiones}, many of questionable validity, to such authors as Boethius, Guido, Marchetto, and a certain “Venturina,” the latter of which Seay was not able to identify when his edition went to print.\textsuperscript{257} He subsequently discovered that most of the Italian section of the \textit{Quaestiones}, along with a few of the Latin passages, actually was copied nearly verbatim from Bonaventura’s \textit{Breviloquium musicale}, an English translation of which Seay published in 1979.\textsuperscript{258} Throughout the \textit{Breviloquium}, Bonaventura frequently refers his readers to his own \textit{Brevis collectio}, which he himself calls the “Venturina.” Jan Herlinger also made the connection between the \textit{Quaestiones} and the \textit{Breviloquium} in the course of his preparation of his critical edition and translation of Marchetto’s \textit{Lucidarium}, a copy of

\textsuperscript{254} See the introduction to Seay’s critical edition of the \textit{Quaestiones}, p. iii. For more on the complex history of the \textit{Introductio musicae planae}, see the introduction to Christian Meyer’s critical edition, pp. vii–x, and Chapter 4 of the present dissertation.

\textsuperscript{255} See Gallo, “Tra Giovanni di Garlandia e Filippo da Vitry,” 18. It is not clear whether Seay knew of Gallo’s article, as it does not appear in the brief bibliography for his critical edition of the \textit{Quaestiones}.

\textsuperscript{256} See Gallo, “Tra Giovanni di Garlandia e Filippo da Vitry,” 18.

\textsuperscript{257} See Seay’s introduction to his critical edition, pp. iii–iv.

\textsuperscript{258} According to Balensuela, Seay added an insert to subsequent copies of his edition of the \textit{Quaestiones} detailing the extent to which the Italian section of the \textit{Quaestiones} was indebted to Bonaventura’s \textit{Breviloquium}, but I have not seen a copy of Seay’s edition that includes such an insert. See Balensuela, “The Borrower Is Servant to the Lender,” 4.
which is included in the same Perugia manuscript as the only surviving copy of the *Quaestiones*.\(^{259}\)

More recently, Matthew Balensuela has demonstrated that portions of the *Compendium* and the *Quaestiones* are in fact closely interrelated in certain respects, with strong textual similarities, often exact, that point either to a direct relationship or, at the least, to a common source.\(^{260}\) Using the online *Thesaurus Musicarum Latinarum*, Balensuela has determined that as many as 27 of the 152 lines of the *Compendium* share direct parallels with the *Quaestiones*.\(^{261}\) Because of a few citations that are present in the *Quaestiones* but missing in the *Compendium* (and, more circumstantially, on account of the fact that some of the other works in the Perugia manuscript that contains the *Quaestiones* are from earlier time periods), Balensuela hypothesizes that the *Quaestiones* may have been a model for the *Compendium* by means of an earlier source, now lost.\(^{262}\)

At the same time, he acknowledges the possibility that the borrowing could be in the reverse, with the compiler of the *Quaestiones* using both the printed *Compendium* and the printed *Breviloquium* as sources for his compilation, adding in citations that he knew (or thought that he knew). Additionally, he points out that there could have been instead a separate lost source that was common to both.\(^{263}\)

For my part, I find the latter two possibilities easier to believe. Were the *Quaestiones* in its entirety the source for the *Compendium*, it likely would need to have been compiled between 1497, when the *Breviloquium* was printed, and 1499, when the


\(^{260}\) Balensuela, “The Borrower Is Servant to the Lender.”


\(^{262}\) Balensuela, “The Borrower Is Servant to the Lender,” 10–11.

\(^{263}\) Balensuela, “The Borrower Is Servant to the Lender,” 11.
Compendium first appeared in print, leaving a rather narrow range.\textsuperscript{264} It seems easier to posit either that there was an independent Latin source, now lost, for both the Compendium and the Latin portions of the Quaestiones, or else that the Compendium itself served as an important source for the compilation of the Quaestiones after the Compendium’s publication in 1499. In fact, a particular textual discrepancy between the Compendium and the Quaestiones on the topic of the gamut may help argue for one of these latter two hypotheses, as will be discussed below.

We shall begin with the Breviloquium, for it is evidently the earliest of the three treatises in their surviving form. In the Breviloquium we find regular use of a nomenclature that combines hexachord propriety with range, particularly during the sections concerning propriety and mutation. For instance, regarding mutation on C fa ut, Bonaventura writes as follows:

\begin{quote}
Adunque cominciamo in c fa ut & ivi sono due mutatione, scilicet prima in seconda & econverso, vel sic fa ut: ut fa. Fa ut sta per ascendere de \( \frac{1}{5} \) quadro grave in natura grave. Ut fa sta per descendere de natura grave in \( \frac{1}{5} \) quadro grave etcetera.
\end{quote}

Therefore, we begin on C fa ut, and on that position there are two mutations, namely the first into the second and vice versa, or thus: fa ut, ut fa. Fa ut is for ascending from the grave square \( \frac{1}{5} \) [\textit{ductio}] to the grave natural [\textit{ductio}]. Ut fa is for descending from the grave natural \( \frac{1}{5} \) [\textit{ductio}] to the grave square \( \frac{1}{2} \) [\textit{ductio}]\textsuperscript{265}.

Leaving aside some of the technical issues related to mutation itself, which will be discussed in the next chapter, we see in this excerpt the same combination of propriety and range that we noted in Aaron’s \textit{De institutione harmonica}. Bonaventura refers not

\textsuperscript{264} Of course, it is possible that the Breviloquium may have circulated first in manuscript, perhaps widening the possible range of completion dates, but I am not aware of any surviving manuscript edition of the Breviloquium that predates its publication in 1497.

\textsuperscript{265} Bonaventura da Brescia, \textit{Breviloquium musicale}, Chapter [8]. (In the 1497 print, the chapter is wrongly numbered as Chapter 6.)
just to the square ½ and natural deductiones but specifically to the grave square ½ and natural deductiones.  

Despite the similarity here to Aaron’s later association between hexachords and register, there is no reason to believe that Bonaventura actually regarded all the notes of a given hexachord as belonging to the same register, as Aaron did with his first division of the hand. Rather, Bonaventura seems to have been grouping hexachords in a repeating fashion according to their general position in the gamut, by analogy with the registral division of the gamut itself. Otherwise he preserves a mostly conventional, octave-based layout, as follows:

Graves: Γ–G
Acutes: a–g
Superacutes: aa–ee

One interesting consequence of Bonaventura’s registral grouping of both hexachords and letter names is that the labeling of the hard hexachords beginning on G does not match his labeling of the starting pitches of the hexachords themselves. In other words, the acute hard hexachord begins on grave G sol re ut, while the superacute hard hexachord begins on acute G sol re ut.

We move now to the Compendium, first published just two years after the Breviloquium. Perhaps owing to the fact that it is a compilation, some of the topics seem
rather out of order. For instance, the work begins with a diagram of the Guidonian hand\textsuperscript{268} and then continues not with a more general discussion of the gamut but rather with the topic of \textit{proprietas} and the syllables of the hexachord, indicating the significance of these topics to the compiler. This is followed by a brief summary of the two principal clefs on F and c and then, without explanation, a pair of verses about the reciting tones and initiation formulae of the psalm tones. Only then does the compilation turn to a description of the gamut.

At the head of his discussion of the gamut, however, the author again demonstrates the importance of hexachords to his conceptualization of the tone system, for he begins with a Gaffurius-like illustration of the seven interlocking \textit{deductiones} depicted crudely as organ pipes (see Figure 9, below). In the illustration, each hexachord is labeled both according to its propriety (natural, hard, or soft) and, significantly, according to its register. For instance, the lowest hexachord, beginning on Γ ut, is labeled as “pars gravis.” Each of the next two hexachords, beginning on C fa ut and F fa ut, respectively, also is labeled “pars gravis,” despite the fact that several notes in each of these hexachords are not part of the gravis register as the author will define it shortly thereafter. The next three hexachords, meanwhile, are labeled as “pars acuta,” and the last “pars superacuta.”

\textsuperscript{268} For more on the history of Guidonian hand as a mnemonic device, see Smits van Waesberghe, \textit{Musikerziehung}; and K. Berger, “The Hand and the Art of Memory.”
Figure 9: Illustration of the interlocking *deductiones* of the gamut from Anonymous, *Compendium musices*.
As in the *Breviloquium*, there is no reason to believe that the compiler of the *Compendium* regarded all the notes of a given hexachord as belonging to the same register. Throughout the *Compendium* (with one important exception, as will be discussed below) the author preserves a mostly conventional, octave-based layout in which each new register begins on A, as follows:

- **Subgrave:** Γ
- **Graves:** A–G
- **Acutes:** a–g
- **Superacutes:** aa–ee

The result, similar to what we saw in the *Breviloquium*, is that the grave hard *deductio* actually begins on a note that the author labels subgrave; the acute hard *deductio* on a note that he labels grave; and the superacute *deductio* on a note that he labels acute.

Soon afterward the author reinforces this same association between hexachords and register when he elaborates on the concept of *deductiones* in the text. The author’s lengthy description deserves to be quoted in full:

> Et quia illa nota sive syllaba, ut, septies in manu reperitur, ideo dicimus quod septem sunt deductiones manus seu palmae, unde prima deductio habet principium in G subgravi, et finem in E gravi, et cantatur per [propriety]. Secunda habet principium in C gravi, et finem in a acuto, et cantatur per naturam gravem. Tertia habet principium in F gravi, finem vero in d acuto, et habent principium in G gravi, et finem in E gravi, et cantatur per [propriety].

And because that note or syllable *ut* is found seven times in the hand, therefore we say that there are seven *deductiones* of the hand or palm, whence the first *deductio* has its beginning on G subgrave and its end on E grave and is sung by means of the grave square [propriety]. The second has its beginning on C grave and its end on a acute and is sung by means of the grave natural [propriety].

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269 Anonymous, *Compendium musices*, sentences 19–27. The chapters in the *Compendium* are unnumbered, so all references will be to sentence number as given in David Crawford’s critical edition. The *Compendium* author’s treatment of Γ as subgrave will be discussed further below. Here the author again demonstrates the importance of the Guidonian hand in his conception of the gamut, for he specifically locates the starting and ending point of each register according to the appropriate joints on each finger (counting downward from the tip of the finger). The graves, for instance, he says “have their beginning on the first joint of the thumb, and their end on the second joint of the pinky” (“Habentque principium in prima iunctura pollicis, et finem in secunda iunctura auricularis”). See sentence 22.
Here again we see the author describing each *deductio* not just by propriety (i.e., natural, hard, or soft) but also specifically by register, such as when he says that the first *deductio*, which begins on what he calls “G subgrave,” is sung “by means of the grave square $\frac{1}{4}$ [propriety].” The tension between the classification of the hard hexachords and their starting point is particularly evident throughout this passage.

There is, however, one significant digression in the *Compendium* from the compiler’s usual division of the gamut, which occurs in the section on mutation. After the author’s relatively brief remarks on the practice, there follows a series of notated musical examples in which the compiler demonstrates the technique on each note on which mutation can occur in the gamut. The examples occur in ascending order, beginning with C grave. The compiler labels the pitch of each successive example both by register and by number (e.g., “C grave et primum”). The numerical descriptor merely accounts for the number of times the note appears in the gamut, with its lowest appearance called

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270 Anonymous, *Compendium musices*, musical examples following sentence 59.

271 The designation “subgrave” will be discussed in detail below.

272 As is typical, the author excludes those positions on which there is only a single solmization syllable, such as (to use the author’s nomenclature) G subgrave, A grave, and $\frac{1}{4}$ grave at the bottom of the gamut and E superacute at the top, as well as the notes b and $\frac{3}{4}$. Anonymous, *Compendium musices*, sentences 41–47.
“primum,” its second appearance called “secundum,” and its third appearance (if applicable) called “tertium.” Nearly all of the registral descriptors appear as expected, with the notable exception of the two upper Gs, the labels of which conflict with the author’s earlier division of the gamut. Specifically, the compiler labels the “second” G as acute (rather than grave) and the “third” G as superacute (rather than acute). This suggests the following alternative division of the gamut, although the compiler never defines it thus, nor does he discuss or use such an alternative nomenclature elsewhere in the treatise:

Graves: Γ–F
Acutes: G–f
Superacutes: g–ee

The benefit of such a division in the context of these examples is that it establishes perfect synchronicity between the two methods of description (by register and by number), which otherwise would have conflicted at the Gs. Most of the graves, for instance, up through F, are labeled “primum.” Among the author’s usual graves, only G would be labeled differently, as “secundum.” By shifting the boundaries of the register to the Gs, the systems coincide, such that each grave also is called “primum,” each acute “secundum,” and each superacute “tertium.” Such an alternative division also offers the potential to resolve the conflict noted earlier between the author’s registral division of pitches and his registral division of hexachords, which also conflicted at the Gs. As we shall see, it is just such a resolution that seems to be pursued both in the *Quaestiones et solutiones* and in Aaron’s *De institutione harmonica.*

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273 This reference by number is a further connection with Aaron, which will be discussed below.
274 The inclusion of Γ as part of the graves rather than as subgrave is purely conjecture, done by analogy with the upper Gs, since the author does not include an example for Γ, where no mutation occurs.
One further element of the *Compendium*’s description of the division of the gamut is worth noting here, namely the author’s conspicuous use of the term *subgravis* as a separate category for the note Γ, a further connection with Aaron’s own first division of the gamut. As noted earlier, the word is actually quite rare in the Latin theoretical literature. A search of the online *Thesaurus Musicarum Latinarum*, for instance, yields just six results other than Aaron, namely: the Anonymous fourteenth-century commentaries on Boethius *Comendacio artis musicae secundum quendam Gregorium* and *Commentum in musicam Boethii*; Johannes Ciconia’s *Nova musica*; Johannes Hothby’s *Excitatio quaedam musicae artis per refutationem*; and the two anonymous treatises now under discussion, the *Compendium musices* and the *Quaestiones et solutiones*.275 The term also appears in a pair of late-fifteenth-century vernacular treatises, namely Hothby’s *La calliopea legale* and, significantly, Bonaventura’s *Breviloquium musicale*.

The earliest use of the term *subgravis* to describe a range of the gamut in a technical fashion (rather than in a general way to mean “very low”) appears to be in the second book of Johannes Ciconia’s *Nova musica*, which, as noted in the previous chapter, was written during the first decade of the fifteenth century.276 The term appears not

275 A little-used alternative tradition, best exemplified in two works by Tinctoris, labels Γ as “gravissimus.” In his *Expositio manus*, chapter 2, Tinctoris explains that “... of those twenty positions [of the hand], only one is most grave [gravissimus], namely Γ ut, because the lowest syllable resides on it.” (“At istorum viginti locorum unicus est gravissimus, scilicet Γ ut, quoniam in eo gravissima vox residet.”) He then goes on to specify that the graves extend “from A re inclusive up to the first A la mi re exclusive [i.e., up to G sol re ut].” (“... ab A re inclusive usque ad A la mi re primum exclusive ...”) Tinctoris, *Expositio manus*, 2.30. He provides similar definitions in his *Terminorum musicae diffinitionum*, s.v. “Graves” and “Gravissimus.”

276 In the two fourteenth-century commentaries on Boethius, both of which originated at Oxford, the term is used more generally in a discussion of contrast in sounds: “Sic acuta vel acutissima gravibus et subgravibus temperantur, ut auriibus sui iudicii fere subtrahatur autoritas, et animus, quem tante suavitatis demulcit gracia, auditorum merita examinare non sufficiat.” (“Thus high and very high sounds are mixed with low and very low sounds, in order that authority generally may be removed to the ears, of their own judgment,
within the context of the octave-based registers of Guido but instead within the context of a discussion of tetrachords, a not unsurprising topic given the speculative nature of much of Ciconia’s treatise. In a chapter entitled “List of the Tetrachords According to Bernardus,” Ciconia explains that Bern of Reichenau enumerated five principal tetrachords in his early eleventh-century *Prologus in Tonarium*, namely grave, final, superior, excellent, and synemenon [*sic*], covering the two-octave range of the combined Greater and Lesser Perfect Systems as transmitted by Boethius (A to aa).277 Ciconia then goes on to explain that a sixth tetrachord, which he calls the subgrave, is now in use:

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Est autem et sextum tetracordum iam inferius ordinatum, quod nominatur subgravium, his caracteribus figuratum: Δ Ε Φ Γ. Constat autem ut ceteri tono, semitonio, et tono. Quod licet nuper inventum fuerit, nemo tamen prudentum hoc vitet, quoniam hec ars absque eo sua plenitudine caret.
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But now a sixth tetrachord also has been placed lower, which is called the tetrachord of the subgraves, and it is figured with these characters: Δ, E, Φ, Γ. Like the rest, it consists of tone, semitone, and tone. Although this tetrachord may have been invented recently, nevertheless no prudent person should shun it, because this art lacks its fullness without it.278
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Shortly thereafter Ciconia supplies a diagram of the six tetrachords, labeled “according to Remigius,” although Ciconia does not mention Remigius’s commentary on

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277 Ciconia, *Nova musica*, II.51 (“Item de tetrachordis secundum Bernardum”). Ciconia labels them *tetrachordum gravium, tetrachordum finalium, tetrachordum superiorum, tetrachordum excellentium*, and *tetrachordum synemenon [sic]*. Bern of Reichenau introduces the tetrachords in the first chapter of his *Prologus*.

278 Ciconia, *Nova musica*, II.51. Ciconia then proceeds to explain how to derive the newer tetrachord on the monochord. Ciconia also briefly mentions this added hexachord in an earlier chapter of the second book (chapter 17), wherein he remarks that “In order that this art may not suffer any deficiency and in order that the four final pitches and the property of the species [of diapason] may be observed, we add one synemenon [i.e., B-flat] between proslambanomenos [A] and hypate hypaton [B]. We also add one tetrachord of subgrave letters, recently given to us by God and distinguished by Greek letters, in this way: Δ E Φ Γ.” (“Igitur ut hec ars nullam penuriam patiatur et quatuor finales voces et proprietas specierum observetur, addimus inter proslambanomenos et hypate hypaton synemenon unum. Addimus et tetracordum unum sub gravium litterarum nuper nobis a Deo datum grecis litteris insignitum, hoc modo: Δ E Φ Γ.”) Ciconia, *Nova musica*, II.17.
Martianus Capella in this chapter on the tetrachords.\footnote{279} The diagram clearly shows the *tetrachordum subgravius* at the very bottom of the gamut, extending downward a fourth from Γ to the D below it (see Figure 10, below). Ciconia’s choice of Greek letters for all four pitches lends consistency with the use of Γ below the graves. His specific choice of letters is not alphabetical within the ancient Greek alphabet, however, but instead coordinates phonetically with the Latin (musical) alphabet: Delta (D), Epsilon (E), Phi (F), and Gamma (G). Despite this meticulous introduction of the subgrave tetrachord, however, Ciconia does not actually use either the term *subgravis* or the Greek pitch letter names elsewhere in his treatise.

\footnote{279} Oliver Ellsworth hypothesizes that Ciconia may have mistakenly attributed the content of the hexachord diagram to Remigius’s *Commentum in Martianum Capellam* because of his references to Remigius in the preceding chapter (chapter 50, “Item de interpretationibus cordarum secundum Remigium”). See Ellsworth’s critical text and translation of Ciconia’s *Nova musica*, 331n99 (continued from p. 329).
Later in the fifteenth century, the term *subgravis* reappears in the *Excitatio quaedam musicae artis* of John Hothby (d. 1487), the English Carmelite friar who by then resided in Lucca. Written in critical response to Ramis de Pareia’s *Musica practica*, which was published in Bologna in 1482, the *Excitatio* survives in just one manuscript (Florence, Biblioteca Nazionale Centrale, Palat. 472) and likely was written either shortly before or shortly after the publication of the *Musica practica*. Hothby was a notable target in Ramis’s vitriolic diatribe against certain traditional principles of music, particularly those relating to tuning and solmization.\(^\text{280}\)

\[^{280}\text{See the Preface to Albert Seay’s critical edition of the \textit{Excitatio} in \textit{Tres tractatuli contra Bartholomeum Ramum}, pp. 1 and 3–6.}\]
In the *Excitatio* the term *subgravis* appears three times, each within a short space in the midst of a lengthy discussion in which Hothby attempts to refute Ramis’s rather dubious argument that theorists ought to limit their use of the term “\(\frac{1}{2}\) quadratum” to those instances in which they also are using the corresponding term “b rotundum” and likewise limit their use of “\(\frac{1}{2}\) durum” to those instances in which they are using the corresponding term “b molle.”  In response, Hothby launches a lengthy critique, amidst which he argues that there are multiple synonymous terms for any given note. One of his primary authorities for his argument is Boethius, and thus part of his argument includes a discussion of the tetrachords and Greek note names of the Greater and Lesser Perfect Systems. Hothby makes the astute observation that at one point in the *De institutione musica* Boethius uses an alternative designation for both the paranete diezeugmenon (d) and the paranete synemmenon (c), instead calling them the lichanos diezeugmenon and the lichanos synemmenon, respectively.  

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281 Ramis’s original statement is as follows: “From this the error of certain singers, who say b molle or square \(\frac{1}{2}\), is clear. For they err in two ways: first, because they sing by means of the syllable of Guido and not by means of the letters of Gregory, and therefore they pronounce neither b as molle nor square \(\frac{1}{2}\) as durus but rather as fa or mi. Secondly, they do not make the correct relation, for when they say square \(\frac{1}{2}\), they ought to say correspondingly round b, and when they say soft b, they ought to say hard \(\frac{1}{2}\), and thus the correct relationship will be made.” ( “Ex his patet error quorundam cantorum, qui dicunt b molle aut \(\frac{1}{2}\) quadratum. Duobus enim modis errant: primo, quia ipsi cantant per syllabam Guidonis et non per litteras Gregorii, neque igitur b molle neque \(\frac{1}{2}\) quadrum durum pronuntiant, sed fa aut mi. Secundo non faciunt rectam relationem; nam quando dicunt \(\frac{1}{2}\) quadratum, debent correspondenter dicere b rotundum, et quando dicunt b molle, debent dicere \(\frac{1}{2}\) durum et sic relatio recta fiet.”) Ramis de Pareia, *Musica practica*, Part I, Treatise II, Chapter 2. Ramis’s point is rather a minor one in the context of his larger discussion of *musica ficta*.

282 According to Boethius, “After [the meson tetrachord], there are two tetrachords, sometimes the synemmenon, sometimes the diezeugmenon. And the synemmenon is that which is placed after the mese, that is, the trite synemmenon. After this is the lichanos synemmenon, also called in the diatonic genus the diatonic synemmenon. But in the chromatic genus it is either the chromatic diatonic synemmenon or the chromatic lichanos synemmenon. But in the enharmonic genus it is either the enharmonic diatonic synemmenon or the enharmonic lichanos synemmenon. After these is the nete synemmenon. But if the synemmenon tetrachord should not be joined to the mese string but rather the diezeugmenon tetrachord, the paramese is after the mese. After this is the trite diezeugmenon, then the lichanos diezeugmenon, which in the diatonic genus is the diatonic diezeugmenon. In the chromatic genus sometimes it is the chromatic
names and their letter-name equivalents, see Figure 11, below, which will be discussed in greater detail in a moment.) As Calvin Bower notes, this is the only instance in the ancient theoretical literature in which the term “lichanos” appears in reference to these two notes, being otherwise confined to the corresponding position within the hypaton and meson tetrachords. From this Hothby extrapolates that any string name may legitimately be reduced to one of three basic designations, namely hypate, parhypate, or lichanos, following the example of the hypaton and meson tetrachords. His lengthy argument deserves to be quoted in full:

In hoc igitur loco paranete synemenon et paranete diazeugmenon lychanos appellat, quasi tale monocordum constitueret vellet, vel huic simile, quemadmodum si proslambanomenos sive A grave et mese sive A acutum et paramese sive ɣ quadrum et netediazeugmenon sive E acutum et netehyperboleon sive A superacutum hypate vocaret. Sed tritesynemenon et trite diazeugmenon triteque hyperboleon parhypate nominarent vellet, quemadmodum paranete synemenon et paranete diazeugmenon appellavit lychanos, hoc modo, hypate parhypate lychanos synemenon gravium, et hypate 

Therefore in this place [Boethius] calls paranete synemenon and the paranete diazeugmenon “lichanos,” as if he had desired to arrange the monochord in such a way, or in comparison to this, just as if he had called proslambanomenos (or A grave), mese (or A acute), paramese (or square ɣ), nete diazeugmenon (or E acute), and nete hyperboleon (or A superacute) “hypate.” And he might have desired to name the trite synemenon, the trite diazeugmenon, and the trite hyperboleon “parhypate,” just as he called the paranete synemenon and the paranete diazeugmenon “lychanos,” in this way: hypate,

diatonic diazeugmenon, sometimes the chromatic lichanos diazeugmenon. But in the enharmonic genus sometimes it is enharmonic diatonic diazeugmenon, sometimes the enharmonic lichanos diazeugmenon. But the same note also is called paranete, with the addition of diatonic, chromatic, or enharmonic.” (“Post hanc sunt duo tetrachorda partim synemenon, partim diazeugmenon. Et synemenon est quod post mesen ponitur, id est trite synemenon. Dehinc lichanos synemenon, eadem in diatonic diazeugmenon synemenon. In chromate vero vel diatonic diazeugmenon chromaticae, vel lichanos synemenon chromaticae. In enharmonio vero vel diatonic diazeugmenon enharmonios, vel lichanos synemenon enharmonios. Post has nete synemenon. Si vero mese nervo non sit synemenon tetrachordum adjunctum, sed sit diazeugmenon, est post mesen paramese. Dehinc trite diazeugmenon, inde lichanos diazeugmenon, quae, in diatono, diatonos diazeugmenon. In chromate tum diatonos diazeugmenon chromaticae, tum lichanos diazeugmenon chromaticae. In enharmonio vero tum diatonos diazeugmenon enharmonios, tum lichanos diazeugmenon enharmonios. Eadem vero dicitur et paranete, cum additione vel diatoni, vel chromatis, vel enharmonii.”) Boethius, De institutione musica, 1.22.

See Bower’s translation of Boethius’s De institutione musica, 42n121.
Hothby’s dense explanation is worth parsing not only for the context it gives to his mention of a subgrave range but also in reference to the earlier discussion of hexachords being identified both by propriety and by range. As mentioned previously, Hothby begins by introducing the idea that the first three notes of each tetrachord might be renamed systematically in such a way that, when ascending, they might appear in the pattern hypate, parhypate, lichanos in each tetrachord. He then goes on to list the various tetrachords, expanding the number from Boethius’s five to a total of eight, and he introduces a novel approach to naming them. Rather than preserving and expanding on the five traditional antique tetrachord names (i.e., hypaton, meson, diezeugmenon,

284 In Seay’s critical edition the text reads “hyperboleon acutarum,” but this would seem to be an error, since Hothby labels the next hyperboleon tetrachord in the same fashion. “Gravium” likely was intended here.

hyperboleon, and synemmenon), he reduces the different tetrachords to just three, namely
diezeugmenon (beginning on $\frac{3}{4}$), hyperboleon (beginning on E), and synemmenon
(beginning on A), each ascending by the intervals semitone, tone, tone. In order to
differentiate the tetrachords by octave, he further differentiates the tetrachords by register
using the now-familiar Guidonian nomenclature of graves, acutes, and superacutes. The
result is that he effectively renames each pitch of the Greater and Lesser Perfect Systems
according to a repeating pattern of three interlocking tetrachords, distinguished by
register in a way that is strikingly similar to the way in which Bonaventura and the
compiler of the *Compendium musices* list the hexachords both by propriety and register
in the next two decades. Hothby’s complete system of renamed tetrachords can be seen in
Figure 11, below. In the figure, the center column shows the traditional antique note
names with their letter-name equivalents (note names for the synemmenon tetrachord are
shown in parentheses). The left-most column shows Hothby’s alternative names for the
diezeugmenon and hyperboleon tetrachords, while the right-most column shows his
alternative names for the synemmenon tetrachords.
Although he does not say so, it seems clear that Hothby has the contemporaneous system of interlocking hexachords, with its three distinct proprieties, firmly in mind here.

Indeed, he seems to be trying deliberately to reimagine the classical tetrachordal system within the context of the hexachordal system, as preparation for his defense of that system in the pages to come. Hothby’s tetrachordal system does not perfectly map onto

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286 Hothby calls this tetrachord “acutarum,” but he later repeats that designation for the hyperboleon tetrachord that is an octave above. It seems reasonable to assume that this was an error, and that he meant to write “gravium” for this tetrachord. (See note 284, above.)

287 Hothby goes on to attack Ramis’s novel solmization system (psal-li-tur per vo-ces is-tas) in the ensuing paragraph.
the contemporaneous gamut, however. For one, it ends at the top with dd (rather than ee), as the top note of the synemmenon superacute tetrachord. Why Hothby did not add an additional superacute diezeugmenon tetrachord, beginning on \( \flat \flat \) superacute and ending on ee, is unclear, particularly since the note \( \flat \flat \) also is otherwise missing in his system. At the bottom of the system, meanwhile, it is worth noting Hothby’s inclusion of a grave synemmenon tetrachord, beginning on A and including low B-flat, in contrast to the traditional gamut, which has only \( \flat \) mi in that register.

Below that is Hothby’s “subgrave hyperboleon” tetrachord, beginning on the E below \( \Gamma \) and extending to A. Just as in Ciconia, we see the introduction of a subgrave tetrachord that extends below the traditional Greater and Lesser Perfect Systems, although Hothby’s subgrave tetrachord is not identical to that of Ciconia, whose tetrachord begins one note lower on \( \Delta \) (D). The difference comes from Hothby’s retention of the Boethian tetrachord, with its ascending construction of semitone-tone-tone, as opposed to the “modal” tetrachord tone-semitone-tone, first introduced in the Musica enchiriadis and Scolica enchiriadis and later refined in Hucbald’s Musica. Similarly to Ciconia, Hothby explains the inclusion of the subgrave tetrachord as an addition for modern usage (“... the subgrave hyperboleon, the notes of which have been added in our age.”).

Despite this, Hothby does not use the term subgravis again in the Excitatio or in any of his other major Latin treatises. The term does appear, however, in Hothby’s

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288 One interesting quirk of Hothby’s system of tetrachordal nomenclature is that the top boundary pitch of each four-note tetrachord goes unnamed, presumably because it would be superfluous throughout most of the system, either on account of the conjunct diezeugmenon and hyperboleon tetrachords or on account of the close overlapping of the diezeugmenon and synemmenon tetrachords. The exception is dd, which remains unnamed as the top boundary pitch of the topmost superacute synemmenon tetrachord.

vernacular treatise *La calliopea legale*, a work that survives in five manuscripts. Here Hothby uses the term in a noticeably different fashion, employing it in conjunction with the contemporary Guidonian registers:

\begin{align*}
\text{Le positioni delle voci sono quattro et piu et meno secondo che altrui piace, cioe subgrave, grave, acuta, et sopracuta. . . .} & \quad \text{The positions of the notes are four, and more or less according to one's pleasure, namely subgrave, grave, acute, and superacute.}
\end{align*}

Hothby follows this statement with a “table of notes” ("tavola delle voci") in which he depicts an expanded gamut of three full octaves and apportions the notes in the following way:

- **Subgraves:** G
- **Graves:** A–G
- **Acutes:** A–G
- **Superacutes:** A–G

As noted earlier, the term *subgrave* also makes a brief appearance in Bonaventura’s *Breviloquium musicale*, published just two years before the *Compendium*. In chapter 3, entitled “Regarding grave, acute, and superacute letters,” Bonaventura initially divides the gamut into the three familiar registers, specifically distributing the pitches as follows:

- **Graves:** Γ–G
- **Acutes:** a–g
- **Superacute:** aa–ee

Bonaventura does not stop there, however, instead going on to report two other methods of dividing the gamut:

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290 See Timothy McDonald’s critical edition, pp. 11–12, for a description of the extant manuscripts.
291 Hothby, *La calliopea legale*, paragraph 9. Throughout *Calliopea* Hothby uses the word *voce* in an idiosyncratic fashion, to mean “note,” as in the letter names. In paragraph 3 of the treatise, for instance, he states that “The notes are seven, namely, A, B, C, D, E, F, G.” (“Le voci sono sette, cioe A, B, C, D, E, F, G.”) Hothby’s qualifying phrase “piu et meno secondo che altrui piace” is interesting here, for it may represent his own reaction to inconsistencies in the way his fellow theorists divide the gamut.
292 Hothby does not use lower-case or duplicate letters to differentiate between registers in the *Calliopea*. 
Se pono ancora dividere piu strette, scilicet, subgrave, grave, acute, et supra acute. Ancora se pono dividere piu strette, scilicet, subgrave, grave, finale, confinale, acute, excellent, et excellentissime, de le quale e la declaratone nel primo de la Venturina nel capitolo de litteris gravibus etc.

[The 20 letters of the gamut] also can be divided more narrowly, namely subgrave, grave, acute, and superacute. They also can be divided even more narrowly, namely, subgrave, grave, final, cofinal, acute, excellent, and most excellent, about which there is a discussion in the first book of the Venturina, in the chapter concerning grave letters, etc.\(^{293}\)

As in Hothby’s *Calliopea*, here again there is evidence of the subgrave category being used in conjunction with the contemporaneous Guidonian registers, not just archaically in the context of old-fashioned tetrachords. In the first sentence, Bonaventura introduces the subgrave category as a means to further divide the gamut, adding it to the three Guidonian registers, but unfortunately he does not specify which note or notes fall under such a category. He then goes on to suggest a further division into seven parts, also including a subgrave category. An informed reader instantly would recognize many of these register names in relation to the tradition of tetrachords, suggesting a link with Ciconia’s and Hothby’s tetrachordal use of the term.\(^{294}\) Again, Bonaventura provides no additional information about this division, instead referring his readers to his *Brevis collectio*. Nevertheless, the competing divisions are presented merely as alternatives that he wishes to report rather than endorse, and he makes no further mention of a subgrave category elsewhere in the *Breviloquium*.

Unfortunately, despite the cross-reference to his larger work, Bonaventura does not actually discuss either alternative division in his *Brevis collectio*, although he does provide an illustration of the gamut that shows something akin to his final seven-part

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\(^{293}\) Bonaventura da Brescia, *Breviloquium musicale*, chapter 3.

\(^{294}\) For instance, in the *Musica enchiriadis*, the tetrachords are called the *graves, finales, superiores*, and *excellentes*. See Atkinson, *The Critical Nexus*, 121.
division. In the graphic he shows the gamut as a system of overlapping hexachords, which he divides first into the expected three-part division of graves, acutes, and superacutes. He then divides each of the three registers further to create a more extensive six-part division (as opposed to the seven-part division noted in the *Breviloquium*). The six-part division of the *Brevis collectio* equates roughly with a division by tetrachord, although the results are not systematic, for the varying spans of the three registers (i.e., eight pitches in the graves, seven in the acutes, and just five in the superacutes) do not lend themselves to a consistent and equal subdivision (see Figure 12, below). As can be seen in the figure, Bonaventura begins his six-part division with a tetrachord labeled “graves,” not subgraves. In fact, Bonaventura makes no mention of the term *subgrave* anywhere in the *Brevis collectio*.

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Figure 12: Division of the gamut according to Bonaventura da Brescia, *Brevis collectio artis musicae*.

This leads us back to the *Compendium*, in which the term subgravis actually appears in two different sections. The initial appearance occurs early on, when the author is laying out the registers of the gamut. Reminiscent of Bonaventura, he first declares that the twenty letters of the hand are divided into four registers: subgrave, grave, acute, and superacute.\(^{297}\) In contrast to Bonaventura, however, the author does go on to specify the extent of the subgrave category, explaining that it applies only to \(\Gamma\). He then proceeds

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\(^{296}\) Seay’s rendering of the figure in his critical edition of the treatise is not entirely clear as to where the dividing line is for the excellentes and excellentissimae. See Seay’s critical edition, p. 14.

with a Marchetto-like historiographical explanation for the addition of Γ and the use of the Greek letter rather than the Latin G. Here, as in Hothby’s Calliopea, we see the term *subgravis* being used unequivocally as a fourth registral category on par with the traditional three of Guidonian usage, even if the category is limited to a single letter. This usage is reinforced later in the treatise, during the lengthy passage on the *deductiones* quoted earlier (see page 96), when the author sets out the starting point for the first *deductio* on “G subgrave,” the only other appearance of the term *subgravis* in the Compendium. Thus we see in Hothby, Bonaventura, and the Compendium the first clear antecedents of Aaron’s use of the subgrave category for Γ, which originated in the rather esoteric theoretical tradition of adding a subgrave tetrachord below one of the two archaic systems of interlocking tetrachords.

We turn now to the *Quaestiones et solutiones*, a treatise that we also encountered in the previous chapter regarding Aaron’s five-part division of plainchant. There are two relevant discussions of the gamut in this treatise. The first appears early in the work, shortly after the author’s explanation of the five-part division. The compiler begins his discussion by relating the gamut immediately to the Guidonian Hand, even though he includes no illustration of the popular pedagogic device.

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300 The treatise incorporates musical examples but does not include illustrations.
Notandum est quod dicta scientia composita fuit et figurata in sinistra manu in qua sunt viginti duo signa, b numero duplicata, et septem litterae latinae, videlicet, A B C D E F G. Et una est littera graeca quae ponitur et figuratur in principio manus, et ista littera vocatur Γ gamma et apposita est ad perpetuam memoriam philosophorum. Note that the science [of music] was composed and notated on the left hand, on which there are twenty-two signs, with b appearing twice, and there are seven Latin letters, namely A B C D E F G. And there is one Greek letter that is placed and notated at the beginning of the hand, and this letter is called Γ and was positioned in perpetual memory of the philosophers.

Thus, just as we saw in the *Compendium*, the Guidonian hand, which itself is integrally bound with solmization, is firmly connected with the very basis of the gamut for the compiler of the *Quaestiones*. Here the author initially describes a gamut that consists of 22 pitches, which includes soft b in the two upper octaves as distinctly separate pitches from square ⁷. This is a departure from the *Compendium*’s gamut, which regards b and ⁷ as variations of the same position (as can be seen in the *Compendium*’s illustration of the gamut shown in Figure 9 on page 95, above).

The compiler of the *Quaestiones* goes on to divide the hand according to grave, acute, and superacute registers, but there is some confusion in his description of the division due to his overlapping of the boundary pitches:

. . . sicut sunt septem dies in ebdomata, ita sunt septem litterae in musica, quarum prima dicuntur graves, secundae acutae, tertiae superacutae. Et distribuitur hoc modo: A principio manus usque ad G secundum dicitur gravis, quia voces graves sunt et gravem cantum reddunt. Et a secundo G usque ad tertium G dicitur acutum, quia voces acutae sunt et acutum cantum reddunt. Et a tertia G usque ad finem dicitur superacutum, quia voces superacutae sunt, scilicet, in . . . just as there are seven days in a week, so there are seven letters in music, of which the first are called graves, the second acute, and the third superacute. And it is distributed in this way: from the beginning of the hand to the second G is called the grave, because the sounds are low and produce a low song. From the second G to the third G is called acute, because the sounds are high and make a high song. From the third G to the end is called superacute, because the...

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supranis vocibus et in capite et cantum superacutum reddunt. sounds are very high, namely, in soprano voices and in the head, and they produce a very high song. 302

From this it is not entirely clear how the author means to classify the two upper Gs: is each the upper end of the register below it or the starting point of the next register above? The distinction is an important one, as we shall see.

The author at first seems to provide some clarification with his ensuing citation of a brief Latin verse, which is actually copied from Bonaventura’s *Breviloquium* (the verse also appears in Bonaventura’s larger *Brevis collectio artis musicae*). 303 The simple verse runs thus:

Octo primae sunt graves scribunturque capitales.
Septem diminuas quas hinc vocabis acutas.
Reliquae sunt quinque et nomina sunt supra acutae.

The first eight are grave and are written in capital letters.
The next seven are written in small letters, which you will call acute.
The remaining ones are five and their names are superacute. 304

It is noteworthy that the number of pitches catalogued in the verse adds up only to 20, in contrast to the 22 cited previously by the author. The most logical explanation for this discrepancy is that the verse accounts for round b and square ½ as a single position, as we also saw in the *Compendium*. This suggests the following, very conventional division of the gamut, which matches the gamut laid out in the *Breviloquium*:

- Graves: Γ–G
- Acutes: a–g
- Superacutes: aa–ee

302 *Quaestiones et solutiones*, f. 48r.
303 Cf. Bonaventura da Brescia, *Breviloquium musicale*, chapter 3, and *idem*, *Brevis collectio*, 8.3. In the *Brevis collectio*, Bonaventura attributes the verse to Boethius, which obviously is not correct. A search of the TML turns up no additional instances of this particular verse.
304 *Quaestiones et solutiones*, f. 48r.
The borrowed verse is not the last word on the topic, however. A markedly different approach to the division appears a little later, when the compiler turns his attention to the *deductiones*. After explaining that there are seven such *deductiones* in the hand, the compiler goes on to situate each according to its starting and end points in a passage that is almost identical to the one quoted earlier from the *Compendium*. There are several important differences in the *Quaestiones*’s version of the passage, however:

Unde prima deductio seu formatio habet principium in G subgravi et finem in E gravi et cantatur per † quadrum grave. Secunda habet principium in C gravi et finem in A acuto et cantatur per naturam gravem. Tertia habet principium in F gravi, finem vero in D acuto et cantatur per b molle grave. Quarta habet principium in G acuto et finem in E acuto et cantatur per † quadrum acutum. Quinta habet principium in C acuto, finem vero in A superacuto et cantatur per naturam acutam. Sexta habet principium in F acuto et finem in D superacutum et cantatur per b molle acutum. Septima et ultima habet principium in G superacutum, finem vero in E superacuto et cantatur per † quadrum superacutum.

Whence the first *deductio* or *formatio* has its beginning on G subgrave and its end on E grave and is sung by means of the grave square † [propriety]. The second has its beginning on C grave and its end on A acute and is sung by means of the grave natural [propriety]. The third has its beginning on F grave but its end on D acute and is sung by means of the grave soft b [propriety]. The fourth has its beginning on G acute and its end on E acute and is sung by means of the acute square † [propriety]. The fifth has its beginning on C acute but its end on A superacute and is sung by means of the acute natural [propriety]. The seventh and last has its beginning on G superacute but its end on E superacute and is sung by means of the superacute square † [propriety].

As we noted earlier in the description of the *deductiones* in the *Compendium*, here again we have the notion that each *deductio* is identified not just generally by propriety but also specifically by register. However, whereas in the *Compendium* the compiler retained a mostly traditional division of the gamut (with the exception of the use of the subgrave category), here we see a subtle but significant departure from the normal

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305 *Quaestiones et solutiones*, ff. 49r–49v. Emphasis mine.
division, a departure that notably coincides more perfectly with the registral division of the \textit{deductiones}. Specifically, the compiler of the \textit{Quaestiones} adopts an altered division that regards each of the two higher Gs not as the top end of the register below it but as the starting point for the one above it, similar to the alternative division that we saw among the examples of mutation in the \textit{Compendium}. Leaving aside the grave hard hexachord for a moment, note the treatise’s description of the acute hard hexachord that begins on G. As we saw above, the verse from Bonaventura that the compiler quoted earlier designates this G as part of the graves, yet here the compiler specifically describes the starting point of the acute hard \textit{deductio} as “G acute.” Similarly, he relates that the superacute hard hexachord begins on “G superacute” rather than G acute. Although he does not say so here, it is difficult to escape the conclusion that the compiler’s relocation of the starting points for the acute and superacute divisions from the more-traditional A to G is related directly to the fact that G is the starting point for each set of \textit{deductiones} when grouped in this way by register.

Elsewhere, in fact, in his later section on mutation, the compiler includes a lengthy discussion as to why Γ, and not A, is the first letter of the hand and why G, and not A, carries the first musical syllable ut, suggesting that such questions were very much on the mind of the compiler.\footnote{See anonymous, \textit{Quaestiones et solutiones}, ff. 53v–54r.} Thus, just as each hard \textit{deductio} begins a new register of hexachords, so each G, the starting point of the hard \textit{deductiones}, begins each new register of pitches, resulting in the following division:

\begin{center}
Graves: Γ–F  
Acutes: G–f  
Superacutes: g–ee
\end{center}
The hexachords thus seem to assume a foundational role in the division of the gamut for the compiler of the *Quaestiones*. Moreover, from this we can better understand the confusion noted above in the author’s first description of the boundary pitches for the upper registers, for there seem to be clear tensions between the traditions from which the compiler was working. From Bonaventura and from the source the compiler shared with the *Compendium* (or perhaps from the *Compendium* itself) came the notion of each pitch register beginning on A, but the compiler also seems to have acknowledged a competing conception, whereby each pitch register instead coincides with the beginning of each group of hexachords (perhaps influenced by the examples of mutation in the *Compendium*, with its alternative division?).

In order to reinforce that this confusion over the labeling of the Gs is not merely a momentary lapse on the part of the compiler or copyist of the *Quaestiones* but rather reflective of an emerging alternative to the traditional division of the gamut, it is also worth noting a conspicuous correction made in the Italian section of the treatise, in a portion of the work that was copied verbatim from Bonaventura’s *Breviloquium*. Amidst a chapter on the so-called “chord of the modes” (*corda*), which is a method that singers can use to determine whether a melody with very limited range is authentic or plagal, the author positions the *corda* for each pair of modes using pitch nomenclature that combines the letter name, hexachord syllables, and register (e.g., “a la mi re acute”).307 After locating the *corda* for modes 1 and 2, the manuscript initially reproduces Bonaventura’s description that “The chord of the third and fourth mode is G sol re ut grave,” reflecting

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307 In the *Breviloquium musicale*, this discussion occurs in chapter 32. We shall return to the topic of the “chord of the modes” in a later chapter, for it is a topic that Aaron also explores.
the more traditional approach to register division and pitch nomenclature.\footnote{308} According to Seay’s critical edition, however, the “grave” is corrected to “acute” (“acuto”) above the line in the manuscript, creating the same conflict with the boundary pitch between the grave and acute registers that we saw above.\footnote{309} Although it seems probable that this emendation was made not by the original compiler of the treatise but rather by the copyist Johannes Materanensis (if not by a later hand), nevertheless this shared approach to an alternative division of the gamut that uses the starting point of each set of deductiones as the starting point for the otherwise octave-based registral divisions suggests that for at least a subset of practically-minded musicians there was a growing foundational importance of the hexachords at the turn of the sixteenth century.

Returning to the Quaestiones’s version of the lengthy passage discussed above, it is particularly surprising within this context that the compiler incorporates (without previous introduction or further explanation) the notion of a subgrave division when he gives the starting point for the grave hard hexachord as “G subgrave.” By analogy with the upper two hard hexachords, the starting pitch for the lowest hexachord logically ought to have been labeled as G grave in this passage, an inconsistency that also appears in Aaron’s first division of the gamut two decades later, as we noted earlier. Notably, the term subgrave does not occur elsewhere in the compilation.

The obvious question becomes, was Aaron aware of these three handbooks on plainsong while preparing his De institutione harmonica? The fact that the Quaestiones

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\footnote{308} “La corda del terzo e del quarto tono e G sol re ut grave.” Quaestiones et solutiones, f. 63v. Compare Bonaventura, Breviloquium musicale, chapter 32.

\footnote{309} See Seay’s critical edition, 26n18. Unfortunately, Seay does not make clear whether the correction was done by the same hand or by a different one.
survives in just one manuscript source certainly casts doubt on any direct connection, although the work is the only one of the three that also transmits the five-part classification of chant discussed in the previous chapter. That Aaron was acquainted with the *Breviloquium* and the *Compendium* seems more promising, owing to their widespread popularity throughout the sixteenth century, particularly during the first two decades. Unfortunately, there is little in Aaron’s chapters on the gamut to demonstrate any direct connection with any of these three works.

Returning now to Aaron, it is clear from the preceding discussion that his unusual first division of the gamut, which at first glance seems entirely unprecedented, if not wholly erroneous, actually is related to a certain thread of practical theory that divides the seven hexachords not just by propriety but also by register, labeling the *deductiones* themselves as grave, acute, or superacute.\(^{310}\) In both the *Breviloquium musicale* and the *Compendium musices*, as we saw, the practical implication of this registral description is rather limited. Both treatises generally continue to use a mostly conventional division of the gamut (other than the anomalous musical examples for mutation in the *Compendium*), notwithstanding their addition of the subgrave category, a holdover from a separate theoretical tradition. In the *Quaestiones et solutiones* (and in the mutation examples of the *Compendium*), however, there is a subtle but important change in the way that the gamut may be divided, with G rather than A as the starting point for the still octave-based registral divisions, apparently in order to have the starting notes of the registral divisions

\(^{310}\) We can see a continuation of this tradition beyond Aaron as well. For instance, in Biagio Rossetti’s 1529 treatise on the training of singers, the *Libellus de rudimentis musices*, the author delineates the starting point for each of the *deductiones*, referring to them both by propriety and by register in the same way as Bonaventura, the *Compendium musices*, the *Quaestiones*, and Aaron (i.e., “\(\frac{1}{2}\) quadrum grave,” “natura gravis,” “b molle grave,” etc.). See Rossetti, *Libellus de rudimentis musices*, chapter 4.
of pitch coincide with the starting notes of the hard hexachords, which begin each new
division of hexachord registers. Finally, in Aaron, we see the labeling of hexachord
registers taken to a most convoluted extreme, for he takes the registral label of each
hexachord and applies it by extension to all the pitches of that hexachord, resulting in
notes that are mixed between two registers as well as registers that extend beyond the
usual distance of an octave.

So far we have talked almost exclusively about Aaron’s unusual first division of
the gamut, but, as noted at the outset of this chapter, Aaron also presents a second
division in his ensuing chapter, titled “Another division of the hand” (“Alia manus
divisio”). In comparison to his first division, Aaron’s second division is much simpler
and notably recalls in content the Quaestiones’s very first description of the gamut,
although the language is not the same:

Scio equidem has viginti voces,
sive litteras sub quibus voces ipsae
continentur, aliter etiam dividi ut
scilicet a Γ ut usque ad G sol re ut
acutum graves sint Acutae vero ab
eodem G sol re ut usque ad
secundum numerentur. Caeterae
vero quae a G sol re ut secundo
restant superacutarum appellatione
censeantur. Sic quidem graves
erunt septem. Totidem acutae.
Superacutae autem sex.

For my part, I know that these
twenty syllables, or the letters to
which the syllables themselves are
connected, also are divided in
another way, namely such that the
graves are from Γ ut all the way to
G sol re ut acute, but the acutes are
reckoned from the same G sol re ut
all the way to the second G sol re
ut. But the rest that remain from the
second G sol re ut are called by the
name of superacutes. Thus there
will be seven graves. There will be
as many acutes. But there will be
six superacutes.311

On the surface, Aaron’s second division seems much more conventional than his
first, at least to the extent that it is clearly octave-based in its conception. However, as in
the Quaestiones, there is some confusion in Aaron’s description regarding the boundary

pitches for the octave-based registers, for he describes the two upper Gs both as the endpoint of one register and as the beginning of the next. His meaning becomes clearer at the conclusion of the chapter when he enumerates each register, declaring that there are seven graves, seven acutes, and six superacutes, which reveals the following division of the gamut (see also Figure 13 on page 124):

Graves: Γ–F
Acutes: G–f
Superacutes: g–ee

Such a division, with registers beginning on G rather than A, is reinforced in his initial description of the second division, when Aaron specifically describes the graves as ascending from Γ ut to G sol re ut acute (as opposed to G sol re ut grave), thus adopting the same registral division of pitch that we saw in parts of the Quaestiones. Although Aaron does not similarly label the higher G sol re ut as either acute or superacute in this passage, he consistently describes the note as superacute throughout his treatise. Thus Aaron’s second division, though octave-based and more systematic than his first, also is clearly influenced by the hexachord-linked division of the gamut that we encountered both in the Quaestiones and in the mutation examples of the Compendium.

Interestingly, it is this second division that Aaron employs throughout the De institutione harmonica, despite its initial presentation as a kind of alternative to the first. In this chapter Aaron also introduces an additional means of differentiating certain notes that possess the same combination of letter name and hexachord syllables in

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312 As Bergquist notes, Aaron was inconsistent in his registral classification later in his Toscanello, alternatingly referring to G sol re ut as both grave and acute (see, for instance, Aaron, Toscanello, II.7–8). Nearly thirty years after the De institutione harmonica, in his Lucidario, Aaron rejects his earlier division altogether, arguing that the first G sol re ut ought to be reckoned with the graves and the second with the acutes, such that the graves span from Γ to G; the acutes from a to g; and the superacutes from aa to ee (Aaron, Lucidario, I.2). See Bergquist, “The Theoretical Writings of Pietro Aaron,” 91–92.
two different registers. In the gamut there are five such pairs, extending from E la mi to B fa ἡ mi. Aaron labels the lower of each pair as “prima,” the higher as “secunda,” descriptors that he employs throughout the *De institutione harmonica* (see Figure 13, below). Interestingly, we see a similar use of such descriptors in Bonaventura’s *Breviloquium*, in the way that he describes the division of the gamut:

Item queste xx littere se dividono in tre parte largo modo, scilicet in grave, acute, & supra acute, hoc modo, da Γ ut in fino in G sol re ut primo tutte sonno grave. Item dal primo A la mi re in fino al secondo G sol re ut sonno acute. Item dal secondo A la mi re in fino ad E la sonno supra acute etcetera.

These 20 letters are divided into three parts in a large way, namely into grave, acute, and superacute, in this way: from Γ ut to an end on the first G sol re ut are the graves. Also from the first A la mi re to an end at the second G sol re ut are the acutes. Also from the second A la mi re to an end at E la are the superacutes, etcetera.\(^{313}\)

Aaron’s use of numerical descriptors also is somewhat reminiscent of the use of such descriptors in the mutation examples of the *Compendium musices* discussed earlier, although Aaron uses his numbers differently and in a more limited way.\(^{314}\)

Finally, it is worth noting that throughout Aaron’s treatise there is no use of the older convention of differentiating pitch register with capital letters, lower-case letters, and duplicates (i.e., differentiating A, a, and aa). Instead, capital letters and lower-case letters are used indiscriminately and nearly always appear with the appropriate

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\(^{314}\) In his 1529 *Libellus de rudimentis musices*, Biagio Rossetti reports a different solution to this potential ambiguity of identical solmization syllables between E la mi and B fa ἡ mi, explaining that some musicians use duplicated letters beginning with ee la mi [acute] and continuing all the way to ee la (rather than reserving them purely for superacute letters). Rossetti associates the practice with “the Belgians (whom we call the Flemish)” (“Belgas (quod Flandrenses dicimus)”). Rossetti, *Libellus de rudimentis musices*, chapter 4.
solmization syllables. Aaron’s complete second division of the gamut, including all the idiosyncrasies of his nomenclature, is shown below in Figure 13.

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<td>E la mi</td>
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<td>D</td>
<td>sol</td>
<td>re</td>
<td>D sol re</td>
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<td>C</td>
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<td>C fa ut</td>
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<td>♀</td>
<td>ut</td>
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**Figure 13**: Second division of the hand according to Pietro Aaron, *Libri tres de institutione harmonica*, Book I, Chapter 3.

There follows a very brief chapter in which Aaron reiterates that there are a total of twenty “positions” (*positiones*) in the gamut (I.4). This number coincides with the usage in the *Compendium musices* and the *Breviloquium musicale*, but it differs from that used in Gaffurius’s *Practica musicae* and in most of the *Quaestiones et solutiones*. The discrepancy arises because Aaron conflates b fa and ♯ mi as a single position in the hand.

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315 Whether this lack of differentiation is Aaron’s own convention or a reflection of the compositor’s inexperience in matters of musical practice is impossible to know. There is a similar inconsistency in Bonaventura’s *Breviloquium*. 

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always referring to the position as b fa ♭ mi regardless of context, whereas Gaffurius and others who cite twenty-two positions grant a separate position to each note in both the acute and superacute registers.

Aaron’s treatment of the gamut concludes with a chapter on letter names (claves), which he treats both from a general standpoint and with respect to the three principal claves, or clefs (F fa ut, b fa ♭ mi, and C sol fa ut). Throughout the chapter there is a certain ambiguity in Aaron’s use of the word clavis, for he employs the word variously to describe three separate but related concepts: letter names, clefs, and, metaphorically, physical keys that open locks. In the first part of the chapter, Aaron speaks generally about letter names, asserting that each letter name acts universally as a key for determining the letter names around it. This leads him to a discussion of what he calls the “principal” letter names, the clefs, which orient the singer on the page and act as “leaders” (duces) in a song. Aaron includes not just the expected clefs of F fa ut and C sol fa ut but also the position of b fa ♭ mi.

Although Aaron does not specify which of the two options at b fa ♭ mi he has in mind, it is clear from the context that he is referring only to b fa, for he relates each of the principal clefs not just to a position in the gamut but also to hexachord propriety. As Aaron explains, F fa ut is associated with the natural propriety; b fa ♭ mi with the soft propriety; and C sol fa ut with the hard propriety. Although Aaron does not explain it himself, each of these positions represents the syllable fa in the hexachord with which Aaron associates it, further evidence of the pervasiveness of hexachords in Aaron’s thinking about the gamut’s nomenclature and notation. Such an association calls to mind
Gaffurius’s description of the principal clefs in his *Practica musicae*, in which he specifically connects the three clefs to the semitone in each hexachord:


And so in this arrangement a clef is drawn where the first tetrachord of each hexachord is ended, on the last note [i.e., on the fourth note of each hexachord]. And not inconveniently, by one consensus musicians assign a clef to that note that leads to the low semitone that is nearer to itself. For the semitone itself is more artificial and more difficult, in nature and in art, with respect to its proportion and its extent, than the tone. And therefore it is more in need of demonstration.316

To summarize, then, hexachords clearly play an important role in Aaron’s conception of the gamut in the *De institutione harmonica*. We can see this emphasis both in his divisions of the gamut (explicitly in the first, implicitly in the second) and in his relation of the principal clefs to specific proprieties. Aaron’s divisions in particular reveal a shift away from traditional modes of thinking that tended to regard A as the logical starting point for the different registers of the gamut, notwithstanding the peculiar problem of the added note of Γ’ ut. Such a shift already was under way in the last years of the fifteenth century, when theorists such as Bonaventura da Brescia and the anonymous authors of the *Compendium musices* and the *Quaestiones et solutiones* had begun to describe deductiones not just by propriety but also by register. This led to discrepancies in how best to label the pitch G sol re ut in the upper two octaves of the gamut, either as the concluding pitch of the lower register (according to the traditional mode of thinking) or as the starting pitch of the upper register (in agreement with the registral designation of

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the hexachord that begins on that pitch). Whereas Aaron’s first division takes the association of hexachords and register to an inutile extreme, his second division (the one he uses throughout the treatise) is a logical consequence of the intellectual shift that is evident in these earlier treatises. Although in these chapters of the De institutione harmonica there is no conclusive evidence of a direct link with these three handbooks on plainsong, in our next chapter, regarding Aaron’s discussion about solmization and mutation, we shall see that there are strong reasons to believe that Aaron was indeed familiar with at least two of these earlier works.
Chapter 4: Solmization and Mutation in Plainsong

After laying out the gamut, Aaron takes up the topics of hexachords and mutation in plainsong. As we shall see, much of Aaron’s treatment of these topics is very much in the tradition of Marchetto’s *Lucidarium*, particularly in Aaron’s inclusion of the technique of “permutation.” In other respects, however, Aaron’s discussion of solmization and mutation shows the influence of some of his more recent predecessors.

In particular, Aaron’s work reveals strong connections with three popular printed works from the last decade of the fifteenth century, each of which we have already encountered: Gaffurius’s *Practica musicae*, Bonaventura’s *Breviloquium musicale*, and the anonymous *Compendium musices*.

Aaron begins his discussion of these topics with four brief chapters (chapters 6 through 9) on the related subjects of proprieties and hexachords, topics to which he has alluded frequently before now but without clear explanation. Even in these chapters Aaron is hardly as clear as he could be, for his descriptions frequently are vague, incomplete, and out of logical order. The chapters have a hurried feel, as if Aaron is pushing ahead without much concern toward seemingly more interesting topics.

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317 Many of the key scholarly introductions to these topics are the same as those that were cited in the introductory paragraphs of the previous chapter. See in particular Bent, “Music Recta and Musica Ficta,” and Berger, *Musica ficta*.

318 I previously explored this topic in a preliminary fashion, as background for a discussion of Aaron’s treatment of mutation in polyphony, in Bester, “Book Two of Pietro Aaron’s *Libri tres de institutione harmonica*.”
In the first of these chapters, which he titles “That any syllable ought to be sung by its own propriety,” Aaron vaguely associates each of the three proprieties with a certain singing quality. As he explains:

All the above-mentioned syllables ought to be sung according to their own proprieties, for whatever syllables are found in square $\frac{1}{2}$ are to be sung with a certain harder sound. Those syllables that include soft b, however, are to be performed with a certain softer and sweeter sound. But those that have a natural ought to have a certain intermediate sound, blended from square $\frac{1}{2}$ and soft b, in order that the sound may not be able to seem altogether hard or soft but mixed from each.\(^{319}\)

Aaron associates the square $\frac{1}{2}$ propriety with “a certain harder sound” (durior sonus); the soft b propriety with “a certain softer or sweeter sound” (mollior . . . et suavior vox); and the natural propriety with “a certain intermediate sound” (medius sonus), blended from the two. He provides no explanation, historical or musical, as to why the proprieties have these associations, nor does he provide any insight as to how a singer ought to mediate between the sounds of the different proprieties when the range of a melody extends beyond the bounds of a single propriety.\(^{320}\) He also is silent about any relationship between the proprieties and textual expression. It is rather a stand-alone statement, the practical value of which is left unexplained to the reader.

\(^{319}\) Aaron, *De institutione harmonica*, I.6.1–3.

\(^{320}\) Compare Gaffurius, for instance, who attempts to historicize the proprieties in relation to ancient Greek theory in his *Practica musicae*, I.4. Gaffurius first expresses doubts about Giorgio Anselmi’s approach in Anselmi’s *De musica* (the only surviving copy of which belonged to Gaffurius and includes extensive glosses by him), in which Anselmi links the three proprieties to the three genera of Ancient Greek theory (i.e., the natural propriety to the chromatic genus; the hard propriety to the diatonic genus; and the soft propriety to the enharmonic genus). Rather, Gaffurius argues that the proprieties relate purely to the diatonic Greater and Lesser Perfect Systems, connecting the natural propriety to the hypaton tetrachord; the hard propriety to the diezeugmenon tetrachord; and the soft propriety to the synemmenon tetrachord.
There is a notable precedent, however, for such an equation of propriety and singing style in Bonaventura da Brescia’s *Breviloquium musicae* (1497), which we encountered in the previous chapter. In a brief chapter titled “Concerning the manner of singing the above-mentioned proprieties” (chapter 7), Bonaventura similarly equates each propriety with a certain singing style, using language that strongly resembles that of Aaron nearly two decades later:

Item nota che ħ quadro e dura proprietade: laquale duro se debe cantare. Item b molle e dolce proprietade: laquale dolce se debe pronunciare. Item natura e mediale proprietade: laquale debe sentire de ħ quadro e de b molle.

Also note that square ħ is a hard propriety, which one ought to sing with harshness. Also b molle is a sweet propriety, which one ought to perform with sweetness. Also natural is a medial propriety, which one ought to feel from square ħ and from soft b.

As we shall see, this is not the only strong echo between Bonaventura and Aaron on the topics of hexachords and solmization.

In the next chapter (chapter 7), Aaron relates the conventional observation that the three proprieties appear a total of seven times in the gamut. He goes on to situate each propriety according to register, reinforcing the connection between the hexachords and specific registers, as discussed in the previous chapter. He divides them as follows: the square ħ propriety occurs three times (in the grave, acute, and superacute registers); the natural propriety twice (in the grave and acute registers); and the soft b propriety twice.

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321 See the previous chapter for more information on Bonaventura’s *Breviloquium musicale*, also known under the title *Regula musicae planae*.

322 Bonaventura da Brescia, *Breviloquium musicale*, Chapter 7 (“De modo cantandi proprietates supradictas”). Note in particular the similarity in Bonaventura’s and Aaron’s choice of verbs for their descriptions of singing under square ħ (“cantare” and “cani”) and soft b (“pronunciare” and “pronunciandae”).
(likewise in the grave and acute registers).\textsuperscript{323} However, he does not delineate either the starting point or location of the different proprieties, leaving that information for a later chapter.

In the ensuing chapter (chapter 8) Aaron finally introduces the related concept of hexachords, for which he retains the term \textit{deductiones}. He explains laconically that a hexachord is found wherever the syllables re, mi, fa, sol, and la follow in order (I.8.2). Presumably he means that the syllables “follow” ut, but surprisingly he makes no mention here of that syllable. Moreover, this information is only so helpful given that thus far in the treatise he has yet to associate hexachord syllables in any explicit manner with specific letter names or intervals within the gamut. He goes on to mention briefly the celebrated hymn \textit{Ut queant laxis}, without reference to Guido, but his citation is of dubious value given his inability to include musical examples and given his lack of explanation regarding the ascending nature of the starting pitches of the hymn’s successive phrases. Only the textual origin of the syllables is clear from Aaron’s discussion here (I.8.3).\textsuperscript{324}

Interestingly, here again we see that Aaron’s writing bears striking similarity to a portion of Bonaventura’s \textit{Breviloquium}. Although the languages differ, Bonaventura’s description of the \textit{deductiones} follows a very similar course to Aaron’s. He first explains the significance of the term \textit{deductio}, relating it to the meaning of the verb \textit{deduco}. He then introduces the six syllables, including ut (unlike Aaron), but his discussion of ut

\textsuperscript{323} Aaron, \textit{De institutione harmonica}, I.7.2. This passage was discussed briefly in the previous chapter for its corroboration of Aaron’s linking of proprieties with specific registers.

\textsuperscript{324} Even this point is subject to confusion, for Aaron’s statement that “The Christian religion consecrated these syllables some time ago and celebrates them in the hymn of the divine John the Baptist” (I.8.3) seems to suggest that the syllables were the inspiration for the hymn and not vice versa.
notably takes place in a separate clause from the remaining five syllables. Thus there is a
tantalizing parallel between the two works in their similar passages that reference just the
syllables re, mi, fa, sol, and la. Finally Bonaventura refers to the *Ut queant laxis* hymn in
a fashion that is nearly identical to Aaron, although Bonaventura does include a reference
to Guido. The two passages run as follows:

Bonaventura da Brescia, *Breviloquium musicale*, Chapter 5:

Item ne la mane havemo sette
deductione, & sonno dicte
deductione a proprietate de deduco
deducis, quod verbum sumitur per
portare aliquid secum. Chadauna de
queste deductione conduchono seco25 se note, e queste sonno
dove se trova ut. Le altre note
sonno re mi fa sol la etcetera. E
questo per auctoritade de Guido, la
santcha chiesia le pone sopra lo
hymno de sancto Zoaanne baptista
hoc modo Ut, Ut queant laxis. Re,
resonare fibris. Mi, mira gestorum.
Fa, famuli tuorum. Sol, solve
polluti. La, labii reatum sancte
Ioannes.

Also in the hand we have seven
deductiones, and they are called
deductiones from the property of
the word deduco, deductis, which is
used to mean to carry something
with itself. Each of these
deductiones carries with it six
notes, and these are where one
finds ut. The other notes are re mi
fa sol la etcetera. This is by the
authority of Guido. The Holy
Church places them onto the hymn
of Saint John the Baptist in this
way: Ut, *Ut queant laxis*. Re,
resonare fibris. Mi, mira gestorum.
Fa, famuli tuorum. Sol, solve
polluti. La, labii reatum sancte
Ioannes.326

Aaron, *De institutione harmonica*, 1.8.1–3:

Moreover, from these proprieties
are made seven *deductiones*
[hexachords], which we name thus
because each one leads six
syllables with itself. Now the
location of any *deductio* is
wherever a location is found whose
syllables follow as companions,
with the order always having been
maintained, namely re mi fa sol la.
The Christian religion consecrated
these syllables some time ago and

325 The 1497 edition reads “segò,” which seems an obvious error. Compare the parallel text in
Bonaventura’s *Brevis collectio*: “... sic sunt in manu septem deductiones, et sunt dictae deductiones a
proprietate deduco, deductis, quod verbum sumitur pro portare aliquid secum, quia quaelibet deductio portat
pacto: Ut, Ut queant laxis. Re, resonare fibris. Mi, Mira gestorum. Fa, famuli tuorum. Sol, solve polluti. La, labii reatum Sante Ioannes.

celebrates them in the hymn of the divine John the Baptist in this way:
Ut, Ut queant laxis; Re, resonare fibris; Mi, mira gestorum; Fa, famuli tuorum; Sol, solve polluti; La, labii reatum Sancte Ioannes.327

Only in the next, very brief chapter does Aaron finally lay out the starting point of each deductio, situating the square ½ hexachord on G; the natural hexachord on C; and the soft b hexachord on F (I.9.1–3). Here we finally get the crucial information that really should have been discussed much earlier, in the chapter on the appropriate singing style of the different proprieties (chapter 6). In the Breviloquium, by contrast, Bonaventura lays out the starting points of the deductiones almost immediately in the first chapter in which he introduces the proprieties (chapter 4).

In short, Aaron’s introduction to the hexachords is concise and without surprises, even if his exposition could be clearer and more systematic in its ordering and approach. By contrast, Aaron’s discussion of mutation in plainsong, the process by which a singer shifts between different hexachords while moving through the gamut, is a little more novel, and Aaron deliberates on the subject more extensively over the next six chapters (chapters 10–15). Before proceeding to Aaron’s own treatment of mutation, however, it would be useful for the sake of comparison to consider the treatment of the same topic by some of Aaron’s predecessors, including Marchetto, Tinctoris, Gaffurius, and Bonaventura, in order to examine the context of Aaron’s remarks on the subject.

An obvious starting point for contextualizing Aaron’s treatment of mutation in plainsong is the Lucidarium of Marchetto da Padova, one of the most influential

327 Aaron, De institutione harmonica, I.8.1–3.
treatments of the topic in the Italian theoretical tradition.\textsuperscript{328} In the treatise Marchetto not only compiled late-medieval thinking regarding mutation in plainsong, but he also introduced the concept of permutation, a means by which one could accommodate chromatic progressions within (and beyond) the system of overlapping hexachords.\textsuperscript{329} Marchetto’s discussion of mutation and permutation is found in treatise 8 of the \textit{Lucidarium}. His ordering of the topics there is surprising, for Marchetto first discusses permutation, then mutation, and then finally the proprieties. One could argue that the topics ought to have been reversed; perhaps Marchetto sought to lead with the most novel of his discussions.

Whatever Marchetto’s rationale for beginning with permutation, we shall begin with the more basic subject of mutation and return to the topic of permutation later in the chapter. Marchetto begins his treatment of mutation with an influential definition that echoes throughout Italian music theory during the ensuing two centuries:

\begin{quote}
\textit{Mutatio est variatio nominis vocis seu note in eodem spacio, linea, et sono.}
\end{quote}

He goes on to elaborate on this basic definition, explaining:

\begin{quote}
\textit{Fit namque mutatio, vel fieri potest, in quolibet loco ubi due vel tres voces sive note nomine sunt diverse, que quidem sub sola una littera includuntur.}
\end{quote}

\textsuperscript{328} For more on the wide-ranging influence of Marchetto’s \textit{Lucidarium} throughout the Renaissance, see Jan Herlinger’s preface to his critical edition and translation of the treatise (\textit{The Lucidarium of Marchetto of Padua}, xv). See also Herlinger, “Marchetto’s Influence.”

\textsuperscript{329} Herlinger gives a brief explanation of this advancement in the introduction to his edition of the treatise. Herlinger, \textit{The Lucidarium of Marchetto of Padua}, 12–14. Much more will be said about the topic below.

\textsuperscript{330} Marchetto, \textit{Lucidarium}, VIII.2.2. Gaffurius, for instance, transmits Marchetto’s definition in the first book of his \textit{Practica musicae}, as will be discussed below.

\textsuperscript{331} Marchetto, \textit{Lucidarium}, VIII.2.3.
As noted in the previous chapter, Marchetto uses the pitch nomenclature of letter name and hexachord syllable (e.g., C fa ut) throughout this chapter, whereas in most of the rest of the *Lucidarium* he uses the nomenclature of letter name and register (e.g., D grave).

For ease of reference, Marchetto’s gamut, with letters and corresponding solmization syllables, is shown in Figure 14.

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Figure 14: Hexachord- and register-based nomenclature according to Marchetto da Padova, *Lucidarium*.\(^{332}\)

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\(^{332}\) As discussed in the previous chapter, Marchetto does not list E la as part of the superacutes, although it is reasonable to assume that he likely would have counted it among them. Similarly, he does not list Γ ut as part of the graves. Each omission may be seen as a reflection of the tension between octave- and hexachord-based conceptions of the gamut.
After presenting his general definition of mutation, Marchetto then proceeds to discuss the possibilities for mutation on many (though not all) of the notes of the gamut, using musical examples to illustrate many of these mutations. He begins by explaining briefly that mutation is not allowed on Γ ut, A re, and /mit because each of these letters has only one syllable. The first position at which mutation is possible, then, is C fa ut, where “there are two syllables and two mutations.” As he describes it:

\[ \text{. . . prima cum mutatur fa in ut} \]
\[ \text{propter ascensum \( \frac{1}{2} \) quadri in naturam, secunda e converso. . . .} \]

\[ \text{. . . The first mutation is when fa is changed into ut on account of an ascent of the square } \frac{1}{2} \text{ [propriety] to the natural [propriety]. The second mutation is when the reverse occurs. . . .} \]

As Marchetto explains, mutation is necessary when a singer must ascend or descend beyond the confines of an individual propriety, as from the hard proprietas to the natural proprietas or vice versa.\(^{334}\) Interestingly, thus far Marchetto has defined proprietas in only the most limited fashion; his full treatment of the subject does not come until the next chapter, after he has finished his discussion of mutation. He continues with an example of plainsong that requires both the types of mutation that he has mentioned on C fa ut. The melody begins unambiguously in the hard propriety, mutates to the natural propriety, and then returns to the hard propriety (see Figure 15, below). Marchetto does not include solmization syllables in his examples, nor does he indicate specifically on which C the two mutations ought to occur (there are two possibilities for each direction of mutation). Thus the solmization syllables in Figure 15 have been added editorially, and


\(^{334}\) Marchetto never actually uses the word deductio in the *Lucidarium*. Rather, the notion of a deductio or hexachord seems for him to be contained in the term proprietas, which he defines as “the derivation of many syllables from one and the same beginning” (“Est enim proprietas in cantu derivatio plurium vocum ab uno et eodem principio.”) Marchetto, *Lucidarium*, VIII.3.3.
the timing of each mutation has been assumed according to a rule of waiting as long as possible before executing mutation, a guideline that Marchetto himself does not mention but will be discussed further below.  

Figure 15: Illustration of mutations on C fa ut between the hard and natural proprieties according to Marchetto da Padova, *Lucidarium*, Treatise VIII, Chapter 2.

Marchetto then moves on briefly to address the notes D sol re and E la mi, saying only that on these notes “there are similarly two syllables and two mutations, being in all things similar to those which are also on C fa ut.” He does not include a musical example for these positions. Rather, he moves right on to F fa ut, about which he has more to say, returning to a more detailed explanation similar in content and style to his description of mutation on C fa ut. Once again, as he explains, there are two syllables and thus two mutations. The difference here, in contrast to the notes D sol re and E la mi, is that the position F fa ut introduces a new propriety, the soft propriety, and no longer intersects with the hard propriety. As with C fa ut, he concludes his discussion with an example of plainchant that demonstrates both mutations, between the natural and soft properties and vice versa.

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335 Marchetto himself does not mention such a maxim, so it is impossible to know whether this assumption matches his practice. Herlinger’s editorial solmization for this example in his edition matches that in Figure 15. See Herlinger, *The Lucidarium of Marchetto of Padua*, 283.

336 “In D sol re et in E la mi sunt similiter due voces et due mutationes, eo modo quo et in C fa ut per omnia se habentes.” Marchetto, *Lucidarium*, VIII.2.8.
Marchetto then progresses to G sol re ut, over which he lingers, for it is the first note that has three solmization syllables, intersecting with all three proprieties. Marchetto divides the six resulting mutations into three pairs of mutations, limiting his explanation (and musical example) for each pair to just two proprieties at once, thus making his description of each pair similar in form and content to his earlier discussions of mutation on notes with only two syllables. Thus he first discusses mutation between the natural and soft proprieties; then mutation between the natural and hard proprieties; and finally mutation between the soft and hard proprieties. He does not supply any single musical example that demonstrates mutation between all three proprieties. Marchetto’s final example of the three pairs of mutations on G sol re ut, showing mutation between the soft and hard proprieties, is shown in Figure 16, below.

![Figure 16: Illustration of mutations on G sol re ut between the soft and hard proprieties according to Marchetto da Padova, Lucidarium, Treatise VIII, Chapter 2.](image)

As he did earlier for the notes D sol re and E la mi, Marchetto then glosses quickly over A la mi re, saying that it has the same types of mutations as the preceding G sol re ut. Instead he moves quickly on to b fa ¾ mi, where, as he explains, no mutation can occur, only permutation:
Although Marchetto generally speaks of this position as a unity, calling it b fa ∝ mi, he makes clear in this passage that the two letters, b and ∝, ought to be considered two separate letters, and he reinforces that they have two different sounds, thus making mutation, as properly understood, impossible. But he also refers obliquely to the possibility of permutation between these letters, a topic that he addressed in his previous chapter and to which we shall return shortly.

Marchetto then gives the next letter, C sol fa ut, the full descriptive treatment, including musical examples, presumably because it is the starting point for another propriety (the natural), although the intersection of the three proprieties on that position is not appreciably different as that which occurs on G sol re ut or A la mi re. Then, after glossing over the mutations on D la sol re, describing them as similar to those on C sol fa ut, he suddenly brings his catalogue to an end, concluding that “judgment concerning all the mutations that follow is like that which was shown concerning the similar ones that have preceded.” Marchetto then veers off to discuss propriety in more detail, a topic that may have been more useful at the outset of his discussion on mutation rather than at its conclusion. Indeed, it is not until this point that Marchetto even lays out the six

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solmization syllables in order or makes explicit the three starting letters of each propriety. \textsuperscript{339}

To summarize Marchetto’s treatment of mutation, then, Marchetto presents a rather abbreviated account that covers the basics in a matter-of-fact way, without significant elaboration or digression. There is very little of speculative interest here, only a practical overview of the technique that takes for granted its use in musical practice. Marchetto’s catalogue of descriptive and musical examples is similarly abbreviated, focusing primarily on just five key positions of the hand on which either a new propriety begins or permutation occurs (i.e., C fa ut, F fa ut, G sol re ut, b fa mi, and C sol fa ut). He glosses over or omits the other positions, relating them to the five principal examples.

In his critical edition and translation of the Lucidarium, Jan Herlinger noted parallels between the organization of Marchetto’s treatment of mutation and that found in the compilation best known as the Introductio musicae planae secundum magistrum Johannem de Garlandia, which had its origins in the second half of the thirteenth century. \textsuperscript{340} As Christian Meyer has shown, the material at the core of the Introductio musicae planae, which includes both speculative topics on music and number as well as practical topics on the gamut, mutation, and intervals, experienced numerous instances of revision and elaboration during the thirteenth and fourteenth centuries, producing an ensemble of related texts. \textsuperscript{341} The heavily interpolated version of the text that Charles-Edmond-Henri de Coussemaker included in the first volume of his Scriptorum de musica

\begin{footnotesize}
\textsuperscript{339} See Marchetto, Lucidarium, VIII.3.3–8.
\textsuperscript{340} See Herlinger, The Lucidarium of Marchetto of Padua, 281, note b.
\textsuperscript{341} See the introduction to Christian Meyer’s critical edition of the ensemble of texts, which he has given the title Musica plana Johannis de Garlandia.
\end{footnotesize}
(1864) as the *Introductio musiceae planae* evidently was a later stage in this process, for the text does not survive in that form before the second half of the fourteenth century.\(^{342}\)

In an effort to reconstruct the earlier stages in the evolution of this material, Meyer has identified four earlier manuscript versions that he has classified as separate witnesses, or *reportationes*, to the evolving textual tradition. His critical edition of the complex tradition presents the text of each *reportatio* followed by a critical text of the more extensive *Introductio musiceae planae*. In order to distinguish between the complete ensemble of texts and the more extensive compilation known from Coussemaker’s edition, he has given the full complex of the textual tradition the modern title *Musica plana Johannis de Garlandia*, reserving the title *Introductio musiceae planae* for the more extensive, better-known version of the text.\(^{343}\)

Numerous theories have been advanced regarding the authorship of the original material and the identity of Johannes di Garlandia, to whom it was traditionally attributed.\(^{344}\) In the earliest surviving copy of the work (found in I-Rvat lat. 5325, copied sometime between 1260 and 1270), the work appears anonymously in tandem with the *De mensurabili musica*, an important treatise on mensural notation that also appears without authorial attribution.\(^{345}\) Hieronymus de Moravia was the first to attribute the *De

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\(^{342}\) Coussemaker, *Scriptorum de musica*, vol. 1, 157–75. According to Meyer, Coussemaker’s source for his edition was Saint-Dié, *Bibliothèque municipale*, 42, the oldest and the most incomplete of the manuscripts that preserve the work in this form. The two earliest manuscripts that transmit the work in this form and with this title (Saint-Dié, *Bibliothèque municipale*, 42, and Barcelona, *Biblioteca de Catalunya*, M 883) date from the second half of the fourteenth century. See the introduction to Meyer’s critical edition, pp. x–xiv.

\(^{343}\) See the introduction to Meyer’s critical edition, pp. vii and xv.

\(^{344}\) For a summary and critique of these arguments, see Sandra Pinegar, “Textual and Conceptual Relationships among Theoretical Writings on Measurable Music,” 82–89 and 96–102. See also Meyer’s introduction to his critical edition, pp. vii.

\(^{345}\) Rome, Biblioteca Apostolica Vaticana, Reg. lat. 5325. See Meyer’s introduction to his critical edition, p. vii. The version in I-Rvat lat. 5325 seems not to reflect the earliest stage of the text, however. Meyer
mensurabili musica to Johannes de Garlandia (also calling him “Johannes Gallicus”) in a revised version of the treatise copied towards the end of the thirteenth century. Because the earliest-surviving versions of De mensurabili musica begin with a reference to a treatise on plainsong, it was long assumed that the treatise on plainsong at the core of the Introductio musicae planae was by Garlandia as well. Indeed, by the second half of the fourteenth century Johannes di Garlandia’s authorship of the treatise on plainsong had come to be taken for granted, and the revised and expanded compilation had acquired the title Introductio musicae planae secundum magistrum Johannem de Garlandia.

In her extensive dissertation on treatises regarding mensural music from the thirteenth and early fourteenth centuries, Sandra Pinegar puts forth the hypothesis that both the treatise on plainchant and the De mensurabili musica may have had anonymous beginnings and that Johannes de Garlandia may have been responsible for the revised version of the De mensurabili musica that appears as part of Hieronymus de Moravia’s Tractatus de musica. Meyer, however, argues that the core material of the treatise on presents it as his reportatio secunda, giving the version from a slightly later manuscript (Paris, Bibliothèque Nationale de France, Ms. lat. 18514), copied in the late thirteenth or early fourteenth century, as his reportatio prima.

See Pinegar, “Textual and Conceptual Relationships among Theoretical Writings on Measurable Music,” 98, and Meyer’s introduction to his critical edition of the compilation on plainsong, p. vii. As Meyer notes, Hieronymus de Moravia’s description of Johannes de Garlandia as “Johannes Gallicus” would seem to argue against William Waite’s hypothesis (in Waite’s article “Johannes de Garlandia, Poet and Musician”) that Johannes de Garlandia the theorist was the same person as the Englishman Johannes de Garlandia, the poet and grammarian who was on the faculty at the University of Paris in the first half of the thirteenth century. See Meyer’s introduction to his critical edition, p. vii.

For a description of the manuscripts that transmit the work in its most expanded form, see Meyer’s introduction to his critical edition, pp. xiii–xiv.

Hieronymus de Moravia includes the revised version of the De mensurabili musica as one of four positiones on polyphonic notation in his Tractatus de musica. Despite Hieronymus’s testimony for Johannes de Garlandia’s authorship, Pinegar was unable to find evidence that Johannes de Garlandia was active at the time that the De mensurabili musica was copied in I-Rvat lat. 5325, leading her to conclude that “There is no evidence to support a Johannes de Garlandia actively teaching and writing about measurable music before the 1270s.” Rather, she argues that Johannes de Garlandia instead may have been responsible for the revised version of the De mensurabili musica that Hieronymus included in his.
plainsong may have originated as an oral pedagogical tradition, perhaps reflecting the teachings of Johannes de Garlandia himself.\textsuperscript{349}

Returning now to Herlinger’s comparison of Marchetto’s discussion of mutation to that in the \textit{Introductio musicae planae}, we are now able to supplement Herlinger’s observation in several notable ways. Herlinger’s reference for his comparison between the two treatises was to the version of the text found in Coussemaker’s \textit{Scriptorum}, which, as we noted earlier, transmits the more extensive compilation that does not survive before the second half of the fourteenth century, well after the writing of Marchetto’s \textit{Lucidarium}.\textsuperscript{350} Significantly, only in this later version of the text is there an extensive list of mutations that covers most positions of the hand, each followed by a musical example, in many ways similar in form and style to the \textit{Lucidarium}.\textsuperscript{351} In the four other \textit{reportationes}, by contrast, the topic of mutation is treated in a much more abbreviated fashion, without any musical examples. In each of these \textit{reportationes}, there are instead just two descriptive examples of mutation, one that demonstrates mutation where there are two syllables (on C fa ut) and another that describes mutation where there are three syllables (on G sol re ut). In \textit{reportatio prima}, for instance, there is the following description:

\begin{quote}\	extit{Tractatus}, concluding that “It is possible, indeed it is plausible, that Johannes de Garlandia’s earliest activity as a music theorist was the redaction of the primary document concerning modal rhythm with which he is credited in [Hieronymus de Moravia’s] \textit{Tractatus}, and that he was in fact still alive and teaching at Paris during the last decade of the thirteenth century and first decade of the fourteenth.” Pinegar, “Textual and Conceptual Relationships among Theoretical Writings on Measurable Music,” 99–100.\end{quote}

\textsuperscript{349} See the introduction to Meyer’s critical edition, pp. vii–x.

\textsuperscript{350} Herlinger, \textit{The Lucidarium of Marchetto of Padua}, 281, note b.

\textsuperscript{351} The organization differs somewhat in that the \textit{Introductio musicae planae} includes a detailed description and a musical example for each position between C fa ut and D la sol re, not just for certain key positions as in Marchetto. Like Marchetto, however, the \textit{Introduction musicae planae} does break off after D la sol re, referring the reader to similar positions in the octave below. The treatise then resumes briefly with descriptions and examples for C sol fa and D la sol in the superacute register.
It ought to be known that wherever there are two syllables there are two mutations, as on C fa ut, which syllables are pronounced fa and ut and ut fa. Similarly wherever there are three syllables there are [six] mutations, as on G sol re ut, A la mi re, etc.\footnote{Johannes de Garlandia (?), \textit{Musica plana Johannis de Garlandia}, \textit{Reportatio prima}, sentences 156–57. Meyer’s \textit{reportatio prima} survives in Paris, Bibliothèque Nationale de France, Lat. 18514, a manuscript that some have dated to the late thirteenth century, others to the early fourteenth century. The text of this passage is corrupt in \textit{reportatio secunda}, in which a clear conceptual error suggests an obvious lacuna: “It ought to be known that wherever there are two syllables there are two mutations, as on G sol re ut and on other places” (“Sciendum quod ubicumque sunt 2 voces ibi sunt 2 mutationes, ut in g sol re ut et in aliis”). \textit{Reportatio secunda}, sentence 70. In \textit{reportatio quarta}, meanwhile, the text reads F fa ut as the example of a location with two syllables. \textit{Reportatio quarta}, sentence 82.}

Given the relatively late date of the extant manuscripts of the more extensive \textit{Introductio musicae planae} text, it seems more likely that the editor/compiler of that text was influenced by Marchetto’s discussion of mutation rather than the other way around.

In the other \textit{reportationes}, by contrast, we can see a separate tradition of demonstrating mutation in an even more concise fashion than that which is found in Marchetto’s \textit{Lucidarum}. We shall return to this highly abbreviated approach when we discuss Aaron’s own treatment of mutation.

Moving ahead to the fifteenth century, a different approach to the demonstration of mutation can be seen in Johannes Tinctoris’s \textit{Expositio manus}, written around 1472–73. In the elementary work, which Albert Seay has described as the “starting point” for Tinctoris’s other writings, Tinctoris treats such fundamental topics as the Guidonian hand, the position of notes on the staff, clefs, solmization syllables, proprieties, \textit{deductiones}, mutation, and melodic intervals.\footnote{For a brief introduction to the \textit{Expositio manus}, see Albert Seay’s preface to his translation of the treatise, published in the \textit{Journal of Music Theory}. Seay, “The \textit{Expositio manus} of Johannes Tinctoris,” 194–99.} Despite the inherently practical nature of these topics, Tinctoris’s approach to mutation is thoroughly exhaustive, at times even
bordering on speculative, as he examines every possible mutation and even contemplates a “certain divine order” (divinus quidam ordo) of what he calls “universal mutations” (mutationes universales).³⁵⁴

Tinctoris treats the topic of mutation in chapter 7 of the treatise, where he defines the practice simply as “the change of one syllable into another.”³⁵⁵ There follows a somewhat misleading catalogue of mutations which he prefaces by saying that “All syllables are changeable, some more, some less.” He then lays out in aggregate every mutation that can be executed from each of the six solmization syllables, saying, for instance, that “ut is changed into three syllables, namely into re, fa, and sol.”³⁵⁶ He does not elaborate on this list here, leaving it to the reader to understand that he does not mean to say that the syllable ut can mutate to all three of these syllables wherever it appears in the hand, but rather that these are the three possible syllables to which ut may mutate, depending on its position in the hand. Tinctoris does make this point clearer at the end of the chapter, when he restates this list in a more detailed way, as follows:

```
Ut re est mutatio quae fit in utroque
G sol re ut ad ascendendum a ⌊ duro in b molle.
Ut fa est mutatio quae fit in C fa ut
et in C sol fa ut ad descendendum
de natura in ⌋ durum, et in utroque
F fa ut ad descendendum de b molli
in naturam.
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Ut re is the mutation that is done on
each G sol re ut for the purpose of
ascending from the hard ⌊ [deductio] to the soft b [deductio].
Ut fa is the mutation that is done on
C fa ut and on C sol fa ut for the
purpose of descending from the
natural [deductio] to the hard ⌋ [deductio], and on each F fa ut for
the purpose of descending from the
soft b [deductio] to the natural
[deductio].
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³⁵⁴ Tinctoris, Expositio manus, 7.9 and 7.58.
³⁵⁵ “Mutatio est unius vocis in aliam variatio.” Tinctoris, Expositio manus, 7.2.
³⁵⁶ “Ut etenim mutatur in tres voces, scilicet in re, in fa et in sol.” Tinctoris, Expositio manus, 7.3.
Ut sol est mutatio quae fit in utroque G sol re ut ad descendendum de duro in naturam, et in C sol fa ut ad descendendum de natura in b molle.

Ut sol is the mutation that is done on each G sol re ut for the purpose of descending from the hard \([deductio]\) to the natural \([deductio]\), and on C sol fa ut for the purpose of descending from the natural \([deductio]\) to the soft b \([deductio]\).

Tinctoris then goes on to restate his list of possible mutations in a more condensed fashion, listing only the various pairs without additional description. For example, regarding the mutations on ut, he writes just “ut re, ut fa, ut sol.” He labels the 18 possible mutations as “universal mutations” \((mutationes universales)\) and explains that they divide into two categories, nine that are ascending and nine that are descending. He then presents a list of all the ascending and descending mutations in a complicated verse that hardly seems conducive as a memory aid:

Ad ascendendum
Ut re, re ut, re mi cum mi re, fa utque, sol utque
Sol reque, la re, la mi scandere te faciunt.

Ad descendendum
Ut fa, ut sol, re sol cum re la, mi laque, fa sol.
Sol faque, sol la, la sol dum canis ima petunt.\(^{358}\)

Although Tinctoris does not say so, each ascending mutation in his list conspicuously ends with ut, re, or mi, whereas each descending mutation ends with fa, sol, or la. Such a division is in line with an oft-quoted maxim to which Aaron himself makes reference: “ut re mi ascends, and fa sol la descends.”\(^{359}\)

Tinctoris continues with an exhaustive catalogue of all 52 possible mutations, covering every position on which mutation is possible, from C fa ut up to D la sol. The

\(^{357}\) Tinctoris, \textit{Expositio manus}, 7.40–42.
\(^{359}\) “Praeceptum est illud vulgatum ac generale ut re mi scandere. Fa sol la descendere. . . .” Aaron, \textit{De institutione harmonica}, I.14.1
style of his descriptions is reminiscent of Marchetto’s, but Tinctoris gives the same thorough treatment to each position of the hand, in contrast to Marchetto’s abbreviated approach that focuses on just five locations. Tinctoris’s discussion of mutation on C fa ut illustrates the style of his descriptions:

<table>
<thead>
<tr>
<th>Latin Text</th>
<th>Translation</th>
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| Duæ in C fa ut qui primus est mutationis locus, scilicet fa ut et ut fa; fa ut ad ascendendum a durum in naturam, et ut fa ad descendendum de natura in durum. | There are two mutations on C fa ut, which is the first place of mutation, namely fa ut and ut fa: fa ut for the purpose of ascending from the hard \( \frac{3}{4} \) [deductio] to the natural [deductio], and ut fa for the purpose of descending from the natural [deductio] to the hard \( \frac{3}{4} \) [deductio].

Tinctoris follows each description with a musical example that demonstrates all the mutations on that position. Figure 17, below, reproduces his musical example for mutation on C fa ut. For those positions on which there are three solmization syllables, and thus six mutations, he condenses all six mutations into one continuous musical example. Recall that Marchetto, by contrast, divided the six mutations on such positions into three separate pairs, with three separate examples.

![Figure 17: Illustration of mutations on C fa ut between the hard and natural hexachords according to Johannes Tinctoris, Expositio manus, Chapter 7.](image)

Tinctoris concludes his exhaustive list of mutations by explaining that mutation does not occur wherever there is only one solmization syllable, such as on Γ ut, A re, %B mi, and E la. He also asserts that mutation is not possible where two solmization syllables do not share the same pitch, as on b fa %B mi, concluding:

Unde quom fa et mi in quovis loco numquam sint in uno et eodem sono, immo ab invicem distent maiori semitonio, est impossible quod unum in alterum sit mutable.

Therefore, because fa and mi never are in any place on one and the same sound, but rather are distant from each other by a major semitone, it is impossible that one may be changeable into the other.\(^{361}\)

Significantly, Tinctoris makes no mention of the technique of permutation.

Tinctoris makes one further practical observation about mutation, articulating a guideline that mutation ought to be used sparingly and delayed until the last possible note within a given hexachord. Put another way, a singer ought to remain within the bounds of a single hexachord for as long as possible, mutating only when it is necessary to move beyond it, and then only on the last note before such a shift is necessary:

Nec praetereundem [sic] est quod mutationes inventae sunt propter digressum unius proprietatis ad aliam. Unde postquam aliquam proprietatem ingressi sumus, ante finalem eius vocem mutare numquam debemus, et sic intelligitur quod rarius et tardius ut fieri potest mutandum est.

And it ought not to be omitted that mutations were invented for the purpose of the passing from one propriety to another. Therefore, after we have embraced any propriety, we ought never to mutate before the final syllable of that propriety, and thus it is understood that mutation ought to be done rather rarely and tardily, to the extent that it is able to be done.\(^{362}\)

As we shall see, this guideline also plays an important role in Aaron’s discussion of mutation.

\(^{361}\) Tinctoris, *Expositio manus*, 7.35.
Having examined several approaches to the discussion and cataloguing of mutation in plainsong, we now turn our attention to some of the practically oriented treatises closer to Aaron’s time. Of particular interest are those whose treatment of mutation shows the influence of Marchetto, since, as noted earlier, Aaron’s own discussion of the topic demonstrates the influence of that tradition.

One prominent late-fifteenth-century theorist on whom Marchetto had a significant influence was Gaffurius, whose treatment of mutation in the *Practica musicae* is highly reminiscent of Marchetto’s in the *Lucidarium*. Gaffurius makes his connection to Marchetto explicit, even citing and quoting Marchetto’s definition of mutation (with some minor alterations):

\[
\text{Verum huiusmodi introductio definitam a Marcheto consequitur mutationem. Is enim inquit:}
\]
\[
\text{Mutatio est variatio nominis vocis in alterum in eodem sono.}
\]

But an introduction of this kind follows mutation as defined by Marchetto. For he says: “Mutation is the change of the name of a syllable into another on the same sound.”

Gaffurius goes on to elaborate on this definition, also incorporating material from Giorgio Anselmi’s *De musica* (1434).

Gaffurius, *Practica musicae*, I.4. Compare Marchetto’s definition of mutation, as discussed earlier: “Mutatio est variatio nominis vocis seu note in eodem spacio, linea, et sono” (see Marchetto, *Lucidarium*, VIII.2.2). Gaffurius strips away some of the redundant terminology and adds in the prepositional phrase “in alterum” for added clarity.

Gaffurius, *Practica musicae*, I.4. The passage to which Gaffurius refers runs as follows: “Itaque cognoscet per hoc docendus cantor sive inflectere voces et permutare et transferre. Dicuntur quantitate pares sed qualitate seu proprietate diversae. Inde quum mutatio fit qualitas unius exachordi in alterius in sua qualitate transfertur et divisa in eadem vocis quantitate: ut testatur Anselmus tertio suae musicae.” Anselmi, *De musica*, f. 34r. As mentioned in note 320 above, the

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363 Gaffurius, *Practica musicae*, I.4. Compare Marchetto’s definition of mutation, as discussed earlier: “Mutatio est variatio nominis vocis seu note in eodem spacio, linea, et sono” (see Marchetto, *Lucidarium*, VIII.2.2). Gaffurius strips away some of the redundant terminology and adds in the prepositional phrase “in alterum” for added clarity.

364 “For those syllables that have been ascribed to their own sounds and chords, that is, notes, if they take their place on one and the same line or the same space, they are said to be equal in quantity but different in their own quality. Therefore, when mutation is made, the quality of one hexachord is changed into the quality of another, with the same quantity of the syllable remaining, as Anselmus testifies in the third book of his *Musica*.” (“Syllabae enim ipsae vocibus et chordis suis scilicet notulis ascriptae si in una eademque linea vel eodem spatio consistint: dicuntur quantitate pares sed qualitate seu proprietate diversae. Inde quum mutatio fit qualitas unius exachordi in alterius qualitatem transfertur et divisa in eadem vocis quantitate: ut testatur Anselmus tertio suae musicae.”) Gaffurius, *Practica musicae*, I.4. The passage to which Gaffurius refers runs as follows: “Itaque cognoscet per hoc docendus cantor sive inflectere voces et permutare et transferre. Dicuntur quantitate pares sed qualitate seu proprietate diversae. Inde quum mutatio fit qualitas unius exachordi in alterius qualitatem transfertur et divisa in eadem vocis quantitate: ut testatur Anselmus tertio suae musicae.” Anselmi, *De musica*, f. 34r. As mentioned in note 320 above, the

Therefore I call mutation the interchangeable deferring [dilatationem] of a syllable for a syllable found in a common position. But I take those syllables [voces] to mean the syllables [syllabas] of the hexachords.\(^{365}\)

One significant difference between Gaffurius’s and Marchetto’s treatment of mutation is the fact that Gaffurius introduces the topic of propriety prior to his discussion of mutation rather than after it. Gaffurius’s order makes much more logical sense, to be sure, for he fully explains the syllabic composition of the hexachord and its different starting points in the hand before discussing the interaction between these hexachords in the practice of mutation. In this section we also see that Gaffurius was influenced not only by Marchetto and Anselmi but also by Tinctoris, whose definition of \textit{proprietas} Gaffurius quotes.\(^{366}\) Moreover, Gaffurius’s ordering of topics is more in line with Tinctoris’s, for in the \textit{Expositio manus} Tinctoris fully treats syllables (chapter 4), proprieties (chapter 5), and \textit{deductiones} (chapter 6) before he finally discusses mutation in chapter 7.

Following Gaffurius’s discussion of the definition of mutation, he dutifully goes on to explain that mutation cannot be done on positions in the hand on which only one syllable is present. Yet he adds an important practical caveat, briefly explaining that


\(^{366}\) “But Tinctoris says that propriety is the singular quality of the syllables to be produced.” (“Tinctoris autem proprietatem dicit singulararem deducendarum vocum qualitatem.”) Gaffurius, \textit{Practica musicae}, I.4. This differs just slightly, in both wording and word order, from Tinctoris’s definition as found in the \textit{Expositio manus}, 5.2: “Proprietas est vocum deducendarum quaedam singularis qualitas.” Tinctoris’s definition of \textit{proprietas} in his \textit{Terminorum musicae diffinitorium} differs even more in one subtle way, the substitution of “producendarum” for “deducendarum”: “Proprietas est propra quaedam vocum producendarum qualitas” (s.v. “Proprietas”). Gaffurius’s use of “deducendarum” in his quotation suggests that he was referring specifically to Tinctoris’s \textit{Expositio manus}. 
mutation actually is possible on these positions by repeating “the original order of the connected hexachords”:

Syllaba item quae vel lineam vel spacium sola occupat mutationi non congruit. Qua re in Γ ut: In Are: In .setTimeout; et In Ela: nusquam fit mutatio: quod quum fieri necessitate contingentet: exachordorum conglutinatorum pristinum ordinem iterabis.

Also a syllable that alone occupies a line or space is not suited to mutation. Therefore on Γ ut, on A re, on .setTimeout mi, and on E la, mutation never is done. When it happens that it is done because of necessity, you will repeat the original order of the connected hexachords.367

Gaffurius does not elaborate further on this interesting idea either in this chapter or throughout the first book on plainchant, but he does revisit and expand upon the concept in book 3 of the treatise, in his chapter on musica ficta in polyphony (chapter 13). There he discusses the use of “ficta progressions” (fictae progressiones) in the system of hexachords in order to introduce “acquired” (acquisiti) notes, such as leading tones, flat notes, and other notes that are outside the range of the hand. Gaffurius relates these ficta progressions to the technique of permutation (the change of both syllable and pitch), as will be discussed further below, but within this discussion he describes the addition of a ficta hexachord on “acquired F fa ut,” a whole tone below Γ ut, which allows for the introduction of low B-flat by the permutation of .setTimeout mi into the syllable fa:

Quum autem in .setTimeout mi gravem: permutaveris mi in fa per transitum maioris semitonii in grave: Exachordum ipsum incipies in acquisitam Ffa aut sub Γ ut depressam: qua re non incongruum est vocum huiusmodi considerationem Musicam acquisitam vocitare. Per reliquas item introductiori chordas consimilem acquisitorum exachordorum deduces consiunctam. Qua re et acquisitas consonantiarum species:

But when you change mi into fa on .setTimeout mi grave by means of a change of a major semitone lower, you will begin that hexachord on acquired Ffa ut, which has been lowered by a tone below Γ ut; therefore it is not incongruous to call an application of such syllables “acquired music.” Similarly by means of the remaining notes of the Introductorium [i.e., the gamut laid out by Gaffurius in book 1, chapter 1] you will derive a similar

367 Gaffurius, Practica musicae, I.4.
Returning to Gaffurius’s discussion of mutation in plainchant, the theorist then presents an abbreviated catalogue of mutations that is strikingly similar in format to that of Marchetto. Like Marchetto, he provides detailed descriptions for just a few key positions, quickly glossing over others as similar in design. Significantly, the positions on which Gaffurius focuses are the same five which Marchetto had highlighted: C fa ut, F fa ut, G sol re ut, b fa 𧀕 mi, and C sol fa ut. For each of these five positions he describes every possible mutation, providing a separate musical example for each individual shift (as opposed to Marchetto, who illustrated the mutations as related pairs within single examples). We shall return to Gaffurius’s treatment of b fa 𧀕 mi below, when we discuss permutation, but his treatment of the other four key positions follows a straightforward format, as exemplified by his description of mutation at C fa ut:

In Cfaut duae alternatim eveniunt mutationes: prima mutando praecedentem syllabam in sequentem scilicet fa in ut diciturque ascendens mutatio ex 𧀕 quadra in naturam. ut harum exponit natularum descriptio.

On C fa ut two mutations alternately occur: the first by changing the preceding syllable to the following one, that is, fa into ut, and the mutation is said to be ascending from the square 𧀕 [hexachord] to the natural [hexachord], as the representation of these notes sets forth.

[Figure 18]

[Figure 18]
Secunda mutatio sit quum modulando mutamus sequentem syllabam in praecedentem scilicet ut in fa: quae quidem dicitur descendens ex natura in \( \frac{1}{2} \) quadr amphibicium. 

The second mutation would be when we change the following syllable into the preceding one, that is, ut into fa, and this mutation is said to be descending from the natural [hexachord] into the square \( \frac{1}{2} \) [hexachord], as is shown here.

![Figure 19](image)

Figure 19: Illustration of mutation on C fa ut between the natural and hard hexachords according to Franchinus Gaffurius, *Practica musicae*, Book 1, Chapter 4.

By contrast, Gaffurius says very little about the other positions of the hand. About D sol re and E la mi grave, for instance, he says only that “two similar mutations are done,” again very reminiscent of Marchetto. Also like Marchetto, Gaffurius does not carry his catalogue all the way to the end of the hand. Rather, he breaks off his list at F fa

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ut acute, reasoning that “The motions of mutations in the remaining places are similar, namely by referring each one to a similar one.”

Throughout his catalogue of mutation, Gaffurius scatters several general observations about the practice of mutation that are relevant. Early on, for instance, he explains that there are three primary reasons for introducing a mutation:

Constat enim tribus de causis mutationem fieri oportere. Primo ut supra et infra unumquodque exachordum voces ipsae modulato transitu possint in acutum intendi atque remitti in gravitatem. Secundo, ad concipiendum suavioris modulationis transitum, plerumque enim non minus melitum et suavem cantum reddit variata vocum qualitas, quam permutata quantitas modulati soni, solet quandoque b mollis qualitas in locum \( \frac{1}{2} \) quadrae deducta (quod Ambrosiani saepius observant) modulationem reddere suaviorem. Tertio ad faciliorem consonantium figurarum scilicet diatessaron ac diapentes \[sic\] transitum in tonorum permixtione dispositum.

For it is well known that mutation ought to be done for three reasons. First, in order that the syllables themselves at the top and at the bottom of every hexachord may be able to be extended upward and be sent forth lower by means of a melodious passage. Second, for the purpose of conceiving the passage of a sweeter song, for a varied quality of syllables makes most songs no less sweet and pleasant than the changed quantity of a melodious sound, inasmuch as the quality of b molle, introduced into the place of square \( \frac{1}{2} \), is accustomed to produce a sweeter song (which the Ambrosians very often observe). Third, for the sake of an easier passage of consonant species, namely a diatessaron and a diapente, that has been positioned in a mixture of tones.

Gaffurius’s first reason is simple enough: mutation is done when one must proceed above or below the bounds of a given hexachord “by means of a melodious passage.”

Gaffurius’s second reason for mutation is more subjective, for he asserts that mutation may be done in order to change the quality of a melody, by the substitution of the soft propriety for the hard propriety, for the purpose of creating variety by the introduction of

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a “sweeter song,” a practice that he specifically associates with the Ambrosians. For his final reason, he refers to instances in which a singer must solmize a larger interval, such as a fourth or a fifth, that extends beyond the bounds of the hexachord in which it begins. Gaffurius does not give any examples of such a mutation here, but he does provide some insight later in chapter 6, regarding the interval of a fifth and its species. There he describes the second species of fifth as extending from E la mi to b fa mi, which he solmizes as mi fa sol la mi. A direct leap of a fifth thus would be solmized simply as mi mi, without the benefit of a pivot point for mutation between the two hexachords. Gaffurius’s third species of fifth, which he places between F fa ut and C sol fa ut, also leaps between two different hexachords and would be solmized as fa fa.

Elsewhere, following his discussion of G sol re ut, Gaffurius digresses to elaborate on the concept of ascending and descending mutations, terminology that he has used occasionally before, without explanation, while discussing mutations on C fa ut, F fa ut, and G sol re ut:

For a mutation is direct and regular that is opposite to the preceding and following mutation on the same sound, as, for example, when the first mutation is done for the sake of ascending, the second for the sake of descending, the third for the sake of ascending, the fourth for the sake of descending, the fifth for the sake of ascending, and the sixth for the sake of descending. But a mutation is called indirect and irregular when it makes a motion of propriety or quality that is similar to the preceding or following mutation on the same sound, as, for example, when the sixth such mutation is ascending, which is done similarly in motion to the preceding fifth mutation,
As he explains, an ascending mutation occurs when “the first motion of the voice [syllable?] proceeds higher.” A descending mutation, by contrast, is when “the first motion of the voice [syllable?] drops lower.” It becomes clear from his discussion that Gaffurius regards each possible mutation at a given position as properly one or the other.

Recall, for instance, that regarding the two mutations on C fa ut, Gaffurius labeled the first mutation, from fa to ut, ascending, and the second, from ut to fa, descending. As a result, each reciprocal pair of mutations consists of an ascending and descending mutation. He then goes on to explain that a direct or regular mutation is that which behaves as expected, such that it is done contrary to the direction of its paired mutation.

An indirect or irregular mutation, on the other hand, behaves unexpectedly, moving in the same direction as its paired mutation.

From context, it becomes clear that the most common reason for such an “indirect mutation” is to introduce a b-flat by mutating directly from the hard hexachord (beginning on G) to the soft hexachord (beginning on F), as Gaffurius explains regarding

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373 Gaffurius, *Practica musiceae*, I.4. Compare Clement Miller’s reading of the first sentence of this passage, which differs somewhat from mine: “A mutation is direct and regular which proceeds in contrary motion to the preceding melodic movement.” However, Miller’s translation of Gaffurius’s definition of indirect mutation is closer to my reading: “In indirect and irregular mutation the motion is the same as that of the preceding or following mutation. . . .” Miller, *Franchinus Gaffurius: Practica musiceae*, 39. In contrast, Irwin Young’s reading of this passage is very similar to mine. See Young, *The Practica musiceae of Franchinus Gafurius*, 33.
the sixth mutation on G sol re ut. He presents two examples for such a mutation, the first of which would be considered direct or regular, the second indirect or irregular:

Sexta fit mutando tertiam syllabam in secundam scilicet ut in re descensus gratia ex \( \xi \) dura in b mollem: ut hoc declaratur exemplo.

Fit plerumque haec sexta mutatio videlicet tertiae syllabae in secundam ut in re: respiciens ascensum in primo disiunctionis gradu: tunc ipsam irregularem seu indirectam mutationem voco: quod hoc sane pernotatur exemplo.

Gaffurius provides musical examples for both these types of mutations, which are reproduced below as Figure 20 and Figure 21. In the first example, the melody first descends to F fa ut before leaping to b fa. Mutation to the lower soft hexachord is required both for the initial descent and for the addition of the B-flat. In the second example, by contrast, the melody leaps directly upward from G sol re ut to b fa, requiring a mutation to the (lower) soft hexachord only for the addition of B-flat. As we shall see, Aaron also has something to say about this type of mutation.

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At the end of his catalogue of mutations, Gaffurius transmits some now-familiar guidelines for mutation. Like Tinctoris, he recommends that mutation ought to be avoided unless it is necessary. Moreover, he follows Tinctoris in advocating that when mutation is necessary, it ought to be postponed until the last possible note:

Mutationum Insuper pluralitatem afferunt fugiendam, quum modulationis progressum unica mutatione consitterit esse congrue dispositum. Ac tardius longiusque quo ad fieri possit mutationem prosequendam esse ferunt.

In addition, it is recommended that a plurality of mutations ought to be avoided when it has been established that the progression of a song has been arranged suitably with a single mutation. And it is said that mutation ought to be pursued rather tardily and far off [in the progression], as much as it is able to be done.\(^\text{375}\)

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\(^{375}\) Gaffurius, *Practica musicae*, I.4. Clement Miller seems to have misinterpreted Gaffurius’s meaning in this passage, which he translated as follows: “Moreover, it is maintained that most mutations are made quickly when their melodic movement consists in a single suitable mutation, and more slowly and deliberately when more than one mutation could be chosen” (*Franchinus Gaffurius: Practica musicae*, 41). Irwin Young also seems to have misunderstood Gaffurius in the second part of this passage, which he
To summarize Gaffurius’s discussion of mutation, then, Gaffurius synthesizes many of the most important practical ideas about the topic in his *Practica musicae*. From Marchetto he borrows the abbreviated catalogue of mutations as well as the idea of permutation, which will be discussed below. At the same time, he supplements this with practical observations on the uses of mutation, ascending versus descending mutations, and the timing of mutation. Notably absent is any reference to dissenting opinions about the practice, such as is found in the works of Johannes Gallicus and, especially, Bartolomeus Ramis. Gaffurius essentially dismisses such dissent by omission.\(^\text{376}\)

Another relevant discussion of mutation is found in Bonaventura’s *Breviloquium*, first published just a year after Gaffurius’s *Practica musicae*. Bonaventura treats the topic in chapter 8 of his treatise, following the brief chapter on the singing of the proprieties that we discussed earlier in this chapter.\(^\text{377}\) Bonaventura first explains that there are fourteen positions in the hand on which mutation may be done. He then offers a very basic definition of mutation, which he says is done “to change the name of the syllable [*nota*], that is, from one propriety into another.”\(^\text{378}\) This definition is simultaneously condensed and expanded from Bonaventura’s own definition of mutation in his earlier *Brevis collectio artis musicae* (“mutatio . . . est variatio nominis vocis seu notae in eadem

\(^\text{376}\) As noted in the previous chapter, Stefano Mengozzi interprets Gaffurius’s historicist treatment of the hexachord as a veiled rebuttal of Ramis, whom Gaffurius does not mention.

\(^\text{377}\) The chapter is labeled erroneously as chapter 6 in the 1497 edition, which is the basis for the facsimile edition published by Broude Brothers.

\(^\text{378}\) “Et nota che e ditta mutatione a mutare el nome dela nota: cioe de una proprietade ne laltra.” Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8].
Bonaventura continues by noting that there are 52 total mutations in the hand, but he explains that the procedure can be done only where there are two or three syllables on the same letter, thus excluding the usual positions where there is just one syllable (Γ ut, A re, ś mi, and E la).

Bonaventura then includes a brief discussion of ascending versus descending mutations, as follows:

<table>
<thead>
<tr>
<th>Italian</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item nota che ogni mutatione</td>
<td>Also note that every mutation that</td>
</tr>
<tr>
<td>terminata in ut re &amp; mi sempre</td>
<td>ends on ut, re, and mi always</td>
</tr>
<tr>
<td>ascende. Item ogni mutatione</td>
<td>ascends. Also every mutation that</td>
</tr>
<tr>
<td>terminata in fa sol &amp; la sempre</td>
<td>ends on fa, sol, and la always</td>
</tr>
<tr>
<td>descedende. Versus. Ut re mi scadunt:</td>
<td>descend. Versus: Ut, re, mi</td>
</tr>
<tr>
<td>fa sol la quoque descedunt.</td>
<td>ascend: fa, sol, and also la</td>
</tr>
<tr>
<td></td>
<td>descend.380</td>
</tr>
</tbody>
</table>

As we shall see, Aaron has a fair amount to say about an exception to this rule, the verse form of which he himself recites. Bonaventura follows this with an unusual threefold classification of mutation as most perfect, perfect, and imperfect, which Bonaventura assigns by propriety (e.g., “a perfect mutation is when we change from the natural propriety to b molle and vice versa”).381 There is no need to linger over this unusual classification here, however, for Bonaventura does not make use of the system again in his discussion of mutation, nor is it a part of Aaron’s treatment of the subject.

380 Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8]. This is almost an exact translation of a passage in his *Brevis collectio*, Chapter 13, although the Latin verse differs just slightly in the use of singular verb forms: “Ut re mi scandit; fa sol la quoque descendit.”
381 “Item mutatione perfecta e quando mutamo de natura in b molle & econverso.” Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8]. Bonaventura calls a mutation imperfect that shifts between square ś and soft b, and he calls a mutation most perfect that mutates between the natural and square ś, though only when ascending. When descending, he explains, it is merely perfect.
Following these remarks, Bonaventura commences his catalogue of mutations. Like Marchetto and Gaffurius, he lingers over some positions of the hand while glossing over others. Most of the positions that Bonaventura highlights are the same as in Marchetto and Gaffurius: C fa ut, F fa ut, G sol re ut, b fa ½ mi, and C sol fa ut. However, after remarking briefly that D la sol re is similar to C sol fa ut, he gets more specific for the next two notes, E la mi and F fa ut, and then gives a full account of G sol re ut (acute). Following G sol re ut, he abruptly ends the catalogue, saying only “and thus for each individual one.”

Despite the similarities in the format of Bonaventura’s catalogue to those of Marchetto and Gaffurius, there are also several notable differences. For one, Bonaventura does not include any notated examples of mutation of the type that is found in Marchetto and Gaffurius. This is not for lack of capability, for the printed edition includes a number of notated musical examples throughout, just not in the section on mutation. Moreover, Bonaventura’s descriptive style differs substantially from these models. Consider, for example, his description of mutation on G sol re ut, which is typical of his style for all of the positions on which he lingers:

Item in G sol re ut sono sei mutatione, scilicet prima in seconda & econverso. Item prima in tertia & econverso, vel sic: sol re, re sol, sol ut, ut sol, re ut, ut re. Sol re sta per ascendere de natura grave in b molle acuto &

Also on G sol re ut there are six mutations, namely the first [syllable] into the second and vice versa. Also the first into the third and vice versa. Also the second into the third and vice versa, or thus: sol re, re sol; sol ut, ut sol; re ut, ut re. Sol re is for ascending

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382 “Et sic de singulis etcetera.” Bonaventura da Brescia, Breviloquium musicale, Chapter [8].
383 Bonaventura also does not include musical examples for mutation in his Brevis collectio.
384 The musical examples throughout the Breviloquium are woodcuts, following the pioneering example of Burzio’s 1487 Musices opusculum. For more on the history of woodcuts in music theory incunabula, including the influence of Gaffurius’s beautifully designed Practica musicae, see Judd, Reading Renaissance Music Theory, 17–33.
from the grave natural [$deductio$] to the acute soft b [$deductio$] and vice versa. Also sol ut is for ascending from the grave natural [$deductio$] to the acute square $\acute{\%}$ [$deductio$] and vice versa. Also re ut is for ascending from the acute soft b [$deductio$] to the acute square $\acute{\%}$ [$deductio$] and vice versa.385

Two points are noteworthy here. First, in this excerpt Bonaventura combines hexachord propriety and range in his description of individual hexachords (e.g., “the grave natural [$deductio$]), a phenomenon that we discussed in a different context in the previous chapter. Secondly, there is Bonaventura’s means of identifying syllables by the order in which they appear in the compound name of the note. Thus, regarding G sol re ut, he refers to the syllables as first (sol), second (re), and third (ut). On the surface, this is similar to Gaffurius’s method of describing the syllables of mutation, for Gaffurius frequently references syllables by their order in the compound names of the notes. However, compare Bonaventura’s method of first listing all the combinations by syllable order, then listing them by syllable name, and then finally describing them in relation to the corresponding change in hexachord propriety. Gaffurius, on the other hand, describes each possibility in full before proceeding to the next, as can be seen in his own discussion of G sol re ut:

Ex Gsolreut sex prodeunt mutationes. Prima fit ex modulato transitu primae syllabae in secundam scilicet ex sol in re ascendendo ex natura in b mollem: ut haec dispositione percipitur. [Musical example omitted.]

Secunda fit e converso: mutando secundam syllabam in primam scilicet re in sol descendendo ex b

Six mutations proceed from G sol re ut. The first mutation is made from the musical transition of the first syllable into the second, namely of sol into re, by ascending from the natural [hexachord] in the soft b [hexachord], as is observed in this arrangement. [Musical example omitted.] The second mutation is made from the reverse,


by changing the second syllable into the first, namely re into sol, by descending from the soft b [hexachord] to the natural [hexachord], as is shown here. [Musical example omitted.] The third mutation is made by the conversion of the first syllable into the third for sake of seeking ascent, namely of sol into ut, from the natural hexachord to the square § hexachord. [Musical example omitted.] The fourth mutation is made from the reverse, namely seeking descent, with ut having been changed into sol, from the square § [hexachord] to the natural [hexachord], as is shown here. [Musical example omitted.] The fifth mutation is made when the second syllable is changed into the third, namely re into ut for the sake of ascending, from the soft b [hexachord] to the square § [hexachord], as here. [Musical example omitted.] The sixth mutation is made by changing the third syllable into the second, namely ut into re for the sake of decent, from the hard § [hexachord] to the soft b [hexachord], as is revealed in this example. [Musical example omitted.]

As we shall see, Aaron uses a descriptive format that is very similar to Bonaventura’s.

Regarding the position b fa § mi, Bonaventura is insistent that mutation is not done there, as he argues in a lengthy digression. Although he consistently refers to the position by one label, that is, b fa § mi, here he asserts that “they are still two letters, and mutation cannot be done except on only one letter.” Bonaventura even includes an unusual illustration in which b fa and § mi appear on different vertical levels within a

387 “. . . li sono anchora due littere: e la mutatione non se pol fare nisi in una sola littera, ut supra patet etcetera.” Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8].
single notated musical space, a visual representation of the major semitone that separates the two pitches (see Figure 22, below). Significantly, Bonaventura makes no mention of the technique of permutation in the *Breviloquium*, other than an oblique reference in his chapter on the tritone to the use of *musica ficta* in order to mitigate such a tritone when it begins on b fa, through the introduction of a flat on E.\textsuperscript{388}

![Figure 22: Illustration of b fa ♭ mi as two distinct letters within the same space on the staff according to Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8].](image)

This leads us to Aaron. Somewhat characteristically, Aaron’s treatment of mutation in plainsong is often rather out of order. Like Bonaventura, he first begins not with an explanation of what mutation is or how it is done, but rather with a description of where mutation can and cannot to take place. He explains that mutation can be done on fourteen different places in the gamut, beginning from C fa ut and proceeding upwards to the end of the hand, excluding those places where there is only a single syllable, namely b fa ♭ mi (twice) and E la.\textsuperscript{389} Because of the unusual way in which he moves upward from

\textsuperscript{388} The word “permutation” does not appear in this context. Bonaventura does allude briefly to the technique by name in his earlier *Brevis collectio*, but not within the context of his discussion of mutation. Rather, he mentions it in two other contexts, first, as here, regarding the mitigation of a tritone that begins on b fa by the introduction of the syllable fa on E (i.e., an E-flat), and then again later in a section on the different semitones described by Marchetto, to which we shall return shortly.

\textsuperscript{389} Although Aaron discusses the possibility of permutation on b fa ♭ mi in a later chapter, he does not make reference to the technique here.
the first point of mutation (C fa ut), he never explicitly says that mutation is excluded on
Γ ut, A re, and ½ mi, but he makes the point clear by what follows:

\begin{align*}
\text{Igitur ubicunque fuerint sub una} \\
\text{littera duae vel plures notae, ibi} \\
\text{mutationes fient. Ubi vero simplex} \\
\text{inveniatur nota, fieri nulla ibi} \\
\text{mutatio poterit.}
\end{align*}

So then, wherever there are two or more syllables under one letter, mutations will be made there. But
where a single syllable is found, no mutation will be able to be made there.\(^{390}\)

Aaron’s choice of the word \textit{nota} here rather than the more usual \textit{vox} for
“hexachord syllable” is noteworthy. Aaron uses both terms interchangeably, but although
the word \textit{nota} appears as a synonym for \textit{vox} in Marchetto’s oft-repeated definition of
mutation, the word \textit{vox} is much more commonly used to describe a solmization syllable
in Latin music theory treatises of the period. Marchetto himself uses only the word \textit{vox}
throughout his catalogue of mutations. Gaffurius even removes the synonym \textit{nota} from
his quotation of Marchetto’s definition, retaining just the word \textit{vox}, and throughout his
discussion of mutation he uses either \textit{vox} or \textit{syllaba}. In contrast, Bonaventura uses the
word \textit{nota} almost exclusively for this purpose in his vernacular \textit{Breviloquium}, as here:

\begin{align*}
\text{Item havemo dicto desopra che} \\
\text{dove se trova una nota sola, ivi non} \\
\text{se pol fare mutatione. Et etiam dico} \\
\text{che dove sono due note, ivi sono} \\
\text{due mutatione. E dove e tre note ivi} \\
\text{sono sei mutatione.}
\end{align*}

Also, we have said above that
where one finds only one syllable, in that place one cannot make
mutation. And also I say that where
there are two syllables, in that place
there are two mutations. And where
there are three syllables, in that
place there are six mutations.\(^{391}\)

Use of the word \textit{nota} to describe “hexachord syllable” also appears in the section
on mutation in the anonymous \textit{Quaestiones et solutiones}. Although the discussion of
mutation in the \textit{Quaestiones} occurs in the Latin part of the treatise, the compiler’s use of

\footnotesize
391 Bonaventura da Brescia, \textit{Breviloquium musicale}, Chapter [8]. Bonaventura uses both \textit{vox} and \textit{nota} for
this purpose in his \textit{Brevis collectio}.

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the word *nota* occurs in a passage that begins with the very Italian-like construction “nota quod”:

Insuper, nota quod ubi sunt duae notae et una littera fieri possunt duae mutationes, et ubi sunt tres notae sub uno signo fieri possunt sex mutationes. Moreover, note that where there are two syllables and one letter two mutations can be done, and where there are three syllables under one sign six mutations can be done.\(^{392}\)

Aaron’s use of the word *nota* in this context thus calls to mind a distinctly Italian nomenclature and further suggests his acquaintance with contemporaneous music theoretical writings in the vernacular.

Following this Aaron then provides his definition of mutation, which runs as follows:

Est autem mutatio vocis unius et proprietatis in alteram vocem ac proprietatem servato eodem loco ac sono variatio sive translatio. Now, mutation is the change or translation of one syllable and propriety into another syllable and propriety with the same place and sound having been maintained.\(^{393}\)

Aaron’s definition seems to be his own adaptation of the definition that originated with Marchetto. Particularly conspicuous is Aaron’s use of the word *variatio*, a key word in Marchetto’s definition, to which Aaron adds the synonym *translatio*.\(^{394}\) The equal emphasis that Aaron puts on the change of *proprietas* in addition to *vox* in his definition of mutation is another peculiar element, perhaps suggesting another relationship with Bonaventura’s *Breviloquium*, in which the author equates both concepts in his definition.\(^{395}\)

\(^{392}\) Anonymous, *Quaestiones et solutiones*, f. 53v. The *Quaestiones* does not include any specific examples of mutation beyond this general maxim.

\(^{393}\) Aaron, *De institutione harmonica*, I.10.5.

\(^{394}\) A search of the TML yields no other examples of these two words being equated in this way.

\(^{395}\) Recall that Bonaventura defined mutation as meaning “to change the name of the syllable, that is, from one propriety to another.” (“Et nota che e ditta mutazione a mutare el nome dela nota, cioe de una proprietade ne latra.”) Bonaventura da Brescia, *Breviloquium musicale*, Chapter [8].
Having thus defined the term, Aaron launches immediately into his examples. However, eschewing the comprehensive catalogue of Tinctoris and even the partial list of Marchetto, Gaffurius, and Bonaventura, Aaron instead limits himself to just two examples, one (C fa ut) that demonstrates mutation where there are two syllables, the other (G sol re ut) where there are three. The passage is worth quoting in full for the differing way in which he treats the two examples:


Now the following ought to be noted with respect to making mutations, that where there are two syllables, two mutations are made. Let C fa ut serve as an example, where, in ascending, fa of the grave square ¼ [hexachord] is changed and is transformed into ut of the grave natural [hexachord]. But in descending, that ut itself is changed, with the order having been reversed, into fa of the grave square ¼ [hexachord], as it was previously, and thus the syllable and propriety is changed in the course of ascent and descent yet the same place and sound persists. But where there are three syllables, it will be necessary that six mutations be made, as on G sol re ut, in which place and in similar places mutations are made as follows, namely of the first note with the second and, with the order being reversed, of the second with the first. Likewise, in the same manner, of the first with the third and of the third with the first. Similarly, of the second with the third, and of the third with the second in this way, sol re, re sol, and there are two mutations. Sol ut, ut sol, and now there are four. Re ut, ut re, thus six are made. The same thing is done in the remaining places of this kind.\textsuperscript{396}

\textsuperscript{396} Aaron, \textit{De institutione harmonica}, I.10.6–11.
Significantly, Aaron’s method of describing these two examples shows two distinct influences. In the first example, regarding mutation on C fa ut, Aaron’s narrative follows what might be described as a more traditional descriptive style, in which Aaron succinctly mixes references to hexachord syllable and propriety (e.g., “fa of the grave square keydown [hexachord] is changed and is transformed into ut of the grave natural [hexachord]”). Regarding G sol re ut, however, Aaron adopts a very different descriptive style that is strikingly similar to that which we saw in Bonaventura’s *Breviloquium*, for he first refers to the syllables by their order in the compound note name and then lists all of the syllable pairs. Aaron does not go on to describe the resulting mutations of hexachord propriety, as would be expected, but the omission seems more like an accidental error of compilation rather than an intentional omission.

Aaron concludes the chapter with a stand-alone statement on ascending and descending mutations, repeating the maxim that we discussed earlier:

\[
\text{Omnis autem mutatio quae in Ut re mi terminatur ascendit. Quae in Fa sol la descendit.}
\]

Now, every mutation that is ended on ut re mi ascends. Every mutation that is ended on fa sol la descends. 397

Aaron says no more about this idea here, but he does return to the precept several chapters later in chapter 14, a lengthy digression in which he discusses an exception to this rule. In fact, there seems to be good reason to believe that Aaron originally intended the material in chapter 14 to follow chapter 10 directly but later interpolated chapters regarding mutation and permutation on b fa keydown [mi and more general observations on the techniques of mutation. Aaron begins the chapter with a slightly altered version of the verse on ascending and descending mutations, which he takes to be “well known and

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397 Aaron, *De institutione harmonica*, 1.10.12–13.
general”: “Ut re mi ascends. Fa sol la descends.” (“Ut re mi scandere. Fa sol la descendere.”) However, as he explains, this maxim proves not always to be true, and he begins his demonstration of such an exception by saying, “For those last two mutations, re ut and ut re, indeed ascend.” The “last two mutations” to which he is referring here are the final pair of mutations at G sol re ut, which were the last pair of mutations that he discussed near the end of chapter 10, before briefly switching gears to mention the precept about ascending and descending mutations. The concision of this connective statement strongly suggests that Aaron originally intended it to be in close proximity to his discussion of mutations on G sol re ut, not separated by three chapters on other topics pertinent to mutation.

Aaron’s objection to the validity of the rule revolves around the idea that, according to the rule, the mutation ut re at G sol re ought to be regarded as an ascending mutation, which he says is “undoubtedly false,” since the destination hexachord begins on a lower note than the originating hexachord. As a demonstration of his argument, he then proceeds to describe a brief and rather convoluted example of mutation that includes two separate mutations on consecutive notes (see Figure 23, below). The example is just a brief excerpt that progresses from G to F to B-flat, meant to come from the middle or the end of a larger example of plainsong. Aaron initially solmizes the G as ut of the hard hexachord, but he changes it immediately to sol of the natural hexachord. He then

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398 Aaron, De institutione harmonica, I.14.1.
399 “Nam duae illae mutationes ultimae re ut, ut re ascendunt quidem.” Aaron, De institutione harmonica, I.14.2.
400 “. . . utique falsum est . . .” Aaron, De institutione harmonica, I.14.3.
401 Aaron introduces the example by saying “For, consider, there will be an unmeasured song, in the middle and at the end of which there will be a progression of this kind. . . .” (“Nam puta erit Cantilena non mensurabilis, in cuius medio ac fine huiusmodi progressus erit. . . .”) Aaron, De institutione harmonica, I.14.5.
descends a tone to F fa ut, where he mutates to ut of the soft hexachord, before leaping up a fourth to b-flat.

![Diagram of hexachords](image)

Figure 23: Example of mutations between the hard, natural, and soft hexachords as described by Pietro Aaron, *De institutione harmonica*, I.10.4–10.

At first glance, this example seems rather out of place, for the intervening mutation from the hard hexachord to the natural hexachord means that there is no direct mutation between ut and re, the very subject of his objection. However, he goes on to argue that such a plurality of mutations in so small a space ought to be avoided, for “to the extent that it is able to be done, mutations ought to be avoided and ought not to be permitted unless a great necessity impels it.” He then proceeds to explain that mutation occurs for two reasons, echoing the first two reasons described by Gaffurius, concluding that a single mutation between the hard and soft hexachords on G sol re ut would be preferable:

\[
\text{Duplici autem ratione necessitas eiusmodi mutationis contingit,}
\]
\[
\text{Quarum est altera quando Cantus ascensum ac descensum non attingit tune enim necessario sequitur mutatio. Altera est quando licet Cantus ascensui serviat atque descensui, attamen necesse est in}
\]

But necessity of a mutation of that kind occurs because of a twofold reason, one of which is when it does not reach the ascent and descent of a song, for then a mutation follows of necessity. The other is when, although it serves the ascent and descent of a song.

402 “Nam quo ad eius fieri possit, mutationes sunt vitandae et nisi magna urgete necessitas, non sunt admittendae.” Aaron, *De institutione harmonica*, I.14.10.
The alternative method that Aaron describes is depicted in Figure 24, below.

![Figure 24: Example of mutations between the hard and soft hexachords as described by Pietro Aaron, De institutione harmonica, I.10.14.](image)

Aaron notes that some may object to the use of the soft hexachord in plainsong, an interesting admission that suggests a trend toward using just the natural and hard hexachords in most plainchant unless b-flat specifically is required. Aaron defends its use here for two reasons: first, in order that only one mutation need be made, since the

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403 Aaron, De institutione harmonica, I.14.11–14. Aaron does not mention Gaffurius’s third reason for mutation, namely solmization of larger intervals such as the fourth or the fifth.

404 Such an implication is in line with Aaron’s more simplified approach to mutation in polyphony, a topic that I explored in depth in Bester, “Book Two of Pietro Aaron’s Libri tres de institutione harmonica,” 48–54.
soft hexachord encompasses both the next two notes in the progression; secondly, in
order to avoid the tritone that otherwise would result between F fa ut and b fa ♭ mi.
(Aaron will say more about the necessity to mitigate the tritone in his next chapter.) He
then explains, however, that due to the close overlap of the hard and soft hexachords, the
mutation ut re could indeed be regarded as ascending, since so much of the soft
hexachord actually lies above the note G sol re ut:

Alia tamen ratio est cur eiusmodi mutatio non descendens sed ascendens esse dicatur, Nām
quando UT RE dicimus, maius quidem intervallum offertur, pluresque notae supersunt, quibus
possit magis ascendi, Si quidem ab re usque ad UT solus est gradus et nihil est medium, et ipsum UT nota
est infima sub qua nulla sit alia. In ascensu autem prima quidem nota UT offertur, post quam multae
usque ad supremum LA sequuntur. Hinc fit ut mutatio dicatur ascendens RE UT et UT RE non
autem descendens, quae tamen ob id quod supra diximus, quandoque dici descendens poterit.

Nevertheless, there is different reason why a mutation of that kind is said to be not descending but
ascending, for when we say ut re, a larger space is provided and more notes are available with which it
would be able to be raised to a greater extent, since it is only one step from re all the way to ut and
nothing is in the middle, and ut itself is the lowest note, under which no other one could exist. But
in ascent, the first note, ut, is provided, after which many follow, all the way to the highest la. From
this, it happens that the mutation re ut and ut re is called ascending and not descending, which, neverthe-
less, on account of that which we said above, sometimes will be able to be called descending.405

All of this calls to mind Gaffurius’s distinction between direct and indirect
mutations under the same circumstances, which we encountered earlier. In both
discussions the theorists are grappling with the inherent conflict between a handy
theoretical generalization and the realities of actual practice. The generalization works
well when one shifts between the hard and the natural hexachords or between the natural
and the soft hexachords, whose starting notes are well separated, but the situation is more

complex when one mutates between the hard and the soft hexachords, which overlap so closely. Moreover, the confusion is not limited to mutation on G sol re ut. As Aaron notes, similar ambiguities occur on A la mi re, C sol fa ut, and D la sol re (I.14.22–23).

Aaron continues along a similar line in the next chapter, remarking on the necessity of b-flat “for the tempering of the harshness of the tritone.”406 He reasons that because b molle was invented of necessity and is not properly part of the series of seven musical letters (even lacking its own unique line or space in musical notation), it is therefore accidental. Thus it may be present or absent depending on whether it is necessary. The philosophical basis for this argument is Aristotle’s distinction between essential and accidental properties, as discussed in his Metaphysics.407

Before we become tempted to reevaluate Aaron’s philosophical training, there is one curious statement in this chapter that points indisputably to a preexisting model for this chapter. Towards the end of the chapter Aaron pauses to digress for a moment, remarking that “. . . the Greeks attached a fitting name to [b molle], calling it menon, that is, an accident” (“. . . graeci nomen illi conveniens indiderunt menon idest accidens illud appellantes.”)408 Aaron’s humanistic attempt to cite a related Greek word and concept is problematic, for the transliteration menon could refer to one of several Greek words, none of which mean “accident.” Rather, it seems to be a corruption of the Greek term synemmenon, the conjunct tetrachord that results in a B-flat in the Greek Lesser Perfect System. A search of the online Thesaurus Musicarum Latinarum yields exactly one other instance of the stand-alone word menon prior to Aaron’s De institutione harmonica: the

406 “. . . ad temperandam Tritoni asperitatem . . .” Aaron, De institutione harmonica, I.15.1.
407 Aristotle, Metaphysics, Book Γ.
408 Aaron, De institutione harmonica, I.15.5.
An anonymous Compendium musices that we discussed at length in the previous chapter.

A close comparison of the two works reveals that Aaron’s entire chapter on b molle is closely related to a parallel passage in the Compendium musices:

Anonymous, Compendium musices, sentences 30–36:

Moreover, it ought to be known that round b ought not to occupy its own line or space in the disposition of letters, nor ought it to have a place naturally, because it is not of the reckoning of the seven musical letters; for if it were any of the seven, it would agree by means of the consonance containing double [i.e., the octave] with any of the graves or the superacutes. Obviously it cannot agree with the graves by the consonance containing double, because there would not be a semitone [in the graves]. But by no means does it agree with the superacutes by means of an octave, because the semitone superabounds. For among the Greeks it is called b rotundum or menon, that is, an accident or accidental, for that which is accidental is not proper, and that which is not proper is not natural. But round b was invented for the purpose of tempering the tritone, which was invented besides, that is, naturally; for where a harsher song sounds, round b is interposed on the place of square for the purpose of tempering the harshness of the tritone. But where the song returns to its own nature, round b

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409 The fact that this etymological digression is in Aaron’s voice and not Flaminius’s is telling, for it highlights the fact that the digression originated with Aaron and not as an interpolation by Flaminius. The search term also produces a hit within the fourth book of Boethius’s De institutione musica, which appears as part of a poorly reproduced figure that was part of the edition of the treatise in the Patrologia cursus completus, Series latina, vol. 63 (Paris: Garnier). The figure depicts the diezeugmenon tetrachord, the caption of which the TML transcribes as “Tetracho dumniiazeu menon.” The only other hit postdates the De institutione harmonica, occurring in the seventeenth-century treatise De modo addiscendi Cantum Ecclesiasticum unicus Tractatus of Claudius Le Vol, again in a similar context and attributed to the Greeks. The word also appears in a similar context in Aaron’s own Lucidario in musica, Book II, Resolutione 3, although here he attributes the term to Guido.
Pietro Aaron, *De institutione harmonica*, 1.15.1–7:

That which pertains to a greater comprehension of \(\textit{b molle}\) also ought not to be omitted, that it was invented of necessity for the purpose of tempering the harshness of the tritone, and for that reason we say that it is not proper and natural, it is accidental. But, having been moved by these reasons, let us not hesitate to affirm this, it ought to be explained now, and first we assert that it is not able to be brought into line with the series of seven letters that form the elements of the musical hand. And for that reason it does not occupy its own line or space and it does not have a natural place, for if it were to be from the class of those, surely it would agree with something of the graves or the superacutes, without doubt, by means of the consonance containing double, that is, by means of the octave. But the fact that it does not agree with the graves is evident from this, because the semitone is found to be lacking for that. But the fact that it also does not comply with and accord with the superacutes is obvious, because it surpasses restraint and luxuriates in the semitone. On account of this reason, the Greeks attached a fitting name to that, calling it \(\textit{menon}\), that is, an accident. From this, it happens that it is able to be present and to be absent with respect to a whole song. Therefore, it ought not to be

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Aaron’s chapter 16 on b molle is his last on the subject of mutation. In between chapters 10 and 14, Aaron writes two chapters about mutation and permutation at b fa ½ mi and another chapter in which he presents two guidelines for the proper use of mutation in plainsong. We shall return to the chapters about b fa ½ mi momentarily, but Aaron’s chapter 13, “How mutations ought to be done in plain songs,” contains two points that are relevant to the present discussion:

Duo quidem in Cantilenis, quae planae dicuntur, servanda sunt, Quorum alterum est ut nunquam nisi necessitas cogat, mutatio fiat, Nam quamdiu voces habeas, quibus ascendere possis atque descendere, mutatio semper vitanda est. Alterum ut in ultimam semper notam mutationem differas, quae quidem nota, dum fit mutatio, duplicatur quidem quamvis appellacione diversa pronunciatur.

Two things ought to be observed in songs that are called plain, one of which is that mutation never is done unless necessity should compel it, for as long as you have syllables with which you are able to ascend and to descend, mutation always ought to be avoided. The other is that you always postpone mutation to the last note, and this note is repeated while mutation is being done, although it is pronounced with a different name.

Here we find the same guidelines that previously appeared both in Tinctoris and Gaffurius, first that mutation ought to be avoided unless it is necessary to move beyond the bounds of a given hexachord, and secondly that even when necessary it ought to be put off as long as possible and executed only on the last available note in the originating hexachord. The majority of this discussion is quite clear, but Aaron’s description of what occurs at the point of mutation adds an element of ambiguity. He says that the note to be mutated “is repeated [duplicitur] while mutation is being done, although it is pronounced with a different name.” The verb duplico can mean “to double” or “to enlarge,” but that

411 Aaron, De institutione harmonica, I.15.1–7.
412 Aaron, De institutione harmonica, I.13.1–2.
would imply a lengthening or a repetition of the note in performance, thus distorting the melody. Rather, Aaron may have in mind a late-Latin meaning of the verb, “to double by dividing” or “to split in two,” a sense that would keep the overall rhythmic flow of the chant intact.  

We now return to the topic of permutation. Once again, we shall begin with Marchetto, who seems to have invented the term. Marchetto’s treatment of permutation actually presupposes his bold innovation, discussed earlier in treatise 2 of the *Lucidarium*, of a five-part division of the whole tone and the different types of semitone (diesis, minor or enharmonic semitone, diatonic semitone, and chromatic semitone) that result from it. Presently there is scholarly disagreement over the nature of Marchetto’s five-part division and the size of the semitones that result from it. Because this debate may relate to Aaron’s own description of the major and minor semitones in the *De institutione harmonica*, we shall postpone that discussion until the next chapter, which concerns Aaron’s treatment of intervals and modes. In the meantime we shall focus primarily on the general technique of permutation as Marchetto describes it.  

Nevertheless, some background on Marchetto’s semitones remains necessary. As we shall see in the next chapter, Marchetto breaks new ground by dividing the whole tone into five parts, a revolutionary idea that provoked some controversy into the next century. Marchetto calls each of the five parts of the tone a “diesis.”

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413 For more on the different meanings of *duplico*, see *A Latin Dictionary*, ed. Charlton T. Lewis and Charles Short (Oxford: Oxford University Press, 1879), s.v. “duplico.”  
414 For a brief overview of Marchetto’s innovations regarding the division of the whole tone and the four types of semitone, see Herlinger, *The Lucidarium of Marchetto of Padua*, 14–20, but note disagreements with Herlinger’s interpretation, as will be discussed in the next chapter.  
415 For more on this innovation and critical response to it, see Herlinger, “Marchetto’s Division of the Whole Tone.”
departure from the traditional meaning of the term, for since Boethius the term *diesis* generally had been understood as a synonym for the minor semitone itself.\footnote{“Dyesis quinta pars est toni.” Marchetto, *Lucidarium*, II.6.2.}

After dividing the tone in this way, Marchetto introduces the different types of semitones, which he defines generally as “all those that comprise less than five parts.”\footnote{See Herlinger, “Marchetto’s Division of the Whole Tone,” 203–5. Boethius attributes this use of the term “diesis” to the Pythagorean disciple Philolaus in *De institutione musica*, III.8.} He defines four such intervals, which vary according to the number of dieses that they contain. The smallest semitone, which consists of just one fifth part, he also calls a “diesis,” using the same term that he generically uses for any fifth part of a tone. Next largest is the “enharmonic semitone,” which encompasses two dieses. This is followed by the “diatonic semitone,” which consists of three dieses. Last is the “chromatic semitone,” which comprises four dieses.\footnote{“... et ideo vocantur semitonia omnia illa que comprehendunt infra quinque ...” Marchetto, *Lucidarium*, II.5.18.} Furthermore, Marchetto explains that these semitones occur in pairs, such that the enharmonic semitone is paired with the diatonic semitone, while the chromatic semitone is paired with the diesis. As Herlinger notes, Marchetto likely conceived his enharmonic and diatonic semitones as practical approximations of the Pythagorean minor and major semitones, about which more will be said in the next chapter.\footnote{Marchetto, *Lucidarium*, II.5.23–27.\footnote{Herlinger, “Marchetto’s Division of the Whole Tone,” 204.}}

Marchetto’s discussion of permutation in Treatise 8 of the *Lucidarium* assumes all of this background from the earlier treatise 2. Marchetto first defines permutation, describing it as “the change of the name of a syllable or a note that is on the same space
or line but has a different sound.” In other words, it is a technique of chromaticism that allows for movement between two notes that are on the same line or space of the staff, such as between b and \( \tilde{\mathbf{1}} \) or between C and C\( \# \). The technique can use either pair of semitones, as Marchetto explains, depending on the context: “Permutation is done where the tone is divided for the sake of consonance into the diatonic and enharmonic [semitones] or into the chromatic [semitone] and the diesis or the reverse.”

According to Marchetto, the enharmonic-diatonic pair of semitones occurs only in a permutation from b to \( \tilde{\mathbf{1}} \) and the reverse. The interval of permutation between these notes is the diatonic semitone, consisting of three dieses, which is used only in this context, as Marchetto explains: “The diatonic [semitone] is used when permutation is made of round b into square \( \tilde{\mathbf{1}} \) or the reverse, by means of ascent or descent.” Thus the sequence of semitones in a progression of A-b-\( \tilde{\mathbf{1}} \)-C would be enharmonic-diatonic-enharmonic. The chromatic-diesis pair, meanwhile, is reserved for movement between a natural, musica recta note (e.g., C) and a raised version of it, using the sign \# (e.g., C\( \# \)), resulting in what Marchetto calls musica falsa. Such a progression is found principally in cadential passages in polyphony, as in the melodic progression C-C\( \# \)-D. The interval of permutation in such a sequence between the natural note and the raised note would be a chromatic semitone of four dieses, with a single diesis remaining for the

421 “Permutatio est variatio nominis vocis seu note in eodem spacio seu linea in diverso sono.” Marchetto, Lucidarium, VIII.1.2.
422 “Fit enim permutatio ubi tonus dividitur propter consonantiam in dyatonicum et enarmonicum aut in cromaticum et diesim vel e converso. . . .” Marchetto, Lucidarium, VIII.1.3.
423 “Semitonium dyatonicum est quando fit permutatio b rotundi in \( \tilde{\mathbf{1}} \) quadrum vel e converso propter ascensum vel descensum. . . .” Marchetto, Lucidarium, II.7.6.
424 Marchetto, Lucidarium, II.7.7–12.
425 For Marchetto’s use of the term musica falsa, see Lucidarium, VIII.1.4 and VIII.1.17.
smaller interval between the C♯ and the D. Marchetto explains that the small interval of the diesis is especially desirable in cadential progressions such as these, saying that this pair of semitones is used “in order that the consonance that follows the dissonances [i.e., a consonant cadence that is preceded by a “dissonant” third, sixth, or tenth] may lie apart by a smaller distance with the motion of both voices.”

According to Marchetto, both types of permutation occur only in polyphony, although, as we shall see, some later theorists acknowledge its use in plainchant as well. Regarding the diatonic semitone, for instance, which, as we saw, occurs only as the interval of permutation between b and ½, Marchetto says that it “is not used in plainsong because it exceeds all proportions of consonance on account of its larger size, thus producing dissonance.” Permutation between a natural note and its raised version also is limited to polyphony, for it uses the sign #, which Marchetto says “is used only in measured song” or in plainsong that has been subsumed into a polyphonic context, such as “in the tenors of motets or other measured songs.” Indeed, all of Marchetto’s musical examples of permutation are polyphonic, appearing in two-part counterpoint, as in Figure 25, below.

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426 See Herlinger, “Marchetto’s Division of the Whole Tone,” 205–7.
427 “... ut a consonantia que sequitur dissonantias per minorem distantiam per motum utriusque distetur...” Marchetto, Lucidarium, II.8.6.
428 “Dyatonicum... quidem non utimur in cantu plano, eo quod propter suam maioritatem excedat omnes consonantiarum proportiones, dissonantiam inde creans.” Marchetto, Lucidarium, II.7.3. Later, in his chapter on permutation in book VIII, Marchetto does say that b and ½ can occur both in plainsong and polyphony, but he is referring specifically to the appearance of the signs (and thus, to the two musica recta notes b and ½), not to the permutation between them. See Lucidarium, VIII.1.6.
429 “Tercium vero signum solum in cantu ponitur mensurato, vel in plano qui aut colorate cantatur aut in mensuratum transit, puta in tenoribus motettorum seu aliorum cantuum mensuratorum.” Marchetto, Lucidarium, VIII.1.7.
Figure 25: Examples of permutation using the diatonic semitone from Marchetto da Padova, *Lucidarium*, Treatise II, Chapter 7.

As we noted earlier, Tinctoris makes no mention of permutation in his *Expositio manus*. Gaffurius, on the other hand, briefly treats the topic in two different places in his *Practica musicae*, discussing it not only in regards to polyphony but also, significantly, with respect to plainchant (I.4 and III.13). His first discussion occurs within the larger context of mutation in plainsong, in the lengthy section in which he lays out his examples of the practice. Indeed, as noted earlier, b fa ♭ mi is one of the five positions on which Gaffurius lingers in his catalogue of mutations.

When he arrives at b fa ♭ mi, Gaffurius begins by saying that “On b fa ♭ mi, because the two syllables [b and ♭] are not of the same sound, many agree that no mutation can be done, for the syllables are separated from each other by a major semitone.” He goes on to argue that such a change can in fact take place by the technique of permutation, which he defines as “a mutual change [variatio] of quality and quantity,” citing both Marchetto and Anselmi as authorities on the subject. As he explains, this involves the simultaneous change both of the syllable fa into mi and of the pitch of the note, up a major semitone (and the reverse). He concludes that “because

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[permutation] is difficult and very dissonant, the consensus of musicians is that it ought to be avoided with every skill."  Nevertheless, he provides a musical example in which the technique is required on two occasions, one ascending and another descending, because of a pair of consecutive fourth leaps on either side of b fa ♭ mi (see Figure 26).  

![Figure 26: Example of permutation from Franchinus Gaffurius, Practica musicae, Book 1, Chapter 4.](image)

The other context in which Gaffurius discusses permutation is in his third book, in his chapter on musica ficta in counterpoint. Here, as noted earlier, Gaffurius discusses the use of ficta hexachords that introduce notes that are outside the hand. Gaffurius describes many of the resulting ficta notes as the results of permutation, a changing of mi into fa or vice versa, supported by ficta hexachords that begin on notes that do not normally support hexachords. For instance, he describes the introduction of E-flat in the grave register (requiring a ficta hexachord beginning on B-flat grave, itself outside the hand),

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432 "... quoniam difficilis et admodum dissonus est, omni solertia devitandum musicorum scola precepit.” Gaffurius, Practica musicae, I.4.
433 Bergquist discusses Gaffurius’s and Aaron’s treatment of permutation in “The Theoretical Writings of Pietro Aaron,” 98. Bergquist doubted the efficacy of such a technique, arguing that a series of consecutive fourths such as this “would probably be quite difficult to find in chant or in polyphonic compositions of the period, so the necessity was not likely to have arisen.”
and the introduction of modern C♯, also in the grave register (requiring a *ficta* hexachord
beginning on A re grave):

\[
\begin{align*}
\text{Inde si in Elami gravem} & \quad \text{Therefore, if you permutate mi into} \\
\text{permutaveris mi in fa: deponetur fa} & \quad \text{fa on E la mi grave, fa will be} \\
\text{maiore semitonio in grave: cuius} & \quad \text{lowered by a major semitone, and} \\
\text{Exachordum in ♭mi gravem} & \quad \text{its hexachord will acquire its} \\
\text{acquiret exordium. Quod si in} & \quad \text{beginning on ♭mi [i.e., B-flat]} \\
\text{Cfaut gravem fa permutaveris in mi} & \quad \text{grave. But if you permutate fa into} \\
\text{per transitum maioris semitonii in} & \quad \text{mi on C fa ut grave by mi, raising} \\
\text{actum: Exachordum huiusmodi in} & \quad \text{by the interval of a major semitone,} \\
\text{Are Initum assumet.} & \quad \text{the hexachord of this will take its} \\
\end{align*}
\]

For Gaffurius, in contrast to Marchetto, both of these types of permutations
involve the interval of a major semitone. Gaffurius stresses that such permutations ought
to be notated with ♭ and b, respectively. Nevertheless, at the conclusion of the chapter,
he observes that there are some who use the sign # to indicate a smaller interval, the
diesis, which “is half the interval of a minor semitone.” As Karol Berger notes,
Gaffurius’s explanation here is less than clear, but when he speaks of the # as lowering
the note to which it is applied by a diesis, he seems to be saying that it is lowered by that
interval in relation to the two notes on either side in a cadential progression, resulting in
Marchetto’s higher-than-usual chromatic semitone:

\[
\begin{align*}
\text{Sunt et qui appositione huius signi} & \quad \text{There are also those who desire} \\
\text{♯ notulam cui apponitur deprimi} & \quad \text{that the note which is appended by} \\
\text{volunt minimo dieseos interuallo.} & \quad \text{the addition of this sign # be} \\
\text{quod Enarmonici generis est. Est} & \quad \text{lowered by the smallest interval of} \\
\text{enim Diesis dimidium semitonii} & \quad \text{a diesis, which is of the enharmonic} \\
\text{minoris interuallum duobus tonis} & \quad \text{genus. For the diesis is half the} \\
\text{circumscriptum.} & \quad \text{interval of a minor semitone when} \\
\end{align*}
\]

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435 Gaffurius, *Practica musicae*, III.13. I am not sure that I agree with Berger that “Gaffurius does not
realize here that the ‘diesis’ of the Marchettans differs from the regular one,” but I do agree with his
assessment that “the only way to make sense of this sentence is to assume that, in a confused manner, he
refers to the Marchettan ‘diesis’ between a sharpened leading tone and the note a step above from which it
Aaron’s discussion of permutation is spread over two chapters, just after his initial chapter on the topic of mutation. In the first of the two chapters, Aaron seeks to establish conclusively that mutation is not possible at b fa ½ mi. First he asserts that although there are two syllables there, yet “there are two letters, and thus one letter there occupies only one note.” Moreover, he adds, the syllable fa “holds a lower place while mi holds a higher one, since that fa is of soft b grave but mi is of square ½ acute in such a way that mi is higher than fa by one major semitone.” Consequently, “neither the same place nor sound is able to be maintained as it is proper in mutations.”

In the next chapter, however, he acknowledges that a certain kind of mutation can be done at b fa ½ mi. Although he argues that progressions that would require such a mutation typically are not found in plainsong or polyphony (I.12.3), he states that he wants the reader to be prepared should the situation ever arise. He then describes an example of plainsong that features the same type of consecutive leaps of a fourth that we saw in Gaffurius’s example from the Practica musicae, thus requiring a shift between mi and fa at b fa ½ mi (see Figure 27, below). Aaron goes on to assert that such a shift properly ought to be called permutation rather than mutation:

> Attamen sciendum est talem notae mi in fa revera non debere mutationem dici sed per mutationem, quia ncessese est ut notam fa, quae ipsi mi per semitoniun maius (uti iam diximus) suiecta est, capias, et in

> Nevehether, it ought to be known that such a mutation of the note mi into fa in reality ought not to be called mutation but rather permutation, because it is necessary that you assume the note fa, which is situated under mi itself by a

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436 “Duae quidem sunt voces sed duae quoque sunt litterae et sic quidem ut una ibi littera unam tantum notam occupet.” Aaron, De institutione harmonica, I.11.3.
437 “Nanque Fa . . . locum inferiorem tenet, Mi vero superiorem, Siquidem illud Fa est b mollis gravis, Mi autem ½ quadri acuti ita ut mi sit uno quidem semitomio maior quam Fa sublimius.” Aaron, De institutione harmonica, I.11.6.
438 “Quare nec locus idem servari sicut in mutationibus convenit nec sonus potest” Aaron, De institutione harmonica, I.11.7.
voce ac sono mi canas. Sic quidem non mutatio proprie sed permutatio fiet, quia de loco in locum notam removere est quidem permutatio-nem tam in ascensu quam in descensu facere, non re vera mutationem.

He judges that such a permutation is “very harsh and quite difficult to perform,” concluding that such a shift of a major semitone is “extremely unpleasant” (I.12.11).

Figure 27: Example of permutation described by Pietro Aaron, *Libri tres de institutione harmonica*, I.12.5–7.

To summarize Aaron’s treatment of solmization and mutation in plainsong, first we must acknowledge that Aaron breaks very little new ground on the topic. As noted at the outset of the chapter, his discussion of both topics largely follows the Marchettan tradition, with additions that were commonplace among many of his predecessors. The only truly novel element in Aaron’s treatment is the unusual concision with which he demonstrates mutation, confining himself to just two examples, one for positions on which there are two solmization syllables, the other for positions on which there are three. We noted a similar format of concision in the various *reportationes* of the *Musica plana Johannis de Garlandia* from the thirteenth and fourteenth centuries, but the

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majority of Aaron’s immediate predecessors favor more extensive catalogues of mutations.440

Perhaps most importantly, it is now possible to speak confidently of strong similarities in wording and organization between Aaron’s *De institutione harmonica* and two published handbooks on plainchant from the end of the fifteenth century: Bonaventura’s *Breviloquium musicale* and the anonymous *Compendium musices*. It seems fairly certain that Aaron consulted both works during the preparation of his treatise. However, one must look elsewhere for Aaron’s inspiration for his chapters on permutation. Gaffurius seems a likely choice, given the similarity of their musical examples, although Aaron’s description of the technique bears few direct similarities with the language of Gaffurius’s discussion. Significantly, we also noted similarities with Gaffurius in Aaron’s next chapter, in which he discusses the proper timing of mutation. Recall that these three chapters seem to interrupt Aaron’s otherwise continuous thoughts about ascending and descending mutations, which are spread between chapters 10 and 14. It is tempting, therefore, to interpret the intervening chapters 11 through 13 as an interjection of Gaffurius-influenced material.

440 Interestingly, there are no examples of mutation in the *Quaestiones et solutiones*, just a general statement that “where there are two syllables and one letter, two mutations can be made, and where there are three syllables under one sign, six mutations can be made.” (“Insuper, nota quod ubi sunt duae notae et una littera fieri possunt duae mutationes, et ubi sunt tres notae sub uno signo fieri possunt sex mutationes.”) Anonymous, *Quaestiones et solutiones*, f. 53v. Note the compiler’s use of the work *nota* for “syllable,” which we discussed previously regarding Aaron’s use of terminology.
Chapter 5: Intervals and Modes

The final two principal topics of Aaron’s first book, namely intervals and modes, are in many ways related, so they will be treated together in the same chapter. As will be seen, Aaron’s treatment of intervals is similar in notable ways to Bonaventura’s treatment of the topic in the Breviloquium, further strengthening the connection between the two works, but Aaron frequently adapts these ideas and adds to them, incorporating references to classical authors such as Cleonides and Martianus Capella. As for the modes, Aaron’s treatment is very much in the tradition of Marchetto’s Lucidarium, but filtered through his more immediate predecessors, especially Bonaventura.

Aaron’s treatment of the melodic intervals of plainsong covers chapters 16 through 25. He organizes his discussion of the intervals into individual chapters, providing a separate chapter for each of the most common intervals used in plainsong, including the semitone, tone, semiditone (minor third), ditone (major third), diatessaron (fourth), diapente (fifth), hexachordon (sixth), and diapason (octave). In addition to these he unusually includes chapters on the tritone and the major and minor heptachordon (seventh), which are less commonly discussed in treatises about plainsong.

Aaron treats both the minor and major sixth in a single chapter, in contrast to his treatment of the minor and major third, which each receive their own chapter.
For the sake of comparison, we shall return to some of the significant predecessors that have been shown to be useful reference points thus far for Aaron’s treatise, beginning with Tinctoris’s *Expositio manus*. Tinctoris treats the intervals of plainsong in a single chapter of the treatise, incorporating descriptions of the semitone, tone, semiditone, ditone, diatessaron, diapente, and the diapente plus tone (major hexachordon).\(^442\) He does not mention the tritone, the minor hexachordon, the major or minor heptachordon, or the diapason in this context, although he does refer his readers to one of his more advanced treatises for a discussion of the “many other types and very many species of intervals in our hand.”\(^443\)

Gaffurius fashions a similar list, treating them in an early chapter of the first book of his *Practica musicae*. In that chapter Gaffurius deals primarily with the clefs and the hexachord syllables, and within this context he limits his discussion of intervals to those that are demonstrable within the bounds of a single hexachord. Thus he describes the semitone, tone, semiditone, ditone, diatessaron, diapente, and the diapente plus tone (major hexachordon).\(^444\) Like Tinctoris, he does not discuss the tritone, the minor hexachordon, the major or minor heptachordon, or the diapason in this section, but he does mention some of these intervals in passing in his chapter on mutation, where he refers to the occasional appearance of intervals larger than a hexachord.\(^445\)

\(^{442}\) Tinctoris, *Expositio manus*, 8.6–19.


\(^{444}\) Gaffurius, *Practica musicae*, 1.3.

\(^{445}\) “Sometimes a disjunct crossing of a mutation occurs when a melody is made by singing beyond the order of a hexachord, as, say, when ascending or descending by seven, eight, or even more syllables, a procedure that is observed more frequently in mensural songs.” (“Evenit quandoque disiunctus mutationis transgressus: quum modulando fit transitus ultra ordinem exachordi: puta ascendendo vel descendendo per
Another treatise that stays within roughly the same confines as Tinctoris and Gaffurius is the anonymous *Compendium musices*, although here every interval that is discussed receives its own chapter, as in Aaron.\textsuperscript{446} The author includes descriptions of the semitone, tone, semiditone, ditone, diatessaron, diapente, and diapason.\textsuperscript{447} The author does not describe the tritone, diapente plus tone, or any other interval between the diapente and the diapason.

Bonaventura da Brescia’s *Breviloquium musicale* stands notably in contrast to these first three examples. Bonaventura lists a total of thirteen “consonances” (he uses both Latin and Italian versions of the term), including the unison, semitone, tone, semiditone, ditone, diatessaron, tritone, diapente, minor hexachordum, major hexachordum, minor heptachordum, major heptachordum, and diapason.\textsuperscript{448} As in the *Compendium musices*, each interval receives its own separate chapter. Bonaventura treats the subject similarly in his earlier *Brevis collectio*, discussing the same “thirteen consonances or species of song,” but all the intervals are addressed in a single chapter (entitled “De tredecim consonantis sive speciebus cantus”).\textsuperscript{449} Comparing Bonaventura’s list of intervals with Aaron, they differ only by one, namely Bonaventura’s inclusion of the unison, an interval that Aaron does not address in this context. Table 2 summarizes each theorist’s catalogue of intervals in plainsong.\textsuperscript{450}

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\textsuperscript{446} The exception is the semiditone, which is treated in the same chapter as the ditone.


\textsuperscript{448} Bonaventura da Brescia, *Breviloquium musicale*, chapters 9–22. Bonaventura uses the terms “hexachordum” and “heptachordum,” whereas Aaron uses the terms “hexachordon” and “heptachordon.”

\textsuperscript{449} Bonaventura da Brescia, *Brevis collectio artis musicae*, chapter 14.

\textsuperscript{450} In the anonymous *Quaestiones et solutiones*, the chapters on intervals are almost exact copies of those in Bonaventura’s *Breviloquium*, so I have omitted discussion of that work here.
Although Aaron’s format for his discussion of intervals is noticeably similar to Bonaventura’s, Aaron diverges significantly in his content. As was typical, Aaron begins his treatment of intervals not with the smallest interval but with the whole tone, whose superparticular 9:8 ratio made it a more suitable starting point than the semitone, which generally was defined in relation to the tone. (Bonaventura also treats the tone before the semitone, but he actually begins with the interval of a unison.) Aaron starts his chapter with definitions from antiquity, quoting both Martianus Capella and Cleonides. One is tempted to see the influence of Flaminius, his translator, in these interpolations. Unfortunately neither excerpt is particularly clear by itself. The quotation from Martianus

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451 Interval names in the table headings have been abbreviated according to modern terminology purely for reasons of space, using the following system: U = unison; m2 = semitone; M2 = tone; m3 = semiditone; M3 = ditone; P4 = diatessaron; TT = tritone; P5 = diapente; m6 = minor hexachordon; M6 = major hexachordon; m7 = minor heptachordon; M7 = major heptachordon; P8 = diapason.

452 As noted in Chapter 1, the De nuptiis of Martianus Capella also played an important role in the laudes musices section of Flaminio’s Preface. As for Cleonides, a Latin translation of his Eisagoge harmonike [Harmonic Introduction] by Giorgio Valla was published in Venice in 1497. Later in the second book of the De institutione harmonica, Aaron cites Cleonides’s work by its Latinized title, Harmonicum Introductorium, suggesting strongly that Aaron’s and Flaminius’s source for Cleonides was the Valla Latin translation.
describes the tone simply as “an extent of space . . . from any note to a note.” The passage from Cleonides is even less helpful, noting only that the term *tonus* can have four different meanings, namely “note, interval, position of the voice, and pitch.” Aaron goes on to mention Cleonides’s agreement with Aristoxenus that there are a total of thirteen tones, evidently unaware that this application of the word *tonus* has nothing to do with intervals (I.16.3). Rather, it refers to Aristoxenus’s system of thirteen *tonoi*, the varying transpositions of the Greek Perfect Systems to different starting pitches. Only then does Aaron begin to provide a practical explanation of the tone as an interval in contemporary practice, describing it as “the connection of two syllables by means of a complete space,” in contrast to the semitone, which encompasses only an “incomplete space.” He concludes with examples that are described in reference to hexachord syllables, both of tones (ut-re; re-mi; fa-sol; and sol-la) and of semitones (mi-fa).

Aaron then moves on to the semitone. He first repeats the notion from the previous chapter that a semitone encompasses an incomplete space and then proceeds to explain that there are in fact two types of semitone, major and minor. The major semitone, he explains, consists of two dieses and a comma, while the minor semitone consists of only two dieses without the comma. Here we can recognize the legacy of

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456 “Vel tonus est coniunctio duarum vocum sive complexio per spatium perfectum . . . Imperfectum semitoniorum.” Aaron, *De institutione harmonica*, I.16.4.

457 Compare Bonaventura, who in the *Breviloquium* instead describes the semitones according to Marchetto’s terminology (enharmonic, diatonic, chromatic). He does not quantify the different sizes of these semitones, however, instead referring them purely to pairs of hexachord syllables as a reference to size.
Marchetto’s terminology of the division of the tone in the way that Aaron equates the minor semitone with two dieses, although his description of the major semitone as two dieses and a comma (rather than three dieses) is a departure from Marchetto’s nomenclature.

Aaron then defines the diesis and the comma, at the same time incorporating interruptive asides on the etymology of both words (with mixed success).\textsuperscript{458} He first defines the diesis in a very Marchetto-like way, calling it “a part of a tone” (“Diesis autem pars est toni”).\textsuperscript{459} He then explains that a tone consists of four dieses and a comma, which equates, of course, to the combination of Aaron’s minor and major semitones. At this point he defines the comma in a most unusual way, asserting that it is a ninth part of a tone: “Comma vero nona est pars toni.”\textsuperscript{460} He reiterates this point at the very end of the chapter, saying that the tone “was divided into nine commata” (“Tonus autem ipse . . . in novem commata divisus est”).\textsuperscript{461} The clear implication, although Aaron does not say so explicitly, is that the comma is precisely half of the diesis. The consequences of this division will be discussed further in a moment.

Also in this chapter, Aaron explains, somewhat cryptically, that only the minor semitone occurs naturally in the hand. The major semitone, by contrast, is accidental:

\begin{itemize}
  \item \textsuperscript{458} Aaron's etymological description of ‘comma’ from the Greek κόμμα is accurate, though his relation of it to the Latin word ‘incisio’ is of questionable value. His etymological description of ‘diesis’ is less successful. He relates it to a Greek word that he transliterates as ‘diesco,’ by which he may mean the verb διήχω (to separate). As a Latin alternative he gives ‘divido.’ In \textit{A Latin Dictionary}, Charlton Lewis instead relates the noun διήχος to the verb διήμη (“to pass through”; “to dismiss”).
  \item \textsuperscript{459} Aaron, \textit{De institutione harmonica}, I.17.7.
  \item \textsuperscript{460} Aaron, \textit{De institutione harmonica}, I.17.8.
  \item \textsuperscript{461} Aaron, \textit{De institutione harmonica}, I.17.9. In the same sentence he also confusingly writes that the tone “encompasses four dieses” (“quattuor dieses complectitur”), which does not match his earlier statement. It seems likely that he intended to include the additional phrase “and a comma” (“et unum comma”), which appears earlier in I.17.7, but that it was omitted here by mistake.
\end{itemize}
“But the major semitone is found nowhere in the natural system of the hand, only where there is b fa ♮ mi. For it is found accidentally wherever there is a tone, as is evident on the monochord” (I.17.4–5). Aaron does not say in this chapter exactly where the major semitone occurs in relation to b fa ♮ mi, but earlier, in his chapters on mutation and permutation on b fa ♮ mi, he had revealed that the major semitone lies between the two syllables b and ♮, as shown in Figure 28.

![Figure 28: The major semitone between b and ♮ according to Pietro Aaron, Libri tres de institutione harmonica.](image)

As Herlinger noted, Aaron was not the first to suggest that the comma is half a diesis: Gaffurius reports the stance in his *Theoricum opus musice discipline* (1480), and Nicolò Burzio borrowed Gaffurius’s testimony, without attribution, in his *Florum libellus* (1487). Herlinger also notes that such a division of the whole tone produces “amazingly accurate approximations of the Pythagorean semitones,” marveling, “Where

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462 Herlinger, “Fractional Divisions of the Whole Tone,” 80–81. Bergquist evidently was not aware of these passages in Gaffurius and Burzio, for he suggested that Aaron “may have been the first to publish the approximation.” Bergquist, “The Theoretical Writings of Pietro Aaron,” 108.
before [Gaffurius], in the theory of the Middle Ages and the Renaissance, is division of the tone into ninths even discussed?"463

In fact, in recent years several scholars have suggested that such a nine-part division of the whole tone may be related to Marchetto’s famous five-part division of the tone. Until somewhat recently, scholars generally have interpreted Marchetto’s five-part division of the whole tone to be a division of the tone into five equal parts, following the lead of Herlinger in his magisterial 1978 dissertation on the *Lucidarium* (and in his later published edition of the treatise) as well as in his several follow-up articles on the topic of theoretical divisions of the whole tone.464 Recently, though, several scholars have come to interpret Marchetto’s words differently, arguing that Marchetto actually intended an unequal division of five parts, in essence consisting of four and a half parts that relate directly to Marchetto’s earlier argument that “the substance and the nature and the total and formal ratio of the whole tone consists in the number nine, neither more nor less.”465 Such an interpretation could suggest a link with the practice of the nine-part division that

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463 Herlinger, “Fractional Divisions of the Whole Tone,” 80 and 81. In contrast, to Herlinger, who assumes that Gaffurius and Aaron were describing a concrete division that would produce practical approximations of Pythagorean intervals, Bergquist, on the other hand, assumed that Aaron was still describing the true Pythagorean comma, and that the division of the tone into nine commata was the approximation. See Bergquist, “The Theoretical Writings of Pietro Aaron,” 106–8.

464 See Herlinger, “The Lucidarium of Marchetto of Padua”; *idem, The Lucidarium of Marchetto of Padua*, 14–20; and his two 1981 articles “Marchetto’s Division of the Whole Tone” and “Fractional Divisions of the Whole Tone.” Among those who follow Herlinger’s assumption of an equal five-part division are David Cohen, in his 2001 article “The Imperfect Seeks Its Perfection,” and Ronald Woodley, in his 2006 article “Sharp Practice in the Late Middle Ages.”

Gaffurius relates more than a century and a half later in his *Theoricum opus* and that Aaron takes for granted in his *De institutione harmonica*.

As we noted in the previous chapter, Marchetto’s initial discussion of the division of the whole tone and its varying sizes of semitones appears in treatise 2 of the *Lucidarium*. Marchetto prefaces the topic with a pair of lengthy proofs that are intended to demonstrate the foundation of the whole tone in the proportion 9 to 8. The proof is of dubious value; Marchetto seems not to have had an extensive education in philosophy, and he was writing primarily for practicing singers, not speculative musicians. One of the key points of his proof is that perfection comes from dividing a substance into nine parts (or rather first into three primary parts and then into three again).

When Marchetto then takes up the division of the whole tone in the next chapter, he begins his discussion with a most surprising statement: “First of all, it ought to be known that the whole tone has five parts, neither more nor less.” As we know from the previous chapter, Marchetto later labels each fifth part a “diesis,” which he defines as “a fifth part of a tone,” and goes on to describe the different types of semitones as consisting

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467 Marchetto was a singer and choirmaster at the cathedral in Padua, and his treatise seems targeted toward the singers whose training he supervised. In the words of Herlinger, “Marchetto’s vivid directions to singers . . . suggest that he was first of all a practicing musician; the unorthodoxy of his mathematical notions and his reliance on another [i.e., the Dominican Brother Siffante of Ferrara] in organizing his treatises and in working out their philosophical arguments . . . suggest that, despite the sophistication of his ideas, he lacked extensive scholastic education.” Herlinger, *The Lucidarium of Marchetto of Padua*, 3. Marchetto credits Brother Siffante directly both in the opening Epistola of the *Lucidarium* and in the Epistola and Explicit of his later *Pomerium*. For more on the role of Brother Siffante, who is otherwise unknown, see Herlinger, “Marchetto’s Division of the Whole Tone,” 198, and Cohen, “‘The Imperfect Seeks Its Perfection,’” 149n34. Cohen suggests that Siffante, as a Dominican, may have been an avenue for the influx of Aristotelian thought in Marchetto’s treatise. (Thomas Aquinas, whose commentary on Aristotle’s *Physics* and *Metaphysics* was so influential for the rise of Aristotelian thought in thirteenth-century scholastic circles, also was a Dominican.)
469 Marchetto, *Lucidarium*, II.5.7.
of differing numbers of dieses (more on this below). For Herlinger, the implications of these statements are unequivocal: the whole tone is divided into five equal parts, or dieses, which form the building blocks for the four different types of semitones. To assume an unequal division of fifths, based on a separate nine-part division, is to misinterpret Marchetto’s intention.

And yet Marchetto does begin his proof of the five-part division of the tone with a reminder of the perfection of the number nine:

Probatum est superius tonum consistere in perfectione numeri novenarii, quod ostendimus ad sensum in corporibus sonoribus, puta in monacordo et aliis.

It was proved above that the tone consists in the perfection of the number nine, which we show for the purpose of perception on sounding bodies, such as on the monochord and other such things.

He then goes on to explain that the number nine cannot be divided equally into two parts (or any multiple of two), which does seem to suggest that Marchetto also was equating the whole tone quantitatively with the number nine. He then confusingly lays out the five parts of his division in relation to the odd numbers contained in the number nine, as follows:

470 “Dyesis quinta pars est toni.” Marchetto, Lucidarium, II.6.2.
471 “Marchetto explicitly defines his diesis as one-fifth tone in Lucidarium 2.6.2; he measures other intervals in multiples of the diesis. . . , a practice that makes no sense unless the diesis is of a single, constant value. The author of the Riemann article evidently supposed that Marchetto regards the whole tone as consisting of nine parts whereas what Marchetto actually claims is that it consists in the number nine (Lucidarium 2.4.29). In the present passage [II.5.14] Marchetto deals with numero-logical considerations, not quantitative measurements.” Herlinger, The Lucidarium of Marchetto of Padua, 135, note g.
472 Marchetto, Lucidarium, II.5.8.
473 “But now it is such that the number nine never can be divided into [two] equal parts; for there is a unity that resists being divided and, consequently, resists being subdivided. For nine never can be divided by two, four, six, or eight, by dividing it equally, we mean.” (“Nunc autem ita est, quod novenarius numeros nunquam potest dividi in partes equales; est enim ibi unitas que resistit dividi, et per consequens neque subdividi; numquam enim potest dividii novem per duos, quattuor, sex, et octo, equaliter ipsum dicimus dividendo.”). Marchetto, Lucidarium, II.5.9–11. Herlinger argues persuasively that Marchetto specifically means two equal parts in this context (and thus any multiples of two). See The Lucidarium of Marchetto of Padua, 133, note e.
Therefore it remains that the parts of the whole tone ought to be unequal, such that one is the first part; from one to three is the second part; from three to five is the third part; from five to seven is the fourth part; and from seven to nine is the fifth part; and this fifth part is the fifth unequal number of the whole nine. Thus it is clear that the tone cannot have other than five parts, neither more nor less, such that five parts make up the whole tone.⁴⁷⁴

This unusual passage lies at the crux of the disagreement over Marchetto’s division of the whole tone. Whereas Herlinger described it as a kind of “numerological sleight-of-hand,” an abstruse and questionable philosophical argument that provided a pivot point for an introduction of Marchetto’s practical subdivision of the tone into five equal parts, others have taken the passage more literally.⁴⁷⁵ Thus for scholars such as Jay Rahn, Marie Louise Göllner, and Dorothea Baumann, Marchetto would appear to be setting out a specific, unequal quantification of the size of the five dieses in relation to the perfect number nine.⁴⁷⁶ According to such an interpretation, Marchetto actually describes two differing sizes of diesis, for Marchetto’s first fifth part encompasses just a single number (1), while every other fifth part spans a space of two numbers (1–3; 3–5; 5–7; and 7–9).⁴⁷⁷ Just afterward, moreover, Marchetto asserts that “Any one of these fifth parts

⁴⁷⁵ See Herlinger, “Marchetto’s Division of the Whole Tone,” 202.
⁴⁷⁶ See Rahn, “Practical Aspects of Marchetto’s Tuning”; Göllner, “Marchettus of Padua and Chromaticism”; and Baumann, “Further Thoughts on Marchetto’s Semitones.”
⁴⁷⁷ Baumann suggests that the smaller diesis of one ninth part instead ought to be called the “comma,” for the size of a single ninth part is very similar to the Pythagorean comma (i.e., the difference in size between the minor and major semitones) of Pythagorean theory. Baumann, “Further Thoughts on Marchetto’s Semitones,” 23.
is called a diesis.”\(^{478}\) Marchetto’s use of the word ‘quelibet’ (‘any’) here could be taken one of two ways: either to mean that any one of the equal fifth parts is called a diesis, regardless of its position within a whole tone (à la Herlinger); or to mean that any fifth part is called a diesis, whether it consists of one ninth-part or two (à la Rahn et al.).

Marchetto then goes on to discuss the different types of semitones, which, as we saw, he defines generally as “all those that comprise less than five parts.”\(^{479}\) As a reminder, Marchetto defines four such semitones, which differ according to the number of dieses that they contain: the diesis (one diesis); the enharmonic semitone (two dieses); the diatonic semitone (three dieses); and the chromatic semitone (four dieses).\(^{480}\) As we also saw previously, Marchetto groups the semitones in pairs, explaining that a whole tone may be divided either into the enharmonic and diatonic semitones or into the chromatic semitone and the diesis.

According to Herlinger’s interpretation of an equal five-part subdivision, the resulting sizes of the four semitones are quite straightforward. Indeed, Herlinger specifically highlights the practical value of the equal five-part division, for Marchetto’s enharmonic semitone (two dieses) and diatonic semitone (three dieses) produce serviceable approximations of the two traditional semitones of medieval theory, the minor and major semitones (often called the limma and apotome, respectively), which according to Pythagorean theory were represented by highly complex ratios (256:243 and

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\(^{478}\) “Quarum quelibet quinta pars vocatur dyesis, quasi decisio seu divisio summa.” Marchetto, *Lucidarium*, II.5.23.

\(^{479}\) “... et ideo vocantur semitonia omnia illa que comprehendunt infra quinque ...” Marchetto, *Lucidarium*, II.5.18.

\(^{480}\) Marchetto, *Lucidarium*, II.5.23–27.
Meanwhile, the diesis and the chromatic semitone, which seem to be Marchetto’s own innovations, provide an approximation for the practice of higher-than-normal raised leading tones in Italian trecento music, even if, as Herlinger points out, a truly four-fifths chromatic semitone would produce intervals that are “impossibly large,” closer in essence to the next largest interval than to the notated interval’s proper size.\(^{482}\) (For example, Marchetto’s chromatic semitone, at ~163 cents, is closer in size to the Pythagorean whole tone, at ~204 cents, than it is to the Pythagorean major semitone, at ~114 cents.) A summary of the sizes of the intervals, along with a comparison in cents of their Pythagorean equivalents (when applicable), can be seen in Table 3, below (cent values are approximate).

\(^{481}\) See Herlinger, “Marchetto’s Division of the Whole Tone.”

\(^{482}\) Herlinger, “Marchetto’s Division of the Whole Tone,” 209. For the practice of narrow semitones at chromatically raised cadences, see especially Cohen, “‘The Imperfect Seeks Its Perfection.’” Although Göllner disagrees about the basis for division, preferring an unequal subdivision, she argues that this approximation of the narrow leading tone was the very purpose of Marchetto’s innovative division: “Thus the new semitone, the so-called *semitonium chromaticum*, is actually the cause of Marchettus’ unconventional division of the whole tone rather than its product.” Göllner, “Marchettus of Padua and Chromaticism,” 4. For my part, I am not entirely convinced of the absolute primacy of the chromatic semitone in Marchetto’s thinking. The practical benefit of either approach, as we shall see, would seem to be its useful approximation of all the semitones, not just of Marchetto’s chromatic semitone.
<table>
<thead>
<tr>
<th>Interval</th>
<th>Size in Equal Dieses</th>
<th>Modern Equivalent in Cents</th>
<th>Pythagorean Equivalent in Cents (Pythagorean Ratio in Parentheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesis</td>
<td>One diesis (one-fifth of a tone)</td>
<td>40.8</td>
<td></td>
</tr>
<tr>
<td>Enharmonic Semitone</td>
<td>Two dieses (two-fifths of a tone)</td>
<td>81.6</td>
<td>90.2 (256:243)</td>
</tr>
<tr>
<td>Diatonic Semitone</td>
<td>Three dieses (three-fifths of a tone)</td>
<td>122.3</td>
<td>113.7 (2187:2048)</td>
</tr>
<tr>
<td>Chromatic Semitone</td>
<td>Four dieses (four-fifths of a tone)</td>
<td>163.1</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Comparison of the sizes of Marchetto’s semitones to Pythagorean semitones according to an equal five-part division of the whole tone.

The alternative hypothesis of an unequal five-part division is a little more complicated. If indeed there are two different sizes of diesis, one smaller one consisting of one ninth part and four larger ones consisting of two ninth parts, then the question naturally arises as to where exactly the smaller diesis occurs among Marchetto’s four different types of semitones.\(^{483}\) For instance, regarding the enharmonic-diatonic pair of semitones, he states simply that “The minor or enharmonic semitone is that which contains two dieses. . . . But the diatonic [semitone] contains three dieses. . . .”\(^{484}\) Of course, the two and three dieses of the enharmonic and diatonic semitones cannot all be of

\(^{483}\) The only place in the treatise in which Marchetto suggests a smaller diesis is in the passage quoted earlier, in which the apparently smaller diesis occurs first (in relation to the number 1), followed by the four seemingly larger dieses. It is difficult to take this explanation literally in regards to the placement of the smaller diesis, however, for such an orientation would create a diesis-as-semitone of one ninth part, an enharmonic semitone of three ninth parts, a diatonic semitone of five ninth parts, and a chromatic semitone of seven ninth parts. Using these relative sizes of semitones, neither pair of semitones, either enharmonic-diatonic or diesis-chromatic, would add together to the full nine parts of a whole tone, both pairs falling short by one ninth part.

\(^{484}\) “Semitonium minus seu enarmonicum est quod continet duas dyeses. . . . Dyatonicum vero tres continet dyeses. . . .” Marchetto, *Lucidarium*, II.7.2–3. It is Marchetto’s definition of his semitones as multiples of undifferentiated dieses that Herlinger believes argues strongly for an equal five-part division, for the “practice makes no sense unless the diesis is of a single, constant value.” Herlinger, *The Lucidarium of Marchetto of Padua*, 135, note g.
the same larger size, or else the two semitones would not add together to make a nine-part whole tone. Thus one of these dieses must be of the smaller type, having just one ninth part of a tone, but is the smaller diesis part of the enharmonic semitone or the diatonic semitone?

Marchetto later describes a certain additive quality to the varying types of semitone, explaining that each semitone arises from the addition of a diesis to the one before it:

Ex enarmonico et diesi consurgit dyatonico, ex dyatonico et diesi cromaticum, ex cromatico et diesi tonus.

The diatonic [semitone] arises from the enharmonic [semitone] and a diesis, the chromatic [semitone] from the diatonic [semitone] and a diesis, and the tone from a chromatic [semitone] and a diesis.485

Were the small diesis a part of the enharmonic semitone, thus creating a semitone of three ninth parts, the diatonic semitone would then need to span a total of six ninth parts and thus would require the addition of a diesis consisting of three ninth parts, a possibility that Marchetto never discusses. Rather, the only solution that makes any mathematical or logical sense is for the smaller diesis to occur between the enharmonic and diatonic semitones, resulting in the following sizes, expressed in ninth parts of the tone:

<table>
<thead>
<tr>
<th>Diesis: two ninth parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enharmonic semitone: four ninth parts</td>
</tr>
<tr>
<td>Diatonic semitone: five ninth parts</td>
</tr>
<tr>
<td>Chromatic semitone: seven ninth parts</td>
</tr>
</tbody>
</table>

In his later section on mutation, Marchetto gives strength to this assumption when he explicitly describes the diesis-as-semitone as half of the enharmonic semitone, which,

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under this unequal interpretation, would require a diesis of two ninth parts and an enharmonic semitone of four ninth parts:

But the peculiar property of the other sign [i.e., of the sharp] is to divide the tone by means of the chromatic [semitone] and the diesis, and to divide the enharmonic [semitone] by half.\textsuperscript{486}

Table 4 summarizes the sizes of each semitone according to the interpretation of unequal fifth parts, including sizes in cents and a comparison to Pythagorean tuning in cents (cent values are approximate).

<table>
<thead>
<tr>
<th>Interval</th>
<th>Size in Unequal Dieses (ninth parts in parentheses)</th>
<th>Modern Equivalent in Cents</th>
<th>Pythagorean Equivalent in Cents (Pythagorean Ratio in Parentheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesis</td>
<td>One larger diesis (two-ninths of a tone)</td>
<td>45.3</td>
<td></td>
</tr>
<tr>
<td>Enharmonic Semitone</td>
<td>Two larger dieses (four-ninths of a tone)</td>
<td>90.6</td>
<td>90.2 (256:243)</td>
</tr>
<tr>
<td>Diatonic Semitone</td>
<td>Two larger dieses and one smaller diesis (five-ninths of a tone)</td>
<td>113.3</td>
<td>113.7 (2187:2048)</td>
</tr>
<tr>
<td>Chromatic Semitone</td>
<td>Three larger dieses and one smaller diesis (seven-ninths of a tone)</td>
<td>158.6</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Comparison of the sizes of Marchetto’s semitones to Pythagorean semitones according to an unequal five-part division of the whole tone, based on ninth parts.

As Table 4 demonstrates, an unequal interpretation of Marchetto’s five-part division of the tone results in semitones (enharmonic and diatonic) whose sizes are a very close approximation of the minor and major semitones of the Pythagorean system, even

\textsuperscript{486} Marchetto, \textit{Lucidarium}, VIII.1.19. Of course, this passage also works perfectly well with Herlinger’s interpretation of an equal five-part division.
closer than those that result from an equal five-part division. 487 By corollary, Marchetto’s smaller diesis of one ninth part, which is the difference between his enharmonic and diatonic semitones, is itself a close approximation of the Pythagorean comma that is the difference between the minor and major semitones. 488 In this sense, Marchetto’s division of four larger dieses and one smaller diesis could be seen as a highly practical approximation of the division of the whole tone that Boethius attributed to the late fifth-century BCE Greek Pythagorean philosopher Philolaus, whereby the whole tone “is divided into four diaschismata and a comma,” with the diaschisma equaling “half of a minor semitone” (in the same way that Marchetto’s “diesis” is half of an enharmonic semitone):

Philolaus igitur haec atque his minora spatia talibus definitionibus includit. Diesis, inquit, est spatium, quo maior est sesquitertia proportio duobus tonis. Comma vero est spatium, quo maior est sesquioctava proportio duabus diesibus, id est duobus semitonis minoribus. Schisma est dimidium commatis, diaschisma vero dimidium dieseos, id est semitonii minoris. Ex quibus illud colligitur: quoniam tonus quidem dividitur principaliter in semitonium minus atque apotomen, dividitur etiam in duo semitonia et comma; quo fit, ut dividatur in quattuor diaschismata et comma.

Therefore Philolaus includes these intervals and ones smaller than these with the following definitions. The diesis, he says, is the interval by which the sesquitertia proportion [4:3] is greater than two tones. But the comma is the interval by which the sesquioctave proportion [9:8] is greater than two dieses, that is, two minor semitones. The schisma is half of the comma, but the diaschisma is half of a diesis, that is, a minor semitone. From these things, the following is inferred: because a tone is divided principally into a minor semitone and an apotome, it also is divided into two [minor] semitones and a comma; from this it follows that

487 As noted above, Herlinger himself makes this point about the similar nine-part division mentioned by Gaffurius and advocated by Aaron. See Herlinger, “Fractional Divisions of the Whole Tone,” 81.
488 The smaller diesis of a single ninth part of a tone would equal 22.7 cents in this system. By comparison, the Pythagorean comma, with a ratio of 531441:524288, measures 23.5 cents.
the tone is divided into four diaschismata and a comma. Of course, such an interpretation inevitably rests on the assumption that Marchetto intended the term “diesis” to describe two differently sized intervals, an ambiguity that many modern scholars find hard to accept. If it were true, however, we might find some evidence of differing interpretations among later theorists as they themselves confronted such an ambiguity.

Indeed, considering the popularity of Marchetto’s treatise, it is not surprising that a number of later theorists, particularly in the fifteenth century, expressed their own opinion on Marchetto’s revolutionary division of the whole tone, which by either interpretation threatened to overturn certain basic principles of Pythagorean intonation, the authority for which remained none other than Boethius himself. One of the earliest and most vocal critics of Marchetto’s division was the fellow Paduan Prosdocimus de Beldemandis, writing more than a century later in his Tractatus musice speculative of 1425. Prosdocimus devoted his Tractatus to a refutation of what he saw as Marchetto’s many errors regarding speculative music in the Lucidarium, particularly Marchetto’s five-part division of the tone, which he took to be an equal one. Echoing the Boethian distinction between the cantor and the musicus, Prosdocimus dismissed Marchetto’s lack of speculative knowledge right at the outset of the treatise:

Fuit enim vir iste in scientia musice simplex praticus sed a theorica sive For that man [Marchetto] was a simple practitioner in the science of

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489 Boethius, De institutione musica, III.8. According to Calvin Bower, this passage does not survive in any other extant source. See his translation of the De institutione musica, 96n14.
490 Reactions by theorists to Marchetto’s five-part division of the tone are explored in Herlinger, “Fractional Divisions of the Whole Tone”; Woodley, “Sharp Practice in the Later Middle Ages”; and Göllner, “Marchettus of Padua and Chromaticism.”
491 For a summary of Prosdocimus’s arguments in the Tractatus musice speculative, see the introduction to Herlinger’s critical edition, 15–20.
music but altogether devoid of theoretical or speculative knowledge, which, nevertheless, because he was deceived, he thought that he knew most perfectly, and thus he presumed to undertake that of which he was totally ignorant. Therefore, the above-mentioned brother [Prosdocimus’s good friend Luca], discerning with me that the errors of this Marchetto had been spread throughout Italy and even beyond, and that they were reckoned to be most true by singers, though not by musicians, entreated me, for the sake of his love, to compose a little work against these errors in order that the erroneous evils and falsehoods in music which have been produced and disseminated by this one Paduan might be removed by another Paduan, and thus Italy might be purged of such errors.  

Prosdocimus lays the groundwork for his critiques of Marchetto with a thorough discussion of intervals and ratios in books one and two of the treatise. He eventually launches into a critique of Marchetto’s division of the whole tone in the second half of book two. His core reasoning for refutation stems from the long-standing principle that a superparticular ratio, such as the sesquioctave 9:8 ratio of the whole tone, cannot be divided into two equal parts. Although the oft-stated maxim most often was evoked to

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492 Prosdocimus de Beldemandis, *Tractatus musice speculative*, Preface. Prosdocimus was more charitable regarding Marchetto’s discussions of chant practice: “But directing himself to the simple practice of plain song in the later part of the work he wrote truly and faithfully and so uncommonly well that up to this point I have seen nothing more faithful about these things which I read on this topic.” (“Sed in posterum ad simplicem praticam cantus plani se convertens vere et solemniter scripsit atque egregie adeo quod hucusque de hiis quae in hac materia legerim nichil solemnius viderim.”) Prosdocimus de Beldemandis, *Tractatus musice speculative*, Preface.

493 Boethius was the usual authority for most defenders of this speculative tradition, but the quarrel had its origins in antiquity. Boethius himself was echoing ancient arguments against Aristoxenus, whose practical and empirical orientation led him to assert a division of the whole tone into two equal semitones, with the ear as the authority rather than mathematical ratios. Boethius naturally rejected such an authority: “But because the musician Aristoxenus, entrusting all things to the judgment of the ears, did not judge these [minor] semitones to be smaller than half, following the Pythagoreans, but, as they are called semitones,
prohibit division of the tone into two equal semitones, Prosdocimus extends the rule, asserting that “the tone . . . is not divisible into equal parts in any way,” including Marchetto’s equal fifths:

\[
\text{The tone, about which there was talk above, is not divisible into equal parts in any way, since it is not divisible into two halves, nor into three thirds, nor into four fourths, nor into five fifths, nor into six sixths, and so beyond that; for no superparticular proportion is divisible into equal parts, and therefore not the sesquioctave proportion, and consequently not the tone, which consists in that sesquioctave proportion, based on that which was discussed above.}^{494}
\]

Later in the century, Johannes Gallicus also addressed Marchetto’s five-part division of the tone in his *Ritus canendi vetustissimus et novus*, written sometime during the pontificate of Pius II (1458–1464).^{495} Like Prosdocimus, Gallicus held little esteem for Marchetto as a true *musicus*, derisively comparing him to “a raven croaking among peacocks.”^{496} Also like Prosdocimus, Gallicus appears to have had little tolerance for Marchetto’s novel semitones. Interestingly, although he seems to have assumed all of Marchetto’s dieses to be the same size, it may not be entirely accurate to say that he regarded Marchetto’s division to be an equal five-part division of the tone. Rather, he thus judged them to be halves of tones, for these same reasons it first ought to be discussed and demonstrated again briefly that no superparticular relation can be divided into an integral half with a known number.” (“Sed quoniam Aristoxenus musicus, iudicio aurium cuncta permittens, haec semitonia non arbitratur esse secundum Pythagoricos contractiora dimidio, sed, sicut semitonia dicuntur, ita esse dimidietates tonorum, de eisdem rursus paulisper est disputandum demonstrandumque prius nullam superparticulararem habitudinem noto numero posse dividi integra medietate.”) Boethius, *De institutione musica*, III.1

^{494} Prosdocimus de Beldemandis, *Tractatus musicae speculative*, II.15.

^{495} See the introduction to Albert Seay’s critical edition of the treatise, p. iv.

seems to have equated Marchetto’s diesis, which is half of Marchetto’s enharmonic semitone, with the diaschisma of Philolaus, which is half of the minor semitone. He therefore rejects Marchetto’s joining together of three or four such dieses to create his diatonic and chromatic semitones, concluding that it would produce the “most inept and disgraceful discord.” The important passage deserves to be quoted at length:

Cum non sit itaque tam eximio musico non credere, cui nec ipsa natura discordat, sed quaecumque scribit approbat, absque dubio phantasticum illud Marchetti semitonium omnino non est, quod de quatuor diesibus velle fabricare præsumpsit et chromaticum appellare. Natura namque viros ab antiquo peritissimos edocuit in duo primum non aequa posse dividit tonum, qui partemque maiorem apohome nominarunt, partemque minorem diesin. Aliquo tempore verum invento postea genere enarmonico, dictum est minus semitonium ac diesis pars eius media. Secundum quos philosophos ac ingenii perspicassimi viros, tonus quinque partes habere potest. Semitonium utpote maius et minus, sed quia maius nihil aliud est quam minus et una particula, tonus quatuor diesis habet cum illa. Quae quidem particula comma vocitata est. Utque fiat quatuor cum comate diesium. . . In hoc ergo, quod Marchettus primum de suis semitoniis duas habere dieses assuerit, errando veraciter non erravit, inquam, illud appellando magis enarmonicum quam dyatonicum aut cromaticum. Ut dixi superius, unum est et idem in omni genere minus semitonium, quamquam dicendo duas dyesis habet non desipuerit. Dicens autem de secundo suo semitonio dyatonico quod tres dieses habeat, id non est auditum a seculo. Cum nihil sit aliud quam Apotheome

And so because it is not for an exceptional musician to not believe that with which nature itself does not disagree, but he proves whatever he writes, without doubt that imaginary semitone of Marchetto, which he presumed to desire to build from four dieses and to call the chromatic semitone, does not at all exist. For nature has taught the most learned men from antiquity that first of all a tone cannot be divided into two parts with equal measure, and these men call the larger part the apotome and the smaller part the diesis. But at some other time, after the enharmonic genus was discovered, [the smaller semitone] was called the minor semitone, and a half part of the minor semitone was called the diesis. According to these philosophers and men of most shrewd genius, the tone can have five parts. Namely, there is a major and minor semitone, but because the major semitone is nothing other than the minor semitone plus one small part, the tone has four dieses along with that small part. This small part has been named the comma. And so [the tone] is made from four dieses along with a comma. . . Therefore, in this way, the fact that Marchetto firstly asserted that his [minor] semitones have two dieses, truly he did not err, I say, but rather by calling that [minor semitone] enharmonic rather than diatonic or chromatic. As I said above, the minor
Several important points emerge from this passage. First of all, Gallicus roundly rejects Marchetto’s notion of a chromatic semitone of four dieses, calling it “imaginary” and concluding that “it does not at all exist.” He then goes on, however, to concede that Marchetto was not entirely off base when he described his enharmonic semitone as consisting of two dieses, although he does take issue with Marchetto’s labeling of the semitone as enharmonic rather than the usual minor. As proof, he lays out a division of the whole tone that recalls the one that Boethius attributed to Philolaus, in which the minor semitone is divided into two equal parts, thus creating an overall division of the semitone is one and the same in every genus, although he was not stupid by saying that it has two dieses. But saying about his second semitone, the diatonic, that it has three dieses, this was not assented by this generation. Because it is nothing other than the apotome which was described above and which was constructed from the small leftover part of the tone, after it has been divided into four parts, added to two dieses. Therefore, the smallest comma joined to two dieses creates the apotome, or is equal to it by itself by virtue of its majority, and will it not be the most inept and disgraceful discord also to join together three or four dieses? I beg, let the first tetrachord in the chromatic genus be made on behalf of all the rest, running (as they say) by means of the minor and major semitone and the semiditone, how superfluous the whole would be after these things with Marchetto, who is unaware of these things.

498 A little earlier in the treatise he asked rhetorically, “Where, I beg, has a diatonic, enharmonic, and chromatic semitone been granted by this generation, except by Marchetto?” (“Ubi precor a saeculo fuit auditum, praeter a Marchetto, semitonium diatonicum, enarmonicum et chromaticum?”) Johannes Gallicus, *Ritus canendi vetustissimus et novus*, III.1.
tone that consists of four equal parts plus a small remainder. However, it is worth noting that Gallicus does not mention either Boethius or Philolaus in his discussion of this division, nor does he use Philolaus’s and Boethius’s terminology for the small interval that is one half of a minor semitone (diaschisma), a curious development considering the vehemence with which he attacks Marchetto for adopting alternative terminology. Recalling that Philolaus uses the term “diesis” to describe the minor semitone itself and names the interval that is half of a minor semitone the “diaschisma,” it is therefore rather surprising to see Gallicus report vaguely that “at some other time . . . a half part of the minor semitone was called the diesis” and to conclude that the tone thus “is made from four dieses along with a comma.”

Could Gallicus’s curious admixture of Philolaus’s division of the tone with Marchetto’s terminology for half of a minor semitone reflect some kind of an oral theoretical tradition that was alive in Italy in the mid-fifteenth century?

If Gallicus was describing some kind of oral theoretical tradition for the division of the tone, he evidently did not see Marchetto as a part of that tradition, for he criticizes Marchetto for the notion that three or four dieses might be combined to create usable semitones. Here, in a sense, it is as if the two theorists are talking past each other. Gallicus accepts Marchetto’s division of the minor semitone into two dieses as if they were the same intervals of Philolaus and Boethius, and thus finds it unacceptable that one could join three or four such dieses into the apotome or Marchetto’s chromatic semitone.

Gallicus’s source for this division undoubtedly is Boethius, even though he borrows Marchetto’s use of the term “diesis” to describe the interval that is half of a minor semitone.
Johannes Tinctoris was more conciliatory towards Marchetto’s innovation, incorporating the Paduan theorist’s five-part division of the whole tone into his glossary of musical terms, the *Terminorum musicae diffinitorium*, which was originally compiled before 1475 and later published, with minor revision, in 1495.\(^{500}\) Although Tinctoris does not mention Marchetto by name in the *Terminorum*, his definitions for *diesis*, *semitonium*, and *tonus* clearly show Marchetto’s influence. In his entry for the term *diesis*, for instance, Tinctoris defines it simply as “one part of a tone that has been divided into five parts.”\(^{501}\) He later reinforces this definition in two of his entries for *tonus*: “a tone is an interval formed from a distance of five dieses” and “a tone is a consonance made from the combination of two voices distant from each other by five dieses.”\(^{502}\)

Finally, in his entries for the major and minor semitone, Tinctoris incorporates more of Marchetto’s distinct terminology, making his link to Marchetto even clearer:

\begin{align*}
\text{Semitonium maius est illud quod} & \quad \text{The major semitone is that which}\n\text{ex tribus diesibus constat, ut de mi} & \quad \text{consists of three dieses, as from mi}\n\text{in b fabmi usque ad fa in eodem} & \quad \text{on b fa \(\frac{9}{8}\) mi to fa on the same}\n\text{loco, quod a pluribus apothome seu} & \quad \text{place, which by many is called the}\n\text{semitonium diatonicum appellatur.} & \quad \text{apotome or diatonic semitone.}
\end{align*}

\begin{align*}
\text{Semitonium minus est illud quod} & \quad \text{The minor semitone is that which}\n\text{ex duabus diesibus tantummodo} & \quad \text{consists of only two dieses, as from}\n\text{constat, ut de mi in alamire usque} & \quad \text{mi on a la mi re to fa on b fa \(\frac{9}{8}\) mi,}\n\text{ad fa in b fabmi, quod a Platone} & \quad \text{which by Plato is called the}\n\text{limma, ab aliis semitonium} & \quad \text{limma, by others the}\n\text{Enarmonicum appellatur. Est et} & \quad \text{enharmonic semitone.}\n\text{aluid semitonium quod} & \quad \text{And there is another semitone that}\n\text{Cromaticum dicitur. Fit autem dum} & \quad \text{is called chromatic. Now it is made}\n\text{canendo aliqua vox ad} & \quad \text{when any voice is raised for the}\n\text{pulchritudinem pronunciationis} & \quad \text{sake of beauty of the performance.}\n\text{sustinetur. Quotienscumque vero} & \quad \text{But whenever a semitone is found}\n\end{align*}

\(^{500}\) For general information on Tinctoris’s *Terminorum musicae diffinitorium*, see the preface to Carl Parrish’s modern edition and translation.


\(^{502}\) “Tonus est coniunctio ex distantia quinque diesum constituta” and “Tonus est concordantia ex mixtura duarum vocum quinque diesibus ab invicem distantium effecta.” Tinctoris, *Terminorum musicae diffinitorium*, s.v. “Tonus.” Nowhere does Tinctoris mention the sesquioctave ratio 9:8 in his definitions of “tonus.”

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Due to the succinctness of the definitions, there is no way to know with certainty whether Tinctoris had in mind an equal or unequal five-part division of the tone in his *Terminorum musicae diffinitorium*. However, Tinctoris discusses semitones again in another of his important treatises, the *Liber de arte contrapuncti*, completed in 1477.

There he describes the minor and major semitones in very different terms:

Est autem semitonium discordantia ex mixtura duarum vocum duobus diascismatibus ab invicem distantium constituta, sicut mi, E la mi gravis, et fa, F fa ut gravis. . . .

But a semitone is a discord made from the combination of two syllables separated by two diascismata, as between mi of E la mi grave and fa of F fa ut grave . . . .

Diciturque semitonium a semus, quod est imperfectus, et tonus, quasi imperfectus tonus. Neque ignorandum est diffinitionem hanc de semitonio minori solum intelligi.

And it is called a semitone from *semus*, which is imperfect, and *tonus*, as if it were an imperfect tone. And it ought not to be ignored that this definition should be taken only for the minor semitone. For as I understand it the semitone placed by itself always is taken to be minor. But the major semitone, which consists of two diascismata and one comma, also is a discord, as fa and mi of any b fa > mi. . . .

Here Tinctoris relates the minor and major semitones to the traditional arrangement attributed to Philolaus. And yet just after this Tinctoris describes the chromatic semitone, “smallest of the rest, which consists, according to some, of a fifth part of the tone.”

This brings us back to Gaffurius, who offers the first definitive account of a nine-part division of the whole tone in his 1480 *Theoricum opus*. Gaffurius writes as follows:

503 Tinctoris, *Terminorum musicae diffinitorium*, s.v. “Semitonium maius” and “Semitonium minus.”
505 “Neque dubium est hoc quoque semitoniumchromaticum caeterorum minimum, constans secundum aliquos quintas parte toni. . . .” Tinctoris, *Liber de arte contrapuncti*, II.2.8. Margaret Bent discusses the contradictions in Tinctoris’s treatment of the semitones in her article “On False Concords,” esp. 79–82.

Therefore the tone consists of two semitones and one comma. Indeed, Philolaus called the minor semitone “diesis.” But those that followed, as Boethius states, said that a diesis is half of a minor semitone. Therefore a minor semitone has two dieses in itself, but an apotome, or rather a major semitone, has two dieses and a comma. From this it follows that the tone is completed from four dieses and a comma. . . . For the comma, as is pleasing to certain people, is half of a diesis.\footnote{Gaffurius, \textit{Theoricum opus musice discipline}, IV.3. As noted earlier, Nicolò Burzio restated Gaffurius’s remarks without attribution in his \textit{Florum libellus}, concluding that “For a diesis is half of a semitone. But a comma is half of a diesis, as is pleasing to some.” (“Dyesis namque est semitonii dimidium. Coma vero dimidium dyesis: ut quibusdam placet.”) Burzio, \textit{Florum libellus}, I.21.}

That fact that Gaffurius speaks of “certain people” to whom such a definition of the comma was pleasing suggests that it was an opinion shared by a specific subset of musicians of his time. How far back did such a division go? It certainly is conceivable that the division originated as an interpretation (right or wrong) of Marchetto’s division, even if Marchetto himself did not conceive of it in that way. By the time of the \textit{De institutione harmonica}, though, Aaron took the division to be the norm.

There follows a brief chapter in which Aaron describes the semiditone, which he defines as a tone plus a minor semitone. He goes on to explain that the interval traverses three hexachord syllables, but not where the syllables are separated by two complete spaces (i.e., not where there are two whole tones), hence the name. He gives a separate example of the interval for both ascent (re-fa) and descent (sol-mi). At the conclusion he calls the interval by the more colloquial name ‘minor third,’ a designation that he will use most often throughout the treatise. After this is an even shorter chapter on the ditone. In just a single sentence, Aaron explains that the ditone consists of two tones, traversing two

\footnote{Gaffurius, \textit{Theoricum opus musice discipline}, IV.3. As noted earlier, Nicolò Burzio restated Gaffurius’s remarks without attribution in his \textit{Florum libellus}, concluding that “For a diesis is half of a semitone. But a comma is half of a diesis, as is pleasing to some.” (“Dyesis namque est semitonii dimidium. Coma vero dimidium dyesis: ut quibusdam placet.”) Burzio, \textit{Florum libellus}, I.21.}
complete spaces and three hexachord syllables, with examples at ut-mi and fa-la. Again he calls the interval by its more common name, the major third.

Following this is a lengthy chapter on the tritone, which, as mentioned previously, is unusual in discussions of plainchant intervals. The topic seems even more out of place here, coming before Aaron’s treatment of the smaller diatessaron. Before he even defines what a tritone is, Aaron argues against its use, asserting that the interval is “hard, harsh, and unattractive” (“durus, asper, et inamabilis”), something that ought to be avoided whenever possible (I.20.1). As he explained in chapter 15, he asserts that the note b molle was invented precisely in order to mitigate the harsh effects of the tritone. He then explains that the interval consists of three tones (hence the name, which itself he calls harsh). He goes on to explain that the tritone is found in four places in the hand (really two different places, both duplicated at the octave). The first pair is conventional, occurring twice in the hand between F and ʻ, to be mitigated by the use of b molle at b fa ʻ mi. The second pair is more interesting. It arises between fa of b fa ʻ mi (i.e., B-flat) and E-natural, for which Aaron prescribes the introduction of “fa of b lenis” in place of E, that is, the use of E-flat by means of the syllable fa in a ficta hexachord built on fa of b fa ʻ mi (I.20.8). Conspicuously, Bonaventura discusses the same four examples in his Breviloquium, and he provides notated musical examples that demonstrate the mitigation of the tritone using both B-flat and E-flat (see Figure 29).

\[\text{(For the second of his b molle to E pair, the text erroneously describes the endnote of the interval as D la instead of E la (I.20.9).)}\]
This is Aaron’s first mention of a *ficta* hexachord, and it is curious that he uses the term *lenis*, a synonym for *mollis* (“soft”), to describe such a non-*recta* hexachord. A search of the online *Thesaurus Musicarum Latinarum* does not yield any other instances in which the term *lenis* is used as a descriptive label for a hexachord, nor is the word used in this way in Bonaventura’s *Breviloquium*. The term *lenis* appears most frequently in *laudes musices* sections, following the tradition of Boethius, who describes how the Pythagoreans used to employ certain melodies in order to foster a “calm and quiet rest.”

A more relevant precedent for Aaron’s use of the term occurs in Hothby’s *Excitatio quaedam musicae artis*, in which the author equates the terms *lenis* and *mollis*, at least as descriptions of sound quality, and contrasts the “lenitas” of a diatessaron to the “asperitas” of a tritone:

> Idem fit de sonis, nam sonorum alius asper, alius lenis sive mollis dici potest, quoniam asperitas et

> The same thing occurs concerning sounds, for *asper* (“harsh”) can be said of one of the sounds, *lenis*

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508 “But the power of the musical art became known to such an extent in the studies of ancient philosophers that the Pythagoreans, when they would dissolve their daily cares in sleep, would use certain songs in order that a gentle and quiet sleep might steal over them.” (“In tantum vero priscae philosophiae studiis vis musicae artis innotuit, ut Pythagorici, cum diurnas in somno resolverent curas, quibusdam cantilenis uterentur, ut eis lenis et quietus sopor inreperet.”) Boethius, *De institutione musica*, I.1.
lenitas eodem corpori accidere possunt, cuius et sonus eodemque motu ad aures ut ostensum est proferuntur. Nam asperitas in sonis ab inaequalitate partium corporis percussi proficiscitur, lenitas vero ab eius aequalitate. Quare ubi diatesseron habet duos tonos et semitonium minus est tamquam corpus habens partes aequales. Cum vero tres tonos ut tritonus qui diatesseron est quoque licet dissonum est tamen quasi corpus habens partes inaequales, quod sensibus quoque est notum, quos negare stultum est, auctore Aristoteles. (“soft” or “gentle”) or mollis (“soft”) of another, because asperitas (“harshness”) and lenitas (“gentleness”) can happen to the same body, and the sounds of this are brought forth to the ears by the same motion, as was shown. For asperitas in sounds originates from the inequality of parts of the struck body, but lenitas originates from the equality of it. Therefore, when a diatessaron has two tones and a minor semitone it is as a body having equal parts. But when it has three tones, such as a tritone, which nevertheless is also a diatessaron, although it is dissonant, as if a body having unequal parts, which also was noted by the senses, which is foolish to deny, the authority being Aristotle.

Aaron then comes to chapters on the diatessaron (fourth) and the diapente (fifth), crucial intervals that had been bound up with modal theory since the eleventh century. As with his description of the preceding intervals, Aaron begins with a discussion of the etymology of the term diatessaron and an explanation of its construction borrowed from Martianus Capella (with corroborations from Cleonides). It is notable that for the first time Flamininus breaks into the narrative in order to corroborate and expand on Aaron’s etymological digression.

Aaron then goes on to explain that there are three distinct species of diatessaron, as follows:

First species of diatessaron: re mi fa sol (tone-semitone-tone)
Second species of diatessaron: mi fa sol la (semitone-tone-tone)
Third species of diatessaron: ut re mi fa (tone-tone-semitone)

509 Hothby, Excitatio quaedam musicae artis, f. 20r. See Albert Seay’s critical edition, p. 47.
510 For a comprehensive discussion of the gradual confluence of species theory with modal theory, see Atkinson, The Critical Nexus, 202–33.
Aaron does not specify a starting pitch for the various species of fourths, choosing instead to describe them by hexachord syllables. Gaffurius, by contrast, locates them on A re,  § mi, and C fa ut, respectively, following a tradition that goes back to an interpolated version of Bern of Reichenau’s *Prologus in tonarium* from the eleventh century. Aaron may have omitted the starting points because he recognized that each species could begin in multiple places, the first species on A, D, or G (with B-flat), the second species on B, E, or A (with B-flat), and the third species on C, G, or F (with B-flat). Indeed, Aaron uses an alternative starting point for the first species of diatessaron (D) when he later describes the species of diatessaron and diapente that make up modes 7 and 8. The last sentence of the chapter is curious, for on the surface it suggests that Aaron was not terribly concerned with species, despite the role that it will play in his discussion of mode: “But although [the diatessaron] differs in this way with respect to its very composition, nevertheless, in reality, it comes to and is reduced to the same thing.” In contrast, Aaron does specify the location of the species of diatessaron in the *Toscanello*, following the tradition espoused by Gaffurius.

His next chapter, on the diapente, follows much the same course, beginning with etymology and ending with the species of the diapente. Perhaps because some of his species would span more than one hexachord, he describes them a little differently here,

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513 Guido of Arezzo described the contextual similarities between certain pitches as “affinities.” See Atkinson, 222–23.
515 “Verum licet compositione ipsa sic differat, re tamen in idem devenit atque redigitur.” Aaron, *De institutione harmonica*, I.21.9.
delineating their boundary pitches rather than with a progression of hexachord syllables, as follows:

First species of diapente: D sol re to A la mi re (T-ST-T-T)
Second species of diapente: E la mi to b fa ½ mi (ST-T-T-T)
Third species of diapente: F fa ut to C sol fa ut (T-T-T-ST)\(^{517}\)
Fourth species of diapente: G sol re ut to D la sol re (T-T-ST-T)

As will be seen below, the ordering of the species corresponds with the ordering of the modes with which they are associated. Thus the first species of both diapente and diatessaron corresponds with the first pair of modes with their final on D; the second species of both intervals with the second pair of modes with their final on E; the third species of both intervals with the third pair of modes with their final on F; and the fourth species of diapente (but the first species of diatessaron) with the pair of modes with the final on G.

In the next chapter he treats both the minor and major hexachordon, or sixth, according to the same basic pattern of etymology followed by a description of their constitution. There follows a chapter on the minor and major heptachordon, or seventh, which runs according to the same plan. There is nothing of surprise or difficulty in the presentation of either chapter.

This takes Aaron to the interval of the diapason, which he calls “the most perfect concord of all.” He launches into a lengthy and flowery tribute to the interval:

\[
\begin{align*}
\text{Diapason symphonia est omnium absolutissima, cuius vide mirandam} \\
\text{vim ac plenitudinem. Haec enim consonantia adeo integra adeo} \\
\text{The diapason is the most perfect concord of all, observe its remarkable power and fullness. For this consonance is so whole, so}
\end{align*}
\]

\(^{517}\) Aaron describes both of these boundary pitches incorrectly. The bottom pitch he describes as fa of the grave b molle hexachord, which would be b fa ½ mi, while he initially describes the top pitch as fa of the acute natural hexachord, which would be F fa ut acute. Later he clarifies that the top pitch is meant to be C sol fa ut (1.22.10).
plena est, sic omnibus perfecta numeris ut non solum voces omnes, sed et caeterae quidem consonantiae ad unam illam tamquam ducem confluant tamquam principi sese subjiciant illam uti omnis symphoniae moderatricem ac reginam venerentur atque suspiciant. Nec immerito quidem prisci illi musicae artis viri tanto illam nomine decorarunt. Haece enim voces omnis continet, quibus harmonia conflatur. Haece item consonantias quaslibet, et eas quidem quas supra commemoravimus complectitur, et eas quae plurime adhuc restant, tamquam foecunda paries ex sese emittit ac generat omni laude dignissima omni favore prosequenda.

In his classic article “The Concept of Physical and Musical Space in the Renaissance,” Edward Lowinsky singled out Aaron’s “panegyric on the octave” as representative of a new attitude toward the octave in particular and pitch space in general. He noted connections between Aaron’s effusive language and that of Johannes Gallicus, relating the new importance of the octave to Gallicus’s and Ramis’s attempts to reform the solmization system. In Book II of the De institutione harmonica, Aaron himself advocated a simplified form of solmization, in the mold of Johannes Gallicus, which effectively reduced the complexities of solmization into a fixed, octave-based distribution of solmization syllables. Yet whereas Johannes Gallicus advocated use of

518 Aaron, Libri tres de institutione harmonica, I.25.1–5.
us simplified system in plainsong as well as polyphony, Aaron envisioned his system just for polyphony, retaining the traditional techniques of solmization for plainchant.

Although Aaron and Flaminio spend most of the rest of the chapter on either etymology or outdated Greek theory, Aaron does make some quick observations about the interval. For instance, he marvels at the fact that "if you should inspect the whole hand . . . you will see that [the octave] is defined from one letter to another like one." He also properly states that the octave consists of five tones and two semitones, although Flaminio cites two opinions to the contrary (Cleonides and Martianus Capella). Finally, he notes that the octave is made up of a diatessaron and a diapente (despite the more fanciful statement that he made earlier that it contains all the consonances in itself).

Aaron then turns his attention to the modes, for which he consistently uses the word "tonus." As noted at the outset of the chapter, Aaron’s discussion of mode is very much in the tradition of Marchetto, whose treatment of the topic in his Lucidarium was very influential in the fifteenth century and beyond. Perhaps most important was

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521 "... si totam percenseas manum, in qua quidem illam ab una littera ad alteram similem terminari videbis." Aaron, De institutione harmonica, I.25.9.

522 On the history and evolution of modal theory, see for instance Bergquist, “Mode and Polyphony around 1500”; The New Grove Dictionary of Music and Musicians, s.v. “Mode” (by Harold Powers); Pesce, The Affinities and Medieval Transposition; Judd, “Modal Types and Ut, Re, Mi Tonalities”; Powers, “Is Mode Real?”; Wiering, The Language of the Modes; Handwörterbuch der musikalischen Terminologie, s.v. “Modus” (by Charles Atkinson); and Atkinson, The Critical Nexus. Although several of the above-mentioned studies are focused primarily on discussions of mode and polyphony (in which Aaron played an important role), they nevertheless take their starting point from discussions of mode in plainsong.

523 Jan Herlinger concluded that, among the many topics covered in the Lucidarium, Marchetto’s treatment of mode may have been the most influential: “Judging by the manuscript evidence, it was Marchetto’s contributions to the theory of mode that made the greatest impact on the music theory of the fifteenth century.” Herlinger, “Marchetto’s Influence,” 248. For more on Marchetto’s discussion of mode, see Herlinger, “The Lucidarium of Marchetto of Padua,” 7–12; Herlinger, “Marchetto’s Influence,” 248–51; Pesce, “The Affinities and Medieval Transposition, 69–72; Rahn, “Marchetto’s Theory of Commixture and Interruption”; and Atkinson, The Critical Nexus, 245–55.
Marchetto’s introduction of a five-part classification of mode, as will be discussed below.\footnote{For a lengthy list showing many of the later theorists who incorporate Marchetto’s five-part system of modal classification, see Herlinger, “The Lucidarium of Marchetto of Padua,” 11n17.}

Marchetto treats modes in treatise 11 of the \textit{Lucidarium}.\footnote{Although Marchetto initially says that the terms “modi,” “tropi,” and “toni” are interchangeable (\textit{Lucidarium}, XI.1.5), he eventually limits himself to the term ‘tonus,’ as Atkinson observes in \textit{The Critical Nexus}, 246.} In chapter 2 he explains that once there were four modes, but eventually they were divided into eight “on account of the inconvenient ascent and descent of each.”\footnote{“... propter inconvenience uniuscuiusque ascensum et descensum.” Marchetto, \textit{Lucidarium}, XI.2.3.} He then goes on to introduce the four finals (D, E, F, and G) and differentiates between authentic and plagal modes. Shortly thereafter he introduces the “cofinals” (\textit{confinales}), alternate finals that are located a fifth above the usual finals.

Having disposed of the basics, Marchetto introduces a five-part classification system, explaining that “Modes are said to be perfect, imperfect, pluperfect, mixed, or commixed.”\footnote{“Istorum autem tonorum alius perfectus, alius imperfectus, alius plusquamperfectus, alius mixtus, et alius commixtus dicitur.” Marchetto, \textit{Lucidarium}, XI.2.20.} Leaving aside the many nuances and exceptions that Marchetto cites for each type, his categories can be summarized as follows:

- Perfect mode: that which fills its measure above and below
- Imperfect mode: that which does not fill its measure either above or below
- Pluperfect mode: an authentic mode that ascends beyond its diapason above or a plagal mode that descends beyond its diatessaron below
- Mixed mode: an authentic mode that also descends more than one note below the final or a plagal mode that ascends more than one note beyond the diapente
Commixed mode: an authentic mode that is mixed with another mode (other than its own plagal mode) or a plagal mode that is mixed with another mode (other than its own authentic mode).  

Having introduced these types, Marchetto injects an important note of caution, warning against an overreliance on the range of a melody in relation to its final as the sole indicator of its mode:

Sunt nonnulli qui absque specierum lege cantus diiudicant cuius toni sint solum propter ascensum et descensum inspecto fine, quorum iudicium pluribus rationibus nullum est.

There are some who judge songs solely on the basis of ascent and descent in comparison to the final without the principle of the species, and their judgment is of no account for many reasons.

Thus interval species is the more crucial factor, and it will take precedence when there is disagreement between species and range or when a melody does not fill out the full measure of its mode.

Marchetto’s system of modal classification, including his perfect, imperfect, pluperfect, mixed, and commixed system as well as the importance of species, notably was transmitted by Tinctoris in his Liber de natura et proprietate tonorum, by Gaffurius in his Practica musicae, by Bonaventura in his Breviloquium musicale, and by the anonymous Compendium musices. And indeed this is the system that finds its way into Aaron’s De institutione harmonica in quite recognizable form.

Aaron begins his first chapter on the modes (chapter 26) with some questionable historicizing of the modes that nevertheless recalls Marchetto. For instance, he cites the

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528 Marchetto, Lucidarium, XI.2.21–34.
529 Marchetto, Lucidarium, XI.3.1.
530 For more on this topic, see Atkinson, The Critical Nexus, 246–54.
531 Marchetto’s system also appears in the anonymous Quaestiones et solutiones, but it is part of the Italian-language section that is copied directly from Bonaventura’s Breviloquium.
532 For discussions of mode in Aaron’s De institutione harmonica, see Bergquist, “The Theoretical Writings of Pietro Aaron,” 224–59; and Pesce, The Affinities and Medieval Transposition, 114–20.
original existence of just four ancient modes “among the Greeks”: protus, deuterus, tritus, tetrardus, which correspond to modes 1, 3, 5, and 7. He credits Gregory the Great for dividing those four modes into eight, which tempered the wide range of the older chants. Aaron goes on to define *toni* as “a certain rule of singing that is recognized on their final by means of ascent and descent.”  

Aaron continues by setting out the four finals and cofinals as well as introducing the difference between authentic and plagal modes, all as expected. Aaron then proceeds to lay out the composition of each tone according to its species of diatessaron and diapente, as shown below in Figure 30.  

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533 “Illud prius dicemus Tonos . . . esse quandam canendi normam, quae in fine per ascensum atque descensum cognoscitur.” Aaron, *De institutione harmonica*, I.26.4.  
534 For modes 2, 3, and 5, Aaron omits mention of the respective species of diatessaron, although he later describes it for each mode in relation to pitch names. For instance, regarding the second mode, he says: “The second mode likewise is formed from the first species of diapente [and the first species of diatessaron], from the same D sol re to A la mi re and from D sol re to A re.” (“Secundus item ex prima specie diapente formatur ab eodem D sol re ad A la mi re, a D sol re ad A re.”) Aaron, *De institutione harmonica*, I.26.14.
In his next chapters, Aaron introduces Marchetto’s expanded modal classification system. In the first of the two chapters he introduces perfect, imperfect, and pluperfect tones. In the second of the two he treats mixed and commixed tones. Here we also see Aaron’s first mention of the so-called “chord of the modes” ("chorda tonorum"), which
here he proposes ought to be used when dealing with a mixed mode, that is, a melody that has both the ascent of an authentic and the descent of a plagal. He reasons that whichever has the greater emphasis ought to be regarded as the proper mode.

Aaron devotes the next chapter to the more traditional use of the chorda of the modes, namely for those melodies that lack both the ascent of an authentic and the descent of a plagal. Each pair of modes with the same final has its own chord, according to the following plan: the chord of modes 1 and 2 is F fa ut; the chord of modes 3 and 4 is G sol re ut; the chord of modes 5 and 6 is A la mi re; and the chord of modes 7 and 8 is b fa ½ mi (see Figure 31). Once the chord has been located, one simply counts the notes above and below the chord (notes on the chord are omitted from the tally), “and where the greater part is found, it is said to be of this or of that tone.”

![Chord of the modes](image)

Figure 31: Chord of the modes according to Pietro Aaron, *Libri tres de institutione harmonica*, Book I, Chapter 29.

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535 “... et ubi maior pars reperitur, huius vel illius esse toni dicitur.” Aaron, *Libri tres de institutione harmonica*, I.29.3.
Aaron does not provide any examples of narrow-range chants that can be classified using the *chorda tonorum* technique, but Bonaventura offers a pair of such examples in his *Breviloquium*. Bonaventura presents two unnamed and untexted musical examples, one labeled “authentic” and the other “plagal” (see Figure 32). Both examples presumably are of the *protus* pairing (modes 1 and 2), for the concluding note of each is D sol re. Thus the defining “chord” is F fa ut. In the first example, there are seventeen pitches above the chord but just twelve beneath it, and thus Bonaventura classifies the chant as authentic (mode 1). In the second example, there are only four notes above the chord but fifteen below, and consequently he describes the melody as plagal (mode 2).

![Figure 32: Examples of modal classification via the chord of the modes according to Bonaventura da Brescia, *Breviloquium musicale*, Chapter 32.](image)
Aaron then goes on to say that some melodies have an equal number of notes both above and below the chord, in which case they must be judged by some other method, namely in reference to their species.\footnote{536} He explains that each modal pair shares a “common” species of diapente, and the frequency of movement beyond the common diapente, whether above or below, determines the proper mode:

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Vocant authores artis diapente speciem communem quia per eum quaelibet ad tonos compositio pertinens gubernatur. Illud autem diapente quo primus tonus ac secundus formatur, quod ad cognitionem authenticorum et plagalium tonorum attinet, commune semper antedictis tonis erit, primo videlicet ac secundo et quicunque ascensus supra terminum dicti diapente invenietur, primo idest authenticico tribuetur. Descensus autem sub terminum inferiorem plagali assignabitur, et ubi erit maior vel ascensus vel descensus, illi tono cui conveniet applicabitur.
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The authorities of this art call the species of diapente common because any composition relating to tones is governed by it. But that diapente by which the first and second tone is formed, as far as the recognition of authentic and plagals is concerned, always will be common to the above-mentioned tones, namely the first and second, and whatever ascent will be found beyond the boundary of the said diapente will be attributed to the first, that is, to the authentic. But descent under the lower boundary will be assigned to the plagal, and where either the ascent or descent will be greater, it will be assigned to that tone with which it is consistent.\footnote{537}

Aaron offers two examples of narrow-range melodies that cannot be judged by the chord of the modes, the antiphons Similabo eum and Euge serve bone. The first of the two examples, Similabo eum, he classifies as mode 2. The version of the melody from the Liber usualis does not quite fit Aaron’s description (see Figure 33).\footnote{538} Although the chant does have a limited range (from the C below the final to the B-flat a sixth above it), completing neither an authentic nor a plagal construction, the number of notes above and

\footnote{536} “Such antiphons are not able to be judged by means of the chord but ought to be appraised only by means of their species.” (“Tales antiphonae iudicari per chordam nequeunt, sed per suas tantum species censendae sunt. Igitur antedicta regula exceptionem patitur.”) Aaron, De institutione harmonica, 1.29.6.
\footnote{537} Aaron, De institutione harmonica, 1.29.8–10.
\footnote{538} Similabo eum is the antiphon to the Magnificat for first vespers for the Common of a Confessor, not a Bishop (Liber usualis, 1193).
below the chord of F flat is not equal, for those above the chord total 14, while those below the chord total 18. Evidently Aaron’s version of the chant differed from the modern one in certain respects. Nonetheless, if one were to evaluate the version of *Similabo eum* from the *Liber usualis* according to Aaron’s alternative method, it would still fit his classification of mode 2, for there are more occurrences of the note that lies below the common species of diapente (i.e., C) than there are of the note that lies above (i.e., B-flat), by a count of four to two.\textsuperscript{539}

![Musical notation](image)

Figure 33: The antiphon *Similabo eum*, in the version from the *Liber usualis*.

Aaron’s other example of a narrow-range chant with an equal number of notes above and below the “chord” is an antiphon with the incipit *Euge serve bone*, which he classifies as mode 1. In the *Liber usualis*, three different antiphons share that incipit, two of which have a D final.\textsuperscript{540} Although the two protus antiphons have differing texts, they are similar in their limited range. One of the two, *Euge serve bone*, has a range from the

\textsuperscript{539} By contrast, the antiphon is classified as mode 1 in the *Liber usualis*.

\textsuperscript{540} The antiphon *Euge, serve bone et fidelis* is an antiphon for second vespers for the Common of a Confessor Bishop (*Liber usualis*, 1181). The antiphon *Euge serve bone, in modico fidelis* is an antiphon for second vespers for the Common of a Confessor, not a Bishop (*Liber usualis*, 1195). A third antiphon, *Euge serve bone et fidelis*, which is also for second vespers for the Common of a Confessor, not a Bishop (*Liber usualis*, 1200), has an E final. Its text differs just slightly from the other *Euge, serve bone et fidelis* at the conclusion of the antiphon.
C below the final to the B-flat a sixth above it (see Figure 34). The version from the Liber usualis has twice as many notes above the chord of F flat as it has below (16 versus 8), but it has an equal number of notes that lie above and below the common diapente (one apiece). It would be judged authentic by the “chord,” but it would be inconclusive by Aaron’s other method.\(^{541}\) The other, *Euge, serve bone et fidelis*, spans from the C below the final to just the A a fifth above it (see Figure 35). In the version of this antiphon from the Liber usualis the notes below the chord dominate (29 below the chord versus just 9 above). Similarly, the only notes that go beyond the bounds of the common diapente are below the final (the C below the final occurs a total of six times). By both methods, the chant ought to be classified as mode 2, which does not match Aaron’s designation. This suggests that the other *Euge serve bone* may have been the antiphon that Aaron had in mind.\(^{542}\)

The fact that both *Similabo eum* (first vespers) and *Euge serve bone* (second vespers) are proper to the Common of a Confessor, not a Bishop, strengthens the case, for it suggests that Aaron may have chosen to cite these two chants not just because they were the best examples of this phenomenon but because he found them in close proximity to each other (and in this particular order) in his source.\(^{543}\) Such a working relationship with the sources of his citations prefigures Aaron’s similar use of printed volumes of

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\(^{541}\) The antiphon is classified as mode 1 in the Liber usualis.

\(^{542}\) In contrast, the antiphon is classified as mode 1 in the Liber usualis.

\(^{543}\) The ordering in the original may explain why Aaron first lists *Similabo eum*, which he classifies as mode 2, and then *Euge serve bone*, which he classifies as mode 1. According to modal classification, one might have expected Aaron to list them in reverse order.
polyphonic music as the source of his citations for the *Trattato*, as Cristle Collins Judd has shown.544

Figure 34: The antiphon *Euge serve bone*, in the version from the *Liber usualis*.

Figure 35: The antiphon *Euge, serve bone et fidelis*, in the version from the *Liber usualis*.

In the next chapter (chapter 30) Aaron relates that some antiphons do not have a discernible mode. In such cases, he suggests that one first look for “some small part of the ascent and descent of its diapason,” but he acknowledges that, in some cases, none

will be found. He calls such melodies “eupohiaca,” which he equates to the Latin phrase “bona sonoritas” (“good sonority”), and he warns not to use the “above-mentioned principle,” which presumably means the chord of the modes, in order to classify these melodies. Aaron’s source for the term *eupohiaca* is unclear, for a search of the online *Thesaurus Musicarum Latinarum* yields no other instances of the word in this form, nor does it appear in Bonaventura’s *Breviloquium*. Undoubtedly it is based on the word *euphonia*, a term that many theorists relate to the general notion of consonance, going back to Isidore of Seville’s *Etymologiae*. The equation of *euphonia* with the Latin phrase *bona sonoritas* goes back at least to the tenth-century Vatican Anonymous. Marchetto presents the definition in a simple form in his *Lucidarium* (“euphonia bona sonoritas dicitur”), but he does not have much else to say about the concept. Rather, he concludes that *euphonia* is merely another word for “consonance”:

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From the above-mentioned definitions we can conclude that *euphonia*, *armonia*, *simphonia*, and *consonantia*, are, in a way, one.
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Variations on the phrase “euphonia bona sonoritas est” reappear in a number of fifteenth-century treatises, including Ciconia’s *Nova musica*, Jacobus Theatinus’s *De institutione harmonica*, I.30.2. Marchetto, *Lucidarium*, V.3.2. Another early treatise that equates the two terms is the late-thirteenth-century *Regulae de musica*, also known as the Mettenleiter Anonymous 2. Marchetto, *Lucidarium*, V.5.3.

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545 “Quare necesse est eiusmodi compositiones aliquam ostendere ascensus atque descensus sui diapason partículam, quae sana si quantitas non inveniatur, talis modulatio nulli tono poterit applicari.” Aaron, *De institutione harmonica*, I.30.2.


547 “Because many antiphons have one mode in the beginning and another at the end, because certain ones possess modes in themselves, but certain ones are authentic and plagal, observe and discern the euphony, that is, the good sonority, in order that you may make not a sound, but a concordant song.” (“Cum enim plures antiphonae alium tonum habeant in initio, et alium in fine, quaedam etiam in se teneant tonos quaedam vero autenticus et plagio, hoc euphoniam, id est, bonam sonoritatem conspice et discerne, ut non sonum, sed consonum cantum reddas.”) Anonymous, *Quid est cantus?* [also known as Vatican Anonymous]. See Peter Wagner’s modern edition, p. 484.

548 Marchetto, *Lucidarium*, V.3.2. Another early treatise that equates the two terms is the late-thirteenth-century *Regulae de musica*, also known as the Mettenleiter Anonymous 2.

549 Marchetto, *Lucidarium*, V.5.3.
According to Jacobus, then, the term *euphonia* seems to refer to intervals of any size, whereas *consonantia* refers only to larger consonant intervals such as the diatessaron, diapente, and diapason. As a result, a diatessaron is both a consonance and a euphony, whereas a whole tone is only a euphony and not a consonance.

Aaron’s own description of *euphoniaca* is vague, but the implication seems to be that some melodies have too small a range for their mode to be discernible. As Bergquist notes, Aaron’s pupil Illuminato Aiguino confirms this interpretation in his 1581 treatise *Il

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550 Jacobus Theatinus, *De partitione licterarum monocordi*, chapters 9 and 15. The last part of the passage refers to a previous statement in the same chapter in which Jacobus divides the intervals that are smaller than a diatessaron into two categories, namely, simple (tone and semitone) and composite (ditone and semiditone).
Aaron’s use of the term as a modal designation, therefore, appears to break new ground, although it is tempting to speculate that his notion of *euphonia* may have developed from the distinction between *euphonia* and *consonantia* that is evident in Jacobus Theatinus’s *De partitione litterarum monocordi*. Perhaps by Aaron’s time a pedagogical tradition had emerged in which, because the term *consonantia* was reserved for intervals that are at least as large as a diatessaron, the term *euphonia* had acquired the meaning “smaller than a diatessaron.”

In Aaron’s penultimate chapter on the modes (chapter 31), he gives a notable example of a chant whose modal classification is determined first and foremost by its

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551 Aiguino, *Il tesoro illuminato di tutti i tuoni di canto figurato*, I.32. Bergquist suggests that Aaron may have been thinking of simple chants for lessons and prayers. See Bergquist, “The Theoretical Writings of Pietro Aaron,” 242–44.
species. He first explains that a diapente may be conjunct or disjunct, but, as Bergquist notes, he does not explain exactly what he means by these terms.\(^{552}\) Instead, he goes on to note that “when a conjunct diapente will be found, it has so great a power that it sometimes compels the tone to change its own nature, as in the responsory *Sint lumbi vestri praecincti* and in the responsory *Duo Seraphin.*”\(^{553}\) Marchetto also discussed the chant *Sint lumbi vestri* in the context of species in the *Lucidarium*. Charles Atkinson has shown that it was the power of a repeated direct fifth leap that overrides what would be a plagal classification because of range.\(^{554}\) By analogy Aaron’s “conjunct diapente” thus seems likely to mean a direct leap of a fifth. This interpretation is strengthened by a comparison to Bonaventura’s *Breviloquium*, in which *Sint lumbi vestri* also is discussed, in a chapter entitled “Concerning the diapente with only one interval” (“De diapente cum uno solo intervalllo”).\(^{555}\) There the melody again is classified as authentic because it has diapente of this type. Bonaventura includes a musical example showing direct leaps of a fifth beginning on all four finals (see Figure 36, below).

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\(^{552}\) Bergquist discusses Aaron’s treatment of *Sint lumbi vestri* in “The Theoretical Writings of Pietro Aaron,” 238–40. As Bergquist notes, “It is rather fortunate that other writers than Aaron discuss this chant, since his own explanation, using the unexplained terms ‘conjunct’ and ‘disjunct’ fifths, is far from clear.”

\(^{553}\) “Nam ubi diapente coniunctum invenietur, tantam quidem vim habet ut aliquando cogat, tonum suam mutare naturam, sicut in responso Sint lumbi vestri praecincti et in responso duo seraphin.” Aaron, *De institutione harmonica*, I.31.3.


\(^{555}\) Bonaventura da Brescia, *Breviloquium musicale*, Chapter 34.
Aaron’s last chapter on the modes returns to the topic of alternate final notes for the modes. Aaron takes issue with the traditional system of cofinals, complaining that the full disposition of the modes is not preserved in those places:

Ex quo quidem (ut mihi videtur) confusio magna suboritur ut et toni rectam formationem non habeant, et potius de suis speciebus quam de fine judicentur.

A great confusion springs up from this (as it seems to me) such that the tones both do not have the correct design and are judged more from their own species than from the final.\footnote{Aaron, De institutione harmonica, I.32.8. Pesce regards this statement as “the most direct evaluation to date of the changing approach to modal classification.” As she puts it, “... the principle of the affinities, which links a mode to a specific nucleus of melodic movement, is being ousted by species theory, which links a mode to a particular species of fifth and fourth.” Pesce, The Affinities and Medieval Transposition, 115.}

He then proposes a curious alternative set of secondary finals: D la sol re (modes 1 and 2); A la mi re (modes 3 and 4); b fa ♭ mi (modes 5 and 6); and C sol fa ut (modes 7 and 8). As Bergquist and Pesce both note, the latter three of Aaron’s alternatives preserve the proper species of diatessaron and diapente if the shift is accompanied by the addition of a flat signature, but Aaron makes no explicit mention of such a change.\footnote{Bergquist, “The Theoretical Writings of Pietro Aaron,” 253. Pesce, The Affinities and Medieval Transposition, 115.} Of course, adding a flat signature would not help D la sol re as an alternative final. Pesce suggests
that Aaron’s choice of D la sol re rather than G sol re ut may reflect “the traditional concern over retaining the tetrardus character of G.”

In the last three chapters of the first book, Aaron discusses the psalm tones, their differentiae, and the proper connection between differentiae and antiphons. Aaron’s description of the seventh psalm tone (I.33.20–21) is curious, for he describes the starting pitch as being on C sol fa ut and the reciting tone below it on A la mi re, a contour that does not match any norm with which I am familiar. The penultimate chapter is a detailed catalogue of all the various starting pitches that antiphons may have in each mode. In the final chapter, he cautions strongly against singing the wrong note as one transitions from the saeculorum, at the end of the psalm tone verse, to the antiphon. Evidently this was a common and vexing problem for the singers with whom Aaron was used to working.

To summarize, much of what Aaron has to say about intervals and the modes is rather mundane, but his treatment occasionally is punctuated by surprising revelations. For instance, among his descriptions of the intervals, there is Aaron’s unexpected definition of the comma as a ninth part of the tone, or his sudden outburst in support of the octave. Much of the section on the modes also runs largely according to Marchettan

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558 Pesce, The Affinities and Medieval Transposition, 115. In a somewhat similar vein, Bergquist speculated that Aaron may have avoided G sol re ut as an alternative final for modes 1 and 2 because it was already a regular final, although Pesce probably would disagree with Bergquist’s assessment that Aaron “was primarily concerned with cofinals rather than transposition.” Bergquist, “The Theoretical Writings of Pietro Aaron,” 253.

559 The psalm tone shown in Bonaventura’s Breviloquium is the usual one, beginning on G sol re ut and rising to a reciting tone on D la sol re. Bonaventura does mention an alternative beginning on C sol fa ut, but solmizes the initium as fa mi fa sol, again arriving on a reciting tone on D la sol re. See Bonaventura, Breviloquium musicale, Chapter 39.

560 Marchetto has a similar catalogue in his Lucidarium, as do some of the later writers that we already mentioned.
tradition, yet he suddenly rejects the traditional notion of cofinals for its failure to preserve the proper orientation of species.

The other significant observation regarding Aaron’s discussion of these topics is the fact that once again there seems to be a discernible similarity between Aaron’s treatment and that in Bonaventura’s *Breviloquium musicale*. From the resemblance in the number and type of intervals discussed to the mutual citation of *Sint lumbi vestri* in relation to the modal power of a direct leap of a fifth, there is a clear affinity between these two works.\(^{561}\)

\(^{561}\) A few scholars previously have noted some similarity between Aaron’s and Bonaventura’s treatment of mode. Klaus Niemöller, in his article “Zur Tonus-Lehre der italienischen Musiktheorie,” identified both treatises as part of the Marchettan modal tradition and suggested that Aaron may have taken the concept of the “chord of the modes” from Bonaventura. Bergquist downplayed this connection, however, stressing that many other authors also discussed the “chord of the modes” concept, including Marchetto, Tinctoris, and Gaffurius. Regarding Aaron’s overall treatment of modes, Bergquist noted that Aaron “follows Bonaventura in ordering his material,” but concluded that he “otherwise cannot be said to lean to any one of his predecessors more than another.” Bergquist, “The Theoretical Writings of Pietro Aaron,” 230–31 and 234–36.
Figure 37: Woodcut from Pietro Aaron, *Thoscannello de la musica* (1523), reused in Aaron, *Trattato della natura et cognizione de tutti gli tuoni di canto figurato* (1525).
Chapter 6: Conclusion

As the preceding chapters have demonstrated, the first book of Pietro Aaron’s *Libri tres de institutione harmonica* is a curious admixture of style, content, and influences. At turns practical, theoretical, humanistic, and philosophical, Aaron’s book on plainsong hardly presents a unified picture of the topic. As is typical, Aaron is at his best when he is focusing on practical matters, such as when he describes the ins and outs of mutation; or when he explains the chord of the modes, for classifying a chant with a limited range; or when he warns against certain common mistakes that singers make when connecting a psalm tone to an antiphon. By contrast, when he turns toward more theoretical matters, as in the chapter on cofinals, he is more prone to error or, at least, inconsistency. And then, of course, when he attempts to demonstrate scholarly knowledge of ancient languages, he tends to be on particularly shaky ground.

Part of the inconsistency inevitably comes from the varied influences that inform the work. On the one hand are older theoretical ideas, such as Ciconia’s five-part division of plainchant and Marchettan approaches to mutation and the modes. On the other hand are some more novel ideas, such as evolving conceptions of the gamut and the octave. Adding to the complexity is the fact that nearly all of the older ideas are filtered through some of Aaron’s more immediate predecessors, introducing fresh layers of interpretation.
At the same time, these varying layers of interpretation sometimes provide an opportunity for a fresh perspective on Aaron’s predecessors. Some parts of Aaron’s testimony on the five-part classification of chant, for instance, allow us to understand more fully Ciconia’s earlier treatment of the topic, at the same time that Ciconia, Jacobus Theatinus, and the anonymous compiler of the *Quaestiones et solutiones* help us to make sense of Aaron’s own meaning.

One of the most significant findings of the present study is the identification of the principal sources that Aaron consulted in the preparation of his book on plainchant. The three works that figure most prominently are Gaffurius’s *Practica musicae* (1496), Bonaventura da Brescia’s *Breviloquium musicale* (1497), and the anonymous *Compendium musices (1499).* To these, we might add Giorgio Valla’s 1497 Latin translation of Cleonides’s *Eisagoge harmonike* and the 1499 publication of Martianus Capella’s *De nuptiis* in Vicenza, given the number of humanistic references to both works.

It is conspicuous that all of the works on which Aaron most depended were printed incunabula. In her seminal 1995 article “Reading Aron Reading Petrucci,” Cristle Collins Judd showed that Aaron demonstrated a similar reliance on printed sheet music for his music examples in the *Trattato*, arguing that his selections betokened a new attitude toward authority in the age of print culture.\(^{562}\) In an earlier study, I argued that Aaron already was doing something similar with some of his limited citations to music

\(^{562}\) See Judd, “Reading Aron Reading Petrucci.” The article was reworked for inclusion in her monograph *Reading Renaissance Music Theory* (see chapter 3, “Pietro Aron and Petrucci’s Prints”). Margaret Bent previously noted Aaron’s reliance on printed examples in his supplement to the *Toscanello* in her 1994 article “Accidentals, Counterpoint, and Notation.”
examples in the *De institutione harmonica*. Now it seems clear that Aaron attached the same added authority to printed theoretical works as well.

By far the most significant source for Aaron’s book on plainchant was Bonaventura’s *Breviloquium musicale*. This seems particularly significant given that the *Breviloquium* was written in the vernacular rather than in Latin. Given what we know about Aaron’s own limitations with the Latin language, it is not surprising that he might have been drawn to one of the very earliest music theory treatises published in the vernacular. We may be able to go a bit further than that, however. As was noted at the outset of the present study, Aaron initially wrote his first treatise in Italian. It is not difficult to imagine that he may have been inspired by the *Breviloquium*, as well as by Gaffurius’s vernacular *Anglicum ac divinum opus musice* of 1508, to craft a full treatise in the vernacular. Whether he had second thoughts about publishing in the vernacular, as he claimed in the translator’s preface of the *De institutione harmonica*, or simply could not find a publisher for such a work may never be known. It was another seven years before he was ready to publish another treatise in the vernacular, the widely popular *Toscanello in musica* of 1523.

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563 Bester, “Book Two of Pietro Aaron’s *Libri tres de institutione harmonica*,” 73–75, esp. 73n197.
564 According to the dialogue in Flaminio’s preface, Aaron explained that the delay in the publication of his treatise was due in large part to his discomfort at the idea of publishing in the vernacular: “The other [cause of the delay] is the fact that a certain shame impeded me because I am not ready to publish those books, which perhaps are not unattractive and not contemptible because of the distinguished subject-matter that they cover, in the Latin language. For I know how much is lacking for them on account of this fact and how much authority, dignity, and charm the Latin language would have been able to add to them.” (“Altera quod me quidam pudor impedit quod eos libellos forte non insulsos neque contemptibiles propter illustrem materiam quam complexi sunt, latino sermone non sim editurus. Scio enim quantum illis ob hanc rem absit, et quantum illis autoritatem, pondus, et gratiam latina oratio potuerit addere.”) Aaron, *De institutione harmonica*, Translator’s Preface, sentences 13–14.
Notwithstanding the clear importance of these printed treatises as sources for Aaron’s *De institutione harmonica*, there remain several significant ideas in Aaron’s first book that cannot be traced to these sources. Perhaps the most obvious is the five-part classification of chant from Aaron’s first chapter. Although it is tempting to posit Aaron’s acquaintance with the *Quaestiones et solutiones*, which shares this classification system as well as other affinities with Aaron’s treatise, there are no definitive textual similarities between the two treatises (at least, none that are not also shared by the *Breviloquium*) that would demonstrate such an awareness on Aaron’s part. Whether Aaron had access to this or another similar treatise or simply knew the classification system through an oral pedagogical tradition remains an open question.

At the core of all these discussions is the important issue of education and pedagogy. The question really has two parts, namely, what were the pedagogical traditions in which Aaron was trained, and how did he himself teach those who were his pupils? Aaron tells us almost nothing explicit about his training, but certain things can be inferred from clues in his treatises and letters. His lack of facility with Latin, for instance, suggests that he was educated not in an ecclesiastical school but rather in a communal or independent context, in which students would experience a mixture of Latin and vernacular studies. Moreover, as Blackburn has pointed out, Aaron’s unusual method of teaching composition, a topic that dominates the third book of the *De institutione harmonica*, strongly suggests that he was not trained in counterpoint by a northerner like

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565 Excellent studies on education in Renaissance Italy include Grendler, *Schooling in Renaissance Italy*, and Black, *Humanism and Education in Medieval and Renaissance Italy*.

566 Grendler chronicles the dramatic rise of communal and independent schools in the trecento in *Schooling in Renaissance Italy*, 3–41.
Rather, his musical training seems to have been more focused on practical matters, in analogy with the abacus schools that were so common during the period.

No doubt Aaron’s treatise also represents to a certain extent his own curriculum as a music teacher. Throughout the work he focuses the greater part of his attention on matters of practical interest for the singer and the composer; purely theoretical concerns play but a minor role. Consequently, in the first book Aaron emphasizes the practical elements of topics such as solmization, mutation, modal classification, and psalm tones, all subjects of prime interest for singers of plainchant.

In many ways, Aaron’s De institutione harmonica also stands as a prime example of the important changes that were then under way in Italian musical culture. The ground was shifting at precisely this moment between those from the north and those who were born in Italy. Latin, the shared language of learning for centuries, was giving way to the vernacular throughout the European continent. New styles of composition, cultivated by the upstart Italians, were gaining popularity. Driving all these currents was the transformative power of the printing press, which facilitated an unprecedented level of distribution and created new shared repertories.

The world beyond was on the cusp of significant change as well. Just a year after the publication of Aaron’s first treatise, Martin Luther touched off the Protestant Reformation with his Ninety-five Theses, in which he criticized abuses in the Church and challenged the very authority of the music-loving Pope Leo X. Within decades the

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567 Blackburn, Lowinsky, and Miller, eds., A Correspondence of Renaissance Musicians, 75.
568 For more on the role of abacus schools for the teaching of mathematical skills, see Grendler, Schooling in Renaissance Italy, 22–23.
569 The frottola that is attributed to Aaron, discussed in chapter 1, is a salient example of this emerging Italian style.
Christian world and its musical traditions would be torn asunder, and plainsong, the great unifying music of the Church, would be relegated for the most part to southern lands.

In such a rapidly changing environment, it is perhaps not surprising that Aaron’s first treatise had a decidedly mixed reception. Gaffurius, who personified the old guard, was vituperative in his criticism, and even Aaron’s friend, Spataro, was non-committal in his support when asked his opinion of the treatise by a colleague. Many modern scholars have not been much more charitable of Aaron’s first effort. Despite this lukewarm response both then and now, Aaron’s treatise still has much to tell us, particularly about the intersection of theory and practice at a pivotal moment in the history of music and music theory. Throughout the treatise we see the complex workings of an active musical mind, as Aaron strove to reconcile his practical experience as a singer and teacher with his ambitions as a theorist. If at times he overreached and erred, he nevertheless left a valuable record of musical thought that continues to be relevant to historians of music theory today.

See chapter 1.
Figure 38: Title page of Pietro Aaron’s *Libri tres de institutione harmonica*. 

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Text and Translation

Three books concerning harmonic instruction published by Petrus Aaron of Florence, with Ioannes Antonius Flaminius of Imola being the translator.

Petrus Aaron of Florence bids greetings to the most distinguished knight Hieronymus Sanctus Petrus.

I know that you are not unaware, most distinguished knight Hieronymus Sanctus Petrus, how much effort I have devoted to music and how great a cultivator of the distinguished art I have been, and that, as a result of this, I have acquired something of fame to such an extent that there are not lacking those who think that I am a person of importance among the musicians of our generation. Accordingly, I have had that constant and perpetual custom to cultivate the art continually to the best of my ability and to desire that it be perpetuated to...

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1 A, E, W: The folio is unnumbered, but the next folio is numbered as 2.
quod me doctorem habuerint / glorientur / et se plurimum profecisse fateantur. Verum quemadmodum pulchrum duco prodesse / quantum quesas / praesentis aevi hominibus / ita pulcherrimum / ac omni laude prosequendum iudico / si quis ita elaboraverit / et caverit / ut bonum illud perpetuum / ac immortale fiat / et posteris etiam prosit. Haec me ratio / hoc desiderium\(^{12}\) impulit / ut pulcherrima / et maxime necessaria totius artis praecipua colligerem: et in unum quasi corpus membra congererem. Quanto autem studio / ac diligentia id a me factum sit tecum iudicent ii / quicunque legerint. Qua quidem in re (fateor) magno mihi fuit adiumento Ioannes Antonius Flaminius Forocorneliensis / vir quidem hoc nostro saeculo\(^{13}\) (ut te scire non dubito) famae non incelebris. Is enim et arte dicendi / et sermonis elegantia: quibus quantum polleat cernere poteris / sic nostros labores iuvit / et ornavit / ut sperem / omnibus / quicunque legerint (modo livor absit) non utilem solum sed et uicundam admodum lectionem fore. Quod opus tam grandem materiam tribus complexum voluminibus quaecunque sit / tuo nuncupandum nomini duximus. Quibus id causis (Nam multae sunt atque iustissimae) motus id fecerim / dicerem equidem / nisi et the greatest extent. For this reason, it has happened that wherever I have been up to now I have taught that art both willingly and faithfully. Indeed, the witnesses are practically innumerable who glory in the fact that they have had me as a teacher and who profess that they developed to the greatest extent. But just as I think that it is noble to be of use to men of the present age, as much as you may be able, so I consider that it is most noble and a thing to be accompanied with every praise if anyone should have striven and taken care to such an extent that that good thing becomes permanent and eternal and also is of use to future generations. This concern, this longing, impelled me to gather together the finest and most necessary precepts of the whole art and to assemble the limbs into one body, as it were. But let those who will have read it judge along with you with what amount of devotion and diligence this has been done by me. In this matter (I admit), Ioannes Antonius Flaminiius of Imola, a man of celebrated fame in this, our generation (as I do not doubt that you know), was a great help to me. For, both by the art of speaking and by the elegance of language, with which you will be able to see how greatly he is effective, he has assisted

\(^{12}\) A, E, W: desyderium.

\(^{13}\) A, E, W: seculo.
notissimae omnibus forent: et illarum commemoratio potius ab adulatione proficisci / quam ob officio videri posset. Erant quippe alii multi et clarissimi / et principes\textsuperscript{14} viri / quibus\textsuperscript{15} forte non ingratum esse id potuit / attamen ut te unum ex omnibus delegerim ac tibi praecepue dicandum putaverim / eximiae / quae in te effulgent dotes / ac tua ingentia merita effecere. Quod tu quidem ita susciendum arbitrabere ut et tuo patrocinio in publicum egredi non reformidet / et sit non apud te solum / et praesentis saeculi\textsuperscript{16} homines / sed etiam apud posteros mei quidem in te amoris / ac veteris observantiae praeceptum / ac perpetuum pignus / ac testimonium. Vale Ex Forocornelii. viii. kalendas Februarias. MDXVI.

\textsuperscript{14} W: Letter ‘c’ illegible.
\textsuperscript{15} A, E, W: Letter ‘q’ has unneeded abbreviation mark.
\textsuperscript{16} A, E, W: seculi.
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you and men of the present generation but also before future generations. Farewell from Imola. 25 January 1516.

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\textsuperscript{17} A, E, W: aliqua. (Compare the chapter heading for I.12: MUTATIONEM IN B FA ingleton MI ALIQUO PACTO INVENIRI.)

\textsuperscript{18} A, E, W: faciende.

\textsuperscript{19} A, E, W: obesse. (Compare the chapter heading for I.15: B MOLLE NECESSARIO ESSE INVENTUM ATQUE OB ID ACCIDENTALE esse.)
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How prolation is attributed to the semibreve. Chapter 16.

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3 See note 2.

23 This is an unusual variation on *enharmonico*. The only other instance in the TML is in Johannes Valendrinus’s *Opusculum monacordale*.
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\textsuperscript{25} A, E, W: perfecte.

\textsuperscript{26} A, E, W: Letter ‘t’ just barely visible.
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Ioannes Antonius Flaminius of Imola bids greetings to his dear Petrus Aaron of Florence.

I have had with you, Petrus Aaron, a long-standing and unwavering friendship, familiarity, and intimacy of such magnitude as I have lived joined in friendship with no man. Your singular affection for me, your pleasantness of nature, your exceptional merit, which has given to you for a long time now a celebrated place among the illustrious men of our generation, brought this about such that I think that I have gained not insufficiently because of your friendship and intimacy. Conversation between us very often has been not unpleasant and not uninteresting concerning writings and

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33 Bergquist: malit coniunctius.
34 A, E, W: seculi.
concerning learned men of this time, among whom, I am aware, or perhaps, more correctly, I am not aware enough, you, my friend, think I ought to be numbered, and by your judgment and by the testimonies of men of excellent learning, which are not unknown to you, you all will persuade into that opinion. When we had fallen into this conversation during the most recent days (as it so happened then, we were at my house) and when I had shown to you our poetic books, which, having been printed recently in Bologna (as you know), we displayed, you were touched by the sweetness of praise and reputation (as I was able to see), you congratulated me to the greatest extent, and you affirmed exceedingly, with not a few words, the joy which you took from this matter. Afterwards, you kept silent, and, with your expression having been fixed on the ground, you were similar to one wrapped in thought for a considerable time. At once I drew a conclusion what you desired in your mind, and, smiling, I said, “Come, my dear Petrus, why do I suddenly

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35 A, E, W: que.
36 A, E, W: oppinionem.
37 TML: suspensum. (A, E: Top part of final ‘s’ poorly printed. W: suspensum.)
38 TML: imortalitatem.
40 A, E, W: Non ne.
/ tantaeque expectationis ut omnes iamdiu illud efflagitent.

Tu tamen cunctabundus / ac haesitanti similis pulsatum diu
limen egredi non sinis ac hominum vota moraris. Scio / inquis⁴¹ / esse quam plurimos / qui dilatam² editionem
meam mirentur ac moleste ferant. Sed morae diuturnioris
duae fuerunt causae / quærum altera est / quod horatiani
praecipit memem suprimenda diutius scripta / nec temere
vulganda putavi. Altera quod me quidam pudor impedit quod
eos libellos forte non insulsos / neque contemptibiles propter
illustrem materiam quam complexi sunt / latino sermone non
sim editurus.⁴³ Scio enim quantum illis ob hanc rem absit / et
quantam illis⁴⁴ autoritatem / pondus / et gratiam latina oratio
potuerit addere. Tunc ego nonem⁴⁵ inquam latinos facere
poteras? Poteram inquis / sed neque mihi plene / neque tui
similibus facturus eram satis / Fateor enim ingenuæ non esse
mihi cæm dicendi facultatem / ac sermonis elegantiam latini /
quam tam grandis materia posceret / et ob id quidem
communi potius et vernaculo sermone scribendos arbitrus

see you so sad and so uncertain immediately after joy?” You
responded, “You see yourself enjoying good fortune,
Flaminius, you who are still living, that immortality of name
has been produced for you, and you go to and fro by means
of the mouths of men.” Then I, “Have not you also already
produced those writings by means of which your fame,
which is widely known even in your lifetime, may be
entrusted to future generations? I have read that outstanding
work of yours that you wrote concerning the musical art,
indeed it is very fine, very useful, and of so great an
expectation that all, for a long time now, have been asking
for it insistently. Yet you, hesitating and similar to one being
in doubt, do not allow yourself to pass the threshold knocked
on for a long time and delay the hopes of men.” “I know,”
you said, “that there are as many as possible who are
surprised and annoyed that my edition has been postponed.
But there were two causes of the rather long delay, one of
which is the fact that, mindful of the Horatian precept, I

⁵ See note 4.
⁴¹ TML: in quis. (A, E, W: Line ends with ‘in’ without slant mark for hyphenation.)
⁴⁵ A, E, W: non ne. TML: nonne.
believed that the work ought to be withheld still further and
that it ought not to be disseminated without care. The other is
the fact that a certain shame impeded me because I am not
ready to publish those books, which perhaps are not
unattractive and not contemptible because of the
distinguished subject-matter that they cover, in the Latin
language. For I know how much is lacking for them on
account of this fact and how much authority, dignity, and
charm the Latin language would have been able to add to
them.” Then I said, “Were you not able to do them in Latin?”
“I was able,” you said, “but I was going to do it neither
perfectly for myself nor sufficiently for people like you. For I
admit candidly that I do not have that faculty of speaking
elegance of the Latin language which so distinguished a
subject-matter would demand, and because of this I decided
that they ought to be written instead in the common and
native language, and, in the end, they are displeasing to me
because of this one fact, and for no other reason am I

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46 TML: displiceret.
47 A, E, W: appreprehensa.
48 Bergquist: quod.
49 Bergquist: quod.
50 A, E, W: laeticiam.
52 W: First ‘u’ obscured.
noster familiaris qui Faventinum postridie profecturus ad
25 Flaminium suum veterem hospitem deverterat.\textsuperscript{53} Aderat
Leander Albertus Bononiensis et ipse necessarius noster vir
quidem (Nec me decipit amor) inter sectae praedicatoriae
viros litteris / ac morum sanctitate monstrabilis. Aderat et
filius meus iunior Flaminii adolescentis (parcius ut de eo
loquar paterna iubet verecundia) certe non illiteratus / et alii
complusculi\textsuperscript{54} et candidi / et docti viri / qui te simul amant / et
ob sacerdotium / ac virtutem colunt / quique liberter me
convisunt. Sustulerunt omnes in coelem manus / Nec mihi
quidem visi sunt laetari minus (vide quo candore animi /
quae\textsuperscript{55} te benivolentia prosequantur) quam si res singulorum
ageretur et ad me conversi omnes pro te rogare coeperunt / ne
frustra sper tanta / atque laetitiam simul tibi
concitassem. Tunc ego / quandoquidem video / quanto meam
hanc operam usui fore iudicetis / ac sua tantam referre noster
Aaron autumam / ut illum praestem / faciam quidem / quod
sum pullicitus / quodque illum\textsuperscript{56} maxime / ac vos simul velle
intelligo. Egisti tu quidem mihi gratias certe tantas quantae
absoluto iam opere multominus tibi / quam ego sum
postponing the publication.” Then, having grasped your
hand, I said, “What do you say, my dear Aaron? What if they
could be done in Latin within a few days?” “Within a few
days,” you said, “they could be done in Latin? And by whose
labour? Or who would take up so great a task within so short a
space of time? And who would endure so heavy a burden?”
“My dear Flaminius would,” I said. You frowned and,
astonished, between joy and wonder, you said, “Are you
joking, Flaminius, or do you speak seriously?” Whereupon I
said, “I speak seriously and indeed in such a way that to no
one have I ever offered my enthusiasm and labor more
willingly.” Immediately, the joy was intense for you and
obstructed your voice, and at once you were unable to speak,
but, having embraced and kissed me fondly, you said, after a
short delay, “It will make me happy, and only then will I
have been granted my prayer if my dear Flaminius will have
provided to me that effort, unexpected to me but very
desirable to me and to be counted among my greatest hopes.”
Once more I gave assurance that I would provide it and
would start when you should desire it. As it happens, there

\textsuperscript{53} A, E, W: diverterat.
\textsuperscript{54} TML: complusculi.
\textsuperscript{55} TML: quae.
\textsuperscript{56} W: Letter ‘u’ obscured.
was present then my dear Phileros Achilles Bocchius, a young man most kind, most learned in Greek and Latin, and a friend of both of us, who, about to go on to Faventia on the following day, had diverted to Flaminius, his old guest-friend. There was present also Leander Albertus of Bologna, himself our friend, a man remarkable among men of laudatory behavior because of his learning and because of the integrity of his character (and love does not deceive me). There was present also my own son, Flaminius the younger, a young man certainly not uneducated (paternal modesty decrees that I speak more moderately about him), and several other men, both kind and learned, who also love you and revere you on account of your priesthood and virtue and who visit me gladly. All raised their hands to the heavens, and they did not seem to me to rejoice less than if the interest of each were at stake (see with what kindness of spirit, with what goodwill they honor you), and, having turned to me, all began to ask on your behalf whether I had aroused so great a

57 A, E, W: negocium.
58 TML: privati. (Final ‘i’ has a larger dot, which may be an abbreviation mark)
59 TML: aio. (There is a clear abbreviation mark over the ‘i’ in the text.)
60 W: Top of second ‘s’ not visible. TML: estes. (There does appear to be an ‘st’ ligature there, but esses would seem to have been intended.)
61 TML: promisiste. (There is an ‘st’ ligature here, as in esses above [see note 60]. Perfect infinitive clearly intended.)
62 TML: me cum. (Line ends with ‘me’ without slant mark for hyphenation.)
quaeni sit facienda noverint / Crescit enim rei pretium\(^{63}\) / quae diligentia aliqua praefatio commendaverit. Tunc omnes intentis in me oculis / et signis non dubii / quantopere id cuperent significantes ad audiendum iam se parabant: cum sic ego respondi. Video / quarta de re mihi ex tempore sit sermo habendus / et quanta sit omnium vestri expectatio / et me insuper angustia temporis premit\(^{64}\) / est enim (uti videtis) hora iam serior / ut si caetera non absint / tempus tamen narranti sit defuturum / ut facile intelligam / non posse me pro rei dignitate / ac magnitudine / et pro vestra simul expectatione sermonem extendere / et erat hoc Petri quidem munus. Sed quando is quoque vobiscum idem velle significavit / non quantum res ipsa et consensus iste posceret / sed quantum angustia temporis sinet et memoria suppeditare poterit / dicam. Scio esse quam plurimos ex vulgo imperatorum / qui tarditate ingenii / et crassitudine quadam torpentes nihil altum non modo aggrediatur / sed nec etiam cogitare valeant. Et ii quidem Musicam arbitrantur esse rem parvam / et ideo non magnificandam\(^{65}\) / vel / sicut in caeteris infirmo sunt / ac hebeti iudicio / etiam contemnendam.\(^{66}\) Sed hope and joy at the same time for you in vain. Then I, “Since I see of how much use you think this effort of mine will be and that our dear Aaron thinks that it is important as regards his own effort to such an extent that I am surpassing that effort, I will do that which I have promised and that which I know he especially, and you all as well, desire.” You gave as much thanks to me, surely, as had been able to be sufficient, less by far for you, with the work having been completed already, than I am equal to, with the work having been joined. And although I saw how much work I was undertaking, both on account of the magnitude of the subject and at the same time because there is scarcely a place of pausing for breath for me, being very busy both publicly and privately (as you know), nevertheless I commanded that you be of good cheer that I would devote my attention earnestly, lest I seem to have promised and you to have hoped for this work from me in vain. When we made an end to these things, my dear Phileros turned to me and said, “Flaminius, I see that you are taking up a great subject, but one not at all beyond your strengths, and that the outstanding work of our Petrus

\(^{63}\) A, E, W: praecium.

\(^{64}\) A, E, W: praemit.

\(^{65}\) A, E, W: magnificiendam. (Could also be ‘magnificiendam’.)

\(^{66}\) A, E, W: contemnendam.
norint ii Musicen omnium in litteris studiorum esse antiquissimam / ut gravissimus auctor\textsuperscript{67} asserit Timagenes / quae tantum illis\textsuperscript{68} iam antiquis temporibus / ut Quintilianus ait / non studii modo / verum | etiam venerationis habuit / ut iidem Musici / et vates / et sapientes iudicarentur. Constat autem / omnes quicunque nomine sapientiae clari fuerunt artis huiusce studiosos fuisse. Quis nescit / quae de Orpheo / et Lino posteritatis memoriae tradita sunt? Qui non solum feras / sed etiam sylvas\textsuperscript{69} / et saxa cantu movisse perhibentur / atque ob id utrunque diis genitum crediderunt. Taceo / quae de Amphione vulgata sunt. Quis ignorat Pythagoram / et qui eum secuti sunt / illam invulgasse opinionem / mundum scilicet musica ratione esse compositum? Socrates iam senex instrui lyra non erubuit. Architas / et Aristoxenus quosdam etiam numeros membris insertos edocuit / quod et Pythagoras affirmavit. Prodanus apud Eupolin et Musicen / et litteras docet / et Maricas nihil se ex musicis scire / nisi litteras confitetur. Divinus Plato civili viro necessariam musice credidit / cuius Timaeum quis musicae ignarus intelliget? Themistocli cum in cena\textsuperscript{70} obleta esset lyra / ac se eius will be divine because of your labor, and I, who am glad no less for your glory than for mine, give thanks to you both, whom not only the present generation but also all future people are going to honor with great praise. But, I beg you, seeing that you are going to offer this work for the distinguished musician, before we depart from here, do not refuse to say some things concerning the virtues of music, not for my sake or for the sake of Leander or Flaminius the younger, for these men along with me have known for a long time now the renown and the excellence of music, to a large extent, but for the sake of others, if any are present, who know that less than how much it ought to be done, for the value of a subject increases as much as any diligent preface will have commended it.” Then all, indicating how greatly they desired this by their eyes having been directed toward me and by not uncertain gestures, already were making themselves ready to listen when I responded in this way. “I see how great the subject is about which a speech has to be made by me on the spur of the moment, and I see how great the expectation of all of you is, and, in addition, a shortage of

\textsuperscript{67} A, E, W: autor.
\textsuperscript{68} TML: \textit{omittit}.
\textsuperscript{69} A, E, W: sylvas.
\textsuperscript{70} A, E, W: coena.
imperitum confessus esset (ut auctor\textsuperscript{71} est Cicero) habitus est
indoctior. Lycurgus durissimarum apud Lacedaemonios\textsuperscript{72} legum auctor\textsuperscript{73} musices disciplinam probavit. Quare Spartani
ad\textit{centus} tibiare\textsuperscript{74} pugnas obibant / nec prius in
certamen gradiebantur\textit{quam} musis sacrificassent. Ad tibi\textit{as}
quoque pugnabant amazones / quorum una cum ad
Alexandrum macedonum regem concipiendi gratia venisset /
donata postmodum ab eo tibicine / ut magno munere laetata
dissessit. Tibi\textit{as} aones\textsuperscript{75} in laudes inflavere caelestium\textsuperscript{76}
Tibi\textit{arum} etiam cantu apud maiores nostros cadavera
efferebantur. Heroum quoque laudes / et fortium vivorum ad
tibiam res gestae cantabantur. Tibi\textit{is} Graecus in\textit{concione}\textsuperscript{77}
usu est. Cretes quoque ad citharam\textsuperscript{78} proelia\textsuperscript{79} inibant. Adde
\textit{quod et animi / et corporis aegritudines sanat} Harmonia.

Populares seditiones crebro cantus inhibuit. Theophrastus ad
affectiones animi tibi\textit{as} adhibebat. Damon musicus iuvenes
time presses me, for the hour already is rather late (as you
see), such that if other things should not be lacking,
evertheless time is going to be wanting for the one who is
talking, such that I easily understand that I am not able to
prolong my speech in proportion to the excellence and the
greatness of the subject and in proportion to your expectation
as well, and this was Petrus’s task. But because he also has
indicated along with you that he wishes the same thing, I will
speak, not to the extent to which the subject itself and this
audience would have demanded, but to the extent to which
the shortage of time will allow and memory will be able to be
adequate. I know that there are as many as can be out of the
crowd of the ignorant who, being dull because of a slowness
of intellect and a certain thickness, not only undertake
nothing that is lofty but also do not have the ability to ponder
it. And these people think that music is an unimportant

\textsuperscript{71} A, E, W: auctor.
\textsuperscript{72} A, E, W: Lacedaemonios.
\textsuperscript{73} A, E, W: auctor.
\textsuperscript{74} A, E, W: tibiare.
\textsuperscript{75} A, E, W: Tibia aones.
\textsuperscript{76} A, E, W: coelestium.
\textsuperscript{77} A, E, W: concione.
\textsuperscript{78} A, E, W: citharam.
\textsuperscript{79} A, E, W: proelia.
ebrios / ac petulantes modulorum gravitate compescuit. 61
Xenocrates organica modulatione lymphaticos\textsuperscript{80} sanabat. 62
Phreneticis etiam symphonia mentem restituit / quod 63
Asclepiades medicus experimento comprobavit. Hierophilus 64
etiam aegrotantium venas rhythmorum collatione pensabat. 65
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pestilentiam\textsuperscript{83} fugavit. Cycni\textsuperscript{84} cantum sequuntur. Fistulis 67
capiuntur cervi. Fistulis aves allici / nemo est / qui nesciat. 68
Elephantos etiam organica detineri voce compertum est. 69
Fides delphinis amicitiam hominum persuasere. Infantium 70
quoque vagitus crepundia sedant. Quin et instrumenta 71
divinae artis quaedam divis attributa sunt. A Mercurio lyram 72
aiunt inventam. Tibiam Palladi assignant. Fistulam ad Pana 73
referunt. In infinitum se se extendat oratio / si cuncta 74
persequi velim / et quam late hoc caelestis\textsuperscript{85} bonum pateat / 75
ostendere / Siquidem eo caelum\textsuperscript{86} abundat. Terra referata est.
76
Maria non carent / quod natura ipsa videtur ad tolerandos
subject and therefore that it ought not to be praised, or, just
as they are of feeble and dull-witted judgment in respect of
the rest, that it ought to be regarded with contempt. But these
people will recognize that music is the oldest of all the
studies in the sciences, as the most venerable author
Timagenes asserts, which had so much not only of devotion
but also of veneration already in those ancient times, as
Quintilianus says, that the same musicians were considered
to be both prophets and wise men. And it is apparent that all
who were celebrated in the name of wisdom were students of
this art. Who does not know those things that have been
handed down for the remembrance of posterity concerning
Orpheus and Linus? These men are reputed to have moved
not only beasts but also trees and stones with song, and, on
account of this, people believed that each was born from
gods. I omit those things which have been made widely
known about Amphion. Who is unaware that Pythagoras and

\textsuperscript{80} A, E, W: lymphaticos.
\textsuperscript{81} A, E, W: Tales.
\textsuperscript{82} A, E, W: citharae.
\textsuperscript{83} TML: pestilientiam.
\textsuperscript{84} A, E, W: Cicni.
\textsuperscript{85} A, E, W: coeleste.
\textsuperscript{86} A, E, W: coelum.
facilius labores / velut muneri nobis dedisse. Haec pauc
 Dixisse volui / ut et vestrae petitioni aliqua in parte
 satisfacerem et ut artem eximiam / sed et labores mi Petre
 tus merita laude non fraudarem / Studia enim praemio laudis
 augentur / et vetus sententia est / artes honore nutriri. Haec
 autem et tuo et omnium / qui aderant / miro assensu
 comprobata sunt. Tibi vero tantus ardor accessit / sic
 inflammatus es / quod nactus esses hominem tibi
 amicissimum / qui tuas vigilias / oratione sua videretur posse
 illustriores facere / ut affirmaveris / velle te novum opus
 formare / ac multo plenius et uberius materiam tractare / et te
 quidem (si ita mihi videretur) cotidie ad me accessurus
 praemeditatum / at dictatum / quae ego exciperem
 pollicitus quidem / te adiecturum plurima ex intimis artis
 penetralibus / quae a nullo adhuc vulgata fuissent / ut nihil
 ultra desiderari oportet / fassus quidem / solere nostri
 temporis musicos talia supprimere / et tanquam naturae
 invidentes pati quidem artis arcana in occulto latere.

those who followed him made known that belief that the
universe was arranged by reason, that is to say, by music?
Socrates, already an old man, did not feel ashamed to be
instructed in the lyre. Architas and Aristoxenus taught that
certain numbers also were included in the body, which
Pythagoras also affirmed. In Eupolis, Prodanus teaches both
music and letters, and Maricas admits that he knows nothing
of the principles of music, only letters. Divine Plato believed
that music was necessary for a statesman; what person,
ignorant of music, will understand his Timaeus? When a lyre
had been offered to Themistocles during dinner and when he
had confessed that he was unskilled in it (as Cicero is the
authority), he was held to be rather unlearned. Lycurgus,
author of the strictest laws among the Spartans, approved of
the discipline of music. On account of this, the Spartans used
to go into battles to the songs of tibiae, and they did not
proceed into battle before they had performed a sacrifice to
the Muses. The Amazons also used to fight to tibiae. One of

87 A, E, W: numeri. (Cf. Quintilian, Institutio oratoria, I.10.16, on which this sentence is based: “Atque [musices disciplinam] natura ipsa videtur ad
tolerandos facilius labores velut muneri nobis dedisse, si quidem et remigem cantus hortatur.”)
90 A, E, W: ad huc.
91 A, E, W: desyderari.
Probavimus omnes istum omni tui candorem / ac tantam liberalitatem: ut affirmaremus divinum fore illud ac immortale / si unquam in manus hominum veniret. Respondisti / venturum quidem / et brevi / nisi Flaminius ipse tibi deesset / At ego statim confirmavi et ea quae iam dixeram / et sum pollicitus / me tibi cotidie satis horis vacaturum. Igitur postero die ad me reversus in hunc modum exorsus es.
birds are attracted by pipes. It also has been established that elephants are held captive by the sound of instrumental music. The lyre has persuaded dolphins of the friendship of men. A child’s rattle also calms the cries of infants. Indeed, even certain instruments of the divine art have been attributed to gods. They say that the lyre was invented by Mercury. They ascribe the tibia to Athena. They ascribe the pipe to Pan. My speech would extend itself to an unlimited extent if I should wish to go over all things and to show how wide a field this heavenly blessing covers, since heaven abounds with it. The earth is bursting with it. The seas do not lack that which nature itself seems to have given to us, as if for a gift, for the purpose of more easily enduring labors. I desired to have said these few things both in order that I might in some part give satisfaction to your request and in order that I might not deprive the outstanding art and also your labors, my dear Petrus, of deserving praise. For desires are increased by the reward of praise, and the old maxim is that the arts are nurtured by honor.” Now these things were confirmed both by your own extraordinary approval and by that of all those who were present. But because you had found a man most friendly to you who seemed to be able to make your vigils more distinguished by his own manner of
speaking, so great an ardor came upon you and you were excited to such an extent that you asserted that you wished to produce a new work and to treat the material more completely and more fully by far, and that you would submit the premeditated and dictated work to me daily (if it were to seem right to me thus), and you promised that you would add to the things that I took down a great number of things from the most secret depths of the art, which as yet had been published by no one, in order that it might be expected that nothing is desired in addition, and you declared that the musicians of our time are accustomed to withhold such things and, as if jealous of nature, to allow the secrets of the art to be concealed in obscurity. We all commended that kindness of yours to all and your generosity that is of such magnitude that we affirmed that that work would be divine and eternal if ever it were to come into the hands of men. You responded that you would come, and that you would do so soon, unless Flaminius himself were to be unavailable. Then I also immediately confirmed those things that I had already said, and I promised that I would be free to attend to you sufficiently every day for hours. Therefore, you returned to me on the following day and began in this way.
PETRI AARON FLORENTINI HARMONICAE INSTITUTIONIS AD MAGNIFICUM EQUITEM AC IURIS PERITUM HIERONYMUM SANCTUM PETRUM BONONIENSEM PATRICIUM LIBER.I. IOANNE ANTONIO FLAMINIO FOROCORNELIENSI INTERPRETE.

[DE CANTU PLANO. CAPUT.I.]

1 MAGNUM EST FLAMINI QUOD heri sum pollicitus nee me quidem poenitet aut sententiam muto / immo rei magnitudine magis / et claritate crescit animus / et in horas fit ardentior. Tu tantum mihi praesta / quam hesterno die pollicitus es promptam / et alacrem operam / et nihil non successurum putes. Arduum sane est / quod93 mente agito / ac prope divinum. Sed me rum ipse virium sum conscious / et quid possim intellego non immemor horatiani illius praeperti.

2 Sumite materiam vestris / qui scribitis aequam94 Viribus / et versate diu / quid ferre recusent
Quid valeant humen95 / speroque divinam opem mihi non

The first book of harmonic instruction of Petrus Aaron of Florence to the great knight and expert in the law Hieronymus Sanctus Petrus, patrician of Bologna, with Ioannes Antonius Flaminius of Imola being the translator.

[Concerning plainsong. Chapter 1.]

That which I promised yesterday is considerable, Flaminius, and yet I am not sorry nor am I changing my mind, on the contrary my spirit rises more because of the magnitude and the renown of the subject matter and becomes more eager from hour to hour. Only provide for me the ready and eager assistance which you promised yesterday, and may you think that everything is going to succeed. Surely it is a lofty and a nearly divine thing that I ponder. But I myself am conscious of my strengths, and I understand what I am capable of, not unmindful of that Horatian precept:

93 A, E, W: Letter ‘q’ has unneeded abbreviation stroke.
94 TML runs this line with the paragraph preceding.
95 Horace, De arte poetica liber.
Take up a subject matter equal to your strengths, you who write, and ponder long what your shoulders refuse and what they are able to bear,

and I hope that divine assistance is not going to be lacking for me, I, who desire most of all in this matter to benefit men and to reveal the secrets of this art and to leave nothing untouched that I think is able to benefit or is in whatsoever way necessary. If perhaps someone will have thought that anything has been omitted by us, he will be bound to put himself forward as a judge and consider that it seemed to us either less necessary or not worth consideration, which human nature has avoided, for we all are not able to do all things, as the poet says. But at any rate, in my opinion, we are going to neglect nothing that matters with regard to this subject or that anyone is able to marvel at, having been omitted. Perhaps unkind interpreters will not be lacking who, moved by spite, condemn these, our labors. I also think that certain people will not be lacking who are annoyed and also take offense at the fact that we thus have made public the
secrets of this art, which they desired to be known only to themselves, for there are not lacking those who think as just stated, as though sacred things are being desecrated. But we, devoting ourselves to the public interest, do not care about what certain people are going to think because of their corrupt judgment. We write these things with virtuous intentions. Therefore, with God as our Protector, from whom all good things arise and by whose gift we exist, whatever we are, taking up the subject, will divide the whole subject matter into two parts, and we will apportion the subject, having been divided, into three books by means of chapters, by which the subject may become easier and more pleasant to study and to learn. First, then, there will be a discussion by us concerning plainsong, and we will say those things which we will think pertain to the understanding of that. In the other part of the work, however, we will discuss the finest and most useful things to know concerning counterpoint (as it is called), and gradually we will open the way to composing any song. Therein the whole art will make itself known, and those secrets known by very few will be revealed, which

capita / quo res facilior / et iucundior cognitum / inventum fiat /

99 TML: ego.
100 A: Stroke above ‘t’ indicating abbreviation is lacking, but the shape of the ‘t’ is of the ‘tur’ version, not a regular ‘t.’ E, W: tollatur. TML: tollat.
101 A, E: Stroke above ‘u’ indicating abbreviation is lacking, but context suggests ‘hunc.’ W: hunc. TML: hunc.
Quartus metricus: Quintus denique communis. Differens ordo dicitur / quando antiphonae tota compostio perfecta est / ut iuxta suum terminum ad diapason usque ascendat. Indifferens est / quando cantilena eiusmodi compositionem non habet. Prosaicus est / quando verba / super quibus est facta compostio / prosa oratione contexta sunt / qualia sunt in sacris / quae dicuntur offertoria / gradualia et iis similia / In quibus quidem plures sane abundant neumae / pauciora insunt verba. Non desunt / qui potent / quando in talibus un tantum syllabae notae plures applicantur / vel arbitrio compositoris fieri vel ut cantilena productior fiat. Sed errant admodum / qui hoc assertunt / Nam divus Gregorius inquit / neumarum multitudinem paucitati syllabarum ictur adiectam / non ut cantus prolixior fiat sed ut ille qui canit / dum diutius paucis immoratur syllabis / verborum diligentius sensum consideret / ac coelestia contempletur. Quartus ordo metricus dicitur / Cui nomen idem tale inditum est / quia metris / hoc est versibus cantus ille subicetur / quales sunt hymni omnes / quos quidem constare versibus nemini dubium est / In quibus quidem modulationibus mos est / totidem quot / sunt syllabae / notae adhibere. Communis things we will make so clear, so straightforward, that (unless we are mistaken) the diligent and studious reader will judge that nothing further is to be needed for him. So then, song is called plain whose notes are delivered with equal measure and with equal time, the law of which it is permitted to change only in the Patrem omnipotentem that they call Cardineus, as appears in ecclesiastical books. In respect of which, as we have been told was pleasing to Augustine and after that to Gregory, five orders pertaining to such song were established, from which every ecclesiastical clause (as they call it) is created. But in order that every ecclesiastical error may be eliminated, we have deemed that the above-mentioned orders are to be organized in this manner, such that the first order is differens. The second is indifferentens. The third is prosaicus. The fourth is metricus. Lastly, the fifth is communis. The order is called differens when the whole composition of the antiphon is perfect, such that it ascends all the way to the diapason with respect to its own final. It is indifferentens when a song does not have such a composition. It is prosaicus when the words upon which the composition has been made have been assembled in prose, such as there are in

102 A, E, W: ad modum.
103 A, E, W: consyderet.
demum ordo is dicitur qui ex Diapente / et Diatessaron constat. Hæc de quinque ordinibus dicta sufficiant. Nam de cantu plano plura quidem alio loco dicti sumus.

sacred songs that are called offertories, graduals, and similar ones to those, in which more neumes surely overflow and fewer words are present. There are not lacking those who think that when in such compositions more notes are applied to only one syllable it arises either because of the inclination of the composer or in order that the song may become lengthier. But those who assert this err greatly, for divine Gregory says that a multitude of neumes was added to a small number of syllables for this reason, not in order that the song may become lengthier but rather in order that the one who sings, by lingering for a longer time over a few syllables, may reflect more carefully on the meaning of the words and may contemplate heavenly things. The fourth order is called metricus, to which such a name was bestowed for this reason, because a song of that kind is made subject to metra, that is, verses, as all hymns are, which, it is doubtful to no one, consist of verses, in which songs it is the custom to use as many notes as there are syllables. Lastly that order is called communis which consists of diapente and diatessaron.

Let these words suffice concerning the five orders. For we are going to say more concerning plain song in another place.
MANUS DIVISIO. CAPUT.II.

1 MANum quidam in treis partes quidam in quattuor dividunt / et id quantum ad voces attinet / Nam et aliae sunt ipsius divisiones. Qui in treis illum partes dividunt in graves partiuntur / acutas / et superacutas. Qui vero in quattuor unam adiciunt / quam subgravem appellant / eamque in solo Γ ut locum habere dicit. Post hanc igitur graves statim sequuntur quae ab A re incipientes usque in D la sol re naturae acutae protenduntur / ibi enim la vocum ultima est gravium licet quaedam intermediae / ac simul mixtae voces nomen acutarum habeant / quae a \( \frac{1}{2} \) quadro acuto principium sumunt. Post graves acutae veniunt / quae a \( \frac{1}{2} \) quadro acuto (sicut diximus) oriuntur / et usque ad \( \frac{1}{4} \) quadrum superacutum extunduntur. Ergo a \( \frac{1}{2} \) quadro superacuto voces / quae superacutae vocantur principium habent / licet quaedam ex genere acutarum intermixtae sint / quae a C sol fa ut naturae acutae originem trahunt.

The division of the hand. Chapter 2.

Certain people divide the hand into three parts, certain others into four, namely as far as syllables are concerned, for there are also other divisions of the hand itself. Those who divide it into three parts divide it into graves, acutes, and superacutes. But there are those who add one that they call subgrave, so as to result in four, and they say that it has a place only on Γ ut. After this, then, the graves follow at once, which, beginning from A re, are extended all the way to D la sol re of the acute natural [hexachord], for there la is the last of the grave syllables, although certain intermediate and mixed syllables together have the name of acutes, which assume their beginning from the acute square \( \frac{1}{4} \) [hexachord]. The acutes come after the graves, which rise (as we have said) from the acute square \( \frac{1}{4} \) [hexachord] and are extended all the way to the superacute square \( \frac{1}{4} \) [hexachord]. Therefore syllables that are called superacute have their beginning from the superacute square \( \frac{1}{4} \) [hexachord], although certain ones are mixed with the genus of the acutes, and these syllables take their starting point from C sol fa ut of the acute natural [hexachord].
ALIA MANUS DIVISIO. CAPUT.III.

1 SCio equidem has viginti voces / sive litteras / sub quibus voces ipsae continentur / aliter etiam dividi / ut scilicet a Γ ut usque ad G sol re ut acutum graves sint Acutae vero ab eodem G sol re ut usque ad secundum numerentur. Caeterae vero / quae a G sol re ut secundo restant superacutarum appellacione censeantur. Sic quidem graves erunt septem. Totidem acutae. Superacutae autem sex.

POSITIONES MANUS.XX.104 CAPUT.III.

1 IN tota igitur manu secundum litterarum numerum xx.105 positiones sunt quae idae sic dicuntur / quod litterae ipsae tanquam sedes quaedam in quibus voces sunt positae.

Another division of the hand. Chapter 3.

For my part, I know that these twenty syllables, or rather the letters to which the syllables themselves are connected, also are divided in another way, namely such that the graves are from Γ ut all the way to G sol re ut acute, but the acutes are numbered from the same G sol re ut all the way to the second G sol re ut. But the rest that remain from the second G sol re ut are called by the name of superacutes. Thus there will be seven graves. There will be as many acutes. But there will be six superacutes.

The twenty positions of the hand. Chapter 4.

Now there are twenty positions in the whole hand in accordance with the number of letters, and they are called positions for this reason, because the letters themselves are just as kinds of seats, in which the syllables have been positioned.

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104 TML: VIGNITI.
105 TML: viginti.
Letter names in the hand in a twofold manner. Chapter 5.

Additionally, there are letter names in the hand itself, which are called universal because they affect each letter. Therefore any letter is the key of its own position because, just as a key opens for us the path by which [that] of foreigners is revealed for the purpose of entering and discloses and makes manifest to us those things which were within, so the name of the syllable is revealed by means of the letter itself, as if performing the function of a key, and indicates that which is adjacent to it. Moreover, there are letter names [i.e., clefs] that are called primary, which reveal to us any propriety and are as leaders in a song, without which every melody will be confused and uncertain and as a ship on the sea without a rudder, without an oarsman, and without a helmsman. Now there are three: the first is of the grave natural [hexachord], which has a place on F fa ut of the grave b molle [hexachord]. The second is of the grave b molle [hexachord], which has taken position on the first b fa ¾ mi. The third is of the acute square ¾ [hexachord], which has laid claim to a seat on C sol fa ut. These letter names, on account of their...
duty of ruling and governing a song, justly have received a position in the middle of the melody, just as a leader and ruler of the people makes for himself a seat not in a corner of the city but in a busy place and in the middle of the city.

That any syllable ought [to be sung] by its own propriety. Chapter 6.

All the above-mentioned syllables ought to be sung according to their own proprieties, for whatever syllables are found in square $\frac{1}{2}$ are to be sung with a certain harder sound. Those syllables that include soft b, however, are to be performed with a certain softer and sweeter sound. But those that have a natural ought to have a certain intermediate sound, blended from square $\frac{1}{2}$ and soft b, in order that the sound may not be able to seem altogether hard or soft but mixed from each.

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108 A, E, W: QUANLIBET.
109 Chapter heading in table of contents includes ‘cani,’ as such: “Vocem quamlibet per suam proprietatem cani debere.”
PER QUAS PROPRIETATES PRÆDICTAE\textsuperscript{110} VOCES CANI DEBEANT. CAPUT.VII.

1 VOces / quae sub antedictis .xx.\textsuperscript{111} litteris continetur / per tres quidem proprietates cani debent / hoc est per \textfrac{1}{2} quadrum.

2 Per naturam. Per b rotundum sive molle. Quas tamen in septem sic nos dividimus / in \textfrac{1}{2} quadrum tripliciter\textsuperscript{112} / idest in grave / Acutum / Superacutum. In naturam duplicem Gravem / et Acutam Eodem modo b molle in grave simul et acutum.

DEDUCTIONES SEPTEM EX PROPRIETATIBUS. CAPUT.VIII.

1 EX his vero proprietatibus deductiones fiunt septem / quas ideo sic vocamus / quoniam singulae secum sex voces deducunt. Ibi autem deductionis cuiuslibet est locus ubicunque inventur / cuius voces quidem comites servato

By which proprieties the before-mentioned syllables ought to be sung. Chapter 7.

The syllables that are included next to the before-mentioned twenty letters ought to be sung by three proprieties, that is by the square \textfrac{1}{2}, by the natural, and by the round or soft b. However, we divide these three proprieties into seven in the following way: into square \textfrac{1}{2} in three ways, that is, into grave, acute, and superacute; into natural in two ways, grave and acute; and in the same way soft b, jointly into grave and acute.

The seven deductiones [hexachords] from the proprieties. Chapter 8.

Moreover, from these proprieties are made seven deductiones [hexachords], which we name thus because each one leads six syllables with itself. Now the location of any deductio is wherever a location is found whose syllables follow as

\footnotesize\textsuperscript{110} A, E, W: PREDICTAE.

\textsuperscript{111} TML: viginti.

\textsuperscript{112} A, E, W: tripliciter.
companions, with the order always having been maintained, namely re mi fa sol la. The Christian religion consecrated these syllables some time ago and celebrates them in the hymn of the divine John the Baptist in this way: Ut, *Ut queant laxis*; Re, *resonare fibris*; Mi, *mira gestorum*; Fa, *famuli tuorum*; Sol, *solve polluti*; La, *labii reatum Sancte Ioannes*.

How ut ought to be sung. Chapter 9.

Now the following ought to be known, that wherever ut is found on G, it ought to be sung by means of the square propriety. But wherever ut is found on C, it ought to be sung by means of the natural propriety. And wherever ut is found on F, it ought to be sung by means of the soft b propriety, which we have summed up in this monostich: The natural takes C. Soft b takes F. Hard ½ takes G.
Mutations are made in 14 places in the hand, the starting point of which is begun from C fa ut, for from that point there are 17 positions up to the end of the hand, from which b fa ⌂ mi twice and E la are excluded, for they are single syllables and allow no mutation. Consequently 14 places are counted (as we have said). So then, wherever there are two or more syllables under one letter, mutations will be made there. But where a single syllable is found, no mutation will be able to be made there. Now, mutation is the change or translation of one syllable and propriety into another syllable and propriety with the same place and sound having been maintained. Now the following ought to be noted with respect to making mutations, that where there are two syllables, two mutations are made. Let C fa ut serve as an example, where, in ascending, fa of the grave square ⌂ [hexachord] is changed and is transformed into ut of the

grave natural [hexachord]. But in descending, that ut itself is changed, with the order having been reversed, into fa of the grave square ☢ [hexachord], as it was previously, and thus the syllable and propriety is changed in the course of ascent and descent yet the same place and sound persists. But where there are three syllables, it will be necessary that six mutations be made, as on G sol re ut, in which place and in similar places mutations are made as follows, namely of the first note with the second and, with the order being reversed, of the second with the first. Likewise, in the same manner, of the first with the third and of the third with the first. Similarly, of the second with the third, and of the third with the second in this way, sol re, re sol, and there are two mutations. Sol ut, ut sol, and now there are four. Re ut, ut re, thus six are made. The same thing is done in the remaining places of this kind. Now, every mutation that is ended on ut re mi ascends. Every mutation that is ended on fa sol la descends.

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119 A, E, W: retrogado, an obvious error.
That b fa $\frac{1}{2}$ mi does not allow mutation. Chapter 11

No mutation is made on b fa $\frac{1}{2}$ mi. But why it is not done ought to be considered more thoroughly, since it is known that there are two syllables there. Therefore it ought to be known that although there are two syllables there, they are not in that manner in which they are seen in other locations, indeed, there are two syllables but also there are two letters, and thus one letter there occupies only one note. Now, it was said above that mutation is not able to be made there, where a single note exists under one letter. Therefore, because of this reason, mutation is not able to be made there. Another reason also prevents it, for fa, in addition to its own order and nature, holds a lower place while mi holds a higher one, since that fa is of the grave soft b [hexachord] but mi is of the acute square $\frac{1}{2}$ [hexachord] in such a way that mi is higher than fa by one major semitone. Therefore neither the same place nor sound is able to be maintained as it is proper in mutations, for since fa is under the letter of soft b while mi is under the letter of acute square $\frac{1}{2}$ and each differs by place and figure, it is necessary that they also be made different with respect to sound. Therefore, from these it easily is

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120 TML: sit.
MUTATIONEM IN B FA ¾ MI ALIQUO PACTO INVENIRI. CAPUT.X.II.

1 VERum / tametsi mutationem ibi fieri non posse efficacibus et veris quidem rationibus satis (ni fallor) ostendimus aliquid tamen in contrarium posse dici videtur / et mutationem eo in loco quam omnes repellunt / aliquam fieri. Quae nos ratio moveat proposito exemplo constabit: Debet enim qui praeecepta dat aliis cautos esse ac maxime diligens possit ne praeeceptis quae tradit / aliquid obici. Scio quidem in modulationibus ecclesiasticis / etiam in cantilenis quae a nobis mensurabiles dicuntur / non inveniri solere notarum progressus / per quos in dicto b fa ¾ mi mutationes facere cogamur: Attamen / siquis unquam i legem hanc communem praeterire vellet / qua ratione id facere possit / monstrabimus / ut si forte in talem Cantilenam unquam inciderit / non miretur / et nostra praesenti admonitione cautos fiat.

2 Exemplum proponam / ut quo modo id fieri possit / appareat.

3 Erit quaepiam immensurabilis (ut dici solet) cantilena / cuius apparent why mutation is not able to be made wherever one is on b fa ¾ mi.

That mutation is found on b fa ¾ mi by a certain method.

Chapter 12.

But even though we have demonstrated sufficiently (if I am not mistaken) by means of effective and true reasons that mutation is not able to be made there, nevertheless it appears that something is able to be said to the contrary and that some mutation, which all reject, is done in that place. What reason moves us will be apparent by the proposed example, for he who gives precepts to others ought to be cautious and especially attentive in order that something may not be able to be brought up against the precepts that he relates. For my part, I know that in ecclesiastical songs, also in songs that are called mensural by us, progressions of notes on account of which we are compelled to make mutations on the said b fa ¾ mi are not accustomed to be found. Nevertheless, if anyone ever were to desire to ignore this common rule, we will demonstrate by what reasoning he would be able to do this in order that he may not be surprised and in order that he may
prima quidem nota in C sol fa ut erit / quae Fa dicet / et per
gradus usque ad E la mi ascendet / diceturque Fa sol la. Post
dictam vero notam la / non gradatim quidem / sed saltim in b/fa ½ mi acutum descendet / postmodum in F fa ut grave per
unum item saltim deveniet. Ibi necesse quidem erit / si talem
progressum canere velut mutatio in b fa ½ mi fiat / et nota
mi in fa mutetur / ut in subiectum F fa ut grave possis
descendere. Videtur ergo ibi praeter omnium sententiam fieri
mutationem. Attamen sciendum est talem notae mi in fa
revera non debere mutationem dici sed per mutationem ¹²¹
quia necesse est / ut notam fa / quae ipsi mi per semitonium
maius (uti iam diximus) subiecta est / capias / et in voce ac
sono mi canas. Sic quidem non mutatio proprie / sed
permutatio fiet / quia de loco in locum notam removere / est
quidem permutationem tam in ascensu quam in descensu
facere / non re vera mutationem. Verumtamen talis variatio
vocis Fa in sonum Mi durissima quidem est / et admodum
dificilis ad pronunciandum / quoniam a dicto Fa usque ad
Mi semitonium illud maius est / quod quidem praeter id / quod
valde incommodum est / asperum quoque / ac
dificilimum se se canenti offerit. Si tamen unquam in id
incideris / quo meliori poterit modo canendus erit.

become cautious because of our present warning if perhaps
this ever will have occurred in a song. Let me set forth an
example, in order that it may be apparent by what method
this is able to be done. There will be some unmeasured song
(as it is accustomed to be called), the first note of which will
be on C sol fa ut, which he will call fa, and it will ascend by
steps up to E la mi and will be sung fa sol la. But after the
said note la, it will descend not by steps but by leap to b fa ½
mi acute, afterwards, by one and the same, it likewise will
come by leap to F fa ut grave. There it will be necessary, if
you should desire to sing such a progression, that a mutation
be made on b fa ½ mi and that the note mi be changed into fa
in order that you may be able to descend to the F fa ut grave
situated below. Therefore, it seems that mutation is done
there contrary to the opinion of everyone. Nevertheless, it
ought to be known that such a mutation of the note mi into fa
in reality ought not to be called mutation but rather
permutation, because it is necessary that you assume the note
fa, which is situated under mi itself by a major semitone (as
we have said already) and that you sing it on the syllable and
the sound of mi. Thus, not mutation but permutation properly
will be made, because to move a note from a place to a place

¹²¹ W: Handwritten hyphen added at end of line after ‘per’ and at beginning of next line before ‘mutationem.’
Mutationes autem Totius manus in unum collectae duae sunt et quinquaginta. Loci vero (ut iam dictum est) quattuordecim.

How mutations ought to be done in plain songs. Chapter 13.

QUOMODO MUTATIONES IN CANTILENIS PLANIS FACIENDAE SINT. CAPUT.XIII.

1 DUo quidem in Cantilenis / quae planae dicuntur / servanda sunt Quorum alterum est ut nunquam nisi necessitas cogat / mutatio fiat / Nam quamdiu voces habeas / quibus ascendere possis / atque descendere / mutatio semper vitanda est.

2 Alterum / ut in ultimam semper notam mutationem differas / quae quidem nota / dum fit mutatio / duplicatur quidem quamvis appellacione diversa pronunciatur. Puta si fa quod |

is to make a permutation, as much in ascent as in descent, not, in reality, a mutation. Nevertheless, such a change of the syllable fa into the sound mi is very harsh and quite difficult to perform since there is that major semitone from the said Fa up to mi, which, in addition to the fact that it is extremely unpleasant, also shows itself to be harsh and very difficult for the singer. Nevertheless, if ever you will have come across this, it will have to be sung in the manner by which the better it will be able to be done. Now, the mutations of the whole hand collected together are 52. But the places are 14 (as was said already).

Two things ought to be observed in songs that are called plain, one of which is that mutation never is done unless necessity should compel it, for as long as you have syllables with which you are able to ascend and to descend, mutation always ought to be avoided. The other is that you always postpone mutation to the last note, which note, while mutation is being done, is repeated, although it is pronounced
est in C fa ut / mutare volueris in UT / debebis illud Fa prius
quidem pronunciare / deinde sub eodem sono UT canere.

Idem in caeteris similibus locis servandum erit. Hoc autem
ideo institutum est ut faciliior rudibus / ac inexpertis fieret ad
canendum via / quibus alioquin difficilis esset vocis
apprehensio.

MUTATIONES ASCENDENTES NON ESSE SEMPER
ASCENDENTES. CAPUT.XIII.

That ascending mutations are not always ascending. Chapter
14.

The following precept is well-known and general, that ut re
mi ascends and fa sol la descends, which seems to be able to
be contradicted at times. For those last two mutations, re ut
and ut re, indeed ascend. Nevertheless, when it is said that
the mutation ut re is ascending from the square \( \begin{array}{c} \text{C} \\ \text{B} \end{array} \) to the round \( \begin{array}{c} \text{B} \\ \text{C} \end{array} \), it is undoubtedly
false, since we do not ascend from the high to the lowest but

with a different name. Consider, if you will have desired to
change the fa that is on C fa ut into ut, you will be bound to
pronounce that first as fa, then to sing ut under the same
sound. The same thing will have to be observed in the
remaining similar places. Now, this has been established for
this reason, in order that the path to singing might become
easier for the untrained and the inexperienced, for whom the
apprehension of the syllable otherwise would be difficult.

122 A: Letter ‘t’ barely visible.
233 Aaron is referring to the last pair of mutations on G sol re ut, which he discussed in chapter 10. As noted in the commentary, it seems probable that
this chapter originally was intended to follow chapter 10 directly.
rotundum / quod quidem inferius est fit descensus. Sed et alio probatur exemplo praelocam mutationem per descensum fieri. Nam puta erit Cantilena non mensurabilis / in cuius medio ac fine huiusmodi progressus erit idem cuius prima nota in G sol re ut acute erit secunda in F fa ut inferiori.

Tertia deinde in b fa \( \flat \) mi acute. Necesse quidem est / quod ad naturalem ordinem attinet ut in illa prima nota UT dicatur\(^{123}\) / quae in G sol re ut est si velis deinde ad sequentem notam / quae in dicto F fa ut inferiori est / progredi / necesse\(^{124}\) est / ut in tali descensu nota illa scilicet UT / quae prima est in sol mutetur / quod est in G sol re ut / dicaturque ut sol / postea vero fa / quod est inferius. Quod si ascensus quoque ad tertiam notam / quae in b fa \( \flat \) mi est acuto / fiat / mutatio est quidem antedictae notae fa / quae in f fa ut est / videlicet in UT eiusmod loci / et ad praedictum locum b fa \( \flat \) mi fit ascensus / In quibus progressibus procul dubio ut sol Fa ut Fa ubi primum UT / quod est in G sol re ut in sol mutatur. Fa vero / quod est in f fa ut inferiori in Ut vertitur. Talis ergo mutatio ostendit / Ut sol fa ut fa / in quo tam parvo quidem intervallo duae fiunt mutationes / quod minime concedendum est / Nam quo ad
descend, for from the square \( \sharp \) [hexachord] to the round b [hexachord], which indeed is lower, a descent is made. But it is demonstrated also by another example that the above-mentioned mutation is made by means of descent. For, consider, there will be an unmeasured song, in the middle and at the end of which there will be a progression of this kind, that is, its first note will be on G sol re ut acute, its second on the lower F fa ut. The third, then, will be on b fa \( \flat \) mi acute. It is necessary, as far as concerns the natural method, that one say ut on that first note, which is on G sol re it, then, if you should wish to advance to the following note, which is on the said lower F fa ut, it is necessary that in such a descent that note, namely ut, which is the first, be changed into the sol that is on G sol re ut, and that it ut sol be said, but after that, fa, which is lower. But if an ascent also should be made to the third note, which is on b fa \( \flat \) mi acute, there is a mutation of the above-mentioned note fa, which is on f fa ut, namely into ut of the same place, and an ascent is made to the before-mentioned place b fa \( \flat \) mi, in which progressions, without doubt, ut sol fa ut fa will be said, where the first ut, which is on G sol re ut, is changed into sol. But fa, which is

\(^{123}\) A: Stroke above ‘t’ indicating abbreviation is lacking, but the shape of the ‘t’ is of the ‘tur’ version, not a regular ‘t.’ E, W: dicatur. TML: dicatur.

\(^{124}\) A, E, W: neccesse. TML: necesse.
eius fieri possit / mutationes sunt vitandae et nisi magna
urgeat necessitas / non sunt admittendae. Duplici autem
ratione necessitas eiusmodi mutationis contingit / Quarum |
est altera / quando Cantus ascensum / ac descensum non
attingit\textsuperscript{125} tunc enim necessario sequitur mutatio. Altera est /
quando licet Cantus ascensui serviat / atque descensui /
attamen necesse est in aliud mutari / quemadmodum saepe de
\textfrac{1}{2} duro in b molle sit transitus ut Cantilena suavior fiat / sicut
superiori patuit exemplo / videlicet a nota G sol re ut acuti ad
notam F fa ut gravis / ubi mutationem unam habemus. Ab
ipso autem F fa ut cum ad b fa \textfrac{1}{2} mi fiat ascensus / altera
sequitur / et sic duae fiunt. Sumatur antedictum Ut / quod est
in G sol re ut / illudque in re b mollis demutetur / In F fa ut
autem sumatur Ut / cum quo quidem ad b fa \textfrac{1}{2} mi ascendatur /
In hoc progressu una tantum mutatio fit / quod sane melius
est. Ratione igitur ostendimus / atque probamus UT RE
mutationem esse / quae per descensum / non semper autem
per ascensum fiat. At dicet aliquis non debere UT in RE b
mollis mutari / quia in cantu non mensurabili per b molle
canendum non sit. Id quidem alibi non negamus / Sed hoc in
on the lower F fa ut, is turned into ut. Therefore, such a
mutation exhibits ut sol fa ut fa, in which space, so small,
two mutations are made, which by no means ought to be
allowed, for to the extent that it is able to be done, mutations
ought to be avoided and ought not to be permitted unless a
great necessity impels it. But necessity of a mutation of that
kind occurs because of a twofold reason, one of which is
when it does not reach the ascent and descent of a song, for
then a mutation follows of necessity. The other is when,
although it serves the ascent and descent of a song,
nevertheless it is necessary that it be changed into another,
just as there is often a change from hard \textfrac{1}{2} to soft b in order
that a song may become sweeter, as was evident in the
preceding example, namely from the note G sol re ut of the
acute range to the note F fa ut of the grave range, where we
have one mutation. But because an ascent is made from F fa
ut itself to b fa \textfrac{1}{2} mi, another mutation follows, and thus two
are made. Let the previously mentioned ut, which is on G sol
re ut, be assumed and let that be changed into re of the soft b
\textsuperscript{[hexachord]}, but on F fa ut let ut be assumed, with which it
\textsuperscript{7} See note 6.
\textsuperscript{125} W: Final letters ‘it’ well above line.

may ascend to b fa \text\textnotes{mi}; in this progression, only one mutation is made, which certainly is better. Therefore we have shown and have proven by reason that ut re is a mutation that is made by means of descent and not always by means of ascent. But someone will say that ut ought not to be changed into re of the soft b [hexachord] because there ought not to be a singing by means of soft b in unmeasured song. We do not deny this otherwise, but in this place we are compelled to do so on account of two reasons, one of which is in order that only one mutation may be made, for otherwise it would be necessary that two be made. The other is in order that the tritone may be avoided. Therefore it is preferable to follow the above-mentioned method.

Nevertheless, there is different reason why a mutation of that kind is said to be not descending but ascending, for when we say ut re, a larger space is provided and more notes are available with which it would be able to be raised to a greater extent, since it is only one step from re all the way to ut and nothing is in the middle, and ut itself is the lowest note, under which no other one could exist. But in ascent, the first note, ut, is provided, after which many follow, all the way to the highest la. From this, it happens that the mutation re ut

\textsuperscript{126} TML: ira.
and ut re is called ascending and not descending, which, nevertheless, on account of that which we said above, sometimes will be able to be called descending. The same thing also occurs on A la mi re. We see that it occurs also in descending mutations, contrary to the well-known precept, because they do not always descend, as appears on C sol fa ut and on D la sol re and in other similar places, in which, for the same reason that we have said, one of the said mutations is found ascending.

That B Molle was invented of necessity and, on account of this, is accidental. Chapter 15.

That which pertains to a greater comprehension of b molle also ought not to be omitted, that it was invented of necessity for the purpose of tempering the harshness of the tritone, and for that reason we say that it is not proper and natural, it is accidental. But, having been moved by these reasons, let us not hesitate to affirm this, it ought to be explained now, and first we assert that it is not able to be brought into line with the series of seven letters that form the elements of the musical hand. And for that reason it does not occupy its own
numero quidem illatum foret / per duplarem procul dubio consonantiam idest per octavam alicui gravium vel superacutum certe responderet. Verum quod gravibus quidem non respondeat / hinc patet / quia semitonium illi deesse deprehenditur. Quod autem superacutis quoque non subserviat / et consonet manifestum quidem est / quia modum praeterit / ac in semitonium luxuriat. Hac de causa graeci nomen illi conveniens indiderunt menon idest accidens illud appellantes. Unde fit / ut adesse atque abesse integra modulatione possit. Quare id quidem / nisi ubi necessarium fuerit / apponi / atque appingi non debit.

DE TONO. CAPUT.XVI.

1 TOnus / quemadmodum Martianus inquit / est spatii magnitudo / qui ideo Tonus dicitur / quia per hoc spatium ante omnes prima vox / quae fuerit / extenditur / hoc est de line or space and it does not have a natural place, for if it were to be from the class of those, surely it would agree with something of the graves or the superacutes, without doubt, by means of the consonance containing double, that is, by means of the octave. But the fact that it does not agree with the graves is evident from this, because the semitone is found to be lacking for that. But the fact that it also does not comply with and accord with the superacutes is obvious, because it surpasses restraint and luxuriates in the semitone. On account of this reason, the Greeks attached a fitting name to that, calling it menon, that is, an accident. From this, it happens that it is able to be present and to be absent with respect to a whole song. Therefore, it ought not to be applied and added except where it will have been necessary.

Concerning the tone. Chapter 16.

The tone, just as Martianus says, is an extent of space, which is called a tone for this reason, because the first voice, which was before all, stretches by means of this space, that is, from
2 nota qualibet in notam.\textsuperscript{127} Secundum vero Cleonidem tonus quattuor modis dicitur / ut phthongus / et intervallum et ut vocis locus / ac Tenor. Sunt autem toni / ut idem sit ex Aristoxeni sententia tredecim / quos apud ipsum legere poteris. Vel tonus est coniunctio duarum vocum / sive complexio per spatium perfectum: Nam duplex quidem spatium est perfectum scilicet ipsorum tonorum / Imperfectum semitoniorum. Perfecti quidem exemplum sit / UT RE / RE.MI.FA SOL.SOL LA. Imperfecti autem MI FA.FA MI.

DE SEMITONIO CAPUT. XVII.

1 SEmitonium est conjunctio duarum vocum per spatium imperfectum / ut de mi in\textsuperscript{128} fa / et de fa in mi. Sed est quidem Semitonium maius / et minus. Et maius quidem duplici diesi / et commate constat: Quid autem diesis / et quid any note to a note. But according to Cleonides, tone is used in four senses, as note, interval, position of the voice, and pitch. But, as the same man says, in accordance with the opinion of Aristoxenus, there are thirteen tones, which you will be able to read in Cleonides itself. Tone is either the conjunction or else the connection of two syllables by means of a complete space, for a double space, namely of tones themselves, is complete, that of semitones, incomplete. An example of a complete space would be ut re, re mi, fa sol, and sol la. But an example of an incomplete space would be mi fa and fa mi.

Concerning the semitone. Chapter 17.

The semitone is the conjunction of two syllables by means of an incomplete space, as from mi to fa and from fa to mi. But there is a major and a minor semitone. And the major semitone consists of a double diesis and a comma, but what a

\textsuperscript{127} This definition is copied directly from Martianus Capella. Compare the translation by William Harris Stahl and Richard Johnson: “A tone is a magnitude of space. It is called a tone because the voice was the first of all sounds to be ‘stretched’ over this space; that is, from a given note to another note. . . .” Martianus Capella, The Marriage of Philology and Mercury, Vol. 2 of Martianus Capella and the Seven Liberal Arts, trans. William Harris Stahl and Richard Johnson with E. L. Burge (New York: Columbia University Press, 1977).

\textsuperscript{128} A, E, W: omittit.
comma sit infra explicabitur. Sed maius quidem semitonium in naturali ordine manus nusquam invenitur nec nisi ubi sit b fa ¾ mi. Nam accidentaliter quidem reperitur ubicunque sit Tonus / sicut in Monochordo apparat. Minus autem duas tantum pulso commate dieses habet. Diesis autem pars est toni significat autem latine divisionem / siquidem a graeco verbo (ut tu Flamini dicere soles) quod est diesco venit / quod apud nos divido est / Nam tonus quidem in quattuor dieses / et unum comma dividitur. Comma vero nona est pars toni / et graece quidem comma / ut ex te saepe audivi: dici latine incisio potest / quia est particula quaedam quasi de tono incisa. Tonus autem ipse / qui: ut diximus / quattuor dieses complectitur / in novem commata divisus est.

diesis is and what a comma is will be explained below. But the major semitone is found nowhere in the natural system of the hand, only where there is b fa ¾ mi. For it is found accidentally wherever there is a tone, as is evident on the monochord. But the minor semitone has only two dieses, with the comma having been excluded. Now the diesis is a part of a tone, and it means division in Latin, since it comes from a Greek word (as you are accustomed to say, Flaminius) which is diesco, which among us is divido (to divide), for the tone is divided into four dieses and one comma. But the comma is a ninth part of a tone, and it is comma in Greek, as I have often heard from you; in Latin, it is able to be called incisio (an incision or a clause) because it is a kind of piece, as if having been cut off from a tone. Now the tone itself, which, as we said, encompasses four dieses [and a comma], was divided into nine commata.

DE SEMIDITONO CAPUT.XVIII.

Now the semiditone is a tone with a minor semitone. This actually encompasses three syllables but not by means of two complete spaces, namely from re all the way to fa by means
descensum autem a SOL usque ad MI. Unde nomen illi / quod non sint pleni duo toni / est inditum. Et hic Tertiam minorem facit / quae quidem ex tono / et semitonio minori constat.

DE DITONO CAPUT.XIX.

Ditonus quidem duo sunt toni / qui per spatia duo perfecta extenditur / et sic treis voces amplectitur / sicut ab UT usque ad MI a FA usque ad LA patet / et Ditonus ipse Tertiam conficit / quae maior appellatur.

DE TRITONO CAPUT.XX

POst ditonum se se Tritonus offert durus / asper / et inamabilis / ac / si fieri possit repellendus semper / Qui quidem in tantum aures veterum vel offendit / vel exterruit: ut necessitatem illis imposuerit / omni solertia vestigandi qua ratione / qua lege leniri posset / ac temperari / ne tantum of ascent. But from sol all the way to mi by means of descent. Whence the name for that was bestowed, because there are not two complete tones. And this makes a minor third, which consists of a tone and a minor semitone.

Concerning the ditone. Chapter 19.

Two tones are a ditone, which stretches through two complete spaces and thus encompasses three syllables, as is evident from ut all the way to mi and from fa all the way to la, and the ditone itself produces a third that is called major.

Concerning the tritone. Chapter 20.

After the ditone, the tritone shows itself to be hard, harsh, and unattractive, and it ought always to be rejected if it should be able to be done. Indeed, it either annoyed or terrified the ears of the ancients to such an extent that it forced on them the necessity of searching out with every skill

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130 A, E, W: raione. TML: ratione.
auribus obstreperet. Inventum est igitur b / quod a soni
lenitate molle dicimus / qui se se illi opponens / ac se
opportune canentibus offerens illius asperitatem atque
duritiem miro temperamento molliret. Qui ipso quoque
nomine duritiem quandam praeseferens etiam |
compositionem qua nulla est asperior / indicat / si quidem a
tribus tonis de quibus constat / nomen sortitus est. Quattuor
autem in locis (de manu loquor) inventur / quorum duo
naturalem sequuntur ordinem / duo per accidens sese
inferunt. Et naturalium quidem locorum alter a\textsuperscript{132} FA naturae
gravis principium capiens in mi ½ quadri acuti desinit. Sic
quidem a leni gravitate exoriens in asperum acumen
extenditur / quod lenitas b mollis intercurrens domat / et
tmoderatur. Alter autem a fa naturae acutae in mi ½ quadri
superacuti excurrit / ubi fa molle sese opponens eodem quo
supra / officio fungitur. Accidentalium vero locorum alter
a\textsuperscript{133} Fa b mollis gravis in mi acutae protenditur / in
cuius mi locum fa b lenis accidentaliter / ac opportune sese
obiiciens succedit. Alter vero / qui collatis omnibus locis
quartus est / a fa b mollis acuti in E\textsuperscript{134} la naturalis terminum

\textsuperscript{131} A: Second ‘r’ barely visible.
\textsuperscript{132} TML: altera.
\textsuperscript{133} TML: altera.
\textsuperscript{134} A, E, W: D. TML: E.
manus evexitur / ubi quidem fa b mollis eodem modo pro la
succedens eandem / immo etiam propter nimium acumen
longe maiorem duritiem lenit / ac temperat. Ex his autem
omnibus / quod memoria tenendum est / facile constat /
quattuor voces absque semitonio propter innatam duritiem
non recte locum habere posse.

**DE DIATESSARON. CAPUT XXI.**

1 Diatessaron a numero vocum / quas continet dicitur
appellatione graeca / FLAMINIUS. Verum id quidem est
nam dia graeca est praeposito et per significat. Ta tessara
did above. But one of the accidental places is extended from fa of the grave b moll [hexachord] to mi of the acute natural [hexachord]; fa of the b lene [hexachord], placing itself in the way accidentally and opportunely, takes the place of this mi.

But another, which is the fourth when all the places are gathered together, ascends from fa of the acute b moll [hexachord] to E la of the natural [hexachord], the boundary of the hand, where fa of the b moll [hexachord], taking over in place of la in the same way, softens and tempers the same far greater harshness, more precisely, even, on account of its excessive sting. Now, out of all these things, that which ought to be remembered is easily apparent, that four syllables without a semitone are not properly able to occupy a place on account of their innate harshness.

Concerning the diatessaron. Chapter 21.

With respect to the Greek name, the diatessaron is named from the number of syllables that it contains. FLAMINIUS: Indeed, that is true, for *dia* is a Greek preposition and means

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quattuor et Martiano teste ex quattuor dicitur.\textsuperscript{136} AARON, ita
sane est / est enim quattuor vocum symphonia ex duobus
tonis et semitonio minori constans / et ut verbis utar Martiani
tui recipit sonos quattuor / spatia tria / productiones duas / et
dimidiam / ubi sonos vocat / quas nunc voces / sive notas
appellamus. Productiones vero appellat / quos et ipse crebro / et
nos quoque nunc tonos dicitus Cleonides quoque
Diatessaron\textsuperscript{137} inquit tonorum duorum atque dimidii esse.
Haec tamen consonantia in tres dividitur species / quarum
prima est RE.MI.FA.SOL / Nam a tono incipit sequitur
semitonium / dein vero tonum. Secunda vero MI.FA.SOL.LA
/ ubi a semitonio minori incipiens in duos desinit tonos.
Tertia de UT.RE.MI.FA constat / quae duos tonos
praemittens in semitonium minorem terminatur. Verum licet
compositione ipsa sic differat / re tamen in idem devenit / atque redigitur.

per (through). \textit{Ta tessara} means \textit{quattuor} (four), and, with
Martianus being witness, [the diatessaron] is called \textit{ex quattuor} (from four). AARON: Certainly, it is so, for it is a
concord of four syllables consisting of two tones and a minor
semitone, and, in order that I may use the words of your
Martianus, it occupies four \textit{soni} (notes), three \textit{spatia}
(intervals), two and a half \textit{productiones} (lengthenings),
where he calls \textit{soni} what we now call \textit{voces} (syllables) or
\textit{notas} (notes). But he calls \textit{productiones} what both he himself
repeatedly and we also now call \textit{toni} (tones); Cleonides also
says that the diatessaron is of two and a half tones.
Nevertheless, this consonance is divided into three species,
the first of which is re mi fa sol, for it begins with a tone, it
traverses a semitone, but then a tone. But the second species
is mi fa sol la, where, beginning from a minor semitone, it
ends in two tones. The third species consists of ut re mi fa,
which, placing two tones in front, is ended in a minor
semitone. But although it differs in this way with respect to
its very composition, nevertheless, in reality, it comes to and
is reduced to the same thing.

\textsuperscript{136} Cf. Martianus Capella, \textit{De nuptiis}: “Symphoniae tres, quarum prima est diatessaron, quae latine appellatur ex quattuor . . .”
\textsuperscript{137} A, E, W: diattessaron.
Concerning the diapente. Chapter 22.

The diapente is a concord, as the same Martianus says, which consists of five soni (notes), which are separated among themselves by means of four spatii (intervals). It has three and a half productiones (lengthenings), that is, it cuts across three and a half toni (tones). Martianus said these things. So then, the diapente is a consonance consisting of five syllables, as the name itself indicates. FLAMINIUS. Indeed, it is so, since it is named from the Greek preposition dia, about which we just spoke, and pente, that is, quinque (five), because it is made up of five syllables. AARON. It contains three tones and a minor semitone. There are four species of it, which themselves also differ by composition but in reality are consistent. So then, the first species, beginning from D sol re of the grave natural [hexachord], is finished on A la mi re. The second species, following from E la mi, likewise of the grave natural [hexachord], is terminated on b fa mi. The third species, beginning from fa of the grave natural [hexachord], has its ending on fa of the acute square [hexachord], that is, on C sol fa ut. The fourth species,
Concerning the hexachord. Chapter 23.

With respect to the Greek word, hexachordon designates a consonance since, as I have heard rather often from you, Flaminius, hex in Greek means sex (six) in Latin, but chorda is said as chorda (string) or fidis (string), and because sonus (sound) and vox (syllable) is emitted from the string of a lyre or a cithara, it ought to be understood in this arrangement in place of sound and syllable. So then, the hexachord is a concord of six syllables. But it is twofold, major and minor, and the major consists of four tones and one minor semitone, as from Γ ut all the way to Ε la mi. The same thing will be found wherever four tones along with a minor semitone will have occurred. By certain people it is called a tone with a diapente; certainly, it is clear that the hexachord consists of these. The minor hexachord is that which is made up of three tones and two minor semitones, as is evident from Ε la mi all the way to C sol fa ut.

DE HEXACHORDO.CAPUT.XX.III.


With respect to the Greek word, hexachordon designates a consonance since, as I have heard rather often from you, Flaminius, hex in Greek means sex (six) in Latin, but chorda is said as chorda (string) or fidis (string), and because sonus (sound) and vox (syllable) is emitted from the string of a lyre or a cithara, it ought to be understood in this arrangement in place of sound and syllable. So then, the hexachord is a concord of six syllables. But it is twofold, major and minor, and the major consists of four tones and one minor semitone, as from Γ ut all the way to Ε la mi. The same thing will be found wherever four tones along with a minor semitone will have occurred. By certain people it is called a tone with a diapente; certainly, it is clear that the hexachord consists of these. The minor hexachord is that which is made up of three tones and two minor semitones, as is evident from Ε la mi all the way to C sol fa ut.
Concerning the heptachord. Chapter 24.

The heptachord is made from seven syllables, as the name itself indicates, having been compounded from two Greek words, since we say *hepta* as *septem* (seven) in Latin but *chorde* as *fidis* (chord) and as *vox* (syllable) or *sonus* (sound).

Therefore, it is a concord made from seven sounds. But this also is major and minor. The major is made up of five tones and a minor semitone, such that it is able to be called a ditone with a diapente. Now, it is found wherever there are seven syllables with a minor semitone. But four tones with two minor semitones make the minor heptachord. Thus it surpasses the minor hexachord by only one tone.

Concerning the diapason. Chapter 25.

The diapason is the most perfect concord of all; observe its remarkable power and fullness. For this consonance is so whole, so complete, so perfect in respect to all numbers, that not only all syllables but also the other consonances flock to
consonantiae ad unam illam tamquam\textsuperscript{141} duce\textsuperscript{142}m conflu\textsuperscript{143}t / tamquam\textsuperscript{144} principi sese subiiciant illam uti omnis symphoniae moderatrice\textsuperscript{145}m / ac reginam venerentur atque suspiciant. Nec immerito\textsuperscript{146} quidem prisci illi musicae artis viri tuento illam nomine decorarum\textsuperscript{147}m omnes continet / quibus harmonia conflatur. Haec item consonantias quaslibet / et eas quidem / quas supra commemoravimus complexa est / et eas quae plurime adhuc restant / tamquam\textsuperscript{148}pren\textsuperscript{149}s ex sese emittit / ac generat omni laude dignissima / omni favore prosequenda. Hanc graece quidem ut tu dicere Flamini soles / Diapason proprio ac eleganti vocabulo nuncuparunt apotu diaketoplan quod omnis (sicut ais) significat deducto / quasi de omnibus constans non modo vocibus sed etiam consonantis. Latini octava\textsuperscript{150}m a numero vocum / de quibus illa conficitur nominant. Illud quoque in hac una mirum dictu / ac memorabile est / quod per totam manum tamquam\textsuperscript{151}m moderatrix / ac domina excurrents ubique sedem sibi invent.

that one as if a leader, they subordinate themselves as if a chief, they venerate and admire it as though the mistress and queen of every concord. And not without cause did those ancient men of the musical art adorn it with so great a name. For it contains all the syllables with which harmony is made. Similarly, it encompasses whatever consonances you please, both those which we mentioned above and most of all those which as yet remain to be discussed, as a fertile parent, to be honored with every most worthy praise and every favor, brings forth and produces from herself. In Greek, as you are accustomed to say, Flamininus, they called this diapason by a suitable and elegant name, apo tu diaketoplan\textsuperscript{152}m (everything was ordered from it), which (as you say) signifies the whole with respect to the thing derived, as if consisting not only of all syllables but also of all consonances. Latins call it octava\textsuperscript{153}(an eighth) because of the number of syllables from which it is made. The following also is extraordinary and remarkable to say in respect of this one, that, extending through the

\textsuperscript{141}TML: tanquam.
\textsuperscript{142}TML: tanquam.
\textsuperscript{143}A, E: imerito (neither dot nor abbreviation mark above initial ‘i’ is visible). W: immerito (abbreviation mark over ‘i’ very faint). TML: immerito.
\textsuperscript{144}A: Letter ‘t’ not visible.
\textsuperscript{145}TML: tanquam.
\textsuperscript{146}A, E, W: foecunda.
\textsuperscript{147}TML: tanquam.
\textsuperscript{148}TML: tanquam.
\textsuperscript{149}TML: tanquam.
\textsuperscript{150}TML: tanquam.
\textsuperscript{151}TML: tanquam.
\textsuperscript{152}TML: tanquam.
\textsuperscript{153}TML: tanquam.
\textsuperscript{154}A, E, W: foecunda.
Hoc facile experieris et ita esse fateronis\textsuperscript{148} / si totem percenseas manum / in qua quidem illam ab una littera ad alteram similem terminari videbis. Haec autem consonantia quinque tonos / et duo semitonia complectitur / ut quanquam caeteras illam ambire consonantias dixerimus iure tamen | quodam insignius Diapente cum Diatessaron admittere dicamus. FLAMINIUS verum / ne praetereamus veterum quoque scriptorum de diapason sententiam / Cleonides / cuius supra mentionem fecimus / inter vteres graecos magnae scriptor authoritatis / illud in sex tonos extendit / Nam tonum ille adnumerat / quae nos duo minora semitone facimus. Idem tamen paulopost iterum diapason loquens inquit / At in diapason hemitonia duo / toni quinque. Ad hemitoniorum autem habitudinem figurai inspiciuntur. Ex nostris autem Martianus ait / Tertia diapason quae ex omnibus dicitur octo sonos recipit spatio\textsuperscript{149} septem / productiones sex: Hemitonia xii.\textsuperscript{150} Ubi Hemitonia semitonia sunt / quae cum xii.\textsuperscript{151} esse dicit / ad eosdem sex tonos whole hand, as if manager and a mistress, it finds a place for itself everywhere. You will find this easily by experience and will confess that it is so if you should inspect the whole hand, in which you will see that it is defined from one letter to another like one. Now, this consonance encompasses five tones and two semitones, such that, although we said that it includes the other consonances, nevertheless with a certain authority we say that it includes the more distinguished diapente with the diatessaron. FLAMINIUS: But let us not omit also the opinion of ancient writers concerning the diapason. Cleonides, of whom we made mention above, a writer of great authority among the ancient Greeks, stretches it into six tones, for he himself regards the tone as equal to those things which we classify as two minor semitones. Nevertheless, the same man, again mentioning the diapason a little later, says that there are, in fact, two hemitones and five tones in the diapason. Moreover, figures are considered with regard to the appearance of the hemitones. But among our

\textsuperscript{234} Likely ἀπὸ τοῦ διάκειτο πᾶν
\textsuperscript{148} A, E, W: fateronis.
\textsuperscript{149} A, E, W: spacia.
\textsuperscript{150} TML: duodecim.
\textsuperscript{151} TML: duodecim.
writers, Martianus says that the third [concord], the diapason, which is called \textit{ex omnibus} (from all), is made up of eight \textit{soni} (sounds), seven \textit{spatia} (intervals), six \textit{productiones} (lengthenings), twelve hemitones. Where hemitones are 15 semitones, which, because he says that there are twelve, are reduced to the same six tones. For the moment, let these things said concerning the most outstanding consonance suffice.

Concerning the four ancient modes. Chapter 26.

We read that among the Greeks there were formerly only four modes, the names of which were these: Protus, Deuterus, Tritus, and Tetrardus. These are the same modes that among us amount to the first, third, fifth, and seventh, whose ascent and descent, as is evident on the monochord and in ancient books, was so great that those who sang in the temples were exhausted beyond measure. Because of this, divine Gregory, a man of divine genius, having judged that

\footnotesize{
\begin{enumerate}
\item LEgimus fuisse apud graecos olim tonos tantummodo quattuor / quorum haec erant nomina / Prothus. Deuterus / Tritus / et Tetrardus / qui sunt idem qui apud nos sunt Primus. Tertius. Quintus / et Septimus / Quorum quidem sicut in monochordo / et antiquis apparat in libris / tantus erat ascensus / atque descensus ut praeter modum / qui canebant in templis defatigarentur.\footnote{A, E, W: \textit{impresentia}.}
\item Qua divus Gregorius divino vir ingenio / ut plerisque alii ad sacra pertinentibus / sic rei
\end{enumerate}
}

\footnotesize{\textsuperscript{152}A, E, W: \textit{impresentia}.
\textsuperscript{153}A: Stroke above ‘t’ indicating abbreviation is lacking, but the shape of the ‘t’ is of the ‘tur’ version, not a regular ‘t.’ E, W: \textit{defatigarentur}. TML: \textit{defatigarentur}.}
thought ought to be given to this subject in the same way as other men with respect to very many things concerning sacred things, divided those four modes into eight and tempered that old ascent and descent, so very difficult for singers, in such a way that there was neither any more labor nor any difficulty for choirs. In order that one may be able to acquire knowledge of each one, we will relate the structure of each of these. First we will say the following, that modes (I am speaking about the modes that we are now discussing) are a certain rule of singing that is recognized on their final by means of ascent and descent. Now, the final of the first and second modes, with the rule having been observed, is on D sol re. But contrary to the rule it is on A la mi re acute. The final of the third and fourth modes is on E la mi grave, but contrary to the rule it is on b fa ½ mi acute. The final of the fifth and sixth modes is on F fa ut grave, but contrary to the rule it is on C sol fa ut. The final of the seventh and eighth modes is on G sol re ut acute, but contrary to the rule, albeit rarely, it is on D la sol re. All the modes are divided in two ways, for they are either authentics or plagals, and authentics are the principal and ruling ones, as it were. FLAMINIUS: Quite right, because they seem to be derived from the Greek
diastessaron conficitur / scilicet a D sol re ad A la mi re acutum / et ab A la mi re / ad D la sol re his quidem notis RE LA / et RE SOL. Secundus item ex prima specie diapente formatur ab eodem D sol re ad A la mi re / a D sol re ad A re. Ubi sciendum est / authenticorum compositionem atque plagalium in diatessaron diffère / authenticorum enim ascendit\(^{155}\) / in quibus dicitur Re la / in Diatessaron autem Re sol. At in plagalibus dicitur Re la / sed in diatessaron Sol re. Hoc autem ideo fit / quia autentico ascendunt / plagales vero descendunt. Tertius tonus de secunda specie diapente conficitur / et ab E la mi gravi ad b fa \(\frac{1}{3}\) mi acutum / et ab eodem b fa \(\frac{1}{3}\) mi ad E la mi secundum his quidem notis MI.MI et MI la. Quartus de secunda specie diapente / et secunda diatessaron componitur ab E la mi gravi ad b fa \(\frac{1}{3}\) mi acutum / et ab eodem E la mi ad \(\frac{1}{3}\) mi. Quintus ex tertia diapente specie ab F fa ut gravi / ad C sol fa ut / et ab eodem C sol fa ut / ad F fa ut acutum his quidem notis FA.FA / et UT.FA. Sextus ex tertia diapente specie / et tertia diatessaron ab F fa ut gravi ad C sol fa ut / et ab eodem F fa ut ad C fa ut. Septimus ex quarta specie\(^{156}\) diapente: et prima diatessaron ab G sol re ut acuto ad D la sol re / et a D la sol re ad G sol re verb that is authenteo (to have full power over). But plagals were made of humbler station than those and as if under their authority. They also seem to be able to be called obliqui (obliques), for plagios in Greek is said as obliquus (oblique, slanting) in Latin. AARON: So then, the first mode is made from the first species of diapente and the first species of diatessaron, namely from D sol re to A la mi re acute and from A la mi re to D la sol re, with these notes, re la and re sol. The second mode likewise is formed from the first species of diapente [and the first species of diatessaron], from the same D sol re to A la mi re and from D sol re to A re. There it ought to be known that the composition of authentics and plagals differs in the diatessaron, for the composition of authentics, in which re la is said, but re sol in the diatessaron, ascends. But in plagals, re la is said, but sol re in the diatessaron. Now, this is done in this way because authentic ascend but plagals descend. The third mode is made from the second species of diapente [and the second species of diatessaron], both from E la mi grave to b fa \(\frac{1}{3}\) mi acute and from the same b fa \(\frac{1}{3}\) mi to the second E la mi, with these notes, mi mi and mi la. The fourth mode is

\(^{155}\) A, E, W: ascendent.

\(^{156}\) A, E, W: spetiae. TML: specie.
composed from the second species of diapente and the second species of diatessaron, from E la mi grave to b fa ♯ mi acute and from the same E la mi to ♯ mi. The fifth mode is made from the third species of diapente [and the third species of diatessaron], from F fa ut grave to C sol fa ut and from the same C sol fa ut to F fa ut acute, with these notes, fa fa and ut fa. The sixth mode is made from the third species of diapente and the third species of diatessaron, from F fa ut grave to C sol fa ut and from the same F fa ut to C fa ut. The seventh mode is made from the fourth species of diapente and the first species of diatessaron, from G sol re ut acute to D la sol re and from D la sol re to G sol re ut superacute, with these notes, ut sol and re sol. Finally, the eighth mode is made from the fourth species of diapente and from the first species of diatessaron, from G sol re ut acute to D la sol re and from the same G sol re ut to D sol re, with these notes, ut sol and sol re. Now, the following ought to be remembered, that all authentic modes are able to descend one note below their final. If perhaps they should not actually descend, nevertheless these modes are not without their integrity, because any mode comprises a diapason. But that descent is

\[ \text{composed from the second species of diapente and the second species of diatessaron, from E la mi grave to b fa ♯ mi acute and from the same E la mi to ♯ mi. The fifth mode is made from the third species of diapente [and the third species of diatessaron], from F fa ut grave to C sol fa ut and from the same C sol fa ut to F fa ut acute, with these notes, fa fa and ut fa. The sixth mode is made from the third species of diapente and the third species of diatessaron, from F fa ut grave to C sol fa ut and from the same F fa ut to C fa ut. The seventh mode is made from the fourth species of diapente and the first species of diatessaron, from G sol re ut acute to D la sol re and from D la sol re to G sol re ut superacute, with these notes, ut sol and re sol. Finally, the eighth mode is made from the fourth species of diapente and from the first species of diatessaron, from G sol re ut acute to D la sol re and from the same G sol re ut to D sol re, with these notes, ut sol and sol re. Now, the following ought to be remembered, that all authentic modes are able to descend one note below their final. If perhaps they should not actually descend, nevertheless these modes are not without their integrity, because any mode comprises a diapason. But that descent is} \]

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157 W: First ‘a’ barely visible.
DE TONO PERFECTO IMPERFECTO ET PLUSQUAM PERFECTO. CAPUT XXVII.

15v 1 2 DE tonorum qualitatibus nunc agemus. Toni quidam perfecti / imperfecti alii. Tertio demum loco plusquam perfecti non nulli dicuntur et perfecti quidem sunt / qui supra terminum suum octo vocibus attolluntur.\(^{158}\) sub terminum vero unam demittunt / quam tamen etiam si non demiserint / perfectorum (sicuti iam diximus) nomen non perdunt. Sed de authenticos loquor prior quintum / qui non ultra semitonium descendit. Plagales quoque una queunt nota diapente commune transcendere / sicut authenticos una descendere. Imperfecti\(^{159}\) toni sunt / qui suum diapason non implent. Sunt etiam / qui plusquam perfecti nuncupentur / vel sicut placet quibusdam superflui / quod et nos magis probamus Nam et philosophi aiunt / nihil ultra / citraque perfectum dari. Cum igitur in diapason perfectio constet / toni plusquam perfecti appellati allowed for authentics because they are the principal and loftier ones (as we have already said).

Concerning perfect, imperfect, and pluperfect mode. Chapter 27.

We will now discuss the characteristics of modes. Certain modes are perfect, others imperfect. Lastly, in the third place, some are called pluperfect. And perfect modes are those which rise above their final by eight syllables but drop one syllable below the final. Nevertheless, even if they will not have dropped this one syllable, they do not lose the name of perfects (as we have already said). But I am speaking about the authentics other than the fifth, which does not descend beyond a semitone. The plagals also are able to exceed the common diapente by one note, just as the authentics are able to descend by one. Imperfect modes are those which do not complete their own diapason. There are also those which are called pluperfect or, as is pleasing to certain people, superflui (superfluous), which we actually approve more, for even the

\(^{158}\) TML: at tolluntur (Text has line break after ‘at’)

\(^{159}\) A, E, W: Imperfeti.
rectius quidem superflui dicuntur. Sunt autem ii / qui suum diapason transcendunt.

Concerning mixed and commixed mode. Chapter 28.

There is also a mode that is called mixed, and it is that which, although it extends to the perfection of the authentic, nevertheless takes something from the plagal, since it descends below its final by two, three, or four syllables. But when modes of this kind ascend or descend to their own perfection, should they have either the ascent of the authentic or the descent of the plagal, they ought to be judged by means of the intervals, or rather, by means of the chord of the modes, about which we will speak later, and either the diapente or the diatessaron ought to be attributed to them where the prolongation will be greater. But if the higher part of the string will have had more of a prolongation, it is said to be authentic, by reason of ascent and of prolongation,
perfecti esse dicantur / indigent / et in altera perfecti sunt.  
4 His quidem a parte pleniori nomen indicatur / ut vel authentici  
dicant esse vel plagales / Toni vero / qui commixti  
vocantur / ii sunt / qui duas treisve\textsuperscript{161} diapente species habent  
ad suam compositionem minime pertinentes / et ii quidem  
commixti appellantur cum illis quorum species participant.  
5 6 Exemplum proponam. Erit antiphona primi toni / quae (ut  
dictum est) diapente cum diatessaron habebit / et in illa  
quidem huiusmodi processus erit / UT SOL et FA FA  
7 saepius tertia species et quarta. Tonus quidem eiusmodi  
primus dicetur ratione compositoris\textsuperscript{162} cum quinto / ac  
septimo commixtus.

mixed with the plagal by reason of descent. Such modes  
sometimes are lacking in one part and are without only one  
tone and are perfect in other things, such that they are said to  
be perfect. To these, the name is attached from the fuller part,  
such that they are said to be either authentic or plagal. But  
there are modes that are called commixed, which are those  
which have two or three species of diapente not at all  
belonging to its own composition, and they are called  
commixed when they share those species of those. Let me  
offer an example. There will be an antiphon of the first  
mode, which (as was said) will have a diapente with a diatessaron,  
and in that antiphon there will be a progression of this kind,  
ut sol and fa fa, more often the third and fourth species [of  
diapente]. A mode of that kind will be called first, commixed  
with the fifth and seventh by reason of composition.

DE CHORDA TONORUM.CAPUT.XXIX. |

Concerning the chord of the modes. Chapter 29.

Certain songs are found in ecclesiastical [books] which are  
the kind whose mode is not able to be discerned easily; the

\textsuperscript{161} A, E, W: treis ve
\textsuperscript{162} A: Abbreviation mark over first ‘o’ barely visible.
ascensu / atque descensu carent. Quare necesse quidem est / ut per chordam\textsuperscript{163} iudicentur. Quam quidem chordam esse dicimus lineam illam / vel spatium / quod terminum cuiuslibet toni tribus vocibus transcendit numeratis notis omnibus / quae supra / et infra chordam sunt non computatis\textsuperscript{164} ipsius chordae\textsuperscript{165} notis / et ubi maior pars reperitur / huius / vel illius esse toni dicitur. Hoc tamen non semper verum est / sicut in antiphonis ferialibus apparat et in antiphona Similabo\textsuperscript{166} eum ad Magnificat / et ad Benedictus Euge serve bone quae quidem Antiphonae supra et infra pares habent notas / quatum altera secundus est tonus. Altera\textsuperscript{167} primus / et hoc quidem propter earum species accidit. Tales antiphonae iudicari per chordam nequeunt / sed per suas tantum species censendae sunt. Igitur antedicta regula exceptionem patitur.

Vocant authores artis diapente speciem communem\textsuperscript{168} quia per eum quaelibet ad tonos compositio pertinens gubernatur.

Illud autem diapente / quo primus tonus / ac secundus reason is because they are without ascent and descent. Therefore, it is necessary that they be judged by means of the chord. We say that this chord is that line or space which exceeds the final of any mode by three syllables, with all the notes having been counted that are above and below the chord, with the notes of the chord itself not having been counted, and where the greater part is found, it is said to be of this or of that mode. Nevertheless, this is not always true, as is evident in ferial antiphons and in the antiphon Similabo eum to the Magnificat and Euge serve bone to the Benedictus; these antiphons have equal notes above and below, one of which is the second mode. The other is the first, and this comes about because of the species of those. Such antiphons are not able to be judged by means of the chord but ought to be appraised only by means of their species. Therefore, the before-mentioned rule allows an exception. The authorities of this art call the species of

\textsuperscript{163} W: Abbreviation mark over ‘a’ barely visible.
\textsuperscript{164} A, E, W: computatis. TML: computatis.
\textsuperscript{165} A, E, W: chorde.
\textsuperscript{166} A, E, W: Simulabo. Cf. I.34.11.
\textsuperscript{167} A, E, W: A ltera. TML: Altera.
Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.

Concerning song without mode. Chapter 30.
descensus sui diapason particulam / quae sane si quantitas

and descent of its diapason; indeed, if this extent should not

non inveniatur / talis modulatio nulli tono poterit applicari:

be found, such a song will be able to be assigned to no mode.

ratio est: quod diapente: ac diatessaron praedictorum

The reason is because the diapente and the diatessaron are

tonorum: ac diapason partes sunt173 / propter quod non

the component parts of the before-mentioned modes and of

3

apparebit / cui tono debeat adscribi. Talis ergo modulatio

the diapason, on account of which it will not be evident to

4

euphoniaca nuncupabitur id est bona sonoritas. FLAMInius.

which mode it ought to be ascribed. Therefore, such a song

Vere quidem dicis. Si quidem Eu graece bonum / phoni autem

will be called euphoniaca (euphonic), that is, good sonority.

vox dicitur. Aaron. Cave igitur ne in talibus modulationibus

FLAMINIUS: You speak correctly, since eu in Greek is said

4

secundum antedictam legem iudices.

as bonum (good) and phone is said as vox (sound). AARON:

5

†

5

3

Therefore, take care that you do not pass judgment in such
songs according to the before-mentioned principle.

320
16v

DE DIAPENTE CONiuncto et disiuncto. Caput.xxxi. |

Concerning the conjunct and disjunct diapente. Chapter 31.

1

Duo diapente forma inter se differentes inveniuntur / quorum

Two diapentes are found, differing with each other in form,

1

2

alterum coniunctum dicitur. Disiunctum alterum De quibus

one of which is called conjunct. The other is called disjunct,

2

maxima

ecclesiasticis

from which the greatest difference arises, especially in

differentia nascitur. Nam ubi diapente coniunctum invenietur

ecclesiastical songs. For when a conjunct diapente will be

/ tantam quidem vim habet / ut aliquando cogat / tonum suam

found, it has so great a power that it sometimes compels the

mutare naturam / sicut in responso Sint lumbi vestri

mode to change its own nature, as in the responsory Sint

praecincti / et in responso duo seraphin Nam iuxta tradita

lumbi vestri praecincti and in the responsory Duo Seraphin.

3

173

praecipue

in

modulationibus

A, E, W: quod diapason diapente / ac diastessaron praedictorum tonorum partes sunt. See the Corrections, sentence 4.

3


praeepta secundus est tonus / vi tamen diapente coniunctorum toni proprietas mutatur quia de plagali fit authenticus / sicut illius principium indicat / Quare modulationes eiusmodi primi quidem toni ratione compositionis esse dicemus / at ratione descentus esse secundi.

DE TERMINATIONE TROPORUM IRREGULARIUM. CAPUT XXXII.

1 QUi artis praeepta tradidere / terminationem irregularem tonorum instituere quattuor quidem in sedibus / quae confines sunt / idest a la mi re. b fa ¾ mi. c sol fa ut. D la sol re. 174 Quare praeepta de tonis tradita praetereunt175 et aiunt / posse tonum in quolibet manus loco terminari / ubi species illius queunt inveniri. Quod quidem si verum est quomodo precepta servabuntur / quae supra tradimus? ut scilicet primus / ac secundus tonus in A la mi re terminetur acuto / in

For it is the second mode according to the precepts handed down, yet the character of the mode is changed by the power of the conjunct diapente because the authentic is made from the plagal, as the beginning of that indicates. Therefore, we will say that songs of that kind are of the first mode by reason of composition but are of the second mode by reason of descent.

Concerning the ending of irregular modes. Chapter 32.

Those who handed down the precepts of the art established the ending of irregular modes in four places that are closely related, this is, A la mi re, b fa ¾ mi, C sol fa ut, and D la sol re. Therefore, they go beyond the precepts handed down concerning the modes and say that a mode is able to be ended on any position of the hand where the species of that mode is able to be found. But if it is true, how will the precepts that we handed down above be observed? Namely, how can it be

175 A, E, W: praetereunt, an obvious error.
5 quo speciem unam primi habemus / et unam\textsuperscript{176} tertii? In b fa \textgreek{h} mi tertium et quartum et species quinti habemus ac sexti?  
6 In C sol fa ut quintum ac sextum / et septimi speciem et octavi. In D la sol re septimum et octavum / et species primi habemus / et octavi.\textsuperscript{177} Ex quo quidem (ut mihi videtur) confusio magna suboritur ut et toni rectam formationem non habeant / et potius de suis speciebus quam de fine iudicentur.  
9 Sunt / qui quierunt quare musici primi / et secundi toni terminum in A re primo quidem manus loco non constituerint / Tertii et quarti in \textgreek{h} mi. Quibus ita respondemus / non posse in dicitis terminari loci / quia / uti supra diximus / eorum species ibi nequeunt reveriri. Quare hac ratione moti asserimus / antedictam terminacionem non esse recte constitutam / et mea quidem sententia toni sunt ita distinguendi / ut primus / ac secundus irregulariter in D la sol re locum habeat / quia tota illius compositio reperitur. Tertius / et quartus in A la mi re. Quintus in b fa \textgreek{h} mi et sextus.  
14 15 Septimus et octavus in C sol fa ut. Et hac ratione praecepta de tonis ab illis tradita confirmamus. Sed quamvis contra praecepta dixerimus / quae authores tradidere / hic tamen that the first and second mode is ended on A la mi re, on which we have one species of the first and one of the third? On b fa \textgreek{h} mi we have the third and fourth mode and the species of the fifth and sixth? On C sol fa ut we have the fifth and sixth mode and the species of the seventh and eighth. On D la sol re we have the seventh and eighth mode and the species of the first and eighth. A great confusion springs up from this (as it seems to me) such that the modes both do not have the correct design and are judged more from their own species than from the final. There are those who ask why musicians do not place the ending of the first and second mode on A re, the first position of the hand, or that of the third and fourth mode on \textgreek{h} mi. To which we respond in this way, that they are not able to be ended on the said places because, as we said above, their species are not able to be found there. Therefore, having been moved by this reason, we maintain that the before-mentioned ending was not placed correctly and, in my opinion, modes ought to be distinguished in such a way that the first and second have a place irregularly on D la sol re, because the complete 

\textsuperscript{8}A, E, W: Page header reads ‘Secundus.’ W: Handwritten correction to ‘Primus.’  
\textsuperscript{176}A: There is an extra stroke above ‘n,’ most likely an inadvertent mark or added later. E, W: No extra mark above ‘n.’  
\textsuperscript{177}A: A series of four dots is written above ‘octavi’ (or below ‘D la sol re’ on previous line).
apertius eorum constitutionem / hinc rectam videri / inde non
rectam ostendemus. Rectam esse hinc dicimus / quod
irregulariurum tonorum terminationes confinia dicuntur / quae
quidem digniora sunt loca excepta propria terminione / quae
in talibus reperiantur compositionibus. Cum ergo
digniora sint loca antedicta / et perfectiora / permissa est
cuilibet tono facultas / ut in suis confinibus terminari possit.

In contrarium tamen illud dicimus / quod si antedictos
volumus tonos secundum normam / et praecpta
considerare/ raro dicimus authentici toni ascensum
inveniri. Sed sunt / qui dicant / tales / quam vocant
irregularitatem in locis debere constitui / atque locari / quos
regulares apellant. Sed sic quoque descensus carent / qui
plagalibus debetur / et ob id raro eiusmodi compositio
reperitur. Talis igitur constitutio tonorum species ascensum /
atque descensus deponit / et variat. Quare mihi quidem
videtur secundum finem praesentem et ordinem regularem
iudicandos esse / atque ubi ad maiorem perfectionem tendent
esse illis attribuendos. Verum huiusmodi constitutionem
irregularis magis puto cantilenis mensurabilibus: quam
immensurabilibus necessariam.

\textsuperscript{178} A, E, W: consyderare.
plagals, and, on account of this, a composition of that kind is rarely found. Therefore, such a system of modes abandons and alters the species of ascent and descent. Therefore, it seems to me that they ought to be judged according to the present final and the regular system, and, when they will extend to greater perfection, they ought to be attributed to those. But I consider an irregular system of this kind to be more necessary for measured songs than for unmeasured ones.

Concerning the beginning, middle, and end of the psalm tones. Chapter 33.

The beginning of the first psalm tone will be on low F fa ut grave. The middle will be on A la mi re acute. The final will be according to the saeculum.

The beginning of the second psalm tone will be on C fa ut. The middle will be on F fa ut grave. The final will be on D [sol re] grave.

1 2 PRimi toni principium in F fa ut gravi erit. Medium in A la mi re acuto. Finis secundum saeculorum. 179


The beginning of the third psalm tone will be on G sol re ut acute. The middle will be on C sol fa ut. The final will be on A la mi re acute as it is in the saeculorum.

The beginning of the fourth psalm tone will be on A la mi re acute. The middle will be on the same A la mi re. The final will be as it is in the saeculorum.

The beginning of the fifth psalm tone will be on F fa ut grave. The middle will be on C sol fa ut. The final will be as it is in the saeculorum.

The beginning of the sixth psalm tone will be on F fa ut grave. The middle will be on A la mi re acute. The final will be as is the beginning because the first and the sixth psalm tone have a similar beginning. But it has its final as it is in the saeculorum.

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183 A, E, W: in Fa ut gravi.
185 A, E, W: priwus (fourth letter an upside-down ‘m’). TML: primus.
186 A, E, W: seculorum.
20 21 Septimi principium in C sol fa ut. Medium in A la mi re acuto. Finis / ut est in saeculorum. 187

The beginning of the seventh psalm tone will be on C sol fa ut. The middle will be on A la mi re acute. The final will be as it is in the saeculorum.

23 24 Octavi principium in G sol re ut acuto. Medium in C sol fa ut. Finis / ut est in saeculorum. 188

The beginning of the eighth psalm tone will be on G sol re ut acute. The middle will be on C sol fa ut. The final will be as it is in the saeculorum.

DE PRINCIPiis tonorum et saeculorum 189 differentiis. Caput xxxiii.

Concerning the beginnings of the modes and the differences of the saeculorum. Chapter 34.

1 Primi quidem toni principia / quemadmodum in libris ecclesiasticis apparet / sex sunt in locis scilicet in C.FA.UT.

The beginnings of the first mode, as is evident in ecclesiastical books, are on six places, namely on C fa ut, D sol re, E la mi, F fa ut, G sol re ut, and A la mi re. On C fa ut, an example is found in the antiphon Gloriosae virginis. On D sol re, an example is found in the antiphon Cum autem sero. On E la mi, an example exists in Congregate sunt gentes. On F fa ut, an example appears in Iterum videbo vos. On G sol re ut, an example appears in Cum appropinquaret Dominus. On

2 D sol re.E la mi.F fa ut.G sol re ut.A la mi re. In C fa ut.exemplum in antiphona Gloriosae virginis extat / In D sol re / in antiphona / Cum autem sero. In E la mi / est in

3 Congregate sunt gentes. In F fa ut apparat in Iterum videbo vos. In G.SOL.RE.UT. in Cum appropinquaret dominus. In A la mi re est / Exi cito in plateas / quae quidem principia non

4

5

6

A la mi re, an example is Exi cito in plateas. These beginnings do not have the same saeculum. Nevertheless, I would not deny that beginnings often are found which require the same saeculum, but not always, as we said above, as you will be able to see easily in the antiphoner. But I see that the opinions of authorities and composers are varied concerning the beginnings and concerning the saeculum in the before-mentioned modes, but, as experience reveals and as is evident in the Gregorian antiphoners, the first mode has eleven differences of the saeculum. The second mode has five beginnings but saeculum doubled in amount, and it has beginnings on A re, C fa ut, D sol re, E la mi, and F fa ut. On A re, as in the responsory Si bona suscepsimus. On C fa ut, as in the antiphon Similabo eum. On D sol re, as there, in Vado ad patrem. On E la mi, as in Domine deus rex omnipotens. On F...
fa ut, as in *Credimus Christum*. But now, we will reveal step by step the whole system and the quantity of the other modes.

The third mode has three beginnings, namely E la mi, G sol re ut, and C sol fa ut. On E la mi, an example is the antiphon *Dum complerentur dies*. On G sol re ut, an example is *Salva nos Domine*. On C sol fa ut, an example is *Domine mi rex*.

From this mode, four differences of the *saeculum* arise.

The fourth mode has five beginnings, namely C fa ut, D sol re, E la mi, F fa ut, and G sol re ut. On C fa ut, an example is in the antiphon *Tulit ergo*. On D sol re, an example is *Innuebant patri eius*. On E la mi, an example is *Prudentes virgines*. On F fa ut, an example is *In ferventis olei*. Lastly, on G sol re ut, an example is *Stetit angelus* in the monastic book. Now, this mode has four differences of the *saeculum*.

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17 The third mode has three beginnings, namely E la mi, G sol re ut, and C sol fa ut. On E la mi, an example is the antiphon *Dum complerentur dies*. On G sol re ut, an example is *Salva nos Domine*. On C sol fa ut, an example is *Domine mi rex*.

18 From this mode, four differences of the *saeculum* arise.

19 The fourth mode has five beginnings, namely C fa ut, D sol re, E la mi, F fa ut, and G sol re ut. On C fa ut, an example is in the antiphon *Tulit ergo*. On D sol re, an example is *Innuebant patri eius*. On E la mi, an example is *Prudentes virgines*. On F fa ut, an example is *In ferventis olei*. Lastly, on G sol re ut, an example is *Stetit angelus* in the monastic book. Now, this mode has four differences of the *saeculum*.

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199 A, E, W: *tonno*.
200 A, E, W: *seculum*.
201 A, E, W: *E fa ut*.
202 A, E, W: *omittit punctum*.
203 A, E, W: *in*.
204 A, E, W: *omittit punctum*.
205 A, E, W: *seculum*. 
Quintus habet principia duo / scilicet F fa ut / et C sol fa ut. In F fa ut exemplo est antiphona Sicut novit me pater. In C sol fa ut: Ego sum vitis vera / ubi una tantum in gregoriano antiphonario differentia saeculorum⁴⁶ est ostenditur. Una item in monastico.

Sextus duo quoque habet principia scilicet F fa ut / et C sol fa ut. In F fa ut exemplum est antiphona Gaudent in coelis. In C sol fa ut in responso Decantabat populus Israel. Ex quoquidem tono una tantum saeculorum⁴⁷ differentia gignitur.


The fifth mode has two beginnings, namely F fa ut and C sol fa ut. On F fa ut, there is, for the purpose of an example, the antiphon Sicut novit me pater. On C sol fa ut, an example is Ego sum vitis vera. In this situation, only one difference of the saeculum is shown in the Gregorian antiphoner. Similarly only one is shown in the monastic antiphoner.

The sixth mode also has two beginnings, namely F fa ut and C sol fa ut. On F fa ut, an example is the antiphon Gaudent in coelis. On C sol fa ut, an example is in the responsory Decantabat populus Israel. Only one difference of the saeculum is produced from this mode.

The seventh mode has five beginnings, namely G sol re ut, A la mi re, b fa ἑ mi, C sol fa ut, and D la sol re. On G sol re ut, an example is in the antiphon Prae timore autem. On A la mi re, an example is Argentum et aurum non est mihi. On b fa ἑ mi, an example is Tulerunt Dominum meum. On C sol fa ut,

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⁴⁸ A, E, W: omittit punctum.
re veni sponsa christi / ubi quattuor sunt saeculorum differentiae.

Lastly, in accordance with the progression of the neumes, the eighth mode has five beginnings, namely D sol re, F fa ut, G sol re ut, A la mi re, and C sol fa ut. On D sol re, an example is Veni sponsa Christi. In this situation, there are four differences of the saeculorum. An example is *Mulier cum parit.* On D la sol re, an example is *Veni sponsa Christi.* In this situation, there are four differences of the saeculorum.


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209 A, E, W: *seculum.*
210 A, E, W: *omittit punctum.*
211 A, E, W: *saeculum.*
imperfecti debet ratione ascensus iudicari / quam tamen propter vim neumarum octavi esse dicimus.

Laurentius, which ascends to the seventh syllable and is nevertheless of the eighth mode. And such an antiphon, according to the precepts of the modes, ought to be of the seventh mode but ought to be judged to be of the imperfect seventh mode by reason of ascent; nevertheless, we say that it is of the eighth mode on account of the power of the neumes.

QUID SIT MENTIO saeculorum⁰¹² / saepius facta. Caput.xxxv.

Why mention of the *saeculorum* was made rather often. Chapter 35.

But because anyone would be able to be uncertain why we made mention of the *saeculorum* so often, we said that the end of the psalm tones ought to be sung to the song of this word. It ought to be known that the vowels which this word, *saeculorum amen*, contains are EUOUAE, according to the pattern of the vowels. That is, the end of any psalm is sung according to the notes that you will have seen above the said vowels, and we said that the psalm tones themselves ought to

1 Verum²¹³ quia dubitare quis possit / cur saeculorum²¹⁴ toties mentionem fecerimus / ad cuius dictionis cantum finem tonorum cani debere diximus / Sciemus / est esse quidem vocales / quas haec dictio EVOVAE continet / ad quorum vocalium rationem Saeculorum²¹⁵ Amen: hoc est finis cuiuslibet psalmi canitur secundum notas / quas supra dictas vocales videris / et secundum quas tonos ipsos finiri debere
diximus. Hoc autem in psalmis omnibus servandum est /

²¹⁵ A, E, W: Seculorum.
quorum ne toni in principio / medio ac fine varientur modos

omnes quibus illos oporteat cani tradidimus.\textsuperscript{216} Aliud quoque
monendum hoc loco putamus / debere illos / qui in chorus
officium praecinendⅠ antiphonas habent / bene cautos esse /
ut nec altius / nec demissius illas quam oporteat inchoent / et

reliquo se canentium choro accommodent.\textsuperscript{217} praeterea\textsuperscript{218}
cum iam cantato psalmo saeculorum\textsuperscript{219} amen dictum fuerit
non eadem voce / quae saeculorum\textsuperscript{220} cantatum sit /
antiphonam resumant / Nam plerumque\textsuperscript{221} in choris minus
cauti sunt qui tale officium gerunt / ex quo quidem magna
dissonantia oritur / Neque enim pro arbitrio resumenda est
antiphona. Ergo licet saeculorum\textsuperscript{222} aut in re: aut in aliam
quamlibet notam desierit / antiphona vero a Fa aut ab alia
qualibet nota incipiet / oportetbit quidem ipsum Fa | vel
quaecunque sit alia nota non eodem sono inchoari. / quo illud

re vel quaelibet alia saeculorum\textsuperscript{223} nota desierit. Sed prout

ipsius antiphonae tibi principium indicabit. Ad tollendum

be ended according to these notes. Now, this ought to be
observed in all psalms. In order that the psalm tones of these
may not be varied in beginning, middle, and end, we related
all the means by which it is proper for those to be sung. We
think that another thing also ought to be advised in this place,
that those who have the duty in choruses of singing antiphons
ought to be thoroughly cautious that they begin them neither
higher nor lower than is proper and that they accommodate
themselves to the remaining chorus of singers. Moreover,
when the saeculorum amen will have been sung, with the
psalm having already been sung, they ought to be thoroughly
cautious that they resume the antiphon not with the same
syllable with which the saeculorum was sung, for those who
perform such a duty in choruses generally are not very
cautious, as a result of which a great dissonance arises, for
the antiphon ought not to be resumed according to desire.

Therefore, although the saeculorum will have ended either on

\textsuperscript{216} A, E, W: tradidimus. TML: tradidimis.
\textsuperscript{217} A, E, W: accommodent.
\textsuperscript{218} TML: praeterea.
\textsuperscript{219} A, E, W: seculorum.
\textsuperscript{220} A, E, W: seculorum.
\textsuperscript{221} TML: plerumque.
\textsuperscript{222} A, E, W: seculorum.
\textsuperscript{223} A, E, W: seculorum.
autem omnem errorem / differentias omnes saeculorum\textsuperscript{224} / quae tonis subiciuntur exposuimus omissa multorum opinione / qui non satis prudenter aiunt / cum tale fuerit Antiphonae principium / ut in antiphona Traditor autem / et Muro tuo / opus esse / ut saeculorum\textsuperscript{225} habeat semper hoc modo scilicet in la la incipiendi in A la mi re acute descendinge sol fa / post ascendendo sol la / et in sol G sol re ut acuti desinendo. Hae quidem notae simul omnes dicentur.\textsuperscript{226} La.la sol.fa.sol.la.sol. Quare sic quidem in magnum errorem labuntur / Nam quomodo fieri potest / quod asserunt / cum in nulla unquam modulatione principia antiphonarum sint paria saeculorum\textsuperscript{227} Quamobrem nullo pacto illis assentiendum ducimus. Verum de cantu plano hactenus.

re or on any other syllable but the antiphon will begin from fa or from any other note, it will be necessary that fa itself, or whatever the other note may be, not start with the same sound with which that re or any other note of the saeculorum will have ended. But rather just as the beginning of the antiphon itself will indicate to you. But, for the purpose of eliminating every error, we have set forth all the differences of the saeculorum which are supplied to the psalm tones, with the opinion of many having been omitted who say, not learnedly enough, that when there will have been a beginning of an antiphon as in the antiphon Traditor autem and in the antiphon Muro tuo, it is necessary that it always have a saeculum in this way, namely by beginning on la la on A la mi re acute, by descending sol fa, after that by ascending sol la, and by ending on sol of G sol re ut acute. Together, all these notes will be said la la sol fa sol la sol. Therefore, they fall into a great error in this way, for how is what they maintain able to occur when the beginnings of antiphons are equal to the saeculorum in no song at all? For this reason, we

\textsuperscript{224} A, E, W: seculorum.
\textsuperscript{225} A, E, W: seculorum.
\textsuperscript{226} A, E, W: dicent.
\textsuperscript{227} A, E, W: seculorum.
Petrus Aaron Florentinus ad Lectorem.  

1 Quaedam lector humanissime in nostris institutionibus obscuriora quibusdam videbantur: quaedam vero incuria correctoris cui impressoris errores corrigendos tradidi.  

2 Quare ut gratiores: et emendatiores illae in manus hominum deinceps venirent: servato per libros: et capita ordine suo in luce dedimus obscurioribus: et depravata pristinae sinceritati restituimus.

believe that by no means should anyone agree with them. But so much about plainsong.

Petrus Aaron of Florence to the reader.

Certain things in our principles, most polite reader, seemed more obscure to certain people, but certain things seemed more obscure because of the carelessness of the corrector, to whom I entrusted correcting the errors of the printer. Therefore, in order that those more pleasing and more correct principles might come into the hands of men one after another, with their own order having been preserved by means of books and chapters, we have brought the more obscure things into light, and we have restored the corrupted things to their former integrity.

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9 The list of corrections is not foliated. The folio numbers given here are editorial, for ease in comparison to the original.  
228 E: Corrections not present.  
229 TML: in curia.  
230 A: erores.  
231 A: syncaeritati.

So then, in the first book, in the thirtieth chapter, where we said “because the diapason, diapente, and diatessaron are the component parts of the before-mentioned modes,” we desire that it be understood in this way, “because the diapente and diatessaron are parts of the previously-mentioned modes and of the diapason.”

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232 TML: tricesimo.
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Appendix A: Extant Copies of Pietro Aaron’s *Libri tres de institutione harmonica*

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(Source: *Repertoire international des sources musicque* [RISM], ser. B, vol. 6, pt. 1, p. 97)

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D: B Berlin, Staatsbibliothek PrK. Musikabteilung (formerly in Marburg und Tübingen)
D: Rp Regensburg, Proskesche Musikbibliothek
F: Pn Paris, Bibliothèque nationale (2 copies)
GB: Lbm London, British Museum (2 copies)
I: Bc Bologna, Biblioteca del Conservatorio (Liceo Musicale; now Civico Museo Bibliografico Musicale)
I: Bu Bologna, Biblioteca universitaria
I: BGe Bergamo, Biblioteca civica
I: Fc Firenze, Biblioteca del Conservatorio
I: Fm Firenze, Biblioteca Marucelliana
I: Mb Milano, Biblioteca nazionale di Brera
I: MOe Modena, Biblioteca Estense
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