

GAFFURIUS'S *PRACTICA MUSICAE*: ORIGIN AND CONTENTS*

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Recent studies of the life and works of Franchinus Gaffurius state that his *Practica Musicae*, consisting of four books, was written at Monticelli and Bergamo between 1481 and 1483, although the work was not published until 1496¹. There are two principal reasons for this belief, one of which is the fact that Gaffurius's biographer, Panteleone Meleguli, informs us that Gaffurius began the *Practica* at Monticelli². The other is based on a manuscript of the *Practica*, dated 1487, which was apparently a copy of an autograph manuscript of the *Practica* left at the Basilica of Santa Maria Maggiore in Bergamo³. Gaffurius was chapel master at this church during 1483, but the following year he assumed the same position at the Cathedral in Milan. The 1487 manuscript copy of his *Practica* is the only handwritten copy that is still extant⁴.

Examination of the manuscript supports Meleguli's statement concerning the inception of *Practica Musicae*⁵, but it does not uphold the modern view that it was completed in 1483. In fact, it indicates quite clearly that some of the *Practica* was written at Milan, and that the four books of the printed edition did not originally form a single treatise but were only later to assume this form.

The manuscript copy of 1487 was made by a Carmelite friar, Alexander Assolari. On fol. 106r he wrote: *Hoc opusculum scriptum et notatum fuit per Fratrem Alexandrum de Assolariis . . . in conventu nostro bergami . . . 1487*. The manuscript begins with Book I of *Practica Musicae*, which ends in this way on fol. 20r: *Franchini Gaphori laudensis musices*

* Editor's note: A translation (and transcription) of the *Practica Musicae* by Dr. Miller is in press as *Musicological Studies and Documents* 20.

¹ Luigi Cremascoli, "Note Storiche sulla Vita di F. Gaffurio", in *Franchino Gaffurio* (Lodi, 1951), 89; Claudio Sartori, "Gaffurius", in *MGG* IV, 1237; *Franchino Gaffuri Theorica Musicae*, ed. by Gaetano Cesari (Rome, 1934), 25.

² Meleguli's biographical sketch, which was probably inspired by Gaffurius, appears at the end of his *De harmonia musicorum instrumentorum opus*, published in 1518 at Milan.

³ Cremascoli, *op. cit.*, 69.

⁴ *Ibid.* It is in the Biblioteca Civica di Bergamo, whose director kindly sent me a microfilm of the manuscript.

⁵ Meleguli was careful to say that at Monticelli Gaffurius *practicam scribere occepit*.

professoris liber primus musices practicabilis explicit foeliciter. Immediately following on the same folio is a discussion of the division of a monochord which does not appear in the *Practica*. The remainder of the manuscript ⁶, which is completed on fol. 108, includes a treatise by Frater Alexander and *Libellus Cantus Mensurabilis* by Johannes de Muris, but it does not contain any more text or music of the *Practica*.

Not only are Books II, III, and IV of *Practica Musicae* missing from this manuscript, but a comparison of its version of Book I with the printed edition of 1496 reveals significant differences. Although both have similar content and follow the same arrangement of chapters, the textual style of the manuscript version recalls a typical late medieval treatise, while the printed edition reflects the humanistic qualities which Gaffurius later cultivated so assiduously at Milan. In the manuscript, authoritative writers cited include Boethius, Marchettus of Padua, Guido d'Arezzo, and Isidore of Seville. The latter is missing in the printed edition, but a host of new names appear, both ancient and modern. The citation in the printed Book I of Baccheus, Martianus Capella, Anselmi, Petrus Apponensis, and Bryennius, indicates the author's broadening interests and his desire to study musical sources of all periods.

The manuscript copy also shows a relationship to Gaffurius's early life and works. In a discussion of intervals (fol. 2v), it mentions their treatment *in vulgari micrologo cantus plani ad paulum grecum sacerdotem laudensem virum siquidem moribus et litteris ornatissimum*. Although a treatise by Gaffurius with this title is not mentioned by Cremascoli ⁷ in his list of works by that writer, it is found in a catalog of the musical library of Padre Martini under the heading: *Micrologus vulgaris cantus plani F. Gaffori lauden* ⁸. The work was dedicated to Paolo de Greci, a priest and member of a noble Lodi family. Since Gaffurius also dedicated (c. 1474) a manuscript to him entitled *Tractatus Brevis Cantus Plani* ⁹, it is most likely that these manuscripts are the same. Neither Paolo de Greci nor the manuscripts are mentioned in the printed edition of 1496.

The most significant difference between the versions, however, and one which makes Book I of the printed edition truly valuable, is Gaffurius's treatment of the relationship and interpenetration of the Gregorian and Ambrosian liturgies. None of the textual and musical material relevant to the Ambrosian rite (which will be discussed later), is found in the manu-

⁶ The contents of the entire manuscript will be the subject of a separate study. Unfortunately the opening folio and several others are missing.

⁷ *Op. cit.*, 134.

⁸ *Catalogo della Biblioteca Musicale G. B. Martini di Bologna*, ed. by G. Gaspari (reprint Bologna, 1961), I, 215.

⁹ Cremascoli, *op. cit.*, 55.

script copy. This is to be expected, since Gaffurius did not become *magister phonascus* at the Milan Cathedral until 1484. The difference resulting from the absence of this material in the manuscript, combined with the other changes in content and the absence of Books II, III, and IV, justify the statement that the manuscript copy of 1487 is only a prototype of Book I of the printed edition, and that Gaffurius made extensive changes and additions in Book I after coming to Milan.

Cesari¹⁰ points out that in *Theoricum opus*, published in 1480, the *Practica* was already mentioned in several places. This agrees with Meleguli's statement regarding the inception of the work, since Gaffurius was at Monticelli between 1480 and 1483¹¹. Three citations in *Theoricum* relate to the *Practica* or at least to practical music. In Book V, ch. 6, after treating hexachords and mutation, Gaffurius states that many things have not been included since they will be treated in greater detail in other books on the practise of musical discipline¹². In Book V, ch. 8, on modes, he also speaks of other books which will be called *practice musice*¹³. Later on in the same chapter, still discussing modes, he again mentions a treatise that will be called *practice*¹⁴.

These comments have two points in common: they relate to musical material found only in Book I; they use the future tense only, and do not specify where the material will be found. In contrast to this are analogous places in the enlarged edition of *Theoricum*, the *Theorica Musicae* of 1492. In Book V, ch. 7 of this latter work, in a treatment of musical fundamentals, Gaffurius remarks that these elements have been given more detailed treatment in Book I of *Practica*, which deals with *cantus planus*¹⁵. And in ch. 8 he ends the *Theorica* by stating that the melodic formulas of the modes have been described more fully in Book I of his *Practica*¹⁶. The lack of precision in references to practical music in the *Theoricum* of 1480 has been supplanted by definite statements in the *Theorica* of 1492. Their comparison tends to support the theory that *Practica Musicae* was not originally an entity of four books, but that it developed from individual treatises.

The material on mensural notation which became Book II of *Practica* was probably begun about the same time as Book I, although lack of a manuscript copy such as exists for Book I makes this supposition rather

¹⁰ *Op. cit.*, 25.

¹¹ Cremascoli, *op. cit.*, 133.

¹² ... in aliis voluminibus de musice discipline pratica prolixius tractari contingent.

¹³ ... in aliis voluminibus que practice musice ascribentur.

¹⁴ ... qui practice ascribetur.

¹⁵ Ac de his multa in primo practice qui cantibus planis ascriptus est: diffusius aperta sunt.

¹⁶ ... latius horum progressionem et formulas in primo practicae disposuimus.

conjectural. It is known, however, that a prototype for Book II existed many years before the 1496 imprint. In 1492 a *Tractato vulgare del canto figurato* by Francesco Caza was published in Milan. This treatise was written under Gaffurius's direction by his pupil Caza, and is actually a vernacular condensation of Book II of *Practica*¹⁷. Gaffurius wrote the letter of dedication (in Latin, of course), remarking that the treatise came from a compendium of mensural notation he had written years before¹⁸. Caza was more explicit and stated that he had followed the teaching and order of the second part of his teacher's work on practical music.

A comparison of Book II of *Practica* and Caza's *Tractato vulgare* reveals the accuracy of the latter's comments. The 15 chapters of *Practica* become 13 in the *Tractato*; otherwise chapter headings of both works are nearly identical. Textual material in the *Tractato* is similar to Book II of *Practica* but is shortened, and the *Tractato* does not contain any of the polyphonic examples in which Book II of *Practica* abounds. It is clear from Gaffurius's statement that a prototype for Book II of *Musicae* existed many years before the printed edition. There seems to be more likelihood, however, that it originated as an independent treatise rather than as Book II of *Practica*. Gaffurius called it a compendium, and Caza relates it to *Practica Musicae*. But the latter was writing in 1492, at a time when the final form of *Practica Musicae* must have been very similar to its imprint in 1496.

Although a manuscript of Book III on counterpoint does not appear to exist, Book IV on proportions was originally written by Gaffurius as an independent treatise. Between 1481 and 1483 he wrote *Proportioni praticabili* and dedicated it to the patrician Corradolo Stanga of Cremona¹⁹. In the dedicatory letter to Stanga he states that he decided to treat the problem of proportions, a subject which nearly all highly skilled musicians left untouched²⁰. He hoped that their less lucid *dicta* would be made clearer through his more expeditious and thorough study, which he illustrated with musical examples of his own compositions²¹. No reference is made to *Proportioni praticabili* as being a part of another work, although it later became Book IV of *Practica*, but Gaffurius expressed the hope that it would

¹⁷ Francesco Caza: *Tractato vulgare del canto figurato*, fasc. ed. and trans. by J. Wolf, Berlin, 1922. Cremascoli, *op. cit.*, 134, says that *Tractato vulgare* is composed "di due capitoli del *Practica Musicae*", an error which is repeated in Sartori, *MGG*, IV, col. 1240.

¹⁸ ... *mensurabilium figurarum compendium a me ex actis annis latine editum*.

¹⁹ The manuscript is in the Biblioteca del Liceo Musicale of Bologna. Cremascoli, *op. cit.*, 134.

²⁰ ... *proportionatum difficultatem (id quod fere omnes artis musicae peritissimi intemptatum relinquerunt) ingenioli mei viribus attemptare*.

²¹ ... *ut minus lucide eorum dicta aptius explorata longeque expeditiora domesticis quibusdam exemplis lucubratione mea facilius redderentur*.

be readily helpful to perceptive youths, and would not be considered a useless display of his ingenuity²².

From the evidence shown it appears that the printed version of *Practica Musicae* differed considerably from its original state. Instead of being a homogeneous work representing varied aspects of practical music, it appears to have been a collection of treatises which eventually formed a single unit. It is known that the *Practica Musicae* manuscript was begun c. 1481 and *Proportioni practicabili* was written between 1481 and 1483. The latter became Book IV of the 1496 edition of *Practica*, while the *Practica* manuscript underwent much revision before assuming its final form as Book I of the printed edition. Much of this change in the manuscript could only have taken place after Gaffurius had established himself in Milan. Although the date of inception of Books II and III is not known, the Italian condensation of Book II, printed in 1492, indicates that a Latin prototype existed some years before. Since Gaffurius referred to this Latin version only as a compendium of mensural notation, it is doubtful that he had originally conceived it as a part of *Practica Musicae*.

Practica Musicae has been called part of a *Trilogia Gaffuriana*, the other two parts being *Theorica Musicae* (1492), and *De Harmonia Musicorum Instrumentorum Opus* (1518)²³. Taken together the three works constitute „a complete theoretical and practical course in composition”²⁴. Gaffurius must have considered these three printed treatises in this way. As a frontispiece of his *Angelicum ac divinum opus* (1508) and *De Harmonia*, a woodcut represents Gaffurius teaching in the cathedral. The border of the woodcut bears a short text linking the three treatises. In addition, the treatises frequently refer to each other. For example, in *Practica* Gaffurius often mentions *Theorica Musicae*, and in one place tells the reader that if he should become fatigued in reading his book on theory, then the *Practica*, like acidulous food, will refresh and restore his digestion²⁵. And the other member of the *Trilogia*, *De Harmonia*, is cited more frequently in *Practica* than any other single entry.

The 1496 edition of *Practica* reflects to a considerable degree the impact of humanistic thought on Gaffurius. During his thirty-eight years of activity in Milan he developed a fine library of literary and musical works. He was not only concerned with the content of books but was also a true bibliophile who derived aesthetic satisfaction from beauty of design and

²² ... quod et docili iuventuti facile conducatur, et ingenio meo non inutile videatur.

²³ Luigi Salamina, "La Trilogia Gaffuriana", in *Franchino Gaffurio* (Lodi, 1951), 137.

²⁴ *Ibid.*

²⁵ Book IV, ch. 15.

format ²⁶. His well known remark in *De Harmonia* (1518) that he had Greek musical treatises translated into Latin is also applicable to the *Practica* of 1496. In 1494 Francesco Burana of Verona had translated for him several Greek musical works ²⁷ which he used in the *Practica*.

Gaffurius was not the kind of humanist who appreciated only ancient culture and who scorned medieval concepts. He displayed a remarkable catholicity of taste and discernment in his studies, and this quality is reflected in the writers he cited in *Practica*. The following list of authors and references to their works which are contained in his *Practica* indicate his wide acquaintance with writings of ancient, early Christian, medieval, and Renaissance authors.

Leone Battista Alberti	<i>De Re Aedificatore</i>
Giorgio Anselmi	<i>Musica</i> (1434)
Aristides Quintilianus	<i>De Musica</i> (trans. for Gaffurius by Francesco Burana, 1494)
Aristotle	<i>Categories; Posterior Analytics; Problems</i> (trans. by Petrus Apponensis)
St. Augustine	<i>De Musica</i>
Ausonius	<i>Griphus ternarii</i>
Bacchius	<i>Introductorio Artis Musicae</i> (compendium, trans. c. 1474)
Venerable Bede	<i>De Arte Metrica</i>
Boethius	<i>De Musica</i>
<i>Brevis musice tractatus</i>	(anon. Greek treatise trans. for Gaffurius by Francesco Burana, 1494)
Manuel Bryennius	<i>Harmonica</i> (trans. c. 1494)
Martianus Capella	<i>De Musica</i>
Cicero	<i>Tusculan Disputations</i>
Diomedes	<i>De Arte Grammatica</i>
Euclid	<i>Elements</i> (trans. by Johannes Campanus)
Franco	<i>Ars Cantus Mensurabilis</i>
Gaffurius	<i>De Harmonia Musicorum Instrumentorum Opus; Theorica</i>
St. Gregory	<i>Moralia</i>
Guido d'Arezzo	<i>De Ignoto Cantu; Micrologus; Regulae Rhythmicarum</i>
Johannes de Muris	<i>Libellus cantus mensurabilis; Musica Practica</i> (from <i>Ars novae musicae</i>)
Marchettus of Padua	<i>Lucidarium</i>
Giovanni Marliani	<i>De Algebra</i>
Persius	<i>Satires</i>
Plato	<i>Laws; Timaeus</i>
Pliny	<i>Natural History</i>
Prosdocimus de Beldemandis	<i>Tractatus Practice de Musica Mensurabili ad modum Italicorum</i>

²⁶ Cremascoli, *op. cit.*, 115.

²⁷ Alberto Gallo, "Le traduzioni dal Greco per Franchino Gaffurio", in *Acta Musicologica*, vol. 35 (1963), 173.

Quintilian
Tinctoris

Institutio Oratoria
Expositio manus; Proportionale Musices;
Tractatus de notis et pausis
Aeneid; Ecologues

Vergil

In considering the above list it is important to understand its relationship to the text of Gaffurius's tome. He does not appear to wish to include an imposing array of names merely to dazzle the reader with his erudition, but he uses them in connection with his avowed purpose in writing *Practica Musicae*. In its preface he tells us that the book was written not only for the advancement of the studious but also to present in a single work an orderly compilation of material assembled from the writings of various authors. Thus in each of the four books he uses a historical approach in dealing with the subject matter, and introduces the writers of the preceding list as they are relevant to the subject under discussion. In following this method he sometimes presents material which is unique among theory books of his time, as for example, the Greek rhythmical signs taken from an anonymous treatise, and the unusual note shapes from Anselmi's treatise, both of which are found in Book II of *Practica*. Since the majority of the authors named above were quoted by Gaffurius in relation to specific subjects, references to them will be made in the following discussion of each book of *Practica Musicae*.

Book I consists of 15 chapters, the first 7 of which are devoted to elements of music, and the succeeding 8 to the 8 Tones, a term Gaffurius uses much more frequently than "modes". Both parts of Book I are profusely illustrated with plainsong examples.

Although Gaffurius's presentation of this material is basically conventional, his comments about two related aspects have particular significance. These concern the performance of plainsong, especially in relation to rhythm, and the music for the Ambrosian liturgy as practised in Milan.

It is apparent that Gaffurius was well aware of the conflicting performance practises of plainsong in his day, and also of the opposing statements made concerning it by various music theorists. Tinctoris, for example, in discussing notes of indefinite value, cites the opening phrase of two plainsong Introits, *Gaudeamus omnes* and *Salve sancte parens*, saying that "such notes are sometime measured, sometimes unmeasured, sometimes in perfect mensuration, sometimes in imperfect mensuration, according to the rite of churches and the wishes of singers"²⁸. In his *Diffinitorium* he states that

²⁸ *Et hujusmodi notae nunc cum mensura, nunc sine mensura, nunc sub una quantitate perfecta, nunc sub alia imperfecta canuntur secundum ritum ecclesiarum aut voluntatem canentium*, in his *Tractatus de notis et pausis*, Coussemaker, *Scriptorum de Musica Medii Aevi*, IV, 45.

cantus simplex planus "is composed of notes of indefinite value, as in Gregorian chant" ²⁹. In a similar comment on plainsong rhythm the Dutch humanist Erasmus of Rotterdam remarks that in cases where notes of unequal duration occur in chant it is done arbitrarily and not according to the length of the syllables in a text. He advocated the latter practice for the performance of Ambrosian hymns, stating that in his opinion they were undoubtedly sung metrically in Ambrose's time ³⁰.

On the other hand, among the many theorists who believed that all plainsong should observe an even rhythm, Gaffurius was one of the most prominent. In addition to stating that chant should be sung in notes of equal value ³¹, he illustrates the principle in both polyphonic and monophonic examples. The polyphonic compositions ³² are two-voices pieces in which a plainsong tenor is written in various combinations of *puncta* and *virgae*, and an upper voice demonstrates either *contrapunctus planus* or *fractus*. In both types, plain and florid, each note of the plainsong tenor is equal to a semibreve value in the upper part.

In showing examples of simple and compound neumes Gaffurius discusses diamond-shaped neumes, or *puncta inclinata*, which he calls middle notes ³³. These are illustrated by a *climacus* consisting of a *virga* and three descending *puncta inclinata*. Such middle notes should be sung in the same way and at the same rate of speed as other notes, although he acknowledges that some singers make them twice as fast, a practice which, however, is the arbitrary decision of a singer and done without good reason. He further observes that certain countries, especially France, use such mensural values as longs, breves, and semibreves to write and sing the *Symbolum cardineum* (Credo IV), as well as some prosas and hymns ³⁴. It is significant that in 1558 Zarlino makes very similar statements when he writes that "to each square figure is adapted a syllable of its own, excepting for the middle notes, which are sometimes treated like minims or even semiminims, as may be seen in many chants, especially in the chant for the Nicene Creed, 'Credo'

²⁹ *Notis incerti valoris simpliciter constitutis, cuius modi est gregorianus*, in Coussemaker, *op. cit.*, IV, 179.

³⁰ Clement A. Miller, "Erasmus on Music", *The Musical Quarterly*, LII (1966), 335.

³¹ *Practica Musicae*, II, 2.

³² Exx. 30-33 in my edition.

³³ It is significant that he discusses these notes, for they are a characteristic mark of Ambrosian plainsong notation. Cf. P. Raphael Molitor, *Die Nach-Tridentinische Choral-Reform zu Rom* (Leipzig, 1901), 101.

³⁴ In *De moderatione et concordia grammaticae et musicae*, Paris, 1490, Jean Le Munerat writes disapprovingly of a choir that introduced a small note-value of polyphony into uniformly moving chant. See Mother Thomas More, "The Performance of Plainsong in the Later Middle Ages and the Sixteenth Century", *Proceedings of the Royal Musical Association*, 1965/66, 129.

in unum Deum', which they call the Credo cardinale" ³⁵. The music of this Creed dates from the fifteenth century and received its name because it was used on more important feast days ³⁶.

It is also apparent that Gaffurius considered the rhythmic alterations made in some plainsongs to be the fault of singers and to have no historical validity. His own experience as a singer in the cathedral of Lodi and later for thirty-eight years as *magister phonascus* at the Milan Cathedral ³⁷ must have given him ample opportunity for first-hand experience in this regard. He comments that many singers want to control the manner of enunciation as well as the rhythm of chant ³⁸, and reluctantly repeats Guido's well known dictum that "of all men in our own time singers are the most fatuous" ³⁹. On the other hand, although not approving changes in rhythm, he allows a variation in tempi, for he says that ferial and lesser psalm-tones are sung faster, but solemn Tones move more slowly ⁴⁰.

Chapters 8-15 of Book I, devoted to a study of the eight Tones, contain plainsong examples of each Tone. Examination of these melodies shows that Gaffurius had a definite method of presentation in mind, and in fact has combined elements of the Ambrosian and Gregorian rites, a procedure which undoubtedly reflects the performance practices current during his tenure at the Milan cathedral.

The beginning, ambitus, and final of each Tone is shown by means of an Ambrosian antiphon, a Gregorian psalm-tone ⁴¹ with several *E u o u a e*, and Gregorian melodies for *Gloria patri et filio et spiritui sancto*. The latter are derived from the fixed melodies of verses belonging to Responsories sung at Matins ⁴². The antiphons, which are the typical short chants associated with office psalmody, have the following texts:

Tone 1: *Alme pater Ambrosi, nostras preces audi, Christe exaudi nos.*

Tone 2: *In Honorem apostolarum fabricavit Bassianus Domino templum novum.*

Tone 3: *Baptizat Augustinum sacerdos Ambrosius ambo statim modulantur, te Deum laudamus.*

Tone 4: *Marcelinus sacerdos et Petrus exercista martires Christi intercedant pro nobis.*

³⁵ Oliver Strunk, *Source Readings in Music History*, (New York, 1950), 260.

³⁶ The article "Credo" in *MGG*, II, col. 1770.

³⁷ Cremascoli, *op. cit.*, 73.

³⁸ I, 2.

³⁹ III, 15.

⁴⁰ I, 15.

⁴¹ Gaffurius's psalm-tones are very similar to those found in LU 113-117.

⁴² The same *Gloria Patri* text and melodies for the eight Tones are contained in AM 1228-1230. See also W. Apel, *Gregorian Chant* (London, 1958), p. 236, wherein there are several Responsory verses of Tone I which are the basis for the *Gloria Patri* of Tone I in *Practica Musicae*.

Tone 5: *Precibus et meritis beati Blasii martiris defende nos Deus ab omni malo guturis.*

Tone 6: *Sancte Herasme, martir inclite, funde preces ad Dominum nostra pro salute.*

Tone 7: *Protasium et Gervasium eadem fides et passio vere fecit esse germanos.*

(Tonus peregrinus) *Nos qui vivimus benedicimus Dominum.*

Tone 8: *O virgo virginum Maria, stella maris, succurre nobis miseris.*

It is evident that Gaffurius chose the antiphons with considerable care. Not only is each melody a perfect textbook example of the ambitus and final of the Tone it illustrates, but the collective texts have so many points in common that their selections could hardly have been accidental. They all relate to saints and martyrs who lived not later than 4 A.D., and most are connected in some way either to St. Ambrose or to Milan and its cathedral. It is as though the author wished to use truly representative Ambrosian examples in his presentation of Ambrosian and Gregorian practises ⁴³.

The text of the first antiphon, an example of Tone I, very fittingly is a petition to St. Ambrose, the father of Milanese liturgy. According to Gaffurius, in the psalm tone which follows this antiphon Ambrosians use a solemn Tone for incipit and mediation; however, he does not give a musical example of this usage, but cites the Gregorian psalm tone ⁴⁴.

The antiphon for Tone 2 relates to St. Bassian, a close friend of St. Ambrose and Bishop of nearby Lodi, who built the Church of the Apostles mentioned in the text ⁴⁵. He was interred in the Church and was named patron saint of Lodi. ⁴⁶

The famous legend of the origin of the *Te Deum* is the subject of the text for Tone 3. Although the chant is not a joint composition of St. Ambrose and St. Augustine, its author is still not known ⁴⁷. That Gaffurius's antiphon is based on it is known by the fact that the opening notes of the *Te Deum* melody are found on the words *Baptizat* and *te deum*. Gaffurius remarks that, contrary to Gregorian practice, the E u o u a e of the Ambro-

⁴³ Although the system of eight modes does not apply to Ambrosian melodies, and they are not classified in that way in medieval sources of Ambrosian chant (Apel, *op. cit.*, 480), it is apparent that in Gaffurius's time they were combined with elements of Gregorian chant and thus were drawn into its modal system.

⁴⁴ I, 15.

⁴⁵ *Heiligen-Lexikon*, ed. by J. Stadler and F. Heim (Augsburg, 1858), I, 415. In 1474 Gaffurius was a singer in the Cathedral of Lodi.

⁴⁶ *The Book of Saints*, comp. by Benedictine Monks of St. Augustine's Abbey (New York, 1943), 41. The feast of St. Bassian is still celebrated in the Ambrosian rite on January 19. See the *Liber vespertalis juxta ritum Sanctae Ecclesiae Mediolensis* (Rome, 1939), 560.

⁴⁷ Cf. the article *Te Deum* in *MGG*, XIII, col. 165.

sian psalm tone begins on *b*, just as in other authentic Tones, and in a more harmonious relationship to the final than *c'*, the other dominant ⁴⁸.

The text of the fourth antiphon for Tone 4 commemorates the martyrdom of the priest, St. Marcellinus ⁴⁹, and the exorcist, St. Peter, who were prominent Christians at the beginning of the fourth century, and who are mentioned in the Canon of the Mass. Melodies of this Tone, according to Gaffurius, often are transposed a fourth higher, employ a B flat, and have a final on *a*. This usage seems to be related to the Ambrosian method of grouping Antiphons and psalm tones into four *familia* or *series* according to the finals *d*, *e*, *f*, *g*, or their transpositions, *a*, *b*, *c'*, *d'*. Such transposed finals indicate a much higher range than that found in Gregorian melodies, and the use of these finals has been called "a most characteristic trait of Ambrosian chant" ⁵⁰.

One of the most popular saints in the Middle Ages, St. Blaise, Bishop of Sebaste in Armenia, is commemorated in the antiphon for Tone 5. Martyred in 316 during the reign of Licinius, the saint's intercession was thereafter petitioned for deliverance from physical ills, especially from diseases of the throat. The text of Gaffurius's antiphon, with its reference to *malo guturis* [sic], is clearly based on the blessing given on the feast of St. Blaise: *Per intercessionem S. Blasii liberet te Deus a malo gutteris et a quovis alio modo* ⁵¹.

There are apparently two saints with the name Erasmus who could be the saint referred to in the text for Tone 6 ⁵², although Gaffurius probably meant Bishop Erasmus of Syria, who came to Antioch during the persecution under Diocletian. He died near Gaeta, where a cathedral bearing his name (St. Erasmus or Elmo) was consecrated in 1106. It is possible that the inclusion of antiphons to St. Erasmus of Syria and St. Blaise of Armenia is a reflection of Gaffurius's belief in the traditional connection of Ambrosian liturgy to the Eastern Church, a tradition confirmed by St. Augustine in his statement that in the Church of Milan "it was instituted that, after the manner of the Eastern Church, hymns and psalms should be sung" ⁵³.

St. Augustine is also a source of information about St. Gervase and St. Protase, brothers who suffered martyrdom in Milan in the second century, and who are the subjects of the antiphon for Tone 7. He relates that their

⁴⁸ I, 11.

⁴⁹ In 1494 Gaffurius was rector of S. Marcellino in Milan.

⁵⁰ Apel, *op. cit.*, 480.

⁵¹ Cf. *The Catholic Encyclopedia* (New York, 1907), II, 592.

⁵² *The Book of Saints*, 95. It is possible, since both were Syrian and both lived in Antioch, that they were the same person.

⁵³ *The Confessions of St. Augustine*, trans. by J. G. Pilkington (New York, 1927), 200.

bodies were discovered by St. Ambrose and interred in the Ambrosian Basilica ⁵⁴. The importance of these saints in Ambrosian liturgy is confirmed by the fact that they are named in the Ambrosian Mass and Litany. The text of the antiphon is found in the Ambrosian *Vespertalis*, occurring in Oratio IV, sung on June 19th, the feast day of the saints ⁵⁵.

Between Tones 7 and 8 Gaffurius treats at considerable length the melodies for the Antiphon *Nos qui vivimus*, which he attributes to St. Ambrose, and for Psalm 113, *In exitu Israel*, affording a striking example of contrasting practice in Ambrosian and Gregorian chant. Although this antiphon and psalm are generally considered to belong to the *tonus peregrinus*, in which the psalm tone has two tenors, *a* for the first half of the verse and *g* for the second half, it is noteworthy that Gaffurius considered the antiphon to belong to Tone 7. This is similar to practices in early treatises and manuscripts, in which the melody of the antiphon was generally assigned to Tone 7 or 4 ⁵⁶. In order to demonstrate his theory and also to show differences between Gregorian and Ambrosian psalm tones, Gaffurius presents three versions of both antiphon and psalm.

The first version, consisting of the antiphon and the first complete verse of the psalm, follows Gregorian usage ⁵⁷. The antiphon has an ambitus of *c* - *b* flat, with a final on *g*. Gaffurius states that this version of the antiphon, ending on the *confinalis*, is simply a transposition of its position within Tone 7. The Gregorian psalm tone of the first version follows the normal *tonus peregrinus* formula with two exceptions. Gaffurius's psalm tone melody for *In exitu Israel* begins with *a g a* instead of the customary *a b-flat a*, and the second half of the verse begins *a b-flat* before settling on *g*, the tenor of the second half.

In his second version the author uses the same antiphon on the same transposed pitches, but presents an Ambrosian psalm tone. He makes the significant statement that Ambrosians of his day use the Gregorian antiphon but their own psalm tone, a comment which emphasizes the close interrelationship of the two rites, and especially the influence exerted by Gregorian chant. His Ambrosian psalm tone consists of only two pitches, a tenor *g* for all syllables of the psalm text except the final, which descends to *f*.

The third version comes from a very old antiphonary the author had seen. The antiphon is notated on the untransposed pitches of Tone 7, and is the original form in his opinion. The ambitus is *g* - *f'*, ending on *d'*, the *confinalis*. The psalm tone is the same Ambrosian melody used in the second

⁵⁴ *Ibid.*, 200.

⁵⁵ *Op. cit.*, 641.

⁵⁶ *Apel, op. cit.*, 400.

⁵⁷ Gaffurius's antiphon may be found in AM 132, wherein it is assigned to the *tonus peregrinus*; the psalm tone formula of this Tone occurs in AM 1218 and LU 160.

version, but now notated on a tenor *d'* and a final *c'*. It is worth noting that the modern Ambrosian *Liber Vespertalis* prints both antiphon and psalm tone melodies on the same pitches as those in the third version⁵⁸. Since the *Liber Vespertalis*⁵⁹ is based on modern research by Solesmes monks of the earliest sources, it confirms Gaffurius's statement that his third version was based on an old antiphonary. Moreover, he comments that at Sunday Vespers Ambrosians alternate between the antiphon *Nos qui vivimus* and *Nomini tuo da gloriam, Domine*, both employing the psalm *In exitu Israel* but each antiphon occurring on alternate Sundays. The identical practice still obtains in *Liber Vespertalis*⁶⁰.

The antiphon *O virgo virginum*, an example of Tone 8, may have been chosen by Gaffurius to end his modal presentation as a mark of respect to the Virgin Mary, the patroness of the Milan Cathedral⁶¹. After citing the Gregorian psalm tone for Tone 8 he then turns to the Ambrosian rite and concludes his treatment of the Tones with Ambrosian *E u o u a e* for each of the 8 Tones. These *E u o u a e* are syllabic cadence formulas, each beginning with repeated pitches indicating the tenor of the Tone. With two exceptions the tenors are the same as Gregorian psalm-tone tenors: the tenor of Tone 2 is *g* and of Tone 3 is *b*. Gaffurius mentioned singing *b* instead of *c'* in his discussion of Tone 3, while the use of *g* as a tenor for Tone 2 is a further indication of the lack of standardization of Ambrosian psalm tone formulas in comparison with the highly organized Gregorian system⁶². The simplicity of his Ambrosian *E u o u a e* examples and the "Ambrosian moderation" of the antiphons were so pleasing to Glarean that he printed both in his *Dodecachordon*⁶³.

Gaffurius's treatment of the eight Tones is particularly significant because it clearly demonstrates two facts concerning the relationship of Am-

⁵⁸ *Op. cit.*, 7. The only difference between the modern form of the melodies and Gaffurius's version occurs on the incipit of the modern psalm tone, which begins with *b c'* before coming to the tenor *d'*. Since this incipit is used only for the first verse, the remainder of the psalm verses proceed exactly as in Gaffurius's version.

⁵⁹ *Op. cit.*, iii, in which Dom P. Gregory Suñol is cited. For theories concerning the origins of Ambrosian musical repertory, see Apel, *op. cit.*, 508; "Choral", in *MGG*. II, col. 1265; *New Oxford History of Music*, I, 61; *The Catholic Encyclopedia*, I, 394.

⁶⁰ P. 7.

⁶¹ During Gaffurius's time the Cathedral was the greater, or summer church; the lesser, or winter church was situated at the opposite end of the Piazza del Duomo, and was destroyed in 1543. Cf. *The Catholic Encyclopedia*, I, 400.

⁶² This is pointed out in *Liber Vespertalis*, 819. In this book Gaffurius's Ambrosian *E u o u a e* terminations are found on pages 826-837, among other possible terminations.

⁶³ *Op. cit.*, ed. by Clement A. Miller (*American Institute of Musicology*, 1965), I, 72, 80.

brobian and Gregorian chant during the Renaissance. On the one hand the inroads made by the Gregorian modal system is evident in his acceptance of the latter and his willingness to apply it to Ambrosian chant, although it is most probable that he was acquainted with early manuscripts in which Ambrosian chant had its own method of classification which was independent of the Gregorian system. Jesson ⁶⁴ cites a handbook on Ambrosian chant, written by C. Perego and published in 1622, in which the infiltration of Gregorian methods was evident. Gaffurius's examples offer testimony that this practise was already well established in the fifteenth century ⁶⁵.

On the other hand, the many deviations from the Gregorian norm, both in antiphons and in psalm tone formulas, indicate that Ambrosian liturgy and chant was very much alive during Gaffurius's lifetime. Although the *Practica Musicae* does not contain Mass music, the Gaffurius codices of the Milan Cathedral substantiate this view. Very frequently the polyphonic Masses in the codices lack both *Kyrie* and *Agnus Dei* ⁶⁶. Since the Ordinary of an Ambrosian Mass does not begin with *Kyrie eleison* ⁶⁷ and also does not include an *Agnus Dei* section, it is evident that these sections were missing because they were not needed in liturgical practice. Thus both the Masses of these codices and the Office chants in *Practica Musicae* testify to the vitality of Ambrosian liturgy and chant at that time.

Book II, devoted to poetic feet, rhythm, notation, and mensuration, demonstrates Gaffurius's use of the historical approach, and confirms the comment in his preface that the *Practica* was a compilation of principles enunciated by others.

In the material on poetic feet ⁶⁸ Gaffurius shows his humanistic leanings, his personal interest in poetry ⁶⁹, and his conception of the relation of poetry to music. He presents an imposing list of metrical feet together with a definition and illustration of each type. Authorities cited include Aristides

⁶⁴ In Apel, *op. cit.*, 466.

⁶⁵ Sporadic and mostly unsuccessful attempts to make Ambrosian liturgy conform to Gregorian practices go back as far as Charlemagne. Even as late as 1440 Pope Eugene IV sent the papal legate Cardinal Branda di Castiglione to Milan for this purpose. Not only was he unsuccessful but the citizenry was so aroused that he was forced to flee the city for his personal safety. See P. Wagner, *Einführung in die gregorianischen Melodien* (Leipzig, 1911), I, 222.



⁶⁶ Knud Jeppesen, "Die 3 Gaffurius-Kodizes der Fabbrica del Duomo", *Acta Musicologica*, 1931, III, 16. For example, from Brumel's *Missa super Dringhs* the codices include only the *Gloria*, *Credo*, and *Sanctus*.

⁶⁷ Apel, *op. cit.*, 469. The *Kyrie* is attached to the *Gloria* and is sung immediately after it.

⁶⁸ In II, 1.

⁶⁹ For a discussion of his poetic efforts, see Alexander Caretta, "Gaffurio Minore", in *Franchino Gaffurio* (Lodi, 1951), 161.

Quintilianus, St. Augustine, and Diomedes ⁷⁰. He then concludes with his own observations about poetic meters, and what should be observed or avoided.

After relating poetic feet to musical meter and rhythm, he discusses rhythm, citing opinions of several Greek writers, as well as Quintilian and Venerable Bede. Most interesting is his presentation ⁷¹ of Greek rhythmic symbols taken from a treatise which was not published in modern times until 1841 ⁷². Five rhythmic signs are discussed. A breve of one *tempus* is a short horizontal line, —; a long of less than two *tempora* is a combination of the short line with a wavy line written directly above it; a long of three *tempora* is similar in shape to an L; a long of four *tempora* is ; and a long of five *tempora* is . A dot after a sign indicates an arsis, and the lack of a dot means a thesis ⁷³.

As the next step in his historical presentation, Gaffurius illustrates note shapes of black notation, remarking that posterity later made them white. He cites ⁷⁴ Franco, Philip of Caserta, Johannes de Muris, Anselmi, Prosdocimus de Beldemandis, and Tinctoris as writers whose treatises he had consulted. As a result the *Practica* is a compendium of varied and unusual note shapes in addition to standard types. Among them is a minim with the tip of its stem "bent back to the right in the shape of a figure two," which has the same shape as a note shown by Prosdocimus ⁷⁵. Also listed are some unique note shapes found in Anselmi ⁷⁶. Included are greater, lesser, and median breves and semibreves. A greater semibreve, for example, is a square note with stems or *plica* strokes ascending and descending from

⁷⁰ Diomedes (fl. 375) and Quintilian have been called the two most important sources for the transmission to the Renaissance of the traditional classification of poetic genres. Apparently Diomedes was much read in the 15th century. See Charles Trinkhaus, "The Unknown *Quattrocento* Poetics of Bartolommeo della Fonte", in *Studies in the Renaissance* (The Renaissance Society of America, New York), vol. 13, p. 87.

⁷¹ In II, 2.

⁷² *Anonymi Scriptio De Musica*, ed. by F. Bellerman, (Berolini, 1841), 17. Gaffurius used the translation by Burana (1494) indicated in the preceding list with the title *Brevis musice tractatus*.

⁷³ The treatise is discussed in Bellerman, *op. cit.*, and J. Wolf, *Handbuch der Notationskunde* (Leipzig, 1913), I, 18. Bellerman's interpretation of the rhythmical signs does not completely agree with Gaffurius's presentation.

⁷⁴ In II, 4.

⁷⁵ *Tractatus . . . ad modum Italicorum*, in Coussemaker, *op. cit.*, III, 229.

⁷⁶ *Musica* (1434). For a discussion of this treatise see J. Handschin, "Anselmi's Treatise on Music Annotated by Gafori", *Musica Disciplina*, 1948, 123.

the right side; a lesser semibreve has the same stems on the left side; in a median semibreve they bisect the square ⁷⁷.

The remainder of Book II deals with mensuration. Since this aspect of Gaffurius's treatise has been treated in various studies ⁷⁸, it is not pertinent to discuss it here. Worth noting, however, is the fact that Gaffurius also adheres to the historical approach in this subject. In speaking about *modus* ⁷⁹, for example, he cites the relation of its note values to poetic feet, and observes that early musicians had one *modus* for a maxima and a long. No single note is worth more than nine perfect breves, and that is also the longest note value a singer can hold in one breath and still maintain a good tone. He accepts the definition of Anselmi for imperfection of notes ⁸⁰, and quotes Johannes de Muris on alteration ⁸¹.

Two comments in Book II and one in Book III relative to *tactus* are found in *Practica* ⁸², although its author does not use that term. The substance of his remarks indicates that he must have discussed the idea of a regular temporal unit with physicians with whom he was acquainted ⁸³. In his first comment he states that physicians believe that the accurate measurement of a short time span conforms to even pulse beats by establishing an equal arsis and thesis, which they call diastole and systole, in one pulse beat. But he notes that a pulse rate is uneven in persons with a fever.

His second comment affirms a semibreve as the unit of measurement. It contains diastole and systole, or arsis and thesis, and equals a single *tempus* or pulse beat divided into two equal parts. To each part of the semibreves a minimal length of tone has been given, and thus each part is called a minim. In his third comment he equates the tempo of a semibreve to the pulse beat of a man breathing evenly. Sometimes this widely quoted statement is translated as "the pulse beat of a quietly breathing man" ⁸⁴. The context of Gaffurius's remarks would indicate that the latter translation is not what Gaffurius really meant. His comments all refer to the idea of

⁷⁷ Anselmi also formed three types of longs and minims. Gaffurius summarized his note shapes by drawing them in the margins (pp. 84-85) of his copy of Anselmi's manuscript.

⁷⁸ Notably in E. Praetorius, *Die Mensuraltheorie des Franchinus Gafurius*, Leipzig, 1905; W. Apel, *The Notation of Polyphonic Music*, Cambridge, 1953; J. Wolf, *op. cit.*

⁷⁹ II, 7.

⁸⁰ II, 11.

⁸¹ II, 13.

⁸² II, 1, 3, and III, 4.

⁸³ Possibly with Nicolò Leonicensi, professor of medicine at the University of Ferrara, who translated Ptolemy's *Harmonicorum* for Gaffurius (Gallo, *op. cit.*, 174); or with Antonius Cuxanus and Hyeroniminus Segazonus, two physicians whose poems appear in Gaffurius's *Angelicum ac divinum opus musicae*, Milan, 1508.

⁸⁴ As in G. Reese, *Music in the Renaissance* (New York, 1954) 179.

"even breathing", not "quiet breathing". He emphasizes the equality of the two parts of the pulse or beat, not its tempo. Although it might be argued that there is a similarity between the two ideas, this is not necessarily the case, and the phrase "quietly breathing" contains an implication which Gaffurius's statements do not seem to substantiate.

His *Angelicum ac divinum opus musicae* of 1508⁸⁵ supports and amplifies his statements on *tactus* in *Practica*. In this vernacular treatise he relates that a pulse beat has two movements, a rise and a fall, which are called systole and diastole by physicians and arsis and thesis by musicians. A semibreve beat is equated to a pulse beat and is divided into two equal movements, each of which has the value of a minim. Gaffurius's emphasis on the pulse of a healthy person is echoed by Lanfranco, who defines *tactus* as "un certo segno formato a imitatione del polso ben sano per elevatione & depositione"⁸⁶.

Book III is devoted to a study of counterpoint. Since certain parts of its fifteen chapters are widely known, this discussion will be limited to an attempt to shed fresh light on Gaffurius's approach to counterpoint. He begins with a systematic study of consonant intervals, from the unison to the twentieth. Almost immediately, however, he introduces the consonant intermediate tones which can be used between the outer notes of an interval, so that he also discusses chordal formations. The perfect fifth, for example, is composed of a minor and major third meeting on a common tone. The outer tones of the fifth make a more pleasant concord because of their relation to the middle tone, as if the outer concord were related to the middle division in a harmonic imitation. In the interval of a tenth he prefers an intermediate tone of a fifth or octave above the lowest tone rather than a third or sixth, although the latter can be used. The principle of intervallic inversion is clearly defined⁸⁷, not only, for instance, that a third becomes a sixth and vice versa, but also that major becomes minor.

In a section on four-part writing⁸⁸ he also discusses vertical structures and their harmonious combinations. It is clear that Gaffurius was keenly interested in the harmony of concords. The stress he put on the proper construction of chords, both three-part and four-part, and the amount of space

⁸⁵ *Tractatus* III, ch. 1. Although this treatise has been called a modified Italian translation of chapters II and III of *Practica* (C. Sartori, *MGG*, IV, 1240), it contains material from the entire *Practica*, but in a condensed and varied form. It has five *Tractatus* instead of four books, and contains 1 polyphonic example instead of the more than 150 polyphonic examples in *Practica*. In addition, it includes considerable new textual material.

⁸⁶ Praetorius, *op. cit.*, 69.

⁸⁷ In III, 7.

⁸⁸ III, 11.

in Book III that he devoted to this aspect of counterpoint, indicate how vitally he was concerned with it.

In regard to the famous eight rules of counterpoint in *Practica*⁸⁹, it should be pointed out that these rules are not his, as he states in his opening sentence⁹⁰, but a compilation from other musicians. Thus he does not hesitate to depart from them, a fact which is not always recognized. The first rule is a case in point. After stating that according to the first rule every song should begin with a perfect consonance, he calls the rule arbitrary, not essential, and says that many songs begin with imperfect consonances. His two-voice musical illustration of this rule begins with a major third⁹¹. Here he appears more advanced than Tinctoris, who allows a composition to begin on an imperfect consonance only if it is an upbeat⁹².

To the rule that two identical perfect consonances should be separated by one or more imperfect consonances he proposes the corollary that a dissonance can never substitute for an imperfect consonance in this situation. The rule that voice parts should move in contrary motion he also calls arbitrary, commenting that parallel motion is frequently found, especially in imitative style.

In a chapter⁹³ on *musica ficta* in counterpoint Gaffurius proposes that the normal hexachord system can be increased by the addition of two hexachords beginning respectively on *a* and on *b*-flat. In addition to the *a* hexachord, producing *c*-sharp and *f*-sharp, and the *b*-flat hexachord with *e*-flat as a constituent tone, he comments that the same principle can be followed in forming other *ficta* hexachords. As an example of *musica ficta* he prints a short two-voice piece⁹⁴ which is easily the most unusual in this regard in the *Practica*. It begins with a signature of two flats that are then canceled in the middle of the piece by two natural signs, dividing the piece into two parts which, however, maintain rhythmic continuity. The cadence of the first part with the two flats is on an octave *e*-flat. The lower voice moves directly to *e* natural, the beginning of the second part, making a chromatic progression in that voice. In the second part both voices end on an octave *e*, which creates a striking relationship between the two cadences, since the first part closes on *e*-flat and the second on *e* natural.

⁸⁹ Summarized in Reese, *op. cit.*, 179, and discussed with a German translation in H. Riemann, *Geschichte der Musiktheorie im IX. — XIX Jahrhundert* (Hesse, 1920), 337.

⁹⁰ Musicians have organized in eight rules the procedures for the elements of song. III, 3.

⁹¹ Ex. 17 in my edition.

⁹² *Liber de Arte Contrapuncti*, III, 1, in Coussemaker, *op. cit.*, 147.

⁹³ III, 13.

⁹⁴ Ex. 41.

The frequent use of *musica ficta* for melodic purposes, especially in a movement involving a lower auxiliary tone, is confirmed by Gaffurius. In the melodic progression of *a, g, a*, he says, *g* is often sung as *g-sharp*. He names the *Salve Regina* as an example ⁹⁵. And in the melodic segment *g, f, g*, the *f* often becomes *f-sharp*, a practice occurring frequently among Ambrosians.

Although Gaffurius advocated Pythagorean intonation, as a practical musician he did not object to certain deviations from it in tuning instruments. His *Practica* is apparently the first treatise in which the principle of temperament is mentioned ⁹⁶. He says ⁹⁷ that a perfect fifth can be diminished in size by a very small and rather indefinite amount, which organists call *participata* ⁹⁸. In another significant remark ⁹⁹ he says that in sounding the interval of a [major] sixth its intermediate tone, which is a major third above the lowest tone, is often lowered a little to bring it closer to the smaller and more pleasant minor third. This is done, he indicates, by experimentation with instruments. In a later treatise ¹⁰⁰ he makes a similar statement about the major sixth, saying that organists call its tuning *communicata* or *participata*, and rely greatly on experience and judgment.

Book IV, a study of proportions, is without doubt the least understood and appreciated part of *Practica Musicae*. Although Gaffurius's treatment of proportions was widely accepted by his contemporaries, it was chiefly in relation to the simpler proportions of *genus multiplex* and *genus super-particulare*, and did not apply to his study of more complicated proportions. A statement to this effect was made by Pietro Aron in his *Toscanello in musica* of 1523 ¹⁰¹. Even Glarean, who adhered in the main to Gaffurius's mensural theories, and who printed a number of his examples of proportions, did not see the value of the more involved types ¹⁰². E. Praetorius ¹⁰³ dismisses them as "spekulativen Spielereien" and thus does not recognize their purpose or method of organization. And according to Apel, "even the theoretical value of such extravagances is doubtful" ¹⁰⁴.

Close examination of Book IV reveals, however, that it is a highly

⁹⁵ In *Liber Usualis* (Tournai, 1927), 276.

⁹⁶ J. Murray Barbour, *Tuning and Temperament* (Michigan State College Press, 1951), 25.

⁹⁷ III, 3.

⁹⁸ According to Barbour the *participata* resulted in a tuning closer to equal temperament than to just intonation or meantone temperament. *Op. cit.*, 5.

⁹⁹ III, 2.

¹⁰⁰ *De harmonia musicorum instrumentum opus*, III, 8.

¹⁰¹ Praetorius, *op. cit.*, 96.

¹⁰² Miller, *op. cit.*, II, 246.

¹⁰³ *Op. cit.*, 96.

¹⁰⁴ *The Notation of Polyphonic Music* (Cambridge, 1953), 145.

organized and minutely detailed textual and musical exposition of the principles of proportional writing, and that even the most complex of the proportions is based on one unified and consistently employed method of organization. In regard to unity of conception, thoroughness of treatment, both textual and musical, and organizational design, it is without parallel among treatises of the time.

The emphasis that Gaffurius placed on this book may be seen in its musical content. Of the 155 polyphonic musical examples in *Practica Musicae*, 111 are contained in Book IV, and they illustrate in a systematic order the five proportional genera. Before considering the genera in detail the following outline will summarize Gaffurius's order of presentation of musical examples.

Chapter	Ex. No.	Genus	Proportions
3	46—65	<i>multiplex</i>	2/1 through 10/1
4	66—70	<i>submultiplex</i>	1/2 through 1/5
5	71—88	<i>superparticulare</i>	3/2 through 10/9
6	89—92	<i>subsuperparticulare</i>	2/3 through 5/6
7	93—104	<i>superpartiens</i>	5/3 through 13/7
8	105—110	<i>subsuperpartiens</i>	3/5 through 7/11
9	111—123	<i>multiplex superparticulare</i>	5/2 through 21/4
10	124—132	<i>submultiplex superparticulare</i>	2/5 through 4/17
11	133—143	<i>multiplex superpartiens</i>	8/3 through 19/4
12	144—148	<i>submultiplex superpartiens</i>	3/8 through 4/19
13-15	149—155	successive proportions	

As shown in the outline, each genus and each proportion is followed by its opposite genus (indicated by the prefix *sub*), and its opposite or inverted proportion. The example numbers¹⁰⁵ show that genera with the prefix *sub* have many less musical examples than the other genera. The reason may be that these genera of lesser inequality, which augment note values, are the opposite of genera of greater inequality, and so need less detailed treatment, since each of the five genera begins with examples of greater inequality.

Genus multiplex, the first of the five genera, has proportional examples 2 3 4 10 for 1, 1, 1, etc., through 1. Two examples are devoted to each proportion, every example consisting of a two-voice piece for tenor and cantus¹⁰⁶. The proportions always apply to the cantus, the tenor maintaining the normal 2 tactus based on a semibreve. The cantus of the first example of 1 has

¹⁰⁵ Example numbers refer to my edition of *Practica Musicae*.

¹⁰⁶ With the exception of Exx. 48 and 49, all examples in Book IV are for two voices.

these mensural and proportional signs: $0 \overset{2}{1} \overset{4}{C} 2$; the second example has:
 $2 \overset{1}{1} \overset{4}{2} C 2 4$. Ordinarily there is at least one complete measure between each change of sign.

Gaffurius used the first example to illustrate these principles: the contrasting rhythmic results of placing $\overset{2}{1}$ after *tempus perfectum* and then after *tempus imperfectum*; the removal of a proportion by the appearance of a succeeding mensural sign; the use of $\overset{2}{1}$ instead of a canon inscribed *diminuitur in duplo*. The second example shows in addition that a proportion, as $\overset{2}{1}$, is canceled by its opposite proportion, $\overset{1}{2}$. The remaining examples of *genus multiplex* follow exactly the same method, changing only to another proportion until $\overset{10}{1}$ is reached. Examples of *genus submultiplex* follow a similar plan but do not go beyond the proportion $\overset{1}{5}$.

In *genus superparticulare*, which also includes examples of color, Gaffurius begins with examples of $\overset{3}{2}$. The importance he attaches to this proportion is seen by the fact that he writes five examples of color, which he equates with *sesquialtera*, before he continues with his systematic treatment of *genus superparticulare*, ending with a $\overset{10}{9}$ proportion. Both his examples of $\overset{3}{2}$ and his textual explanations follow the conventional definition of 2 proportion, and do not support the thesis of Praetorius¹⁰⁷ that *sesquialtera* compositions of Gaffurius should be altered rhythmically to make the rhythm smoother and avoid a "rhythmisches Labyrinth". In fact, considering the much greater complexity of many proportional examples that follow *sesquialtera*, it is unlikely that Gaffurius would consider it sufficiently difficult to make an exception of it.

During his discussion of *sesquialtera*¹⁰⁸ Gaffurius makes the statement that a proportion is easily recognized if it is a constituent part of a note, as a third of a breve in *tempus perfectum* (a semibreve) or a fourth of a

¹⁰⁷ *Op. cit.*, 106. The point at issue is that Gaffurius did not advocate a special treatment for *sesquialtera*, not that such a treatment did not exist. It seems clear from musical and theoretical sources of the times that various adjustments were made in performing a *sesquialtera* rhythm.

¹⁰⁸ In IV, 5.

semibreve in *prolatio minor* (seminim) ¹⁰⁹. But if the proportional note is not evenly divisible, as a fifth part of a semibreve, a series of such notes will move in an unbroken succession, so that the precise value of each note cannot be determined by marking an exact middle, yet so that the value and measurement of each note will continue without interruption.

5

It is with this kind of proportion, a 4 of *genus superparticulare*, that Gaffurius added a new dimension to the remaining examples of individual proportions ¹¹⁰, which amount to more than half the total number of examples in Book IV. The new procedure is related to the tenor and could be called isometric. Although the tenor of these examples continues to function as the part which keeps the normal tactus, and proportional numbers are placed only in the cantus, the tenor is now arranged metrically so that it contains exactly the number of semibreves or their equivalents called for by the lower number of the proportion.

Of still greater significance is the relation of the tenor to a proportion and its opposite or inverted proportion. In every example the original proportion is canceled by its opposite proportion, but the tenor continues the same isometric pattern established at the beginning of the original proportion. The isometric design of the tenor ends either at the end of the composition ¹¹¹ or, if both *tempus perfectum* and *tempus imperfectum* are employed, at the change of mensuration as well as at the end.

8

An 7 proportion ¹¹² of *genus superparticulare* illustrates Gaffurius's

8 7 16 14 8

principle. The cantus pattern is 0 7 8 C 14 16. In the 7 proportion the tenor, in *tempus imperfectum*, equals a measure of seven semibreves; under the

7

cantus 8, which follows one measure later, the tenor continues with a measure equal to seven semibreves, thus forming a two-measure isometric group. The plan of proportions following the *tempus imperfectum* of the

16

cantus is the same with one exception. The tenor under 14 equals two

14

measures of seven semibreves each, and under 16 equals one measure of seven semibreves, making a three measure isometric grouping. This pattern, which occurs frequently, indicates that Gaffurius was not concerned with an equality of measure units, but with the maintenance of an isometric tenor

¹⁰⁹ Gaffurius's name for semiminim.

¹¹⁰ Exx. 83-148.

¹¹¹ The final long, of indeterminate length, is not part of the isometric pattern.

¹¹² Ex. 86.

In *genus multiplex superparticulare* examples of proportion occur either in *tempus perfectum* or *tempus imperfectum*, but both mensuration signs

C 5 11. The tenor under the 5 proportion of the cantus equals a measure of five semibreves; in the next measure the cantus cancels the proportion but the tenor retains a measure containing five semibreve beats (which of course the cantus also assumes). The entire composition is beautifully proportioned. In the opening part the tenor and cantus, both in *tempus imperfectum*, equal five measures, with two semibreve beats in each measure. Thus the *tempus imperfectum* section contains ten semibreves, and the isometric proportional section also has ten.

It seems evident that Gaffurius regarded his book on proportions as a practical method of instruction in proportions, and not merely as a collection of abstruse and theoretical examples. His introduction to *Proportioni*

115 Ex. 148.

practicabili states that the work was written for apt pupils ¹¹⁶. His method of organization is detailed and pedagogically sound. The contrapuntal melodies of the two-part examples, regardless of rhythmic intricacies, can be considered exemplary models of contrapuntal techniques practised in his time. It is hard to believe that Gaffurius would lavish such care on so many musical examples if he did not expect them to be practised and sung, or that he would include them in a tome entitled *Practica Musicae*.

¹¹⁶ See ftn. 22.