

MUSICOLOGICAL STUDIES & DOCUMENTS

33

FRANCHINUS GAFFURIUS

*De Harmonia Musicorum
Instrumentorum Opus*

Introduction and Translation

by

CLEMENT A. MILLER



1977

AMERICAN INSTITUTE OF MUSICOLOGY

ARMEN CARAPETYAN

Director

TABLE OF CONTENTS

Title Page of the 1518 Edition	Frontispiece
Introduction	11
Distich by Caesar Saccus of Lodi	26
Poem by Stefano Negri	26
Chapter Headings	27
Colloquy of Maurus Ugerius of Mantua and the Muses	31
Jean Grolier coat of arms	32
Book I	33
Letter of Dedication	33
Book II	77
Book III	155
Book IV	179
Poem by Lancinus Curtius	190
Poem by Gulielmus Le Signerre	214
Epigram by Pantaleon Meleguli	214
Poem by Franciscus Phylippineus	214
Bibliography	217
Index	220

INTRODUCTION

This edition of *De harmonia musicorum instrumentorum opus* is based primarily on the edition printed in Milan on November 27, 1518,¹ and dedicated to Jean Grolier, the noted French bibliophile. Since the printed edition, however, is based on several manuscripts, three of which are still extant, it is necessary to examine these MSS briefly in order to understand the process by which the printed edition was developed.

The original manuscript of *De harmonia* was completed by Gaffurius in March, 1500, and was dedicated to Bonifacius Simonetta (c. 1441-1502), Cistercian abbot of the monastery of San Stefano del Corno. Simonetta was praised by Gaffurius as a *viro omnium scientiarum studiosissimo*. He was author of *De christianae fidei et romanorum Pontificum persecutionibus opus* (Milan, 1492, with several later editions), which also contained more than 250 letters to clerics, friends, and various rulers. His wide range of interests and humanistic inclinations are shown by the diversity of topics in the letters, which cover astronomy, music, medicine, geography, and other subjects.²

The printed edition of 1518 and the original manuscript of 1500, preserved at Lodi,³ are divergent in numerous ways. At present MS 1500 begins with the table of contents which is followed by a short poem by Meleguli, the biographer of Gaffurius. In the printed edition the poem constitutes the penultimate text. MS 1500 then proceeds to a letter of dedication to Simonetta. The contents of the letter, however, were erased, probably by Gaffurius,⁴ although a portrait of the abbot still remains at the head of the letter. The body of the text which follows is different in several respects from the printed edition. Minor changes in words, or word order, or phraseology, occur frequently, and headings of diagrams often differ. But more significant is the lack, in all the MSS, of references to contemporaries of Gaffurius who

¹ A facsimile edition of *De Harmonia* is edited by G. Vecchi (Bologna, 1972), in *Biblioteca Musica Bononiensis* II, 7.

² For more on Simonetta see A. Caretta, L. Cremascoli, L. Salamina, *Franchino Gaffurio* (Lodi, 1951), p. 15ff.

³ In the Biblioteca Comunale Laudense, no. XXVIII A. 9. Hereafter the manuscript will be called MS 1500.

⁴ For possible reasons of the erasure see A. Caretta, *op. cit.*, p. 17.

CHAPTER HEADINGS

BOOK I

Chapter

1. The definition of instrumental music and its relation to the four elements	35
2. Sounds and their differences.	37
3. Definitions of intervals and their differences	39
4. The meaning of the perfect system of fifteen strings	42
5. Definition and properties of the three genera; disposition of the low hypaton tetrachord in the diatonic genus.	46
6. Size and disposition of the meson tetrachord in the diatonic genus	49
7. Size and disposition of the diezeugmenon tetrachord in the diatonic genus.	51
8. Size and disposition of the fourth and highest hyperbolaeon tetrachord in the diatonic genus	52
9. Disposition and interposition of the synemmenon tetrachord in the diatonic genus	53
10. The string added between proslambanomenos and hypate hypaton and its relation to contiguous strings	55
11. Species of fourths found on the diagram.	58
12. Species of fifths found in the immutable diatonic system	58
13. Species of octaves found in the immutable diatonic system	59
14. What is perfect and mutable in a system; why the disdiapason is called immutable	60
15. The mixed genus in which every whole tone is divided into two unequal semitones	61
16. In the mixed genus each tetrachord contains three fourth-species	66
17. Each pentachord of three whole tones and one semitone contains four different fifth-species.	67
18. The relation of a smaller number in a proportion to a larger, and of a larger number to a smaller	68
19. Consideration of a proportion resulting from two equal proportions.	69
20. Consideration of a proportion produced by two unequal proportions.	70
21. Removal of a smaller proportion by a larger and a demonstration of the remainder	71
22. <i>Sesquixesta</i> does not exceed <i>sesquioctava</i> by the same proportion as <i>sesquioctava</i> exceeds <i>sesquidecima</i>	73
23. The way to reduce small proportions into one common denominator.	74

BOOK II

Chapter	
1.	The chromatic genus 77
2.	Measurement of the hypaton tetrachord according to the chromatic genus 78
3.	Measurement of the meson tetrachord in the chromatic genus 80
4.	Measurement of the diezeugmenon tetrachord in the chromatic genus 81
5.	Measurement of the hyperbolaeon tetrachord in the chromatic genus 82
6.	Measurement of the synemmenon tetrachord in the chromatic genus 82
7.	The third string in the chromatic tetrachord produces different semitones than those in the mixed genus 85
8.	The exposition of the enharmonic genus 86
9.	Measurement of the hypaton tetrachord and of others in the enharmonic genus 87
10.	The proportions of enharmonic dieses 88
11.	Measurement of all tetrachords in the enharmonic genus in the perfect system 89
12.	In every diatonic tetrachord only the lowest whole tone is divided from the chromatic genus, and only the lowest semitone in the chromatic is divided from the enharmonic 91
13.	A close and compact tetrachord occurs only in the chromatic and enharmonic genera 95
14.	The division of a whole tone and its parts according to Philolaus 95
15.	The division of the whole tone into four exact dieses according to Aristides Quintilianus 97
16.	The varied division of the whole tone and tetrachords according to Aristoxenus 98
17.	The division of the three genera according to Didymus and Architas 102
18.	The three close or dense genera of Ptolemy 104
19.	The arrangement of the three diatonic genera according to Ptolemy 108
20.	Arrangement of the equal diatonic and diatonic diatonic genera according to Ptolemy 110
21.	The removal of a whole tone and semitone from a diatonic fourth consonance 115
22.	The proportions which form a large semitone and a comma 116
23.	The three fourth-species in the diatonic genus 117
24.	The conversion of the enharmonic genus into the natural diatonic 119

25. The conversion of the soft chromatic into the natural diatonic	120
26. The conversion of the intense chromatic genus into the natural diatonic	121
27. The conversion of the soft diatonic genus into the natural diatonic	122
28. The conversion of the intense diatonic genus into the natural diatonic	123
29. The conversion of the tonic diatonic into the natural diatonic	123
30. The conversion of the equal diatonic into the natural diatonic	124
31. The four fifth-species	125
32. The arrangement of the seven octave-species	128
33. Six whole tones exceed an octave by one comma	134
34. 24:23 and 46:45 exceed the small semitone by 81:80	138
35. 6:5 is larger than a whole tone and a semitone by 81:80	139
36. A fifth and a whole tone are larger than 5:3 by 81:80	141
37. A fifth and a semitone are smaller than 8:5 by 81:80	142
38. That every essential and ratio of harmonic modulation is considered in the fifteen strings	145
39. A harmonic instrument of four octaves	149
40. The division of whole tones on a monochord by chromatic semitones according to Anselmi	151

BOOK III

Chapter

1. Conjunct arithmetic proportionality and its properties	155
2. Disjunct arithmetic proportionality and its properties	156
3. Conjunct geometric proportionality and its properties	157
4. Disjunct geometric proportionality and its properties	160
5. Conjunct harmonic proportionality and its properties	161
6. The proportions of all intervals are found in harmonic division	164
7. A consideration of arithmetic, geometric, and harmonic divisions with common extremes	165
8. The three divisions are compared to public affairs; also concerning seven other divisions formed later	166
9. Three tones in arithmetic division are discordant when sounded together	171
10. Three tones struck together in geometric division form a dissonant sound	172
11. Three tones in harmonic division form a most pleasant concord and a true harmony when sounded together	174
12. The sonorous division of a major and minor sixth and tenth	177

BOOK IV

Chapter	
1. The modes first used by the ancients	179
2. The properties of four modes and the excellence of the Dorian	180
3. The octave-species to which these four modes belong	181
4. The observance and use of the Dorian mode among the ancients	182
5. The nature and use of the Phrygian, Lydian and Mixolydian modes among the ancients	183
6. The addition of three collateral modes and their natures	184
7. Collateral modes are opposed by nature to their authentic modes	185
8. The nature of the Hypophrygian and the Hypolydian	187
9. The nature of the Mixolydian and the superaddition of the Hypermixolydian	188
10. The harmonization of the seven modes and planets in a Sapphic poem with the Dorian and Hypodorian modes	190
11. The interval by which one mode is higher or lower than another	193
12. Muses, constellations, modes, and strings belong to a mutual order	197
13. Among heavenly bodies some form masculine sounds, some feminine, and some are common	202
14. Heavenly sounds are perceived by virtue alone	203
15. The ancients understood music more by ratio than by aural sense	203
16. Consonant numbers offer much to other arts	204
17. The parts of the mind are adapted to musical ratios	206
18. The conception of the human body is formed in harmonious comparisons	207
19. Musical systems are considered in the body of the universe	208
20. Musical systems are compared to virtues, senses, and states	210

Colloquy of Maurus Ugerius of Mantua and the Muses

What chorus awaits here? The Muses. Having left the summit
Of Parnassus is the entire sacred band coming here?
We are all present here, and what reason compels us
To make such a long journey from Helicon?
Do you not see the void in our insignia?
And Apollo is without his own poetic song.
Gaffurius has removed harmonious melodies from all
The Muses; their eloquence now has no sound.
You, Gaffurius, unlock the spirit that entrusts most things to you,
You can restore all things to the Muses.
Do not come to me, Muses, reach out to the grottoes of Grolier,
A thousand songs give utterance to modes in a thousand sweet
sounds,
In that way you are said to have formed the temple of the Muses,
But I know that it was in the music of Franchinus.
With it Grolier resides in a splendid abode,
And he is surrounded by learned men.
More godlike among them he speaks with eloquence,
And shines like a precious gem alight in its facets.
He loves them, he refreshes and embraces them with an under-
standing arm,
And from an ample purse he offers the most noble gifts.
With his aid they agree with whatever you seek
And indeed he cultivates your goddesses.
But what kind of honors will you bring to the author
So that a Muse may not flow without gratitude by stream to his
harbor?
Poets will exalt the name of Grolier to the heavens,
And annual festivals will be held in our territories.

BOOK I

The author¹ speaks to the book: Where are you going? Why are you fleeing? Did you hope to be able to leave your master?

Book: A throng of muses is calling me; the distinguished Grolier favors me with a hospitable reception and aids me with his support.

Author: Little book, you will soon be free; go now under his propitious auspices and banish grave cares of the mind. But if you are rejected you will suffer a shameful fate and I will say: never reenter our portals.

Franchinus Gaffurius sends best greetings to Jean Grolier of Lyons, chief Treasurer of Milan for the Most Christian king of France.

Most generous Sir: Among the ancients there was a custom handed down by tradition which posterity has preserved up to the present; according to this custom learned men offered their lucubrations to some illustrious person so that the authority of such a man would deliver their works from malicious and scurrilous attacks. Thus they dedicated the results of their labors to notable men, as Dioscorides of Anazarbus to Mark Antony (according to Suidas), Plutarch to Trajan, Pollux of Naucratis to Commodus, Aristotle to Alexander of Macedonia, Oppian to Marcus Aurelius and Philostratus to Severus. This is indeed the right thing to do, for the good fruits of the earth could not be shared with mortals, as with Triptolemus,² unless some severe deity would protest the seeds from becoming the food of insects and other animals. I, following their authoritative example, have written the work *De Harmonia* and have found no one greater than you to whom to dedicate it. For men of acute judgment eagerly praise, extol, and honor you with almost divine veneration in every kind of discourse, although your brilliant light stands out through your virtue alone. You are the guardian of liberal studies; for a long time you have aroused the muses to tumult and tempest, and you support, cherish, and honor them with a hospitable reception. I omit both your

¹ As a model for this opening poetic section Gaffurius used Horace, *Epistles*, I, 20. For a study of this section see A. Caretta, "Gaffurius Minore", in *Franchino Gaffurio* (Lodi, 1951), p. 167.

² An Attic hero, son of Celsus, king of Eleusis. Triptolemus is credited with bringing agriculture to mankind.

remove 9:8 from 32:27 by multiplying 32 and 8 to make 256 and 27 and 9 to make 243, the semitone proportion 256:243 will remain.

CHAPTER 22

The proportions which form a large semitone and a comma

Since it is established that a small semitone consists of 256:243, as an indication of a large semitone we will arrange three numbers whose extremes form 9:8, a whole tone. The median number to the smallest makes a small semitone, and to the largest a large semitone or apotome. The numbers are 1944, 2048, and 2187. 2187:1944 makes 9:8, a whole tone; 2187:2048, with 139 as remainder, makes a large semitone. The median number to the smallest, 2048:1944, makes 256:243, a small semitone. Thus 2187:2048 forms an apotome, which exceeds half of a whole tone. But a small semitone, arranged in the primary numbers 256:243, does not fill out half of a whole tone, as the description shows.

$$2187:1944 = 9:8, \text{ a whole tone}$$

$$2048:1944 = \text{a small semitone}$$

$$2187:2048 = \text{a large semitone}$$

The excess and difference of a large semitone in relation to a small semitone is easily seen when the numbers of both proportions are arranged so that the larger number of the larger proportion is multiplied by the smaller number of the smaller proportion, and the smaller number of the larger proportion is multiplied by the larger number of the smaller proportion. The result of such a computation is called a comma, which is a proportion drawn from the multiplication of the opposite parts of the principal numbers, or 531441:524288, which is called 524288 with 7153 as a remainder. For these numbers, taken eight times, produce the total sum formed from the multiplication of these proportions, as this example shows:

$$2187:2048 = \text{large semitone}$$

$$256:243 = \text{small semitone}$$

$$531441:524288 = \text{comma}$$