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[<i>-] IL TRIMERONE OF THE HARMONIC FOUNDATIONS, or, THE PRACTICE OF MUSIC: DIALOGUES FO THE MOST ILLUSTRIOUS KNIGHT SIGNOR BOTTRIGARI, where the ANCIENT AND MODERN TONES, as well as of the different writing characters used by musicians in every age.

[<ii>-] TABLE OF THE NAMES OF THE PRACTICAL MUSICIANS, THEORISTS, PHILOSOPHERS, Mathematicians, Poets, and others quoted and mentioned in the three following Dialogues of the TRIMERONE of the FOUNDATIONS OF HARMONY, or, the Practice of music

Euclid--Isagoge

Psellus--Synopsis

Ptolemy--Harmonics

Aristoxenus--Armonici

Boethius—De Musica

Gaudentius--Harmonic Institution

Guido d'Arezzo--Micrologus musicale

Martianus Capella--Symphoniae

Aurelius Cassiodorus--Musica

Lucius Pollio Vitruvius--Architettura

Venerable Bede--De ratione Calculi, De Musica quadrata

Oddo Abbot--Enchiridion harmonicum

Bartholomeus Ramus--Musica practica

Stephano Vanneo--Recanetum

Don Petrus Aaron--Dialogo di Musica

Angelo Picitone--Fior angelico

Gioseffo Zarlino--Institutione armonica  
Brother Buonaventura--Breuiloquium  
Nicolaus Wollick--Enchiridion musices  
Nicolaus Listenius--Musica  
Brother Illuminato--Illuminata  
Don Vincenzo Lusitano--Introduction  
Don Giouannj Guidetti--Directorium Chori  
Giouanni Spataro—Corrections, Letters  
Nicolaus Burtius--Florum Libellus  
Aristotl--Harmonic Problems  
Saint Aurelius Augustinus--Confessions  
Saint Jerome --Distinttione  
Saint Pope Gregory--Distinctions  
Joachimo Perionius--Conformations of the Languages  
Jean Mouton  
Okenghem, Sthokem, Vaqueras, Tadinghen, Biaumont, Brumel,  
Josquin de Press  
Adrian Willaert  
Verdelot  
Cirillo--Letter to Gualteruzzo  
Henricus Glareanus--Dodecachordum  
Monk Sigibertus--Cathalogue of the writers  
Hercole Bottrigaro--Il Desiderio, Dialogue  
Merlino Cacao--Macaronea  
Tortellius--Dictionary

Virgil—Bucolica, Aeneis

Publius Ovidius--Metamorphoses

Statius--Silvae

Giorgio Valla--Expetendorum, et fugiendorum libri

Lucanus--Pharsalia

Quintilian--Institutio Oratoria

Marco Tullio Cicerone--De Oratore

Tito Liuius--Histories

Valerius Maximus--Memorable sayings and facts

Francesco Petrarch--Poems

Dante Alighieri--Comedy

Cristoforo Landino--Commentary

Alessandro Vellutello--Commentary

Bernardo Daniele--Commentary

Pope John xxij. Papa--Decree

Plato

Iubal: brother di Iubal

Moses

Ezra

Reverend Padri of San Domenic of Bologna

Johann Reuchlin--On Accents

Elia Leuj--Sefer tob

Giovanni Vallense--Sefer Tob

Mutianus, Translator of Gaudentius' Harmonic Institution

Vincenzo Galilei--Dialogue on the ancient and modern music della antica e moderna musica

Cardinal Santo Angelo--libraria

Demetrius Phalereus--Peri ermenias

Pierio Valeriano--Hieroglifics

Oro Apolline--Hieroglyphs

[<iii>-] Pietro de' Natali--Cathalogue of the santi

Censorinus--De die natali

Porphyrius, Commentary to Ptolemy' s Harmonics

John the Deacon--Life of the most saint Gregory

Wulafriid Abbot--liber de Principiis

Trithemius Abbot--De Scriptoribus Ecclesiasticis

Nicolaus Aurificus--De Veritate et Cerimoniis

Don Nicola Vicentino--Antica Musica reduced to modern practice

Johannes de Muris--Musica plana

Philippe de Monte

Antonio Gardano

Bartolomeo Spontone

Cipriano de Rore

Alessandro Spontone

Ciro Spontone

Nicolò Mantoano

Giaches da Ponte

Christoforo Morales

Brother Lodouico Zacchone--Musica pratica

Henrico Isaac

Johannes Frosch--Opusculum Musicae practicae

Don Paolo Pontio--Musical Reasonings

Don Oratio Tigrini--Musical Handbook

Leonardo Maria Picinino

Alypius music theorist-- before Christ years

Aristoxenus music theorist-- 670. years

Architas music theorist--430.

Euclid of Megara--420.

Eratosthenes of Cyrene music theorist--270.

Alexander Didymus Alessandro musico theorist anno Domini 40.

Ptolemy from Pelusium very ancient music theorist--140.

Boethius Roman philosopher mathematician--500.

Psellus physician and mathematician--300.

Cassiodorus monk--575.

Censorinus--anno Domini 240.

Martianus--

Venerable Bede--730.

Porphyrius--240.

Gaudentius music theorist

Plutarch--125.

Odo Abbot of Cluny--920.

Guido d' Arezzo music theorist--1020.

Berno Abbot music theorist--1048.

[-<iv>-] TABLE OF THE MOST NOTABLE TOPICS CONTAINED IN THE  
DIALOGUE of the first DELL NOTABILI CONTENUTE NEL DIALOGO of the  
first day.

a--Writing exhaustively about tones or modes is not easy, nor briefly accomplished--  
page 2

b--The term tone has four meanings in music page 2

c--SUBJECT of the first Dialogue --page 3

d--I Tuonj, ouer Modi primierj antichissimj furono appresso i Musicj tre solamente, e quali--foglio 4

e--To three most ancient tones one was added in the first place, then three, so they were seven in total. Which ones these were, and how it happened and why--page 4

f--The explanation or table of the tones is similar to a scale--page 4

g--The note, or sound called by the Greeks proslambanomenos is always the lowest of the perfect system in the proposed tone--page 6

h--The Dorian tone was considered by Plato and by the ancient philosophers the most beautiful and the most excellent is situated for this reason half-way in the middle of all the others --page 7

i--The tones are correlated to the seven--page 7

k--The tones are just as numerous as the species of the diapason--page 7

l--The species of the diapason are as many as the species of the first two harmonic consonances, namely, 3 are those of the diatessaron and 4 the ones of the diapente, so they are seven in total--page 7

m--There are different ways to adjust the order of the tones to the order of the species of the diapason --page 8

n--Euclid' s and Gaudentius' rule to adjust the order of the tones to the order of the species of the diapason--page 8. 9

o--Table of the tones explained with our characters or musical notes according to Euclid, Gaudentius and Ptolemy--page 10

p--Table of the seven ancient species of the diapason--page 12

q--Table of the seven ancient species of the diapason with the application of the tones according to Euclid and Ptolemy--page 13

r--Difference between Euclid, Ptolemy and Gaudentius in the application of the tones page 14

s--How it is possible to bridge the discrepancy between Ptolemy, Euclid and Gaudentius in the application of the tones--page 14

s--An eighth tone was added to the seven ancient ones--page 16

[<v>-] t--Passage by Aristoxenus which contains the number and name of the tones, or modes, which is considered fragmented--page 16. and page 19.

t--The tones were thirteen according to Euclid and Aristoxenus, and fifteen according to Alypius--page 16

u--Boethius must not be believed when he says that Ptolemy introduced the eighth note, because Ptolemy reprehends and condemns not only the number of eight tones, but also the number of thirteen and fifteen--page 16

u--Boethius' authority has induced many writers of musical matters to say that Ptolemy introduced the eighth tone--page 17

x--Boethius was a very great collector and very diligent organiser and divulgator of the theoretical doctrine of the ancient music theorists--page 18

y--Boethius' very important error in explaining the perfect numbers in his book on arithmetic--page 18

Z--Way to increase the number of the eight tones up to thirteen and fifteen and the table of those orderly set out --page 19

z--Alypius presumed that the main tones are five, which ones these are, and how he added one above and one below each one of these--page 20

End of this table of the most notable topics contained in the dialogue of the following first day.

[Bottrigari, Il trimerone, Giornata prima, leaf bound between pages <v> and 1, ALONSO CVPINO, Paulo Consoni, 2. 4. 7. 8. 9. 10. 6. 3. 1. 12. 11. 5.]

IL TRIMERONE OF THE HARMONIC FOUNDATIONS, or, THE PRACTICE OF MUSIC, DIALOGUES OF THE MOST ILLUSTRIOUS KNIGHT SIGNOR BOTTRIGARI, where the ancient and modern tones, as well as of the different writing characters used by musicians in every age.

FIRST DAY.

Interlocutors,

ANNIBALLE Melone. ALONSO Cupino.

ALONSO Cupino - who was a practical musician, a singer, an instrumentalist, a composer, and a contrapuntist - had a very strong desire to learn and understand how many tones or modes or tropes there really were, and which ones they were, both of those which were used by the ancient musicians as well as by our contemporaries, what was their progress together with everything else that pertained to them. Therefore, knowing, as it was common knowledge, that Messer Annibale Melone was a great expert of this topic, since he laboured for a long time studying them, one day, having met him by chance while he was talking a walk, he begged him greatly and

convinced him to promise that he would explain the whole matter to him at Melone's discretion. A few days later therefore, Alonso went to the school of music where Melone taught, he found him there, he explained to him what he required more in detail and had prompted him to go to see him, and begged him to satisfy him as he had promised. [Plato, Dialogue Theaetetus, or on science at the beginning in marg.] So, while Melone answered and Alonso listened and put questions, and Melone answered, narrated and stated his explanations, there followed then that discourse between them, which will be written by preceding what they said with their name, in order to avoid that boring repetition of 'that one said' and 'this one replied'.

ANNIBALE. Discussing the subject of tropes, or modes, as they were called by the ancient music theorists, or tones, as they are called commonly by our contemporaries – and especially in the way that now more particularly than the day before yesterday, when you asked me unexpectedly and in passing, you have expressed to me that this is what you require of me, namely that I should teach you about it, and you than wanted me to promise you that I would do it –, this is not, I assure you, something that is as easy and swiftly done as perhaps others believe, and maybe also you have convinced yourself that it should be. I say this, not because I am not ready to meet your request in the first place, or because I want to maintain the reputation of the wares that I sell, since I derive no pleasure or delight in denying my friends what I can provide, when I am asked, or in making them beg me to agree to meet their desires, but to let you know that this is really a vast and difficult topic, and to avoid marring your enjoyment of this topic and of my company, should this explanation, which I am about to embark upon for your benefit, turn by chance from a feeling the feeling of anticipation which precedes enjoyment to unexpected annoyance and regret.

Alonso. I am willing, and I want this pledge to be for you a clear and manifest sign of the great trust which I have in you. I want you to rest very assured, I say, that I believe that the subject of the tones is not so easy that with it can be dispatched swiftly and easily in its entirety, and that your kindness towards your friends is always nothing short of abundant. Without standing for any other ceremony on my part, I invite you to begin to start to explain to me these tones.

Anniballe. Euclid writes in his *Isagoge*, or brief Harmonic Institution that this term tone can be interpreted in four ways. His words, originally in Greek, translated into our language are as follows: “Tone has four meanings. It can be interpreted as sound, as interval, as the place of the voice and as its tenure”.

Alonso. I do not understand them very well. Explain them please. Euclid himself explains them by adding. “Those who call the cithara heptatonon [Eptatonon], or containing seven sounds use the term tone to mean sound. It is taken in the sense of the term interval when we say that there is a tone between Mese and Paramese (which for translates as between alamire, and [sbq]mi; where sits the tone of the diazeusis, or disjunction). “It is taken to mean voice - continues Euclid - when we say something like the tone of the voice is Dorian, or Phrygian, or Lydian, or one of the others, which contemporary theorists call first, second, third and so on. This term tone is interpreted as the extension of the voice, as when we say the high, the low, or the middle tone of the voice,” as if we said such and such sings the soprano part [which was called in Latin specifically Cantor add. supra lin.], that one sings the Bass part

[which was called in Latin *Succentor* add. *supra lin.*], and this sings the Tenor part, which in Latin was called *Occentor*.

Alonso. I have very well understood all the four meanings attributed by the ancient music theorists to this term tone, among which - if I am not mistaken - is numbered the meaning which you have begun to explain to me after my request, namely the one occurring in the definitions of first, second, third and other tones, which are called in this way, according to the explanation which you have provided me with, by our contemporary theorists, which are the same as those that Euclid mentions being called by the ancients Dorian, Phrygian, Lydian, and the rest. Please, continue dealing with these continuing the explanation which had already you started.

Anniballe. Before I explain these tones, or modes, or tropes as you want me to do, it is necessary firstly for you understand everything that the ancient theorists have left us written on the subject. But, since this explanation requires a long time, as I said, and since it is already quite late, today we will discuss only the tones of the ancient, and another time later one, tomorrow for instance, or when you want, we will carry on the discussion coming to those described by the theorists nearer to us in time. We will deal with their number and their origin, and also of the Ecclesiastic ones also called *cantus firmus*, or plainchant, as well as measured compositions, according to our contemporary fashion. And if in this section on the ancient modes or tones, as well as in the ones devoted to the Ecclesiastical and modern measured ones, you will ever come across one our contemporary theorists who has, as seems to you to have really opposed opinions, I want to prostrate myself apologising, or rather, I want to declare to you that I did not do this to offend them in any way, nor equally to please anyone else or support their view, in the event that it will seem to you that my views were, and also were in reality very similar to theirs. My sole intention has been to explain to you what I believe to be truth itself, and to conclude I will leave said that its rightful judges will be the knowledgeable and true writers of music, and those who know the good and strong reasons, since these reasons will have guided them and me to our common belief.

Alonso. Do what is easier for you, and better.

Anniballe. I will start then by saying that the tones, tropes or modes first used in antiquity, as Pselus informs us in his harmonic Synopsis also called Music Compendium [-4-] and Ptolemy in the tenth chapter of the second book of his Harmonics, “were only three, namely, Dorian, Phrygian and Lydian. These were also called *aequitoni* and they were named thus after the peoples from which they originated, or from any other such event which might seem true to those who have written about them before us. Also, they were called *aequitoni*, because one exceeded the other by the interval of a tone, namely there was the interval of a tone from the Dorian to the Phrygian, and another tone from the Phrygian to the Lydian.”

Alonso. I like this explanation. As to their names, it must have been similar to when we say *Canzone Francese* or *Canzone Napolitana*.

[e. in marg.] Anniballe. Exactly. They then added another one to these three placing it above the Lydian at the distance of a *limma*, or semitone, as Ptolemy adds in the same passage. In this way they filled the span of *diatessaron*, or, we say, fourth, and they

called that tone Mixolydian from its proximity to the Lydian. Considering then that the distance from said Mixolydian to the Dorian was a diatessaron, or a fourth downwards, they thought that the other modes or tones should not be without some other tones lower than each of them by a diatessaron. Therefore, they called Hypolydian the one that they placed under the Lydian, and Hypodorian the one under the Dorian. Thus they increased their number to total of seven.

Alonso. What is the meaning of these terms Hypodorian, Hypophrygian, Hypolydian?

Anniballe. This is something that Ptolemy tells us in the same book, where he states that Hypo means under, so Hypodorian means under the Dorian mode, Hypophrygian under the Phrygian, and Hypolydian under the Lydian.

Could you provide an illustration of this way of organising them?

Anniballe. I can. I can do better than that. I will provide a commentary to the description given by Ptolemy in the same passage that I mentioned above. Here it is.

[f. in marg.] Alonso. It is similar to a scale, but, to tell you the truth I do not understand it at all.

Anniballe. Some indeed call it a scale, and others a hand, because of what you will understand further on. Others also call it a table. But what is so obscure that it prevents you from understanding it? Perhaps the Greek words, or the lay-out of this table?

Alonso. The words themselves cause me some difficulty to understand it, nevertheless I know that they are Greek terms, and words already used by the ancient theorists. However, what prevents me to understand it

[-5-] [Bottrigari, Il trimerone, Giornata prima, 5; text: T, S, TVONO. HYPODORIO, Nete hyperboleon, Paranete hyperboleon, Trite hyperboleon, Nete diezeugmenon, Paranete diezeugmenon, Trite diezeugmenon, Paramese, MESE, Licanos meson, Parhypate meson, Hypate meson, Licanos hypaton, Parhypate hypaton, Hypate hypaton, Proslambanomenos, HYPOFRIGIO, HYPOLIDIO, DORIO, FRIGIO, LIDIO, MISOLIDIO. gg, ff, ee, dd, cc, [sqb][sqb], aa, g, f, e, d, c, [sqb], a, G, F, E, D, C, A]

is that I see that they are repeated one after the other in each one of these tones. To make myself clearer, I say that I see that the term proslambanomenos appears near the first degree of each one of these parts of the table. Near the second degree I find the word hypate hypaton, and so in all the others that follow I see the same word in the same order.

Anniballe. If you notice that above each one of these columns in the table is placed the name of the tone of mode therein contained with the word laid out in continuous order, you will find easy, I believe, to understand the order of these words as well, since the term proslambanomenos, which means in our language added-on, namely, note, or voice, is always the [-6-] [g. in marg.] lowest of that mode, or tone. The hypate hypaton, which means main one of the main ones is a little higher, and is

always the second sound, or voice of the tone. Similarly, the parhypate hypaton, which translates as nearest to the main of the main ones, being higher than the second one, is always the third. Beyond this, the lichanos hypaton, namely, indicator of the main ones, is always the fourth one and slightly higher than the third. Thus all the others follow from step by step. You must have clear in your mind first that their sequence – as Aristoxenus says in the first book of his harmonic Fragments) is the same as in the letters, which follow one another in a continuous order. You must take into account also that these connected areas marked with the letter T. denote that the interval is a tone, while these connected and marked with the letter S. denote a semitone. Therefore you can understand clearly, as I told you already, the distance between the proslambanomenos of this Hypodorian mode or tone and the hypate hypaton amounts to a tone, from this one to the parhypate hypaton there is another tone, and from the parhypate hypaton to the lichanos hypaton there is a semitone. You can follow this sequence further on in said column of the Hypodorian tone, frapposto interposing the tone of the diazeusis, or separation, which occurs between the mese and the paramese. In this other column then, which represents the Hypophrygian tone, you can see that the distance from its proslambanomenos to its hypate hypaton amounts to a tone, which in turn is only a semitone away from its parhypate hypaton, while the one distance between hypate hypaton and parhypate hypaton in the Hypodorian mode is a tone. Past its parhypate hypaton is the lichanos hypaton which is distant a tone from it. And in such order there follow similar sequences of interposed intervals or spaces. Add to this that, as you can see, between the Hypodorian tone and the Hypophrygian there is the interval of a tone, namely, the proslambanomenos of the Hypodorian sits a tone under the proslambanomenos of the Hypophrygian. The Hypolydian mode follows, which is contained in this third column. Between its proslambanomenos and its hypate hypaton there is a semitone; from its hypate hypaton to its parhypate hypaton there is the interval of a tone, and the distance from its parhypate hypaton and its lichanos hypaton is another tone; and so forth, following its sequence. Equally, between the proslambanomenos of the Hypophrygian tone and this one of said Hypolydian the interval is a tone, namely, that first is a tone lower than the second one. To this one follows the column which contains the Dorian mode, which is the fourth one, where you can see clearly that there is a semitone between its proslambanomenos and the proslambanomenos of the preceding Hypolydian, and between itself and its hypate hypaton there is the interval of a [-7-] tone, just, as you have seen, it is the case in its Hypodorian, which follows the same sequence upwards. The same sequence is maintained in the Missolydian tone, just as the Phrygian and Lydian follow the same of the Hypophrygian and Hypolydian, always with the interposition of the tone of the separation.

Alonso. Before you move on to explain more about this table, please explain to me what this tone of the separation is.

Anniballe. It is not the right time now for me to explain it to you. I will tell you about it some other time, where and when it is appropriate.

Alonso. Be it as you please.

[h. in marg.] Anniballe. You must know also that the Dorian tone has been considered the most beautiful and excellent of all the others by theorists and philosophers, and particularly by Plato. For this reason it was put in the middle of all the others, since

three are beneath it, namely, the Hypolydian, Hypophrygian and Hypodorian, and, equally, three above it, namely, the Phrygian, Lydian and Mixolydian [i. in marg.]. Therefore it is set among the tones in the same position as the sun is situated in the middle of all the other planets, since Mars, Jupiter and Saturn are located above it, and Venus, Mercury and the Moon beneath it. [Ptolemy deals with this at chapters eight and nine of the third book of his Harmonics, until the end, Cicero in the Somnium Scipionis, and Boethius at chapter twenty-seven of the first book of his music add. infra lin.] The ancient theorists maintained also that all the other tones were governed by the Dorian, both beneath it, and above it, and that in the beginning every mese was tuned to it, note with note.

Alonso. I do not know what this mese is, which you have mentioned to me.

Anniballe. The mese is a note which is so called because it is located in the centre of the perfect system, namely, the system made up from the fifteen notes within the interval of a bisdiapason. This mese is always in unison with a string, or note of the Dorian. Starting from the Hypodorian, I state that its it forms an unison and produces the same sound as the hypate meson of the Dorian. The mese of the hypophrygian forms an unison with the parhypate meson of the Dorian; the mese of the Hypolydian does the same with lichanos meson of the Dorian; the mese of the Phrygian forms a unison with the paramese of the Dorian; the mese of the Lydian is the same note, and it is in unison with the trite diezeugmenon of the Dorian; the mese of the Myxolydian does the same with the paranete diezeugmenon of the Dorian. All this is contained in the ninth chapter of the second book of Claudius Ptolemy' s Harmonics – in the opposite order though, going from the high to the low -, who repeats in the ninth chapter of the said second book that we must assume that the tones or modes, as you can see, only seven, just as seven are the species of the diapason, which are as many as the species of the first consonant intervals, namely, of the diapente, and the diatessaron added together. This chimes with what Gaudentius states in the eighth chapter of his Harmonic Institution, and Ptolemy himself discusses these seven species of the diapason, the three of the diatessaron and the four of the diapente, explaining them in the third chapter of the same second book, according to the stable sounds, or voices, namely, those that are common to the beginning and end of each tetrachord in every harmonic genus. However, since we want to apply them to the tones or modes in a sequential order, this is hard to observe; equally, if one wants to keep to the order of the species of the diapason, one cannot observe the order of the tones. [m. in marg.] In fact, to maintain intact the order of the tones, it is necessary that the sixth species of the diapason pertains to the Hypodorian, the seventh to the Hypophrygian, the first to the Hypolydian, the second to the Phrygian, the third and fourth to the Lydian and the fifth to the Mixolydian. Conversely, if one wants to keep the order of the species of the diapason, the first species will contain the Hypolydian, the second one the Dorian, the third, fourth and fifth one the Phrygian, the Lydian and the Mixolydian, as I said.

Alonso. These things are very hard to grasp, even for those who are more intelligent than I am. Could you please explain them more clearly, or provide me with a demonstration according to our music conventions?

Anniballe. Perhaps Euclid will clarify this for you through what I am about to say. In his brief harmonic Institution, he says that the tones were only seven. Equally, the

species of the diapason were also seven, as I have mentioned to you already. Euclid pairs each species with a trope or tone, saying these words. [Euclid, page 14 in marg.] “The first species of the diapason is the one that has a semitone in the lowest position and another one in the seventh place going upwards, namely between parhypate hypaton and trite diezeugmenon, and the Mixolydian tone or mode was adapted to this species. The second has the semitone in the third place from the bottom and another one in the seventh place between parhypate hypaton and trite diezeugmenon, and the Lydian tone or mode was adjusted to it. The fourth has a semitone at the very bottom and another one in the fifth space upwards, namely, from hypate meson to nete diezeugmenon, and the Dorian mode or tone was accommodated to it. The fifth has a semitone at the bottom and another one in the fifth place going upwards, namely, between parhypate meson and trite hyperboleon, and the Hypolydian tone or mode was accommodated to it. The sixth has [-9-] the semitone in the third space upwards from the bottom and another one in the second going from the high register towards the low, namely, between lichanos meson and paranete hyperboleon, and the Phrygian mode was accosted to this one. The seventh and last one has the semitone in the second space from the bottom and another one in the fifth going towards the high register, or between from mese to nete hyperboleon, or from proslambanomenos to mese, and the Hypodorian mode or tone was applied to this species.” This is also recounted by Gaudentius in chapter eight and last of his harmonic Institution. [n. in marg.] It is true nevertheless that he uses and adopts the composition of the diatessaron with the diapente, instead of talking about the location of the semitones, as Euclid does. He says that “the first species of the diapason is made up by the diatessaron in conjunction with the first species of the diapente. The second species of the diapason is composed by the second species of the diatessaron and of the diapente. The third one is made up of the third species both of the diatessaron and of the diapente. The fourth is composed of the first species of diapente and of diatessaron at the distance of an octave. The fifth species is composed of the second of both diapente and diatessaron at the distance of an octave. The sixth is contains the third species of the diapente and diatessaron at the distance of an octave. Finally, the seventh and last species of the diapason is composed of the fourth species of the diapente, and of the first of the diatessaron, it being connected to it.” Now, if you want, I will provide you with a demonstration of it according to our practice and with the characters of our musical notation, in the best and most adequate way possible, albeit I could direct you to the demonstrations clearly explained by the knight Signor Hercole Bottrigaro in his commentaries and translations of the said brief harmonic Institution by Euclid and of Ptolemy’ s Harmonics.

Alonso. You would do please me greatly, because there would be no time lag, and the memory of what you have explained to be would be still fresh in my mind.

[Bottrigari, Il trimerone, Giornata prima, 9; text: Nete Hyperboleon, Paranete Hyperboleon, Trite Hyperboleon, Nete Diezeugmenon, Paranete Diezeugmenon, Trite Diezeugmenon, Paramese, MESE, Licanos Meson, Parhypate Meson, Hypate Meson, Licanos Hypaton, Parhypate Hypaton, Hypate Hypaton, Proslambanomenos, Hypodorio, [Gamma], A, [sqb], C, D, E, F, G, a, [sqb][sqb], c, d, e, f, g, aa, Hypofrigio, Hypolidio, [Gamma], A, [sqb], C, D, E, F, G, a, [sqb][sqb], c, d, e, f, g, DORIO, Frigio [Lidio ante corr.], Lidio, Missolidio]

Annibale. First of all, I will provide you with a description of the tones according to Ptolemy and using our system of notation, and, in order to complete the explanation of Ptolemy's table which I explained above, I state now that Gammaut corresponds to the proslambanomenos of the Hypodorian tone, or mode, Are to the hypate hypaton, and equally, [sqb]mi to the parhypate hypaton, Cfaut to the lichanos hypaton, Dsolre to the hypate meson, Elami to the parhypate meson, Ffaut [-10-] to the lichanos meson, and Gsolreut to the mese. The very same happens in the Hypolydian tone, or mode of this first one of Ptolemy's tables. In fact, the proslambanomenos corresponds to the [Gamma]ut of this second table, its hypate hypaton to Are, the parhypate hypaton to [sqb]mi, the lichanos hypaton to Cfaut, the hypate meson to Dsolre, the parhypate meson to Elami, the lichanos meson to Ffaut, and, finally, the mese to Gsolreut. In the very same way, the proslambanomenos of the Dorian tone in this first of Ptolemy's tables corresponds to the [Gamma]ut of the second one, the hypate hypaton corresponds to Arte, the parhypate hypaton to [sqb]mi, the lichanos hypaton to Cfaut, the hypate meson to Dsolre, the parhypate meson to Elami, the lichanos meson to Ffaut, the mese to Gsolreut, the paramese to alamire, the trite diezeugmenon to the high [sqb][sqb]mi, the paranete diezeugmenon to csolfcut, the nete diezeugmenon to dlasolre, the trite hyperboleon to the high elami, the paranete hyperboleon to the high ffauf, and the nete hyperboleon to the high gsolreut. Now you can see – as I have told you when I provided you with the explanation of this first table – that the mese of each one of these seven tones corresponds to a note of the Dorian. Therefore, the mese of the Hypodorian, which corresponds to Gsolreut is in unison with the Dsolre of the Dorian; the mese of the Hypophrygian, which corresponds similarly to Gsolreut, relates to the Elami of the Dorian; the mese of the Hypolydian which is in its Gsolreut, corresponds to the Ffaut of the Dorian. This is what concerns the lower tones. As to the higher ones, the mese of the Phrygian, which is in its Gsolreut, corresponds to the alamire of said Dorian; the mese of the Lydian, which is in its Gsolreut, is in unison with the high [sqb][sqb]mi of the Dorian; finally, the mese of the Mixolydian, which is itself in Gsolreut as well, corresponds to the csolfcut of the Dorian. And in this way we have completed the comparison of this table according to Guido d' Arezzo and our usual practice with this one by Ptolemy.

Alonso. I appear to have understood very well. And I will present you with a demonstration of it with our musical notes, if you do not mind.

Annibale. Please go ahead, as I will be really glad to see that this is as you say it is.

[Bottrigari, Il trimerone, Giornata prima, 10; text: Alonso. Hypodorio, Hypofrigio, Hypolidio. DORIO. Frigio. Lidio. Missolidio.]

[-11-] Annibale. From this description, which you are producing, I deduce that you understood very well – of which I am extremely pleased – that you have understood perfectly all that I have been discussing up to this point. Continue, please, and then ask me what you need.

Alonso. I am not confident yet that I can pronounce correctly these Greek terms, so, to avoid tripping over their pronunciation, I will use our musical notes which corresponds to those terms, as you have shown me. I will say that the lowest voice of the Hypodorian, called proslambanomenos, must correspond with reason to our [Gamma]ut, and the same will be in the case of the other 15. notes in order up until

the high *gsolreut*. Similarly, the lowest note of the Hypophrygian, which is its *proslambanomenos*, must correspond to *Are*, and so on in sequence for fifteen notes up to the high *Alamire*. Also, the lowest note, or *proslambanomenos*, of the Hypolydian, must correspond to  $[\text{sqb}]mi$ , and the other fifteen notes must follow orderly upwards up to the very high  $[\text{sqb}][\text{sqb}]mi$ . I also maintain that the Dorian must start with its *proslambanomenos* in *Cfaut* and move towards the high register across fifteen notes up to the high *csolfaut*. The Phrygian, after the Dorian, must have his *proslambanomeons* in *Dsolre*, and, rising across fifteen notes one after the other, it must arrive at the high *Dsolre*, called nowadays *dsolre*. The Lydian must have its *proslambanomenos* in *Elami*, and, rising through its perfect system made up of fifteen notes, it must arrive at the very high *elami*, or, as it is called commonly, *ela*. The Mixolydian must start with its lowest note, the *proslambanomenos*, in *Ffaut*, and, following upwards across its fifteen notes in sequence, it must arrive to the highest *ffaut*. I said that each of these tones must have its *proslambanomenos*, or lowest note, recalling that you told me that Euclid, Ptolemy and Gaudentius relate to us that the first note in the Dorian tone, and its lowest sound, is lower than its second one by a tone, that the second is lower than the third by another tone, and the third one lower than the fourth one by a semitone. The Phrygian, they say, has its lowest note lower than its second note by a tone, the second lower than the third one by a semitone and the third one lower than the fourth by a tone. The lowest note of the Lydian mode is a semitone beneath its second note from the bottom, the second note is lower than the third one by a semitone, and the third one is another tone lower than its fourth note. The Mixolydian mode is similar to the Dorian because it is a diatessaron higher, just like the Hypodorian, which is itself a diatessaron beneath the Dorian. The same holds for the Hypophrygian and the Hypolydian, both of which are a diatessaron lower than the Phrygian, and Lydian respectively. Hence I cannot imagine, nor can I believe, that, [-12-] if one wants to adjust the ancient modes to our practice, they can be accommodated in another position, especially if we want the Dorian tone to be a tone lower than the Phrygian and the Phrygian another tone lower than the Lydian, and the Lydian a semitone lower than the Mixolydian, and consequently and similarly the Hypodorian from the Hypophrygian, and this one from the Hypolydian, and this one from the Dorian mode, as you said to be the opinion of those ancient theorists. In fact the distance from  $[\text{Gamma}]ut$  to *Are*, and from *Cfaut* to *Dsolre* is a tone; from *Are* to  $[\text{sqb}]mi$ , and from *Dsolre* to *Elami* it is also a tone, and from  $[\text{sqb}]mi$  to *Cfaut*, and from *Elami* to *Ffaut* it is a semitone.

Anniballe. I recognise that you have understood what I said very well, but you must also bear in mind that, although it is said that the Dorian tone is similar to the Hypodorian, and equally the Hypophrygian to the Phrygian and the Lydian to the Hypolydian, this has to be understood to be the case only in the case of their lowest diatessaron, because in any other part the species of the diapason are different one from the other, as you will be able to see at the right time, and in the right place.

Alonso. I seem to have understood as well these seven ancient species of the diapason. However, I tell you that the first species, according to what you have told me to be Gaudentius' opinion, is the one that begins on the low  $[\text{sqb}]mi$  and ends on high  $[\text{sqb}][\text{sqb}]mi$ , by way of the first species of the diatessaron which starts on the

low [sqb]mi and ends on Elamj, to which is added the first species of the diapente, which spans from Elami to the high [sqb][sqb]mi, in this way.

[Bottrigari, Il trimerone, Giornata prima, 12; text: prima specie, seconda specie, terza specie, quarta specie, quinta specie, sesta specie, settima specie]

The second species is this one, which starts on Cfaut and ends on csolfaut, by way of the second species of the diatessaron which spans from cfaut to Ffaut, to which is added the second species of the diapente, which extends from Ffaut to csolfaut. The third species of the diapason begins on Dsolre and ends in dlasolre, by way of the third species of the diatessaron, which spans from said Dsolre as far as Gsolreut, to which is added the third species of the diapente, which extends from said Gsolreut to Dlasolre. The fourth species of the diapason begins on the low Elami and it ends on high elami by way of the first species of the diapente, which begins on said low Elami and ends, as it did contributing to the first species of the diapason, on the high [sqb] [sqb]mi, having added above the first species of the diatessaron at the interval of an octave, which spans from said high [sqb][sqb]mi to high elami. The fifth species of the diapason extends from the low Ffaut to the high ffaut, by way of the second species of the [-13-] Diapente, which starts in said low Ffaut and ends in csolfaut, and of the second species of the diatessaron at the interval of an octave which is from csolfaut to the high ffaut. The sixth species of the diapason starts from Gsolreut and ends on the high gsolreut, by way of the third species of the diapente, which spans from Gsolreut to dlasolre and with the addition fo the third species of the diatessaron at the octave, which spans from said high dlasolre to the high gsolreut, with the addition of the third species of the diatessaron at the interval of an octave, which is between high dlasolre and gsolreut. The seventh species of the diapason starts on alamire and ends on high alamire, by way of the fourth species of the diapente, which spans from alamire to the high eelami, and of the first species of the diatessaron at the interval of the eleventh above, namely between said high elami, and the high aalamire.

Anniballe. You have many things to demonstrate in order to show me that you have completely understood. Therefore, carry on.

Alonso. The seven species of the diapason, according to Euclid' s exposition.

Anniballe. Please add, 'and according to Ptolemy' s words in said chapter five of he second book of his Harmonics.'

Alonso. They have to be explained with the application of each one of these seven tones in this way, starting from the low [sqb]mi. In this first species of the diapason we can see clearly that the semitone is in the first low space between [sqb]mi and Cfaut, and in the fourth upwards or downwards between Elami and Ffaut. In the second species the semitone is truly in the third place downwards between Elami and Ffaut, and upwards between the high [sqb][sqb]mi and csolfaut. In the third one, both semitones are in the second space both downwards, between Elami and Ffaut, and upwards, or, we could say, in the penultimate space going upwards between [sqb] [sqb]mi and csolfaut. The fourth species has one semitone in the first and lowest space, namely, between high Elami and csolfaut, and the other in the antepenultimate space going upwards, namely, between high elami and csolfaut. The fifth has a

semitone in the fourth space downwards, between high Elami and Csolfaut, and the other one in the last place upwards, between high eelami and ffaut. The sixth has one semitone in the third space downwards, between high [sqb][sqb]mi and csolfaut, and the other one in the penultimate space upwards, between high Elami and ffaut. The seventh and last species has a semitone in the second space in the low register, and the other one in the fifth and antepenultimate space upwards, namely, between high [sqb] [sqb]mi and csolfaut, and between high eelami and high ffaut, or, in its lower octave, between [sqb]mi

[Bottrigari, Il trimerone, Giornata prima, 13; text: Missolidio. prima, Lidio. seconda, Frigio. terza, Dorio. quarta, Hypolidio. quinta, Hypofrigio. sesta, Hypodorio. ottava, ouero]

[-14-] and cfaut, and between Elami and Ffaut. Now, I write down here these seven species of the diapason, and I organise them in this way, which seems to me to be the same way adopted by Gaudentius, as you told me.

Annibale. This is how it was, but with a retrograde or inverted order, since the Mixolydian was put in the low register and the Hypodorian in the high register. You can see and know this by comparing it to this other description that you produced of the seven species of the diapason and the sequence of the modes according to Ptolemy' s, that these three most excellent theorists [r in marg.] agree very well in their description of the species of the diapason, but they are in great disagreement as to the application of the tones to those species. In fact, Euclid and Gaudentius assign the first species to the Mixolydian more, while Ptolemy assigns it to the Hypolydian. The result of this is that in their descriptions of the sequence of the tones, the order of one is inverted compared to the other. Moreover, you can be clear about the difference between Ptolemy' s constitution, or system, or creation of said tones and that of the other two theorists, who are in such agreement with each other, since Euclid and Gaudentius move upwards by semitone, tone and tone to form the Mixolydian mode, while Ptolemy, similarly moving upwards, proceeds by a compound tritone. Euclid in the Lydian proceeds upwards by tone, tone and semitone, and in the Phrygian he moves upwards from the low register by semitone, and Ptolemy as well is also in agreement with this pattern. But in the Dorian Euclid moves from the low register upwards by semitone, tone and tone, just as in the Mixolydian, while Ptolemy organised his Dorian with tone, tone and semitone, which is different from the pattern of his Mixolydian. Euclid, in the Hypolydian moves by a compound tritone, while Ptolemy builds it with a semitone, a tone, and another tone, just as the Lydian. Euclid then structures the Hypophrygian by tone, tone and semitone, while Ptolemy creates it of a tone, a semitone, and another tone, just as his Phrygian. Finally, the Hypodorian is created by Euclid with a tone, a semitone and another tone, with the same pattern that he uses in the Phrygian, while Ptolemy moves upwards by tone, tone and semitone, just as in his Dorian. Therefore, in conclusion it seems that, as I said, in this respect [s in marg.] they clash and disagree greatly. This clash can be reconciled by reversing the order in which they proceed, according to the knight Signor Cavalier Hercole Bottrigaro' s Annotations to Euclid' s and Ptolemy' s Harmonics, which I have mentioned above. Namely, as Euclid, as one can see, moves in his Mixolydian from the low register upwards by semitone, tone, and tone, [-15-] so Ptolemy descends is that mode from the high to the low register via the same intervals, namely tone, tone and semitone. And just as in the Lydian Euclid ascends by steps of tone,

tone, and semitone upwards from the low register, likewise Ptolemy descends downwards by the same intervals. In the Phrygian mode, Euclid moves upwards by tone, semitone, and tone, while Ptolemy moves downwards using the same intervals. Similarly there follow that all of these other four modes, or tones, which, for this reason, are also called tropes, a word what in our Italian language means connection, as you can see not only from their first tetrachords, but from all their diapason, bearing in mind always the inverted or retrograde sequence, namely, upwards from the low register, or downwards from the high register. And this was really a very subtle and most beautiful observation.

Alonso. We could add, I believe, another point of disagreement between Ptolemy and Euclid and Gaudentius, which consists in the names of the notes, since, on the basis of these explanations of the application of the tones, or modes, the note [sqb]mi, which Euclid and Gaudentius name hypate hypaton, would be called parypate hypaton according to Ptolemy. Therefore, the action of calling it with two names, dividing it from itself, would create confusion.

Anniballe. Equally, one could remedy this difficulty easily, as said knight Signor Hecole Bottrigaro mentions in the above mentioned passage, where he states that, since the first and lowest note of the perfect system has to be called proslambanomenos, the second hypate hypaton, the third one parhypate hypaton and similarly all the rest in an uninterrupted sequence, one has to pay little attention and consideration to the name, or names, since, as Aristotle's says, they were given in conformity to the free will and consent of those who imposed them, but one must adhere instead to their meaning. Moreover, we find confirmation of the demonstration given in the tables of said tones that have been drawn earlier, not only in Ptolemy in chapter five and at the end of chapter ten of the second book of his Harmonics where he describes the tables of the tones, but also in Euclid, not very far from the beginning of his brief harmonic Institution, where he deals with the three harmonic genera; and much more clearly, or rather, in the most clear way, in Gaudentius at the beginning of chapter seven of his Harmonic Institution with these words, which I translate. "The ancients called proslambanomenos the lowest of all sounds, from which they started their music. They did not always select it according to nature, but because of its position in the lowest register. In fact, the proslambanomenos (listen carefully) was not the same sound in every tone, but a different one in different ones, as later [-16-] further on I will prove." He then provides its demonstration with these words, which are there, towards the end of chapter eight. \_\_\_\_\_ Martianus Capella himself in book nine on music, under the heading about the symphonies says that the mese of the lower modes turn into the proslambanomenos of the high modes. Now, what he has said referring to the note proslambanomenos has to be understood of every other one of said largest perfect system individually. So, you have to be enlightened reasonably thanks to the resolution provided of this doubt of yours, although, so to speak, I have provided with the illness and the method to cure it, namely, the matter of the doubt, and its resolution.

Alonso. I remember not, and I am entirely satisfied with this way of solving it. Please, now continue your discussion of the modes, or tones.

Anniballe. So, the most ancient and first theorist came to the conclusion that the tones are not just three, but seven, and they ordered them and finalised them in the way that

you have seen and heard. Other ancient theorists came later, who wanted them to be eight, as I hinted at earlier, [s. in marg.] adding another tone, or trope above the Mixolydian, doing so to complete the diapason entirely. They called this tone Hypermixolydian, namely, above the Mixolydian, because hyper means above, as I noted that Ptolemy says where he also explains the word hypo, namely at chapter ten of the second book of his Harmonics. Other theorists who lived after them not content with those eight went further and added more tones, as Aristoxenus did, who increased their number up to thirteen, as Euclid tells in his brief harmonic Institution, [t. in marg.] and Aristoxenus himself writes in the second book of his Harmonic Elements. But that book, where are contained the number, names and also the sequence of those has come down to us in such a fragmented form, in my opinion, that we can extract not much from it. Alypius increased their number up to fifteen, as one can suppose from examining the fragments of his Harmonic Isagoge, and built them in such a way that both those and these by the interval of a semitone. However, Ptolemy arguing against the first ones in chapters eight nine of the second book of his Harmonics, and in chapter eleven against Aristoxenus, Alypius and their followers, demonstrates with very convincing arguments that the modes, or tones must and reasonably cannot but be seven, and that, since the ones beyond those seven are useless and pointless, so the act of increasing their number through continuous intervals of a semitone is very inappropriate and useless.[u. in marg.] Nor should one trust Boethius when he says at chapter seventeen of the fourth book of his music that Ptolemy added the eighth mode, or tone to the other seven and that he called it Hypermixolydian, since Ptolemy at chapter eight, greatly rebuking who introduced said eighth tone for being responsible [-17-] of providing an excuse for the theorists who came after him to add other modes without any reason, says precisely these words, traduced into our language: “Therefore, those who only arrive at the diapason reasonably count in the mode which is removed by a diapason from it, since they do the same who overshoot the set target, but these deceive themselves in one thing, while those in more than one, so much so that not without reason that it is blamed on them and ascribed to them as their fault that they almost caused and initiated the habit of going beyond the seven modes.” And I want you to know that Boethius' authority – himself a really great writer – was in the past and is up to our day such, [u. in marg.] that has induced many excellent modern theorists who came before us to allow this false story be written in their books on music, namely, that Ptolemy was the person who added the eighth mode, or tone to the seven pre-existing ones. I am very convinced that this stemmed from the fact that Ptolemy's Harmonics had not been available – indeed they have only been rediscovered a few years ago -, and not only in the Greek language in which Ptolemy wrote, but translated into Latin by several people, and soon they will appear in print translated by Signore Bottrigaro with improvements and corrections of the mistakes caused by the copists and the passage of time, causing many lapses, to which the knight Signor Bottrigaro could only bring all the helpful expertise, which he has been to muster, adding also light and clarity, through some annotations and demonstrations, to make them better understood.

Alonso. All Italians will be greatest obligation to acquire them, but especially those, who will want to and derive pleasure from mustering music theory. But this eighth tone, which you have called Hypermixolydian, if I remember correctly, being set as a completion of the diapason, is it not the same as the Hypodorian tone transported an octave higher, and therefore, if I am not mistaken, very similar to said Hypodorian tone in every part of it?

Anniballe. More, it is the same, except for the fact that it differs for being higher, and this is the most important and strongest ground on which Ptolemy was opposed to the opinion of those ancient theorists who introduced it, namely he showed that they did not introduce anything new in music.

[-18-] Alonso. What is the distance between the Mixolydian and this mode, or tone?

Anniballe. According to the above explained application of said modes or tones to the seven species of the diapason according to Euclid and Gaudentius, and going backwards, as I have shown you, it is separated by the Mixolydian by a tone, which is the one of the diazeusis, or, as we say, disjunction, or separation, which is always a sesquioctave and is called major. But, according to Ptolemy' s opinion, its distance does amount to a sesquioctave tone, but it is not the tone of the separation, but another one lower, which sits between parhypate meson and lichanos meson.

Alonso. In this way perhaps, according to Euclid and Gaudentius?

[Bottrigari, Il trimerone, Giornata prima, 18; text: Hypodorio. Hypermissolidio. Missolidio. E conforme à Tolomeo, così]

Anniballe. Excellent. You can see in this way that either according to Euclid' s and Gaudentius' opinion, or according to Ptolemy' s, this Hypermixolydian is always the same as the Hypodorian, either being in unison with it, or at the distance of an octave. Therefore, Ptolemy' s explanation is proved to be very true.

Alonso. Very true indeed. And I am very surprised that those ancient theorists, who lived before, or at the same time as Ptolemy and invented this eighth tone, did not spot this crass mistake. I am also greatly surprised that Boethius, who is considered by everybody the prince of the music theorists who wrote in Latin, ran into this mistake, which you state and demonstrate clearly that he ran into, namely, to have attributed to Ptolemy the addition of said mode, or tone Hypermixolydian.

[x. in marg.] Anniballe. One cannot deny, if not through too overt malice, that Boethius was an extremely great collector, and very diligent organiser and demonstrator of the theoretical doctrine of those ancient theorists, but, as we say, even Homer sometimes is asleep. Of this error, [y. in marg.] as well as of another a very important one which occurs in his Arithmetic, where he presents the demonstration of the perfect numbers, was unveiled to me by knight Signor Cavaliere Hercole Bottrigaro.

Alonso. Is this possible?

Anniballe. Possible, indeed, and certain. However, let us go back to our topic of the tones. As I said, other more recent theorists were not content with these eight tones, and arrived at the [-19-] [z. in marg.] number of thirteen, dividing them by semitones, as Euclid demonstrates in his brief harmonic Institution, according to the opinion of Aristoxenus, who writes about it in the second book of his Harmonic Elements. I reply to you that I believe that this passage has come down to us in incomplete form,

but Euclid provides the names and explains their order: Hypermixolydian, which is also called Hyperphrygian, the two Mixolydians, the higher of the two is called Hyperiastian, and the other one Hyperdorian, two Lydians, of which the lower is called Aeolian, and two Phrygians, the lower of which is called Hypoaeolian, then the two Hypophrygians, of which the lower is called Hypoiastian, and finally the Hypodorian, which, as the Dorian, is only one. This is the table of said modes, or tones.

[Bottrigari, Il trimerone, Giornata prima, 19,1; text: uij. Hypermissolidio, Hypofrigio 1. uij. Hyperiastio 2. Hyperdorio, Missolidio, 3. uj. Lidio, 4. Eolio, 5. v. Frigio, 6. Īastio 7. iiij. Dorio, 8. iij. Hypolidio, 9. Hypoeolio, 10. ij. Hypofrigio, 11. Hypoiastio, 12. i. Hypodorio, 13.]

Alonso. If each of these thirteen tones, or modes one is higher then the other one by a semitone, said first Hypermixolydian, and this last Hypodorian fall within the diapason.

Anniballe. This is what Euclid states, and it really is so.

Alonso. Therefore, their demonstration according to the common practice of our theorists has to be as follows, starting with the first natural semitone.

[Bottrigari, Il trimerone, Giornata prima, 19,2; text: 1, Hipermissolidio. Hyperfrigio. 2, Hyperiastio. 3, Hyperdorio. Missolidio. 4, Lidio. 5, Eolio. 6, Frigio. [Īastio ante corr.], 7, Īastio, 8, DORIO, 9, Hypolidio. 10, HypoEolio. 11, Hypofrigio. 12, Hypoiastio. 13, Hypodorio. E secondo Tolomeo cosi. Hypermissolidio, [[8]]]

[-20-] Therefore, as we say, the cloth thac is not used for the trunk busto, is used in the sleeves, namely that action of taking what is redundant in the high register, can be added in the low register underneath.

Anniballe. Very good. You must have noticed the warning that I gave you, namely, that since the Hypolydian mode is set a diatessaron under the Lydian mode - hence that prefix hypo which means under -, that similarly its companion called Aeolian has under itself another one called Hypoaeolian, namely, underneath the Aeolian, and similarly the Iastian with the Hypoiastian, and besides, and that above the Dorian itself, and above the Iastian, the Phrigian, Aeolian and Lydian modes lay equally at the distance of a diatessaron the Hyperdorian, Hyperiastian - which are also called Mixolydian -, the Hyperphrygian, or Hypermissolydian, the Hyperiastian, which are also called Mixolydian, the Hyperphrygian, or Hypermissolydian, and for this reason they carry the prefix hyper, which means above, as I have already mentioned.

Alonso. I remember. These systems are really large. But, which ones are the tones whose number has been increased by Alypius up to a total of fifteen, as you said?

Anniballe. It is not less important, I will say, the system described by Alypius in those many tables of his, where, at the end, in the manuscripts that I have seen, an entire table is missing, and a little less than half of another one. Besides, there is hardly a

table with some note signs missing. Therefore, his system is such, with the premise though that, as many ancient theorists wanted the tones or modes to be five mainly, [A. in marg.], namely, Lydian, Aeolian, Phrygian, Iastian, and Dorian, which are also the fourth, fifth, sixth, seventh, and eighth respectively of the twelve of Aristoxenus as described by Euclid, if we interpose among the first three, Dorian, Phrygian, and Lydian the Iastian and Aeolian, namely the Iastian between the Dorian and the Phrygian, and said Aeolian between the Phrygian and Lydian. Then, he added and accommodated two collateral tones to each one of these five, one of which would be lower of said principal tone, and the other one higher, and then naming those as well by adding the prefix hypo and hyper, as you can see from this table, which I reproduce here for you.

[Bottrigari, Il trimerone, Giornata prima, 20; text: I. 2. Hyperlidio, 1. Lidio, 3. Hypolidio, II. 5. HyperEolio, 4. Eolio, 6. HypoEolio, III. 8. Hyperfrigio, 7. Frigio, 9. Hypofrigio, IIII. 11. Hyperïastio, 10. ïastio, 12. Hypoïastio, V, 14. Hyperdorio, 13. Dorio, 15. Hypodorio]

However, it is very true that in each one of Alypius tables one can see first the description of the main tones, or tones, namely, Lydian, Aeolian, Phrygian, Iastian, Aeolian and that after each one there follow in order its collateral tones, [-21-] hyper, and hypo, and for this reason I have put numbers in front of them to signify this system, which, together with the number and names of these tones, we have also an account by Martianus Capella in his music, where he deals with the symphonies, and an other one by the great Cassiodorus in his Music.

Alonso. If the distance between these modes, or tones described to us by Alypius amounts to a semitone, as it seems, it is inevitable that they will surpass the span of a diapason, since, if the thirteen modes of Aristoxenus are contained within a diapason, and these of Alypius are fifteen, namely two more than those, I deem it impossible, if these, as those, proceed always at the interval of a semitone, that they could be contained within the tight terms of said diapason.

Anniballe. Certainly, it is impossible that they would fit, as said diapason can contain but twelve semitones of Aristoxenus.

Alonso. Ah, you are causing me to fall into another difficulty pertaining to the twelve tones of Aristoxenus.

Anniballe. Which?

Alonso. How can those tones of Aristoxenus, if they are thirteen, be contained within the twelve semitones of said diapason.

Anniballe. This difficulty of yours can be resolved with the easiest ease. I tell you that, since the spaces are always one less than the terms that delimit them, the semitones, which are intervals, or spaces, are necessarily fewer than terms, which are the proposed tones, by one. For this reason, since those modes, or tones of Aristoxenus thirteen, they cover very well those twelve semitones, which constitute and form the diapason. See, for instance those golden freezes of these leather sword holders, called by their makers columns. These are indeed thirteen, and do they not

frame those areas of red leather, which are really twelve? Imagine now that the entire diapason is contained between that first and that other thirteenth and last of said columns, or golden freezes, and it is divided in twelve semitones, which are represented by the twelve segments of red leather. Hence, will the modes, or tones no correspond to the thirteen columns or golden freezes?

Alonso. They certainly will. This example was very appropriate, but how should I interpret the position of the fifteen tones described by Alypius, and related by Martianus and Cassiodorus?

[-22-] Anniballe. You must add two modes to the number of thirteen, which were those of Aristoxenus. These must be separated one from the other by a tone, and must be named according to the names mentioned by Alypius, Martianus and Cassiodorus, as I have shown you. Nor should you be impeded or delayed by the doubt that said fifteen tropes, or tones have to be contained within a diapason, remembering that Ptolemy not only reprehends those very ancient theorists who increased the number of said tones up to a total of eight, and thirteen, in order to cover the entire diapason, but also the others, who went beyond the terms of the diapason, among whom was Alypius together with Martianus, Cassiodorus, and also

Alonso. I imagine that this could be the appropriate description of said fifteen tones of Alypius, according to our contemporary musical characters.

[Bottrigari, Il trimerone, Giornata prima, 22; text: Hyperlidio. LIDIO, Hypolidio. HyperEolio. [Hyperfrigio. ante corr.], FRIGIO. [EOLIO, corr. supra lin.], HypoEolio, [Hypofrigio. ante corr.], Hyperfrigio. FRIGIO. Hypofrigio. Hyperïastio. ïastio. Hypoïastio. Hyperdorio, DORIO. Hypodorio.]

Anniballe. You have imagined very well.

Alonso. Does Boethius discuss those thirteen tones of Aristoxenus as well as these fifteen of Alypius?

Anniballe. He does not say even a word about them. It seems quite strange, especially as far as those of Aristoxenus are concerned, because he was, so to speak, the follower of Aristoxenus par excellence. Moreover, he, just as Vitruvius in the fifth chapter of his Architecture, declares to be in search of them, demonstrating the species of the three harmonic genera in the twelfth chapter of the fifth and last book of his Music, preferring the tetrachords of said Aristoxenus more eagerly than those of any other theorist. Then, not only in chapter [<13.>] of the fifth book, but in chapter three of his third book, embracing Ptolemy's arms, contends against him, by flying the flag, as they say, and with drawn sword. To sum up, Boethius does not discuss the thirteen tones, but only of the first eight, as I will explain more in depth when I deal with the topic that I have left to discuss, regarding the number, order and names of the modes, or tones so-called Ecclesiastic, which are our own ancient ones, and cover the plainchant, or cantus firmus, and our contemporary compositions. I would do this readily now that you must have understood in this way what I have referred concisely regarding the number, order, and names of the tropes and tones, as we want to call them, both of the most ancient and of the ancient theorists and musicians, as well as of the less ancient, if I were sure that we could exhaust the discussion before night-time.

However, if you like, tomorrow we shall complete this part as well, and equally we well discuss also the other section relative to the tones used today in the compositions called canto figurato, or misurato, in which are written [-23-] both madrigals, and motets, and many other types of compositions, if we have left enough of the day that might suffice. Otherwise, we will delay doing it until the day after tomorrow.

Alonso. Personally, I would not want you to stop explaining it to me, since this section, which you have made me understand so well and with such ease, leaves me with such great a desire to understand the next one. However, do what you prefer, and is easiest for you.

Anniballe. Come on, I shall wait for you here straight after lunch.

Alonso. And I will be here tomorrow after lunch without fail.

Here ends this first DIALOGUE when the clock sounds

the seventh hour of the night following the day Sunday, 21<sup>st</sup> February 1593.

At Bologna.

Hercole Bottrigaro

And I finished copying out this copy

at the time of 22 and 1/3 hours (as my little watch da fascia in a little box)

of the day Sunday 17<sup>th</sup> of October 1599.

In my estate, which I like very much, in the town of Santo Alberto

Hercole Bottrigaro