

Jacobus [?], *Compendium de musica*

<Prima Pars>

Capitulum I.

Dispendiosa sub compendio tradere, facile quoniam non est, manifestum est. Disciplinarum musica hoc modo est, cum sit facultas harmonica acutorum sonorum graviumque concordiam perpendens, secundum Boethium quinto *Musicae* suae libro. Diligentibus tamen et non negligentibus hanc sub compendio quomodo melius potero, proponere curabo in hunc modum.

Musica namque multa licet sit, instrumentalem elegimus describendam, et hoc tripliciter, videlicet theorice, practice et mensurabiliter. Theorice quantum ad consonantias proportionatas seu proportionabiliter constitutas, ut in Boethio, *De musica institutione* per totum. Practice vero quantum ad consonantiarum usum et applicationem, tam ad instrumenta naturalia ut vocis humanae, quam artificialia ut tibiae, psalterii, chori vel organi et similia; et hoc dupliciter, videlicet per se vel cum adiuncto, id est monophonice vel diaphonice seu poliphonice. Mensurabiliter cum discretione vel sine discretione, propter quod mensurabilem ipsam proposuimus describere musicam. De dicta autem practica nulla considerata mensura Guido monachus in suo *Micrologo* circa finem primi libri, capitulum “Diaphonia.” De mensurabili vero et poliphonia magister Franco teutonicus in suis praeceptis, id est in libello qui *Ars* vocatur *mensurabilis musicae*.

Is igitur hos qui diligenter inspexerit auctores, eam de qua famur se agnovisse laetabitur, sed id modo non obvium. Multa tamen in praefatis reperienda auctoribus praesupponentes de tribus praelibatis succinctius tractandum est musicae partibus et primo de theorica, id est speculativa. Theoria enim graece, speculatio est latine. Huius autem speculationis opus est praxis.

<First Part.>

Chapter 1.

Presenting copious [things] in compendious format is manifestly not an easy thing [to do]. Among disciplines this is true of music, which according to Boethius, in the fifth book of his *Musica*, is the skill of weighing concord between high and low sounds. However, I shall take care to set it forth in compendious format, to the best of my ability, for those who are diligent, not negligent, in [the following] way.

Although music is many things, we have chosen to write about the instrumental kind, and this threefold, namely, theoretically, practically, and measurably. Theoretically with regard to proportioned or proportionally-constituted intervals, as throughout Boethius, *De musica institutione*. Practically with regard to the use and application of intervals, both on natural instruments, such as the human voice, and on artificial ones, such as flutes, psalteries, dance [instruments], organs, and the like; and this twofold, namely, either by itself or together with another, that is, monophonically or diaphonically or polyphonically. Measurably, either with exactitude or without exactitude, which is why we have proposed to describe that measurable music. Concerning the said practical kind, without consideration of measure, Guido the monk [has written] the chapter *Diaphonia* in his *Micrologus*, toward the end of the first book. But magister Franco the Teuton [has dealt] with the measurable kind and polyphony in his teachings, namely, in his booklet called *Ars mensurabilis musicae*.

He who shall have read those authors diligently shall rejoice in recognizing the things of which we speak, but this is not easy. For there are many presuppositions to be found in the aforesaid authors, [and] the three aforesaid parts of music must be dealt with more succinctly. And firstly the theoretical, or speculative, [part]. For what is called *theoria* in Greek is *speculatio* in Latin. But speculation does need practice.

Capitulum II. De speculatione musices, et quid scire oporteat, et quid scit, unumquodque quod scire opus est.

De theorica igitur tractaturi quantum ad consonantias proportionatas seu proportionabiliter constitutas videndum nobis est. Quid sit proportio? Quid proportionabilitas? Quid proportionatum? Quid proportionabile? Quid sonus? Quid consonantia? Quot consonantiae? Quae bonae, quae meliores, quae optimae? Quid dissonantia? Quot dissonantiae? Quae malae, quae peiores, quae pessimae? Quae permissivae, quae prohibitivae, quae refutabiles et quae receptivae?

Proportio est igitur duorum terminorum ad se invicem comparatio. De tribus medietatibus: Quoniam vero, Boethius libro secundo. Ibidem autem etiam, quid proportionabilitas. Proportionatum autem est illud quod ex proportionabilitatibus derelinquitur. Proportionabile quoque est quod aptum natum est proportionari. Sonus autem hic sumptus est vocis casus emmeles, id est aptus melo seu cantilenae; libro primo capitulo 8, et aliter capitulo 17.

Consonantia ibi etiam: Consonantia duarum vocum rata permixtio diffinitur. Simile libro primo capitulo 8: Consonantia, inquit, est acuti soni gravisque mixtura suaviter uniformiterque auribus accidens. Etiam capitulo 3 eodem libro: Consonantia, inquit, est dissimilium inter se vocum in unum redacta concordia.

Consonantiae autem principales tres sunt: diapason, diapente et diatessaron. Sunt autem simplices ex eo quod ab ipsis aliae compositae nomen recipiunt, ut bisdiapason, diapente cum diapason atque diatessaron cum diapason, si fas sit ipsam consonantiam dici, quod non credunt Pythagorici. Omnem enim consonantiam aut in multiplici aut in superpartulari fundari dicunt. Diatessaron vero cum diapason in multiplici superbipartienti cadere demonstrant. Hoc autem genus a concinentiae ratione Boethius segregasse dinoscitur, sed nec omnes superpartulares consonantiae dicuntur, ut tonus qui principium est consonantiae instar unitatis et puncti.

Compositae consonantiae hae sunt quae dictae sunt, videlicet bisdiapason quae vocatur maxima symphonia, et diapente cum

Chapter 2. Concerning speculation in music, and what one should know, and what one knows, any one thing one needs to know.

Now we must consider the things to be dealt with regarding theory, as far as proportioned or proportionally-constituted intervals are concerned. What is proportion? What proportionability? What is proportioned? What is proportionable? What is sound? What consonance? How many consonances are there? Which are good, which better, which best? What is dissonance? How many dissonances are there? Which are bad, which worse, which worst? Which are allowable, which forbidden, which to be rejected and which to be accepted?

Proportion is the comparison of two terms with one another. Concerning the three means, [see] Boethius, [chapter] *Quoniam vero*, in the second book. And in the same place also what [is] proportionability. The proportioned thing is that which is left by proportionabilities. Also the proportionable is that which is by nature suitable for being proportioned. Sound understood in this way is a precisely-pitched fall of the voice, one that is suitable for tune or song; in the first book, chapter 8, and elsewhere chapter 17.

In that place also consonance: Consonance is defined as a certain mixture of two sounds. See also the first book, chapter 8: Consonance, he says, is the mingling of high and low sounds falling sweetly and uniformly upon the ears. And in the third chapter of the same book: Consonance, he says, is the concord of mutually dissimilar sounds brought together in one.

There are three principal consonances: diapason, diapente, and diatessaron. These are simple in that other composite [intervals] take their names from them, like bisdiapason, diapente with diapason, and diatessaron with diapason—if indeed it is right to call this a consonance, which the Pythagoreans do not believe. They say that every consonance is founded in either the multiplex or superparticular [proportions]. And they demonstrate that the diatessaron with diapason falls in the multiplex superbipartient [proportion]. Boethius is known to have excluded this kind [of proportion] from the principle of harmonious sound. But not all superparticular [proportions] are called consonances, for example the tone, which is the principle of consonance just like the number one and the point [in mathematics and geometry].

Composite consonances are those already mentioned, namely bisdiapason, which is called the greatest *symphonia*, and the diapente with diapason.

diapason. Consonantiarum autem bona est diatessaron, diapente melior, diapason vero optima. Hoc ideo quia partes diffinitionis consonantiae eisdem secundum magis et minus competunt. Dulcius enim diapente in aure cadit quam diatessaron, et diapason quam diapente. Verum bene fateor quod sensibus non sit dandum omne iudicium. Iudicant enim de accidentibus sibi notis, puta de sonis. Consonantiarum vero naturas sibi ratio reservavit iudicandas. De aliis vero compositis consonantiis attende verbum metricum quo dicitur: Simplicium norma formabis compositiva.

Capitulum III. Cur consonantia dicatur esse bona, et de generibus inaequalitatis.

Ratio bonitatis consonantiae est perfecta cadentia in genere inaequalitatis. De ipsis autem generibus habetur capitulum 3: Consonantia, libro primo. Item libro secundo, capitulo 4: Relatae, inquit, quantitatis simplicia tria sunt genera, scilicet multiplex, superparticulare et superpartiens. Et composita duo, scilicet multiplex superparticulare et multiplex superpartiens.

Horum autem duo a Boethio pro consonantiis eliguntur: multiplex scilicet et superparticulare. Hoc autem est propter principalitatem. Alii vero soni minus principales etiam in aliis cadunt generibus, ut ditonus, et caetera. Vocantur autem haec inaequalitatis genera, quia ab aequalitate discrepant. In numeris enim dum aequales duo sunt nulla summa maior, sed utrobique aequalitas ut 4 et 4. Sed vero alius alium excedat aut ab alio alius excedatur, fiet ea tunc quae vocatur inaequalitas ut in multiplicibus 1, 2, 3, 4, 5 et usque in infinitum progrediendo. In his enim maior minorem bis, ter, quater, quinquies aut pluries continet: totiens etiam minor a maiore continetur.

Et in superparticularibus erit idem ut 2, 3, 4, 5, et caetera. Maior enim minorem continet eiusque vel mediam vel tertiam vel quartam partem et sic deinceps. Iterumque in superpartientibus simile est ut 3, 5, 7, et caetera. Maior namque minorem continet eiusque duas vel tres vel quotlibet insuper partes. Et si duas, erit superbipartiens; si tres supertripartiens; sicque fit ut a partium pluralitate nomen accipiant. Erit quoque superbipartiens prima species,

Among consonances the diatessaron is good, the diapente better, but the diapason best. This is because the parts of the definition of consonance fit them in varying degrees. For the diapente falls more sweetly on the ear than the diatessaron, and the diapason more so than the diapente. However, I do say that all judgement is not to be given to the senses. For these judge only about the accidental things known to them, namely sounds. But to reason alone is reserved the judgement as to the natures of the consonances. For the other composite consonances, bear in mind that metrical verse where it it says: You shall form composite norms from the simple ones.

Chapter 3. Wherefore a consonance is said to be good, and concerning the species of inequality.

The principle of goodness in consonance is a perfect falling in the species of inequality. Concerning those species one may consult chapter 3, *Consonantia*, in the first book. Also in the second book, chapter 4: There are, he says, three simple species of related quantity, namely, multiple, superparticular, and superpartient. And two composite ones, namely, multiple superparticular and multiple superpartient.

Of these, Boethius singled out two for the consonances, namely, the multiple and the superparticular. And this is because of their principal rank. Other less principal sounds, like the ditone and others, fall in other species. Species of inequality are so called because they deviate from equality. For when there are two equal numbers, neither is larger than the largest, but there is equality on both sides, like 4 and 4. But when one exceeds the other, or is exceeded by the other, then there is what is called inequality, as in the multiples of 1, 2, 3, 4, 5, and so forth, ad infinitum. For in these, the larger [number] contains the smaller twice, three times, four times, five times, or more: and the smaller one is contained as many times in the larger.

And the same shall be the case with superparticulars, like 2, 3, 4, 5, and so on. For the larger [number] contains the smaller plus one half or the third part or the fourth, and so on. And again, it is the same way in superpartients, like 3, 5, 7, and so on. For the larger [number] contains the smaller plus two or three or however many parts in addition. And if two, then it shall be superbipartient; if three, supertripartient; and this is how they receive their names, from the plurality of parts. The first species shall be superbipartient,

supertripartiens secunda et sic de aliis. In multiplicibus vero, dum maior minorem bis continet, vocatur proportio dupla; dum ter tripla et sic de aliis.

In superparticularibus, dum maior minorem continet eiusque dimidiam vel alteram, quod idem est, vocabitur sesquialtera; dum vero tertiam sesquitertia et sic ulterius. Est autem sesquialtera prima species superparticularium, sesquitertia vero secunda et sic de aliis. Dupla vero prima species est multiplicis, tripla vero secunda et sic de aliis.

Amplius dum maiores minores continent, maiores dicuntur inaequalitates; dum vero minores continentur, minores. Est ergo maior multiplex superparticulare et caetera. Minor vero erit submultiplex et subsuperparticulare. Itaque a maioribus minores per praepositionem “sub” addita differunt. Amplius maiores termini duces sunt, comites vero minores.

Amplius consonantiae diapason scilicet in dupla, bisdiapason in quadrupla, diapente cum diapason in tripla cadunt et ab eis denominantur. Item diapente in sesquialtera, diatessaron vero in sesquitertia, tonus quoque in sesquioctava. Ceteri vero soni—ut dictum est—in superpartienti et aliis compositis, puta multiplici superpartulari et multiplici superpartienti. Est autem multiplex superparticulare dum maior numerus minorem habet totum bis eiusque alteram vel tertiam vel quartam vel quamlibet partem. Et si alteram habuerit, vocabitur dupla sesquialtera ut 10 ad 4, 5 ad 2. Si vero tertiam, dupla sesquitertia ut 7 ad 3, 14 ad 6. Si vero maior minorem ter in se contineat et alteram partem vel tertiam et caetera, vocabitur similiter tripla sesquialtera; et si quater, quadrupla et sic deinceps.

Multiplex superpartiens vero est dum maior minorem continet bis, ter, quater vel pluries eiusque duas, tres vel plures partes; et si duas, vocabitur dupla superpartiens ut 8 ad 3. Amplius et eo modo ut in multiplici superpartulari. Sed et in istis est dare maiores inaequalitates et minores praepositione “sub” addita, ut submultiplex superparticulare et caetera. De his omnibus Boethius latius in *Arithmetica*: De relata ad aliquid quantitate et capitulo 21 in *Musica*, libro primo. De his ergo non plus.

the second supertripartient, and likewise the others. In multiples, however, one speaks of duple proportion when the larger contains twice the smaller; when three times [one speaks of] triple, and likewise the others.

In superparticular ones, when the larger contains the smaller plus one half (or *altera* which is the same thing), it is called sesquialtera; but when the third part, [it is called] sesquitertia, and so on. For the sesquialtera is the first species of the superparticulars, but sesquitertia the second, and likewise the others. But duple is the first species of the multiple ones, triple the second, and likewise the others.

Further, when the larger [numbers] contain the smaller ones, one speaks of major inequalities; but when smaller ones are being contained, minor. Therefore the multiple superparticular is major, and so on. But the submultiple shall be minor, and the subsuperparticular also. Thus the minor [inequalities] are distinguished from the major ones through the addition of the prefix *sub*. Further, the greater terms are the leaders, the smaller ones followers.

Further, the consonances of the diapason, bisdiapason, and diapente with diapason fall, respectively, in the duple, quadruple, and triple [proportions], and take their names from them. Also diapente [falls] in sesquialtera, the diatessaron in sesquitertia, and the tone in sesquioctava. However, the other sounds [may fall] in the superpartient, as already said, or in other composites such as the multiple superparticular and the multiple superpartient. The multiple superparticular is when the larger number contains twice the smaller number plus one half, or one third, or one fourth, or whichever part. And if it shall contain one half, then it shall be called duple sesquialtera, such as 10 to 4, 5 to 2. But if the third part, [it shall be called] duple sesquitertia, such as 7 to 3, 14 to 6. But if the larger [number] contains the smaller three times plus one half or the third part, and so on, then it shall similarly be called triple sesquialtera; and if four times, quadruple, and so forth.

Multiple superpartient is when the larger [number] contains the smaller two times, three times, four times, or more, plus two, three, or more of its parts. And if two, then it shall be called duple superpartient, like 8 to 3. And so on, in the same way as the multiple superparticular. But in these, too, there are major inequalities and minor ones with the prefix *sub*, such as submultiplex superparticular, and so on. For more on all these things, [see] Boethius in *Arithmetica*, *De relato ad aliquid quantitate*, and chapter 21 in *Musica*, in the first book. No more about these things [here], then.

Capitulum IV. De dissonantia.

Dissonantia nempe consonantibus opponi. Ipsorum enim opposita est diffinitio. Dissonantiae ergo sunt quaecumque non sunt consonantiae et hae quidem secundum quod sensum auditus magis et minus offendunt, aut ratio repellit propter quod malae, peiores aut pessimae aestimantur. De his autem simul et consonantiis Boethius in quinto, 2, 3, 4, 8 et 9 capitulis. Et ibidem, cur non omnia sensui non applicantur aut cur non rationi tantum, sed omnia sensui et rationi simul.

Nobis autem nunc est intuendum, quoniam rerum primordia sensus invenit, ratio autem inventum perficit. Sicque factum est ut musica habeat iudicii partes duas. Habent enim singulae artes instrumenta quibus aliquid confuse, partim vero sub integro iudicatur. Illud autem instrumentum confusi iudicii musicae sensus est. Integritatis vero ratio, ut circuli manus est instrumentum an vero ipsa circum bene protraxerit, circinum experitur.

Dicitur autem hoc instrumentum, quo rationis adhibito modo sonorum perquiruntur duae differentiae apud Boethium harmonica regula, cuius inventor Pythagoras fuisse dicitur. Concham nihilominus in qua nervis limacis desiccatis varios sonos efferentibus, Mercurium quendam invenisse dicunt, ad cuius similitudinem cythara prima dicitur fuisse facta; quidam tamen Iubal huius harmonicae regulae repertorem fuisse dicunt, forte quia illius temporibus iubilis vim habuisse fertur. Quod tamen Pythagoras ut praefertur, dictae regulae fuerit repertor, narrat Boethius, libro primo, capitulo 27.

Capitulum V. De vocum differentiis, divisione et acceptance.

Ptolemaeus unisonas et non unisonas voces fieri. Appellant autem tam sonos consonos, quam non consonos voces. Omnis enim vox est sonus et non econverso. Vocum, inquit, aliae sunt unisonae, aliae minime.

Chapter 4. Concerning dissonance.

That dissonance is to be opposed to the consonances, since their definitions are opposed. Dissonances, therefore, are any [intervals] that are not consonant. And these indeed are judged bad, worse, or worst, according to whether they offend the sense of hearing, or whether reason rejects [them], to a greater or lesser degree. For these and the consonances, [see] Boethius in the fifth [book], chapters, 2, 3, 4, 8, and 9. And in the same place [concerning the question] why anything should be [subject] to the [judgement of] sense at all, and why not only to reason, but rather to reason and sense at the same time.

But now we must consider why it is that sense discovers the first [outlines] of things, but reason perfects what is found. This is how it came about that there are two parts to judgement in music. For every art has instruments with which things are known only in muddled fashion, and not in their wholeness. In music the instrument of muddled judgement is the sense, but [the instrument] of wholeness [is] reason—like the hand is an instrument [for drawing] a circle, but the compass is used to test whether that circle shall truly be drawn well.

Now the instrument with which one inquires into the two differences of sounds, through the application of the measure of reason, is called, according to Boethius, a harmonic ruler, whose inventor is said to have been Pythagoras. Nevertheless, some say that a certain Mercurius has invented the shell in which different sounds are produced by strings of dried snails, [the shell] in whose likeness the first lyre is said to have been made. Some people however say that Iubal was the one who discovered the harmonic rule, perhaps because in his times jubilation was held to exert power. But Boethius reports in the first book, chapter 27, that Pythagoras was the inventor of the said ruler, as said before.

Chapter 5. Concerning the differences between pitches, their division and admission.

Ptolemy: that pitches are either unison or not unison. For they call consonant as well as non-consonant sounds “pitches.” For every pitch is a sound but not the other way round. Some pitches are unisons, he says, but

Unisonae sunt quarum sonus unus est ut figuraliter dicatur sicut re-re, vel quicumque alii soni. Minime unisonae sunt quarum sonus unus gravis est, alius vero acutus sicut ut-re, re-fa, re-la, et sic de aliis. Amplius ut semitonia et ipsorum partes ut commata, schismata, diaschismata, quorum differentias difficile capit auditus neque enim sensus minima propter ipsorum parvitatem recipit et a maioribus saepe confunditur, ut ait Boethius. Simile in quinto Boethii capitulo 2. Item et capitulo 3 eodem libro.

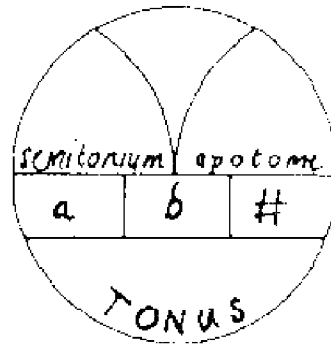
Cum non unisonarum, inquit, aliae sunt continuuae, aliae vero disgregatae, continuuae ab harmoniae disciplina separantur, disgregatae vero harmoniae subiciuntur disciplinae. Amplius ekmeles, id est melo ineptae seu in cantilena nullo modo cadentes refutantur. Em<m>eles vero melo deputatae sunt. Sunt autem ekmeles soni quorum velocitates ita sunt iunctae, ut colores in radi<i>s eo quod sensus eas nullo capiat modo. Simile in tortura nervi cytharae, dum percussus ipse nervus torquetur, tunc enim ita sunt iunctae velocitates sonorum ut quasi nulla sit cognitionis discretio ob hanc autem causam: comma minimum quod capit auditus a Boethio diffinitur. In quibus igitur nulla discretionis ratio sentitur voces ekmeles sunt. Aliae vero, quoniam separatae sunt et in ipsis de facili differentia percipitur rite emmeles efferuntur. Sunt autem haec quas superius bonas, meliores diximus et optimas, et ab eisdem compositae. Aliae vero sunt, quae malae sunt, peiores et pessimae quarum videlicet, ut dictum est, soni ita iuncti sunt ut paene eorum differentia nesciatur.

Sunt autem et partes toni, apotome et lim<m>a videlicet, id est semitonium maius et minus. Est autem semitonium maius in commate inter .b. et .b. graves vel acutas vel ubicumque in eadem chorda monochordi vere seu false disponantur, simul .b. rotundum et .b. quadratum. Minus vero semitonium est quotiens a diatessaron duo toni rescinduntur ut inter ut, re, mi, fa. Est autem ut-re tonus. Item re-mi alius tonus, mi-fa vero semitonium est, quamvis in gammate recipiatur. Istaes partes igitur consonantiis minime deputantur quoad consonantiarum perfecta inaequalitatis genera; constituunt tamen et ipsae tonum simul iunctae, ut patet in hac formula:

others not at all. Unison are those whose sound is one, figuratively speaking, like **re-re**, or any other sounds. Not unison are those that have one low and one high sound, like **ut-re**, **re-la**, and so on, also like semitones and their parts, such as commas, schismata, diaschismata, whose distinctions the hearing perceives only with difficulty, since the sense does not perceive the least things because of their smallness, and it is often confused by the larger things, as Boethius says. See also the fifth [book] of Boethius, chapter 2. Also in chapter 3 of the same book.

Since some of the unisons, he says, are continuous, others discontinuous, the continuous ones are excluded from the discipline of harmony, but the discontinuous ones accepted in the discipline. Further, ekmeles [non-melodic pitches], which are unsuitable for melody and not falling [in rational proportions] in song, are rejected. Emmeles [melodic pitches], however, are suitable for melody. Further, ekmeles are sounds whose velocities blend exactly as colors [do] in rays, in such a way that the sense does not perceive them [separately] in any way. The same is true of the straining of the string on the lyre. When struck, that string is strained, and then the velocities of sounds are joined in such a way that there is almost no perceptible distinction as a result. The smallest comma which the hearing can perceive is defined by Boethius. Ekmeles, therefore, are those pitches in which no principle of distinction is perceived. The others, however, are justly known as emmeles because they are separate and because it is easy to perceive the differences between them. But there are some which we have above called good, better, and best, and likewise their composites. And there are others which are bad, worse, or worst, namely, as already said, when the sounds are joined and the differences between them can scarcely be told.

There are also the parts of the tone, namely, the apotome and limma, that is, the major and minor semitone. A semitone is major by the comma between high or low .b. et .b., and [it may be] disposed truly or falsely anywhere on the same string of the monochord, round .b. as well as square .b. But the minor semitone is what remains when two tones are taken from the diatessaron, as between **ut**, **re**, **mi**, **fa**. For **ut-re** is a tone. Also **re-mi** is another tone, but **mi-fa** is a semitone, even though it is accepted in the gamut. Those parts, therefore, are not reckoned consonances at all, at least as far as the perfect species of inequality of consonances are concerned; yet they do constitute a tone when they are joined together, as is apparent in this figure:



Sunt igitur toni partes, ut dictum est, malae. Amplius malae sunt: tritonus ut inter .F. et .b., semitritonus ut inter .b. et .f. et eorum composita. Ex his autem peiores sunt commata et dieses, semitoniorum videlicet partes. Pessimae autem partium semitoniorum particulae. Amplius et commatis ut schismata, diaschismata. Dum enim aut aequari non possunt, aut cum discretione distantes non sunt, quasi assatum in sartagine strident, aut sicut nervi tortura sonant indiscreta.

Permissivi autem soni sunt sicut tonus ut: ut-re, re-mi, fa-sol, sol-la. Amplius semiditonus sicut re-fa, mi-sol. Item ditonus sicut ut-mi, fa-la, et haec omnia cum diapason composita sicut tonus cum diapason, semiditonus cum diapason et ditonus cum diapason. Idem enim est; diapason enim paene est una vocula sicque factum est ut quicquid supra diapason fiat: super unisonum factum fuisse videatur. Utrum semitonium per se prohibetur quantum ad genus videlicet superpartiens, quod a concinentiae ratione segregatur, cum diapason vero et diapente permittitur. Permissivae ergo voces emmeles erunt; ekmeles vero prohibitivae. Illae autem sunt, quae malae, peiores et pessimae dictae sunt, hoc autem secundum magis et minus. Plus enim schisma discordat quam comma; hae quoque similiter iure refutabiles erunt quae a meli confectione se iunguntur. Aliae vero receptabiles censeantur. Haec autem, ut promisimus, brevius pertractavimus, in Boethio 5 per totum clarius habentur.

As said before, then, the parts of the tone are bad. Also bad are the tritone, as between .F. and .b., and the semitritone, as between .b. and .f., and their composites. Worse among these are commas and dieses, which are parts of semitones. The worst parts of semitones, however, are particles, and also [the particles] of the comma, such as schismata and diaschismata. For since they cannot be made equal, and are not distant by a precise [rational proportion], they make a shrill noise like roasting in a frying pan, or they sound indistinct like the straining of a string.

Permissible sounds, however, are those like the tone, such as **ut-re, re-mi, fa-sol, sol-la**. Further the semiditone, like **re-fa, mi-sol**. Also the ditone, like **ut-mi, fa-la**, and all of these also together with the diapason, such as tone with diapason, semiditone with diapason, and ditone with diapason. For that is the same thing; for the diapason itself is almost one pitch, and it is made in such a way that anything above the diapason seems to be sounding as though above the unison. Both the two semitones, taken by themselves, are prohibited as far as the superpartient genus is concerned, which is excluded from the principle of harmony, but they are permitted [when joined] with the diapason and diapente. The emmeles, therefore, will be permissible pitches; but ekmeles are prohibited. For it is these that are called bad, worse, and worst, albeit according to varying degrees. For the schisma is more discordant than the comma; likewise, if they are joined together, they shall also be rightfully rejected from the composition of melody. Others, however, are deemed acceptable. All of these things, which, as promised, we have treated rather briefly, are more clearly to be found throughout [book] 5 of Boethius.

<Secunda Pars>

Capitulum I. Prologus practicae musicae, et quid scire oporteat.

De per se practica. Quid sit monochordum seu harmonica regula quaerendum. Amplius quomodo fiat vel qualiter, ad quid valeat monochordi dicti instrumentum. Amplius quid in eo inveniatur et cur monochordum dicatur, sed cur non diachordum aut trichordum dicatur. Item de modis seu tropis vel abusive tonis.

Capitulum II. De regulari et irregulari tonorum discretione.

Monochordum seu harmonicam regulam esse fixam firmamque inspectionem. In qua speculatione adhibita consonantiarum ratio per quam praxis ordinem sumpsit et modum inquiritur, quae nullum inquirentem dubio fallit iudicio. Simile capitulo 11, libro primo. In ea enim omnes soni musicales perquiruntur. Guido in *Micrologo* suo per totum. Monochordum, inquit, est instrumentum in quo rationis adhibito modo omnes consonantiae perquiruntur. Et Boethius in 4 libro in fine, ibi: "Ut vero indubitanter."

Quomodo autem fiat istud monochordum, Guido in suo *Dialogo* describit, ibi: Quid est musica? Veraciter canendi scientia, et facilis ad canendi perfectionem via, sicut enim magister et caetera. Sequitur: Quale est monochordum? Responsum: Lignum cum discretione longum in modum capsae, intus cavum in modum cytharae, super quod posita chorda sonat (supple: plectro percussa) cuius sonitu vocum varietates facile comprehendis. Sequitur: Quomodo ponitur ipsa chorda? Responsum: Per mediam capsam in longum linea recta ducitur, et relicto ab utroque spatio unius unciae in eodem ab utraque lineae parte punctus ponitur. In relictis vero spatiis duo capitella, quae Graeci magadas vocant, quanta et linea quae sub chorda est. Huius autem instrumenti exempli gratia, licet ipse Guido non describat, exemplum hoc modo ponere possumus. Fit autem hoc monochordi instrumentum ob hanc causam, ut hi qui vocem naturalem ad consonantias applicare

<Second Part>

Chapter 1. Prologue to practical music, and what it is necessary to know.

Concerning practical [music] by itself. [It is] to be inquired what the monochord or harmonic ruler is. Further how and in what way it is made, what purpose the instrument of the said monochord serves. Further what may be found on it, and why it is called monochord, and not dichord or trichord. Also, about modes or *tropi*, or, incorrectly, *toni*.

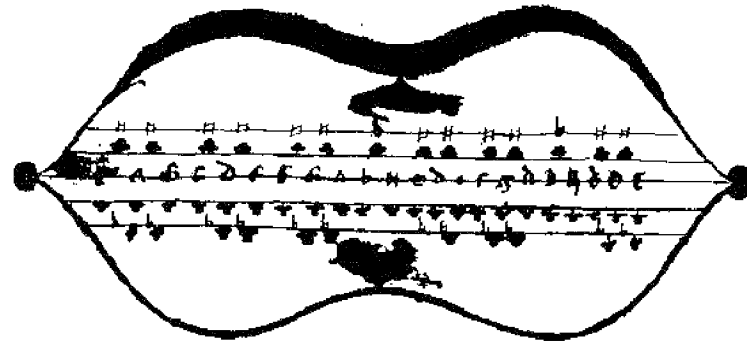
Chapter 2. Concerning the regular and irregular distinction between *toni*.

That the monochord or harmonic ruler is a fixed and firm [tool of] inquiry, on which one investigates, with the help of scientific speculation, the principle of consonance by which practice assumes order and measure, [and] which deceives no inquirer with doubtful judgement. Similarly chapter 11, first book. For on it all musical sounds are thoroughly researched. Guido in his *Micrologus*, passim. The monochord, he says, is an instrument on which all consonances are thoroughly researched through the application of reason. And Boethius, at the end of the fourth book, here: *Ut vero indubitanter*.

In his *Dialogus* Guido [ps.-Odo] describes how this monochord is made, here: What is music? The science of singing in accordance with truth, and the easy road to perfection in singing like a magister, and so on. Further: What kind of thing is the monochord? Answer: A long wooden [construction, made] in the manner of a box, with markings, hollow inside like a lyre, upon which is placed a string that sounds (fill in: when struck by a quill) and through whose sound you may easily understand the differences between pitches. Further: How is that string placed? Answer: It is stretched in a straight line along the length and down the middle [of the] box and, with a distance of one inch left on both sides, a point is placed at the same [distance] from both parts of the line. But in the remaining distances [there are] two bridges, which the Greeks call *magadas*, as much [apart] as the line which is under the string. By way of illustration we may give an example of this instrument in this way, even though [Odo] does not provide it. This instrument of the monochord is there in order that those who do not know how to apply the natural voice to

nesciunt, si hominem verentur, saltem ab artificiali instrumento addiscant, vocemque naturalem eidem applicent. Valet autem istud monochordum ad experiendum, utrum vox naturalis consonantias debite efferat secundum dispositionem naturalem ratione praevia gubernatam, fixam, firmam et incommutabilem.

consonance, if they are afraid of man, may learn at least [to do so] on an artificial instrument, and apply the natural voice to the same. For this monochord allows one to test whether the natural voice produces consonances properly, according to the natural disposition which is fixed, firm, immutable, and governed by reason.



Capitulum III. Quomodo soni in monochordo recipiuntur.

Chapter 3. How sounds are obtained on the monochord.

In hoc monochordo sonos usuales reperiri. Prima enim vox si percussa fuerit atque octava, sive simul sive successive, diapason reddunt consonantiam. Amplius autem quaelibet de octava ad octavam. Ipsa vero prima ad quintam diapente, et quaelibet alia, exceptis dumtaxat tertia et septima quae semitritonum reddunt, ut .b. ad .f. et de .E. ad .b. rotundam. Item ipsa prima ad quartam diatessaron, et quaelibet alia, exceptis .F. et .b. quadrata quae tritonum faciunt. Item de tertia ad tertiam ditonus aut semiditonus. Item de secunda ad secundam tonus aut semitonium maius aut minus. Amplius in distantia .b. -.b. commatis differentia reperitur, semitonio a parte .b. quadrati relicto. In sexta decima vero .b.-.b. pro duabus computatis bisdiapason. In tertia decima similiter .b.-.b. pro duabus computatis diapente cum diapason. In vicesima prima etiam .b.-.b. ubique computatis diapente cum bisdiapason. In vicesima secunda autem similiter tonus cum diapente et bisdiapason. Sed et toni differentiae inter utrasque litteras, inter quas tonum est dare, percussis plectris signorum adiunctorum reperientur.

[How] sounds of [practical] use are found on this monochord. If the first pitch shall be struck and also the eighth, whether at the same time or in succession, then they produce the consonance of the diapason. Likewise any one from eighth to eighth. But the first to fifth [makes] a diapente, and any other one, excepting only the third and seventh, which produce a semitritone, like .b. to .f. and .E. to round .b. Also, first to fourth [makes] a diatessaron, and any other one, excepting F and square .b. which make a tritone. Also third to third [makes] a ditone or semiditone. Also second to second a tone or a major or minor semitone. Further in the space b.-.b. is found the difference of the comma, a semitone being left from the part of square .b. In the sixteenth, however, .b.-.b. for two computed bisdiapason. In the thirteenth likewise .b.-.b. for two computed diapente with diapason. In the twenty-first also .b.-.b. everywhere computed diapente with bisdiapason. In the twenty-second however similarly the tone with diapente and bisdiapason. But the differences of the tone are found between both the two letters between which the tone is given, the quills of the adjoined signs having been struck.

Verum si huiusmodi instrumentum aut alia nova fieri pigeat, iam a longinquis temporibus facta recenseantur, ut puta cythara vel psalterium, sambucum vel organum. Sensus enim in m<usica> quodammodo ipse, ut ita dicam, particularis effectus in sonis particularibus est instructus, quod iam an bene vel male soni cohaereant, fere intuetur. Histrio enim discohaerentem chordam amplius ut torqueat aut ut cohaereat, remittit. Huic ergo voci sic aptatae artificiali naturalem adiungens, quaesitum se invenisse laetatur. Sic ergo mirabiliter magister ab homine compositus indefective eundem docebit usquequo sonos efferat indubitanter. Chordas autem si quis torquere ignoret, is modus est quo pueris in manus articulos tradi solet huiusmodi facultas; secundum namque gammatis dispositionem torquendum est. Dum enim fit aliter, soni qui falsi dicuntur efferuntur, ex eo quod a recta monochordi dispositione deviant. Huiusmodi autem monochordi transsumptio, vocabulo abusive sumpto falsa musica nuncupatur.

Capitulum IV. De mutatione signorum monochordi et aliis conficiendis monochordis.

Monochordi litteras in ea superposita descriptione existere. Nova quaedam vero signa specialia videlicet pro communibus saepe poni contingit, quibus insigniti soni a monochordo vero deviant. Sunt autem haec ut .b., .b.; ipsorum etiam descriptio in praedicto habetur instrumento. Plectris enim tactis ibidem apposis inter duas illas litteras quae tonum continent, utrasque toni partes audiri indubitanter contingit, ut inter .Γ. et .A. Si enim ipsarum plectra ferias, toni sonum habebunt, ipsius vero .Γ. plectrum si tetigeris et plectrum quod est inter ipsam et .A., .b. quadra<to> insignitum, maiorem toni partem personabis. Ad .A. vero minorem; inferius vero si tangas, quod similiter est inter ipsas duas quae sunt .Γ. et .A., .b. rotundo insignito, minorem partem efferes, ad ipsam vero .A. maiorem.

Hoc modo autem et similiter fiet et in aliis tonum obtinentibus secundum dictam plectri percussionem intensive vel remissive. Sed et pars semitonii, puta comma inter .b.-.b., audienda proponitur, dum inter utrasque semitonium aut elevatur aut deprimitur per

But if it should be tedious to [have to] make this or other novel instruments, one may [also] examine those [instruments] that have been produced since long times past, such as the lyre or psaltery, the harp or organ. For in <music> the the sense itself is, in a certain way, made particular [and] trained in particular sounds, if I may say so, so that now it usually perceives whether sounds cohere well or badly. For the actor relaxes a discoherent string so that it may strain or cohere better. And when he joins the natural voice to this artificially adjusted one, he rejoices that he has found what he was looking for. In this way a master appointed [?] by a man shall wondrously teach him, without fail, how to produce sounds without hesitation. For if someone does not know how to strain the strings, [the master] is the means by which this faculty is customarily passed on to boys, on the joints of the hand; for [a string] must be strained according to the disposition of the gamma. But when it is done in a different way, one produces sounds that are called false, because they depart from the correct disposition of the monochord. But this kind of transsumption of the monochord is called “false music” by misuse of the word.

Chapter 4. Concerning the mutation of the signs of the monochord, and the construction of other monochords.

That the letters of the monochord are in the description above. It often happens that certain new special signs are placed before common things; with the help of which, unsigned sounds may depart from the true monochord [that is, from musica recta]. These are .b. and .b.; their description is to be had on the aforesaid instrument. For when the said quills are applied between two letters that comprise the tone, it will doubtlessly happen that both parts of the tone are being heard, as between .Γ. and .A. For if you strike their quills, they shall have the sound of the tone, but if you shall have touched the plectrum of that .Γ. and the plectrum that is between it and .A., you will produce an unsigned square .b., [which is] the major part of the tone, but minor relative to .A. If you hit [a little] lower, also between the two that are .Γ. and .A., you will produce the minor part in unsigned round .b., but major relative to .A.

In this way it may also be done in others that comprise the tone, according to the said striking higher or lower of the quill. But the part of the semitone, namely, the comma between .b.-.b., may also be heard, when between both [letters] the semitone is either raised or lowered by some recognizable sign,

qualecumque signum cognoscibile, puta .a. vel .b. vel quocumque alio; .b. rotundum in ea disposuimus non ut ita sit, sed ut sentiat qui addiscit. Dicit enim: Harum exempla ponimus et caetera.

Has inquam litteras, ita ut diximus, omnibus monochordi litteris tonum aut apotome, quod est semitonium maius, continentibus accidentes, ut puta .b., .b. adventicias dicimus, ex eo quod soli voci quae in ipsis sit, deserviunt. Iphis enim praeteritis ad eas nullus amplius est recursus, sed proprii monochordi tunc littera famulatur. Ad maiorem vero certitudinem quidam post hanc adventiciam litteram in monochordo debitam inscribi voluerunt, optimum inquam, sed usus non inolevit. Sufficiat autem manere proprium, dum repellitur accidens, ut si album a pariete prius nigro removeatur, ut prius niger remanebit.

Inter nervos igitur qui plectro vero percussi tonum personant, dicta contingit mutatio signorum. Amplius inter quos apotome exauditur, in aliis vero minime inter quos videlicet semitonium minus locum habere dicimus, ut puta .b.-.C. et .E.-.F. graves; item .a.-.b., item .b.-.c. et .e.-.f. acutae; rursus .aa.-.bb., item .bb. et .cc. superacutae. Inter quas vero toni sunt, hae sunt litterae .Γ.-.A., .C.-.D., .F.-.G. graves; item .c.-.d., .f.-.g. videlicet acutae; .cc.-.dd.-.ee. vero superacutae. Inter quas autem apotome est, sunt .b.-.b. acutae, .bb.-.bb. superacutae.

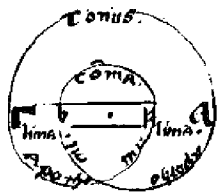
Divisae igitur hae per signum adventicium, quae apotome continent, ad una<m> partem semitonium relinquunt, ad aliam autem comma. Est autem comma illud ultimum quod capit auditus, ut supra diximus. Dum vero ipsa dicta signa ipsos dividunt tonos, ad unam partem apotome relinquunt, ad aliam vero semitonium. Si vero propter ipsa signa ab utraque parte toni semitonium subtrahi contingat, residuum comma erit, ut figuraliter describatur:

such as .a. or .b. or any other one. We have placed round .b. in them, not because it is one, but so that he may perceive who is learning. For it says: We have placed examples of those things, and so on.

Those letters that are accidentals, namely .b. and .b., [which,] just like we have said, [may be used] on all letters of the monochord that mark the tone or apotome (which is the major semitone), [those letters], I say, we call adventitious ones, because they serve only the pitch which is in them. When they are past, there is no further recourse to them, but rather the proper letters of the monochord return to service. But there are some people who have wanted an obligatory letter to be written on the monochord after that adventitious one, in order to have greater certitude, [which] I say is best, but this has not become the custom. It would suffice however to keep the proper thing once the accidental is removed, as when white is removed from a wall that was previously black, it shall be black as before.

The said mutation of signs takes place between strings that produce a tone when struck by the quill. The apotome may be heard between these [strings] as well, but not between others, for example between those in which we have said the minor semitone occurs, like low .b.-.C. and .E.-.F.; also high .a.-.b., .b.-.c., and .e.-.f.; again .aa.-.bb., also superacute .bb. and .cc. But the letters between which the tones occur are these: low .Γ.-.A., .C.-.D., .F.-.G.; also high .c.-.d. and .f.-.g.; superacute .cc.-.dd.-.ee. But those between which the apotome is found are high .b.-.b. and superacute .bb.-.bb.

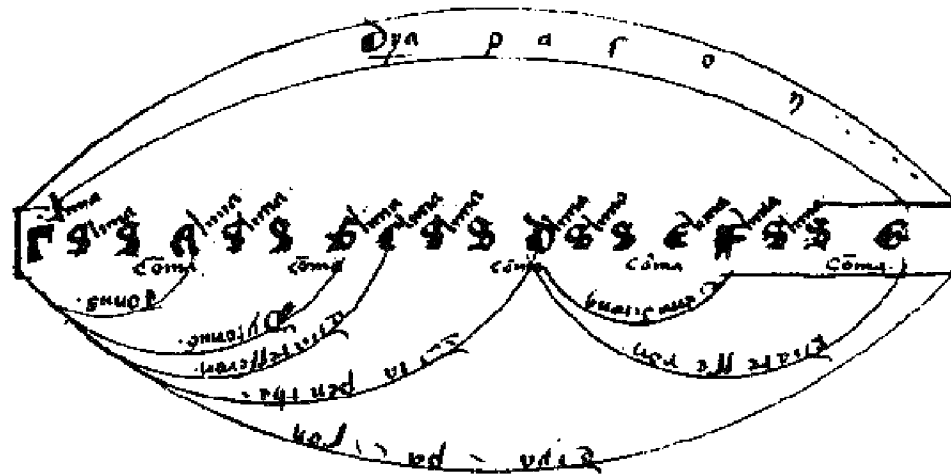
When the [letters] that contain the apotome are divided by an adventitious sign, therefore, they leave a semitone on one side, but a comma on the other. For the comma is the last thing which the hearing still perceives, as we have said above. So when the said signs divide the tones, they leave the apotome on one side, but the [minor] semitone on the other. But when it happens that a semitone is subtracted from both parts of the tone because of those signs, then the remainder shall be a comma, as represented by way of a figure:



In hac autem formula .b.-.b., quod commatis distantia, ponimus. Sed quia eadem alibi superius et ubique pro apotome distantia posuimus, ut in tonis alterum eorum, ut hic: .Γ.-.b.-.A., et hic: .Γ.-.b., haec sub vario colore signamus, ne cadant sub aequivocationis figura.

Istorum autem adventiciorum signorum, si causetur, optimum erit monochordum. Ubilibet enim et tonos facere poteris et semitonia, ditonos pro semiditonis, diapente pro semitritonis ut inter .b. et .f., ubique diatessaron pro tritonis ut inter .F. et .b.; ubique etiam recipere poteris quod est nunc valde utile.

Fiet autem hoc monochordum hoc modo: unusquisque tonus per limma et limma et comma dividetur, semitonium autem ubique manebit; apotome vero in limma et comma dividetur hoc modo quo in superiore formula est expressum, ubi scilicet comma, in distantia scilicet toni, inter duo semitonia disponitur. Sic enim dictum monochordum conficiendum erit.



Boethium in eodem toni spatio duo semitonia praeponi contigerit, ut comma acuatur, aliud causando monochordum. Hoc erit exemplum. [exemplum deest]

Posset autem et aliud fieri monochordum ex puris videlicet commatibus, dividendo puta ipsum tonum in suas propinquas partes

For in this figure we have written .b.-.b., which is the distance of a comma. But since we have used the same [signs] elsewhere, above and everywhere, to indicate the distance of the apotome, as in the tones (one like this: .Γ.-.b.-.A., and [the other] like this: .Γ.-.b.), we have signed them in a different color, lest they fall under the figure of equivocation.

The best possible monochord shall be [one that contains] those adventitious signs. But in any place where you shall be able to produce either tones or semitones, you shall be able to obtain ditones in place of semiditones, the diapente in place of semitritones, such as between .b. and .f., and everywhere the diatessaron in place of tritones such as between .F. and .b., which [ability] is now most useful.

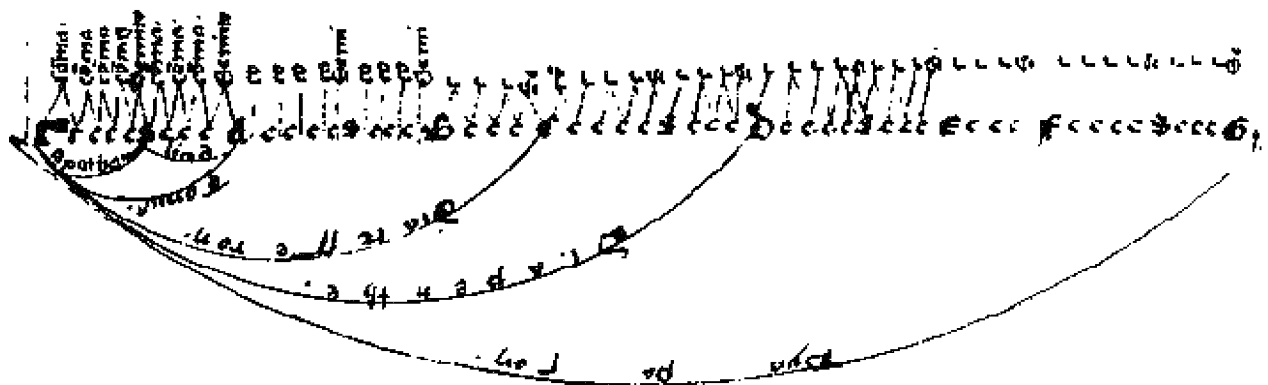
Let this monochord be made in the following manner: let every tone be divided by limma and limma and comma, but the semitone shall remain everywhere. But let the apotome be divided into limma and comma in the way indicated in the figure above, where namely the comma (within the distance of the tone) is placed between the two semitones. The said monochord shall have to be made like this:

If it has happened that two semitones are placed directly in succession in the same space of a tone, so that it is sharpened by a comma, it will produce a different monochord. This shall be the example. [Example is missing.]

But the monochord could also be made differently, namely from pure commas, dividing up the tone into its near parts, apotome and limma; in this

apotome et limma; hoc modo utraque pars in suas dividatur partes. Sicque fiet, ut apotome in 4 commata et plus et nondum quinque dividatur, et semitonium in tria et non quattuor. Sicque tonus in plus quam octo et nondum novem commatibus in hoc dicto monochordo divisus inveniatur. Hoc autem erit exemplum:

way each part would be divided into its own parts. The result would be that the apotome was divided into more than four commas but not quite five, and the semitone into three and not four. And thus the tone, on the said monochord, would be found divided into more than eight but not quite nine commas. This shall be the example:



Haec autem monochorda, si quis veraciter nititur indagare numeris ut exquirat, necesse est. Utilissimum nihilominus est hoc ultimum monochordum, omnia enim continet alia; ex eo etiam alia plura fieri possunt, puta unum ex puris semitoniiis. Amplius aliud ex eisdem et eorundem partibus, quae sunt dieses, dimidiorum videlicet (ut Philolaus ait) semitoniorum partes. Item rursus unum ex pluribus commatibus et ipsorum partibus. Itaque omnium generum melorum dispositiones in ipso dicto monochordo reperire possibile non dubito: Diatonicum enim per tonum, item tonum et semitonium.

Such monochords are necessary if one is at pains to inquire into the numbers that one seeks in accordance to truth. This last monochord is nevertheless the most useful, for it contains all the others; and many others could be made from it, for example one [fashioned] out of pure semitones. And also another from the same [semitones] and their parts, which are dieses, that is, parts of the halves of semitones (as Philolaus says). Also, again, one out of more commas and their parts. And thus I do not doubt that it is possible to find the dispositions of all genera of melody in this said monochord: the diatonic one through the tone, tone, and semitone. The chromatic one through the tone divided into two semitones, that is, major and minor, and three incomposite semitones, or a ditone, which is the same. The enharmonic by the ditone and two dieses, that is, parts of the semitone.

Chromaticum per tonum, divisum in duo semitonia, maius scilicet et minus, et tria semitonia in composita vel semiditonus, quod idem est. Enharmonicum per ditonum et duas dieses, semitonii videlicet partes.

For the manner of obtaining the diesis is this. The comma and half of the comma also make half of the semidiesis. For the semis is more than half of the comma, but there is no comma or less than half. But these things, since they serve speculation more than practice, we shall leave to the philosophers for now.

Diesim autem is modus recipiendi est. Comma et medium commatis medium quoque semissis diesis fiet. Est autem semis plus quam dimidium commatis, nullum vero comma est seu dimidio minus. Sed haec, cum plus deserviant speculationi quam praxi, sapientibus ea ad praesens relinquamus.

But now we must inquire why the said harmonic ruler is called a monochord. And the reason is this. Just as a variety of pitches is

una voce naturali, nunc intensa secundum acumen, nunc vero remissa secundum gravitatem, nunc moderata secundum mediocritatem, varietas effert ipsarum vocum, sic in chorda per magadarum, id est capitellorum vel digitorum appositionem longando vel curtando secundum acumen, grave vel medium, etiam omnes voces agnoscuntur, ut in viella vel symphonia manifestum. Et sicut vox eadem diversa proferens una dicitur et non plures, ita etiam cum ipsa chorda omnia possit exprimere, monochordum ab una chorda denominatur et non a pluribus. Quocirca diachordum vel etiam trichordum non dicitur, sed monochordum.

<Capitulum V.> De tropis, et quid circa ipsos sit agendum.

De tropis seu modis quos abusive tonos dicunt Boethium in 5 <libro> theorice, Guidonem vero per omnia practice sufficienter tractasse.

De his ergo breviter, eosdem tonos nominando: usus namque hoc utitur vocabulo. Ante omnia vero quid sit tonus videndum. Amplius quot sunt toni? Quid operentur toni? Quare sunt tot et non plures aut etiam pauciores? Quibus in locis resideant in monochordo in recto vel affinitate? Quomodo nominantur? Quis sit eorum legitimus ascensus vel descensus? In quo convenient? In quo etiam differant? Quid habent commune? Quid vero speciale?

Tonus ergo ut hic sumitur est regula quae de omni cantu in fine diiudicat, sicut ait Guido in Dialogo suo. De hac etiam materia tractat Boethius, libro 4, capitulo 3. Octo sunt beatitudines, harum instar autem octo toni, 4 videlicet authentici id est principales, et 4 plagales id est laterales. Authenticos autem etiam acutos dicere fas est, plagales vero humiles.

Operantur hi toni in canticis regularitatem, quam quivis, si transgrediatur, transformabit. Sunt enim melorum sedes, sicut loci argumentorum. Transformatio in tonis est trans tropicam formam elevatione vel depressione vocis debacchatio. Diapason species, quae octo sunt et non plures aut pauciores, etiam octo tonos istos progenuerunt, quare plures aut pauciores etiam non sunt. Simile in

produced by one natural voice which is now strained to a high pitch, then loosened to a low pitch, then moderated to the middle, thus also all the pitches may be learned on a [single] string by means of *magadas*, that is, bridges, or the placement of fingers, lengthening or shortening according to high, middle, or low, as is manifest on the viol or symphonia. And just as the same voice that produces different [pitches] is called one and not several, so in the same way, since one may express all things through that string, the monochord is named after one string and not several. Wherefore one does not speak of dichord or trichord, but of monochord.

Chapter 5. Concerning *tropi*, and what one should do concerning them.

That *tropi* or modes, which are incorrectly called *toni*, have been sufficiently treated by Boethius in the fifth <book> according to the theory, and by Guido throughout according to practice.

Therefore [we may be] brief about them here, calling them *toni*: for this is the word employed in everyday use. First of all, however, we must consider what is a *tonus*. Then, how many *toni* are there? What do *toni* accomplish? Why are there only so many, and not more or fewer? What are the places on which they reside on the true monochord and [on which ones] by affinity? How are they named? What are their proper ascents and descents? In what do they agree? In what do they differ? What do they have in common? And what is special [about each]?

The *tonus*, therefore, as understood here, is a rule which judges every song by its final, as Guido says in his *Dialogus*. Boethius also deals with this matter in the fourth book, chapter 3. There are eight beatitudes, and in their likeness [there are] eight *toni*, namely four authentic or principal ones, and four plagal or lateral ones. It is proper to call the authentic ones high, and the plagal ones low.

These *toni* establish regularity in songs, which [regularity] shall be transformed if there be any transgression. For they are the seats of the melodies, like *topoi* are of arguments. Transformation in *toni* is a roaming beyond the form of the trope through a raising or lowering of pitch. The [eight] species of diapason, which are eight and not more or fewer, have generated those eight *toni*, wherefore there are neither more nor fewer [of

Boethio, capitulo 3, libro 4. Sedes autem ipsorum seu finales chordae monochordi sub rectitudine sunt. .D., .E., .F., .G. Sub affinitate vero omnes aliae in quibus legitimus ascensus aut descensus identitatem conciliat, scilicet per tonos et semitonia.

Verbi gratia .D. habet in elevatione: tonum, semitonium et tonum. Idem autem erit .G. per .b. rotundum sic: .G.a.b.c. Et .a. per .b. quadratum sic: .a.b.c.d. Et .d., quae est eius octava, sic: .d.e.f.g. Et iterum .g.aa.bb.cc. Et .aa.bb.cc.dd. Hae igitur omnes .D. sunt affines et cognatae.

Rursus .E. in elevatione semitonium habet, iterum tonum et tonum sic: .E.F.G.a. Idem autem erit .a.b.c.d. Item .b.c.d.e. Item .e.f.g.aa. Item .aa.bb.cc.dd. Iterum autem .bb.cc.dd.ee. Affines enim sunt.

Rursum vero per acquisitam, id est .b. rotundum, .F. in elevatione tonum habet et iterum tonum et iterum semitonium sic: .F.G.a.b. Idem autem fiet .c.d.e.f. Item .f.g.aa.bb. Item .cc.dd.ee.

.G. quoque similiter in elevatione duos tonos habet et unum semitonium hoc modo: .G.a.b.c. Idem autem fiet .c.d.e.f. Item habet <duos tonos et> semitonium g.aa.bb.cc. Item vero .cc.dd.ee., in elevatione ergo huiusmodi affines erunt litterae.

Amplius tot enim <?> hoc modo .A.b.C.D. Idem autem erit .D.E.F.G. Item .G.a.b.c. Item .a.b.c.d. Iterum .d.e.f.g. Idem g.aa.bb.cc. Item .a.bb.cc.dd. Idem autem in aliis fiet, ut in subscripta monstratur figura:

them]. See also Boethius, chapter 3 in the fourth book. Now their seats, or the finals of the string of the monochord under rectitude [musica recta], are D, E, F, and G. But by affinity also all the others on which identity is established by lawful ascent or descent, namely through tones and semitones.

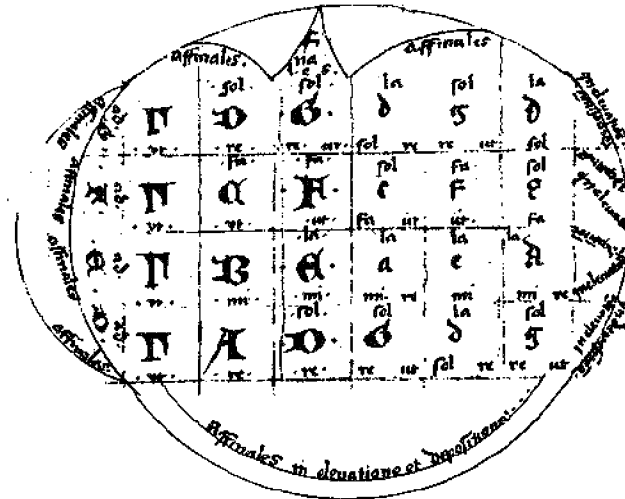
For example, moving up from .D. one has a tone, semitone, and tone. The same shall be [the case] from .G. with round .b., thus: .G. .a. .b. .c. And from .a. with square .b., thus: .a.b.c.d. And from .d., which is its octave, thus: .d.e.f.g. And again .g.aa.bb.cc. And .aa.bb.cc.dd. All these, therefore, are in affinity with and relatives of .D.

Again, moving up from .E. one has a semitone, and again a tone and tone, thus: .E.F.G.a. And .a.b.c.d. shall be the same. Also .b.c.d.e. Also .e.f.g.aa. Also .aa.bb.cc.dd. And again .bb.cc.dd.ee. For they are in affinity.

Again however by an acquired [letter], that is, round .b., moving up from .F., one has a tone and again a tone and again a semitone, thus: .F.G.a.b. Also .c.d.e.f. shall be the same. Also .f.g.aa.bb. Also .cc.dd.ee.

Moving up in the same way from .G. one similarly has two tones and one semitone, in this way: .G.a.b.c. The same however shall be .c.d.e.f. Also it has <two tones and> a semitone g.aa.bb.cc. And also .cc.dd.ee., so in moving up those letters shall be in affinity.

Further as many times in this way: .A.b.C.D. And .D.E.F.G. shall be the same. Also .G.a.b.c. Also .a.b.c.d. Again .d.e.f.g. Also g.aa.bb.cc. Also .a.bb.cc.dd. And it shall be the same with others, as is shown in the figure written below:



In hac igitur formula finales describuntur illae videlicet quae sunt inter duo puncta; quaelibet autem finalis etiam ante et retro recta linea suas depictas habet affinales, ut puta .D. gravis: .Γ.A.G. graves et .d.g. acutas. .E. etiam gravis: .Γ.b. graves et .a.e. acutas, item .aa. superacutam. .F. etiam gravis: .Γ.C. graves et .c.f. acutas, item .cc. superacutam. .G. item graves: .Γ.D. graves et .d.g. acutas, item .dd. superacutam.

Affinales recte autem dictae sunt, quoniam eadem sunt tam in elevatione quam in depositione. Aliae quoque quaedam affines sunt, sed non similiter; cum illis enim tantum deponuntur aut elevantur, .a. enim acuta et .aa. superacuta cum .D. gravi non deponuntur. Similiter .b. quadrata, quae secundum Guido<nem> est secunda nona incipiendo monochordum in .A. gravi, et ea quae sibi respondet in diapason, scilicet haec: .b., ut .E. gravis non deponuntur. Item .G. gravis et acuta, ut .F. non deponuntur. Item .a. acuta et superacuta non ut .G. deponuntur, elevantur tamen omnes praefatae ut dictae finales.

Amplius .c. acuta et superacuta non ut .D. elevantur, nec etiam .d. acuta et superacuta ut .E., nec .b. rotunda, prima nona monochordo initiato in .A., et ea quae sibi respondet in diapason, scilicet haec: .bb. Amplius nec .c. acuta et superacuta ut .G. gravis deponuntur tamen cum ipsis finalibus. Ideoque affines proprie non dicuntur, sed improprie quoniam non simul cum finalibus elevantur aut etiam deponuntur, sed tantum unam tenent partem sicque iure laterales dici possunt, veluti unum latus tenentes.

Pro dictis autem litteris tam finalibus quam affinalibus usus quasdam voces inolevit, quae sunt ut, re, mi, fa, sol, la. Harum autem vocum finales re, mi, fa, sol dixerunt. Verum quia saepius contingit aliquos cantus virtute solfationis datae secundum differentiam in ut terminari, eandem vocem in sol, eo ipso voluerunt commutari. Hoc autem saepe contingit in septimo vel octavo tono. Si igitur in aliqua littera gammatis finali vel affinali, recta vel litterali, quae vulgo clavis nuncupatur, ipsarum quattuor una reperiatur, ibidem tropica sedes aptabitur.

Tropi autem, modi vel toni, superius authentici dicti sunt et plagales. Authentici vero protus, deuterus, tritus, tetrardus a Guidone

In this figure, then, are represented the finals, those, namely, that are between two points; but every final also has its affinals drawn before and after in a straight line, as for example low .D. [in the bottom row]: low .Γ.A.G. and high .d.g. Also low .E. [in the second row from the bottom]: low .Γ.b. and high .a.e., also superacute .aa. Also low F.: low .Γ.C. and high .c.f., also superacute .cc. Also low .G.: low .Γ.D. and .high d.g., also superhigh.dd.

Affinals are correctly so called, because they are the same both in moving up and moving down. There are also certain other ones in affinity, but not in the same way; only either the ascent or the descent is the same. For the descent from high .a. and superacute .aa. are not like that from low .D. Likewise square .b., which according to Guido is the second ninth beginning the monochord on low .A., and also the one corresponding to it in the diapason, namely this: .b., do not have a descent like that from low .E. Also from low and high .G. the descent is not like that from .F. Also high and superacute .a. do not have a descent like that from .G. But all of the aforesaid ones do have ascents like the said finals.

Further, from high and superacute .c. there is no ascent like that from .D., nor from high and superacute .d. one like .E., nor round .b., the first ninth from the beginning of the monochord in .A., and the one that corresponds to it at the diapason, namely .bb. Further neither high and superacute .c. have descents like that from low .G., though [they do] with those finals. Therefore they are not properly called in affinity, but rather improperly, because they are not raised or lowered in the same way as the finals, but hold only one part and thus they may be justly call lateral ones, as if they were holding one side.

However, the custom has grown [to use] certain syllables like **ut**, **re**, **mi**, **fa**, **sol**, and **la** for the said letters, finals as well as affinals. And of those syllables, people have called **re**, **mi**, **fa**, and **sol** the finals. However, because it happens quite often that certain chants end in **ut**, by virtue of a solmisation given according to difference, therefore they have wanted that same pitch to be changed into **sol**. This often happens in the seventh or eighth *toni*. So if one of those four is found in some final or affinal letter of the gamut, recta or literal, which is commonly called a key, then the seat of the *tropus* shall be adjusted in that same place.

However, *tropi*, modes, or *toni* were called either authentic or plagal above. The authentic ones are called *protus*, *deuterus*, *tritus*, and *tetrardus* by Guido.

nominantur. Plagales vero plaga protii, plaga deuterii, plaga tritii, plaga tetrardi. Alii autem pares et impares eosdem dixerunt. Pares autem primus, tertius, quintus et septimus nominantur. Impares vero secundus, quartus, sextus et octavus. Boethius vero aliis nominibus nominat in 4 libro. Parium ergo legitimus ascensus ad duplas id est octavas, nonas vel decimas de licentia. Descensus vero modicus est, in acuminibus enim multum delectantur. Plagales vero humiliores sunt, descensus enim ipsorum ad quartas, quintas et aliquando sextas gravitate gaudentes; parum enim ascendunt. Hoc inferius in troporum formula patebit.

C<apitulum VI.> De regulari et irregulari tonorum discretione.

Meli sedem tonum, nec ab eo posse privari. Argumenta enim, quae peccant etiam quendam locum et, si accomodatum, sibi venditant ad quem vultum habent. Dubia igitur cantilena ubi vultum habet in tono reponitur. Talium discretio est, quia ipsarum confusus est ascensus et descensus cognitioque confusa, tono cui plus assimilabitur, aptabitur. Si enim frequentius pulsent acumina continuando usque in finem, sub authenticis indubitanter erunt. Si vero similiter ad gravia remittantur, sub paribus dico usque in finem. Sunt enim quidam cantus, qui in altissimis paene usque in finem debacchantur ad modum superborum, in finem vero ita humiliantur ut necessario plagalibus adaptentur. E converso etiam de plagalibus fiet, dum enim usque in finem plagas sustinuerunt, ad altiora scandentes, authenticis fiunt.

Amplius autem dicti cantus, si non ascendant ut authentici vel descendant ut plagales, sed quodam medio ferantur itinere, veluti sunt breves cantus qui non ascendunt nisi ad quintam, vel ad plus ad sextam. Alii vero non descendant nisi ad secundam vel tertiam, eodem cognitionis gaudebunt iudicio, ubi puta magis vultum habebunt. Omnes enim authentici regulariter a fine scandendo fugiunt et raro finem percutiunt, praeterquam in neumis seu clausulis seu particulis. Sicut enim in prosa vel metris partes, pedes et clausulae, com<m>a,

But the plagal ones are the *plaga protii*, *plaga deuterii*, *plaga tritii*, and *plaga tetrardi*. Others, however, have called them even and odd. The first, third, fifth, and seventh are called even [*sic*], but the second, fourth, sixth, and eighth odd. Boethius calls them by yet other names in the fourth book. In the even ones, the correct ascent is up to duples, that is, octaves, with the freedom to go up to ninths or tenths. But the descent is restricted, for [the even *toni*] delight very much in the high regions. But the plagal ones are lower, rejoicing in their descents down to the fourths, fifths, and sometimes sixths [below the final]; however, they ascend but little. This shall be apparent below in the figure of the *tropi*.

Chapter 6. Concerning the distinction between regular and irregular *toni*.

That the seat of melody is the *tonus*, and that it cannot be deprived of it. For arguments which are in error about a certain *locus* offer themselves up for sale, if accommodated, to whichever [*locus*] they are showing their face to. A doubtful song, therefore, is placed back in the *tonus* where it shows its face. Because their ascent and descent are confused, therefore, and their knowledge is confused, one distinguishes them through adaptation to the *tonus* which they resemble most. But if they hit the high regions more frequently, and continue like this until the end, then without doubt they shall be authentic. By the same token, if they keep returning to the low regions, all the way until the end, I say [that they are to be reckoned] among the even ones. But there are some chants which, in the manner of proud people, roam in the highest regions almost until the end, and then at last bow down so low that they are necessarily adapted to the plagal ones. The reverse also happens among the plagal ones, when they shall have sustained blows until the end, but then, climbing up to higher regions, become authentic.

Further, when chants do not ascend like authentic ones nor descend like plagals, but stay on a middle course, they are like those short chants that do not ascend beyond the fifth or at most the sixth. Others however do not descend below the second or third [beneath the final] , [and] they shall enjoy the same judgement, that is, where they shall show their face more. For all authentic ones regularly flee from the final by climbing up, and rarely strike the final except in neumas or clausulas or short parts. As for example in a prosa, or in meters, the parts, feet, and closing

cola et periodi sunt aptata: ita etiam in canticis sunt debita respirationum loca seu clausulae vel neumae, quae convenienter—ut ait Guido—assimilantur periodo, regulariter igitur authentorum clausulae ipsis assimilantur. Plagalium vero progressus necdum in clausulis finalem percutiunt, sed frequentius circa eam ludentes ipsam deosculantur. Regulares ergo tales erunt cantilenae, quae sub hac regula manebunt. Scandentes vero ultra vel descendentes, vel etiam ad legitimum ascensum vel descensum non pervenientes, minime regularitate gaudebunt.

<Capitulum VII.> De convenientia tonorum et differentia.

Convenire tonos et differre. Omnes enim tres litteras habent communes, id est .F.G.a. Cum his vero tribus primus, secundus, quartus, sextus et octavus .C.D.E. praeterea communes habent, tertius etiam cum reliquis .D.E. communes habet. Quintus vero et septimus sub .F. nihil sunt nisi ex gratia, tunc enim .E. habere possunt et non aliter. Amplius secundus, quartus, quintus et sextus .b. rotundam communem, primus vero, tertius et septimus et octavus .b. quadratam etiam communem habent; .c. vero omnibus est communis praeterquam secundo et .d. omnibus praeterquam <secundo et> quarto; .e. vero tertio, quinto, septimo et octavo, .f. autem quinto et septimo, .g. vero solam septimus habet.

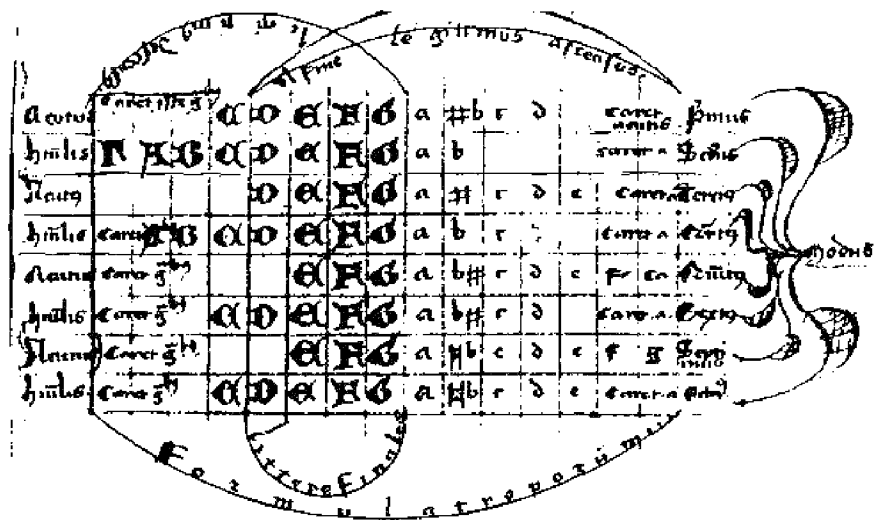
Differunt autem toni quoniam has hi litteras habent, quas non habent illi: hoc clarissime in formula apparebit. Notandum vero quoniam primus, septimus et octavus aliquando .b. rotundam recipiunt. Item quoniam dum eandem recipit septimus, ipse per omnia primus est, et octavus secundus eodem modo, dum recipit eandem .b. Ipse etiam quintus atque sextus .b. quadratam habent. Verum quia isti, scilicet primus, septimus et octavus .b. rotundam dictam, quintus et sextus quadratam de iure non habent, in formula non disponentur <primo ordine>. Esto igitur troporum formula:

sections are suitable for commas, colons, and periods: thus also in chants there are proper places for breathing, or clausulas or neumas, which—as Guido says—are conveniently likened to the period, and again the clausulas of authentic ones are regularly likened to them. The ways in which plagal ones proceed is not yet to hit the final in the clausulas, but rather to kiss it frequently while playing around it. Regular chants, therefore, shall be those that shall observe this rule. But those that ascend or descend beyond the lawful upper or lower range, or that do not quite reach it, shall not rejoice in such regularity at all.

Chapter 7. Concerning the agreement and difference between *toni*.

That *toni* agree as well as differ. All [*toni*] have three letters in common, namely, .F.G.a. The first, second, fourth, sixth, and eighth, moreover, have.C.D.E. in common along with those three, but the third only has .D.E. in common with the others. The fifth and seventh have nothing beneath .F. except by special favor, in which case they may have .E. but nothing more. Further, the second, fourth, fifth, and sixth have round .b. in common, but the first, third, seventh, and eighth have square .b. in common; .c. is however common to all except the second, and .d. to all except <the second and> fourth; .e. however to the third, fifth, seventh, and eighth, but .f. to the fifth and seventh, and the seventh only has.g.

But the *toni* are different in that some have letters that others do not: this shall be most clearly apparent from the figure. It is to be noted that the first, seventh, and eighth [*toni*] sometimes accept round .b. Also, when the seventh accepts the same [round .b.], it [becomes] the first in every respect, and in the same way the eighth [becomes] the second when it receives that same .b. But the fifth and sixth [*toni*] have square .b. However, because it is not lawful for the first, seventh, and eighth to have the said round .b., nor for the fifth and sixth to have the square one, they are not disposed in the figure <in the first order>. Be [this], therefore, the figure of the *tropi*:



Vide igitur, diligens inspector, in huius formulae descriptione tonos tonis convenire qui pares habent litteras, dissentire autem qui non, et quas isti litteras cum illis habeant communes, quas vero speciales, et qui has habet, quas non alter, per carentiam cellularum patet prom<p>tissime, sive sit in acumine, sive in gravitate. Apparet etiam qui graves seu humiles toni sint, et qui acuti. Apparet rursus quae sint litterae finales et quas quilibet tonus habeat sub et supra a finali, ut quoniam primus .D. habet pro finali, sub se tantum .C. noscitur habere, omnes autem aliae cellulae notam habent carentiae. Supra se vero .E.F.G.a.b.c.d. etiam tantum habet, aliae vero cellulae eandem notam habent, scilicet carentiae.

Apparet etiam legitimus a fine tonorum ascensus et descensus. Regulariter enim primus ad duplam ascendit, remittitque tonum ad .C. Secundus vero etiam regulariter ad quintam id est diapente descendit. <Habent> vero tonum, semitonium, tonum, tonum et semitonium et idem in aliis invenitur. Invenitur etiam differentia primi ad secundum simul et convenientia. Primus enim in acumine .c.d. habet, quas non habet secundus. Ipse vero secundus in gravitate .Γ.A.b. habet, quas non habet primus. Simile autem erit in aliis. Conveniunt vero quia .D. habent pro finali. Item quia a .C. gravi usque ad .b. rotundum omnes litteras habent communes. Idem in tertio et

See, then, you diligent beholder, in the design of this figure, that *toni* agree with *toni* that have the same letters, but disagree [with those] that do not, and [see also] which are the letters that they have in common, which [are] special, which [*tonus*] has them, and which other [*tonus* does] not. [The latter] is most readily apparent from the lack of cells, whether it be in high regions or low. It is also apparent [from the figure] which are the low or deep *toni*, and which the high. And again it is apparent which are the final letters, and which [letters] every *tonus* has under and above the final. For example, since the first has .D. as a final [in the top row], we know that it has under it only .C., but all other cells [to the left of .C.] have a mark of absence. Above [.D.], however, it has only .E.F.G.a.b.c.d., but the other cells have the same mark of absence.

What is apparent also is the proper range above and below the final of the *tonus*. For the first ascends according to rule to the octave, and descends by a tone to .C. But the second descends according to rule to the fifth, that is, diapente. But <they have> the tone, semitone, tone, tone, and semitone [in common], and the same is found in the others. One may also find the difference between the first and second [*toni*], and their agreement as well. For the first has .c.d. at the top, which the second [in the second row] does not have. But that second has .Γ.A.b. at the bottom, which the first does not have. And it shall be likewise in the other [*toni*]. The [first and second *toni*] agree because they have .D. as the final, and also because they have all the letters between low .C. and round .b. in common. Also it shall be the same in the

quarto qui .E. habent pro finali, quinto et sexto qui .F., septimo et octavo qui .G., etiam simile erit. Talis igitur dictae formulae inspectio propositum explicabit negotium.

<Capitulum VIII.> De explicata tonorum atque praecisa regularitatis et irregularitatis agnitione.

Pro litteris tonorum videlicet sedibus finalibus vel affinalibus novitatem notulas posuisse. Pro .D. scilicet cum suis affinalibus hanc notulam re, pro .E. mi, pro .F. fa, pro .G. sol, et dato quod in ea virtute solfationis ut reperietur, in sol notulam convertitur. Omnis cantus igitur in re notula, si fuerit inventus, primi erit aut secundi, in mi vero tertii vel quarti, in fa quinti vel sexti, in sol septimi vel octavi. Etiam, ut dictum est, si esset ut, tunc enim in sol transit, huius rei exemplum hoc est:

septimus .G. sol octavus
quintus .F. fa sextus
tertius .E. mi quartus
primus .D. re secundus

Legitimus autem ascensus et descensus per tonos erit et semitonia, quomodo enim progressio in troporum supraposita formula usque ad diapason per tonos et semitonia progreditur. Sic etiam a dicta diapason usque ad maximam symphoniam, quae est bisdiapason, poterit ascendere et rursus quamdiu durat monochordum seu gamma. Secundus autem etiam simili modo remitti potest, et in aliis fiet similiter. In his tamen cavetur ne gravitas acuminibus vel econverso ita immesceatur, quod discretio nulla sit agnitionis, ut in primo et secundo tonis saepe contingit. Unde Guido:

“Sunt autem”, inquit, “horum plurimi cantus qui ad .A. et .b. non deponuntur et ad decimam .c. et undecimam .d. non elevantur, de quibus est dubium <an> primi an secundi toni sint, quorum ista discretio

third and fourth, which have .E. as final, the fifth and sixth which [have] .F., the seventh and eighth which [have] .G. So it is this kind of inspection of the said figure that shall explain the business [we have] proposed.

<Chapter 8.> Concerning the full and precise recognition of the regularity and irregularity of *toni*.

The novelty of small marks [*notulae*] having been placed for the letters of the *toni*, that is, the seats of the finals or affinals. For .D. along with its affinals this *notula*: **re**, for .E. **mi**, for .F. **fa**, for .G. **sol**, with the understanding that when **ut** shall be found on [the final] by virtue of solmisation, the *notula* is turned into **sol**. Every chant, therefore, that shall be found on the *notula re*, shall be of either the first or second [*tonus*], on **mi** however of the third or fourth, on **fa** of the fifth or sixth, on **sol** of the seventh or eighth. Also, as already said, if [in the fifth or sixth the final] was **ut**, then it goes to **sol**. Here is the example:

seventh .G. **sol** eighth
fifth .F. **fa** sixth
third .E. **mi** fourth
first .D. **re** second

The lawful ascent and descent shall be by tones and semitones in exactly the same way as that in which the progression in the aboveplaced figure of tropes moved up to the diapason by tones and semitones. Likewise one shall be able to ascend from the said diapason up to the greatest *symphonia*, which is the bisdiapason, and again, for as long the monochord or gamut lasts. But the second [*tonus*] may move down in the same way, and in others it shall be likewise. But with these things, let one take heed that the low range is not filled with high notes, or the other way round, to the extent that [the *toni*] cannot be told apart, as frequently happens in the first and second. Whence Guido:

“There are,” he says, “several chants that do not descend to .A. or .b. and do not move up to the tenth [step] .c. or the eleventh [step] .d. About [such chants] the doubt arises whether they are in the first or second *tonus*. The distinction is as follows. If they do not ascend to the eighth [step] .a.

est. Ad octavam .a. et primam nonam .b. si non ascendant, certissime de tono secundo sunt. Eruntque octava .a. et prima nona .b. utrisque communes ad quas dum cantus ascendit, si diu in eas permaneat aut simul tertio vel quarto percutiat, aut si in decima .c. incipiat, modi erit primi. Si autem ab inferioribus incipiat et secundum quantitatem antiphonae rarissime ad illas ascendat, secundi erit modi”, et infra.

De tertio vero et quarto ita loquitur:

“Discernitur autem quartus a tertio, quia quartus habet primam .A., secundam .b. et tertiam .C. quas non habet tertius. Et tertius habet undecimam .d. et duodecimam .e. quas non habet quartus. Quod si in aliqua antiphona neque has litteras tertius habeat, neque has quartus, et in decima .c. incipiat vel secundam nonam .b. amplius diligit, tertii erit; alias in quarto ponetur si eius formulae imitetur differentias”. Et addit: “Volunt aliqui”, inquit, “quarto modo ad similitudinem tertii secundam nonam .b. tribuere,” et infra. “Sed nos”, inquit, “magis communem usum secuti sumus. Invenimus praeterea in difficilioribus cantibus ipsam primam nonam .b. iungi tertio modo et tertiam vocem .C. ut fieret decachordum, quod tamen cum rarissime fiat, abusivum esse non dubito,” et infra. Et subiungit: “Tantum”, inquit, “ego precor regulam et communem usum ex<s>equi, quae autem rarissime fiunt, nullius artis regula solet approbare.”

De quinto autem et sexto ita dicit:

“Si in decima .c. incipiat vel in undecima .d., et eam iuxta qualitatem suam saepe repercutiat, quintus erit modus. Si autem non ascendat quam ad primam nonam .b., dicitur de sexto. Sic etiam per principia discernuntur. Vix enim sextus nisi in suo fine incipit aut in .A. aut in .C. aut in .D.”

De septimo quoque et octavo hoc dicit:

“Sane”, inquit, “in his cantibus qui inter octavam depositionem et septimam elevationem medii sunt, ut in reliquis quoque modis dictum est, secundum formularum varietates in quo tono maneat,

and the first ninth [step] .b., then they most certainly are in the second *tonus*. The eighth [step] .a. and first ninth [step] .b. shall be common to both, and when a chant ascends to [these pitches], it shall be in the first mode if it stays on them for a long while, or strikes the third or fourth [pitches .C. and .D.] at the same time, or if it begins on the tenth [step] .c. But if it starts in the low range, and ascends to [those pitches] very rarely, in terms of the length of the antiphon, then it shall be in the second mode,” and so on.

But this is how he speaks about the third and fourth [*toni*]:

“But the fourth is distinguished from the third in that the fourth contains the first [step] .A., the second .b., and the third .C., which the fourth [mode] does not have. Now if in some antiphon neither the third has those letters, nor the fourth, and if it begins on the tenth [step] .c. or delights more in the second ninth [step] .b., then it shall be in the third [*tonus*]; otherwise let it be assigned to the fourth if it imitates the *differentiae* of its formula.” And he adds: “Some,” he says, “want to assign the second ninth .b. to the fourth mode, in likeness of the third,” and so on. “But we,” he says, “have followed the more common practice. Besides, we have found that in the more difficult chants, the first ninth .b. is joined with the third mode, and also the third pitch .C., so that there is a decachord, which I do not doubt is erroneous, since it happens very rarely,” and so on. And he adds: “I pray,” he says, “that only the rule and common use should be followed, which however is rarely the case, for of no art is the rule accustomed to approve.”

But he speaks thus about the fifth and sixth:

“If it begins on the tenth [step] .c. or the eleventh .d., and frequently hits that one again according to its quality, it shall be the fifth mode. But if it does ascend further than the first ninth .b., it is said to be in the sixth. Thus they are also distinguished by their beginnings. For there is scarcely a sixth or it begins on its final or in .A. or in .C. or in .D.”

He also says this about the seventh and eighth:

“Truly,” he says, “in those chants that are middling between the descent of the eighth and the ascent of the seventh, as said already in the other modes, one determines the mode according to the varieties of the formulas.

discernuntur. Per ipsas enim varietates uniuscuiusque modi principia liquido pervidebis.”

Haec Guido. Et nunc de his et praecantibus dicta sufficiant, ad partem vero tertiam nostri tractatus stilum acuamus.

<Tertia Pars.>

<Capitulum> I. Prologus, in quo quid sit agendum, proponitur.

De musica cum adiuncto: diaphonice, poliphonice, mensurabiliter cum discretione et sine ea [sit] dicendum. Diaphoniam vero et poliphoniam mensuramque discretam et indiscretam scire oportebit.

Ut igitur breviter dicam: Diaphonia est duarum vocum simul in eodem tempore vel quasi eodem prolatarum unio. “Eodem tempore” dico propter voces quae simul et semel fiunt a duobus, scilicet simul incipientibus et simul desinentibus. “Vel quasi eodem” dico propter hokettationes, sincopationes, truncationes et notarum interruptiones factas, videlicet in mensurae aequivalentia. Similiter propter fractiones quae omnia intercisis fiunt temporibus, finaliter tamen ad unum aliquid revertuntur et diaphoniam causant.

Est autem quaedam diaphonia grossa, ut Guidonis, et quaedam subtilis, ut Franconis et eorum qui ipsum secuti sunt in posteritatem. Est autem Franconis et sequentium, quando scilicet cavetur discordia notabilis vel soni inutilis identitas seu nugatio, puta continuando plures octavas, duas vel tres quintas, vel illas quas bonas, meliores, optimas supra retulimus, vel quas malas, peiores, pessimas descripsimus. In Guidonica vero non hoc omnino cavetur. Dicta ergo diaphonia est.

Capitulum II. De poliphonia.

Poliphonia vero est unio plurium inter se vocum suavi mixtione iunctarum consonantiae diffinitionem retinentium. Amplius

For by those varieties you shall transparently see the beginning of any one mode.”

Thus Guido. What we have said about this must suffice for those beseeching [us to tell them], so let us sharpen our pen for the third part of our treatise.

<Third Part.>

Chapter 1. Prologue, in which it is set forth what is to be done.

[Now] we must speak concerning music with adjoined [part]: diaphonically, polyphonically, measurably with exactitude and without it. It shall be necessary to know diaphony and polyphony, and exact and inexact measure.

To state it briefly, therefore: diaphony is the uniting of two voices performed together at the same time, or almost the same time. I say “at the same time” because of the sounds that are made at the same time, and one time only, that is, by two [performers] who begin and end at the same time. I say “almost the same” because of hocketings, syncopations, truncations, and interruptions of notes, naturally in equivalence of measure. Likewise also because of breakings which are all done in tempora that are cut up, and that finally return to one [sound] and cause diaphony.

There is a crude kind of diaphony like that of Guido, and a refined kind like that of Franco and of those who came after him. For [the diaphony] of Franco and followers avoids conspicuous discord and the useless repetition or trifling of sound, that is, the succession of several octaves, two or three fifths, or of those which we have reported above as being good, better, or best, or that we have described as bad, worse, or worst. In Guidonian [diaphony], however, they are not altogether avoided. It is therefore called diaphony.

Chapter 2. Concerning polyphony.

Polyphony is the uniting of several pitches that are joined together in a sweet mixture, and that retain the definition of consonance. Further, polyphony is a

poliphonia est gratiosum auriculae pabulum, quae dum cum discretione fit, nihil est ibi superfluum nihilque diminutum, sed omnia sibi ita rato ordine respondent, non obstante quod hic hokettet, hic vero quasi fila trahat, alter quoque sincopet, et rursum alius quomodo vult frangat, ut quasi solemnissimae serici textura, varietate prolutionum, figurarum et descriptionum impressa, totum reficiat animum totumque cibet auditum, in tantum quod ab omnibus curis abstrahit omnes sensus alios. Ipsum etiam intellectum, ne aliud intelligat, tenet captivum, et non solum haec quae cum discretione mensurabilis est, verum etiam ea quae sine discretione est—puta: organica. Illa enim caelici cantores ecclesiastici illius scilicet triumphantis ecclesiae, similiter et istius militantis ecclesiae nostrae psalmos hymnosque dulces deo cum tripudio decantant, vocis organa huic organo iocundissime immiscentes.

Capitulum III. Quomodo in poliphonia sit operandum.

In poliphonia operis fundamentum opus inspicere. Sine enim fundamento frustra est quod aedificatur. Ipso igitur reperto sonos eidem addere decebit et non quoscumque, scilicet bonos, meliores, optimos, et eorum composita, ac etiam permissivos.

Quo facto, aut aequaliter incipis, aut minime et, si aequaliter, in duplo incipere manifestum est oportere aut in triplo aut in quadruplo aut sesquialtero. His quoque etiam clausulatim mediari atque finire, ut omnia sibi debite respondeant. Itaque rite sicut est in cantu, ita erit et in discantu. Sicut enim ibi sunt partes, pedes et clausulae, similiter et in discantu opus erit. Sed summe cavendum a transformatione, hoc est tropica deviatione. Verum si cantus transformet, nihil prohibet modum suum sequi; tamen necesse erit. Sed, sicut cantus vitiosus est dum transformatur, sic et diaphonia ac etiam poliphonia. Si ergo quis recte fecerit formas troporum praescriptas, ad unguem eas tenens, non exibat.

pleasing food to the ear; when it is done with exactitude, there is nothing superfluous there, and nothing deficient, but all things correspond in such a precise order—notwithstanding that one hockets, that one draws [the notes] like threads, that another makes syncopations, and again someone else breaks however he pleases—that [the end result], like a solemn silken cloth, stamped by a variety of performances, figures, and depictions, completely restores the mind and nourishes the whole hearing, so much so that it pulls away all other senses from [their] cares. Indeed it holds the understanding itself captive so that it cannot bring understanding to anything else. And it is not only [diaphony] which is measurable with exactitude [that accomplishes this], but even that which is without exactitude, that is, organal. Those heavenly ecclesiastical singers—of the Church Triumphant, that is—and similarly also [those] of our Church Militant, sing sweet psalms and hymns to God with ritual dance, mingling the organa of [human] voice with this organum [of heaven] in the most pleasing fashion.

Chapter 3. How to proceed in polyphony.

That it is necessary in polyphony to inspect the foundation of the work. For without a foundation one builds in vain. Having found that [foundation], it shall be appropriate to add sounds to it, and not just any [sounds], but those that are good, better, or best, along with their composites, and also those that are permissible.

Having done this, you begin either together or not, and if together, then obviously it is necessary to begin in duple, triple, quadruple, or sesquialtera. With these one is also to make intermediate or final closes, so that all things respond to each other in proper fashion. Thus, what is correct in chant shall be [correct] also in discant. For just as there are parts, feet, and clausulas [in the former], similarly these shall be needed in discant. But above all one should beware of transformation, that is, deviation from the *tropus*. Indeed, when the chant is transformed, nothing prohibits its mode from following; yet it shall be necessary. However, just as chant is defective when it is transformed, so also is diaphony or polyphony. So if one shall observe correctly the aforesaid forms of the *tropi*, holding them to the nail, one shall not be lost.

Capitulum IV. De ordinatione discantus supra fundamentum.

Ex multiplicibus et superparticularibus inaequalibus praevis proportionibus sonos productos natura praecedere. Usus tamen indifferenter multiplicibus et superparticularibus utitur, nunc istas praeponens ut diapente aut diapason, sed nunc dum immediate immo superpartientes immiscet. Natura inquam praecedere multiplices voluit sicque primo duplices, deinde triplices, hinc vero quadruplices. Rursus superparticulares: primum videlicet sesquialteras, ultimo vero sesquitertias. Hic ergo rationis ordo est et naturae. Usus vero peramplius lasciviam perpendens simplicibus iam satur mixturis gaudet etiam ad sui opus, superpartientes sonos praedictis immiscens, nec rationis aut tenet ordinem, sed, ut ita dicam, in modum textoris lanas simul commiscens et fila texendo, gratiosum aspectui panni profert artificium, simplici texturae panno praeeligibile. Sed et pictor naturales colores artificio transferens, innumera coloris genera placabilia simplicibus commiscet. Sed et Epicureus cocus aromatum varietate et, ut ita dicam, quadam alienatione saporum quamplurimos gutturi retinuit dulcissimos. Itaque nimirum sonorum mixturis auris gaudet, ut oculos colorum vel guttur saporum, expedit tamen ut omnia rato sibi respondeant ordine. Clausularum igitur et terminorum fundamenti seu cantus vel tenorum phonista ita disponat apices, ut iisdem principales sonos contribuat; deinde vero, prout sibi natura dictabit, aliquantulum peritus sonos sonis immisceat. Sed et ut mensuram sequatur inceptam, opus est in inceptatione videlicet, mediatione et finali periodo. In aliis vero aliquantulum vagari nihil prohibet secundum hoc quod infra de truncatione dicetur. Unde de mensurabilibus sermo creverit, nam et oratio metrica mensuram fieri in omnibus clamat. Ait enim:

Sicut in omne quod est, mensuram ponere prodest,
sic sine mensura deperit omne quod est.

Frangere autem aut hocketare vel sincopizare vel huiusmodi similia facere dum delectant, ita sibi cuncta maritabiliter nexentur, ut

Chapter 4. Concerning the arrangement of discant upon the foundation.

That nature [wants] those sounds to have precedence that are produced from the multiple and superparticular unequal proportions. For everyday use employs indifferently multiple and superparticular [proportions], first placing such [intervals] as diapente or diapason in front, but then it shall immediately mingle in superpartient ones. For nature, I say, has wanted multiple ones to have precedence, and thus firstly duples, then triples, and thereafter indeed quadruples. And again the superparticulars: in the first place sesquialteras, lastly however sesquitertias. This is therefore the order [established by] reason and nature. But everyday use, being sated with the simple ones, also rejoices, in a spirit of playfulness, in mixtures [being added] to its work, mingling in superpartient sounds among the aforesaid [intervals]. Nor does it stick to the order of reason, but [proceeds], if I may put it like this, as a weaver mixing [different] wools together, and [who], in weaving threads, produces the artifice of a cloth that is pleasing to the sight, one preferable to a cloth of simple weave. But also the painter, when he brings natural colors into his artwork, mingles in countless pleasing kinds of color along with the simple ones. And the Epicurean cook has likewise retained for the gullet, through a certain perversion of savors, if I may put it like that, a very large number of the sweetest [savors] from among the variety of aromas. Thus without doubt the ear rejoices in mixtures of sound, just as the eyes [in mixtures] of colors and the gullet of savors, though it is expedient that all things respond to each other in a considered order. Therefore, the phonista, [the maker] of the foundation, or chant, of the clausulas and terminations, or of the tenors, should arrange the peaks in such a way that he assigns the principal sounds to them; thereafter, being a little experienced, let him mingle in [other] sounds, according to what nature shall dictate. Yet in order that he follows the initial measure, [that measure] is needed at the beginning, the middle, and the final period. Nothing stops him, however, from wandering a little elsewhere, according to what shall be said below concerning truncation. Whence that saying about measurable things, for the metrical verse calls for measure in all things. It says:

Just as it is profitable, with everything that is, to apply measure,
So without measure everything perishes that is.

However, breaking, hocketing, syncopating, and similar things, while they give delight [by themselves], must be joined together as though in a marriage,

sectionum distributa portio perdebite cohaereat, mensura quoque totius ad partes non discordet.

Ex nunc et rursus cavetur, ne soni aliqui puta multipliciter producti vel etiam superparticularitate, uti sonus dupli, tripli, quadrupli, sesquialteri et sesquitercii et etiam sesquioctavi, aut etiam aliqui superpartientes, ut supertertiidecim^{<i>} seu semitonia vel quaecumque infra tonum sunt, sicut partes eiusdem vel etiam partium particulae bis vel ter vel totiens iterentur, sed simul [[?]semel] eos percussisse, donec alius interfuerit, quicumque sit ille, suffecerit. Hi ergo, qui vulgo tertiae, sextae aut etiam decimae nuncupantur, simplices vel compositae, secundum vocis humanae possibilitatem iterandi totiens quotiens usque ad finalem clausulam seu periodum liberum habent arbitrium. Tonus vero, partes quoque eius aut partium particulae ut commata, vel etiam minora spatia ut diaschismata, quae in monochordo communi non cadunt, raro aut numquam ad discantum accedunt—verum, quia de permissivis tonum diximus in minutis fractis hokettatis aut sincopizatis, eidem receptaculum morulae et non morae praestatur.

Praestat rursus auditus et in communi servatur diapente a gravi parte locari in constitutione ipsius diapason, diatessaron vero ab acuta, quod aliquando non fecerunt Guidonistae. Natura tamen sesquialteram, deinde sesquiterciam—duas inquam maximas superparticulares—pro constitutione diapason symphoniae seriatim disposuit et enim 2-3-4 diapente, diatessaron et diapason continent. Hic autem naturalis est progressus. De tertiis, sextis et decimis rursus notandum quod, cum in his semitonium partem tenet acutam, sonum sequentem usus frequens remissivum comprobavit, cum vero tonus ipsam tenet partem acutam, intensivum voluit. Ditonus igitur, ut sic ad diapente, tonus cum diapente ad diapason, ditonus cum diapason ad triplam calle recto parantur. Semiditonus vero ad unisonum, semitonium cumeveral diapente ad diapente, semiditonus cum diapason ad ipsam diapason retrocedunt.

Amplius curandum, ut in his quae tardam accentus retinent moram, contra tenorem concordia maior teneatur. Pluries item si discantent pariter, unusquisque aut per fractiones, hoket^{<t>}ationes, sincopationes, truncationes vel etiam saltus, ita

in such a way that [each] divided portion of those [into which the song is] cut coheres properly, and also the measure of the whole agrees with the parts.

Further, one should beware, again, that no sounds produced from multiple [proportions] or from superparticularity, like the sounds of the duple, triple, quadruple, sesquialtera, sesquitercia, and sesquioctava, or even some superpartient [proportions], like the supertertiidecima or semitone [^{256/243}] or any that are smaller than the tone, like parts of the same, or small parts of parts, are stated twice or three times or any number of times. It shall have sufficed to have struck them once until another one shall have come between, whatever it may be. But those [intervals] that are commonly called thirds, sixths, and tenths, both simple and in composites, have the free will to repeat as many times [as they like], according to the capacity of the human voice, until the final closing or period. But the tone and its parts, or small parts of parts, like commas or smaller spaces such as diaschismata which do not fall in the common monochord, rarely or never enter into discant—although, since we have spoken of minute hocketed or syncopated fractions of the tone among permissible [sounds], they are admitted for brief moments, but not for longer intervals of time.

Again, the hearing decides, and in general, when putting together a diapason, one keeps the diapente located in the bottom part and the diatessaron at the top, which Guidonists do not always do. For it is in serial order that nature has disposed the sesquialtera and after that the sesquitercia—that is, the two largest superparticulars—for the constitution of the symphonia of the diapason. And indeed 2, 3, and 4 contain the diapente [^{3/2}], diatessaron [^{4/3}], and diapason [2]. For this is a natural progression. Again, concerning thirds, sixths, and tenths it is to be noted that when the semitone holds the high part in them, frequent use has approved the subsequent [interval] as one of remission, but when it is the tone that holds the high part, it has wanted one of intension. It is by a straight path, therefore, that the ditone is set [to go] to the diapente, the tone with diapente to the diapason, and the ditone with diapason to the triple, but the semiditone retreats to the unison, the semitone with diapente to the diapente, and the semiditone with diapason to the diapason.

Further, one should take care that when there is a slow temporal interval of accent, the greater concord should be held against the tenor. Also if [several] are discanting together, each should regularly keep himself so distinct, whether through breaking, hocketing, syncopating, truncating, or

distincte se habeat, ut cum aliquo non discordet, non ascendat aut descendat praeterquam in his sonis, quos continuari libet, tertiis videlicet sextis vel etiam compositis. Si tamen ista contingant, alternatim faciendum erit. Amplius locum per truncationem vacuum implendum et quasi colludendo idem agendum.

De his: nunc stet manus fessa;
plus dat usus, quam scriptura
de mensura, sed sit cura,
quantum valet vis concessa.

even leaping, that he makes no discord with anyone, [and] does not ascend or descend [in parallel motion] except by those [intervals] with which one is allowed to continue, that is, thirds, sixths, or [their] composites. But if those things happen, one shall have to proceed in alternation. Further, any empty place is to be filled by truncation, and one should [inter]act as if one were playing [a game] together.

About all this: now let the weary hand stay;
Practice teaches more about measure
Than writing, yet let one take care,
Strength [is] granted as much as [one] is able to.