TENTATIVE EXPOSITION OF A NEW THEORY OF MUSIC,

SET OUT CLEARLY FROM

THE MOST CERTAIN PRINCIPLES OF HARMONY

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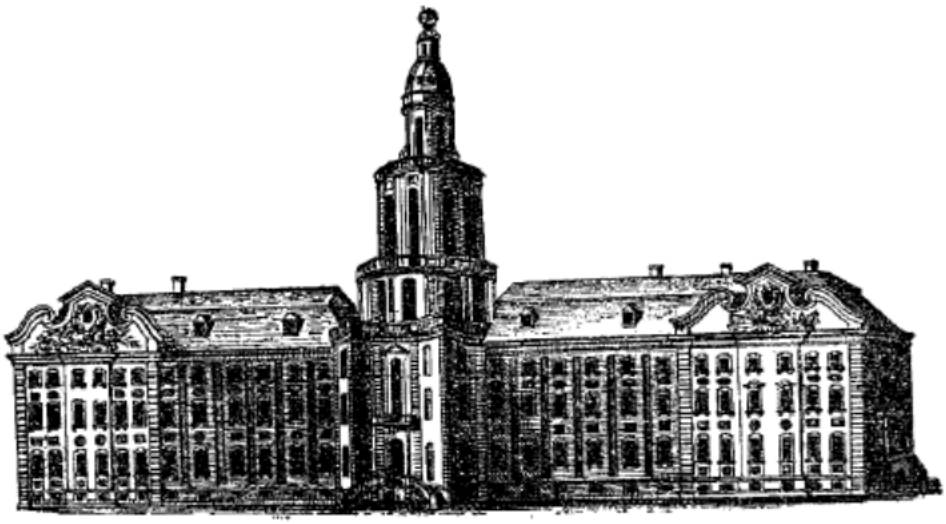

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PREFACE

These matters, by which music is rendered pleasing to the ear and which affects the mind with pleasurable sensations, clearly may be understood to have their beginnings in ancient times, when music began to be improved, and not to belong to the arbitrary natures or customs of men. Indeed Pythagoras, who first set out the fundamentals of music, now understood the ratios of the harmonies, by which the ear may find delight in kindred perceptible proportions, even if that may not yet be agreed on, how these ratios may be perceived to be in agreement by listening. But since he understood the true principles of harmony less distinctly, he attributed too much to his proportions nor had he got to know the limits to be put in place for these. Just as for that reason the merit has been withheld from Aristoxenus, who truly, as he might infringe on the teaching of Pythagoras, had gone off in the opposite direction, while all the strength of numbers and ratios expressed were to be withdrawn from music. Yet meanwhile neither had Aristoxenus dared to assert himself that a well composed melody pleasing to the ear to be fortuitous to be without any reason, but only denied the cause of the joy to be placed in the proportions established by Pythagoras; and while he considered the whole judgement of concords to be left to the ear, he had preferred to ignore the very source itself, and to admit the teaching of Pythagoras to be insufficient, and for this to be complicated by many errors. Indeed this in time may be justly considered to be much more in doubt, or that it may be given generally for any theory of music, by which, it may be explained, why some melody may be somewhat pleasing or be able to displease; for not only is the music of barbarians loathsome to us, which is accustomed to please them wonderfully, but they in turn have found nothing generally pleasing in our music. Hence nevertheless if anyone wished to infer nothing evidently to arise from its charm, as we perceive from the music, surely he would be judged exceedingly precipitate. For indeed at this time the composition of music may include the greatest complexity and bear innumerable complicated parts, and neither is allowed to carry the whole judgement, either by our approval or from the aversion of the barbarians indicated before, as the individual parts together should be considered and examined attentively. But initially when we take it to be judged from the simplest consonants from which all music is composed, of which kind are the octaves, fifth, fourth, third and sixth, both greater and less, we understand there is no dissent generally between all the nations ; but rather while all these intervals would be esteemed to be heard with more pleasure by unanimous consent than the dissonants, evidently the third, the seventh, and innumerable others following, which can be produced. Because of this agreement since neither any other account may be given nor uniquely may be able to be ascribed of equal agreement, the true cause deservedly is to be investigated. Almost similar thereafter is the account of two or more concords following each other successively, of which the following can neither please nor displease without reason. But more attention and ability is required for the pleasure derived from several concords taken together successively than from individual ones; as indeed individual concords may please, it suffices, if these may be recognised and the order may be perceived which is present in these; but if several concords may be offered

successively, for the above pleasing it is necessary, that also the order may be understood, which is contained in that sequence. Therefore as these matters, in which a certain order is present, may be increased so much by multiplicity, so that everything, which constitute the order, may not be perceived except by the most acute ears, it is no wonder, if duller ears may find no inner charm. Therefore since barbarians may derive little or none of the pleasure from our music, its cause at least may depend on this, that either in fact none of its charm may be present absolutely, or it may be pleasing only on account of our being so accustomed to it, but rather it is required to be judged as a many layered order and charm to be present in our music, of which only the smallest part may be perceived by barbarians. But this may prevail most in the customary run of things, not indeed by itself to be persuading certain musical compositions to be pleasing, which may be seen by others to be unpleasant, but rather for the sense of hearing itself to be exercised and made sharper, so that it may be able to perceive all the arrangements, with which such music is replete. Therefore anyone whose ears are not yet exercised and perfected in this manner, for these the plainest music, by which on account of the great simplicity we may be affected to disdain, is to be abandoned, since we are accustomed to much more accomplished compositions we may be accustomed to require much more of the orders.

Therefore thus from these related judgments, both correct as well as perverse, clearly it may follow a general theory of music to be given, in which an account of these may be given from the most certain and unquestionable principles, which both may please as well as displease, which may be able to be explained, to investigate this principle in the present work and to have constructed a theory of music based on these principles. Indeed now, however much labor has been undertaken, yet not everything has progressed beyond the doctrine according to concords, and that indeed thus cannot be resolved, so that it might lead to be used in practical music ; but how much shall be set out in this book, even if we have not resolved the whole matter, we leave the judgement to others ; meanwhile the precepts arising from our theory especially proposed for music agree remarkably well, so that we may have no doubts about the solidity and truth of this theory. Indeed we have chiefly followed the duties of the natural philosopher in establishing this theory and we have enquired into the true nature of these things, which in music may be observed either to please or to displease ; but if hence the theory may be in agreement with experiment, we are seen with the prescribed function justly performed for us.

Therefore it was appropriate to have returned from the sound sources themselves to first principles, not only more accurately than hitherto had been done, but also and which was especially the case, we have adapted these to the fundamentals of music requiring to be put in place. Clearly of course we show, sound consists in the vibratory motion of such particles of all the air and since with this agreed on this motion may affect the sense of hearing, so that hence the perception of sound may arise. Thus it has become known that the hearing of simple sound to be nothing other than the perception of numerous pulses sequentially in equal intervals of time in turn among themselves, and the distinction between deep sounds and sharp sounds thus to be put in the frequency of these pulses, so that, where more pulses strike the ear in the same time, there the sound may be considered sharper. Then we have studied carefully the various ways sound are to be

effected, which we have recalled to three kinds, and initially we have determined the speed of the pulses, which the given body transfers to the air; from which thus the number of pulses, that any sound in music produces in a time of one second is allowed to be defined. And in this discussion we have shown an entirely new theory of the sound, which pipes and flutes return on being blown into, of which since there is so much agreement with experiment, that this by necessity may be seen to be had for the truth. Besides too we have carefully investigated the intensity of sounds and we have uncovered the way individual musical instruments thus are required to be constructed, so that all sound, however diverse on account of the tone, yet may be produced equally strong, from which it may be seen to constitute an essential part in the construction of musical instruments.

Nevertheless the theory of music depends on two fundamentals, of which the first is present in the accurate recognition of sounds, so that it pertains properly to natural science, and has been set out well enough in the first chapter and beyond. Truly the other principle depends rather on metaphysics, since it will be able to be defined by that, how it may be effected, so that several sounds either at the same time as well as in succession may be perceived to be pleasing or displeasing ; which question we have thus been led to resolve both by reason and by experiment, so that then we may set up two or more sounds as it pleases, so that the proportion may be understood, how the number of vibrations produced by each in the same time is maintained; truly the opposing displeasure consists in this, when either no order may be perceived or that, which must be present, may be seen suddenly be disturbed. Then we set out, how the order of sounds may be perceived distinctly, which in the account of the vibrations, may be presented either at the same time or produced in equal time intervals ; from which it will soon be gathered that some ratios are easier to be perceived, others more difficult; and on enquiring into the cause of this distinction we are introduced to the ease of appreciating these orders, which are of the greatest moment not only in music, but also in other disciplines and arts, in which attractiveness has been proposed, may be of great importance. But these same orders have been disposed to follow the simplest proportions being perceived and all these proportions related to the order, which can be perceived with equal ease: thus to the first single order pertains the proportion of all the simplest equalities, which is most easily soon come upon, wherever it is present, and that sets up two equal sounds [*i.e.* the same note is played twice]. This corresponds to the second order, to which equally only one proportion is referred to, which is the double ratio ; this is perceived easier than all the other ratios except that of equality, and comprises the interval of the sounds, which is called the diapason [*i.e.* diatonic], or the whole octave. Truly for the third order two ratios were seen to be of importance, evidently the triple and quadruple, since these two ratios may be understood with equal facility; and we have pursued the remaining orders in this manner, and the perceived ratios whatever to be attributed with equal ease to each one. Truly we call these the degrees of pleasantness, [or sweetness, charm, etc], because from that it is understood, how many such pleasant concords may be had or, what amounts to the same thing, how many concords may be considered to be required to facilitate that change; from which it is understood, how many other ratios more easily with the others, wherever they will have arisen, may be able to be noted. Besides, this distinction of the

ratios will be evident not by the names, which the ancients had themselves imposed, to be put in place, neither as had been considered by the Pythagoreans, the multiple ratios to be easier to understand than the superparticulars [*i.e.* integral with an aliquot part] nor these themselves to be easier than the superpartients [*i.e.* integral with several aliquot part], but the criteria are to be drawn from quite another source, the recognition and appreciation of the concords must arise from a much more solid perfect accord with experience. And from these two principles, the one physical, the other metaphysical, we will construct the whole theory of music.

Before everything else, it is to be observed that music to be resolved into two chief parts, by which it may be brought together by grace or elegance and charm or attractiveness itself, which is attained by a thorough application to the work ; of which the one part depends on the discrimination between the deep somber notes and high notes of the sounds, the other indeed consists of the duration of the sounds. Indeed the present day music is accustomed to be prepared especially from both these kinds of charm ; yet meanwhile even now examples can be observed, in which either one kind or the other arouses so much feeling. Truly in this treatise we have set out to show that the charm especially, which arises from the distinction or sounds on account of their depth and sharpness, as the one shall be treated with less difficulty than the other, and from that the other may be more easy to be established . Indeed just as in the distinction between the bass and treble other properties do not occur, except those which may arise from the combination of the numbers 2, 3 and 5; thus musicians have not yet arrived at this point in the separation between the durations of the notes, but have derived everything from the numbers 2 and 3 alone of this kind to be agreeable, whereby the ear is still not in a state to be able to distinguish between the rapports to be just as complicated in the one case as in the other.

Therefore in these musical compositions, which consider only the difference between the base and treble sounds, the initial explanation has been made from the sounds made by one or several concords striking the ear at the same ; where not only all the concords, which indeed can occur in music, are examined, but also demonstrated the following kinds of charm, from which it can be decided at once, whether other concords may be able to be perceived more easily. Then we have progressed to the succession of two concords and we have shown, how two concords may be able to be brought together, in order that also a succession of pleasing sounds may be rendered. Then truly we have extended the same situation to a series of several concords and thus to any musical work, since no account may be taken of the duration of the sounds. But we have recalled the judgement of these individual matters to numerical exponents, in which all the strength and nature both of the individual concords as well as of two or more may be contained in succession ; from which at first the setting out of the simple concords has arisen, then the exponents of two successive concords, and three exponents of the series of concords in turn in sequence, from which three things music in general is considered to be resolved. Hence again we have deduced for the various kinds of musical compositions, and indeed initially the principles of general music, that it shall be the combination of the various sounds sufficient for the production of the harmony ; we have reduced its investigation equally to the consideration of being explained. And thus we have enumerated all the

kinds of music initially from the most simplify made as far as to the greatest composed, such as indeed until now can be tolerated; and in this enumeration soon we come upon in general both the most ancient as well as with the received use in more recent times, of this kind are the most simple kind of Mercury, the diatonic, chromatic and the inharmonious of old, of which the first two were in close agreement with these, which were supposed to supply harmony to us ; but of the remainder, evidently of the chromatic and the inharmonic, only so much likeness is observed. Indeed since the ancients, partially from hearing alone and partially from reckoning, had led to that confusion being reached, it is no wonder, if only a likeness of the true harmonies have been encountered ; yet now meanwhile the defect of these kinds is openly recognised. They were occupied for a long time with the diatonic kinds, before that of the true harmony agreed on would be delivered, certainly what Ptolemy had at last agreed required to be acceptable. Finally, our ten eight kind is in perfect agreement with that, which now generally in use is accustomed to be called the diatonic-chromatic ; namely it contains in one octave twelve sounds at almost equally spaced intervals between themselves, evidently the semitones and limas, either major or minor. But although this kind has now been in use for some time, yet always new amendments of the music, by which it might prove to be more pleasing to the ear, have been introduced, but that undertaking itself nevertheless may cease to prosper, so that if the nature of the tones, which indeed now meets with the maximum approval by musicians, may depart from the true harmony by a single tone *B*, the degree of agreement from a single note would scarcely have been be able to be hoped for with the help of the ear. Therefore we have pursued this kind of diatonic-chromatic scale in all its details, which agrees so well with the true principles of harmony, and we have set out the various ways of composition to which it is adapted ; yet also we have shown the more general compositions, so that it may be apparent, even now to how great an extension music is capable. Then we have enumerated all the concords to be returned for this diatonic-chromatic kind, which can be found in general here, and, with that agreed on, we have indicated which shall be the most agreeable to be carried out. Finally we have dealt with teaching about the kinds of music more accurately, than has been able to be permitted hitherto, and we have subdivided the individual ways into their kinds and systems, from which the matter of the composition of music is seen to be approached more clearly. But all this is as if only the first foundations, from which a complete theory of music may be constructed, we propose further evolution and we are committed to the practice of compliance from musical experts, which without doubt, is why both theoretical as well as practical music may not be able to be raised to the highest degree of perfection.

PRAEFATIO

Eas res, quibus musica auditui grata redditur animosque voluptate afficit, neque in arbitrio hominum positas esse nec a consuetudine pendere iam primis temporibus, quibus musica excoli coepit, satis luculenter intelligebatur. PYTHAGORAS enim, qui primus musicae fundamenta posuit, iam agnovit rationem consonantiarum, quibus aures delectentur, in proportionibus perceptibilibus latere, etiamsi ipsi nondum constaret, quo pacto hae rationes ab auditu percipiantur. Quoniam autem vera harmoniae principia minus distincte perspexerat, proportionibus suis nimium tribuerat neque ipsis debitos limites constituere noverat. Quam ob causam ab ARISTOXENUS merito est reprehensus, qui vero, ut PYTIIAGORAE doctrinam infringeret, in alteram partem contrariam nimium recessit, dum omnem numerorum et rationum vim ex musica tollere est annisus. Interim tamen nec hic ARISTOXENUS asserere ausus est melodiam bene compositam auribus temere ac sine ulla ratione placere, sed tantum voluptatis causam in proportionibus a PYTHAGORA stabilitis sitam esse negavit; atque dum totum de consonantiis iudicium auribus relinquendum putavit, ipsum fontem ignorare maluit quam doctrinam PYTHAGORAE insufficientem multisque erroribus adhuc involutam admittere. Hoc quidem tempore multo maiori iure dubitandum videatur, an ulla omnino detur theoria musica, per quam, cur melodia quaepiam placeat displiceatve, explicari queat; non solum enim nos barbarorum musicam, quae ipsis mirifice placera solet, abominamur, sed hi vicissim in nostra musica nihil omnino suavitatis inveniunt. Quodsi autem quis hinc inferre velit nullam prorsus dari rationem eius suavitatis, quam ex musica percipimus, is profecto nimis praecipitanter iudicaret. Cum enim hoc quidem tempore compositio musica maxime sit complexa et fere innumerabilibus partibus complicata, neque de nostra probatione nec de barbarorum aversatione ante iudicium integrum ferre licet, quam singulae partes componentes attente sint consideratae et examinatae. Quando autem a simplicissimis consonantiis, ex quibus omnis musica componitur, initium iudicandi sumimus, cuiusmodi sunt octavae, quintae, quartae, tertiae et sextae tam maiores quam minores, nullum omnino dissensum inter omnes nationes deprehendimus; quin potius omnes haec intervalla unanimo consensu auditui magis grata aestimant quam dissonantias, tritonum scilicet, septimas, secundas innumerasque alias, quae effici possunt. Cuius consensus cum neque nulla detur ratio neque soli consuetudini adscribi queat, vera causa merito investigatur. Similis deinceps fere est ratio duarum pluriumve consonantiarum sese successive insequentium, quarum consecutio sine ratione neque placere neque displicere potest. Maior autem attentio ac facultas requiritur ad voluptatem ex pluribus consonantiis sucessivis capiendam quam ex solitariis; ut enim singulae consonantiae placeant, sufficit, si eae agnoscantur atque ordo, qui in ipsis inest, percipiatur; at si plures consonantiae successive efferantur, ad placendum insuper necesse est, ut etiam ordo, qui in ipsa consecutione continetur, intelligatur. Quodsi ergo harum rerum, in quibus certus inest ordo, multiplicitas tantopere augeatur, ut omnia, quae ordinem constituunt, non nisi ab acutissimis auribus percipi queant, mirum non est, si hebetiores aures nullam penitus suavitatem inveniant. Cum igitur barbari ex nostra musica parum aut nihil voluptatis capiant, eius rei causa minime in hoc versatur, quod vel revera nihil prorsus insit suavitatis vel nobis solum ob consuetudinem placeat, sed potius

iudicandum est tam multiplicem ordinem ac suavitatem in nostra musica inesse, cuius minima pars tantum a barbaris percipiatur. Hoc autem in negotio consuetudo plurimum valet, non quidem ad sibi persuadendum compositionem quandam musicam esse gratam, quae aliis ingrata videatur, sed ad ipsum sensum auditus exercendum atque exacuendum, ut omnes ordines, quibus talis musica est repleta, percipere possit. Qui igitur aures suas hoc modo nondum exercuerunt ac perfecerunt, iis musica planissima, qua nos ob summam simplicitatem fastidio afficimur, quia copiosioribus compositionibus assuefacti multo plus ordinis requîrere solemus, est relinquenda.

Cum itaque ex his memoratis tam rectis iudiciis quam perversis clare sequatur dari omnino theoriam musicam, in qua ex certissimis atque indubitatis principiis ratio eorum, quae tam placent quam displicent, explicari queat, in praesenti opere haec principia investigare iisque theoriam musicae superstruere constitui. Quanquam enim iam multi hunc laborem susceperunt, tamen omnes ultra doctrinam de consonantiis non sunt progressi, et ne hanc quidem ita absolverunt, ut in musica practica ad usum perduci posset; quantum autem in hoc libro sit praestitum, etsi totum negotium non absolvimus, aliis relinquimus iudicium; interim praecepta ex nostra theoria nata cum musica maxime probata tam egregie consentiunt, ut de soliditate et veritate huius theoriae dubitare omnino nequeamus. Officium enim Physici in hoc instituto potissimum sumus secuti atque in veras causas inquisivimus earum rerum, quae in musica cum placere tum etiam displicere observantur; quodsi ergo theoria cum experientia consentiat, officio praescripto rite functi iure nobis videmur.

Primum igitur doctrinam de sonis ex ipsis fontibus repeti conveniebat, quam non solum accuratius, Quam adhuc factum est, exposuimus, sed etiam, quod praecipuum erat, ad musicae fundamenta constituenda accommodavimus. Dilucide scilicet ostendimus, in quali particularum aërearum motu vibratorio omnis sonus consistat et quonam pacto iste motus sensum auditus afficiat, ut inde perceptio soni exsurgat. Ita innotuit auditionem soni simplicis nil aliud esse nisi perceptionem plurium pulsuum aequalibus temporis intervallis se invicem insequentium, atque discrimen gravitatis et acuminis sonorum in frequentia istorum pulsuum ita esse positum, ut, quo plures pulsus eodem tempore aures percutiant, eo sonus acutior aestimetur. Deinde varios modos sonos efficiendi sumus perscrutati, quos ad tria genera revocavimus, atque a priori celeritatem pulsuum, quos datum corpus sonorum in aërem transfert, determinavimus; ex quo adeo numerum pulsuum, quem quisque sonus in musica receptus intervallo unius minuti secundi edit, definire licuit. Atque in hac tractatione novam omnino theoriam sonorum, quos fistulae seu tibiae inflatae reddunt, exhibuimus, cuius cum experientia consensus est tantus, ut ea necessario pro vera habenda videatur. Praeterea quoque vim ac vehementiam sonorum diligenter investigavimus atque modum aperuimus singula instrumenta musica ita conficiendi, ut omnes soni, ratione gravitatia utcunque diversi, aeque tamen fortes efficiantur, ex quo non partem subsidii in fabricationem instrumentorum musicorum redundare videtur. Duplici autem theoria musica nititur fundamento, quorum alterum in accurata sonorum cognitione continetur, id quod ad scientiam naturalem proprie pertinet ac primo capite satis superque est expositum. Alterum vero principium ex metaphysica potius est petendum, quippe per quod definiri oportet, quibus rebus efficiatur, ut plures soni tam simul quam successive ab auditu percepti placeant displiceantve; quam

quaestionem cum ratione tum experientia ducti ita resolvimus, ut binos pluresve sonos tum placere statueremus, cum ratio, quam numeri vibrationum eodem tempore editarum inter se tenent, percipiatur; contra vero displicentiam in hoc consistere, quando vel nullus ordo sentiatur vel is, qui adesse debere videatur, subito perturbetur. Deinde exposuimus, quomodo ordo sonorum, qui ratione vibrationum simul vel aequalibus temporibus editarum continetur, distincte percipiatur; ex quo mox colligere licebat alias rationes perceptu esse faciliores, alias difficiliores; atque in causam huius discriminis inquirentes facultatem percipiendi ad gradus perduximus, qui non solum in musica maximi sunt momenti, sed etiam in aliis disciplinis et artibus, quibus venustas est proposita, ingentem utilitatem afferre queant. Gradus autem isti secundum simplicitatem rationum percipiendarum sunt dispositi atque ad eundem gradum omnes eae rationes relatae, quae aequali facultate percipi possunt: ita ad primum gradum unica pertinet ratio omnium simplicissima aequalitatis, quae, ubicunque adest, mox facillime animadvertitur, eamque duo soni aequales constituunt. Hunc excipit gradus secundus, ad quem pariter plus una ratione referri non licet, quae est ratio dupla; haec enim facilius percipitur quam omnes aliae praeter rationem aequalitatis, atque in sonis intervallum, quod diapason seu octava vocatur, comprehendit. Ad tertium vero gradum duas rationes, triplam scilicet et quadruplam, referre est visum, cum hae duae rationes aequali facultate percipiantur; atque hoc modo reliquos gradus ordine sumus persecuti, unicuique rationibus perceptu aeque facilibus tribuendis. Ipsos vero hos gradus suavitatis appellamus, eo quod ex iis intelligatur, quantam quaeque consonantia suavitatem in se habeat seu, quod eodem redit, quanta facultas ad eam percipiendam requiratur; unde intelligitur, quanto aliae rationes aliis facilius, ubicunque affuerint, animadverti queant. Perspicuum praeterea erit discrimen hoc rationum non in nominibus, quae veteres ipsis imposuerunt, esse situm neque, uti PYTHAGOREIS visum est, rationes multiplices facilius percipi quam superparticulares neque has facilius quam superpartientes, sed criterium ex longe alio fonte esse petendum, ex quo multo solidior et experientiae maxime conveniens cognitio ac diiudicatio consonantiarum nascatur. Atque his duobus principiis, physico altero, altero metaphysico, totam theoriam musicae superstruximus. Quod ad ipsum pertractationem operis attinet, ante omnia notandum est musicam duabus potissimum absolvi partibus, quibus ipsi gratia et lepos concilietur; quarum altera discrimini inter gravitatem atque acumen sonorum innititur, altera vero in duratione sonorum consistit. Hodierna quidem musica utroque suavitatis genere maxime solet esse condita; interim tamen etiamnunc exempla conspicere licet, in quibus alterutrum genus tantum gratiam excitat. In hoc vero tractatu eam praecipue suavitatem evolvere constituimus, quae ex discrimine sonorum ratione gravitatis et acuminis nascitur, cum alterum genus tractatu minus sit difficile atque ex altero explicato facile conficiatur. Quemadmodum enim in discrimine gravitatis et acuminis aliae proportiones locum adhuc non inveniunt, nisi quae numeris *2,* 3 et 5 constituantur, ita in discrimine durationis ne hucusque quidem musici pertigerunt, sed omnem huius generis suavitatem ex solis numeris 2 et 3 traxerunt, neque etiam auditus in hoc genere rationes tam compositas comprehendere valet quam in altero. In ipsa igitur compositionis musicae, quae ad differentiam inter sonos graves et acutos tantum respicit, explicatione initium factum est a consonantiis seu pluribus sonis simul sonantibus; ubi non solum omnes consonantiae, quae quidem in musica occurrere

possunt, sunt recensitae, sed etiam secundum genera suavitatis dispositae, ex quibus statim diiudicari potest, quanto aliae consonantiae aliis facilius percipi queant. Deinde ad successionem duarum consonantiarum sumus progressi atque ostendimus, quomodo duas consonantias comparatas esse oporteat, ut ipsa etiam successio auditui grata reddatur. Tum vero idem institutum extendimus ad plurium consonantiarum seriem atque adeo ad opera musica quaecunque, quandoquidem durationis sonorum nulla ratio habetur. Iudicium autem harum singularum rerum ad exponentes numericos revocavimus, in quibus omnis vis ac natura tam consonantiarum singularum quam binarum pluriumve successionis contineatur; ex quo nati sunt primo consonantiarum simplicium exponentes, deinde exponentes successionis duarum consonantiarum, tertioque exponentes serierum consonantiarum plurium se invicem insequentium, quibus tribus rebus universa musica in genere considerata absolvitur. Hinc porro sumus deducti ad varias compositionum musicarum species, ac primo quidem se obtulit doctrina de generibus musicis, ita definito genere musico, ut sit complexio variorum sonorum ad harmoniam producendam idoneorum; cuius pertractationem pariter ad considerationem exponentium reduximus. Enume·ravimus itaque omnia genera musica initio a simplicissimis facto usque ad maxime composita, qualia quidem auditus adhuc tolerare potest; atque in hac enumeratione mox incidimus in genera tam antiquissimis quam recentioribus temporibus usu recepta, cuiusmodi erant genus Mercurii simplicissimum, diatonicum, chromaticum atque enharmonicum veterum, quorum bina priora quidem apprime cum iis, quae harmonia nobis suppeditavit, congruebant; at reliquorum, chromatici scilicet et enharmonici, similitudo tantum conspicitur. Cum enim veteres partim solo auditu partim ratione confusa ducti eo pertigerint, mirandum non est, si tantum simulacra verae harmoniae sunt nacti; interim tamen iam ipsos defectum horum suorum generum agnovisse palam est. Circa genus etiam diatonicum diu fuerunt occupati, antequam id verae harmoniae consentaneum esset redditum, quippe quod PTOLEMAEO demum acceptum est referendum. Nostrum denique genus decimum octavum mirifice cum eo, quod nunc maxime est in usu et diatonico-chromaticum appellari solet, congruit; continet namque in una octava duodecim sonos aequalibus fere intervallis a se invicem distantes, hemitoniis scilicet et limmatis sive maioribus sive minoribus. Quamvis autem hoc genus iam pridem sit usu receptum, tamen perpetuo musici novas emendationes, quibus id auditui gratius efficeretur, intulerunt, quod negotium ipsis quoque tam prospere cessit, ut ea sonorum dispositio, quae nunc quidem musicis maxime probatur, unico sono *B* signato a vera harmonia dissentiat, quantus consensus a solo auditu vix sperari potuisset. Hoc igitur genus diatonico-chromaticum cum veris harmoniae principiis perfectissime conciliatum fusius sumus persecuti atque, ad quam varios componendi modos id sit accommodatum, exposuimus; nonnulla tamen etiam genera magis composita exhibuimus, ut appareat, quantae amplificationis musica etiamnum sit capax. Deinde ad genus diatonico-chromaticum reversi omnes consonantias enumeravimus, quae in hoc genere locum invenire possunt, et, quo pacto quaeque suavissime sit efferenda, indicavimus. Denique doctrinam de modis musicis accuratius, quam adhuc fieri licuit, pertractavimus singulosque modos in suas species ac systemata subdivisimus, quibus rebus compositioni musicae non parum lucis accedere videtur. Haec autem omnia tanquam prima tantum fundamenta, quibus completa musicae theoria sit superstruenda, proponimus atque

ulteriorem evolutionem et ad praxin accommodationem expertis musicis committimus, minime dubitantes, quin tam musica theoretica quam practica ex his principiis tandem ad summum perfectionis fastigium perduci possit.