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"EX CONSIDERATIONE TEXTUS ET HARMONIAE OBSERVIREN": THE RYTHMIC AND METRIC INTERPRETATION OF XVI AND XVII CENTURY VOCAL MUSIC

PREMISE

Over a century and a half ago, Heinrich Bellermann, the great German musicologist, author of fundamental studies about ancient musical notation, in the preface to his essay *Die Mensuralnoten und Taktzeichen des XV. und XVI. Jahrhunderts,*[1] affirmed that "Die genaue Notenkenntniss jener Zeit ist jedenfalls das erste Erforderniss zum Verständniss ihrer Musikwerke, wiewohl nicht das einzige" (The exact knowledge of the notation of an epoch is the first, if not the only thing necessary to understand the musical works it brought us). There is no need to explain that by writing "die genaue Notenkenntniss" Bellermann not only made reference to the mere principle that regulates the transcription of ancient note values into modern ones, but he also implied other and more subtle information contained in the sign. Such was, for instance, the problem of the rhythm and the way to keep it correctly, the *musica ficta*, the counterpoint, the relation between verbal and music meter, between the word's semantic significance and melody's figurative adherence destined to represent it and much more. *Stricto sensu*, the German scholar highlighted the great amount of information the graphic symbol – the ancient as well as the modern – enshrines, and that the task of modern performers is to interpret this correctly so that the musical idea they convey could be as persuasive as possible.

Modern performers often consider XV, XVI and XVII century notation to be a minefield. The symbols of these notations seem to be similar to those we usually use in musical practice, but their meaning diverges so much from our musical notation that it may lead the performer to (often gross) misunderstandings. Furthermore, it is a well-known fact that when the original written symbols are translated into another code (in our case, into modern writing) they inevitably lose they original vitality. Indeed, musical notation is not only representative of a system of communication, as others devised by man throughout centuries, but at the same time it embodies a group of implied values that affect both the shape and the content of the musical message delivered.

It is still a widespread belief that the knowledge of ancient musical notation is only a technical matter, which has to be committed to a few professionals who are the only experts able to transliterate an ancient sign into the current one. In this way, each performer, although lacking of any notion about musical palaeography, could translate sheet music into sounds without even understand transcriber's choices.

In reality, no opinion could be more wrong than this. Musical notation, as with any other means of communication, is nothing but an instrument, in the true sense of the term, and it ought to be considered as such. The graphic fact that, far from being a superstructure, an old-fashioned garment that can be adapted to modern fashion, is a fundamental vehicle to understand all rhythmic, harmonic, dynamic, and agogic features typical of the music they belong.

The essential difference between modern musical notation (the traditional system made up of notes, rests, figures of value, etc., to be clear) and that of the past (in this case that dating back to the Renaissance and proto-baroque) lies in the presence of these implied values. The lack of precise evidence, the loss of the performing tradi-

[1] H. Bellermann, *Die Mensuralnoten und Taktzeichen des XV. und XVI. Jahrhunderts*, Berlin, Georg Reiner, 1858, Vorwort, p. III.

tion, and variations in taste, hindered their understanding far before that of their reproduction nowadays.

It is true that the causes that made Heinrich Bellermann's words no longer worthy of consideration nearly up to the present day, hide behind this contradiction: ancient musical notation has received much consideration so far in the perspective of its historic development. To wit, as the evolution of the sign's progression over time, rather than that of its semantic function as record of a memory, a tradition and an already lost performing habit.

What additional reason could urge medieval and Renaissance composers to avoid transferring into their music any other sign except that of a sound's height and length? Their old-fashioned notation system, semantic poverty, indifference towards the expressive performance of their music? No, of course not. If anything, quite the contrary, considering the solid technical preparation musicians had. It should have been at least pleonastic if not injurious to suggest these performers (many of them were also composers) an interpretative path inseparable from their specific preparation.[2]

Hence, it is necessary to go into the thoughts of musicians to whom the notation belongs, and become familiar with the performing practices of the period when they lived and worked, if we want to learn how to read the notations they used correctly.

Taking into account that almost the totality of Renaissance and baroque music repertoire, it does not matter whether sacred or profane, is represented by vocal compositions where the link between music and poetry makes the two arts complementary and mutually indissoluble, the knowledge and mastery of their intimate essence is crucial to the comprehension of the problem.

It is common knowledge that polyphony and monody derive from speech; the musical shape great XVI and XVII-century composers offer to it, is created in order to make this link exclusive and stimulating. Music digs deep into speech, while speech elevates music towards unexplored skies and emphasizes its unobtrusive expressive components.[3]

The melodic word, to whatever language it

[2] Perhaps the presence of accurate interpretative captions in a piece of music would entail*, ipso facto*, the solution to its performing problems. On the contrary, in our opinion, it complicates them enormously, especially due to the obvious impossibility to understand them all.

The *communis opinio* that music of the past is, with regard to performance, less difficult than recent music should be firmly rejected. One of Palestrina's motets or Monteverdi's madrigals are no easier to perform than one of Mahler's symphonies or Debussy's preludes. The level of difficulty in performance cannot and should not take into account the technical aspects a piece of music necessary entails. On the contrary, it is to be sought after in the indeterminable field of emotive perceptions that animated the author in the very first moment of creation. *Simili modo*, it is simply absurd to consider performing a Renaissance motet or madrigal regardless *tout court* of the historical and cultural background of the time when these pieces of music were created.

[3] How not to mention here the famous words contained in Luzzasco Luzzaschi's dedication to Lucrezia d'Este della Rovere, of the *Sesto libro dei madrigali a cinque voci* (Ferrara, Vittorio Baldini, 1596). Through this work, the new expressive needs of the late sixteenth-century music, based on the undisputed power of the poetry of eloquence, the rethoric in the art of stirring feeling, are described. This book written by the humanist Alessandro Guarini, son of the famous poet Giovanni Battista, represents its true ideological manifesto worth of being quoted almost integrally: "sono […] la musica e la poesia tanto simili, e di natura congiunte, ben può dirsi, non senza misterio di esse favoleggiando, ch'ambe nascessero a un medesimo parto in Parnaso. [...] Percioché non solamente ha la musica per suo fine il giovamento, e 'l diletto, lineamenti della sorella naturalissimi, ma la leggiadria, la dolcezza, la gravità, l'acutezza, gli scherzi, e le vivezze che sono quelle spoglie, ond'elle con tanta vaghezza s'adornano, sono portate dall'una e dall'altra con maniere tanto conformi, che bene spesso musico il poeta e poeta il musico ci rassembra. Ma come a nascer fu prima la poesia, cosí la musica lei (come sua donna) riverisce, ed a lei cede della prima genitura l'onore. Intanto, che quasi ombra di lei divenuta, là di muover il pié non ardisce, dove la sua maggiore non la preceda. Onde ne segue, che se il poeta inalza lo stile, solleva eziandio il musico il tuono. Piagne, se il verso piagne, ride, se ride, se corre, se resta, se priega, se niega, se grida, se tace, se vive, se muore, tutti questi affetti ed effetti, cosí vivamente da lei vengon espressi, che quella par quasi emulazione, che propriamente rassomiglianza dè dirsi. Quivi veggiamo la musica de' nostri tempi alquanto diversa da quella che fu già ne' passati, percioché dalle passate, le poesie moderne sono altresì diverse. e per tacer di tutte le altre, che non sentono mutazione, se non di materia, come canzoni, sestine, sonetti, ottave, e terze rime, dirò del madrigale, che solo per la musica par trovato, ed il vero dirò, dicendo, ch'egli nell'età nostra ha ricevuto per la sua perfetta forma, tanto dall'antica diversa, che se quei primi rimatori tornassero vivi, a pena potrebbono riconoscerlo, non sì mutano si vede per la sua brevità, per l'acutezza, per la nobiltà, e finalmente per la dolcezza, con che l'hanno condito i poeti che oggi fioriscono, il cui lodevole stile i nostri musici rassomigliano nuovi modi, e nuove invenzioni piú dell'usate dolci, hanno tentato anch'essi di ritrovare; delle quali hanno formata una nuova maniera, che non solo per la novità sua, ma per l'isquisitezza dell'artifizio, potesse piacere, e conseguir l'applauso del mondo".

may belong, has a heartbeat. Syllables and stresses give it breath, the breath of life. In addition, it melts with the feeling enshrined in words to which the eloquence of speaking is not enough to express all their richness: singing is essential. Singing as climax of an extremely complex process of expressive aggregation, as supreme testimony of an intimately mastered téchne and a *poiesis*. The knowledge and mastery of the ancient metric thus represents the *condicio sine qua non* to reach a deep knowledge of the rhythm at the base of the musical repertoire of the period taken into account.

The term *metro* (meter) has to be considered as the regular flow of rhythm, its subdivision, its pulse and its organization into "measures". It is the movement of the rhythmic flow itself that regulates poetic verse.

Phrases and periods that include several measures are not regular necessarily. They are perceived as the resolution of tensions produced when some of the metric units they contain prevail over others. Despite this, the irregularities in the construction of phrases and periods lie on a structure of regular pulses that musicians and theorists of the past indicated with the term *tactus.*[4]

Throughout the XVII and XVIII century, musicians and theorists long debated about meter in terms of *quantitas notarum intrinseca* or "good and bad notes". These terms define pulse and measure without referring to stress or to any other form of articulation. When "mensural" *tactus* was replaced with the «bar» that could be sometimes slower sometimes faster in relation to the notation symbols that represented it, and the emotional meaning of the sheet music, bar and measure became "notation formulas" as will be seen later. Singers and instrumentalists learnt these formulas as parts of primary performance techniques and they were the base of articulation and phrasing especially for the correct pronunciation of literary texts. Accent was one means to perceive meter and its interpretation in this sense only became predominant starting from the second half of the XVII century. Not by chance, the moment when "solo singing" started to spread widely as well as music for key and string instruments, in order to look for their articulation.

1. THE CONCEPT OF "MEASURE" IN THE XVII CENTURY

The concept of measure, time signature, bar line gradually changes during the XVI century, especially towards its end.

It is a common knowledge that some modern notation symbols derive from the ancient mensural system.[5] In the great majori-

[4] The word *tactus* appears for the first time in the treatise *De musica* by Adam von FULDA (1490), ch. VII, p. 362, in M.GERBERT, *Scriptores ecclesiastici de musica sacra*, St. Blasien, 1784, tomus III: "Tactus est continua motio in mensura contenta rationis".

[5] In the early Seventeenth century, the musical figures in use were still those typical of the so-called "white" mensural notation that became popular starting from the half of the XV century. These were as follows: Maxima (Duplex Longa), Longa (Long), Breve (Double whole note), Semibreve (Whole note), Minim (Half note), Semiminim (Crotchet or Quarter note), Fusa (Quaver or Eight note) and Semifusa (Semiquaver or Sixteenth note). Their values varied according to the rules of perfection, imperfection, augmentation, coloration and proportions used in mensural notation starting from the XIII century, and still used in the XVI century, as well as in the first half of the XVII century.

Whereas in modern notation, a figure without a dot always has a binary value, that is to say, it always includes the value of the two figures it divides into; in ancient mensural notation, a figure could both value two or three figures according to the mensural sign placed at the beginning of the piece of music.

The terms *Modus*, *Tempus* and *Prolatio* were used respectively with reference to the figures of Longa-Breve, Breve-Semibreve and Semibreve-Minim.

The ternary relation was called "perfect"; the binary one, "imperfect".

Under some conditions a perfect figure could become imperfect, that is to say abridged of a third of its value through a process referred to as "imperfection".

The imperfection could affect the figure both "a parte ante" or "a parte post" to wit before or after it.

In perfect mensure, the figures of subdivision (Breve respect to Longa; Semibreve respect to Breve and Minim respect to Semibreve) could double their value in order to obtain perfection ("alteration").

Black notes or notes submitted to *color* were always imperfect, also in the ternary mensure.

The *tempus perfectum* was indicated by a circle and the Breve valued as three Semibreve; the *tempus imperfectum* was indicated by a semicircle and the Breve valued as two Semibreve.

The *prolatio perfecta* ocuurred in combination with *tempus perfectum* or *imperfectum* and it was indicated by a dot inscribed in

ty of cases, they were used without knowing their original meaning. The same goes for a notes' name through the passage from the hexachordal to the octave system and for the loss of the original level function by guidonian syllables, now turned into absolute pitch indicators.

C-clef semicircle and its cut C-clef diminution, for instance, are mensural symbols that in modern notation value respectively 4/4 and 2/2 that is to say, nothing to do with their original mensural value.

Time notations that use numeral fractions such as 3/2 or 9/8 derive from proportion signs transformed in time signs.

The mensural system related all duration values to the hand (also to the foot) "downbeat" and "upbeat" movement. Because of its moderate speed, it was referred to, as already said, as *tactus* or "pulse".[6]

Since in XVI-century polyphonic music Minim was the predominant pulse figure, each Minim was considered as a pulse and was represented by the hand movement in *depositio (thesis)* and in *elevatio (arsis)*. The association of these two movements corresponded to the value of a Semibreve or *tactus* represented by the C-clef sign.

Throughout the sixteenth century (especially from the second half of the century) as the use of short-value figures increased more and more in profane polyphonic compositions, the Minim will be divided in two parts so that, it will start to embody the quality of *tactus* and Semiminim, that of a pulse.

In some pieces of music, Semiminim will even become a *tactus* unit while Fusa will become a pulse unit.

Before reaching this level of transformation, *tactus* will still be linked to the value of Semibreve and when the bar line will be introduced in the first scores, at the beginning of the seventeenth century, it will be placed at intervals corresponding to the length of a *tactus*. This will create great confusion with regard to terminology that still lingers up to day.

The two movements of the hand, one «on the downbeat», the other «on the upbeat» (*positio* and *levatio*) that represented the *tactus* had the same length in the binary form (*tempus imperfectum*) while in the ternary (*tempus perfectum*) the "downbeat" doubled the "upbeat" (two movements "downwards" and one "upwards").

Tactus could be *aequalis* or *inaequalis*. The former included two pulses, the latter three. C-clef and cut C-clef signs indicated the *tactus aequalis* that could include two, four or eight secondary pulses or, in other words, two Minims or four Semiminims or eight Fusa, respectively.

Since there is no metric distinction between *depositio* and *levatio*, as exists between our modern beat sequences, it was possible to relate the six pulses contained in a *tactus* and a half either to three groups of two Semiminims or to two groups of three Semiminims.

Three *tactus aequalis* under the C-clef sign could be understood as follows: three measures of two Minims each [*tempus imperfectum*]; two measures of three Minims each [*tempus perfectum*]; two measures of two

the circle or in the semicircle. In this case, the Semibreve valued as three Minims.

Figures' regular length could be modified through "proportions", that is to say, it could be diminished or augmented by using mathematic ratios.

Proportio dupla, ratio 2:1 was indicated by a bar crossing the signs of *tempus perfectum* or *imperfectum*.

Other proportions' symbols derived from fractions: 3/1. 3/2 and so on. All the signs and rules subtended to them remained in use in sixteenth-century music, though with some difference coming from music practice. For instance, the fact that *proportion dupla* was not only considered as other proportions but it also qualified the *tempus* with the *medium* crossing the semicircle or the circle, affirmed a precise agogic will, not just a simple relation between two opposite values.

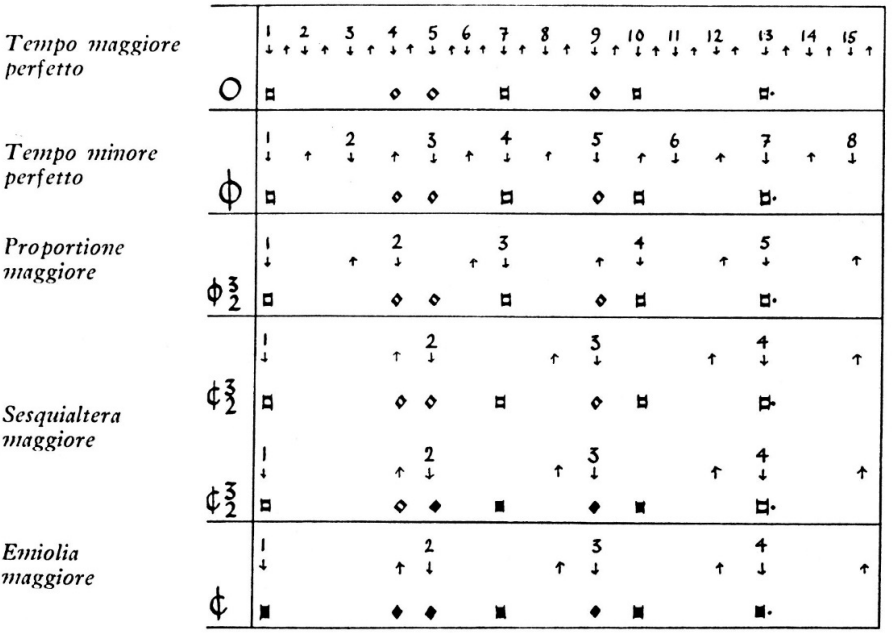
During the fifteenth and sixteenth century *proportion tripla* (3/1) and *proportio sesquialtera* (3/2), along with *proportion dupla*, the most used among proportions, were also combined to different mensural signs.

Early seventeenth-century theorists started to operate a distinction between major and minor proportions, between "major sesquialtera" and "minor sesquialtera" according to the value of *tactus*' figure to which they had to be related. Moreover, they provided performers with the indication of the *modus operandi* to execute figures of value in the length of a *tactus*, or the regular time unit measured by the rise and fall of the hand.

[6] The Italian term for the Latin *tactus* is "Battuta"; the German is "Takt" and the French is "mesure".

ternary Minims each [*tempus imperfectum cum prolatione minore*]; six measures of two Semiminims each [*tempus imperfectum diminutum*]; four measures of three Semiminims each [*tempus perfectum diminutum*].

The following chart, proposed by Aldrich,[7] does not include all the possible combinations but only those that appear more frequently in music sources of the XVI and XVII centuries.



[7] P. Aldrich, *Rhythm in Seventeenth-Century Italian Monody*. With an Anthology of Songs and Dances, London, J. M. Dent & Sons, 1966, p. 43.

The *tactus inaequalis* contained three pulses. It concerned the *tripla*, *sesquialtera* and *emiolia* proportions and indicated the collocation of three notes of the same value or of an equivalent value in the time length of two or, in some cases, of three notes in the time length of one.

The variety and sometimes the babel of signs described in the writings of that time is the clear testimony of attempts made by composers and theorists to establish precise time relations between *tactus inaequalis* and *tactus aequalis*.

In musical sources from the second half of the XVII century time signatures appear that indicate the presence of compound time signatures: 6/8, 9/8, 12/8 but also others, no longer used today, such as 9/4, 6/16, 9/16, 12/16. It is highly probable that these new signs represented the attempt to devise a new model of metric notation.

Then during the XVII century, *tactus* gradually modifies its temporal inflexibility though it was related to the same figures of value. Performers began to get used to play shorter figures with a faster *tactus* related to the figure of Semiminim, instead of the classical figure of Semibreve or Minim. Moreover, they interpreted mensural and proportion signs no longer according to the rigid beat of *pulsus cordis* but according to a rhythm that was sometimes slower, sometimes faster, more appropriate "to the time of soul's affection not of the hand".[8]

As said, with regard to the binary meter, *tactus* time value is performed with the same "downwards" and "upwards" movement even when tactus will start to include two or four pulses per movement.

Proportions with a numerator bigger than denominator ("proportion inequalities") were performed by using a rhythmic pulse faster than those with a smaller numerator.

Another peculiarity of mensural notation is the agreement that notes with a smaller value should be performed faster than notes with a bigger length.

As consequence, time was not only indicated through traditional mathematical signs, but also with the figures' length value.

Generally, pieces of music in 3/2 and cut C-clef relate the pulse to the Minim and have a slower rhythm than those in 3/4 and C-clef where the pulse in on the Semiminim.

The testimonies of XVII-century theorists, which we are going to introduce here, start to relate the pulse to the Semiminim.

The words used to indicate time are useful to compensate the ambiguity of some metric problems. During the early sixteenth century, captions as *tarde*, *velociter*, *adagio* and *presto* needed to underline intermediate time changes due to the diminution of the *tactus* (*semiditas*) or proportion signs.

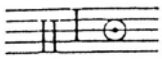
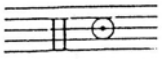
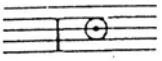
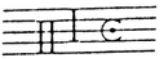
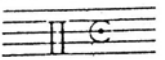
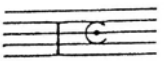
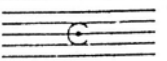
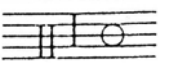
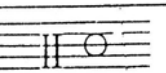
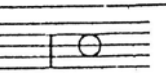
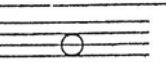
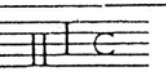
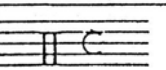
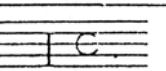
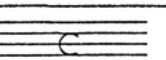
This vocabulary of agogic expressions would become increasingly rich and precise throughout the XVII century.

Italian composers seemed to be the first to use mensural and proportion symbols to indicate time signatures of 3/4, 6/8 and 12/8, as we currently understand them. 3/1 and 3/2 time signatures are still associated with proportions used less frequently than in the past.

Italian musicians and theorists who worked between the end of the XVI century and the whole XVII century would introduce their foreign colleagues to the practice of *tactus*.

[8] C. Monteverdi, *Madrigali guerrieri et amorosi […]. Libro ottavo*, Venice, Alessandro Vincenti, 1638. "Claudio Monteverde a' chi legge".

SUMMARY TABLE OF THE ORDO MENSURALIS

Signa	modus maior	modus minor	tempus	prolatio
	perfectus 3	perfectus 3	perfectum 3	perfecta 3
	perfectus 3	imperfectus 2	perfectum 3	perfecta 3
	imperfectus 2	perfectus 3	perfectum 3	perfecta 3
	imperfectus 2	imperfectus 2	perfectum 3	perfecta 3
	perfectus 3	perfectus 3	imperfectum 2	perfecta 3
	perfectus 3	imperfectus 2	imperfectum 2	perfecta 3
	imperfectus 2	perfectus 3	imperfectum 2	perfecta 3
	imperfectus 2	imperfectus 2	imperfectum 2	perfecta 3
	perfectus 3	perfectus 3	perfectum 3	imperfecta 2
	perfectus 3	imperfectus 2	perfectum 3	imperfecta 2
	imperfectus 2	perfectus 3	perfectum 3	imperfecta 2
	imperfectus 2	imperfectus 2	perfectum 3	imperfecta 2
	perfectus 3	perfectus 3	imperfectum 2	imperfecta 2
	perfectus 3	imperfectus 2	imperfectum 2	imperfecta 2
	imperfectus 2	perfectus 3	imperfectum 2	imperfecta 2
	imperfectus 2	imperfectus 2	imperfectum 2	imperfecta 2

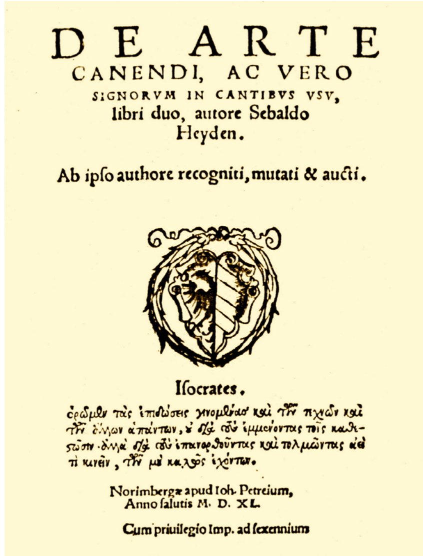
2. NOTE VALUES AND *TACTUS*

There is no doubt that in the shif from the Sixteenth-century mensural notation to the modern system, the most remarkable change was that observed in the relation between note values and *tactus*.

In mensural music, *tactus* regulates “fast” or “slow” musical performance: fast music was written with short values (for instance “chromatic madrigals”) and slow music with longer values or ratios.

The treatise *De arte canendi* (1540) by Sebald Heyden (1499-1561)[9] has influenced musicians and musicologists of the last century since it established that in the XVI century *tactus* was represented with unchangeable pulses.

> *Per eam enim temeritatem variorum Tactuum, omnis ratio & natura Proportionum quam diversa signa inter sese habent, confusa ac omnino deformata est. Quod quidem etiam nunc tanto aegrius ferimus quanto minus opus fuerat plures ac eas diversas Tactuum species excogitare. Cum enim quam multiplices Tactuum species ob hoc tantum excogitatas videamus, ut motum cantus subinde mutarent, nunc tardiorem nunc concitatiorem nunc properantissimum faciendo. Quaeso ergo, quid nam illos novatores, de Proportionibus, Augmentationibus ac Diminutioribus intellexisse credamus? Certum utique est, ex arte ipsa, quod illi per diversas species Tactus praestare volverunt, idem veteres per integritatem aut diminutionem Signorum aut Proportiones, multo & rectius, artificiosius praestitisse.*
>
> Through these changes in *tactus*, the relationship and nature of all proportions with their different types of signs has been confused and mistakenly interpreted. In fact, though useful, several types of *tactus* have been invented that still exist nowadays. Because of these diverse kinds of *tactus*, we observe frequent time changes in a composition that make it sometimes slower, faster or even extremely fast. I wonder now, what have these proportion, augmentation and diminution «novatores» understood about figures? It is true that, through different types of tactus, they desire to obtain the same results as past composers had by using, more correctly and artistically, diminution or proportion signs.


DE ARTE
CANENDI, AC VERO
SIGNORVM IN CANTIBVS VSV,
libri duo, autore Sebaldo
Heyden.

Ab ipſo authore recogniti, mutati & aucti.

Iſocrates.
ὁρῶμεν τὰς ἐπιδώσεις γινομένας καὶ τῶν τεχνῶν καὶ τῶν ἄλλων ἁπάντων, οὐ διὰ τοὺς ἐμμένοντας τοῖς καθεστῶσιν, ἀλλὰ διὰ τοὺς ἐπανορθοῦντας καὶ τολμῶντας ἀεί τι κινεῖν, τῶν μὴ καλῶς ἐχόντων.

Norimbergæ apud Ioh. Petreium,
Anno ſalutis M. D. XL.

Cum priuilegio Imp. ad ſexennium

Heyden then teaches that immutable *tactus* is essential to mensural notation, though he admits himself that this is not the unique and exclusive practice followed during the sixteenth century.

As written in the *Music Active Micrologus* by Andreas Ornithoparcus (1490- XVI century), John Dowland translated from Latin to English in 1609,[10] *tactus* was commonly compared to the value of Semibreve and identified with the pulse of the human wrist:

> *[Tactus] est quida(m) motus manu p(rae) centoris signoru(m) indicio formatus, cantum dirigens mensuraliter.*

---

[9] S. Heyden, *De arte canendi*, Nuremberg, Johannes Petreium, 1540, ch. A 3r e v. «Epistola nuncupatoria».

[10] *Andreas Ornithoparcus his Micrologus, or Introduction: containing the art of singing Digested into foure bookes. Not onely profitable, but also necessary for all that are studious of musicke. Also the dimension and perfect vse of the monochord, according to Guido Aretinus.* By Iohn Douland lutenist, lute-player, and Bachelor of Musicke in both the Vniuersities. London, Thomas Snodham, 1609.

Tactus is a certain movement of the hand performed by the singers' director, according to the nature of the signs of a piece of music and their time notation.

Tactus could be *major*, *minor* and *proportionatus*:

Major [tactus] est mensura, tardo ac motu quasi reciproco facta. Hunc tactum et integru(m) et totalem nominant auctores. Et q(ue)m verus est omnium ca(n)tilenarum tactus: Semibrevem non diminutam suo motu comprehendit: vel breve(m), in duplo diminutam.

Minor est majoris medium, quem Semitactu(m) dicunt. Q(ue)m Semibrevem in duplo diminutam suo motu mensurat, indoctis tantum probatus. Proportionatus est quo tres Semibreves contra unam ut in Tripla, aut contra duas, ut in Sesquialtera proferu(n)tur [...].

Tactus major relates to a measure with a slow beat. Scholars define it as whole or total *tactus*. Since this is the true *tactus*, the one present in every song, it includes a non-diminished Semibreve or a diminished Breve in *proportio dupla*.

Tactus minor is half *tactus major* and is called *Semitactus* since it relates to the Semibreve diminished in *proportio dupla.* Only those who have little knowledge in the art of music perform it.

Tactus proportionatus is when three diminished Semibreve are opposite to one of *tactus* [*proportio tripla*, Ed.] or to two [*proportio sesquialtera*, Ed.][11]

As evidenced in Ornithoparcus' essay, *semitactus* or *tactus* related to Semibreve was not the only one practiced. Nothing prevented it from being related to other figures shorter than the Semibreve, as the Minim was.

The speed of performance did not change in the choice between *tactus major* and *tactus minor*, since *tactus major* referred to a figure that was twice the value of *tactus minor*. The choice depended on several factors, many of them linked to performance and the idea of the score the composer wanted to achieve.

Tactus could be *regular* or *irregular*.

According to Gioseffo Zarlino (1517-1590), *tactus* was regular if it included two pulses only (one in *depositio* and one in *elevatio*); irregular, if included three (two in *depositio* and one in *elevatio*).[12]

Potiamo dire che la Battuta si ritrova di due maniere: equale & inequale, ove si riduce ogni movimento che si fa con la voce.

Et questo dico, perché gli antichi Musici & li Poeti anco, i quali erano riputati una cosa istessa; per un certo loro istinto naturale divisero le voci in due parti & attribuirono ad alcune il Tempo breve & ad alcune il tenpo lungo; et al tempo lungo applicarono due Tempi brevi & posero nel primo luogo quelle sillabe o voci de Tempo breve che sono di minor quantità; & nel secondo quelle del tempo lungo, che sono di maggiore. […]

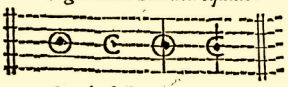
Si deve avvertire che considerarono la Battuta in due parti: & tanto alla prima quanto alla sec-

[11] A. ORNITHOPARCUS, Musice Active Micrologus, Lipsia, Valentin Schumann, 1517, liber secundus, caput tertium: De Tactu, c. f iijv.

[12] G. ZARLINO, *Istitutioni harmoniche*, Venezia, Francesco de I Franceschi Senese, 1573, third part, ch. 49, p. 244.

così potiamo dire, che la Battuta si ritroua di due maniere; Equale & Inequale; oue si riduce ogni mouimento proportionato, che si fa con la voce. Et questo dico, perche gli antichi Musici & li Poeti anco, i quali gia erano riputati vna cosa istessa; per vn certo loro istinto naturale diuisero le Voci in due parti, & attribuirono ad alcune il Tempo breue & ad alcune il Tempo lungo; & al Tempo lungo applicarono due Tempi breui, & posero nel primo luogo quelle Sillabe, ò Voci del Tempo breue, che sono di minor quantità, & nel secondo quelle del Tempo lungo, che sono di maggiore: come è il douere: essendo che si come la Vnità tra i numeri è inanti il Binario, che contiene due Vnità; così il Tempo breue debbe tenere il primo luogo, & il lungo il secondo. Ma si debbe auertire, che considerarono la Battuta in due parti: & tanto alla prima, quanto alla seconda attribuirono la misura del Tempo breue, o lungo; si come li tornaua più commodo. E ben vero che li Moderni applicarono primieramente alla Battuta hora la Breue & hora la Semibreue imperfette; facendole equali al tempo del Polso, distinto in due mouimenti equali; onde cotale Battuta si può veramente chiamare Equale; conciosia che tra la Positione & la Leuatione si ritroua la proportione di Equalità: essendo che tanto alla Positione, quanto alla Leuatione si attribuisce il Tempo lungo, ouer amente il breue. Da poi le applicarono hora la Breue con la Semibreue, & hora la Semibreue con la Minima; & la diuisero in due mouimenti inequali, applicando alla Positione il Tempo lungo & alla Leuatione il Tempo breue; ponendole in Dupla proportione. Et perche tra la Positione & la Leuatione casca la proportione di Inequalità: però cotale Battuta si può con verità chiamare Inequale. Hauendo dapoi essi Musici cotale rispetto, quando intendeuano la Battuta equale, segnauano le lor Cantilene nel principio col Circolo, o Semicircolo intieri: ouero da vna linea in due parti tagliati. & quando intendeuano la Inequale, aggiungeuano à cotali segni o cifere il Punto; come in questi essempi si può chiaramente vedere. Et se alle volte voleuano segnare la Battuta inequale: ma non con li segni del Tempo puntati; poneuano dopo il Segno del Tempo la cifera del Ternario sopra quella del Binario in cotal modo $\frac{3}{2}$; & cotali cifre nominauano della Sesquialtera; & forse non senza ragione;

Segni della Battuta equale.



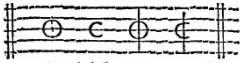
***Segni** della Battuta inequale.*

onda attribuirono la misura del Tempo breve o lungo si come li tornava piú comodo.

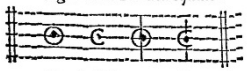
È ben vero che li Moderni applicarono primieramente alla Battuta hora la Breve & hora la Semibreve imperfette, facendole equali al tempo del polso, distinto in due movimenti equali; onde cotale Battuta si può veramente chiamare Equale; conciosia che tra la Positione & la Levatione si ritrova la proportione di Equalità, essendo che tanto alla Positione quanto alla Levatione [...] le appplicarono hora la Breve con la Semibreve & hora la Semibreve con la Minima & et la divisero in due movimenti inequali, applicando alla Positione il Tempo lungo & alla Levatione il Tempo breve, ponendole in Dupla proportione.

Et perché tra la Positione & la Levatione casca la proportione di inequalità: però cotale Battuta si può con verità chiamare Inequale.

Havendo dapoi essi Musici cotale rispetto, quando intendevano la Battuta equale, segnavano le lor Cantilene nel principio col Circolo o Semicircolo intieri ovvero da una linea in due parti tagliati. & quando intendevano la Inequale aggiungevano à cotali segni il Punto, come in questi esempi si può chiaramente vedere:



Segni della Battuta equale.

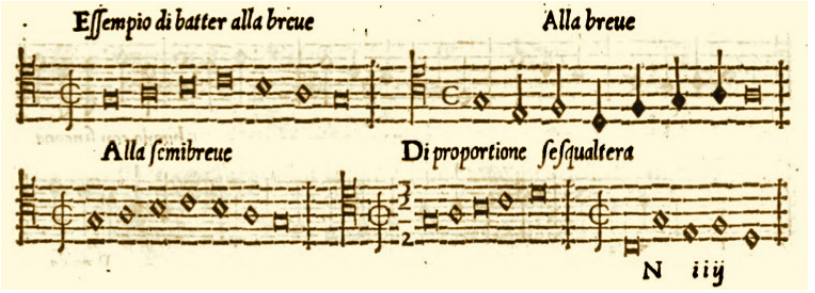


***Segni** della Battuta inequale.*

In order to avoid serious misunderstandings, it is worth pointing out that there were physiological limits in the choice of *tactus* speed.

If the pulse was so slow it could not easily be held, the *regens chori* or the one who led the execution was forced to subdivide the gesture and, as consequence, to double the bar speed.

If the pulse was too fast, the director was forced to act the other way round: two beats in one, by halving the speed.



In the case where we wanted to create a relation between these indications and the metronomic signatures, we would observe that the pulse becomes too slow around forty beats per second, and too fast around one hundred thirty-five beats.

As a consequence of that *tactus major* perfectly fits at the core of this topic, since the human pulse generally oscillates between sixty and eighty beats per second, while *tactus minor* containes twice that rate.

Nicola Vicentino (1511-1572) offers a remarkable analysis of this in his treatise *L'antica musica ridotta alla moderna prattica* where, while describing the way to "beat the measure",[13] he affirms that

> questa misura si usa con tre ordini, il Primo si domanda ordine di batter alla breve, che sotto una battuta sandarà una breve, ò due semibrevi, nel tempo minor imperfetto: il Secondo ordine si domanderà batter alla misura della semibreve nel tempo perfetto, che già si soleva cantare tre semibrevi per battuta, à imitatione del numero ternario, et per ora non s'usa, se non nella proportione di equalità: il Terzo ordine di batter la misura sarà detto di proportione sesquialtera, quando la compositione sarà signata con il numero sesquialtero, et le semibrevi, ò minime, si canteranno due contra tre: et i sopra detti modi saranno qui apparenti

In the XVI century, theorists talked about *tactus* in relation to notation, not as a separate theory and practice. In the following century, some colleagues, such as Agostino Pisa (1611-?) and Pier Francesco Valentini (1570-1654) wrote treatises entirely dedicated to *tactus* theory and practice.

Being a committed conservator, such as Sebald Hayden, to the so-called "original practice" of Palestrina, Agostino Pisa in his *Breve dichiaratione della battuta musicale,*[14] argues over the idea of "music measure" that was spreading in that period. The same happened some years before when Giovanni Artusi strongly and spitefully railed against the "harshness" and harmonic "licenses" Monteverdi had inserted in some of his madrigals of the *Quarto libro a cinque voci* (Venezia, Ricciardo Amadino, 1603).

It is no wonder that Pier Francesco Valentini, in his *Trattato della battuta musicale*,[15] often disagrees with his colleague and challenges many of theories, starting with *tactus* variability.

In fact, according to Valentini, *tactus* can and has to be maintained:

> tal volta adagio, e tal volta presto, e tal volta 'l presto e l'adagio mediocremente, secondo richiedono li stile delle compositioni et il sale delle parole;
> at times adagio, at times presto, and at times presto and adagio moderately, as the

[13] N. Vicentino, *L'antica musica ridotta alla moderna prattica*, Rome, Antonio Barre, 1555, fourth book, ch. viii, p. 76.

[14] A. Pisa, *Breve dichiaratione della battuta musicale, opera non solo utile ma necessaria a quelli che desiderano fare profitto nella musica*, Rome, Bartolomeo Zannetti, 1611.

[15] P. F. Valentini, *Trattato della battuta musicale*, Rome, Vatican Apostolic Library, Ms. Barb. Lat. 4417, 1643.

compositions' style and the word's innermost sense require;

Moreover, the theory regarding figures' value to which *tactus* can be related:

> oltre la Breve et oltre la Semibreve, sì nella eguale come anco nella inegual Battuta, qual si voglia nota musicale, per mezzo delle date proportioni può essere misurata et abbracciata dal tempo et intervallo di una Battuta.
> beside Breve and Semibreve, both in the same as in different Measures, whatever the note, it can be measured through given proportions and embraced by Measure time and interval.

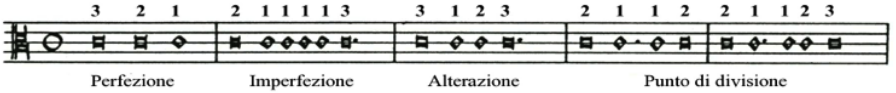
In this respect, Valentini talks about "broad measure" to indicate a slow tempo and "quick measure" for a quick tempo, in order to conciliate different variations of pulse.
This diversity of opinions among contemporary theorists confirms the fact that in the period between the XVI and XVII centuries, tradition was still very strong, and mensural notation innovations clashed with the durable habits of music practice still predominant, and the solid current theoretic conceptions not yet rejected.
In contrast with vocal music notation, short-value figures prevail in instrumental music (for lute, organ and harpsichord), whereas the figures of Longa, Breve and Semibreve are less and less used than minims and musical figures with a shorter value such as Fusa (hundred twenty-eighth notes) and Semifusa notes (two hundred fifty-sixth notes).
The *tactus equalis* is still anchored to the Semibreve, but the Semibreve now beats slower than *pulsus cordis* and some theorists do not hesitate to openly talk about four pulses per mensure, two in *depositio* and two in *elevatio*.
In this regard, here is what Antonio Brunelli (1577-1630) establishes with his *Regole utilissime per li scolari che desiderano imparare a cantare* (1606):


C 105

REGOLE
VTILISSIME
PER LI SCOLARI CHE DESIDERANO IMPARARE A CANTARE,
SOPRA LA PRATICA DELLA MVSICA,
Con la Dichiarazione de Tempi, Proporzioni & altri accidenti, che ordinariamente s'usono, non solo per imparar à cantarli, ma ancora à segnarli nelle compositioni.
Di Antonio Brunelli, Maestro di Cappella, & Organista del Duomo di San Miniato.
Nuouamente composte, e date in Luce.

IN FIORENZA,
Appresso Volcmar Timan, 1606.
Con Licenza de' Superiori.

*i*l *Tempo maggiore imperfetto* [C] denota che sotto lui la Massima vale otto battute, la Longa quattro, la Breve due, la Semibreve una, la Minima mezza, la Semiminima un quarto, la Croma un ottavo & la Semicroma la sestadecima parte. O vero per piú chiarezza diciamo che delle Minime ne vanno due per battuta, delle Semiminime quattro; delle Crome otto & delle Semicrome sedici.
the *imperfect Tempus major* [C] denotes that under his sign Maxima counts for eight measures, Longa for four, Brevis for two, Semibrevis for one, Minim for half, Semiminim for one quarter, Fusa for one-eighth and Semifusa for the sixteenth part. Or, to be clear, we affirm that a measure should include two Minims, four Semiminims, eight Fusa and sixteen Semifusa.
Il *Tempo minore imperfetto* [C sbarrato] si può regolare in due modi, il primo è che si può cantare come *maggiore imperfetto*, il secondo è che si devono cantare tutte le sue note per metà, si come ancora le pause si conteranno per metà & et questo è il suo proprio e se alcuni maestri l'insegnano a cantare come *maggiore imperfetto* lo fanno per levare la difficultà allo scolare e forse alcuni lo fanno per ignoranza. E che sia la verità si vede in molte compositioni d'alcuni che hanno stampato non essere osservata la



regola di detti Tempi. Perché sanno bene i periti che il Tempo minore tanto imperfetto quanto perfetto si deve comporre sempre di numero impari acciò si possi cantare per metà, come per essempio se fate cinque Semibhrevi, mettendone una in terra & una in aria la quinta verrà in terra e terminerà la battuta & se fossero quattro, mettendone una interra & una in aria la quarta nota finirebbe in aria, però detto Tempo si deve cantare per metà. È ben vero che si può cantare come sopra mandando una Semibreve a battuta, ma questo si fa per levare la difficultà al cantare, non già che sia suo proprio.[16]

The *imperfect Tempus minor* [cut C] can be regulated in two ways, the first is singing it as *imperfect major*, the second is singing all his notes in half of their time, as well as rests that will count for half of their value and if some masters teach it as *imperfect major*. They do it to help students and perhaps some of them do it through ignorance. Moreover, that to be the true is clear in many compositions of some who did not observe the rule of these *Tempi*. Since professionals know very well that either imperfect or perfect minor Tempus always has to include odd numbers so that it could be sung for the half of its length. Furthermore, if you execute five Semibreves, one in downbeat and the other in upbeat, the fifth will fall in downbeat and end the measure, and if there are four, one in downbeat and the other in upbeat, the fourth will end in upbeat, but this Tempus should be sung in half time. It is true that it is possible to sing by ending the measure with a Semibreve but it aims to easy the singing, it is not the ordinary practice.

Though Brunelli did not reveal the reason why singers found it difficult to sing in a minor tempus, by halving the values, it was clear from his argumentation that minor tempus was sung as major (Semibreve = *tactus*) but with a faster speed, not necessarily twice as much.

Il *Tempo maggiore perfetto* va cantato nel medesimo modo, che il maggiore imperfetto, postposta la differenza che è in alcune pause & alcune note che alle volte sono perfette & altre volte alterate.[17]

The perfect Tempus major should be sung in the same way as the imperfect major, beside the difference in some rests and some notes that are sometimes perfect and sometimes altered.

The two mensural signs of tempus perfectum [O and cut O] rarely appear in XVII-century compositions, except when they are followed by proportions' values. Brunelli explains this as follows:

*i*l *Tempo minore perfetto* [O sbarrato] si dovrebbe cantare nel medesimo modo del minore imperfetto cioè per metà e questo è il suo proprio, & anco si può cantare ordinariamente come il Tempo maggiore imperfetto postposto le perfezioni & alterazioni che vi sono quale sono queste. Le battute che toccano due righe e quelle che ne toccano tre

[16] A. Brunelli, *Regole utilissime per li scolari che desiderano imparare a cantare sopra la pratica della musica*, Firenze, Volemar Timan, 1606, p. 16 sgg.

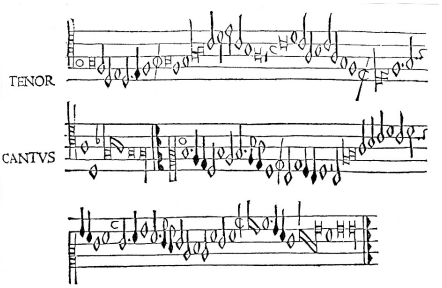
[17] The rules of perfection, imperfection and alteration of figures popular in the sixteenth century are similar to those applied in the XVI century and since the time of Franco of Cologne, the first theorist who wrote about them in his treatise *Ars cantus mensurabilis* (half of the XIII century).
The only difference is that Brunelli relates figures' value to *tactus* and not to mensural signs. These rules can be summarized as follows: a Breve followed by another Breve, a Longa or three Semibreve is perfect and counts for three tactus (*similis ante sibi similem, perfectum est*). A Breve followed or preceded by a single Semibreve or by more than three Semibreve is imperfect and only counts for two *tactus*; when two Semibreve are between two Breve, the second Semibreve is altered that is to say it doubles its value and counts for two *tactus*. Breve rests, as well as the Breve figure, are perfect and can create perfection, but it is not possible to turn them into imperfect; Semibreve rests, as well as Semibreve figure, are imperfect and can create imperfection but their alteration is impossible. The dot is useful to establish *alio modo* the clusters of figures that create a perfection.
Brunelli gives the following examples to illustrate what he wrote. The numbers above the figures indicates the number of *tactus.*

& ancora le Note seguenti: Massima, Longa, Breve & Semibreve & per maggior brevità tutte le perfezioni & alterazioni, tanto nelle Note quanto nelle Pause & tutti gl'altri accidenti che si trovano in detto Tempo tutti si regolano come nel Tempo maggiore perfetto, s'è già detto di sopra, perché s'osserva la medesima regola […] ma se si canta per metà, tutte le Note varranno la metà manco tutte le perfette, quanto l'imperfette, come anco le Pause.

The *perfect Tempus minor* [cut O] should be sung in the same way as the imperfect minor or for the half of its value and it is also possible to ordinarily sing it as the imperfect Tempus major beside present perfections and alterations. The bar lines that touch two lines and those that touch three and also the following notes: Maxim, Longa, Breve, Semibreve and for brevity all perfections and alterations, both in Notes and Rests and everything this Tempus includes is regulated as the perfect Tempus major. As mentioned above, it occurs because they follow the same rule […] but if sung in half of the value, all Notes will count for half of their value, not just the perfect ones but the imperfect as well as the Rests.

The following example, drawn from the *Practica musicae* by Franchino Gaffurio,[18] allows a verification of the effect of *diminutio* on the *integer valor* of the cut O and C signs:

ORIGINAL SPECIMEN



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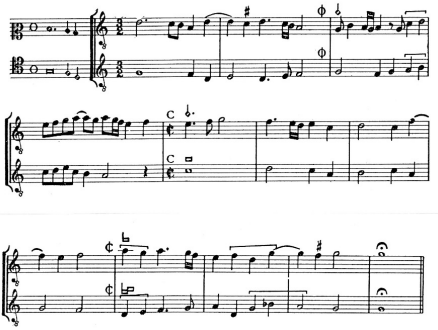


It is interesting to observe that Brunelli still inserts Maxim and Longa among the figures that could be perfect, testimony that, at the beginning of the seventeenth century, *Modus minor* or *Modus Longarum* and *Modus major* or *Maximodus* with ternary mensuration were considered in theory, though they were already obsolete in practice.

As with his contemporary colleagues, Brunelli makes no direct reference in his treatise to bar lines, though they had started to appear in practice, both in manuscripts and in music prints.

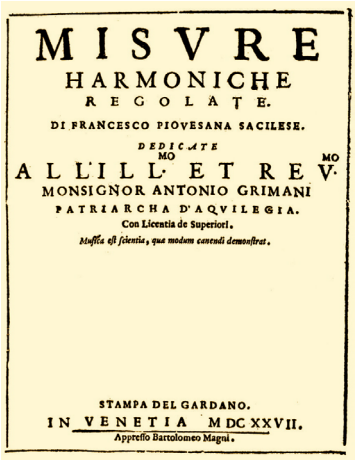
Putnam Aldrich informs us about this procedure when he affirms that "on rare occasions compositions with as many as six or seven parts are scored and therefore barred as in Lorenzo Allegri's *Primo Libro di Musiche*, 1618. Where the composer explains in a note: 'I wanted to present the Symphonies divided by perfect instruments such as the Lute, Organ and in particular the double Harp"».[19]

Also Francesco Piovesana Sacilese (XVII century) in his treatise *Misure harmoniche regolate* (1627) openly talks about a four-pulse *tactus*:

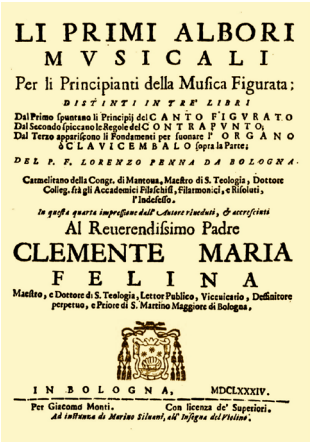
> la compositione della battuta è de due parti, la prima delle quali è il battere e la seconda l'elevar della mano: di piú, in cadauna di queste parti sono duoi tempi, di modo che in tutto sono quattro: in questi si distribuis-

[18] F. Gaffurio, *Practica musicae*, Milano, Giovanni Pietro Lomazzo, 1496, liber secundus, caput quartumdecimum: "De Diminutione", cc iiij.

[19] P. Aldrich, *op. cit.*, p. 28.



MISVRE
HARMONICHE
REGOLATE.
DI FRANCESCO PIOVESANA SACILESE.
DEDICATE
ALL'ILL.MO ET REV.MO
MONSIGNOR ANTONIO GRIMANI
PATRIARCHA D'AQVILEGIA.
Con Licentia de Superiori.
Muſica eſt ſcientia, qua modum canendi demonſtrat.
STAMPA DEL GARDANO.
IN VENETIA MDC XXVII.
Appreſſo Bartolomeo Magni.



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MVSICALI
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& CLAVICEMBALO ſopra la Parte;
DEL P. F. LORENZO PENNA DA BOLOGNA.
Carmelitano della Congr. di Mantoua, Maeſtro di S. Teologia, Dottore
Colleg. frà gli Accademici Filaſchifi, Filarmonici, e Riſoluti,
l'Indefeſſo.
In queſta quarta impreſſione dall'Autore riueduti, & accreſciuti
Al Reuerendiſſimo Padre
CLEMENTE MARIA
FELINA
Maeſtro, e Dottore di S. Teologia, Lettor Publico, Vicecuſario, Definitore
perpetuo, e Priore di S. Martino Maggiore di Bologna.
IN BOLOGNA, MDCLXXXIV.
Per Giacomo Monti. Con licenza de' Superiori.
Ad inſtanza di Marino Silueſtri, all'Inſegna del Pelione.

cono in questo modo: cioè nell'istesso tempo dell'abassat'uno e nel fermar la mano a basso, un altro vien distribuito: nell'elevar poi similmente si applica il terzo e nel fermar la mano in alto, il quarto: il qual modo di distribuir questi tempi è il vero e reale: avvertendo, che detti tempi sono equali nella sua misura, et che però anco tali devono esser misurati co' la mano: aggiongendo, che questo misurare, particolarmente s'appartiene nei Chori à Periti di questa scienza, cioè a Musici, et non à Cantori, come oggi si usa: i quali (parlo de' poco pratici) volendo misurare, et governare la musica, il regimento del cui canto è il batter bene, formano questa misura della battuta una volta gobba et una stropiata: et non s'accorgono, che per questo molte volte si comettono gli errori nei pubblici Chori, con scemamento della devotione.[20]

> the bar is composed of two parts, the first the downbeat and the second the upbeat: moreover, each part has two beats, for a total of four. These are distributed as follows: at the same time, the first downward movement starts and the hand falls, the other rises, and the same occurs with the third and the fourth beat. This is the true and authentic way to perform them. Since these beats have the same value, but still have to be measured by the hand, it is worth saying that this practice, in choirs, applies to professionals, that is to say, to musicians not to singers as happens nowadays. The latter (I refer to non-professionals) who want to measure and govern music, since the notion of bar is fundamental to singing, perform the bar sometimes partially, sometimes distorting it. They do not realise it, and as a consequence, errors often occur in public choirs, causing a decrease in devotion.

Similar arguments are presented in *Li primi albori musicali* (1694) by Lorenzo Penna (1613-1693), who describes the four parts of *tactus*, adding a colourful "hand waving" in its rise and fall:

> ha la Battuta quattro parti, la prima è battere e la seconda è fermare in giú, la terza è alzare e la quarta è fermare in su. Nelle Note nere spiccano benissimo queste quattro parti di Battuta, perché la prima è nel percuotere, la seconda è nel levare un poco ondeggiando la mano, la terza è nell'alzata e la quarta è nel fermare in su.[21]
>
> The bar has four parts, the first is downbeat and the second stops down, the third is upbeat and the fourth stops up. In black notes, these four parts stand out very well, because the first is on the beat, the second in raising the hand a little and waving it, the third is in the rise and the fourth in stopping the raised hand.

(to be continued)

[20] F. Piovesana, *Misure harmoniche regolate*, Venice, Gardano, 1627, p. 60.

[21] L. Penna, *Li primi albori musicali per li principianti della musica figurata*, Boulogne, Giacomo Monti, 1694, p. 36.