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Title: On the Multiplex Genus which belongs to the Proportions which represent the Intervals

Source: Bologna, Museo internazionale e Biblioteca della musica, MS C.48, f.1r-4r

[f.1r-] [Number 4. add. m. sec.] Fifth.

On the Multiplex Genus which belongs to the Proportions which represent the Intervals.

On the Consonances derived from the proportions in the first Chapter of the fourth book of Franchino's Theorica.

Where one finds the proportions which provide the form to the Intervals
Fifth Lecture.

After the superpartiente genus, o my Signori, there follows the superparticular multiplex genus, and the Genus constituted by the first Two Genera, namely by the Multiplex Genus and by the superparticular one, of which I am about to talk to you today. This Genus is created when the Larger number, compared to the smaller one, contains the smaller one within itself several times, and on top of it a Fractional part of the smaller number. It is defined by Franchino Gaffurio in the fourth Book of his Practice of Music, at Chapter nine, in this way: "On the Multiplex superparticular genus. The multiplex superparticular Genus – Franchino says – occurs when the Larger number compared to the smaller one contains it several times, and besides it contains a Fractional part of it." The species of the proportions of this genus are infinite. The first species, or, to be more precise, the first degree, is the Dupla sesquialtera, which is created when the larger number compared [f.1v-] to the smaller one contains within itself several times the smaller one and also one half of it, as, for instance, in the case of the number five compared to the number Two, because the number five contains the number Two Twice (this is the Dupla) and it contains also the number One, which is half of the number Two. Here is the superparticular Genus. The proportion form seven to Three will be called Dupla sesquiterza, because the number seven contains the number three twice with the addition of the number One, which is a third of the number Three. The proportion from nine to four will be called Dupla sesquiquarta, because the number Nine contains the number Four twice within itself, with the addition of the number One, which is the fourth part of the number four. One will be able to proceed ad infinitum with this sequence in this first degree. The second Degree is created when the larger number contains the smaller one within itself Three times, and it contains also a Fractional part, as in the case of seven and Two, because the number seven contains the number Two Three times as well as the number One, which is one half of the number Two. Hence, this proportion is called Tripla sesquialtera. The proportion from ten to three is called Tripla sesquiterza, since the number Ten contains the number Three Three times as well [f.2r-] as the number One, which is the Third part of the number Three. There are also the proportions Tripla sesquiquarta, Tripla sesquiquinta and so forth. To sum up, if one sees that the larger Number contains the Smaller number within itself Four times, the proportion will be called Quadrupla, if it contains it five times, the prportion will be called Quintupla, if six sestupla, as it was said about the species of the Multiplex Genus, which are also the same as those. The only difference that there is consists in the fact that, since the Multiplex Genus is accompanied by the superparticular Term, one adds to it the Fractional part, namely Dupla sesquialtera, Tripla sesquialtera, Dupla sesquiterza, Tripla sesquiterza, or dupla sesquiquarta, Quintupla sesquiquarta or sesquiquinta, according to whether the Fractional part is one half, a

third or a fifth, and so on ad infinitum. The Genus Multiplex superpartiente will be constituted in the same way. This is the Last Genus because it is created when the larger Number contains the smaller one several times and an Aliquanta part of the same smaller number. Therefore, it will be called Dupla, Tripla, quadrupla [-<f.2v>-] as it was said above, with the addition of the name of the Aliquant part, which, if it is Two, it will be called suprabipartiente, if it is three supratipartiente and so on, as it was discussed sufficiently in our last discourse. I give you this example, for instance, the proportion from eight to three. In fact, the number eight contains the number Three Twice within itself and it contains the number two as well, which is an Aliquanta part of the number three, so that the proportion from eight to Three will be called Dupla suprabipatrienteterza. It is called Dupla because the number eight contains twice the number Three within itself, superbipartiente because the Aliquanta part is the number two, and Terza because the part aliquanta is Aliquanta of the number Three. Any proportion of the superpartiente Genus is created in this way. At last I have come to the end of a subject so Difficult and confused, which is the hardest that can be found in all the Mathematical science, but I have been forced to discuss it because not only it is useful to the musician in order to know by which proportions [-<f.3r>-] [third in marg.] any Musical Interval is represented, but also in order to put them into practice, as their use becomes easier. In fact, Music is the science which considers the proportions which represent whichever Musical Interval, as it was said when it was Defined by me. It is left to us to attribute the proportions to the musical Intervals, so that it may be demonstrated that what I stated and I am about to state occurs mathematically. However, in order to avoid progressing by using words whose meaning has not been clarified, it is necessary to know first of all what a musical Interval is. Therefore, I state that an Interval is the distance which is found between Two sounds, of which one is lower and the other one Higher. This is Boethius' definition, since he says that "an Interval is the distance between a High and a low sound," as, for instance, ut re, ut mi, ut fa et cetera. The intervals which are contained within the extremities of the Diapason, or octave are sixteen, [-<f.3v>-] as Cerreto refers in the first book of his practice of music, chapter 411. These are:

The Comma, which is found in the proportion 81-80

The Diesis or Diaschisma, which is found in the proportion 521-477.

The minor semitone, which is the one that is called Diesis nowadays and consists of four Commas contained in the proportion 25-24.

The larger semitone, which is found in the proportion 16-15

The sesquioctavo Tone, which is found in the proportion 9-8

The semiditone or minor third contained in the proportion 6-5

The Ditone or major third, contained in the proportion 5-7

The Diatessaron or fourth, contained in the proportion 4-3

The Tritone, contained in the proportion 45-32

The Diapente or Imperfect fifth, contained in the proportion 63-45

The perfect Fifth, consisting of Three tones and a Larger semitone, contained in the proportion 3-2

The Minor hexachord or minor sixth, contained in the proportion 8-5

The Major Hexachord or Major sixth contained in the proportion 5-3

The minor Heptachord or minor seventh, contained in the proportion 7-5

The major Heptachord or Major seventh, contained in the proportion 15-8

The Diapason or octave contained in the proportion 2-1

[-<f.4r>-] What the Comma, the larger and smaller semitone and any other Interval is will be explained in the following speech. With this I have finished.