



IN THEIR OWN WORDS

Anicius Manlius Severinus Boethius, *Fundamentals of Music* (c520 C.E.)

Music theorists in classical antiquity were different from those today. They were philosophers and mathematicians, as well as music theorists, but they did not analyze specific compositions. For nearly a thousand years, from roughly 400 B.C.E. to 500 C.E., they wrote about the math and science (as they understood it) that served as a natural and physical explanation of music. At the very end of this period, the Roman philosopher Anicius Manlius Severinus Boethius pulled together the essential strands of ancient Greek musical theory, translating the original documents from Greek into Latin in his own mind and then providing an overview of the essential points. What he produced was a five-book compendium, his *De Institutione Musica*, which went on to become the single most important treatise on music throughout the Middle Ages and Renaissance. Book I of this five-book tract became the required “textbook” for the study of music at nearly all colleges or universities in the West. As with much of Greek culture, what survives has been interpreted through Roman eyes—if we want to know about Greek music theory, the simplest thing to do is read Roman Boethius.

Book I, Chapter I: There Are Three Kinds of Music

Here Boethius sets forth a threefold classification of the types of music implied by the ancient Greeks but not clearly articulated by them: the unheard music of the spheres or celestial harmony; music that unites the body and soul in a harmonious whole; and music as we usually think of it, sounding music, particularly that generated by musical instruments. For centuries thereafter, musicians debated whether the planets produced music as they orbited, and this concept of “music of the spheres” appears several times in Shakespeare’s plays.

At the outset, we should say what music is and say how it is understood by those well-schooled in it. There are three kinds of music: the first is music of the spheres [*mundana*]; the second is music of the body [*humana*]; and the third that which is made by certain instruments [*instrumentalis*], for example, the kithara or the aulos and others which assist with songs.

The first type of music is music of the spheres, which can be seen especially in the heavens or in combination with the elements or changing of the seasons. For how can it be that a celestial machine can move so quickly yet silently on its course? And although its sound does not reach our ears, which happens for many reasons, it is not possible however that such an extremely fast motion of such large bodies makes no sound, especially because the paths of the stars are all joined in a way that nothing more perfect could be conceived. For some [travel] in a higher, and others in a lower orbit. Yet all turn with equal force in a way that through these dissimilar paths they form a rational order. With such a celestial model, no less rational order can be expected in music. . . .

Yet all of this diversity generates a variety of seasons and of fruits, and thus creates the body of one entire year. But imagine if such variety of things disappeared from our thinking, everything would perish and lose, I might say, their consonance. And so it is that in loosening the low strings, we do not go so far that the sound disappears into nothingness; nor, on the other hand, do we place too much tension on the strings in the high range lest they break. Rather, everything is done that is appropriate and fitting. And similarly we see in **music of the spheres** nothing that is excessive and that goes beyond itself. . . .

With regard to **music of the body**, whoever looks within himself will understand it. For what is it that mixes non-corporal reason with the physicality of the body than a certain harmony, just as high and low pitches by means of temperance make one consonance. For what more than this joins together the parts of the soul: as Aristotle says [*Nicomachean Ethics*, 1.13.1102-1103], it is a conjunction of the rational and the irrational. For what is it, moreover, that mixes together the elements of the body and brings the parts together than rational harmony? But later on I will speak of this further.

The third type of music is that which is said to involve certain instruments. These include those activated by pressure, as in strings, or by wind, as with the aulos, or by water [hydraulic organs], or by striking, as with those that are made of brass in concave shape. And so all of these make diverse sounds. Thus it would seem appropriate to discuss instrumental music first in this treatise. But this is enough of a preface. Now let us discuss the elements of music.

Chapter II: Concerning Pitch and the Elements of Music

Here Boethius discusses the acoustics of music. He understands the principle of sound waves and of the relationship between string tension and pitch. He understands also that a string does not vibrate only once, but many times very rapidly, faster than the eye can see. However, Boethius is not aware that sounding strings—or the sound waves generated by any instrument, for that matter—vibrate in sections and thereby generate partials (overtones); that discovery would not come until the turn of the eighteenth century.

Consonance, which regulates the flow of all music, cannot exist without sound. Sound, moreover, cannot exist without a pulsating and percussive force, and neither of these can exist unless preceded by movement. For if everything is immobile, one thing cannot strike or impel another, and all things would be bereft of motion; and thus no sound could be made. For this reason we define sound thusly: a percussive activation of the air that proceeds undissolved to the process of hearing.

There are various kinds of motions, some faster, others slower. If someone perceives a continual motion, he will necessarily regard it as either faster or slower. Moreover, if someone shall move his hand, he will move it faster or slower. And similarly when the motion is slow and less frequent, lower sounds are necessarily produced, created by that slowness and infrequency. If, however, the motion is fast and frequent, high sounds are necessarily created. Thus if one and the same string is stretched more tightly, a high sound is produced; when tension is relaxed, a lower one. For when it is tighter, it pulsates more rapidly and activates the air more frequently and rapidly. And conversely, it pulses more calmly and slowly when string tension is weakened.

It is important to understand that when a string is struck, not just one sound results, or that one percussion is all that exists in these sounds; for every time the air is activated, it is done so by a percussive force. But because of the immediate joining together of sound, no interruption is perceived by the ears, but rather a single sound, either low or high, strikes the senses. One [sound] derives from many, and this applies equally well to slow, infrequent pulsations, and fast frequent ones. The situation is similar to when one fashions a cone—which is called a top—paints a line of dashes of red or some other color on it, and turns it as fast as possible. Then the entire line seems to be red, not because it is so, but because the red parts overwhelm the uncolored parts, which cannot be seen. But later we shall talk more of this.

In sum, because high pitches are caused by fast, frequent motion, and low pitches by slower, less frequent motion, it is obvious that the addition of motion will cause a lower pitch to become a higher one, and a reduction of motion will cause a higher pitch to become a lower one, for high pitch involves more motions than low pitch. Plurality

makes the difference in these matters, and thus it is necessary to consider number. Everything is on a continuum from few to many, and one number can be compared to another. When numbers are compared, some will be equal, and others unequal. And so it is with sounds: some are the same, and others distant one from another. But those pitches that do not reach a concord in their inequality are in every way dissonant. For consonance is the concord of dissimilar pitches brought together into one.

Chapter 35: What Is a Musician?

Boethius ends Book I by making a distinction between the intellectual, or knowing, musician and the mere practitioner of the art. Eventually, he works in the creator, or maker, of music as well. Whether Boethius's formulation of adjudicator, fabricator, and practitioner can be equated with the modern day critic, composer, and performer is not altogether certain. This prejudice against the lowly performer continued in theoretical writings for centuries, often because the performer wasn't trained in (and didn't need) the increasingly complex system of musical notation that was to develop.

It is now generally known that in all arts and disciplines, it is more honorable to be a person who works from true understanding, rather than manual labor. Thus it is far better to know how to do something, than it is to do something but not know how it is done. Indeed, physical activity is tantamount to slavery; reason, however, rules like a mistress. For unless the hand follows the will of reason, all will come to naught. Where could it be more evident that it is better to possess rational understanding than to be a creator of a work or a practitioner, than in the science of music? It is just as much more noble than the mind is superior to the body because it is only reason that separates the expert from the servant. Reason commands and leads to rectitude because unless the command of reason is followed, the undertaking will fail. . .

Now exactly how great are the glory and merit of reason can be perceived by considering that the mere practitioners take their names not from the discipline but from the instruments they play. For the kitharist is named from the kithara, and the aulos player from the aulos, and the others are named by their instruments. But a *musician* is one who has gained by reason an understanding of the science of music, not through servitude of work, but through the dominance of cogitation. Thus we see in the construction of war monuments a similar process with regard to the bestowing of names. For individuals are recalled or triumphs celebrated by inscribing the names of those who planned them, not with the names of those who did the actual labor.

There are three types of individuals versed in the art of music: one is the person who plays an instrument; another that composes songs; and the third is the individual who evaluates the work of the performer and the songs. But those who are in the instrumental class and spend all their time there—as, for example, kitharists and organists and players of other musical instruments—these are excluded from the knowledge of the science of music and made servants, as said, devoid of all reason and destitute of all speculative thinking. The second class of individual involved with music is that of the poet who possesses not so much a propensity for thinking and reason as a natural instinct for song. And so this type of musician is separated from music as well. The third class is that which has the capacity to judge, so that the rhythm and the melody, indeed the entire song, can be evaluated. Because this class is steeped in reason and thought, it can rightly be esteemed as belonging to music. That person is a musician who applies the faculty of reason and thought to what is fitting and appropriate for music with regard to modes and rhythms, of the genera of songs and the mixings of sounds [consonances] of all types, which will be explained later, as well as the faculty of judging the songs of the poets.