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The importance of music in education

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Following Marivilia Carrasco's presentation, which briefly touched on the fact that a musical science does exist, we can now more clearly locate the sense, the transcendence of musical education, a task in which the majority of us gathered here are involved. It is important to know that this development of human reflection on musical construction (out of which intervals, the octave, the fifth, the fourth, etc., emerge) practically began with the history of culture, from China and India in the East; later, with the Greeks, it enters the European world, and then, with the help of the Arabs, who inherited part of the Greek tradition, it penetrates Spain in the Middle Ages, laying the basis for the musical development of the West. Musical thought has occupied a large part of creative activity, not as a banal matter, but always as the object of special care, and much more so when it is related to education.

In referencing the genre which different scales represented in Greek music, Plato discusses which is the most appropriate for education, for its symmetry and because it encourages nobility of character, while others were considered to be more inclined to sensuality and passing pleasures, and were inappropriate for mental and moral growth.

It is important to see what part of musical science we inherited from Greece. Greece gives us our tonal system virtually already structured. This is what Europe was to elaborate over the centuries, expanding its internal construction, giving it more complexity.

The Greeks also bequeathed to us their theory of the division of the vibrating string, and the geometric proportions represented by the musical intervals, such as the geometric mean, the arithmetic mean, and so forth. One entire string gives us the fundamental; half the cord, or one over two, gives us double frequency (2:1), which is the octave. This we can prove on any guitar. We can use a cardboard strip the length of the guitar's fingerboard and then divide it in half, in thirds, and in fourths to produce certain basic intervals. Two-thirds of the string will yield a frequency which is in a relationship of 3:2, which is the fifth; three-fourths of the string is going to give us a frequency of 4:3, which is the fourth.

Greek musical theory emerges from this framework, and recognizes the following consonances: the octave, called *diapason;* the perfect fifth, or *diapente;* the perfect fourth, or *diatessaron); the octave plus a fifth, which is called diapason diapente,* and the double octave, *didiapason*. These divide the octave into an harmonic or arithmetic proportion, and the golden section, which we discussed earlier. For example, we see that the relationship of frequencies implied in the ascending *mi-la* interval, is the same as that represented by *si-mi,* and is a golden proportion.

In Plato's *Timaeus* dialogue, a scale is mentioned which is effectively our current major scale: the tetracord *do-re-mi-fa,* followed by *sol-la-si-do*. Both are equal and, unlike the others mentioned earlier, better located in the minor scale, they give us a structure which already sounds to us like our own current major scale.

The scientists most concerned with these studies in Greece were Pythagoras, Plato, and Aristoxinos, among many others.

The Arabs are also important in this. Around the tenth century A.D., Al Farabi writes *The Great Book of Music,* in which he details a philosophy of music and establishes the basis for the diatonic system, including equal tempering. A little before him, another theorist named Al Hindi had introduced Greek theory and alphabetical notation. Avicenna (or Ibn Sina) theorized on the simultaneous pulsation of the octave, the fifth, and the fourth.

It is during this period that we already have contact with Spain. The court of Alfonso the Wise brought together educated men from Hebrew, Arab, and European civilizations. Through them, Greek theory is preserved, and enters Europe by a fresh route. The earlier tradition, transmitted through the Romans, was greatly diluted and did not embrace this whole body of thought; thus, it was the Arabs who in essence rescued music for the West.

Therefore, the fact that a science of music exists should be sufficient motivation for those of us dedicated to this, but especially for those who teach, to understand that there is nothing trivial about what we do, and that it cannot, must not, be suppressed with the stroke of a pen, as the current government budgets would have it.

Antecedents of musical education in Mexico

In the sixteenth century, Spanish and Flemish missionaries used Indian openness to music to evangelize and to incorporate Western culture. Unlike what is happening today in our universities, at that time music was one of the four subjects of the Quadrivium, which were an extremely important part of professional education, of the higher education existing at that time.

What we musically inherited from the evangelization pro-