Appreciating
MUSIC

for Christian Schools™

Second
Edition

Contents

Introduction

What is sound? A good synonym might be "vibration," because any sound is caused by something vibrating. Anything—from an instrument to a machine—that produces a musical sound is classified by the way it vibrates to generate sound.

Five categories of instruments

Some instruments have stretched strings as their sound generators. The performer plucks, rubs, or strikes a string to make the string vibrate. Instruments that use stretched strings to generate sound are classified as **chordophones**, from two Greek words meaning "string sound." Instruments in this category include the harp, violin, viola, cello, double bass, guitar, banjo, piano, and harpsichord.

The sound generator on a **membranophone** is a stretched membrane that vibrates when struck. Drums fall into this category. Many other percussion instruments are classified as **idiophones**; the idiophone itself vibrates when struck, rubbed, plucked, or shaken. In addition to cymbals, bells, rattles, and xylophones, some rather unusual instruments are in this category, such as the glass harmonica and the music box.

Aerophones, as the name implies, produce their sound through a column of vibrating air. This class of instruments includes the flute, recorder, clarinet, oboe, trumpet, trombone, and tuba, as well as many other "wind" instruments.

The final category of instruments is the **electrophones**, which use electricity to generate musical sounds.

Orchestral families

European instruments, or those that appear in our symphony orchestras, are also classified in another way. They divide into four orchestral families: the **string** family, the **woodwind** family, the **brass** family, and the **percussion** family. In this chapter we will examine the instruments and the characteristics of each family.

Mechanical Music Makers

The enchanting song of a music box is fascinating to listen to, but have you ever watched the delicate mechanism that creates the sound?

The eighteenth century was an era of obsession with all things mechanical. Musical clocks were popular, especially in the Tyrol area of Austria and northern Italy. Some completely mechanical instruments were developed to teach birds how to sing composed melodies. One instrument, the componium, made by Nicholas Winkel of Amsterdam in 1821, could automatically make variations on any tune given it. In fact, Winkel estimated that it would take 138 billion years for the componium to play all the variations on any given tune!

Swiss clock makers created the first music boxes in the late 1700s, using a tuned metal comb and a rotating metal cylinder or disk with projecting pins. As the cylinder or disk turns, the pins pluck various prongs on the metal comb to play a popular tune. Throughout the nineteenth century, producing music boxes with the latest tunes created keen competition among manufacturers.

1 AM

"Galop" from *Moscow, Cheremushky*

Dmitri Shostakovich (1906–75)

Born on September 25, 1906, in St. Petersburg, Russia, Dmitri Shostakovich (dih•MEE•tree shah•stah•KOH•vihch) experienced firsthand the 1917 Bolshevik Revolution and the ensuing years of turmoil under Soviet repression. Unlike other prominent Russian composers, Shostakovich refused to leave his mother country. He remained in Russia despite the heavy censorship of the arts under the Soviet regime, which dictated what kind of music a composer should write and what kind of art an artist should create. A Soviet composer had no way of knowing the current trends and developments in the musical world because foreign publications were prohibited and foreign radio waves were jammed. The Soviet dictator Joseph Stalin discouraged, and at times forbade, experimentalism, individualism, or originality in art and music. Many Russian composers and artists, including the great composer Igor Stravinsky, emigrated to America or Europe to escape this censorship.

Shostakovich achieved world recognition in 1925 with the premiere of his First Symphony, which was his graduation exercise at the St. Petersburg Conservatory, where he had enrolled at age thirteen. Among his fifteen symphonies, the Seventh or *Leningrad* Symphony (1941) is probably the best known. This symphony was inspired by the Nazi siege of Leningrad and instantly was almost as popular in America as in the Soviet Union.

The Imperial Winter Palace in Leningrad

Shostakovich's dramatic musical style carried over to his interest in theatrical music. He wrote music for several plays and films. He also wrote several operettas (musical dramas with some spoken dialogue, lighter than opera but not as popular in style as the Broadway musical) including *Moscow, Cheremushky.* Because of Soviet oppression, the people of Russia had become dependent on the government for almost everything, including their housing. This satirical comedy tells the story of a new apartment complex under construction in Moscow, its hopeful tenants, and the interesting ways they tried to get the best residences. The opening piece "Galop" takes the characters on a fast-paced spin around Moscow to see their new homes.

The String Family

The violin

The string family forms the backbone of the symphony orchestra, making up from one-half to two-thirds of the instruments in the orchestra. The *violin* is the smallest, and consequently the highest pitched, of the stringed instruments. Orchestral music almost always calls for two groups, or **sections,** of violins—first violins

Haydn's Little Joke

The famous composer Franz Joseph Haydn (HIY•dihn) always enjoyed a good musical joke. He wrote a piece that begins with the violins on an F, one note lower than G, their lowest pitch. The violinists had to loosen their lowest string to lower the pitch to F; then, during the piece, they tuned the string back up to G. The effect sounds amusing, even if you do not have a musician's sense of humor!

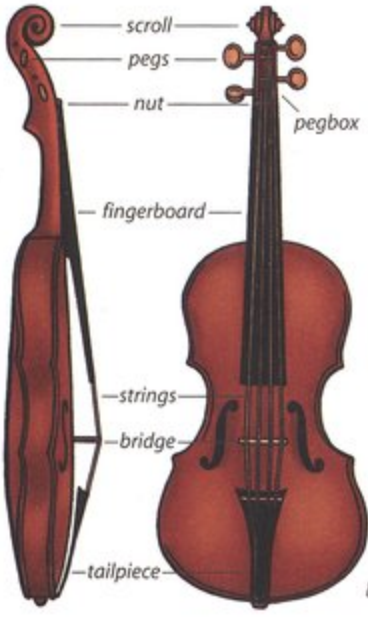
and second violins. As a rule, the music composed during the seventeenth through the nineteenth centuries features the first violins as the dominant section in the orchestra. These violinists usually play the melody, and the first violinist, who sits at the center front of the orchestra to the left of the **conductor,** is called the **concertmaster** (or concertmistress) and often acts as the conductor's assistant. Before the orchestra plays, the concertmaster stands in front of the group and signals the members of each section to tune their instruments.

The second violin section may play the melody with the first violins, but perhaps an **octave** lower. Often the seconds may play a harmony part or a **countermelody** to accompany the melody. Usually the music played by the second violins is not as difficult as that played by the first violins, but it is certainly just as important.

Special techniques

The violin is a versatile instrument and can be played in many ways, using various techniques. Although the violinist traditionally plays the strings of his instrument with a horsehair bow, he has some other options as well. The most common alternative technique, **pizzicato,** involves the player's plucking the strings with either the nails or pads of the fingers of his right hand to create a dry, **staccato** sound. Instead of pulling his bow back and forth against the strings, the violinist might bounce his bow along the string to play **spiccato;** this also creates a staccato effect. Occasionally, a composer indicates that the violinist should turn his bow over to allow the wood rather than the horsehair to bounce against the strings. The most familiar example of this technique is found in "Mars" from *The Planets* by Gustav Holst, a twentieth-century English composer.

Advanced string players employ **vibrato** to make the tone quality of their instrument warm, rich, and alive; they rapidly rock their left hand back and forth to vary each pitch just slightly. String players may use mutes to add a hushed, subdued quality to an expressive passage of music. The **mute** clamps the *bridge* to reduce the vibrations traveling down to the resonating body of the instrument.



String mechanics

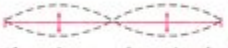
How does a violin work? This diagram should help you to understand. Four strings, made of a variety of materials such as catgut, steel, or nylon, stretch tightly from the *tailpiece,* along the *fingerboard,* to the *pegbox.* The strings contact the instrument in two places between the tailpiece and the pegbox: the *nut,* just below the pegbox, and the *bridge.* When the violinist plucks a string or draws the bow along it, the string begins to vibrate. The bridge transfers these vibrations to the hollow body of the instrument, which works as a resonating chamber for the sound. Each

string wraps around one of the four *pegs;* turning a peg either stretches and tightens a string to make its pitch higher or loosens a string to make its pitch lower.

If you examine the strings closely, you will notice that each one is a different thickness. The thicker strings do not vibrate as rapidly as the thinner strings, so their pitch is lower. When the instrument is tuned properly, each string produces a certain pitch. To play pitches other than those produced by the four open strings, the player shortens a string by pressing it against the fingerboard with one of the fingers of his left hand. The only part of the string that will vibrate is the length from the bridge to the player's finger, so the string produces a higher pitch. A good violinist works many years to learn just exactly where to place his fingers to produce

String Mathematics

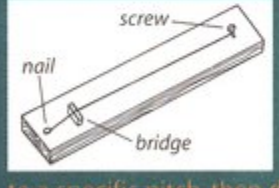
This string vibrates 440 times per second.



If we depress the string halfway, one half of it vibrates 880 times per second to create a pitch one octave higher.

Several centuries before Christ's birth, the Greek philosopher Pythagoras (piy•THAG•oh•ras) declared that "all is number." He believed that everything could be explained in terms of numerical relationships. He applied this law to many areas of study, including astronomy (the earth's sphericity), geometry (the Pythagorean theorem), and music. Pythagoras proposed a scientific approach to music by expressing musical intervals (distances between notes) as numerical proportions. He discovered that if you depress a stretched string exactly halfway along its length, its pitch will sound an octave higher.

Conduct your own experiment. Stretch a guitar or violin string along a thin board. Securely attach the string at one end with a nail; wrap the other end around a fairly long screw. Insert a small block of wood, to act as a bridge, under the string towards the nail end of the board. Turn the screw to tighten or loosen the string to produce different pitches. "Tune" the string to a specific pitch, then depress the string with your finger halfway between the bridge and the nail end of the board. Does the pitch sound an octave higher? What pitch sounds when you depress the string two thirds of the distance from the bridge? Three-fourths of the distance? Move the bridge to different locations under the string. Attach a resonating chamber under the board to amplify the sound. If the board is wide enough, add other strings of varying thicknesses.



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ISBN 1-59166-233-8

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