**Chapter 2**

**How We Make Music**

In Chapter 2 you will be introduced to the various instruments of the band and orchestra, as well as the registers of the human voice. Throughout history mankind has sung and danced to express himself. Each culture has also created instruments to assist the singing and dancing, or to imitate the human voice. Generally speaking most cultures have developed instruments that produce sounds by vibrating strings, by being struck with a mallet, by blowing wind into them, and by the use of some type of keyboard device attached. We have many different ways of categorizing instruments. This chapter introduces you to three; register, construction, and family.

The human voice is considered the purest of all instruments and many instruments were created to imitate its sound. The voice falls into four very broad ranges; soprano, the highest; alto, the next highest; tenor, next to lowest; and bass, the lowest. In fact, these are the names that we give to the four parts in a choir, and soprano and alto are almost always female voices and tenor and bass are almost always male voices. Instruments can also be categorized using these range or register designations.

In an attempt to be able to categorize worldwide musical instruments Curt Sachs developed the construction system of categorization. He called anything that used air to create a sound an aerophone. Anything that produces a sound by using a vibrating string is a chordophone. An instrument that has some type of membrane or skin stretched across a gourd type shape is a membranophone. And, an idiophone is an instrument that uses its body to create the sound. These are usually struck or shaken.

Using the family system of categorization we can group instruments into the following: string family, woodwind family, brass family, percussion family, keyboard family, and electronic family.

You are probably familiar with many of these instruments. Perhaps you have heard a guitar in a rock band. It is a member of the string family and is a chordophone. Guitars, like most instruments can come in many sizes, but we are most familiar with the bass guitar and the tenor instrument since they are the ones used in most popular bands.

Or, you may have heard or played the piano. It is a keyboard instrument and would fit in either the chordophone or idiophone categories. Since it has 88 keys it can play in all four of the registers from bass to soprano.

String Instruments

String instruments create their sound by strings vibrating. These strings are stretched taut over the body of an instrument and the strings are usually set vibrating by drawing a bow across them. They can also be plucked by the hand to make a much shorter and less resonant sound. The instrument changes pitches by changing the length of the part of the string that vibrates. The most common string instruments in Western music are the violin, the viola, the cello, and the contra bass. The orchestra also includes a harp. As you can see by the pictures in your textbook the four primary strings all look alike. They are all essentially different sizes of the same basic construction and are played with similar methods. The violin, viola, cello, and bass correspond in range to the vocal ranges of soprano, alto, tenor, and bass, respectively.

These instruments are used in a wide variety of ensembles and combinations. Perhaps the most famous ensemble of string instruments is the orchestra. The orchestra has multiples of each of the four string instruments plus a number of wind and percussion instruments.

Woodwind and Brass Instruments

Woodwind and brass instruments produce sounds by air being blown into them. In the case of the woodwinds the air sets a reed vibrating. A reed is a very thin piece of cane or wood. The flute is the notable exception to this. Its sound is produced much like blowing across the top of a soda bottle. The most common woodwind instruments include the flute, oboe, clarinet, bassoon and saxophone. Of these only the oboe, clarinet and bassoon are actually made of wood. The flute and saxophone are made of metal. The woodwind instruments change pitches by an intricate system of keys that are opened and closed by the fingers. These instruments are also used in a large number of ensembles or groups including bands, orchestras, and jazz ensembles.

Brass instruments are also blown into in order to create the sound. However, the player’s lips are actually doing the vibrating. The brass player changes notes basically by changing the length of the tubing through which the air column passes. This is achieved on the trumpet, horn, euphonium, and tuba by depressing one or more of three valves. On the trombone the player simply lengthens the instrument by extending the slide tubing.

In all woodwinds and brasses the instrument is simply an amplifier.

Percussion Instruments

Just about anything can be a percussion instrument. For our purposes, if it can be struck with a mallet or hand, or rattled, and it produces a resonating sound it is a percussion instrument. Percussion instruments are categorized as either definite or indefinite pitch instruments. This means that the instrument either has a recognizable sound that can be tuned to a scale or its sound is not heard as one tone or another.

The most common instruments of the percussion section in an orchestra or band are the snare drum, the bass drum, the cymbals, the timpani or kettledrum, the gong, and the xylophone. Of these only the timpani and the xylophone are definite pitch instruments. These instruments generally produce their sound by vibrating when struck or shaken. In most cases they produce one sound and their pitch does not change. They are usually used to create particular tone colors or to assist in keeping the beat.

Percussion instruments are perhaps the most common of all instruments. They appear in all ensembles and as solo instruments in most cultures.

Keyboard Instruments

Over the past 700 years keyboard instruments have developed significantly. Many instruments that existed in the 1500s–1700s are rarely played today. The most common keyboard instruments of today are the piano, organ, harpsichord, and synthesizer. These instruments all produce sounds in different ways. However, the player initiates the sound essentially the same on all these instruments-by depressing a key or keys on a horizontal keyboard.

The piano is the most popular keyboard instrument and has been for the past 200 years. It has 88 keys arranged on a horizontal keyboard. When the player depresses a key, a hammer strikes a string and the sound is produced.

The organ, often called the king of instruments, is usually a wind instrument. Like the piano the player depresses keys to create the sound, but the keys open up passages that allow wind to pass through pipes. In the past 50 years electronic instruments have been developed that produce this sound from analog and digitally recorded sounds.

The harpsichord is an older instrument than the piano and looks somewhat like the piano. The primary difference between the two is that when the key is depressed on a harpsichord it causes the string to be plucked rather than struck. This creates a twangy tone quality.

To hear all these instruments, listen to Britten's *Young Person's Guide to the Orchestra* or watch the instrument videos on the textbook website.

Ensembles

Voices and instruments are grouped together into bands, choirs, and orchestras-- called ensembles. Choirs consist of groups of voices, most often both male and female voices. These ensembles range in size from just a few singers to hundreds.

Orchestras are made up of the instruments of the woodwind, brass, percussion, and string families. The saxophone and euphonium are not usually members of the orchestra. Sometimes the orchestra includes keyboard instruments such as harpsichord, piano, or organ.

Bands consist of woodwind, brass, and percussion instruments. The members of the string family are not regular members of the band but sometimes a harp or string bass are added, as well as piano.