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Understanding Music: Past and Present

N. Alan Clark

Middle Georgia State University, norman.clark@mga.edu

Thomas Heflin

Abraham Baldwin Agricultural College, theflin@abac.edu

Jeffrey Kluball

Darton State College, jeff.kluball@darton.edu

Elizabeth Kramer

University of West Georgia, ekramer@westga.edu

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Understanding Music

Past and Present



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N. Alan Clark, PhD | Thomas Heflin, DMA | Jeffrey Kluball, EdD | Elizabeth Kramer, PhD





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1

Music Fundamentals

N. Alan Clark, Thomas Heflin, Elizabeth Kramer

1.1 OBJECTIVES

1. Recognize a wide variety of sounds, comparing and contrasting them using musical elements of pitch, volume, articulation, and timbre.
2. Aurally identify important performing forces (use of the voice and instruments) of Western music.
3. Define basic elements of melody, harmony, rhythm, and texture and build a vocabulary for discussing them.
4. Identify basic principles and types of musical form.
5. Listen to music and describe its musical elements and form.
6. Compare and contrast categories of art music, folk music, and pop music.
7. Identify ways in which humans have used music for social and expressive purposes.

1.2 KEY TERMS AND INDIVIDUALS

- | | |
|-----------------------|---------------------------|
| • Accidentals | • Composition |
| • Acoustics | • Conjunct |
| • Acoustical Engineer | • Consonant |
| • Acoustician | • Cycles per Second (cps) |
| • Amplitude | • Disjunct |
| • Beat | • Dissonant |
| • Brass | • Dynamics |
| • Chord | • Equalization |
| • Chord Progression | • Form |
| • Chromatic | • Frequency |

- Fundamental Pitch
- Guido of Arezzo
- Improvisation
- Instrumentation
- Interval
- Harmony
- Hertz (Hz)
- Homophonic
- Key
- Keyboard
- Measure
- Melody
- Meter
- Monophonic
- Motive
- Music
- Noise
- Octave
- Overtones
- Partial
- Percussion
- Performing Forces
- Phrase
- Pitch
- Polyphony
- Polyrhythm
- Range
- Register
- Rhythm
- Scale
- Sequence
- Seventh Chord
- Sine Wave
- Sound
- Sound Waves
- Step
- Strings
- Syncopation
- Synthesizers
- Tempo
- Texture
- Timbre
- Time Signature
- Tonic
- Triad
- Twelve-Bar Blues
- Vocal
- Woodwinds

1.3 WHAT IS MUSIC?

Music moves through time; it is not static. In order to appreciate music we must remember what sounds happened, and anticipate what sounds might come next. Most of us would agree that not all sounds are music! Examples of sounds not typically thought of as music include noises such as alarm sirens, dogs barking, coughing, the rumble of heating and cooling systems, and the like. But, why? One might say that these noises lack many of the qualities that we typically associate with music.

We can define **music** as the intentional organization of sounds in time by and for human beings. Though not the only way to define music, this definition uses several concepts important to understandings of music around the world. “Sounds in time” is the most essential aspect of the definition. Music is distinguished from

many of the other arts by its temporal quality; its sounds unfold over and through time, rather than being glimpsed in a moment, so to speak. They are also perceptions of the ear rather than the eye and thus difficult to ignore; as one can do by closing his or her eyes to avoid seeing something. It is more difficult for us to close our ears. Sound moves through time in waves. A sound wave is generated when an object vibrates within some medium like air or water. When the wave is received by our ears it triggers an effect known as sound, as can be seen in the following diagram:

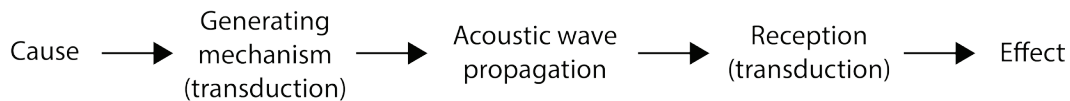


Figure 1.1 | Movement of a sound wave

Author | Corey Parson

Source | Original Work

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As humans, we also tend to be interested in music that has a plan, in other words, music that has intentional organization. Most of us would not associate coughing or sneezing or unintentionally resting our hand on a keyboard as the creation of music. Although we may never know exactly what any songwriter or composer meant by a song, most people think that the sounds of music must show at least a degree of intentional foresight.

A final aspect of the definition is its focus on humanity. Bird calls may sound like music to us; generally the barking of dogs and hum of a heating unit do not. In each of these cases, though, the sounds are produced by animals or inanimate objects, rather than by human beings; therefore the focus of this text will only be on sounds produced by humans.

1.3.1 Acoustics

Acoustics is essentially “the science of sound.” It investigates how sound is produced and behaves, elements that are essential for the correct design of music rehearsal spaces and performance venues. Acoustics is also essential for the design and manufacture of musical instruments. The word itself derives from the Greek word *acoustikos* which means “of hearing.” People who work in the field of acoustics generally fall into one of two groups: **Acousticians**, those who study the theory and science of acoustics, and **acoustical engineers**, those who work in the area of acoustic technology. This technology ranges from the design of rooms, such as classrooms, theatres, arenas, and stadiums, to devices such as microphones, speakers, and sound generating synthesizers, to the design of musical instruments like strings, keyboards, woodwinds, brass, and percussion.

1.3.2 Sound and Sound Waves

As early as the sixth century BCE (500 years before the birth of Christ), Pythagoras reasoned that strings of different lengths could create harmonious (pleasant) sounds (or tones) when played together if their lengths were related by certain ratios. Concurrent sounds in ratios of two to three, three to four, four to five, etc.

are said to be harmonious. Those not related by harmonious ratios are generally referred to as **noise**. About 200 years after Pythagoras, Aristotle (384-322 BCE) described how sound moves through the air—like the ripples that occur when we drop a pebble in a pool of water—in what we now call waves. **Sound** is basically the mechanical movement of an audible pressure wave through a solid, liquid, or gas. In physiology and psychology, sound is further defined as the recognition of the vibration caused by that movement. **Sound waves** are the rapid movements back and forth of a vibrating medium—the gas, water, or solid—that has been made to vibrate.

1.3.3 Properties of Sound: Pitch

Another element that we tend to look for in music is what we call “definite pitch.” A definite **pitch** is a tone that is composed of an organized sound wave. A note of definite pitch is one in which the listener can easily discern the pitch. For instance, notes produced by a trumpet or piano are of definite pitch. An indefinite pitch is one that consists of a less organized wave and tends to be perceived by the listener as **noise**. Examples are notes produced by percussion instruments such as a snare drum.

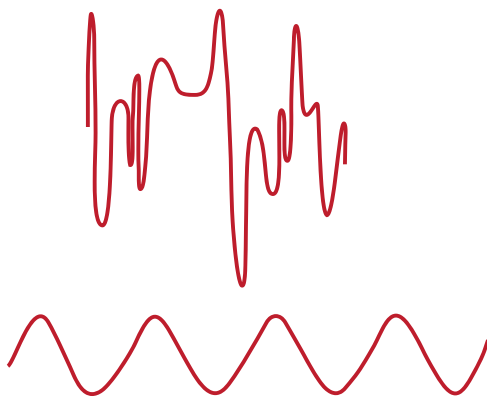


Figure 1.2 | Two sound waves, the first an indefinite pitch and the second a definite pitch.

Author | Corey Parson

Source | Original Work

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Numerous types of music have a combination of definite pitches, such as those produced by keyboard and wind instruments, and indefinite pitches, such as those produced by percussion instruments. That said, most tunes, are composed of definite pitches, and, as we will see, melody is a key aspect of what most people hear as music.

The sound waves of definite pitches may come in many frequencies.

Frequency refers to the repetitions of a wave pattern over time and is normally measured in **Hertz** or **cycles per second (cps)**. Humans normally detect

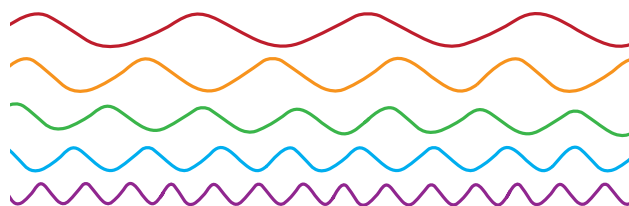


Figure 1.3 | Sine waves of varying frequencies

Author | Corey Parson

Source | Original Work

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types of sound called musical tones when the vibrations range from about twenty vibrations per second (anything slower sounds like a bunch of clicks) to about 20,000 vibrations per second (anything faster is too high for humans to hear.) Watch the first five minutes of this excellent explanation of

how different types of sounds result from the combination of the **partials** above the basic tone. In actuality, all sounds result from different variations of this process, as it naturally occurs in our environment.

Ex. 1.1: The Audio Kitchen; Sawtooth and Square Waves (2012)

<http://www.youtube.com/watch?v=A1gwC8YoyMU>

In the Western world, musicians generally refer to definite pitches by the “musical alphabet.” The musical alphabet consists of the letters A-G, repeated over and over again (...ABCDEFGABCDEFGABCDEFG...), as can be seen from this illustration of the notes on a keyboard. These notes correspond to a particular frequency of the sound wave. A pitch with a sound wave that vibrates 440 times each second, for example, is what most musicians would hear as an A above middle C. (Middle C simply refers to the note C that is located in the middle of the piano keyboard.) As you can see, each white key on the keyboard is assigned a particular note, each of which is named after the letters A through G. Halfway between these notes are black keys, which sound the sharp and flat notes used in Western music. This pattern is repeated up and down the entire keyboard.

SIDEBAR: How Waves Behave

Reflection – sound waves reflect off of hard surfaces

Absorption – sound waves are absorbed by porous surfaces

Amplitude – refers to how high a wave appears on an oscilloscope; i.e., how much energy it has and therefore how loud it is

Frequency – refers to how many times a wave vibrates each second. This vibrating speed is measured using cycles per second (cps) or the more modern Hertz (Hz)

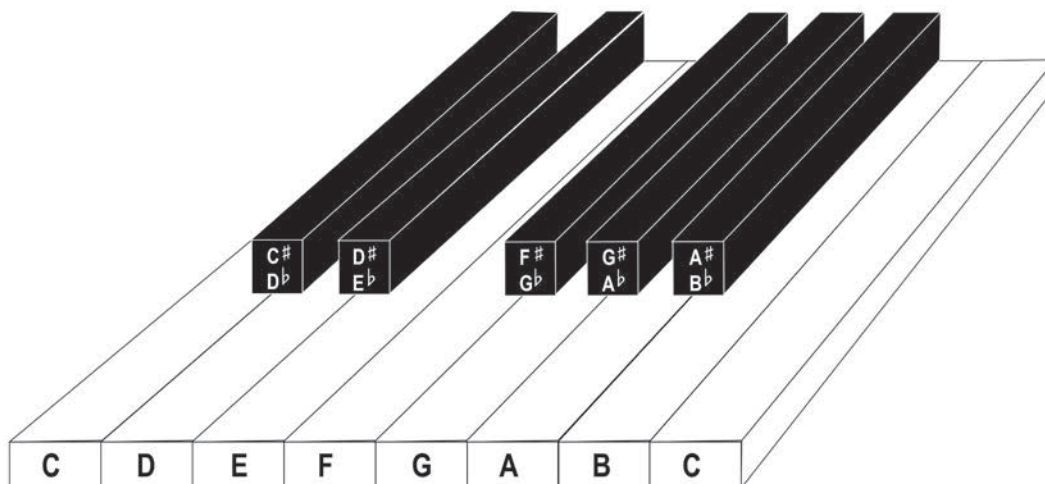


Figure 1.4 | The keyboard and the musical alphabet.

Author | Corey Parson

Source | Original Work

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When a sound wave is generated, it often generates other waves or ripple effects, depending on the medium through which it travels. When a string of a certain length is set into motion, for example, its waves may also set other strings of varying lengths into motion.

The vibration with the lowest frequency is called the **fundamental pitch**. The additional definite pitches that are produced are called **overtones**, because they are heard above or “over” the fundamental pitch (tone). Our musical alphabet consists of seven letters repeated over and over again in correspondence with these overtones. Please see Figure 1.6 for the partials for the fundamental pitch C:

To return to the musical alphabet: the first partial of the overtone series is the loudest and clearest overtone heard “over” the fundamental pitch. In fact, the sound wave of the first overtone partial is vibrating exactly twice as fast as its fundamental tone. Because of this, the two tones sound similar, even though the first overtone partial is clearly higher in pitch than the fundamental pitch. If you follow the overtone series, from one partial to the next, eventually you will see that all the other pitches on the keyboard might be generated from the fundamental pitch and then displaced by **octaves** to arrive at pitches that move by **step** (refer to Figure 1.6).

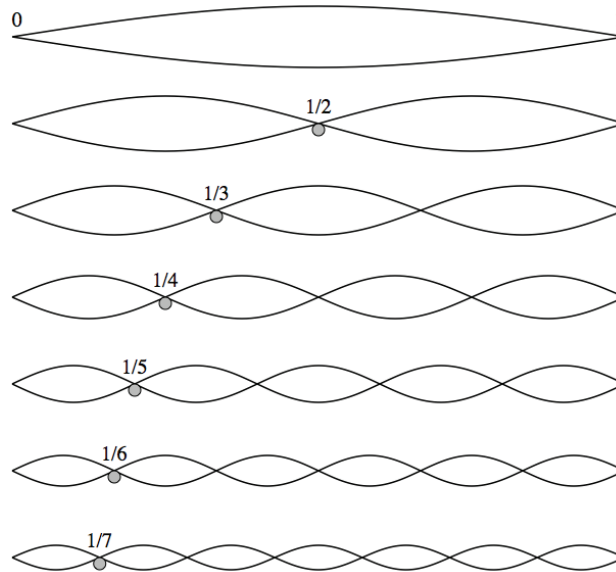


Figure 1.5 | Overtones of a vibrating string

Author | User “Qef”

Source | Wikimedia Commons

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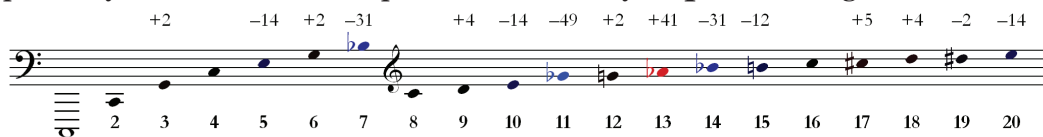


Figure 1.6 | Partial of C

Author | User “MusicMaker5376”

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Watch these two videos for an excellent explanation of the harmonic series from none other than Leonard Bernstein himself, famous conductor of the New York Philharmonic and composer of the music of *West Side Story*.

Ex. 1.2: The Harmonic Series

https://www.youtube.com/watch?v=8n3qMB6AD_o

<https://www.youtube.com/watch?v=iDTj6tBnHlA>

The distance between any two of these notes is called an **interval**. On the piano, the distance between two of the longer, white key pitches is that of a step. The longer, white key pitches that are not adjacent are called leaps. The interval between C and D is that of a second, C and E that of a third, the interval between C and F that of a fourth, the interval between C and G that of a fifth, the interval of C to A is a sixth, the interval of C to B is a seventh, and the special relationship between C and C is called an octave.

1.3.4 Other Properties of Sound: Dynamics, Articulation, and Timbre

The volume of a sound is its **dynamic**; it corresponds with the **amplitude** of the sound wave. The articulation of a sound refers to how it begins and ends, for example, abruptly, smoothly, gradually, etc. The **timbre** of a sound is what we mean when we talk about tone color or tone quality. Because sound is somewhat abstract, we tend to describe it with adjectives typically used for tactile objects, such as “gravelly” or “smooth,” or adjectives for visual descriptions, such as “bright” or “metallic.” It is particularly affected by the ambience of the performing space, that is, by how much echo occurs and where the sound comes from. Timbre is also shaped by the **equalization (EQ)**, or balance, of the fundamental pitch and its overtones.

The video below is a great example of two singers whose voices have vastly different timbres. How would you describe Louis Armstrong’s voice? Perhaps you would call it “rough” or “gravelly.” How would you describe Ella Fitzgerald’s voice? Perhaps it could be called “smooth” or “silky.”

Ex. 1.3: Louis Armstrong and Ella Fitzgerald

<https://www.youtube.com/watch?v=J2oEmPP5dTM>

1.4 MUSIC NOTATION

The development of music notation was absolutely critical to the rise of music that used more than just one melody. Everything that has developed in Western music after 1040 CE—from music of many independent voices (polyphonic), to solo voices with keyboard or group accompaniments, to the popular music we enjoy today—grew from this development. Though modern scholars have found examples of written musical symbols as far back as 900 CE, the staff notation system developed by **Guido of Arezzo** and others who followed him allowed for the accurate preservation and distribution of music. Music notation also greatly contributed to the growth, development, and evolution of the many musical styles over the past one thousand years.

Because of his contributions to the development of music notation, Guido of Arezzo is arguably the most important figure in the development of written music in the Western world. He developed a system of lines and spaces that enabled mu-

sicians to notate the specific notes in a melody. The development of music notation made it possible for composers to notate their music accurately, allowing others to perform the music exactly the way each composer intended. This ability allowed polyphonic (many voiced) music to evolve rapidly after 1040 CE. The video linked below is an excellent resource that explains Guido's contributions in more detail.

Ex. 1.4: Guido of Arezzo

<http://www.youtube.com/watch?v=LxkstaYPztM>

The popularity of staff notation after Guido paved the way for the development of a method to notate rhythm. The system of rhythmic notation we use today in Western music has evolved over many years and is explained in the following link.

Ex. 1.5: Rhythmic Notation by Andrew Poushka (2003)

<http://www.studybass.com/lessons/reading-music/rhythmic-notation>

The following prepared college marching band arrangement is adapted from DJ Khaled's popular tune "All I Do is Win," which shows an example of how staff notation is used today.

Trumpet in Bb 1 All I Do is Win DJ Khaled
arr. Alan Clark

6 11 16 18 6

Figure 1.7 | "All I Do Is Win"

Author | N. Alan Clark

Source | Original Work

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1.5 PERFORMING FORCES FOR MUSIC

Music consists of the intentional organization of sounds by and for human beings. In the broadest classification, these sounds are produced by people in three ways: (1) through the human voice, the instrument with which most of us are born, (2) by using musical instruments, or (3) by using electronic and digital equipment to generate purely electronic sounds.

1.5.1 The Human Voice as a Performing Force

The human voice is the most intimate of all the music instruments in that it is the one that most of us are innately equipped. We breathe in, and, as we exhale, air rushes over the vocal chords causing them to vibrate. Depending on the length of the vocal chords, they will tend to vibrate more slowly or more quickly, creating pitches of lower or higher frequencies. The muscles in the larynx contract, causing the vocal chords to close, and air pressure forces them open. This closing and opening can happen hundreds of times a second. To reach a higher pitch vocal chords vibrate more rapidly.

Changing the shape of your vocal cavity allows for different timbres and vowel sounds. Changing the position of the mouth and lips allows for further variety in sound and for the production of consonants. Because men tend to have thicker and longer vocal chords, they tend to have lower voices than women, whose vocal chords tend to be shorter and slimmer.

The natural speaking voice exhibits some variation in pitch. One's voice often rises at the end of a question. When you have a cold and the vocal chords are swollen, you often speak in lower pitches than normal. Singing generally differs from speaking in that it uses a wider **range** of definite pitches that often occur in a regular meter (discussed later). By range, we mean the number of pitches, expressed as an intervallic distance. A trained opera singer might have a range of three to four octaves, whereas the average person has a range of a little over an octave.

Additionally, as we speak we generally focus on consonants, which articulate the beginnings and ends of syllables and help make our meaning plain. In singing, performers often focus on the vowels, as vowels tend to carry better than consonants. Also, the meaning of the words is sometimes deemed less significant than the melodies themselves.

In Western music, voice ranges are typically split into four categories:

1. Bass: lowest male voices; sing in a low **register**, below middle C (middle C being the C approximately in the middle of the range of the piano)
2. Tenor: highest male voices; sing in a register around and below middle C
3. Alto: lowest female voices; sing in a register around and above middle C
4. Soprano: highest female voices; sing almost exclusively above middle C

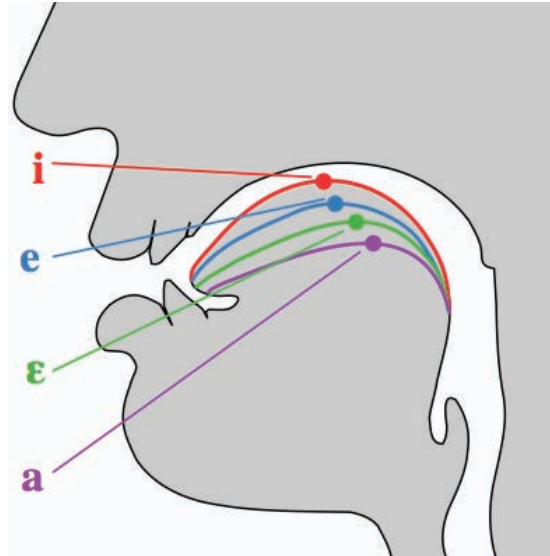


Figure 1.8 | Position of the larynx for various vowel sounds.

Author | User "Badseed"

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Western classical music tends to use all four of these ranges, whereas melodic register and range in jazz, rock, and pop tends to be somewhat more limited. As you listen to jazz, rock, and pop, pay attention to ranges and registers used as well as any trends. Are most female jazz vocalists altos or sopranos? Do most doo-wop groups sing in higher or lower registers? Different musical voices exhibit different musical timbres as well, as you heard earlier with Louis Armstrong and Ella Fitzgerald.

1.5.2 Musical Instruments as Performing Forces

Humans have been making music with bone, stone, wood, textiles, pottery, and metals for over 35,000 years. A musical instrument is any mechanism, other than the voice, that produces musical sounds. As we study jazz, rock, and pop we will be listening to two types of musical instruments, purely acoustic instruments and electronic instruments.

A purely acoustic instrument is an instrument whose sound is created and projected through natural acoustic characteristics of its media. Thus, when one hits wood or bone or stone or metal, one sends vibrations through it which might be amplified by use of a small chamber like a sound box or a gourd. When one plucks a string, one creates sound waves that might be amplified through a piece of wood or box of wood, such as one finds in an acoustic guitar or violin. As with the voice, the larger the instrument, the deeper the pitches it plays—consider for example, the cello versus the violin. Instruments also differ in their ranges, some being able to produce a wide variety of notes while others are much more restricted in the pitches that they can play. (For example, the piano has a range of over seven octaves, while the saxophone normally plays only two and a half).

The timbre of a sound coming from a musical instrument is affected by the materials used and the way in which the sound is produced. Based on these two characteristics, we categorize acoustic instruments into five groups: strings, woodwinds, brass, percussion, and keyboard.

1. **Strings:** instruments whose sound is produced by setting strings in motion. These strings can be set in motion by plucking the strings with your finger, or a pick (a piece of plastic). They can also be set in motion by bowing. In bowing, the musician draws a bow across the string, creating friction and resulting in a sustained note. Most bows consist of horse hair held together on each end by a piece of wood. String examples: violins; violas; violoncellos; string bass (also known as double bass or stand-up bass); classical, acoustic, and bass guitars; harps. For more information and listening examples of the



Figure 1.9 | Horsehair Bow

Author | User "Feitscherg"

Source | Wikimedia Commons

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different orchestral string instruments, go to <http://www.philharmonia.co.uk/explore/instruments>. Click on the individual instruments for an introduction and demonstration of the instrument.

2. **Woodwinds:** instruments traditionally made of wood whose sound is generated by forcing air through a tube, thus creating a vibrating air column. This can be done in one of several ways. The air can travel directly through an opening in the instrument, as in a flute. The air can pass through an opening between a reed and a wooden or metal mouthpiece as in a saxophone or clarinet, or between two reeds as in a bassoon or oboe. Although many woodwind instruments are in fact made of wood, there are exceptions. Instruments such as the saxophone and the modern flute are made of metal while some clarinets are made of plastic. These instruments are still considered woodwinds because the flute was traditionally made of wood and the saxophone and clarinet still use a wooden reed to produce the tone. Woodwind examples: flute, clarinet, oboe, bassoon. For more information and listening examples of the different orchestral woodwind instruments, go to <http://www.philharmonia.co.uk/explore/instruments>. Click on the individual instruments for an introduction and demonstration of the instrument.
3. **Brass:** instruments traditionally made of brass or another metal (and thus often producing a “bright” or “brassy” tone) whose sound is generated by “buzzing” (vibrating the lips together) into a mouthpiece attached to a coiled tube. This “buzzing” sets the air within the tube vibrating. The pitches are normally amplified by a flared bell at the end of the tube. Brass examples: trumpet, bugle, cornet, trombone, (French) horn, tuba, and euphonium. For more information and listening examples of the different orchestral brass instruments, go to <http://www.philharmonia.co.uk/explore/instruments>. Click on the individual instruments for an introduction and demonstration of the instrument.
4. **Percussion:** instruments that are typically hit or struck by the hand, with sticks, or with hammers, or that are shaken or rubbed. Some percussion instruments (such as the vibraphone) play definite pitches, but many play indefinite pitches. The standard drum set used in many jazz and rock ensembles, for example, consists of mostly indefinite-pitch instruments. Percussion examples: drum set, agogo bells (double bells), glockenspiel, xylophone, vibraphone, bass drum, snare or side drum, maracas, claves, cymbals, gong, triangle, tambourine. For more information and listening examples of the different orchestral percussion instruments, go to <http://www.philharmonia.co.uk/explore/instruments>. Click on the individual instruments for an introduction and demonstration of the instrument.
5. **Keyboards:** instruments that produce sound by pressing, or striking keys on a keyboard. The keys set air moving by the hammering of a

string (in the case of the piano) or by the opening and closing of a pipe through which air is pushed (as in the case of the vibraphone, organ, and accordion). All of these instruments have the capacity of playing more than one musical line at the same time. Keyboard examples: piano, organ, vibraphone, and accordion. For more information and listening examples of the different orchestral keyboard instruments, go to <http://www.philharmonia.co.uk/explore/instruments>. The keyboard link is found within the percussion instruments.

1.5.3 Non-acoustic instruments

Electric sounds and instruments: instruments can be electric in several ways. In some cases, an acoustic instrument, such as the guitar, violin, or piano may be played near a microphone that feeds into an amplifier. In this case, the instrument is not electric. In other cases, amplifiers are embedded in or placed onto the body of an acoustic instrument. In still other cases, acoustic instruments are altered to facilitate the amplification of their music. Thus, solid body violins, guitars, and basses may stand in for their hollow-bodied cousins.

Another category of electronic instruments are those that produce sound through purely electronic or digital means. Synthesizers and the modern electric keyboard, as well as beat boxes, are examples of electronic instruments that use wave generators or digital signals to produce tones.

Synthesizers are electronic instruments (often in keyboard form) that create sounds using basic wave forms in different combinations. The first commercially available compact synthesizers marketed for musical performance were designed and built by Dr. Robert Moog in the mid-1960s.

A staple of twenty-first century music, synthesizers are widely used in popular music and movie music. Their sounds are everywhere in our society. Synthesizers are computers that combine tones of different frequencies. These combinations of frequencies result in complex sounds that do not exist in nature. Listen to the recording below of Björk, which incorporates a live band with a variety of strange and interesting synthesized sounds.

SIDEBAR: Moog - Inventor of the Synthesizer

<https://www.youtube.com/watch?v=y5HRa9nEVVU>



Figure 1.10 | Early Minimoog by R. A. Moog Inc. (ca. 1970)

Author | User "glacial23"

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Ex. 1.6: Björk – Voltaic Paris HD

<https://www.youtube.com/watch?v=HeKAVX2s6hM>

Solid-state electronics have enabled the synthesizer to shrink in size from its early days in the 1970s. Compare the number of electronic components in the photo of Keith Emerson's "rig" with the much smaller keyboard synthesizers used by Chick Corea linked below.

Ex. 1.7: Emerson, Lake, and Palmer – "Tarkus" 1971

<https://www.youtube.com/watch?v=TpvOVNfu4VQ>

Ex. 1.8: Chick Corea, Live at North Sea Jazz 2003

<https://www.youtube.com/watch?v=SL34LYIWQ6M>

Synthesizers can also be used to imitate the complex sounds of real instruments, making it possible for a composer to create music and have it played without having to hire a real orchestra. The video below features music created using sample-based synthesis, a method that incorporates recorded audio "samples" to approximate the sound of an orchestra through a computer.

Ex. 1.9: Vienna Symphonic Library

<https://www.youtube.com/watch?v=Cwbgp26g-QQ>

Many photographs of all different types of instruments may be found using Google images.

1.6 NEW RECORDING TECHNOLOGIES

Today, the ability to make high quality recordings is within the reach of anyone with a laptop and a microphone. But only a few years ago, recordings were an expensive endeavor available only to those with the financial backing of a record label. Musicians of the twenty-first century have access not only to recording technologies, but also to new and cutting-edge tools that are fundamentally changing how music is created, enjoyed, and disseminated. The synthesizer discussed above can be a recording technology, but there are others such as Auto-Tune.

1.6.1 Auto-Tune and Looping

Auto-Tune is a technique originally invented to correct for intonation mistakes in vocal performances. However, the technique quickly evolved into a new form of expression, allowing singers to add expressive flourishes to their singing. Even-



Figure 1.11 | Boss RC-50 Loop Station

Author | User "Massygo"

Source | Wikimedia Commons

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tually, the technique was used to turn regular speech into music, making it possible to create music out of everyday sounds. Listen to the clip below of the musical group, the Gregory Brothers, who regularly use Auto-Tune to create songs from viral Internet videos and news clips.

Ex. 1.10: Obama Mixtape: 1999 - Songify the News Special Edition

<https://www.youtube.com/watch?v=eq1FIvUHtto>

Looping is another technique that musicians now use to create music on the spot. The technique involves recording audio samples which are then repeated or “looped” over and over again to a single beat. The performer then adds new loops over the old ones to create complex musical backdrops. The clip below features a street musician named Dub FX, who uses only his voice, a loop pedal, and some audio effects to replicate the effect of a full band.

Ex. 1.11: Dub FX

<https://www.youtube.com/watch?v=lvYDy15vW6U>

1.7 MELODY

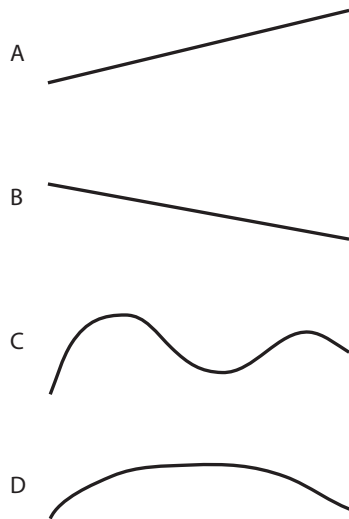
The melody of a song is often its most distinctive characteristic. The ancient Greeks believed that melody spoke directly to the emotions. **Melody** is the part of the song that we hum or whistle, the tune that might get stuck in our heads. A more scientific definition of melody might go as follows: melody is the coherent succession of definite pitches in time. Any given melody has range, register, motion, shape, and phrases. Often, the melody also has rhythmic organization.

The first of these characteristics, range, is one that we’ve already encountered as we talked about pitch. The range of a melody is the distance between its lowest and highest notes. We talk about melodies having narrow or wide ranges. Register is also a concept we discussed in relation to pitch. Melodies can be played at a variety of registers: low, medium, high.

As melodies progress, they move through their given succession of pitches. Each pitch is a certain distance from the previous one and the next. Melodies that are meant to be sung tend to move by small intervals, especially by intervals of seconds or steps. A tune that moves predominantly by step is a stepwise melody. Other melodies have many larger intervals that we might describe as “skips” or “leaps.” When these leaps are particularly wide and with rapid changes in direction (that is, the melody ascends and then descends and then ascends and so forth), we say that the melody is **disjunct**. Conversely, a melody that moves mostly by step, in a smoother manner—perhaps gradually ascending and then gradually descending—might be called **conjunct**.

Shape is a visual metaphor that we apply to melodies. Think of a tune that you know and like: it might be a pop tune, it might be from a musical, or it might be a song you recall from childhood. Does it correspond with any of the shapes in Figure 1.12?

In other words, do the pitches of the melody primarily ascend; shape A? Descend; shape B? Oscillate, much like a wave; shape C? Ascend, arch up, and then descend; shape D? These are shapes that we might hear unfolding over time. As we think back to a melody that we know, we can replay it in our mind and visualize the path that it traces.



Sing the childhood tune “Row, Row, Row Your Boat” to yourself. Which shape from Figure 1.12 do you think it is most like? “D” is the best answer. Now look at the musical notation for “Row, Row, Row Your Boat.”

Figure 1.12 | Melodic Shapes

Author | Corey Parson

Source | Original Work

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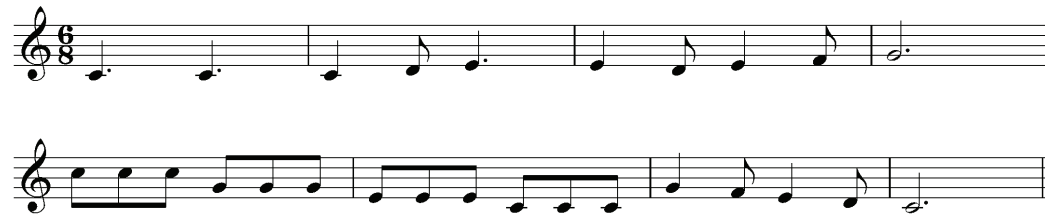


Figure 1.13 | “Row, Row, Row Your Boat”

Author | Arranged by N. Alan Clark

Source | Traditional Melody

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Even if you can’t read music, hopefully you can see how the note heads trace an arch-like shape, similar to the shape labeled “D” in Figure 1.12. Most melodies have smaller sub-sections called **phrases**. These phrases function somewhat like phrases in a sentence. They are complete thoughts, although generally lacking a sense of conclusion. In the song “Row, Row, Row Your Boat,” the music corresponding with the words “Row, row, row your boat,” might be heard as the first phrase and “gently down the stream,” as the second phrase. “Merrily, merrily, merrily, merrily,” comprises a third phrase, and “life is but a dream,” a fourth, and final, phrase.

Melodies are also composed of **motives**. A motive is the smallest musical unit, generally a single rhythm of two or three pitches. In “Row, Row, Row Your Boat,” the music set to “merrily” might be heard as a motive. Motives repeat, often in se-

quence. A **sequence** is a repetition of a motive or phrase at a different pitch level. Thus, in “Row, Row, Row Your Boat,” the first time you hear “merrily” is when it is at the top of the melody’s range. The next time, it is a bit lower in pitch, the next time a bit lower still, and the final time you hear the word, it is sung to the lowest pitch of the melody. Another song that you might know that has sequences is “My Country, ‘Tis of Thee.”

Ex. 1.12: Mormon Tabernacle Choir “My Country, ‘Tis of Thee” (2014)

<https://www.youtube.com/watch?v=eWJIooA7fLM>

1.8 HARMONY

Most simply put, **harmony** is the way a melody is accompanied. It refers to the vertical aspect of music and is concerned with the different music sounds that occur in the same moment. Western music culture has developed a complex system to govern the simultaneous sounding of pitches. Some of its most complex harmonies appear in jazz, while other forms of popular music tend to have fewer and simpler harmonies.

We call the simultaneous sounding of three or more pitches a **chord**. Like intervals, chords can be consonant or dissonant. **Consonant** intervals and chords tend to sound sweet and pleasing to our ears. They also convey a sense of stability in the music. **Dissonant** intervals and chords tend to sound harsher to our ears, and often convey a sense of tension or instability. In general, dissonant intervals and chords tend to resolve to consonant intervals and chords. Seconds, sevenths, and tri-tones sound dissonant and resolve to consonance. While some of the most consonant intervals are unisons, octaves, thirds, sixths, fourths, and fifths. From the perspective of physics, consonant intervals and chords are simpler than dissonant intervals and chords. However, the fact that most individuals in the Western world hear consonance as sweet and dissonance as harsh probably has as much to do with our musical socialization as with the physical properties of sound.

A listening example of consonance may be found at the following links:

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 11.mp3>

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 23.mp3>

An example of dissonance may be found at the following links:

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 9.mp3>

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 10.mp3>

The **triad** is a chord that has three pitches. On top of its root pitch is stacked another pitch at the interval of a third higher than the root. On top of that second pitch, another pitch is added, another third above. If you add a fourth pitch that is a third above the previous pitch, you arrive at a **seventh chord**. (You may be

wondering why we call chords with three notes “triads” and notes with four chords “seventh chords.” Why not “fourth chords?” The reason has to do with the fact that the extra note is the “seventh” note in the scale from which the chord is derived. (We will get to scales shortly.) Seventh chords are dissonant chords. They are so common in jazz, however, that they do not always sound like they need to resolve to consonant chords, as one might expect. One also finds chords with other additional tones in jazz: for example, ninth chords, eleventh chords, and thirteenth chords. These chords are related by stacking additional thirds on top of the chord.

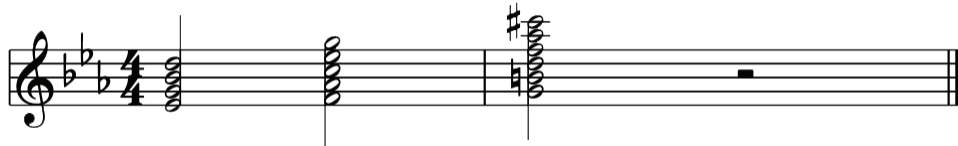


Figure 1.14 | Seventh, ninth, and eleventh chords in musical notation

Author | Corey Parson

Source | Original Work

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Key (sometimes called “tonality”) is closely related to both melody and harmony. The key of a song or composition refers to the pitches that it uses. A key is a collection of pitches, much like you might have with a collection of stamps, bottles, etc. The most important pitch of a key is its **tonic**, that is, the note from which the other pitches are derived. For example, a composition in C major has C as its tonic; a composition in A minor has A as its tonic; a blues in the key of G has G as its tonic. A key is governed by its **scale**. A scale is a series of pitches, ordered by the interval between its notes. There are a variety of types of scales. Every major scale, whether it is D major or C major or G-sharp major, has pitches related by the same intervals in the same order. Likewise, the pitches of every minor scale comprise the same intervals in the same order. The same could be said for a variety of other scales that are found in jazz, rock, and popular music, including the blues scale and the pentatonic scale.

C-major scale			C	D	E	F	G	A	B	C
A-minor scale	A	B	C	D	E	F	G	A		
Blues scale on A	A		C	D	E		G	A		
					(E-flat)					

Table 1.1: C major scale, A minor scale, Blues scale on A

Major and minor scales are most often found in Western music today. The difference of sound in the major scale as opposed to the minor scale is in the perception of the sound. Major sounds relatively bright and happy. “Happy birthday” and “Joy to the World” (the Christmas Carol) are based on the major mode.

Examples of Major scales excerpts may be heard at the following links:

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 14.mp3>

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 3.mp3>

Minor sounds relatively more subdued, sad, or melancholy. The Christmas Carol “We Three Kings” is in the minor mode.

Examples of Minor mode excerpts may be heard at the following links:

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 24.mp3>

<http://real.darton.edu/faculty/kluball/MUSC1100/Question 16.mp3>

You might note that the simplest form of the blues scale (Table 1.1) is a type of pentatonic or five-note scale. This reflects the origins of the blues in folk music; much of the folk music around the world uses pentatonic scales. You might also note that the blues scale on A, has a note suspended below it, an E-flat (a pitch that is a half-step higher than D and a half-step lower than E). Otherwise, it is devoid of its blue notes. Blue notes are pitches that are sometimes added to blues scales and blues pieces. The most important blues note in the key of A is E-flat. In a sense, blues notes are examples of accidentals. **Accidentals** are notes that are not normally found in a given key. For example, F-sharp and B-flat are accidentals in the key of C. Accidentals are sometimes called **chromatic** pitches: the word chromatic comes from the ancient Greek word meaning color, and accidentals and chromatic pitches add color and excitement to a composition.

Chords can be built on every pitch of a scale. See Table 1.2 for the triads of C major.

C	D	E	F	G	A	B
E	F	g	A	B	c	D
G	A	b	C	D	e	F
I	ii	iii	IV	V	vi	vii°

Table 1.2: Chords of C Major

One can build seventh chords on these same pitches, by simply adding pitches. In the key of C major, the C major triad is considered the tonic triad (I), because it is built on the tonic of the key. Every other chord in C major tends to resolve to the tonic chord. The two next important chords are the F chord, which we call the IV chord or subdominant, and the G chord, which we call the V chord or dominant. Popular music also uses the VI chord a lot. The chords of a key tend to progress in an orderly fashion. Certain chords tend to resolve to other chords. The dominant or V chord, normally resolves directly to the tonic or I chord. We call a series of chords a **chord progression**.

One of the most important chord progressions for jazz and rock is the blues progression.

In the blues, the tonic chord (I) moves to the subdominant chord (IV) and then back to the tonic chord (I) before moving to the dominant chord (V) and finally back to the tonic (I). This often happens in the space of twelve bars or measures and thus this progression is sometimes called the **twelve-bar blues**. In the key of D, it would look like the following:

Root of the chord	D	G	D	A	G
Chord Symbol	I	(IV)	I	V	(IV)
Number of bars	4	2	2	2	2

Table 1.3: Twelve-bar blues in the key of D

As you can see, sometimes the dominant chord (V) briefly shifts back to the subdominant chord (IV) before finally resolving to the tonic chord.

Chord progressions play a major role in structuring jazz, rock, and popular music, cueing the listener to beginnings, middles, and ends of phrases and the song as a whole. Chord progressions in particular, and harmony in general, may be the most challenging aspects of music for the beginner. Hearing chords and chord progressions requires that one recognize several music phenomena at the same time. Chords may change rapidly, and a listener has to be ready to move on to the next chord as the music progresses.

The best way to learn to hear harmonies is to start with simple examples and ask general questions. Listen to “Light My Fire” (1967) by the Doors, using the link below. See if you can hear the general difference between the verses, which use mostly minor chords, and the chorus, which uses mostly major chords. If you continue to listen, you will eventually be able to hear both.

Ex. 1.13: The Doors, “Light my Fire” (1967)

https://www.youtube.com/watch?v=deB_u-to-IE

1.9 RHYTHM

When you think of the word rhythm, the first thing that might pop into your head is a drum beat. But rhythm goes much deeper than that. Earlier, we defined music as intentional organization of sounds. **Rhythm** is the way the music is organized in respect to time. It works in tandem with melody and harmony to create a feeling of order. The most fundamental aspect of rhythm is the **beat**, which is the basic unit of time in music. It is the *consistent* pulse of the music, just like your heartbeat creates a steady, underlying pulse within your body. The beat is what you tap your feet to when you listen to music. Imagine the beat as a series of equidistant dots passing through time as in the Figure 1.15.

**Figure 1.15 | The Beat****Author |** Thomas Heflin**Source |** Original Work**License |** CC BY-SA 4.0

It should be noted that the beat does not measure exact time like the second hand on a clock. It is instead a fluid unit that changes depending on the music being played. The speed at which the beat is played is called the **tempo**. At quick tempos, the beats pass by quickly, as represented by Figure 1.16 below showing our beats pressed against each other in time.

**Figure 1.16 | Fast Tempos****Author |** Thomas Heflin**Source |** Original Work**License |** CC BY-SA 4.0**Figure 1.17 | Slow Tempos****Author |** Thomas Heflin**Source |** Original Work**License |** CC BY-SA 4.0

At slow tempos, the beats pass by slowly, as seen in Figure 1.17 showing our beats with plenty of space between them.

Composers often indicate tempo markings by writing musical terms such as “allegro” which indicates that the piece should be played at a quick, or brisk, tempo. In other cases, composers will write the tempo markings in beats per minute (BPM), when they want more precise tempos. Either way, the tempo is one of the major factors in establishing the character of a piece. Slow tempos are used in everything from sweeping love songs to the dirges associated with sadness or death. Take for example, Chopin’s famous funeral march:

Ex. 1.14: Chopin “Piano Sonata Op.35 No.2”



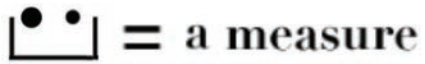
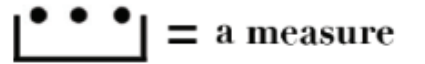


https://www.youtube.com/watch?v=Hgw_RD_1_5I

Fast tempos can help to evoke anything from bouncy happiness to frenzied madness. One memorable example of a fast tempo occurs in “Flight of the Bumblebee,” an orchestral interlude written by Nikolai Rimsky-Korsakov for his opera *The Tale of Tsar Saltan*, which evokes the busy buzzing of a bee.


Ex. 1.15: Nikolai Rimsky-Korsakov “Flight of the Bumblebee”

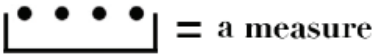
<https://www.youtube.com/watch?v=aYAJopwEYv8>

Beats are the underlying pulse behind music, while **meter** refers to the way in which those beats are grouped together in a piece. Each individual grouping is called a **measure** or a **bar** (referring to the bar lines that divide measures in written music notation). Most music is written in either duple meter (groupings of two), triple meter (groupings of three), or quadruple meter (groupings of four). These meters are conveyed by stressing or “accenting” the first beat of each grouping. In the figure below, you can see examples of triple and quadruple meter. The first beat of each bar is larger than the rest to indicate this accent. These larger beats are often referred to as strong beats, while the smaller beats between them are referred to as weak beats.

Duple Meter	Triple Meter
	
	
In modern musical notation:	In modern musical notation:
	

Quadruple Meter





In modern musical notation:




Figure 1.18 | Meter
Author | Thomas Heflin
Source | Original Work
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To illustrate how vital rhythm is to a piece of music, let’s investigate the simple melody “Mary Had a Little Lamb.” Below, the melody and chords are conveyed through standard musical notation. The meter is indicated by the two numbers four over four. (This is known to music readers as the **time signature**.) This particular time signature is also known as “common time” due to the fact that it is so widely used. The top number indicates the meter, or how many beats there are per

measure. The bottom number indicates which type of note in modern musical notation will represent that beat (in this case, it is the quarter note). The vertical lines are there to indicate each individual measure. As you can see, the melody on the top staff and the chords on the bottom staff line up correctly in time due to the fact that they are grouped into measures together. In this way, rhythm is the element that binds music together in time.

Mary Had a Little Lamb

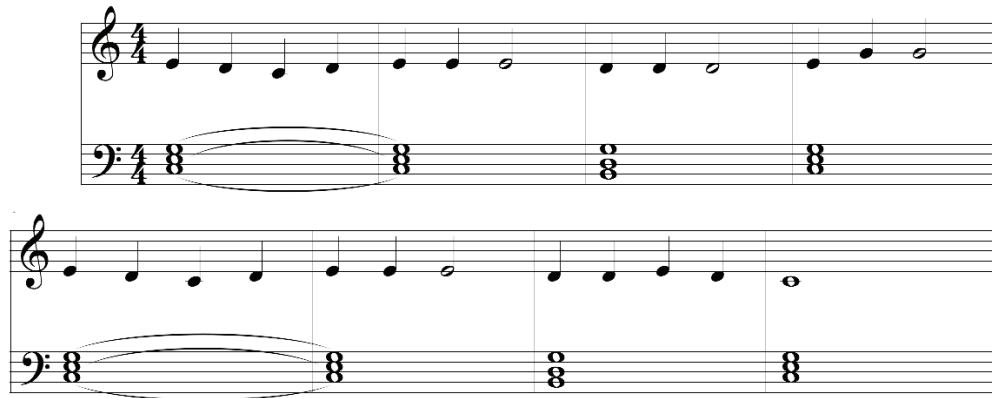


Figure 1.19 | “Mary Had a Little Lamb”

Author | Arranged by Thomas Heflin

Source | Traditional Melody

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One way to add a sense of rhythmic variation to music is through the use of syncopation. **Syncopation** refers to the act of shifting of the normal accent, usually by stressing the normally unaccented weak beats or placing the accent between the beats themselves as illustrated in Figure 1.20.



Figure 1.20 | Syncopation

Author | Thomas Heflin

Source | Original Work

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Syncopation is one of the defining features of ragtime and jazz, and is one aspect of rhythmic bounce associated with those genres of music. In Figure 1.21 below, it is the circled notes on the weak beats which are accented or emphasized.



Figure 1.21 | “The Entertainer” by Scott Joplin

Author | Corey Parson

Source | Original Work

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In some cases, certain types of music may feature the use of a **polyrhythm**, which simply refers to two or more different rhythms being played at the same time. A common polyrhythm might pit a feeling of four against a feeling of three. Polyrhythms are often associated with the music of Africa. However, they can be found in American and European music of the twentieth century, such as jazz.

Listen to the example below of Duke Ellington playing his signature song, the Billy Strayhorn composition “Take the A Train.” You will notice that the beats in the piece are grouped as four beats per measure. Pay special attention to what happens at 1:32 in the video. The horns begin to imply groupings of three beats (or triple meter) on top of the existing four beat groupings (or quadruple meter). These concurrent groupings create a sense of rhythmic tension that leads the band into the next section of the piece at 1:38 in the video.

Ex. 1.16: Duke Ellington “Take the A Train”

<https://www.youtube.com/watch?v=hRGFqSkNjHk>

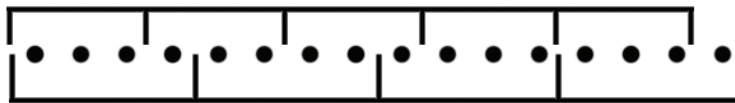


Figure 1.22 | Polyrhythm

Author | Thomas Heflin

Source | Original Work

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1.10 TEXTURE

Texture refers to the ways in which musical lines of a musical piece interact. We use a variety of general adjectives to describe musical texture, words such as transparent, dense, thin, thick, heavy, and light. We also use three specific musical terms to describe texture: monophony, homophony, and polyphony. Of these three terms, homophony and polyphony are most important for jazz, rock, and popular music.

Monophonic music is music that has one melodic line. This one melodic line may be sung by one person or 100 people. The important thing is that they are all singing the same melody, either in unison or in octaves. Monophony is rare in jazz, rock, and popular music. An example would be a folk melody that is sung by one person or a group of people without any accompaniment from instruments. Gregorian chant is another excellent example of monophonic music.

Ex. 1.17: Gregorian Chant

https://www.youtube.com/watch?v=3EL8hdQD_4

Homophonic music is music that has one melodic line that is accompanied by chords. A lot of rock and popular music has a homophonic texture. Anytime the tune is the most important aspect of a song, it is likely to be in homophonic texture. Elvis Presley’s “Hound Dog” (1956), The Carter Family’s version of “Can the Circle

be Unbroken” (1935), and Billy Joel’s “Piano Man” (1973), are relatively good examples of homophony.

Polyphony simultaneously features two or more relatively independent and important melodic lines. Dixieland jazz and bebop are often polyphonic, as is the music of jam bands such as the Allman Bros. “Anthropology” (ca. 1946) for example, a jazz tune recorded by Dizzy Gillespie, Charlie Parker, and others reflects the busy polyphony typical in bebop. Some jazz played by larger ensembles, such as big bands, is also polyphonic at points, although in this case, there is generally a strong sense of a main melody. Much of the music that we will study in this text exists somewhere between homophony and polyphony. Some music will have a strong main melody, suggesting homophony, and yet have interesting countermelodies that one would expect in polyphony. Much rap is composed of many layers of sounds, but at times those layers are not very transparent, as one would expect in polyphony.

1.11 PUTTING IT ALL TOGETHER

1.11.1 Form in Music

When we talk about musical **form**, we are talking about the organization of musical elements—melody, harmony, rhythm, texture, timbre—in time. Because music is a temporal art, memory plays an important role in how we experience musical form. Memory allows us to hear repetition, contrast, and variation in music. And it is these elements that provide structure, coherence, and shape to musical compositions.

A composer or songwriter brings myriad experiences of music, accumulated over a lifetime, to the act of writing music. He or she has learned how to write music by listening to, playing, and studying music. He or she has picked up, consciously and/or unconsciously, a number of ways of structuring music. The composer may intentionally write music modeled after another group’s music: this happens all of the time in the world of popular music where the aim is to produce music that will be disseminated to as many people as possible. In other situations, a composer might use musical forms of an admired predecessor as an act of homage or simply because that is “how it’s always been done.” We find this happening a great deal in the world of folk music, where a living tradition is of great importance. The music of the “classical” period (1775-1825) is rich with musical forms as heard in the works of masters such as Joseph Haydn and Wolfgang Amadeus Mozart. In fact, form plays a vital role in most Western art music (discussed later in the chapter) all the way into the twenty-first century. We will discuss these forms, such as the rondo and sonata-allegro, in later chapters, but for the purpose of this introduction, we will focus on those that might be more familiar to the modern listener.

1.11.2 The Twelve-Bar Blues

Many compositions that on the surface sound very different use similar musical forms. A large number of jazz compositions, for example, follow either the

twelve-bar blues or an AABA form. The twelve-bar blues features a chord progression of I-IV-I-V-IV-I. Generally the lyrics follow an AAB pattern, that is, a line of text (A) is stated once, repeated (A), and then followed by a response statement (B). The melodic idea used for the statement (B) is generally slightly different from that used for the opening phrases (A). This entire verse is sung over the I-IV-I-V-IV-I progression. The next verse is sung over the same pattern, generally to the same melodic lines, although the singer may vary the notes in various places occasionally.

Listen to Elvis Presley's version of "Hound Dog" (1956) using the link below, and follow the chart below to hear the blues progression.

Ex. 1.18: Elvis Presley "Hound Dog" (1956)

<https://www.youtube.com/watch?v=5ZdC6oQKU-w>

Chords:	1	2	3	4	5	6	7	8	9	10	11	12
	I				IV		I		V	IV	I	
Lyrics:	You ain't nothin but a hound dog, cryin' all the time				You ain't nothin but a hound dog, cryin' all the time				Well, you ain't never caught a rabbit, and you ain't no friend of mine.			
	When they said you was high classed, well that was just a lie.				When they said you was high classed, well that was just a lie.				You ain't never caught a rabbit and you ain't no friend of mine.			

Figure 1.23 | Format Breakdown of Elvis's "Hound Dog"

Author | Thomas Heflin

Source | Original Work

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This blues format is one example of what we might call musical form. It should be mentioned that the term "blues" is used somewhat loosely and is sometimes used to describe a tune with a "bluesy" sound, even though it may not follow the twelve-bar blues form. The blues is vitally important to American music because it influenced not only later jazz but also rhythm and blues and rock and roll.

1.11.3 AABA Form

Another important form to jazz and popular music is AABA form. Sometimes this is also called thirty-two-bar form; in this case, the form has thirty-two measures or bars, much like a twelve-bar blues has twelve measures or bars. This form was used widely in songs written for Tin Pan Alley, Vaudeville, and musicals from the 1910s through the 1950s. Many so-called jazz standards spring from that repertoire. Interestingly, these popular songs generally had an opening verse and then a chorus. The chorus was a section of thirty-two-bar form, and often the part that audiences remembered. Thus, the chorus was what jazz artists took as the basis of their improvisations.

"(Somewhere) Over the Rainbow," as sung by Judy Garland in 1939 (accompanied by Victor Young and his Orchestra), is a well-known tune that is in thirty-two-bar form.

Ex. 1.19: Judy Garland “(Somewhere) Over the Rainbow” (1939)

<https://www.youtube.com/watch?v=PSZxmZmBfnU>

After an introduction of four bars, Garland enters with the opening line of the text, sung to melody A. “Somewhere over the rainbow way up high, there’s a land that I heard of once in a lullaby.” This opening line and melody lasts for eight bars. The next line of the text is sung to the same melody (still eight bars long) as the first line of text. “Somewhere over the rainbow skies are blue, and the dreams that you dare to dream really do come true.” The third part of the text is contrasting in character. Where the first two lines began with the word “somewhere,” the third line begins with “someday.” Where the first two lines spoke of a faraway place, the third line focuses on what will happen to the singer. “Someday I’ll wish upon a star, and wake up where the clouds are far, behind me. Where troubles melt like lemon drops, away above the chimney tops, that’s where you’ll find me.” It is sung to a contrasting melody B and is eight bars long. This B section is also sometimes called the “bridge” of a song. The opening a melody returns for a final time, with words that begin by addressing that faraway place dreamed about in the first two A sections and that end in a more personal way, similar to the sentiments in the B section. “Somewhere over the rainbow, bluebirds fly. Birds fly over the rainbow. Why then, oh why can’t I?” This section is also eight bars long, adding up to a total of thirty-two bars for the AABA form.

Although we’ve heard the entire thirty-two-bar form, the song is not over. The arranger added a conclusion to the form that consists of one statement of the A section, played by the orchestra (note the prominent clarinet solo); another re-statement of the A section, this time with the words from the final statement of the A section the first time; and four bars from the B section or bridge: “If happy little bluebirds...Oh why can’t I.” This is a good example of one way in which musicians have taken a standard form and varied it slightly to provide interest. Now listen to the entire recording one more time, seeing if you can keep up with the form.

1.11.4 Verse and Chorus Forms

Most popular music features a mix of verses and choruses. A chorus is normally a set of lyrics that recur to the same music within a given song. A chorus is sometimes called a refrain. A verse is a set of lyrics that are generally, although not always, just heard once over the course of a song.

In a simple verse-chorus form, the same music is used for the chorus and for each verse. “Can the Circle Be Unbroken” (1935) by The Carter Family is a good example of a simple verse-chorus form. Many childhood songs and holiday songs also use a simple verse-chorus song.

Ex. 1.20: The Carter Family “Can the Circle Be Unbroken” (1935)

<https://www.youtube.com/watch?v=qjHjm5sRqSA>

In a simple verse form, there are no choruses. Instead, there is a series of verses, each sung to the same music. Hank Williams's "I'm So Lonesome I Could Cry" (1949) is one example of a simple verse form. After Williams sings two verses, each sixteen bars long, there is an instrumental verse, played by guitar. Williams sings a third verse followed by another instrumental verse, this time also played by guitar. Williams then ends the song with a final verse.

Ex. 1.21: Hank Williams: I'm So Lonesome I Could Cry (1949)

<https://www.youtube.com/watch?v=oyTOZCfp8OY>

A contrasting verse-chorus form features different music for its chorus than for the statement of its verse(s). "Light my Fire" by the Doors is a good example of a contrasting verse-chorus form. In this case, each of the two verses are repeated one time, meaning that the overall form looks something like: intro, verse 1, chorus, verse 2, chorus, verse 2, chorus, verse 1, chorus. You can listen to "Light my Fire" by clicking on the link below.

Ex. 1.22: The Doors, "Light my Fire" (1967)

https://www.youtube.com/watch?v=deB_u-to-IE

Naturally, there are many other forms that music might take. As you listen to the music you like, pay attention to its form. You might be surprised by what you hear!

1.11.5 Composition and Improvisation

Music from every culture is made up of some combination of the musical elements. Those elements may be combined using one of two major processes; composition and improvisation.

Composition

Composition is the process whereby a musician notates musical ideas using a system of symbols or using some other form of recording. We call musicians who use this process "composers." When composers preserve their musical ideas using notation or some form of recording, they intend for their music to be reproduced the same way every time.

Listen to the recording of Mozart's music linked below. Every element of the music was carefully notated by Mozart so that each time the piece is performed, it can be performed exactly the same way.

Ex. 1.23: Mozart "Piano Sonata K.457 in C minor" (1989)

<https://www.youtube.com/watch?v=JrUH5VAetEg>

Improvisation

Improvisation is a different process. It is the process whereby musicians create music spontaneously using the elements of music. Improvisation still requires the musician to follow a set of rules. Often the set of rules has to do with the scale to be used, the rhythm to be used, or other musical requirements using the musical elements.

Listen to the example of Louis Armstrong below. Armstrong is performing a style of early New Orleans jazz in which the entire group improvises to varying degrees over a set musical form and melody. The piece starts out with a statement of the original melody by the trumpet, with Armstrong varying the rhythm of the original written melody as well as adding melodic embellishments. At the same time, the trombone improvises supporting notes that outline the harmony of the song and the clarinet improvises a completely new melody designed to complement the main melody of the trumpet. The rhythm section of piano, bass, and drums are improvising their accompaniment underneath the horn players, but are doing so within the strict chord progression of the song. The overall effect is one in which you hear the individual expressions of each player, but can still clearly recognize the song over which they are improvising. This is followed by Armstrong interpreting the melody. Next we hear individual solos improvised on the clarinet, the trombone, and the trumpet. The piece ends when Armstrong sings the melody one last time.

Ex. 1.24: Louis Armstrong, “When the Saints Go Marching In” (1961)

https://www.youtube.com/watch?v=5WADCJ4_KmU

Composition and Improvisation Combined

In much of the popular music we hear today, like jazz and rock, both improvisation and composition are combined. Listen to the example linked below of Miles Davis playing “All Blues.” The trumpet and two saxophones play an arrangement of a composed melody, then each player improvises using the scale from which the melody is derived. This combined structure is one of the central features of the jazz style and is also often used in many popular music compositions.

Ex. 1.25: Miles Davis “All Blues” (1949)

<https://www.youtube.com/watch?v=uRBgy43gCoQ>

1.11.6 Music and Categories

Categorizing anything can be difficult, as items often do not completely fit in the boxes we might design for them. Still, categorizing is a human exercise by which we attempt to see the big picture and compare and contrast the phenomenon we encounter, so that we can make larger generalizations. By categorizing music we can attempt to better understand ways in which music has functioned in the past and continues to function today. Three categories which are often used in

talking about music are (1) art music, (2) folk music, and (3) popular music. These categories can be seen in the Venn diagram below:

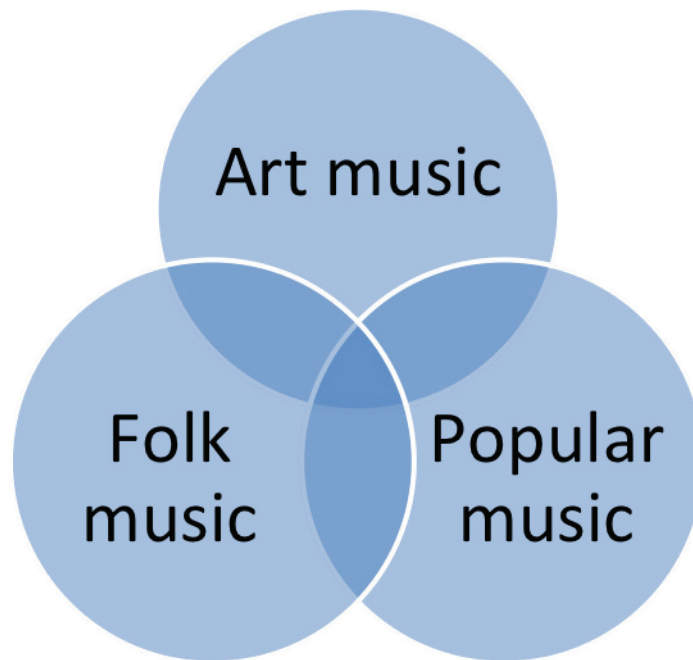


Image 1.24 | Venn Diagram of the Three Categories of Music

Author | Elizabeth Kramer

Source | Original Work

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Much of the music that we consider in this book falls into the sphere of art music in some way or form. It is also sometimes referred to as classical music and has a written musical tradition. Composers of art music typically hope that their creative products will be played for many years. Art music is music that is normally learned through specialized training over a period of many years. It is often described as music that stands the test of time. For example, today, if you go to a symphony orchestra concert you will likely hear music composed over a hundred years ago.

Folk music is another form of music that has withstood the test of time, but in a different way. Folk music derives from a particular culture and is music that one might be expected to learn from a family at a young age. Although one can study folk music, the idea is that it is accessible to all; it generally is not written down in musical notation until it becomes an object of scholarship. Lullabies, dance music, work songs, and some worship music are often considered folk music as they are integrated with daily life.

Popular music is marked by its dissemination to large groups of people. As such, it is like folk music. But popular music is generally not expected to be passed down from one generation to the next as happens with folk music. Instead, as its name implies, it tends to appeal to the masses at one moment in time. To use twen-

tieth-century terminology, it often hits the charts in one month and then is supplanted by something new in the next month. Although one might find examples of popular music across history, popular music has been especially significant since the rise of mass media and recording technologies in the twentieth century. Today, music can be put online and instantly go viral around the world. Some significant twentieth-century popular music is discussed in chapter eight.

1.12 CHAPTER SUMMARY

In this chapter, we learned a basic definition of music as well as definitions of the basic elements of music. We also explored some basic facts about acoustics, including the nature of sound. We learned how tones comprised of organized sound waves sound to us like definite pitches, while disorganized sound waves are perceived as noise. We briefly touched on the harmonic series and how it influenced the nature of music, including properties of sound such as timbre.

Next, we explored how the development of musical notation made it possible to organize sounds into a wide variety of configurations. There are an infinite number of possible **performing forces**, but the most common would have to be the human voice followed by a wide variety of instruments including strings, woodwinds, brass, percussion, keyboards, and electric instruments.

Next we discussed the four main components of music: melody, harmony, rhythm and texture. Melody is defined primarily by its shape, and can be broken up into smaller components called motives. Harmony, which is the vertical aspect of music, can be described in its most basic terms as dissonant or consonant. Harmony is often built in thirds through the use of three-note chords called triads or four-note chords called seventh chords. Whole sequences of chords are known as chord progressions. Compositions are harmonically grounded through the use of key centers, tonic notes, and scales.

Rhythm is the way the music is organized in respect to time. The fundamental unit of time is the beat, which is further broken into groupings called measures. These groupings are determined by the meter of the piece, which is often either duple, triple, or quadruple. The speed at which these beats go by is known as the tempo. Other rhythmic devices such as syncopation and polyrhythm can add further variety to the music. On a larger scale, music is put together in terms of its form. We discussed three common song forms, the blues, AABA and the Verse and Chorus.

Texture refers to the ways in which musical lines of a musical piece interact. Common textures include monophonic texture (one melodic line), homophonic texture (accompanied by chords), and polyphonic texture (simultaneous melodies). We also saw that composition and improvisation are the two major processes used to combine the musical elements we discussed. They may be used independently or they may be combined within a composition. These topics are key concepts to remember while reading the upcoming chapters where they are further expanded upon.

1.13 GLOSSARY

Accidentals – notes that are not normally found in a given key

Acoustics – the study of how sound behaves in physical spaces

Acoustical Engineer – a person who works in the area of acoustic technology

Acoustician – a person who studies the theory and science of acoustics

Amplitude – refers to how high the wave form appears to vibrate above zero when seen on an oscilloscope; louder sounds create higher oscilloscope amplitude readings

Bar – see *measure*

Beat – the basic unit of time in music

Brass – instruments traditionally made of brass or another metal (and thus often producing a “bright” or “brassy” tone) whose sound is generated by blowing into a mouthpiece that is attached to a coiled tube

Chord – the simultaneous sounding of three or more pitches; like intervals, chords can be consonant or dissonant

Chord Progression – a series of chords

Chromatic – musical pitches which move up or down by successive half-steps

Composition – the process whereby a musician notates musical ideas using a system of symbols or using some other form of recording

Conjunct – a melody that moves mostly by step, in a smooth manner

Consonant – (adjective) term used to describe intervals and chords that tend to sound sweet and pleasing to our ears; consonance (noun), as opposed to dissonance, is stable and needs no resolution.

Cycles per Second (cps) – a definition of frequency of vibration; replaced by Hertz in 1960

Disjunct – a melody with wide leaps and rapid changes in direction

Dissonant – (adjective) intervals and chords that tend to sound harsh to our ears; dissonance (noun) is often used to create tension and instability, and the interplay between dissonance and consonance provides a sense of harmonic and melodic motion in music

Dynamic – the variation in the volume of musical sound (the amplitude of the sound waves)

Equalization (EQ) – the process of raising or lowering different frequencies of sound, either in a recording, or within a tone (overtones)

Form – the structure of the phrases and sections within a musical composition (Does it repeat?)

Frequency – how quickly or slowly a medium (solid, liquid, gas) vibrates and produces a sound

Fundamental Pitch – the lowest pitch in the harmonic series

Guido of Arezzo – a medieval music theorist who developed a system of lines and spaces that enabled musicians to notate the specific notes in a melody

Improvisation – the process whereby musicians create music spontaneously using the elements of music as building blocks

Instrumentation – the instruments comprising a musical group (including the human voice)

Interval – the distance in pitch between any two notes

Harmony – any simultaneous combination of tones and the rules governing those combinations (the way a melody is accompanied is also another way to define harmony)

Hertz (Hz) – the unit of frequency defined as one cycle per second and named after Heinrich Hertz (1857-1894) in 1960

Homophonic – musical texture comprised of one melodic line accompanied by chords

Key – the set of pitches on which a composition is based

Keyboard – instruments that are characterized by keyboards, such as the piano, organ, vibraphone, and accordion

Measure – a unit of time that contains a specific number of beats defined by the meter/time signature

Melody – a succession of single tones in musical compositions

Meter – the way in which the beats are grouped together in a piece

Monophonic – musical texture comprised of one melodic line; a melodic line may be sung by one person or 100 people

Motive – the smallest musical unit of a melody, generally a single rhythm of two or three pitches

Music – sound and silence organized in time

Noise – a disorganized sound with no observable pitch

Octave – the distance between two musical pitches where the higher pitch vibrates exactly twice as many times per second as the lower

Oscilloscope – an electronic device that displays a visual representation of the different types of sound waves

Overtones (also known as harmonics) – a musical tone heard above a fundamental pitch

Partials – the sounds of different frequency that naturally occur above a fundamental (primary) tone

Percussion – instruments that are typically hit or struck by the hand, with sticks, or with hammers or that are shaken or rubbed by hand

Performing Forces – see instrumentation

Phrase – smaller sub-sections of a melody

Pitch – a tone that is composed of an organized sound wave

Polyphony – musical texture that simultaneously features two or more relatively independent and important melodic lines

Polyrhythm – two or more different rhythms played at the same time

Range – the number of pitches, expressed as an intervallic distance

Register – the low, medium, and high sections of an instrument or vocal range

Rhythm – the way the music is organized in respect to time

Scale – a series of pitches, ordered by the interval between its notes

Sequence – a repetition of a motive or phrase at a different pitch level

Seventh Chord – a chord that has four pitches stacked in intervals of thirds

Sine Wave – the simplest sound wave that occurs in nature. A pure sine wave contains no partials and is perfectly smooth and rounded in appearance on an oscilloscope.

Sound – the mechanical movement of an audible pressure wave through a solid, liquid, or gas

Sound Waves – longitudinal waves (compression and rarefaction waves) that travel through a solid, liquid, or gas

Step – the distance between adjacent notes in a musical scale

Strings – instruments whose sound is produced by setting strings in motion

Syncopation – the act of shifting the normal accent, usually by stressing the normally unaccented weak beats or placing the accent between the beats themselves

Synthesizers – electronic instruments (often in keyboard form) that create sounds using basic wave forms in different combinations

Tempo – the speed at which the beat is played

Texture – the ways in which musical lines of a musical piece interact

Timbre – the tone color or tone quality of a sound

Time signature – the numeric notation at the beginning of a line of music where the top number indicates how many beats are in each measure and the bottom number indicates which type of note will represent that beat

Tonic – the most important pitch of a key; the note from which the other pitches are derived

Triad – a chord that has three pitches stacked in intervals of thirds

Twelve-Bar Blues – a twelve-bar musical form commonly found in American music

Vocal – having to do with the human voice

Woodwinds – instruments traditionally made of wood whose sound is generated by forcing air through a tube, thus creating a vibrating air column