

Each instrument has a unique pattern of overtones. All the partials we have discussed are present to some degree, but they differ in their relative strength. With a clarinet, for instance, the fundamental, first, and third partials are very strong. These produce the same pitch in different octaves. Partial that produce other pitches are relatively very weak on the clarinet. As a result, the clarinet produces a sound wave that looks very similar to a pure sine wave, with little ambiguity in pitch. On the opposite end of the spectrum are church bells. Sometimes the overtones with bells are so strong that they seem to drown out the fundamental, and the listener may wonder what the “real” pitch is supposed to be. The **timbre** of a pitch is also affected by the thickness and density of the instrument’s material and the amount of resonance. The timbre (also called **tone color**) of an acoustic guitar is affected by the size and shape of its hollow wooden body, where the sound waves produced by the strings resonate and are amplified.

For much twentieth-century music, both popular and classical, the choice of instruments and the way they are combined play a central role in making each piece a unique work of art. In *The Banshee* (LISTENING EXAMPLE 4), Cowell takes an old instrument—the piano—and requires the performer to employ new playing techniques, producing unexpected tone colors. In the absence of common-practice harmony, many twentieth-century compositions use changes in timbre to mark changes in form. In popular music, many listeners can distinguish styles—rockabilly, Motown, bluegrass, disco, punk, or house—after hearing just a few seconds of music, due to the differences in characteristic combinations of instruments and timbres.

Dynamics, Articulation, Ornamentation

Dynamics, the loudness and softness of a sound, are useful to performers and composers for expressive purposes. TABLE 1-4 shows the common Italian terms for different dynamic levels and their abbreviations. The full name of the modern piano is “pianoforte” because, unlike its keyboard predecessors, it could play both quietly (*piano*) and loudly (*forte*) in response to changes in the pianist’s touch.

A gradual increase in dynamics is called a *crescendo*, and a gradual decrease is called a *decrescendo* or *diminuendo*. In a score, either the abbreviations “*cresc.*” or “*dim.*” or a symbol shaped like an elongated V rotated ninety degrees clockwise (for *crescendo*) or counterclockwise (for *diminuendo*) indicate a gradual change in volume.

The dynamic level for even a single pitch can change multiple times if its duration is long enough. Imagine a consonant chord, such as the first syllable of the “A-men” at the end of a sacred piece of music, swelling from a soft to a loud dynamic level then *decrescendo*-ing back to a whisper: a very dramatic effect.

Another expressive factor affecting the sound of a piece is **articulation**. Articulation has to do with the mechanics of starting and ending a sound. **Staccato** indicates that the performer should shorten the duration of a note rather than letting it sound for its full value; this produces extra silence before the next note, often making the musical phrase sound crisper or choppy. **Legato** means multiple pitches are played in a smooth, connected but not overlapping manner. On a keyboard, one can produce staccato by poising the finger above a key and pecking down quickly, then quickly returning the finger to its original position. On wind instruments, players use their tongue to produce a distinct beginning for a given pitch. On a violin, the bow may be bounced from the string, or the finger used to pluck it (called **pizzicato**); Cowell requires the performer to pluck piano strings during *The Banshee*. Legato involves leaving the finger (with the weight of the arm balanced on it) on the key until it is time for the next pitch, at which time the weight is transferred to another finger on the next key. An **accent** involves more sudden sound than a staccato, and, unlike staccato, silent space before the next pitch is not required. Various degrees of pressure, tonguing, and bow pressure all contribute to articulation. (Several articulations are depicted in TABLE 1-5.)

Ornamentation refers to localized embellishments, which are often not written down. A pop singer can swoop into a pitch, and a trumpet player can add a **trill** (a rapid oscillation between two adjacent notes) to the last pitch of a melody as a grand finale. The singer Ethel Merman adds occasional ornaments during “I Got Rhythm” (LISTENING EXAMPLE 1). The high woodwinds sustain a trill near the start of *American Salute* (LISTENING EXAMPLE 12).

FORM IN MUSIC

Form describes how music is organized on a larger time scale—how units are combined to make larger structures. Form is the architecture of music.

Perceiving Musical Form

Music takes place in time. By the time the final notes are heard, the sound waves from the beginning have long disappeared. To have a sense of the whole shape of a piece of music, a listener must *remember* what came before. Most people use some kind of visual representation of the music to think about its overall form, such as **scores** (music notation) and **diagrams**.

Memory and anticipation are the key components to the listening experience. A listener who *expects* a dissonant passage to resolve into a consonant one may encounter one of several results. The expectation may be *met*, it may be *thwarted*, or it may be *deferred*. As the listener hears a piece, he/she experiences an ebb and flow of tension and release. Tension and release, we know, lend shape to a chord progression or melody. Tension and release also operate on a larger scale, though the listener is often less conscious of it. The primary way that tension

