Shopping for a Piano: Acoustic vs. Digital

The most serious piano teachers will adamantly point their students in the direction of an acoustic piano. For serious piano studying, I agree with this completely for reasons I will discuss shortly. But for many reasons, a genuine handcrafted instrument may not be the best choice for you. With the affordability, portability, and the many features that come with digital pianos, you may wish to head the other way. Summarily, the question of acoustic versus digital boils down to a matter of authenticity versus everything else.

Mostly, the drawbacks of an acoustic piano are matters of practicality, such as price. For what you could get a new, decent quality digital piano with, you'll be dealing with a rather meager acoustic. This can encompass a number of problems. For instance, aside from any tuning it might need, the overall sound quality of a cheap acoustic piano can be quite poor. This may not just be an issue of bad strings, but can result from an infinite number of possible factors arising from any of the complex mechanics of the piano being in disrepair. Other common problems of old pianos are broken keys and sticky keys, which is when the keys fail to spring up the way they should. There may also be faults with the framework that can range from nuisances to impending hazards. The list of the possible troubles of a bad acoustic continues indefinitely, and it is likely that the piano will need a decent amount of initial maintenance, in addition to periodic maintenance, which is likely to pull a few additional large bills out of your wallet right way.

Also, because of its bulk and weight, an acoustic may be a very difficult accommodation for people living in tight or elevated spaces, such as dorm rooms and certain city apartments. Some buildings may even prohibit pianos, particularly on floors above the ground level, because the weight and bulk of pianos make them quite cumbersome and possibly hazardous to either the tenants or the buildings themselves. This raises the issue of portability as well. Do you gig? Do you relocate frequently? Toting a 500 pound upright piano isn't possible for most people; moving one across the room is a challenge for most people. If your music should ideally be ready to go, your hulking wooden companion is not going to be sympathetic.

Acoustic pianos also lack the many features present in digital pianos nowadays that may be valuable tools to you. For example, volume control may be necessary in dormitory, or close living, situations. Newer digitals also come with a suite of onboard functions, including on-the-fly recording, voice customization, electronic metronome, and even music mixing features, which you won't have. You will also lack the benefit of porting your music to your PC; a simple MIDI connector would feed your performance directly into your computer's audio card without any ambient noise or loss of sound quality, which will probably beat any recording made with an acoustic piano and consumer grade recording hardware available at a neighborhood electronics store.

In light what you're giving up in bells and whistles, surely you will be at a degree of inconvenience being committed to an acoustic piano. Still, despite the great deal of effort digital piano makers have put into their product, none have been able to truly reproduce the sound and feel of a good acoustic piano. First, lets talk about the piano sound. To most people, casual or occasional listeners of piano music, the sounds made with an acoustic piano and a digital piano are quite identical and equally satisfactory musically. But listen closely, because there is an important difference.

A digital piano outputs high quality recordings of the sounds that were made by a real piano at one time. During the process of making a digital piano, each key of a real concert grand piano is struck a number of times at varying velocities and recorded with sophisticated equipment. This array of high quality recordings will serve as the digital voice, and will give the digital piano a rather broad range of tonality and an overall likeness of an acoustic piano in varying music dynamics. But once the notes have been recorded and finally integrated with the digital piano's voicing mechanism, they are never going to be changed. Even though the *aesthetic* quality of the sound may be state of the art, it is the way the sounds should *behave* but cannot because they are fixed recordings that is the fundamental problem of digital pianos.

An acoustic piano uses a complex array of hammers, strings, a soundboard, and other moving parts that function in collaboration. This means that when any note is played, it is not played with entire independence, but is highly affected by the current state of the surrounding components of the piano. For example, playing a chord on a digital piano will simply result in three notes being played, as they were recorded individually, at the same time, whereas with an acoustic piano, the three notes will interact with each other through the soundboard and become a stew of vibrations, producing a different, more complex, and ultimately richer sound. Lacking this quality of pliability, what comes out of digital speakers will typically be quite simplistic and boring, and will be most unsatisfactory to aficionados of the true piano tone.

An acoustic piano is also an analog instrument, which means is has virtually infinite range. For example, there is no limit to the loudness or softness a note may be played on an acoustic piano. With digital pianos, there is a point at which a minimum or maximum will be achieved. This means there will be occasions when you will not be able to play a note as softly or as loudly as you wish. In order words, true *pppp* or *ffff* are probably beyond the scope of digital pianos without you resorting to adjusting the volume dial while you're performing. Even if you were to do that, the tonal quality of the notes would remain static from that point on, when it would further continue to dull or brighten on an acoustic piano.

Another problem of digital devices is the matter of intervals. In photography, for example, pixels are the intervals. With a traditional film camera, the amount of detail you are able to capture is theoretically unlimited because film is a single and continuous malleable body. The “film” of a digital camera is not single or continuous but is a multitude of pixels, each of which is only able to record a solid block of color. The amount of detail a digital camera is able to capture will depend on how small the pixels are and how tightly they’re packed together. If the pixels, or intervals, are small enough and packed closely enough, the amalgam of the blocks of color they record will appear to be smooth curves and gradients to the human eye.

There is a similar issue of intervals with digital pianos, which is mainly the issue of touch sensitivity. Digital pianos have a finite number of intervals when it comes to key pressure. The more intervals there are and the closer they are to each other, the more realistically the piano will respond to your dynamics. High end digital pianos will have quite a lot of them. But digital pianos within the means of average shoppers may not have sufficient sensitivity. This means that while the vast difference between *piano* and *forte* may be noticeable, the most intricate variances of touch pressure may be disregarded. This will be quite a nuisance to pianists seeking a highly responsive instrument, particularly when it comes to meticulous classical music.

It also manifests in pedaling. Piano pedals are ranged. Between simple on and off, or up and down, there are degrees. “Half-pedaling” and “quarter-pedaling” are crude terms describing the manner of pedaling in which the pedal is only pressed partially down in order to create an intermediate effect. For instance, rather than completely depressing the pedal so that the full brilliance of a note is sustained, you may wish to depress it only half way to dampen about half of the note and let only the remainder of it sustain for a subtler, suppressed quality. Certainly a scrupulous pianist will wish to employ the complete range of pedaling available to him, which may not be represented entirely accurately in a digital piano.

Aside from sound, as mentioned previously, key touch is also an important issue. Digital piano makers these days have gone to great lengths to reproduce the feel of acoustic pianos. For the most part, they’ve done a good job. They’ve even gone as far as implementing graded hammer action, which is in line with the hammers of acoustic pianos gradually becoming lighter from left to right. As a matter of fact, if you could take a look at the inner workings of a digital piano, you would be quite surprised and impressed with the complexity of the hammer mechanics. However, as long as digital pianos look the way they do, being the shape and size they are, there is going to be a limit as to how authentically the key feel can be made.

The hammers in a digital piano are simply extensions of the pianist’s fingers. When the pianist presses a key down, it will raise the opposing side of the lever, which touches an electronic pad inside the piano that serves as the string. The hammers in an acoustic piano do not behave this way. Instead of being extensions of the pianist’s fingers, they are rather like projectiles that are sprung at the strings high above them. Imagine the carnival game where you hit the pad on the ground with a mallet, which flings a projectile up the meter towards the bell at the very top. The finger is the mallet, the visible piano key is the pad, the hammer inside the piano is the projectile, and the string is the bell. First of all, this means if you press a key all the way down but not with the minimum amount of force needed, the projectile hammer will never leave its seating and the string will actually never be struck. On the part of the pianist, this launch-pad-like action will need a slightly different technique than the seesaw-like action of digital piano hammers, predominantly in difficult works. Secondly, it will *feel* noticeably different under the fingers.

The only way this can truly be reproduced in a digital piano is by the use of bona-fide acoustic hammers. And there’s nothing wrong with doing that. But the problem is there isn’t enough room for them inside the compact size of most of the digital pianos today. That’s why as long as they look the way they do, the action of digital pianos will not feel completely akin to that of acoustic pianos. Certain higher end models do integrate the acoustic hammer action simply to recreate the key feel. Even higher end models, which are called “silent pianos,” integrate strings as well and are bona-fide acoustic pianos *with* the added ability to remove the strings from the action and toggle on digital mode in order to provide volume control! But these tend to be even more expensive than acoustic pianos.

In terms of what the average piano shopper will be able to afford, the difference in the overall performance between a digital and acoustic piano will be stark. To restate what I said at the beginning of the article, it really boils down to the authenticity versus everything else. And the authenticity is usually going to cost you more to get. What you should think about is how important it is to you that the piano truly resembles an acoustic. Are you a classical piano student looking at a long road of perfection and possibly a career as a concert performer? Then a digital piano is probably not what you want to be practicing on, even as a temporary substitution, because there is a good chance it will hurt your technique. It is possible to get financing on an acoustic piano, so I would recommend going that route, using your budget of cash as a down payment. If this is not necessarily what you have in mind for your musical venture, then perhaps a digital piano is all you require. Depending on your needs, it may not be a mere *reduction* of an acoustic, but a substantial upgrade with all the features you’re going to get. Typically, a digital piano will be more than enough to satisfy one’s musical appetite.

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About the Author

E. Chung is a student of classical piano and webmaster at Piano Lessons with Master Teachers, a freely available collection of interviews held with over 30 legendary concert pianists and teachers concerning the art of piano mastery. To learn more, visit his website at http://www.piano-lessons-master-teachers.com.