The Massage : a Quick Note on Piano Technique

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Impetus, Acceleration, Sines and Lines

Some people just don't seem to be able to get a decent, round sounding tone out of a piano or so it seems. Some piano players summarize it as, "No. You can't do it!" or when they play the piano themselves, "Oh... I thought it was the piano."

The main difference between a good attack on the keys and a bad one is massaging them for a round sound and hitting them straight for a cranky sound. What you want is typically a round sound, unless you need to wake up the audience a little. (Music is expression and piano players too can get cranky.)

It left me to question why the sound is so different. How does the difference in technique lead to a different kind of sound? My electric piano is thus advanced that it even models the sound accompanied by the different attacks properly, which led me once again to question what physics have been employed and modeled to achieve that sound.

It's all in the wave.

When you look at the vibration of a piano string, the main tone produces a sine wave with a certain frequency. Overtones and undertones add to the wave, but the string's graph as you might call it is completely fluent.

When you punch the key straight down, it hits the string with full impetus at a constant speed. This means that it resembles a single spike of a saw wave that hits a string that means to employ the shape of a sine wave. They don't match and as such the saw wave rips through the sine wave a little bit, making for this ripping cranky sound.

When you massage the key, the hammer hits the string with acceleration. When you look at a graph of accelerated motion, you'll notice that it resembles the shape of a quarter sine wave more. Because it resembles the shape of the sine wave, the string is prone to follow its direction in a natural non-conflicting manner.

When the hammer hits the string with acceleration the string just resonates with it hitting a zero-point sooner at the hammer. When the hammer hits the string with constant speed, the string doesn't adjust to the shape of the acceleration and as such retains friction beating against the hammer longer, causing this ripping sound at the beginning of the tone.

I hope this explains to you why you need to massage the keys and that it, even when you're only into reproducing music, is something you can learn and enjoy.

And can someone now please set up an experiment to show that my "theory" is correct. It is, but you know, I go by ear. That isn't scientific, now, is it?