

FEATURE ARTICLE

Does Lid Height Really Matter? This Is What the Numbers Say

Dr. Paul Allen Lee

I am sure there is not one among us who has not been told, “Oh, the piano is too loud. Let’s put the lid down,” or worse yet, had a well-meaning teacher come and unilaterally close the lid for a student, thinking that all balance issues will be solved by lowering the lid on the piano. This phenomenon is so ubiquitous that concerns and complaints about the practice are frequently brought up in some large collaborative piano groups on social media. An ancillary problem is the inherent lack of respect shown to pianists when a non-pianist comes to our instrument and makes changes to it. Could you imagine the horror if a pianist were to get up from the piano and physically take the instrument out of a partner’s hands and start adjusting things on it?

The Physics of Musical Instruments

During my doctoral work at Arizona State University, I became interested in the physics of musical instruments and acquired several books that detail how instruments produce their particular sound. These books, primary among them being *The Physics of Musical Instruments* by Neville Fletcher and Nicholas Rossing, discuss in detail how each instrument (or family of instruments) sounds, showing equations, graphs, charts, and pictures that explain the production of sound from a scientist’s viewpoint. Unfortunately for many musicians, books like *The Physics of Musical Instruments* are often written to an audience with many years of training in science and mathematics. The several pages of equations involve complicated time domain and frequency domain calculations, calculus, and differential equations; I have an undergraduate degree in mechanical engineering, and some of the math involved made even my head spin.

In reading through the piano section in *The Physics of Musical Instruments*, I came across a sentence that immediately piqued my curiosity: “Raising or lowering the lid causes surprisingly little change in the overall sound level, although it causes rather marked changes in the strength of the high-frequency sound in certain directions.” After consulting various databases and academic libraries, I found that while there is considerable research on the acoustic properties of piano soundboards and how they respond, there is very little evidence to support that one sentence. I decided to make this question the focal point of my doctoral research. In this article, I will summarize my research and findings (spoiler alert: just keep the lid open!), which will hopefully be of use to our community of collaborative pianists.

A variety of woods and metals are used in the construction of the modern grand piano. According to Steinway’s website, the rim is made of rock maple, the “ribs” of sugar pine, the soundboard of Sitka spruce, the keybed of quarter-sawn spruce, and the keys of European spruce. The cast iron plate for the Model D carries a tension of over 45,000 pounds (20,400

kg). Cast iron is a logical choice for the plate, as it can carry immense compressive loads (up to 365,000 pounds per square inch or 2,520 megapascals), while the rock maple used in the rim of the piano provides excellent strength without absorbing sound or vibrational energy (more energy kept within the piano means less energy leaves as sound). In short, the materials sourced for everything except the soundboard are chosen with an eye towards minimizing sound loss (vibrational energy loss), while the soundboard's wood is chosen for the greatest possible transmission of vibrational energy from the strings and bridges to the air.

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What Does It Take to Be A Good Collaborative Pianist? Introducing the LAWs of Collaborative Piano

Dr. Jaime Namminga

Any collaborative pianist who has ever been asked what it takes to be a good collaborative pianist knows that any proper response is not straightforward, as there are many components involved in effective partnering. As coordinator of a collaborative piano area, I have discovered that these many components can be intimidating and overwhelming for undergraduate students to understand and execute. While to an extent, the answer to the question depends on the pianist and musical partners—their personalities and priorities, I have broken it down into two “LAWs,” separated into three components each. The first LAW is an acronym for Listening, Anticipating, and Watching, while the second includes Leading, Answering, and Waiting. This article introduces these LAWs and gives a broad scope of each of their components. Some of the points apply more to working with those early in their musical training, while others apply to those of any level.

While there is individuality to each LAW component, there is also a great deal of overlap and connectivity between them, and these components build on one another to define a well-rounded collaborative pianist in the end. The aim of this article is to advise those teaching collaborative piano introductory courses or studio lessons, and those collaborating with lesser experienced partners.

LAW #1: Listening, Anticipating, Watching

Listening, the first part of LAW #1, is at the heart of what collaborative pianists do. Before even a single note is played or sung, they listen in conversation with musical partners to help them feel welcome and comfortable in the rehearsal or performance environment. In the music-making context, pianists listen to a partner's timbre, articulation, and dynamics to match their sound, thus helping to create the character and atmosphere appropriate to the piece. Pianists also listen in an aim of achieving perfect ensemble. While there are several elements that go

into ensemble accuracy, this section will broadly cover three main elements, using a different instrument category for each.

Listening

When working with singers, pianists must listen closely to the consonant sounds so they can synchronize with the vowel. Martin Katz, Arthur Schnabel Collegiate Professor of Collaborative Piano at the University of Michigan, confirms in his book, *The Complete Collaborator*,

“Even when the preceding consonant is expressive or voiced, it is not the official attack of the note in question. As collaborators committed to perfect ensemble, our own notes must be synchronized precisely with those of our partners, and thus we always play on the vowel sound, never before it.”

While good ensemble requires the pianist to watch the other performer’s bow whenever performing with string players, listening is equally important, particularly for synchronizing with their four-note chords, broken into two parts. Pianists must listen for the bottom part of the chord, which typically sounds before the beat, and then line up with the top part, which lands on the beat. If there are too many notes leading up to the chord for string players to start breaking the chord before the beat, pianists must create space for the chord to be placed late.
o from Arizona State University.

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