

Welcome to the Optimizing Pianism newsletter – the place where science, art and pianism come together.

*Each week, a 5-minute fact for a life-time of better pianism.
No more guessing. No more time-wasting. No more injuries.
Just better tools for making better music!*

TOPIC:

The Piano Tone (Part 2/5)

Continuing our journey of understanding how our touch can – or can't – alter the quality of the note being played, next, we address the key–keybed noise. Some pianists promote this sound, while others claim that it contributes to the 'thump' of the piano tone.

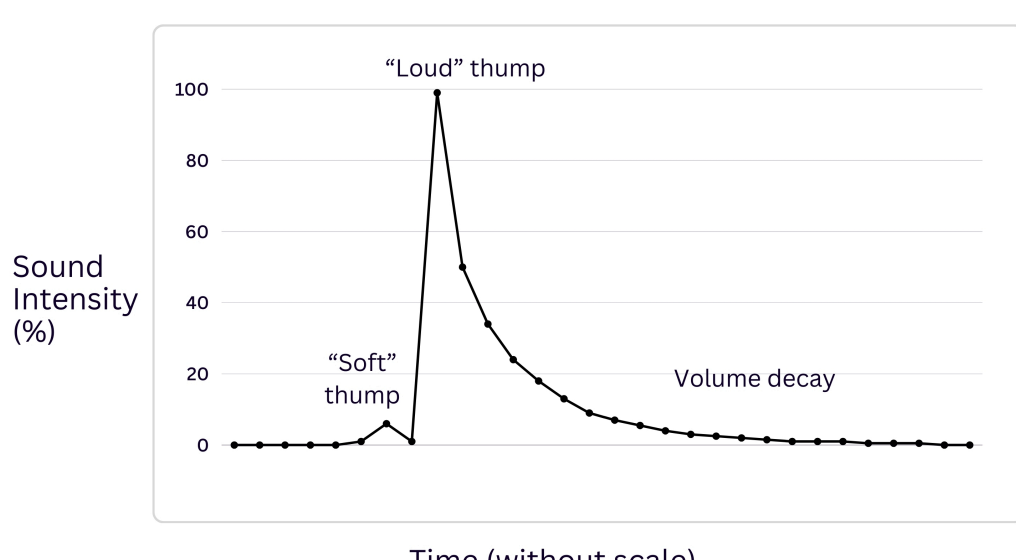
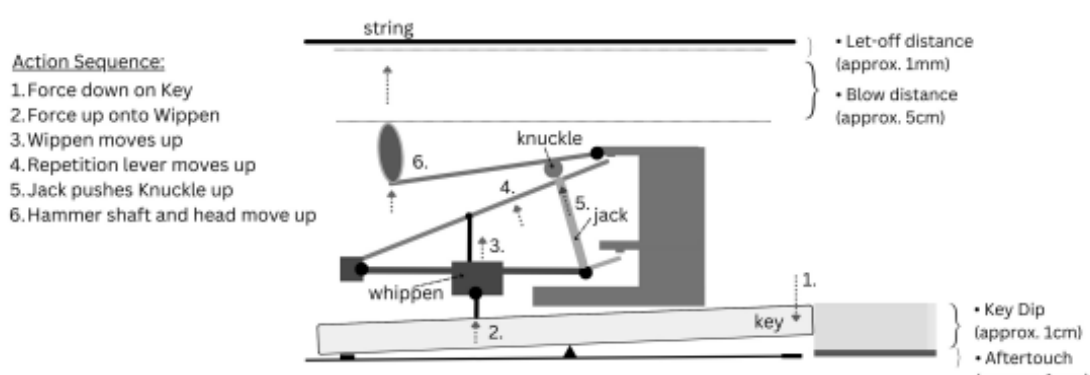
CONFLICTING TRADITIONS:

“the depth should not be exaggerated as it invites pressure, which in turn produces a forced, strangulated tone.” – Boris Berman.

“[Fingers] Go deep into the keybeds [...] firmly held by the finger tip.” – Levanskaya

MYTH-BUSTING FACTS TO CONSIDER:

1. The impact of the key against the keybed makes a noise. It is unavoidable. The noise depends on: the force of the impact; the cloth washers (and their thickness) which sit between the key and the keybed; the type of wood of the keybed.
2. Piano makers choose the wood of the keybed very carefully. Their choice influences the resonance of all piano sounds significantly.
3. A piano, if played with the keybed removed, has a 'thin', harpsichord-like sound.
4. The noise of the key-keybed interaction is impossible to hear when playing low notes (low frequencies) as it too emits low frequency sounds. Thus, key-keybed noises are typically only noticed when pianists play loudly in the upper registers of the piano.
5. Given that the let-off of the hammer from the action occurs only 1-2mm before the key reaches the keybed, there is no physical or time opportunity for a pianist to slow down this impact or abort from the key-keybed collision. (This fact is ignored by almost all pedagogical theories in existence). A golfer, for example, cannot hit a ball hard and then slow down his or her swing whilst the head of the golf club is still in contact with the ball.
6. If the pianist did slow down the key stroke prior to key-keybed impact to minimise the key-keybed noise, the key descent would, necessarily, also be slower, and so too would the resultant hammer speed, thus producing a softer-volumed tone, not the full tone that was initially desired.
7. Point 6 could, theoretically, be overcome (fractionally) by putting more force into the key at the beginning of the key's descent rather than at the end, thereby creating more opportunity to abort from the keystroke's descent. This, however, would come at the expense of a much louder finger-key impact noise, which we know can be audible in some circumstances (see newsletter 2, the 'soft thump' noise.) It is almost certain, that pianists use this stroke to create more percussive effects (ie. faster up-spike of sound at the onset of the piano tone).
8. Bear in mind that the key-descent time is approx 0.02s for *forte* sounds - faster than the human has time to sense and respond to via its neuro-motor pathways.
9. The impact noise of the key against the key-bed is super-imposed upon the more massive noise made by the hammer hitting the string. See second diagram below (and Newsletter 2). This nullifies our ability to hear the keybed noise separately.



(Pictures from *Optimizing Pianism*, p.61 and p.96.)

Question:

So, returning to the initial question: Can the key-keybed collision noise be altered independently of how fast the hammer moves?

Answer: NOT REALLY.

Obviously, this impact noise is caused by our touch, but it is going to be louder if the key descent is faster, and softer if the key descent is slower. The two actions cannot be separated, neither physically nor temporally. Contorting your body, face, or finger will not change this.

Conclusions

Again, pianists should think less (ideally, not at all!) about their (mistaken) theories about how the piano sound works, and spend more time on listening to

the sounds they want to achieve, the sounds they produce, and doing so using a biomechanically easy and reliable way.

But there's still a long way to go, we've only just scratched the surface. Stay tuned for next week.

best wishes,
Cam

Want more depth?

Read pp.51-63, *The Touch-Tone relationship – Scientists Perspectives*
(All references about the physics and noises of the piano tone are listed there.)

Other info

- **Read the book!** *Optimizing Pianism – Evidence-Based Perspectives* ([LINK here](#))
- **Read the previous newsletters** ([LINK here](#))
- **Comments, suggestions or topic requests:** ([Tell me HERE](#))
- **Upcoming Concerts and ticket bookings in Melbourne** ([LINK here](#))
- **A little music...**

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Business address:
21 Widdenham Rd. N7 9SE. London. UK
info@cameronroberts.com.au

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