

by Dr. Bang Lang Do

Thinking, Fast and Slow: Good practice habits based on Cognitive experiments

Try to answer these questions:

- 1) Take the letter R. Is R more likely to appear as the first letter or third letter of a word?¹
- 2) A racquet and a ball cost \$1.10. If the racquet is a dollar more than the ball, how much is the ball?²
- 3) Is this logical? All roses are flowers. Some flowers fade quickly, therefore some roses fade quickly.³

If you took less than two minutes to answer, you probably used your intuition, and you probably have wrong answers. If you were cautious, you may get right answers, and this careful methodical approach also reflects your natural thinking tendency. Perhaps, it even reflects how you practice or perform.

Economic Nobel prize-winner, Daniel Kahneman's latest book, "Thinking, Fast and

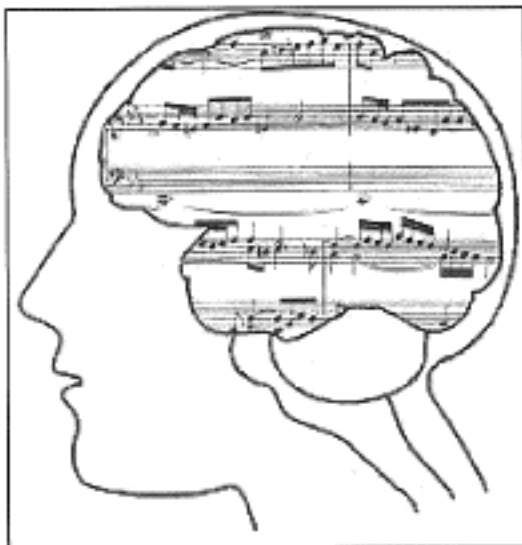
Slow," explains how our mind works. As a compilation of cognitive theories and experiments, it can be used to understand practice versus performance, or our students' learning processes and practice habits.

When we computed the answers above, most of us made fast intuitive decisions.

Kahneman uses the term "Fast Thinking" for a thinking mode that is reactive, automatic, heuristic, intuitive and creative.⁴ Most musicians perform in this mode, yet most practice using only Slow Thinking mode, the one that solves problems, reflects, or evaluates.⁵

Tim Gallwey calls this "Self-1," the "thinker. . . the part of you that analyzes. . . [and] self-monitors."⁶

Here's an example of Fast Thinking. Read this: "If oyu are abel to raed hist hten oyu r midn is ni Fsat Tkihign mdoe." When pianists sight-read, the same heuristic approximation applies. Their thinking is fast; so fast that with practice, thinking in effect becomes a rehearsed reaction. Their eyes know to look ahead; their ears know what to expect. Most beginners' piano books are based on this fast approximation principle: students "guesstimate," direction of the melody, then specific intervals, then chords' shapes, a particular inversion, or a certain voicing. Gradually, students' eyes will be trained to recognize a chord with a mere glance, their ears will expect resolutions, and past auditory experiences will guide their fingers.



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Ideally, both Fast and Slow mode should be used in the practice studio. The main focus here will be the Slow mode, where students work out solutions and repeat with goals.

But there are dangers to this mode.

First danger: Overload

Our brain is like an electrical system—it can short circuit. Experiments have shown that when the task is too hard, people give up unintentionally and subconsciously.⁷ Thus no matter how hard you try, or will it, your brain has limited capacity in "sprint mode."

Conclusion: Teachers should know a student's capability, and break down tasks to chunks they can handle. In psychology this is called "chunking."

Second danger: Reaction Trumps Willpower

Try these tests: (a) Say "left" if the word is on the left, and "right" if the word is on the right. (b) Say "upper" if the word is in upper case, "lower" if the word is in lower case.⁸

LEFT	Upper
Left	Lower
Right	LOWER
RIGHT	Upper
RIGHT	UPPER
Left	Lower
LEFT	LOWER

Was this test challenging? We all know how hard it is to shut off thoughts while we're performing. This test and that feeling are examples of conflict between an automatic reaction (Fast Thinking) and an intention to control (Slow Thinking). Here are other conflict examples in our lives: (1) Trying not to stare at something, but somehow our eyes keep moving towards it while we're thinking "don't stare!" (2) Forcing ourselves to read a boring book and finding ourselves returning to the point where the reading lost its meaning.⁹ Conclusion: Fast Thinking overrides Slow Thinking, no matter how hard we try to control. Thus, regarding practice time, students should not practice certain things when their brains are tired. It will only reinforce bad habits that would take time to undo. They should plan practice so that whatever needs most reinforcement or brain-power is done first, at the most optimal time of the day for that particular student.

Third danger: Blindness

When concentration is at its highest, one can be blind to other stimuli. In one experiment, when the brain was busiest, as measured by pupil dilation and heart rate, participants did not see a full-size gorilla appear right next to the screen they were watching.¹⁰ Musicians, when we are busy focusing on a technical passage, are our ears effectively "blind?" Do we really hear the sound we are producing or is it an approximation of reality? Even if we can play the passage in tempo, our goal should be to feel as if virtually every movement is a physical reflex. Related danger: students may work on motions separated from sound. One sometimes hears technical wizards at competitions with not much to say. The reason may be that they have practiced repeats without "music," and the disconnect between "music" and technical prowess was reinforced so many times that they either can play perfectly note-wise, or falter when

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they try to play musically. Immediate playing with whole heart and soul (combining Slow and Fast) is a must, even when the piece is new, even when it's just one phrase. The phrase is within a piece, and it has its own function and expression.

Fourth danger: Change is difficult

If you try to count all the ds in this page, and when you turn the page, try to count all the ps, counting ps will be more difficult in comparison. Research has shown that it takes more energy and focus to change task.¹¹ Conclusions: students should break their practice into smaller chunks even if the break is just to stand up, stretch, or get a sip of water. Students should also analyze the music scores for technical and sound changes. The brain needs time to switch tasks; give it time. One should stop at the change, breathe, visualize what's ahead, and continue full tempo. For beginners, a change can be playing two hands legato and suddenly, one hand switches to lifts. Teachers can help a student stop right before the change, and help the student hold fingers as the other hand lifts. Exaggerating the motion helps the body feel the change. Ravel's "Scarbo" is another example; it demands many fast changes in sound and physical motion.

If practice is done optimally, as Mr. Moore had said in the 2011 MTNA convention, then 80% of the energy during a performance will be in Fast Thinking mode, where students trust physical reflexes to do what they have been trained to do, and only 20% will be spent on determination. "When you let go of trying to control. . . you are free to communicate the feelings and emotions in your music."¹² Most mental energy should be focused on sounds, associative ideas, emotions, images or stories. At that point, as one teacher once told me, "you play who you are."

Answers to the three questions:

- 1) More likely in the third position.
- 2) Ball: \$.05, Racquet: \$1.05
- 3) The last sentence is not true. "Some flowers that fade quickly" may not include roses at all.

Notes

¹ Daniel Kahneman, *Thinking, Fast and Slow* (Farrar, Strauss and Giroux, N.Y. 2011): 7.

² *Ibid*, 44

³ *Ibid*, 45

⁴ *Ibid*, 105

⁵ *Ibid*, 21

⁶ Bill Moore, "Playing your Best When It Counts," *American Music Teacher* Vol 60, No 6, (June/July 2011): 18-19.

⁷ Daniel Kahneman, *Thinking, Fast and Slow*, 33

⁸ *Ibid*, 25

⁹ *Ibid*, 25

¹⁰ *Ibid*, 23-24

¹¹ *Ibid*, 37

¹² Bill Moore, "Playing your Best When It Counts," *American Music Teacher* Vol 60, No 6, (June/July 2011):18-19.