



The Singer's Library

The Brain on Music

BY BRIAN MANTERNACH

Recent research helps demystify how musicians learn.

The human brain is notoriously complex. After all, the phrase “It’s not brain surgery!” came from somewhere for a reason. It would be understandable, then, if singers feel intimidated by the title of the new book *The Musician’s Mind: Teaching, Learning, and Performance in the Age of Brain Science*. Author Lynn Holding points out in the preface, however, that the focus of the book is not neuroscience, which is concerned with the anatomy and physiology of brain structure.

As such, she promises that readers will not find graphic photos of the brain “sliced up like a side of beef.” In fact, the only image of the brain that the book contains is a cartoon rendering on the cover. Instead, Holding devotes her writing to cognitive

science (how the brain processes information) and its most relevant applications to how musicians learn. Teachers will find tools in this book to maximize the benefit of their instruction, and students will find ways to make their time in the practice room really count.

In this interview, Holding discusses what the research reveals.

You discuss in the book that the more difficult the task we are attempting to accomplish, the more neuronal firing occurs in our brains. This causes us to “dig deeper for more complicated tasks” and, as a result, we find solutions that are retained better and are more retrievable because we found them through our own efforts. Does this mean that practicing

mindlessly—going through the motions without sufficient effort or attention—will not lead to significant improvements?

The simple answer is yes. The research shows, as you stated, the more difficult the task, the more the learner has to “dig” for their own solutions. But where the human mind is concerned, there is always more complexity to consider. The first is to note that your question—and my answer—are both based on the assumption that the task at hand is actually achievable by the learner.



Brian Manternach



Lynn Holding

It's kind of like the so-called "Goldilocks rule": if the task is too difficult or not achievable at all, students will reach for

it and not be able to grasp it and maybe fall on their faces. If the task is too easy, they end up just fiddling around and either not making much progress or, because the task is too easy, simply grinding their habitual mistakes in more deeply. In this latter scenario, there is actual regression, not simply failure to progress. In the former, there is certainly failure to progress—but if a teacher continues to lob too many unattainable tasks

to a student, other negative consequences could accrue, such as student self-blame.

So effective teaching is finding that "sweet spot" where just the right amount of effort will provoke achievement; this is in keeping with one of the requirements for learning—effort—and which Robert Bjork dubbed so beautifully "desirable difficulties." To be able to do this consistently—and always with a heavy dose of empathy—elevates this kind of teaching to an art itself, I believe.

So, really, teachers are tasked with creating a series of "desirable difficulties" for students to overcome, which will result in deeper learning. Do you believe the idea of teachers presenting obstacles rather than answers is counterintuitive, or

at least countercultural, and difficult to embrace?

Very seasoned, excellent teachers understand this concept through lived experience. The best ones are both tough (in that they have high expectations and really give students their money's worth) but also empathetic and even [able to] display "warmth." I talk about this balance a lot in my book and try to live it myself as a teacher. Teachers whom I have observed having difficulty with this concept are usually young teachers who are still "green" and/or students themselves. They have a harder time finding the balance between what my class this semester called "nicey-nicey" and what I would call "creating a set of desirable difficulties for the learner."

And, of course, there are other, more practical considerations; if

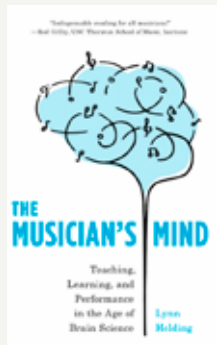
CRANE
Julia E. Crane
The Crane School of Music • SUNY Potsdam

DEGREE OPTIONS
Bachelor of Music Degrees in Music Education, Performance, Composition, Music Theory, Music History and Music Business
Bachelor of Arts Degree in Music
Master of Music Degrees in Music Education and Performance

potsdam.edu/crane

Potsdam
STATE UNIVERSITY OF NEW YORK

Book Review



In the first two chapters of *The Musician's Mind*, author Lynn Holding surveys modern psychology, debunking popular misconceptions about the brain and highlighting current research that is pertinent to musicians. Chapters three and four focus on human cognition and learning, with an in-depth exploration of procedural learning (also known as motor learning) and its “critical prerequisite,” attention.

Chapter five explores some of the book's most fascinating ideas as Holding scrutinizes long-held beliefs that influence the methods used to train musicians. She presents psychologist K. Anders Ericsson's term “deliberate practice,” which challenges—or at least offers a significant qualifier to—author Malcolm Gladwell's “10,000-hour rule” for mastery. She differentiates between deliberate practice (which she says is “rarely fun at any stage of development”) and “play,” and she explores how “helicopter parenting” impacts young musicians. She also draws on the work of social psychologist Carol Dweck when discussing the “troublesome notion of talent” and how it may stunt progress by contributing to a fixed mindset as opposed to a growth mindset.

Chapter six explores new information related to music performance anxiety, and chapter seven, “The Digital Brain,” examines how addictive modern technologies contribute to “mass inattention,” which influences performers and audience members alike. In the eighth and final chapter, Holding describes empathy as both important to artists and “a cornerstone of civilized culture.”

The Musician's Mind is an exceptional contribution to vocal pedagogy. Holding has conscientiously collected some of the most relevant research, which she has adeptly translated and expertly applied to voice training. Her work is tremendously important for voice educators. If heeded, it stands to have a transformational impact on the field. —*Brian Manternach*

you are a popular teacher whose calendar is so full you are turning students away, you can afford to be more demanding. If you are just starting a studio, you may find yourself being all “nicey-nicey” so your clients return.

In chapter four, you caution that offering students too much feedback can create a dependency on their teachers that may distract them from their own effort. Does this mean teachers, in a sense, might want to consider doing less teaching during lessons?

Sort of. A better way to express it would be that teachers should consider doing less talking during lessons. In my section on “Feedback,” I discuss how too much talking (in motor learning-speak, “augmented feedback”) immediately after a task, can interrupt or even completely block the student from processing their own feedback. Let's say we are working with a mezzo on some really hard melismatic passage

from Rossini or Handel or Mozart. I find melisma really challenging (and also really satisfying) to teach—because excellent, operatic, robust melisma is an exquisite coordination between breath support (how much air we send just below the vocal folds) and breath control (how much air we let pass through the vocal folds).

Finding the ways to describe how that feels in your body and then transfer that to the singer who puts it into action is the “how” of excellent voice teaching. But I have learned that is only part of the story; in the “dance” between teacher and student, what the teacher knows is only part of that dynamic duo. How the student understands is the other half, and we have to let students experience the act—in this example, the melisma—and process it immediately after trying it.

If teachers intervene at this very crucial, fertile moment, it is as if they are saying, “Here, let me tell you how you felt that.” It is a strong urge that I myself have had to learn

how to contain (and I'm still working on that!). So this is indeed less “talking,” but it can be profoundly good teaching.

You also warn about what psychologist Carol Dweck calls the “inverse power of praise”—using rewards as motivation—since it may shift students' focus to pursuing the praise or the reward rather than the pursuit of learning an intended task. How can teachers find a balance between creating a positive and supportive atmosphere for learning without encouraging students to become, as you say, “addicted to praise”?

I have been exploring this idea for years, as well as its applications and meaning in voice training. This is really hard and (in my opinion) is what separates good teaching from truly fine and inspired teaching. And because it is hard, there are no easy, pat answers. This balance is also tied to many things—teaching, learning, performance, the perpetual parade

“In the ‘dance’ between teacher and student, what the teacher knows is only part of that dynamic duo.”

of auditions that test our fragile egos, performance anxiety—and I think that musicians operate under unique circumstances that make our challenges equally unique from other performers, like dancers. So I explore this very question in multiple ways throughout my book.

Despite the fact that this book is based heavily on scientific research, you write in the introduction that it is a “wrong-headed” impulse to use that research to defend the arts as a way to, for instance, improve standardized test scores. Why do you say that?

Great question. I have been wrestling with this myself my entire adult life, and on the face of it—certainly as you have presented it here—it can sound like a great contradiction. So first, about that contradiction, I would say that we (as a community of singers, artists) must be comfortable with living in the middle of two seemingly opposing ideas—let us call them “science” and “art.”

Indeed, I argue that this middle ground is exactly where artists operate and thrive (even as they may wrestle with it—another “desirable difficulty”). My entire book spans this contradiction because

this question is explored in the first and last chapters. We should use scientific discoveries (in my case, both voice science and cognitive science) to heighten our exploration, but not to definitively answer every little thing about our journey. As I wrote in my book, human knowledge is not limitless. When we can’t check boxes anymore (or improve test scores), what is left to illuminate the human condition is the boundlessness of art.

Brian Manternach, DM, is an assistant professor at the University of Utah Department of Theatre and a research associate at the National Center for Voice and Speech. He is an associate editor of the Journal of Singing and he blogs at drbrianmanternach.blogspot.com. Visit brianmanternach.com for more information. CS|MUSIC



LONGY

School of Music of Bard College

**BECOME THE
MUSICIAN THE
WORLD NEEDS
YOU TO BE**

Longy offers vocalists concentrations in:
Voice and Opera
Historical Performance
Jazz and Contemporary Music

Longy.edu/apply
Boston, MA