Peter Keller: On Becoming More Skilled Ensemble Musicians with Insights from Cognitive Science

Description

It was a late spring day in the 5th grade, and the school I attended was having its annual let's-get-the-kids-outside-and-make-them-compete-at-random-made-up-sporting-events extravaganza. There was tug-of-war, water balloon tosses, running laps while balancing an egg on a spoon, potato sack races, etc.

Anyhow, my friend Shane and I were paired up to compete in the three-legged race (in case you've never seen this, here's what it looks like). We tied our adjacent legs together, lined up with our classmates at the edge of the field, put our arms around each others' shoulders, and decided which leg we'd start with. We also agreed to say "one, two, one, two" out loud together to help us keep our legs coordinated.

When we heard the signal to go, we said "one" together, stepped forward in sync, and gradually built up speed, continuing to count out loud. It wasn't long before we were legit running, where all four (or three?) of our legs were completely off the ground between strides.

Victory!

When we got to the finish line and looked back, we discovered that the race wasn't even close! None of the other teams had even gotten to the halfway point yet. Some teams were on the ground, some were dragging their partners across the field, it was the hilarious mess that you'd expect from a bunch of 5th graders (exactly like these kids).

Nearly 40 years later (), I still remember how in-sync we were that day, and how effortlessly we ran across the field. And though I haven't talked to Shane in years, I'm betting he still remembers that day too.

Chemistry?

Indeed, whether it's playing sports, dating, or collaborating in an ensemble with other musicians, we've all experienced moments of "chemistry" (or the complete lack thereof) with certain people.

Where we just feel like we're more in sync on some fundamental level. Like, our natural inclinations and instincts seem to align so well, that being together or playing together not only feels easy, but is kind of a thrill in and of itself.

Have you ever wondered why this is? Or more specifically, what the underlying neural or behavioral bases for this kind of chemistry might be? And whether these are skills we can learn and develop? And if so, how?

Meet Peter Keller

Peter Keller is currently Professor of Neuroscience in the Center for Music in the Brain and the Department of Clinical Medicine at Aarhus University in Denmark, and Professor of Neuroscience of Music in the MARCS Institute for Brain, Behaviour and Development at Western Sydney University in Australia.

His work today centers around trying to better understanding the cognitive and motor processes that enable musicians to play effectively together in ensembles. But once upon a time, Peter was a conservatory student majoring in trombone, musicology, and composition. An experience which, as you'll see from today's chat, led to many of the questions that he explores in his research today.

In today's chat, we'll explore…

- 2:42 – Peter's journey from trombone to psychology, and a particular aural skills class, in which the teacher's unique methods may have influenced some of Peter's research interests today.
- 11:43 – What is "anticipatory auditory imagery," and what effect does this have on both our experience of the performance, and what the listener hears as well? (This is something legendary tuba player Arnold Jacobs often spoke about in his teaching, which trumpet player Kristian Steenstrup describes in his podcast episode at 2:42 here.)
- 14:22 – How does anticipatory auditory imagery work when it's not just you, but you're playing with other musicians too? (Pianist Vivian Hornik Weilerstein talks about this exact thing in her podcast episode too – just in different words. You can listen to that at 41:02 here.)
- 17:31 – And how do musicians adapt or adjust to spontaneous things in performance?
- 22:14 – Are there any ways to test, measure, or predict how effectively one may be able to play with others?
- 26:56 – Why is striving for "perfect" ensemble – i.e. 0 milliseconds of asynchrony between musicians – actually undesirable? (This reminded me of Vivian's explanation of "lined-up ensemble" vs. "emotional ensemble" at 27:56 here)
- 28:35 – Is there a research-based rationale for teachers' asking students to conduct in lessons or move physically while mentally audiating a piece they're working on to help them internalize a stronger sense of rhythm or pulse? (This is something that violinist Catherine Cho speaks more about, at 10:02 of her podcast episode here!)
- 30:27 – Why is dance music most effective when it's loud?
- 34:06 – Can people play effectively together even if there are individual discrepancies in their philosophies about effective ensemble playing?
- 37:52 – What could account for different members of the same ensemble having very different impressions of the same performance, where some thought it went well, and others thought it didn't

go well? (Cellist Merry Peckham speaks about this in her podcast episode, at 35:50 here!)
- 39:30 – Are there certain characteristics that might make some individuals predisposed to be better at certain instruments than others?
- 41:58 – If there are specific ensemble skills that seem to be essential for effective ensemble playing, do we currently have ways of measuring or "testing" for these skills, so we can identify who these effective ensemble players might be?
- 43:50 – What implications could this research on ensemble skills have on orchestral auditions? As in, is it possible that some ensembles may be getting enough data about a candidate's instrumental skills, but not enough data about their ensemble skills, to make decisions about which musicians would mesh well within that ensemble?

One quick thing before you listen!

Peter references his **Ensemble Skills Framework** at about a third of the way into the episode, but really starts alluding to it much earlier than that. I think the visual model really helps to make many of these concepts more concrete and organize them in our brains, so take a quick look below and just keep it in mind as you listen to the episode:

> From Keller, P. E., Novembre, G., & Hove, M. J. (2014). Rhythm in joint action: psychological and neurophysiological mechanisms for real-time interpersonal coordination. Philosophical Transactions of the Royal Society B: Biological Sciences, 369(1658), 20130394.

Notes

- Here's a link to Peter's 2012 paper on anticipatory auditory imagery that I alluded to at the beginning of the episode.

More Peter?

If you'd like to explore more of Peter's research, below are a few handy links.

You can check out his dissertation or the Janacek thesis that he mentioned in today's episode, or even listen to a few of his musical compositions at his website:

- Peter Keller – Human Interaction Through Music

Or follow his Twitter feed at:

- Peter Keller @Twitter

Or reach out to him via:

- Center for Music in the Brain, Aarhus University, Denmark

- MARCS Institute for Brain, Behaviour and Development, Western Sydney University, Australia

Header photo credit: Wissenschaftskolleg

Date Created
June 2022