

Music Lessons: What Musicians Can Teach Doctors (and Other Health Professionals)

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Medicine is a learned profession, but clinical practice is above all a matter of performance, in the best and deepest sense of the word. Because music is, at its core, a pure distillate of real-time performance, musicians are in an excellent position to teach us about better ways to become and remain expert performers in health care and ways for our teachers and mentors to help us do that. Ten

features of the professionalization of musicians offer us lessons on how the clinical practice of medicine might be learned, taught, and performed more effectively.

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Music has a lot to offer medicine. Listening to music can clearly put us in touch with our own feelings; hearing the Brahms Alto Rhapsody pulled the author William Styron back from the edge of suicide (1). But whether it can sensitize us to what other people are feeling and make us more empathic or compassionate as caregivers remains an unanswered question. After all, Adolf Hitler was a passionate opera lover, but hearing opera (or at least Wagner's librettos) seems to have only fed his destructive fantasies. It is famously risky to generalize from extreme examples, but these reflections suggest it might be fruitful to explore other, more pragmatic approaches to what music and, particularly, musicians have to teach us.

EXPOSITION

Understanding how professional musicians are trained may help us think more clearly about better ways for physicians, as well as many other health professionals, to become and remain expert practitioners—interviewers, diagnosticians, proceduralists, therapists, managers, or innovators—and ways for our teachers and mentors to help us achieve high levels of performance. Examining the structure of music and musical careers may also reveal important insights into the structure of clinical practice.

DEVELOPMENT

At least 10 aspects of the professionalization of musicians offer lessons on how health care practice might be learned, taught, and accomplished more effectively.

Performance

Although musicians must master at least some of the cognitive aspects of music (history, theory, harmony, and elements of style), at its core all music is a pure distillate of real-time performance. The word *performance* sometimes implies that what is being seen or heard is somehow not to be believed, not “real,” but great performances in music are above all authentic. Picasso probably captured this seeming paradox best in his comment that “Art is the lie that tells the truth.”

The lesson: Although medicine is inarguably a learned profession, clinical practice is above all a matter of performance, in the best and deepest sense of the word. However, the performance aspect of medicine has been overshadowed in the past 150 years by the irresistible pressure to master an enormous, complex, and ever-changing scientific knowledge base (2, 3). Recognition of music's laser-like focus on performance could help us regain a more appropriate balance in medicine between knowledge and performance (between knowing and knowing how).

Coaching

Musicians learn to play music by playing it, by moving repeatedly through cycles of experiential learning. But experiential learning is only successful when it includes all parts of the cycle: live, hands-on experience (real or simulated); reflective observation (what happened? what went right? what could have gone better?); abstract conceptualization (finding explanations for why things happened the way they did and proposing ideas for how they might be done differently); and further active experience (4). Endless performance without feedback drifts into stagnation, whereas endless reflecting and conceptualizing without performance wanders off into pedantry (5).

The lesson: Great teachers in music are coaches, not lecturers. Coaches watch, listen, and provide the feedback that closes the experiential learning cycle; that helps learners acquire the advanced professional skills of reflection-in-action and reflection-on-action that they need to become expert performers (6). It is not coincidence that Donald Schön observed teaching sessions in both medicine and music in his now-classic field studies of how practitioners in applied disciplines acquire their expertise (6). Although knowledge transfer will always be a basic element of medical education, lectures, readings, and discussions are enabling elements of experiential learning—means, rather than ends—and coaching at the highest level is the appropriate model for clinical teaching. Unfortunately, mastery of coaching in medicine is still not seriously taught, rewarded, or studied (7). It must be.

Stardom

Outstanding musical performers, the stars and superstars, provide budding musicians with goals, models, and inspiration, but even the greatest orchestras and bands are made up of strong rank-and-file performers, not stars and superstars. Moreover, great musical performers are rarely great teachers, and great teachers in music are rarely great performers (8). Performance and coaching require vastly different personalities, goals, skills, and experience.

The lesson: Few health professionals become international experts, which is just as well, because neither health care delivery nor medical education could function if they depended mostly on superstars. The small number of master clinicians who become exceptional teachers apparently do so by learning to step away partially from their performance role even while they are performing, which lets them help their students move back and forth between being actor and observer (9). We do not know how those teachers acquire that particular multitasking ability. We need to find out.

Talent

Although many professional musicians have perfect pitch (the ability to know the exact pitch of a note when hearing it), it is not essential, and many wonderful musicians lack it (10). And although biological gifts undoubtedly factor in, it is increasingly clear that the most important factors in becoming an accomplished musician are training, practice, and experience, rather than some vaguely defined quality of “talent.”

The lesson: Just as a person with a tin ear would be ill-advised to choose a career in music, a person who faints at the sight of blood or is uncomfortable when talking with people should probably steer clear of a medical career. But it is equally reasonable to expect that almost anyone with certain basic abilities (for example, a stable personality, lively curiosity, good problem-solving skills, a moderately hypertrophied work ethic, and a deep satisfaction in relieving other persons' distress) can become a terrific physician without also needing the medical equivalent of perfect pitch or other similar gifts.

Time

Achieving a high performance level in any musical style or tradition requires time, and a lot of it (and classical musicians may need even more time than others). Elapsed time is not the issue; in music, as in all professions, the real essentials are the extended, focused involvement with every aspect of the discipline and the hours of practice (11).

The lesson: Medical school and residency together already involve at least the estimated 7 to 10 years of focused involvement and 10 000 hours of practice needed to go beyond deliberative rationality to the level of true professional expertise (11, 12); surgeons may need substantially more time to master both the cognitive and technical aspects of their specialty (13). Because current medical train-

ing is riddled with inefficiencies and has become almost intolerably expensive, medical educators are now exploring accelerated systems for “training to competence” (7). Although such programs seem both rational and promising, they need to be approached with caution, lest we end up creating cohorts of prodigies rather than wise decision makers and mature healers. Growing up takes time.

Art

Musical performance can be technically brilliant but cold and mechanical; the flip side is that it can instead be artistically exquisite but technically sloppy and out of control. Masterful performance requires musicians to attain prodigious levels of technical skill, while at the same time going beyond technique into the domain of true musicality—finding a way to put themselves into the sounds they make, the way Glenn Gould entered into Bach and Louis Armstrong into Dixieland. The legendary pianist Vladimir Horowitz is reputed to have said to a woman who told him she loved watching his hands as he played, “Thank you, madam, but what makes you think I play with my hands?”

The lesson: Medicine is not just science, but a “professional, science-using, inter-level interpretive activity taken for the care of a sick person” (14); it is, as is often said, both science and art. Unfortunately, the lesson from music is unclear here, because we know musical technique is teachable but do not understand the sources of musicality (15) any more than we understand the sources of the personal strengths, limitations, or styles of health professionals. Exploring the nontechnical aspects of performance should be a serious research endeavor in both disciplines. (Neuroscience might even help.)

Practice

Musicians know that performance skill degrades rapidly over time and therefore spend much more time practicing and rehearsing than performing in public, both during training and throughout their careers. (Many professional musicians continue to take lessons for years.) A widely known saying among musicians, attributed to various musical giants, is, “If I don't practice for a day, I know it; if I don't practice for two days, the critics know it; if I don't practice for a week, everyone knows it.” The key here is the nature and quality of the practicing, not just the hours spent; its essential element is mindfulness, being really present while practicing, rather than mechanically repeating motions. The single most important piece of advice on practicing is “listen” (made easier these days by easy access to high-quality recording equipment), but “slow it down” and “break it into parts” are close runners-up. At its best, practicing includes learning how to practice; it involves both reinforcing what is already known and pushing the envelope into what has not yet been mastered.

The lesson: If dedicated practice is an essential element in clinical teaching, the current clinical training system seems to come up short, although the increasing use of feedback from audio and videotapes, role-playing, and sim-

ulations are steps in the right direction (7). Extensive time in real-world clinical practice teaches many unique and important skills. Unfortunately, it may not fully protect against some worsening of patient outcomes (16), in part, perhaps, because over time clinicians' diagnostic thinking tends increasingly to premature closure and may become less flexible (17).

As attractive as it might be in principle, taking substantial amounts of time away from real-time clinical care to rehearse being a better clinician is obviously not realistic. One potentially useful way out of this dilemma might be to find ways to make daily clinical work serve simultaneously as practice in both senses of the word: delivering care and refining the skills of delivering it (18). Could exercises, such as periodic (perhaps random) critical self-review of videotaped office visits or operative procedures, be of help here? (19).

Teamwork

Except for keyboard players and folk singers, musicians perform almost exclusively in groups: duos, jazz combos, chamber ensembles, rock groups, or orchestras. And although musicians largely practice alone, rehearsing and playing in groups is a major and essential part of both their formal training and their performance careers. It is where they learn to share control, listen to other players, and send and receive signals. Group performance becomes, in effect, a part of their musical DNA.

The lesson: Even more than musical performance, clinical practice is inherently a team activity, but doctors, in particular, continue to be socialized primarily as autonomous agents; serious, formal rehearsing in multidisciplinary groups is the exception. Peers often learn informally to function quite well as medical teams; the harder part is reconciling teamwork with the diversity in age, experience, power, and status of most working clinical groups. But unless the training and practice of all health professionals seriously comes to grip with these realities, medical care will continue to be shot through with unnecessary and disruptive cacophony (20).

Repertoire

A fundamental element in all of music is bringing the expected together with the unexpected; merging the standard with that which has never been heard before. Composers state themes in classical works and then develop and transform them into variations; the tunes are familiar in jazz, but the riffs are always different; musical styles established in one era morph over time into new ones; and no matter how many times musicians play a "chestnut," they need to make it fresh and engaging every time.

The lesson: Developing a basic repertoire of practices and procedures in medicine is as important as achieving total fluidity in scales and arpeggios in music, but clinical practice at its highest level requires deviating from these repertoires in response to particular patients in particular

contexts. Of note, the requisite skills for making the necessary adjustments and departures in medical interviews have much in common with the skills jazz musicians use in improvising: creating communicative space, developing a voice, and cultivating an ensemble (21).

Specialization

Specialization is the natural order among instrumentalists: oboists often learn to play the English horn but rarely also become violinists, and Cannonball Adderly played only alto sax. The reasons for such extreme specialization are not really known but presumably depend at least partly on the need to match the technical demands of an instrument with a performer's physical and psychological attributes (as well as social and gender stereotypes and barriers; most flutists and harpists are still women, and most conductors are still men). Besides, achieving high-level mastery of a single instrument is generally enough of a challenge in any one musical career.

Composers usually learn to perform on at least one instrument (Beethoven was one of the great pianists of his era), but they generally live in a different world from performers. As the basic scientists of music, composers are primarily interested in discovering its unknown possibilities rather than interpreting what has already been discovered. Economics probably also shapes the choices: Music is a business as well as an art, and earning power varies with the performer's instrument. The only true generalists in music may be conductors, who must not only be familiar with what every instrument can do but also know every note written in the score for every instrument—and then make it all work together.

The lesson: The powerful drive to specialization in music suggests that specialization is an inherent quality of all highly demanding performance arts, a hypothesis supported by the seemingly endless emergence of medical subspecialties and sub-subspecialties as new technologies and biological developments emerge. A deeper understanding of what governs the choice of medical specialty could help adjust the mix of practitioners to the needs of the care system, particularly because the system seems to need a great many more conductors.

Examining musical structure also reveals some intriguing parallels with the structure of clinical practice. Take tempo, for example: Rushing a musical performance ruins its effect, much as pushing patients through the system too fast can distort their care. Take rhythm: Getting things in synch, achieving flow, is enormously valuable, particularly in such high-stakes, time-constrained clinical situations as surgical procedures (22). And take counterpoint: A clinician's structured line of diagnostic thinking moves forward both in synch with and in response to a patient's free-flowing words. How can we learn to hear both simultaneously?

RECAPITULATION

Music, of course, is not medicine, which is exactly why an understanding of how musical performance is created might help shake us loose from fixed ideas and preconceptions about the goals and methods of medicine. What would medical training and practice look like if we were to modulate from the current world into one shaped by insights from the professionalization of musicians? First, sophisticated coaching by highly trained coaching professionals would be the rule, rather than the exception, in all clinical teaching. Second, all the elements of the experiential learning cycle would be at work, at least at some level, all the time. Third, teamwork would be a major, explicit, and continuous element of all curriculum and training experiences. Fourth, techniques and incentives would be available for converting episodes of clinical practice into dedicated, defined learning experiences, as would greater opportunities for practicing clinical skills off line. Finally, the health care research agenda would include uninterrupted, deep exploration of such issues as the nature and acquisition of coaching skills, drivers of specialty choice, factors that affect the development of clinical judgment and empathic care, and the essentials of improvisation.

CODA

The case being made here is not that we would all be more effective clinicians if we were also musicians (although it would be fascinating to ask the many doctors and other health professionals who are also accomplished musical performers to reflect on how music has made a difference in their medical careers). At the very least, however, those of us in health care might want to keep firmly in mind what all musicians and other performing artists take for granted: You're only as good as your last performance.

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