

Living with Music

One Musician's Perspective

Nolan Gasser, PhD

In his impressively accessible introduction to theoretical physics, *The Elegant Universe*, Brian Greene enthusiastically summarizes, with a metaphor, the essence of string theory and its unique promise to unify Einstein's general relativity with quantum mechanics: "At the ultramicroscopic level, the universe would be akin to a string symphony vibrating matter into existence." Beyond the pride I feel in reading of Greene's conceptual alignment of the very nature of the early universe and the discipline of music, which is my own life's work, I am struck at just how common such metaphors are. Music as the window through which we can hope to better understand the world—or the universe—appears as old as time itself.

The first well-known exponent of this concept was Pythagoras, the ancient Greek musician-mathematician, who, according to legend, first recognized the inherent link between these two disciplines as manifest in the mathematical perfection of key musical intervals, which were perfect numerical proportions: the octave as 2:1, the fifth as 3:2, and the fourth as 4:3. Such beautiful symmetry was more than coincidence, the Pythagoreans argued, and must be an expression of a higher "harmony"—a Music of the Spheres—where the planets and stars move according to a musical logic, sounding the silent pitches of an endless celestial melody as they make their way around the heavens. From ultramassive stars to ultramicroscopic particles, music seems to make the universe more graspable and relevant to our lives.

The idea that music forms an intrinsic connection to the human body is, like the metaphoric relationship between music and the universe, an ancient one. The sixth-century Christian philosopher Boethius, perhaps the most revered musical author-

ity of the Middle Ages, expanded upon Pythagoras's notion of a *musica mundana* (heavenly music) with the term *musica humana*, defined as the music that runs

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Representation.

Psychology, too—following an inauspicious start (Freud was famously apathetic toward music)—has invoked music as a unique and vital presence in our lives, with ties to both our early, pre-ego development (e.g., infusing us in an ocean of sound that recalls the womb) and to our collective unconscious, as a link to prehistoric archetypes that may hold a key to our personal survival. Among the most articulate psychologists writing on the subject in recent years is Anthony Storr in such books as *Music and the Mind* and *The Dynamics of Creation*. Storr argues that music is more than a language of emotion but one that synthesizes the inner and external worlds, yet “belonging wholly to neither.” It is the stubbornly abstract nature of music—at once intelligible yet untranslatable, to use Claude Levi-Strauss's expression—that, for psychologists such as Storr, raises music to the very pinnacle of human achievements.

Finally, an interest in exploring a more empirically verifiable connection between music and our lives has enjoyed a present-day renaissance, highlighted by the publication and popular success of several recent books, among them Oliver Sacks' *Musophilia* (see review on page 11) and Daniel Levitin's *This Is Your Brain on Music*. Both explore the neuroscientific basis of our fascination with and dynamic response to music, as a significant part of what defines us as human—emotionally as well as cognitively. Dr. Sacks employs his forty years of work as a clinical neurologist to document a wide and fascinating array of cases in which music exhibits a commanding presence in the human brain, producing at times strikingly therapeutic, and in other cases sadly

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disturbing, responses in patients—often in association with a traumatic event or the onset of a serious neurological condition. Dr. Levitin, a cognitive psychologist and former music producer, has focused his attention on detailing the neurological and brain chemical responses arising from our interaction with music, and especially its significance to our emotional life. His research using functional magnetic resonance imaging (fMRI) to map the neural and metabolic responses to music, moreover, may be seen as but a modern corroboration of Boethius's earlier notion that music triggers a complex interplay between our minds, bodies, and spirits.

Both Sacks and Levitin emphasize the startling power of musical memory: Sacks, for example, highlights cases in which a patient whose mind is wholly ravaged by Alzheimer's disease can still sing a melody learned in childhood, without missing a pitch or lyric; similarly, Levitin cites studies of nonmusicians singing their favorite pop songs with no external aid, matching the pitch and tempo of the original recording with remarkable accuracy. Clearly, music is hardwired into our brains in a manner that defies narrow explanations of auditory reception and memory, lending credence to Sacks's notion that indeed "we humans are a musical species no less than a linguistic one."

While the observations, case studies, and scientific data derived from these inquiries and commentaries are fascinating, they act largely as confirmation of a truth that most of us already know: music is important to our lives and has a powerful effect on us that defies easy explanation. So, what can we do with this knowledge? What actions can we take to enhance the positive role music plays in our lives? How do we best "live" with music?

I am a practicing musician, and my perception of the "power" of music is most keenly derived from my professional experiences with the medium as a performer, musicologist, and composer. From this vantage point, the chief reality I perceive is that music—when conditions are right—is a living force, one that has the potential to transport us from our normal spiritual and

physical confines to another realm, where clock-time disappears and where emotion and intellect merge to the point of being indistinguishable. But the rub, as I see it, is that, like any transcendent experience, feeling the "living force" of music takes work; it is not a passive stimulus, like receiving a massage, but an active dialogue between that which resides within us and that which enters our awareness from the outside. It is a conversation between our expectations, our memory, and the visceral reality of what enters our ears. Even with repeated encounters with a familiar piece of music, the experience is never the same twice, provided we are actively engaged with it.

Many of the writers mentioned above speak of the specific quality of tension and release within a piece of music or a musical performance (as in a jazz improvisation) as a key component of music's emotional and cognitive gravitas. Manifestations of this admittedly vague notion are multiple and vary considerably, from a simple harmonic cadence (e.g., dominant-tonic) to a larger structural progression (e.g., from development to recapitulation in a symphony; from bridge to chorus in a pop song). But whatever the case, the tension must be perceived and the resolution experienced for the full effect to take place. The overriding encounter is one of musical narrative—a concrete progression in "aesthetic time" without a concrete story line, where the "subject" is sound itself.

This is indeed the miracle of music: that tones, rhythms, harmonies, or timbres in succession can have meaning at all, a meaning experienced as it happens, and where precise semantic translation is impossible or irrelevant. When the living musical experience is powerful enough, we can be truly lifted into an altered state, where a resonance imaging of our brain would undoubtedly reveal it as coming alive, triggering a myriad of salutary effects on our sympathetic and parasympathetic nervous systems. In an age of increasing societal and personal stress, not to mention rising environmental risks, a counterbalance of engaged music-listening seems a painless—indeed pleasurable—means to help ward off the prospect of cardiovascular disease or cancer. Think of it as musical exercise.

But once again, it takes effort. The development section of the opening movement of Mozart's Piano Concerto No. 21, for example, contains an extended set of musical sequences, rising one after another, like a huge row of waves slowly making their way to the sandy beach of the movement's primary theme. The effect is amazing if followed intently passage-by-passage, though merely pleasant if listened to casually. To cite another, more obscure example, the Renaissance master Josquin des Prez's six-part motet *Praeter rerum serium* is among the most profound works ever written, and the emotional-intellectual payoff is unrivaled—if the narrative is intently followed; otherwise, it sounds like pretty church music.

Now, to be sure, there is nothing wrong with casual music listening; like a recreational massage, it can be wonderfully pleasant. But with just "pleasant," we will not quite rise to the heady and poetic powers assigned music by the writers noted above. A key ingredient here, of course, is education; the more one knows about music—historically, theoretically, practically—the more one can retrieve during one of those encounters. Perhaps, indeed, when conditions are right—whether "living" with the music of Bach, the Beatles, or Dave Brubeck—we'll glimpse what Pythagoras and Boethius were really talking about: that the heavens, as well as the human body, are made more harmonious by the inexplicable power of music. **sfm**

Dr. Nolan Gasser is a professional composer, pianist, and musicologist, who received his Ph.D. in Musicology from Stanford University, where he has taught as an Adjunct Professor. His compositions have been performed by orchestras and artists around the country, with a performance this month [March 10] at Carnegie Hall. Among his current commissions include a work celebrating the launch of NASA's next space telescope mission, GLAST, entitled Cosmic Reflection, "depicting" the history of the universe. Dr. Gasser is the architect of the Music Genome Project for the popular Pandora music service, and is the Artistic Director of the Classical Archives website. He lives in Petaluma with his wife and two children.