

to remind us all about the responsibilities of scientists to not focus only on a specific problem and to search for connections beyond the limits of a single discipline. The scientific ethos, which has helped in the past to establish an open and liberal society based on free inquiry and exploration, is once again called upon to defend these values. Therein lies the ethical dimension of a scientific way of life. The satirist Karl Kraus once called Vienna the “Doomsday Laboratory,” and the city’s 20th-century history shows how fragile the Exners’ vision of a liberal humanism actually was. However, as Franz Serafin Exner noted, only through the dedicated efforts of us all will we be able to maintain the highly improbable state of cultural, scientific, and individual diversity.

References

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NEUROSCIENCE

Steal Away, Music

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Music “steals” us. Far from a passive fancy that lies ready to be called on for the pleasure of our ears and minds, music acts on us. Like the song of the sirens, it seduces us, capturing the mind and body and holding them in its reins. Music has a will of its own when it sneaks up on us with familiar—even unwanted—tunes, “brainworms” that we cannot shake. It taps into memories and emotions so deep-seated that they lie well below awareness in Alzheimer’s disease until music brings them to the surface. A Parkinson’s patient, unable to will himself to move, relies on music’s rhythm and moves. *Musicophilia* is not only another example of

best-selling author Oliver Sacks’s repertoire of fascinating neurological anecdotes and skillful storytelling but also a poignant collection of evidence that music has a powerful influence on the human brain.

Stories of bizarre and wonderfully human experiences of music float somewhere between the mystical and the medical. The tale of a sudden gift for the piano delivered by a lightning bolt dazzles us, and stories of musical hallucinations and rhythm-induced seizures of the temporal lobes haunt us. We suspend our sensory intuitions to imagine our senses blending like watercolors when a minor third “tastes salty” or the key of D major “looks clear green” in music synesthesias. The chapter titles alone titillate the curiosity, from “Accidental Davening” to “Papa Blows His Nose in G.”

Sacks (a professor of clinical neurology at Columbia University) is most at home telling stories of people afflicted by brain damage and deterioration, an inclination revealed by his sensitivity to the unpredictable range of neurological events that carry each patient on a unique mental and emotional journey. Sacks relates his patients’ stories with honest insight and a delicate reverence. Moments of humor surprise us, as in the story of the charming Louis, an elderly gentleman with frontotemporal dementia whose loss of inhibition leads him to sing incessantly while chasing after a plate of cookies like an unabashed child.

Gently, we are moved from the funny to the devastating with Clive, a severe amnesic for whom life does not exist beyond the span of several agonizing seconds, except when conducting music or playing the organ. Clive exists only in the present and only through music. When the music stops, so does existence, and he returns to an “abyss” of nonbeing. And we scientists ask, is music adaptive?

Sacks’s golden nugget in *Musicophilia* is his insightful description of the ways in which certain brain functions that are normally suppressed get released through damage to others. Damage to the dominant hemisphere, for example, can result in a disinhibition of perceptual abilities associated with the nondominant hemisphere. Thus, through disease or mere aging, individuals, even those who were once artistically or musically naïve, can gain access to perceptual and creative powers. Deafness can lead to musical hallucinations,



Henry Ossawa Tanner’s *The Banjo Lesson* (1893).

blindness can lead to music synesthesia, and the disinhibition that occurs in frontotemporal degeneration can lead to sudden, excessive musicality. A shift to right-hemisphere dominance resulting from a lack of normal suppression by the left temporal lobe might contribute to the disproportionate musical abilities in savants and people with Williams syndrome.

Neuroscience is delving deep into the brain’s musical networks: from the subcortical and cortical structures of musical emotion, to the integration of auditory and motor areas in rhythm; the effects of music training and mental imagery on plasticity, to the role of body maps in musician’s dystonia; the asymmetry of the planum temporale in absolute pitch, to the genetic basis of amusia. The field of music neuroscience is young, however, and Sacks’s essays are equally nourished by the poetic philosophies of Nietzsche, Eco, and Schopenhauer and the music of Chopin, Chico

Marx, and the Grateful Dead. Some mysteries of our creative impulse—the paradoxical way that sad music gives us pleasure, the unique force with which rhythmic music brings a dancing crowd to ecstasy—might just transcend the limits of reason. “The power of music,” says Sacks, “whether joyous or cathartic, must steal on one unawares.”

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Musicophilia

Tales of Music and the Brain

by Oliver Sacks

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