

## Awe: The New Science of Everyday Wonder by Maria Popova

“Music,” the trailblazing composer Julia Perry wrote, “has a unifying effect on the peoples of the world, because they all understand and love it... And when they find themselves enjoying and loving the same music, they find themselves loving one another.” But there is something beyond humanistic ideology in this elemental truth — something woven into the very structure and sensorium of our bodies; as the great neurologist Oliver Sacks observed, “music can pierce the heart directly; it needs no mediation.”

Psychologist Dacher Keltner examines what that unmediated something is and how it pierces us in a portion of his altogether fascinating book *Awe: The New Science of Everyday Wonder and How It Can Transform Your Life* (public library) — a taxonomy of wonder derived from his study of twenty-six cultures around the world, across which music, above all other forms of beauty and spirituality, emerges as the most universal of our creaturely portals into transcendence.

Art by Kay Nielsen from *East of the Sun and West of the Moon*, 1914. (Available as a print and as stationery cards.)

After observing the virtuoso concert cellist Yumi Kendall respond bodily to the music she plays and cast an embodied enchantment upon those hearing it, Keltner writes:

When Yumi moves her bow across her cello’s strings, or when Beyoncé’s vocal cords vibrate as air moves through them, or when Gambian griot superstar Sona Jobarteh plucks the strings of her kora, those collisions move air particles, producing sound waves — vibrations — that move out into space. Those sound waves hit your eardrums, whose rhythmic vibrations move hairs on the cochlear membrane just on the other side of the eardrum, triggering neurochemical signals beginning in the auditory cortex on the side of your brain.

Sound waves are transformed into a pattern of neurochemical activation that moves from the auditory cortex to the anterior insular cortex, which directly influences and receives input from your heart, lungs, vagus nerve, sexual organs, and gut. It is in this moment of musical-meaning making in the brain that we do indeed listen to music with our bodies, and where musical feeling begins.

This neural representation of music, now synced up with essential rhythms of the body, moves through a region of the brain known as the hippocampus, which adds layers of memories to the ever-accreting meaning of the sounds. Music so readily transports us from the present to the past, or from what is actual to what is possible, spatiotemporal

journeys that can be awe-inspiring.

And finally, this symphony of neurochemical signals makes its way to our prefrontal cortex, where, via language, we endow this web of sound with personal and cultural meaning. Music allows us to understand the great themes of social living, our identities, the fabric of our communities, and often how our worlds should change.

Composition 8 by Wassily Kandinsky, 1920s, inspired by the artist's experience of listening to a symphony. (Available as a print.)

With an eye to a suite of studies examining the neurophysiology of awe through the lens of music — how different types of music affect our heart rate and hormones, how different people's brains synchronize when listening to the same music — he adds:

When we listen to music that moves us, the dopaminergic circuitry of the brain is activated, which opens the mind to wonder and exploration. In this bodily state of musical awe, we often tear up and get the chills, those embodied signs of merging with others to face mysteries and the unknown... Music breaks down the boundaries between self and other and can unite us in feelings of awe... When we listen to music with others, the great rhythms of our bodies — heartbeat, breathing, hormonal fluctuations, sexual cycles, bodily motion — once separate, merge into a synchronized pattern. We sense that we are part of something larger, a community, a pattern of energy, an idea of the times — or what we might call the sacred.

Complement with the poetic physicist Alan Lightman on music and the universe, Nick Cave on music, feeling, and transcendence in the age of algorithms, and some thoughts on music and the price of what we cherish, then revisit the kindred science of “soft fascination” and how nature helps us think.