



Your Brain on Om: The Science of Mantra

There is a vast science of sound in yoga used for increasing awareness and expanding emotional states

By [Gabriel Axel](#)

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In response to my [first post on yoga and the brain](#), I received a thoughtful question from a reader: "Why would my brain want to love saying Om?" We have often heard (or heard of) yoga students or ourselves chanting the sound Om or Aum at the beginning or end of a [yoga class](#). When I first took a yoga class, I was curious as to the reason and significance of using this sound, feeling slightly awkward uttering aloud this unfamiliar sound. Indeed, in some of my yoga classes, there may be students who opt out of participating in this part, instead choosing to remain silent. As a scientist by [birth](#), so to speak, and thus a true skeptic in the sense that I enjoy questioning unfamiliarities to a healthy degree – rather than the self-serving doubting of everything that doesn't agree with the limited convictions of the personal mind – I figured that chanting such a sound may have a functional purpose if I experimented with it. I soon discovered that there is a vast science of sound in yoga used for increasing awareness and expanding emotional states of the human personality in ways that align with some recent investigations in neuroscience.



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In the course of human evolutionary [history](#), the auditory faculty evolved to process some set of constant features in nature, which make up the core grammar of auditory perception. These are the bite-sized pieces of sound information that the brain has evolved to process and of which to make sense. Through our sense of hearing the brain detects forms in space, much like echolocation in bats, by recognizing the sounds of interactions among solid-object physical events. Imagine that you hear the sound of a car's [tires](#) screeching, followed by a crash, and then the reverberation of the impact.

What you've just heard is a series of events: a slide (tires screeching), a hit (the impact) and a ring (the reverberation), the three major types of physical interactions. [Neuroscientist Mark Changizi has posited](#) that the major phonemes of speech have evolved to resemble these kinds of interactive events, in a sort of onomatopoeia, where the sounds of the words resemble the events themselves, such as in "screech" and "crash." Speech, and even music as an ordered narrative of sounds, make use of our brain's evolved capacity to [perceive](#) natural sounds.

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Mantra is a Sanskrit word for "sound tool," and Om is one of myriad such mantras. Sanskrit and some other ancient languages such as Tibetan, prototypical Egyptian and ancient Hebrew evolved as complex systems of onomatopoeia, where the sounds evoke movements of energy. This evocation is qualitative and subjective and is linked with interoception (inner body sensations) and emotional sense of self, both [predominantly represented in the right hemisphere](#) of the brain. Conversely, the narrative strand of sounds in which we give them meaning is done [predominantly through the left hemisphere](#). What is fascinating about mantras is that from a physics standpoint, the sounds themselves, before they are assigned meaning, will resonate in different parts of the body and mind, creating actual interactions or events. Mantras are information, in the literal sense of in-forming: the creation of form, or interactions. The Sanskrit language is an information sequencing system that [mimics](#) the process of nature's repeating patterns. As the Sanskrit scholar Dr. Douglas Brooks has said, "Sanskrit tells us what Nature shows us. A limited number of rules gives an arbitrarily large number of outcomes. The way

Nature goes about its business, Sanskrit goes about its language." Much like the emotive quality of immersing oneself in music, mantra uses sound to evoke movement of physical and emotional energy through stimulation of the nervous system, from which emerges meaning and narrative.

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In order to have insight into and validate a mantra for ourselves, it must be experienced and felt through introspection. Let's take the mantra Om, or Aum, one of the most common in Sanskrit and Tibetan. If Aum is indeed onomatopoeic, then performing it can create an event inside the nervous system, which can then become an object of concentration and meditation, and thereby a focal point for expanding physical and emotional awareness. In terms of phonemes, we notice that it does not have any plosives or fricatives, only sonorants. From the types of solid-object physical events that the brain evolved to perceive, this respectively corresponds to an absence of hits and slides, and the presence of only rings. A, U and M are sonorants or rings, so this particular mantra qualifies an object that inherently has no interactions (hits or slides). In terms of physics, this means our object is formless. Try resonating the mantra aloud, allowing air to flow through the nasal passage, smoothly transitioning between the three sounds. If you do not wish to disturb anyone that may be around you, you can whisper the sounds subvocally. The A (pronounced ä, as in "car") can feel like a wide opening and has a broader vibratory effect on the physical body, approximating the gross consciousness of the waking state. The U (pronounced ōō, as in "soup"), has a funneling effect, narrowing the consciousness into subtler sensations such as thoughts and impressions, approximating the dream state. The more nasal M sound is like the drone of a bee; it makes the cranium vibrate in a kind of undifferentiated and ubiquitous earthquake over the convolutions or valleys in the cerebral cortex, approximating the deep dreamless sleep state of consciousness. Traditionally, Aum represents and has the capacity to progressively open up the practitioner to the ever-present formless and timeless reality, the background radiation of the cosmos that echoes the Big Bang. Aum is found in the form of Amen in Christianity, Judaism and ancient Egyptian, where it also codes for the immutable eternal aspect of consciousness.

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The feelings and symbolic representations of the sounds will differ from person to person because, like any tool, the effects of the sounds depend on the user operating them and the object of use, namely the condition of the body and mind. The practitioner should first develop a state of relaxation through proper breathing. It is also important to take interest in or to have a healthy curiosity for the practice so that the effect of actually enjoying the learning process may help the mantra get a foothold in the system. Mantras can be done vocally, sub-vocally (whispering) or silently in the mind. It is recommended to start aloud, and then proceed with the more silent variations. Silent repetition does have an effect; when the frequency of any sound is high enough, it extends beyond the human range of hearing and eventually achieves stillness, which is beyond sound itself. It has been demonstrated in a double-blind [study](#) that ultrasound probes applied to the skull can improve subjective mood, and it has been [evidenced](#) that even imagining performing musical exercises rewires and strengthens nerve connections. Both of these studies speak to the capacity of mental recitation of mantra to activate and affect the physical nervous system. Moreover, group chanting or recitation of mantra can synchronize the brainwaves between the participants, achieving yet another level of collective effect, as [has been shown between musicians](#), which can help to understand the functional basis for group chanting in many of the world's wisdom traditions.

Johann Wolfgang von Goethe once said: "Architecture is frozen music." The Sanskrit language is code for the patterns of nature, sonic representations of the way nature works. Mantras hold within them the latent forms of the universe. From supreme stillness and subtle ultrasonic vibrations, these latent forms cascade into being as audible sound, which then has the capacity to in-form, or shape reality, as has been demonstrated by [cymatics](#). By practicing mantra, we can tap into the source of that power to manifest – we can drive our awareness deeper into the bones, muscles and tissues of the body to gain a greater sensitivity and understanding of our makeup and amplify the emotional energies latent within, much like the potential energy present in mountains that then becomes kinetic in the form of an avalanche when the earth quakes. By aiming with intention the practice of mantra into progressively deeper layers of ourself, we can bring more of ourself online, as it were, and therefore more on board the journey of health and fitness towards union and wholeness. Through mantra, we have the opportunity to practice yoga.

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