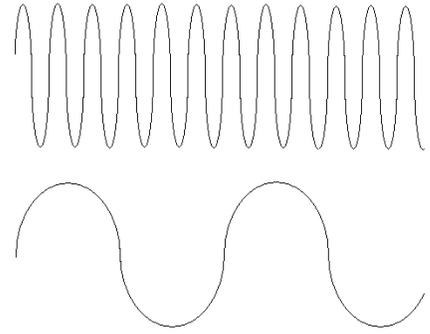


Commentaries

Brain Waves and the Era of Cosmetic Neurology



I was about to begin this column focusing on a brochure my daughter, who lives in LA, sent me, advertising “Yoga for brain education” and a book called, *Brain Wave Vibration*, which “helps you reawaken your natural healing abilities by awakening your brain stem.” “Your brain stem is critical to your health because it is the area of your brain that controls breathing, heart rate, stress response and other automatic functions of the body.” The brochure noted that Los Angeles had proclaimed May 2nd, Brain Education Day.”

As luck would have it I then stumbled on an editorial in *Neurology* (Hamilton et al. *Rethinking the Thinking Cap*. 2011;76:187), the journal of the American Academy of Neurology, about the potential use of brain stimulation to enhance memory and cognition. “Cosmetic Neurology,” is their term. This type of brain stimulation is like a watered down and somewhat focal electroconvulsive therapy (ECT), but does not induce seizures. This “cosmetic” research is in addition to the experimental trials on mood and motor function for people with Parkinson’s disease, again based on effects of ECT.

Discussions of brain wave vibration, trans-magnetic stimulation and relaxing the brainstem are reminders of the common belief that we all only use a percentage of our brains, the rest of it presumably lying fallow. Popular myth holds that what distinguished Albert Einstein from the rest of us was his ability to harness his whole brain power. The rest of us are innately like him, but due to some trick or peculiarity of wiring he could harness a 200 horse power motor awhile the rest of us are in the double digits (or less). But, if we can vibrate our brains, or parts of the brain we might go from our V6 to a V8 version.

Having read about brain wave vibrations and studied electroencephalography,

I have come to believe that electrical synchrony may save the planet. While it is true that when portions of the brain fire in synchrony epileptic seizures occur, near-synchronous firing may be ideal. Perhaps seizures simply represent too much of a good thing, which brings me to quantum neurology.

Most of us don’t understand quantum mechanics, and even fewer the notion of quantum computing, but here, at the very core of physics, may be the key to understanding the mental universe, which is, by definition, the actual and only universe we all live in. The core of quantum mechanics, of course, is probability; objects and waves transform into each other, and no object is in any particular location, but rather has a probability or energy distribution. This is why people have memory lapses and why some people are smarter or more coordinated than others. Their electrons are on the wrong side of the bell shaped curve.

Imagine that each electron in your brain has a probability of doing something or being somewhere. The brain works by chemical-electric connections. So, if you can’t count on each electron doing its job, these synaptic connections are only partly reliable. Many people have used a variety of drugs to alter the physiology of their brains, with the ultimate goal of changing the reliability of transmission. Imagine if all your electrical impulses actually triggered their intended connections! Perhaps you’d think more clearly. Perhaps you wouldn’t forget the thing you walked into the living room to retrieve but then forgot. On the other hand, if the connections all fired at the same time, the energy released is overwhelming, but short of a critical mass and an explosion, the brain generates an electrical seizure.

For the past few years we’ve been working on cosmetic neurology. Originally used to describe the use of botuli-

num toxin to reduce age-related wrinkles, cosmetic neurology now focuses on intelligence, memory and, hopefully, personality. Of course part of the explanation for this is that when botulinum injections for wrinkles proved to be a money-making activity, it was taken over by dermatologists so neurologists needed something else for the cosmetic effect. Being neurologists we have taken a “deeper,” more philosophical approach to cosmesis, by tapping American’s concerns to be smarter and to think quicker. When we offered our first study for “cosmetic Neurology” intervention we were swamped with interest, but when we described our study, and people learned that it was not for botulinum, we did, indeed, have trouble recruiting. More people are interested in wrinkles than intelligence. However, we have concluded our study and showed that people who wear magnets on their left parietal scalps improve on tests of verbal fluency. We are studying the effect of magnets on frontal lobe function for apathy, and reverse magnets (patent pending) which reduce electrical activity in places we think may be overactive.

The idea behind magnetic stimulation is that we can overcome the randomness imposed by quantum mechanics, with directed electromagnetic forces that cause electrons to move in ways that produce higher degrees of wave synchrony, thus relaxing the brainstem and also making the interactions between the two cerebral hemispheres less oppositional, allowing them to work in concert, thus increasing brain power. We have found that focused electromagnetic stimulation increased brain metabolism as measured by PET scan. This in turn has led to significant weight loss for many subjects, as they think harder, and use greater energy. This, in turn, has greatly improved our recruitment for our studies, for we can now advertise weight loss as a potential

benefit. It appears that many more people are interested in wearing magnets and reverse magnets on their heads to lose weight than to think better. We can again talk about “cosmetic neurology,” although once reimbursement codes are determined it will undoubtedly become a behavioral medicine procedure.

April Fool.

– JOSEPH H. FRIEDMAN, MD

Disclosure of Financial Interests

The editor’s potential conflicts of interest are available by emailing him at joseph_friedman@brown.edu.

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A Tale of Two Stricken Cities

It was a magnificent harbor where the Tagus River emptied into the eastern Atlantic Ocean. Archeologists tell us that Celtic tribes had peopled its shores, building great stone dolmens to honor their gods. About three millennia ago it became the site of a Phoenician trading post called *Allis Ubbo* (safe harbor.) The port assumed great mercantile importance since the Phoenicians—disseminators of civilization—used the harbor as their point of departure to the fabled tin mines in what is now southwestern England. Greek mariners knew the community as Olissipo; and the Romans, now designating the Iberian province as Lusitania, called the community, Olissipona. And when Portugal was conquered by the Islamic Moors in 711 CE, they referred to the site as *al-‘Isbunah*, a name than morphed finally to its current title, Lisbon, when the coastal city was recaptured by Christian forces in the Reconquista of 1147 CE.

Mid morning of November 1, 1755, All Saints Day: The citizens of Lisbon, Portugal, were not unfamiliar with periodic earth tremors; and fourteen times in the prior five centuries the tremors were sufficiently intense to do structural damage within the city limits. But it had been many years since the last earthquake of note had touch the city; and Lisbon, on this holy day, was unprepared for the intensity of this quake, which in retrospect, was the most damaging quake afflicting a European city in recorded times.

The citizens of Lisbon witnessed the physical destruction of much of their baroque city; but nature had not yet completed its veil of lethal terror. The epicenter was located on the floor of the Atlantic Ocean some 200 kilometers southwest of the Portuguese shores. The temblors were experienced as far northeast as Finland. The Atlantic shores of Portugal, however, were then struck by a massive tidal wave, a tsunami, that engulfed the Algarve coast, destroying many fishing villages and flooding habitations along the Tagus River. Superimposed upon the destruction wrought by quake and flood were devastating fires beginning shortly after the quake-initiated destruction. The separate fires coalesced, razing much of the center of Lisbon including its central hospital, the Royal Hospital of All Saints. An estimated 40,000 Portuguese died.

The three-fold tragedy befalling Lisbon—earthquake, tidal wave and fire—brought the Portuguese to reappraise their political views, their religious tenets, and certainly their newly experienced intimacy with a nascent science called seismology. The ruling monarch, King Joseph, had his palace utterly destroyed, and for the remainder of his life he refused to dwell within customary masonry structures, remaining instead in a small tent city. Widespread fear dominated Lisbon’s urban population, many believing that their

unhappy fate was an act of divine punishment for their emerging intimacy with the Age of Enlightenment.

Lisbon’s tragedy was well known to the remainder of the western world . Voltaire wrote poetic condolences and a century later in the United States, Oliver Wendell Holmes Sr.,—poet and physician of renown—makes mention of the Lisbon earthquake beginning in the second stanza of his enduring poem, “The Deacon’s Masterpiece,” which begins with the memorable lines: “Have you heard of the wonderful one-hoss shay, That was built in such a wonderful way, It ran a hundred years to a day ?”

Holmes’ second stanza declares, somewhat irreverently:

Seventeen hundred and fifty-five.
George Secundus was then alive,
Snuffy old drone from the German hive.
That was the year when Lisbon town
Saw the earth open and gulp her down.

Over a millennium before, in the year 79 CE, another proud city was felled by natural forces. Pompeii, a prosperous city of some 20,000, situated on the southern reaches of the Bay of Naples, provided many summer villas for the Roman elite. The city stood figuratively in the shadow of Mount Vesuvius, a volcano with a reputation for unanticipated eruption. In November of the year 79—historians think that it was November 23—Vesuvius erupted sending a cloud of superheated ash in a southeastern direction killing the inhabitants of Pompeii and neighboring cities such as Herculaneum. Pompeii was buried under a 22 meter layer of hot ash; and it was then lost to memory except as a footnote in the writings of the late Roman scribes. The physical existence of Pompeii was only verified, by accident, in 1599.

Two cities, one pious and one voluptuary, were felled by indifferent natural forces. In nature, said Ingersoll, there are neither rewards nor punishments, there are only consequences.

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Stanley M. Aronson, MD, and spouse/significant other have no financial interests to disclose.

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