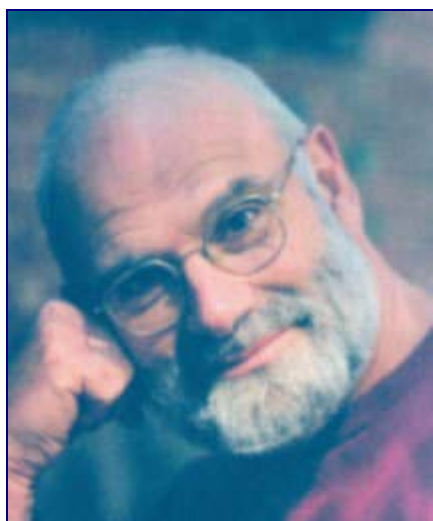


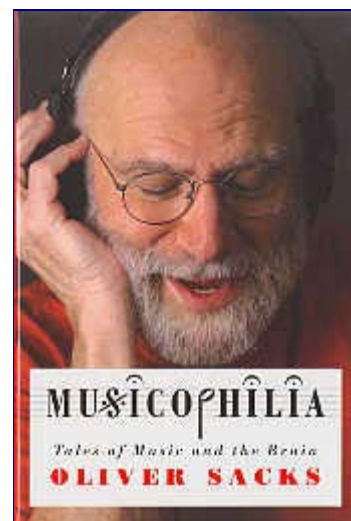
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## A READER'S JOURNAL

### Musicophilia Tales of Music and the Brain by Oliver Sacks

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A Book Review by Bobby Matherne ©2010



When Oliver Sacks talks, I listen. When he writes, he takes subjects and follows them to the very nerve-endings and synapses of the

brain itself. He never writes without including some aspect of his amazing and diverse life, such as when he introduced the [Island of the Colorblind](#) by talking about his love for the cycads which were growing in the London Botanical Gardens. The island whose population were color blind also had these primitive cycad trees, whose existence dates back to Paleozoic times. I was amazed to discover that the subtropical sago palm which grows everywhere around New Orleans was not a true palm, but one of these ancient dinosaur age plants. When I read his books, my life changes — I can never look at a sago plant without admiration since that book. Nor can I think of cold and hot lights (fluorescence and tungsten bulbs) without thinking of his two uncles, one who pioneered in cold light, and the other a pioneer in hot lights, namely, his [Uncle Tungsten](#) of the eponymous book.

With this book, he has attacked music in the same way, delving deeply into his own experiences with music and deeply into what happens inside the minds and brains of many patients with various brain and nervous system anomalies which shed light on how our human body works *vis-à-vis* music. If you thought you understood music because you are a music lover, Sacks will open his bag of tricks and surprise and delight with novel aspects of music which few have heard of or discovered in their own lives, up until now. And once more he has changed my own life. This time, not in a pleasant way.

Did you ever notice a clock ticking in the room you were in? And once you've noticed the darn thing ticking how hard it is to get rid of the ticking? You cannot get it to stop ticking by conscious effort(1); the harder you try the more aware you become of its incessant tick, tock, tick, tock, tick, tock . . . Well, during his discussion of tinnitus(2) he describes various kinds of tinnitus, one of which matched a low level of tinnitus in my own ears, one of which I was hardly conscious of, until *he mentioned it*, I was plagued by my consciousness of it for several days, before I lapsed once more into blissful unawareness of it, but never again into blissful ignorance of it. Like Adam seduced by the apple that Eve-like Oliver offered, I have gotten knowledge of my tinnitus, and it become present whenever I think of or write about it. Let this be your warning, if you suspect you have low-level tinnitus, it may arise into consciousness while this review or the book, but rest assured, it will lapse once more into normal background noise in a short time.

I recall Betty Rankin, aka Big Mama of [WWOZ.org](#) fame, once saying over the radio, that she listened to WWOZ radio all night to help her sleep, and now I understand that she likely had enough tinnitus to

otherwise keep her awake. My tinnitus is more like light hissing of a steam radiator, very constant and low volume, more like the white noise that some people buy and electronic generator for in order to help them sleep. Me, I have a white noise generator built-in.

In his Preface Sacks writes about music and quotes Schopenhauer, "The inexpressible depth of music — so easy to understand and yet so inexplicable, is due to the fact that it reproduces all the emotions of our innermost being, but entirely without reality and remote from its pain . . . Music expresses only the quintessence of life and of its events, never these themselves." On this point, I would respectfully disagree esteemed philosopher. Once when the French Academy was debating whether a bear could dance, a man by the window looked out and saw a dancing bear in the street. In the face of contradictory evidence, a philosophical argument cannot stand. To those alive today who agree with Schopenhauer's last statement above, I would merely ask them to visit New Orleans and observe and participate in how music is integrated into life and all of its events.

We use the expression a bolt from the blue to refer to ideas which come to us in a flash, but Sacks begins his book with a story of a man, a doctor, who was talking on a pay phone outdoors when he was hit by a lightning flash which laid him out on the ground, dead, for all practical purposes. He reports floating above the scene, watching a woman giving him CPR.

**[page 4] Then I was surrounded by a bluish-white light . . . an enormous feeling of well-being and peace. The highest and lowest points of my life raced by me. No emotion associated with these . . . pure thought, pure ecstasy. I had the perception of accelerating, being drawn up . . . there was speed and direction. Then, as I was saying to myself, 'This is the most glorious feeling I have ever had' — SLAM! I was back."**

**Dr. Cicoria knew he was back in his own body because he had pain — pain from the burns on his face and his left foot, where the electrical charge had entered and exited his body — and, he realized, "only bodies have pain." He wanted to go back, he wanted to tell the woman to stop giving him CPR, to let him go; but it was too late — he was firmly back among the living. After a minute or two, when he could speak, he said, "It's okay — I'm a doctor!" The woman (she turned out to be an intensive-care-unit nurse) replied, "A few minutes ago, you weren't."**

The police finally took the doctor home instead of the hospital and later tests by cardiologist showed no problems. Just when his life seemed to have returned to normal several weeks later, he developed an intense desire to listen to piano music. He didn't own a piano, so he got recordings to satisfy his craze.

**[page 5] This was completely out of keeping with anything in his past. He did not have a piano in his house. What music he did listen to tended to be rock music.**

**With this sudden onset of craving for piano music, he began to buy recordings and became especially enamored of a Vladimir Ashkenazy recording of Chopin favorites — the *Military Polonaise*, the *Winter Wind Etude*; the *Black Key Étude*, the *A-flat Polonaise*, the *B-flat Minor Scherzo*. "I loved them all," Cicoria said. "I had the desire to play them. I ordered all the sheet music. At this point, one of our babysitters asked if she could store her piano in our house—so now, just when I craved one, a piano arrived, a nice little upright. It suited me fine. I could hardly read the music, could barely play, but I started to teach myself." It had been more than thirty years since the few piano lessons of his boyhood, and his fingers seemed stiff and awkward.**

This was only an appetizer for what was to come. Soon he heard music in his head.

**[page 5, 6] "The first time," he said, "it was in a dream. I was in a tux, onstage; I was playing something I had written. I woke up, startled, and the music was still in my head. I jumped out of bed, started trying to write down as much of it as I could remember. But I hardly knew how to notate what I heard." This was not too successful — he had**

**never tried to write or notate music before. But whenever he sat down at the piano to work on the Chopin, his own music "would come and take me over. It had a very powerful presence."**

The music in his head seemed to "come from Heaven" as Mozart said about his music. Soon a music teacher came to help write down his music. Other than that, this was "a solitary pursuit, between himself and his muse." (Page 7)

When Sacks interviewed him, some details of his inner experiences emerged. His new-found ability to see auras indicates to me that his chakras had been opened. These seven energy centers associated with cardinal points of the human body are like vortices which get stirred up and begin to spin and pour spiritual energy in and out the body in their various locations. Each chakras has definite number of petals from two to a thousand, and these petals represent what the convolutions of the flowing forces leave as a visual pattern to those who can see these spiritual forces.

**[page 7] I asked whether he had experienced other changes since the lightning strike — a new appreciation of art, perhaps, different taste in reading, new beliefs? Cicoria said he had become "very spiritual" since his near-death experience. He had started to read every book he could find about near-death experiences and about lightning strikes. And he had got" a whole library on Tesla," as well as anything on the terrible and beautiful power of high-voltage electricity. He felt he could sometimes see "auras" of light or energy around people's bodies — he had never seen this before the lightning bolt.**

There are dozens of such cases of unexpected musical skills in this book, so I include this one in detail. When Dr. Cicoria asked if Sacks thought his experiences were spiritual, he might not have known that Sacks characterizes himself as an "atheistic Jew"[\(3\)](#). Sacks responded he "felt that even the most exalted states of mind, the most astounding transformation, must have some physical basis or at least some *physiological correlate in neural activity*". (italics added) This statement is interesting because I suspect that all illnesses and diseases process this way as well, some deep spiritual change takes place and the body follows along as if the soul and body were entrained, and I have no doubt they are.

Suddenly out of nowhere, like a grace note in music which doesn't appear in the written score, Cicoria's love of music appears in his life and his life is enhanced by it. Dr. Cicoria's story inspired me to write this poem.

**A grace note  
not to be questioned**

**Whether it be  
flat or sharp —**

**A grace note  
a lucky strike**

**A lightning strike  
not to be questioned**

**But to be enjoyed.**

**A grace note,  
A fillup  
A flare  
A soupçon  
of music.**

In his Preface, Sacks writes about the "extraordinary tenacity of musical memory" saying that "so much of what is heard during one's early years may be 'engraved' on the brain for the rest of one's life." Clearly he

is correct about this, but he does not go far enough, lacking the insights of the science of doyletics which postulates that every event in one's life is "engraved" on the brain indefinitely. Not for the rest of one's life, however, because it is easy using the speed trace memory technique to remove events which would otherwise remain engraved for the rest of one's life. As one begins to understand how one removes consciously these engraved events from one's early life, one can see that many of events are removed unconsciously as one matures(4). These "engraved events" are called doylic events or simply doyles and for simplicity they are assumed be stored in doylic memory, which name is necessary to distinguish it from just plain memory (or cognitive memory). Doylic memory hold physical body states which includes a vast array of events in the body of the pre-five-year-old child: hearing, speaking, walking, handling objects, recognizing objects through their orientation, and various internal states we label generically as sadness, fear, anger, anxiety, joy, happiness, gladness, among many other states.

When I read the case history of Mrs. N. I wondered if a simple speed trace might have kept her from needing a partial temporal lobectomy.

**[page 28] She had loved the Neapolitan songs, which reminded her of her childhood. ("The old songs," she said, "they were always in the family; they always put them on.") She found them "very romantic, emotional. . . they had a meaning." But now that they triggered her seizures, she began to dread them. She became particularly apprehensive about weddings, coming as she did from a large Sicilian family, because such songs were always played at celebrations and family gatherings. "If the band started playing," Mrs. N. said, "I would run out. . . . I had half a minute or less to get away."**

Since our research into doyletics has found that doylic memories which trigger migraine, asthma, allergies, rashes, and various kinds of automatic responses, it seems possible that a simple minute or two speed trace could remove the very trigger which caused her grand mal seizures. I leave this as an open question, but one could promise relief without surgery for many people who suffer various kinds of seizures. The trace procedure is very fast and after short training(5), it can be used by the patient on themselves upon the slightest symptom of the seizure coming on.

One of the keys to a general acceptance of the science of doyletics would be a physiological confirmation of the Memory Transition Age of five years old. Extensive traces going back 35 years have shown that if a doyle is traced back before the age of 5, it will not return while traces only going to ages 6 or older will allow the doyle to return at some future time. From the description of how the functional MRI scans were able to notice the filling of musical gaps, it seems clear that a functional MRI could provide physiological confirmation of the Memory Transition Age.

**[page 33] Physiological confirmation of such "filling in" by involuntary musical imagery has recently been obtained by William Kelley and his colleagues at Dartmouth, who used functional MRI to scan the auditory cortex while their subjects listened to familiar and unfamiliar songs in which short segments had been replaced by gaps of silence. The silent gaps embedded in familiar songs were not noticed consciously by their subjects, but the researchers observed that these gaps "induced greater activation in the auditory association areas than did silent gaps embedded in unknown songs; this was true for gaps in songs with lyrics and without lyrics."**

A speed trace converts a doylic memory into a cognitive memory. The same stimulus which triggered the doylic memory before trigger thereafter only a cognitive memory. Thus the region where the doylic memory had been stored since before five (*engraved* in the brain) will be bypassed after a speed trace, and instead a section of the cortex will be activated. A functional MRI before a speed trace should show activity in the limbic region's amygdaline structures and none in the cortex, and after the trace, there should be no activity in the same limbic region, but activity showing up in the cortex itself. This research work will be an enormous boon to humankind. It will be done sometime, but why not now? The

equipment and the hypotheses are ready for testing and confirmation.

The "motor tapes" which Rodolfo Llinás talks about refer to types of doylic memory which is postulated to be stored in the limbic region and given up to the thalamus directly to activate "action-patterns" for walking, talking, and various movements learned first in childhood. What he calls action-patterns are the doyles which can be triggered into action by some stimulus reaching a particular motor-tape or doylic memory. The speed trace holds the stimulus constant while going down in age until somewhere below five, it goes past the time the original "motor tape" was stored. When that happens, a miracle occurs: the motor tape remains where it was, but a cognitive memory of original generating event in the cortex. Thereafter the motor tape, although still present is bypassed and the simple memory of the event arises in consciousness. When the "motor tape" was unpleasant feeling or illness (such as allergy, rash, hyperventilation, etc), it is subsequent to the trace never activated again. This feature of the speed trace has been confirmed in thousands of cases.

Over years of discussing the principles of doyletics with the original innovator, Doyle Henderson, we often mused over the possibility that absolute pitch comes from musical training or exposure under the Memory Transition Age of five. Gottfried Schlaug of Harvard is able to identify absolute pitch in musicians because they show "an asymmetric enlargement of the planum temporale. They might not be able to identify painters, scientists, or writers, but a musician is easy to spot, even without absolute pitch, they show "increased volumes of gray matter in motor, auditory, and visuospatial areas of the cortex and cerebellum."

**[page 94] How much, Schlaug wondered are these differences a reflection of innate predisposition and how much an effect of early musical training? One does not, of course, know what distinguishes the brains of musically gifted four-year-olds before they start musical training, but the effects of such training, Schlaug and his colleagues showed, are very great: the anatomical changes they observed with musicians' brains were strongly correlated with the age at which musical training began and with the intensity of practice and rehearsal.**

Clearly musical training before the Memory Transition Age is beneficial to becoming a musician as one grows older. Whether it ensures one will have absolute or perfect pitch, we do not know, but it certainly increases the likelihood of it appearing after such early training. Sacks writes on page 97, "Having absolute pitch, for example, is highly dependent on early musical training, but such training cannot, by itself, guarantee absolute pitch." That may be so, but a systematic study of children under the Memory Transition Age who are given similar instruction would quickly show whether such training will ensure absolute pitch or not. A training which had absolute pitch as its aim and which began at age 4 would likely achieve a very high percentage of success.

This next passage surprised me as it reveals that having absolute pitch can create difficulty when tries to transpose music from one key to another.

**[page 122, 123] Transposing music from one key to another is something which any competent musician can do easily and almost automatically. But for someone with absolute pitch, each key has its own unique character, and the key in which one has always heard a piece is likely to be felt as the only right one. Transposing a piece of music, for someone with absolute pitch, can be analogous to painting a picture with the wrong colors.**

On page 125 Diana Deutsch asks why is absolute pitch not universal, and later in a recent letter to Oliver Sacks, she reveals, at least to me, the real reason, "My realization that I had absolute pitch — and that this was unusual — came in the form of a great surprise when I discovered, at age 4, that other people had difficulty naming notes out of context. I still remember vividly my shock at discovering that when I played a note on the piano, others had to see what key was being struck in order to name it. . ." To me and others

who have studied the principles of doyletics, the key phrase is when she said "at age 4" which is well below the Memory Transition Age of 5. She had already stored in doylic memory the tones of each note and the name of the note, so that when she heard a note the name popped up immediately for her. Doylic memory storage is a function of a person's idiosyncratic environment: Diana's included hearing and naming notes; the others she refers to did not have the same environment as she did. It is commoner in families with a rich musical environment, so long as the pre-5 child is included in it and is given the notes and the names of the notes together at some point.

Certain Asian languages such as Mandarin and Vietnamese are designed with pitch (musical tone) as part of the content of the word. In English and most Western languages, pitch or tone modulates the meaning of a word, phrase or sentence, turning perhaps a serious statement into a facetious statement, but pitch cannot change the content of a word. In languages where pitch is required for understanding or speaking individual words, a child stores doyles of tone from birth onwards and this very upbringing would lead us to suspect that Mandarin and Vietnamese native speakers would have much higher incidence of absolute pitch than Westerners. Deutsch et al. documented findings to corroborate this hypothesis based solely on the principles of doyletics.

**[page 127] "For students who had begun musical training between the ages of 4 and 5," they wrote, "approximately 60% of the Chinese students met the criterion for absolute pitch, while only about 14% of the US nontone language speakers met the criterion."**

It is not fair to call the US language "nontone" because of the various rich shadings of tone which it uses to modulate and emphasize words, phrases, and sentences. Rather the distinction must be made that US language uses no tones to create content in individual words, only as meta-process for adding coloration and meaning in the course of everyday speech. The result is US speakers can be more sloppy with their use of tone in large brush strokes if you will during talking, but Mandarin and Vietnamese speakers must have exact control of tone to speak the simplest words and phrases.

Without the benefit of doyletics, Deutsch et al. guess at the critical age, saying, as Sacks reports on page 127, "They observed that there was a critical period for the development of absolute pitch, before the age of eight or so. . ." Yes, it is before the age of eight, but it can be shown to be before the age of five as verified by thousands of early traces by Doyle P. Henderson, which is why it was formulated as a basic hypothesis for the science of doyletics(6). Native speakers of a language learn to speak well before five and if they learn a second language after age five, they will speak with an accent which includes the tone and tempo of their native language.

We have some good friends who are neighbors and the wife especially speaks a wonderful flawless English, but after watching several movies made in India, most recently 'Delhi 6', in which the actors speak mostly in their native language and occasionally lapse a bit into English, we could recognize that wonderful music effect of our friend's speaking was due to her native India language which modulated her English. It was not so much a foreign accent, but a foreign music woven into her English.

Talking about implicit and emotional memories, Sacks writes on page 203, "It seems certain, likewise, that in the first two years of life, even though one retains no explicit memories (Freud called this infantile amnesia), deep emotional memories or associations are nevertheless being made in the limbic system and other regions of the brain where emotions are represented — and these emotional memories may determine one's behavior for a lifetime." Yes, that is exactly true: it may determine one's behavior for a lifetime, or until one does a simple speed trace! The alternative may be years of psychoanalysis in the Freudian mode to unlock his so-called childhood amnesia, which we understand now to be *not* amnesia at all, but a very real memory of emotional events stored in doylic memory. Doing a speed trace converts what Sacks calls "implicit and emotional memories" stored in the limbic region into explicit memories which are stored thereafter in the cortex. Therefore implicit memories are doylic memories by definition and explicit memories are cognitive memories. We are unconscious of our implicit and emotional

memories and become conscious of the first instance in which they were experienced and stored as doyle when we complete a successful speed trace. In effect, implicit memories are converted into explicit memories by a simple speed trace.

In a recent Pyrate Con lecture in New Orleans I learned to sing "Sea Shanties." There are *heaving* and *hauling* shanties. To heave is to push on something, like a capstan perhaps to lift a spar or heavy sail, and to haul is to pull on things such lifting up an anchor or a dingy perhaps. Merchant sailing vessels hired a "Shanty Master" for each of their ships because of the increased speed and efficiency of the sailors if they were led by a Shanty Master, especially one who interlaced his shanties with a strong dose of wit and personal characteristics of members of the crew. Sacks found out the life-saving efficacy of a heaving song when he broke both of his legs on mountain trail and had to get himself to safety and emergency treatment before nightfall or he would likely die. Sacks explains how he used a rowing or marching song, "such as 'The Volga Boatman's Song', with a strong heave on each beat. Before this I had muscled myself along; now, with the beat, I was musicked along. Without this synchronization of music and movement, the auditory with the motor, I could have made my way down the mountain. And somehow, with this internal rhythm and music, it felt much less like a grim, anxious struggle." (Page 233 to 234)

Sacks described several instances of hallucinatory music playing in his head. Here is one of them.

**[page 280] I had another musical dream, and this too continued into the waking state. Here, in contrast to the Mozart, I found something deeply disturbing and unpleasant about the music, and longed for it to stop. I had a shower, a cup of coffee, went for a walk, shook my head, played a mazurka on the piano — to no avail. The hateful hallucinatory music' continued unabated. Finally I phoned a friend, Orlan Fox, and said that I was hearing songs that I could not stop, songs that seemed to me full of melancholy and a sort of horror. The worst thing, I added, was that the songs were in German, a language I did not know. Orlan asked me to sing or hum some of the songs. I did so, and there was a long pause.**

"Have you abandoned some of your young patients?" he asked. "Or destroyed some of your literary children?"

"Both," I answered. "Yesterday. I resigned from the children's unit at the hospital where I have been working, and I burned a book of essays I had just written. . . . How did you guess?"

"Your mind is playing Mahler's *Kindertotenlieder*," he said, "his songs of mourning for the death of children." I was amazed by this, for I rather dislike Mahler's music and would normally find it quite difficult to remember in detail, let alone sing, any of his *Kindertotenlieder*. But here my dreaming mind, with infallible precision, had come up with an appropriate symbol of the previous day's events. And in the moment that Orlan interpreted the dream, the music disappeared; it has never recurred in the thirty years since.

Once more Oliver Sacks has set a table before me with a feast of incredible stories and amazing insights. His willingness to share his own stories make all of his stories more believable. One can read two dozen books about how the human brain processes music or simply read this one. Sacks has done the homework for us, provided a crib sheet for us, and understanding the human brain just a little simpler for the non-neuroscientist reader.

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----- *Footnotes* -----

**Footnote 1.** This process is known by the name given it by Paul Watzlawick, the Be Spontaneous Process, and appears whenever one attempts to do something consciously which otherwise only arises spontaneously. See this book: [The Situation is Hopeless, but not Serious](#).

[Return to text directly before Footnote 1.](#)

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**Footnote 2.** Tinnitus is noise in the ears, a natural hearing symptom associated with aging.

[Return to text directly before Footnote 2.](#)

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**Footnote 3.** On page 35, Oliver Sacks notes, "As I write, in New York in mid-December, the city is full of Christmas trees and menorahs. I would be inclined to say, as an old *Jewish atheist*, that these things mean nothing to me . . ."

[Return to text directly before Footnote 3.](#)

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**Footnote 4.** What evidence do we have of unconscious tracing of these engraved events? Food dislikes are doylic memories of facial muscles of grimaces very commonly, not dislikes of taste. Often the person disliking a food has really never tasted it because they grimace so much at the sight or smell of the food that they cannot put the food in their mouth, much less eat it. Since most people by age 40 have lost their food dislikes, we have *prima facie* evidence of the unconscious tracing of food dislike doyles.

[Return to text directly before Footnote 4.](#)

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**Footnote 5.** Training procedure explained [here](#).

[Return to text directly before Footnote 5.](#)

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**Footnote 6.** It is Hypothesis 3 and details about it can be found here:  
<http://www.doyletics.com/doyletic.htm>

[Return to text directly before Footnote 6.](#)



