Oliver Sacks, the neurologist and author who opened the windows of the mind to the masses, died in late August aged 82. His ability to weave humane fables from scientific case studies made him one of the most popular science writers of the last 50 years. But his passing is as much a loss to the field of music as it is to the fields of neurology and literature, writes Charlie Pite.

Oliver Sacks grew up in an Orthodox Jewish community in London's Cricklewood area, where both of his parents were doctors. Despite taking piano lessons, he was, in his own words, "one of the less musical members of a musical family".

But this amateur interest was destined to keep rearing its head throughout a career in medicine. Sacks eventually moved to North America in 1960, arriving in Canada, interning in San Francisco, and eventually settling in New York. There, he began work with catatonic patients at Beth Abraham Hospital (now Beth Abraham Health Services) in the Bronx. These early experiences would go on to shape his most famous book – *Awakenings* (1973).

It was his second book to be published. His close friend and colleague, Dr Concetta "Connie" Tomaino, says it was out of print by the time she arrived at Beth Abraham in 1980: "It wasn't widely known, except among some medical students." Sacks' first book was a scientific account of migraines written in laymen's terms — a style that went on to become his trademark. By the time *Awakenings* was published three years afterwards, Sacks' character-driven patient histories enamoured critics at a time when, as he put it, "medical narrative was almost extinct". It would take a while longer to truly revive it.

"One of the things that Oliver has done so eloquently," Tomaino says, "is to preserve the individuality of his patients, and to talk about a phenomenon in the context of individual experience." Indeed, Hollywood also honoured Sacks' natural storytelling skills. *Awakenings* was released as a movie in 1990, starring Robin Williams and Robert De Niro, and was nominated for three Academy Awards. (Sacks has also had two essays adapted for the big screen — *At First Sight* (1999) and *The Music Never Stopped* (2011) — making him cinema's most adapted science non-fiction writer.)

"Music, uniquely among the arts, is both completely abstract and profoundly emotional"

Although it concentrated largely on the effects of the L-DOPA drug, *Awakenings* also supported the potential of music to benefit the treatment of some patients. It was an idea that went on to permeate much of his later work. In *A Leg to Stand On* (1984), Sacks recounted how, after breaking his leg while up a mountain, he saved his own life by singing. Later, it was Mendelssohn's *Violin Concerto in E Minor* that helped him recover the rhythm he needed to walk again.

Sacks' work was criticised by some in the scientific community for breezing over the data in favour of character and narrative, but it was precisely this approach that opened up an important yet traditionally unreadable subject to a wider audience. Cautious and modest, he was able to warm people to the work of doctors and scientists, often seen by the public as arrogant and elitist.

The power of music recurs in Sacks' later books, such as *The Man Who Mistook His Wife for a Hat* (1985) and *An Anthropologist on Mars* (1995). The work being done by Sacks and Tomaino at Beth Abraham eventually gave rise to the Institute for Music and Neurologic Function (IMNF). With Sacks in a consultancy role, the IMNF became a driving force in music-therapy research and treatment, with celebrity support from artists including Moby and The Beastie Boys. Through its non-profit clinics, the IMNF continues to assist the recovery of individuals, from trauma and stroke victims to sufferers of degenerative conditions like dementia.

However, Tomaino doesn't think music therapy would even be on the public's radar were it not for Sacks, "because his writing has been so widely distributed [across] the population, not just scientists and scholars". Although modern music therapy has been around since the Fifties, "it's only recently that the public's been speaking about it", she observes.

Tomaino found out about music therapy as a pre-med student in the Seventies and, as a lifelong trumpet player, chose to do her master's degree in the fledgling field at New York University. Upon meeting Sacks at Beth Abraham, she knew that she'd "found an ally in him". Together, they "started to explore the complexities of music in the brain".

At that time, it simply wasn't possible for science to measure what music therapists needed in order to substantiate, or even write off, their suspicions. As a respected medical doctor, Tomaino credits Sacks with keeping the field grounded and out of the hands of a New Age movement that would have spelt certain death in the eyes of the scientific establishment.

As an author, Sacks led with emotion but, as a doctor, little got past his keen intellect. Never did he ask his readers to suspend their scepticism. The claims being made simply weren't absolute enough to appeal to would-be alternative-medicine practitioners. Tomaino says Sacks "clearly described a phenomenon that needed to be researched [further and that] maybe didn't happen to everyone in the same way all the time, meaning you can't really bottle it and prescribe it that way".

Music therapy eventually earned a tome of its own in the shape of *Musicophilia: Tales of Music and the Brain* (2007). In this collection of case studies, Sacks illustrates how the human brain processes music differently to other stimuli, such as language. Its tapestry of characters includes a woman who can't stop hearing a "playlist" of certain songs, and a vocal-group singer with Alzheimer's who remembers nothing but his repertoire of baritone parts. We meet children who were born with prodigal musical gifts, as well as an elderly woman to whom symphonies sound like a clatter of pots and pans.

As Sacks put it: "Music, uniquely among the arts, is both completely abstract and profoundly emotional. It has no power to represent anything particular or external, but it has a unique power to express inner states or feelings. Music can pierce the heart directly; it needs no mediation."

His work helped demonstrate how music could effectively rewire the brain, to the point where the brains of musicians are recognisably different from others. It not only showed how neurological damage could affect enjoyment of music (and how we all perceive music differently), but that music could be used to treat a variety of neurological conditions, from Alzheimer's to Parkinson's.

Steven Pinker, the linguist and evolutionary psychologist, once notoriously dismissed music as "auditory cheesecake", saying that: "As far as biological cause and effect are concerned, music is useless." In contrast, Sacks was suggesting that its qualities as a mode of expression might have been as significant an evolutionary advantage for us as language undoubtedly was: "Rhythm['s] power to 'move' people, in both senses of the word, may well have had a crucial cultural and economic function in human evolution, bringing people together, producing a sense of collectivity and community."

Music's benefits reach far beyond that, however. Sacks' work demonstrated how it could help with learning (and relearning) skills and procedures, such as the ability to speak in aphasia sufferers. And by stimulating emotions in dementia patients, he showed how music could help illuminate the surviving pockets of awareness in even the most seemingly far-gone. Music therapists are now able to help restore a patient's personality, if only episodically.

"When people die, they cannot be replaced. They leave holes that cannot be filled, for it is the fate — the genetic and neural fate — of every human being to be a unique

Sacks became music therapy's most famous advocate, receiving as many as 100 letters a day (many of his stories begin with receiving mail). He was affectionately introduced on NPR's *The Takeaway* as the "Justin Bieber of neurologists," and in *The New York Times* (for whom he also contributed as a writer) as the "poet laureate of contemporary medicine".

Earlier this year, Sacks' announced he had months to live in a *New York Times* opinion piece, in which he reflected on his imminent confrontation with death. "When people die, they cannot be replaced," he wrote. "They leave holes that cannot be filled, for it is the fate — the genetic and neural fate — of every human being to be a unique individual, to find his own path, to live his own life, to die his own death."

Sacks' work will continue to help those with neurological disorders live their own lives. To hundreds and thousands of readers, he has laid bare many mysteries of the mind, teaching us to open ours to other people's. He has strengthened our understanding of ourselves through our relationship with music, and gifted an objective value to our innate yet entirely personal connection to that most unique of all arts.

Thank you, Dr Sacks, from the bottom of our brains.