

In “**William Shakespeare**” (translated by A Baillot), Victor Hugo writes: “*To sing resembles a freeing from bondage.*” Victor’s next sentence is immortal:

Music expresses that which cannot be said, and on which it is impossible to be silent.

Markus Buehler, Professor Engineering at MIT, takes this a bit further. He believes that music can help us see what, otherwise, is difficult or impossible to see. He is using music “*to design new proteins.*”

He, and a Team are now trying “*to unpack*” the “*vibrational properties*” of SARS-CoV-2, which is raging across the planet. In a conversation with Kim Martineau on 2nd April 2020, Markus answers a question on the benefit of translating proteins into sound. “*Our brains are great at processing sound! In one sweep, our ears pick up all of its hierarchical features: pitch, timbre, volume, melody, rhythm, and chords. We would need a high-powered microscope to see the equivalent detail in an image, and we could never see it all at once. Sound is such an elegant way to access the information stored in a protein.*”

And when he and the Team *listened* to the SARS CoV-2, what did they hear?

Its protein spike contains three protein chains folded into an intriguing pattern....The virus has an uncanny ability to deceive and exploit the host for its own multiplication. Its genome hijacks the host cell’s protein manufacturing machinery, and forces it to replicate the viral genome and produce viral proteins to make new viruses. As you listen, you may be surprised by the pleasant, even relaxing, tone of the music. But it tricks our ear in the same way the virus tricks our cells. It’s an invader disguised as a friendly visitor. Through music, we can see the SARS-CoV-2 spike from a new angle, and appreciate the urgent need to learn the language of proteins.

At the end of the conversation, Markus blows the mind. *“We believe that the analysis of sound and music can help us understand the material world better. Artistic expression is, after all, just a model of the world within us and around us.”*

This idea, that music may hold a Key, is something that Kurt Vonnegut also sensed. Moved by music, this satirical writer, *an atheist*, melted while addressing students at the Eastern Washington University in 2004 (**“If This Isn’t Nice, What Is?: The Graduation Speeches and Other Words to Live By”**), and said:

If I should ever die, God forbid, let this be my epitaph:

THE ONLY PROOF HE NEEDED OF THE EXISTENCE OF GOD WAS MUSIC.

In **“Friedrich Nietzsche: A Philosophical Biography”**, Julian Young quotes *“an autobiographical fragment”* written by Friedrich Nietzsche (when he was around 14-years young): *“God has given us music above all so that it might lead upwards. Music....can exalt us, divert us, cheer us up, or break the hardest of hearts....But its principal task is to lead our thoughts to higher things, to elevate, even to make us tremble....”*

S. P. Balasubrahmanyam, who passed on yesterday might have agreed, except for Nietzsche’s view that one of the tasks of music is *“to make us tremble.”* i have not met him, nor do i know much about his life — but, i have listened to his music. Some of his songs exalt the Spirit, some cheer, and some are balm to tired hearts — ensuring that they do not become calloused. ***I cannot think of much more a human can do for another.***



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The flag was at half-mast for a bit yesterday. The music played, and it is flying high again....

Peace ☐

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