

## Sarah Brightman on ISS

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As a musician, I cannot imagine the vast Universe without sound or vibration, but space is so vast and empty!

So I look for a common thread, the universal characteristic to connect with the essence of Music, the one and only universal language linking the material world of the sciences to the spiritual world of Philosophy and Arts: Mathematics.

The philosopher Leibniz, scientist and mathematician, did he not develop a symbolic mathematics reflecting a formal universal language, his “universal characteristic” for the development of all types of rational and aesthetic discourse, which includes musical notes?

This approach soothes me, unable to conceive for a moment that Music can be absent from the Perfection and Harmony that is the Universe, the famous pre-established Harmony of Hilbert, Minkowski and Sommerfeld, a deep order revealed by numbers. Moreover, Harmony, is it not a major component of Music?

This common factor is a key to Leibniz and all of these princes of mathematical thinking at the University of Göttingen, who studied the deepest mysteries of our Universe: Minkowski, Sommerfeld, Hilbert, Klein, Lindemann, Hurwitz, Weyl, Ramanujan, Gödel, Einstein, Hei-

senberg, Born and many others today.

In Ancient Greece, Music is already imbued with philosophical and mathematical concepts of Plato and Aristotle, themselves inspired by Pythagoras and his respect for the mathematical relationships that govern the Universe. For Pythagoras and his followers, everything is Numbers. Things, including musical sounds, shape the nature of all numbers that are themselves first principles of the whole of Nature. The conclusion of the Pythagoreans is that elements of numbers are those of all that exists: the world is Number and Harmony.

Thus Music has a cosmic dimension just as Astronomy has a musical dimension.

Plato even asserted that Music and Astronomy are “Sister Sciences.” Pythagoras, meanwhile, established a parallel between the distances between stars and musical intervals, finding a certain harmonic proportion: between the Earth and the Sun one obtains a Fifth, and an Octave is obtained between the fixed stars and the Earth.

As for the Celestial Sphere above us, it was the Nine Muses.

The legacy of this thinking is very present in some 20th

century composers such as Iannis Xenakis, composer, architect and engineer. In 1954, he created *Metastasis*, the first music entirely derived from mathematical rules and procedures. His objective was to put into practice a direct relationship between Music and Space Architecture. Probabilities are calculated entirely, using explicit rules.

Consider also the Artist’s own Inspiration: was not Mozart inspired by the transcendent characteristic of our Universe to have attained such Perfection in creation, perfect Harmony? A deeply personal conviction has always been there at the core of my being, telling me that Music is part of the essence of this vast, unique and perfect Universe.

In 2015, for the first time in History, a professional opera singer, Englishwoman Sarah Brightman, will embark for the International Space Station (ISS) for what she calls, “the greatest adventure imaginable.” For this musician, no doubt in search of Harmony of any kind, it will be an opportunity not only to record her singing from the venue of Space, but to be first and foremost in the heart of the unification of Science and Art.

Sources: *The Mind of God*, by Igor and Grichka Bogdanov- Wikipedia- musical encyclopedias

*Our French sister section is 3AF MP, l’Association Aéronautique et Astronautique de France, Midi-Pyrénées chapter, [www.3af-mp.fr](http://www.3af-mp.fr). See the Section News pages for the 3AF MP organization chart. More information is soon to be placed on our web site at [www.aiaahouston.org](http://www.aiaahouston.org), but that has not yet been transferred from our former web site, [www.aiaa-houston.org](http://www.aiaa-houston.org).*

*The relevant committee is in the technical branch of AIAA Houston Section, the International Space Activities Committee (ISAC), as shown on our organization chart. The ISAC is chaired by [Ludmila Dmitriev-Odier](#).*



*Above: Sarah Brightman, Macy’s Thanksgiving Day Parade, 2007. Image credit: [Wikipedia](#).*