

Otto Lehto:
Music's Pre-Existence as Ideal Sound

1. Introduction: Prelude to Origins

"In the beginning was the melody" [i.e. *logos*] - K. Stockhausen¹

The long-standing role of music as a stranger in our midst is a great attractor for ever-renewed theoretical speculation. Remember that it was as a stranger, as a visitor, that Plato castigated music and musicians (in his *Republic*); strangers who could not be trusted, or their origins verified. And indeed, the exact historical or geographical origins of musical expression and sonic art are clouded in the fragmentary mists of time. The further back we go, the less written evidence we seem to find of musical notation, but at the same time, we definitely sense music's vibrant presence, in pre-notated and largely oral form, all around the world. It is hinted at in the scrolls of Egypt and the clay tablets of Mesopotamia. The most we can say is that music has always been with us, by the campfire, on the hunt, in the dances of the tribe.

Like its history, music's future, too, appears to us as an unclear, hazy picture. We simply do not know what music will look like (or rather, *sound* like) in 100, or even 50, years. Starting with the atonal and pop revolutions of the 20th Century, the branching dialectic of "progress" in the History of Music has outgrown its own erstwhile Enlightenment certitude (represented by the forward-looking drumbeat of the Classical-Romantic revolutions and the burgeoning of the backward-looking institutions of the Conservatory and the Museum). This sense of definite progress towards the Absolute, as crystallized by the Hegelian program, has given way to the less certain, but probably more interesting, framework of the 21st century, where we have multifarious groupings and -campings of mutually incompatible subcultures, genres and styles, crystallized by the image of fractally dispersed youth subcultures (representing around one half of the world's total population) vying for the limelight in the globalized marketplace of an expanded and transformed world population that has - we should not forget - tripled in the last 50 years and become interconnected by cable and satellite communication networks operating (literally) at light-speed. The question of origins seems awfully quaint and nostalgic in such a world.

Indeed, there can be no recovery of a lost innocence because the only innocence we have ever had the pleasure of intoxicating ourselves with is the comforting veil of ignorance,

¹ 1989: p. 17 (cf. the Gospel of John).

represented by a pre-worldly parochialism of each pre-internet culture. So, to recover a historical origin would be to recover and resuscitate a mythology. Our origins, then, cannot be historical, lest music's objectivity be reduced to ancestral myths. The depth of musical meaning cannot be neatly traced to any "depth-historical" analysis of imagined roots, whether in Greece or Africa or India, or in the Shamanic-Tribal ritual magic of the world's indigenous peoples in their pre-urban habitats. The true origins of music cannot be temporally demarcated at all. It is impossible to nail down the birth of music, even if it is indeed possible to generate a retrospective genealogy of its specific stages of formal emergence (cf. Nietzsche's *The Birth of Tragedy*).²

From the perspective of such wisened-up agnosticism, it is perhaps possible to revisit the old, ever-green, idea of music as *harmonia*, understood as music's perennial pre-existence.

2. Man, Nature and Harmony: *Anthropos*, *Physis* and *Harmonia*

"It is impossible for any of the things that are and are known by us to come to be if the being of the things from which the ordered world (*kosmos*) came together [--] did not *pre-exist*." - Philolaus³

What needs to exist before all - before man, measurement and music - is a world knowable to man. This cosmos is governed by proportions that are fully in accord with man's trained faculties. Thus, pre-Socratic philosopher Philolaus of Croton's epistemological cosmophilia is guaranteed by the principle of *harmonia* (or concord, "togetherness"), which gives numbers, ratios, geometric proofs and mathematical axioms their eternal truthfulness. *Fiat lux et harmonia!*

We have tasted the first drops from the Pythagorean well... Let us inquire deeper into the history of cosmological and mathematical musical theories. Where does music come from? The obvious answer is that music is created by human beings, socially or individually, for such and such a purpose or entertainment. However, we immediately run into problems of definition and demarcation: Do animals have music? Can a waterfall be called musical? These questions interest largely only the academia. But the problem of specificity can be solved in a simple way: what if the cosmos itself is musical, or music itself cosmic or cosmological? What does this mean? This implies an interest on the part of the theoretician in the physiological and deep-signifying agencies of matter, nature and the world. It is no wonder, then, that people who have always claimed a special access to Truth, or Verifiability - mathematicians, cosmologists, system-builders,

² Nietzsche's analysis is fascinating also in the way it enthuses and rejuvenates human spirit and Dionysian aspirations. Despite its shortcomings as a historical, factual study, the book is an exemplary case of music-as-life, life-as-spirit.

³ Carl A. Huffman (ed.) 1993: p. 65, my emphasis

philosophers and hermeticists - can boast an unusually high degree of "cosmo-musicologists" in their ranks, from antiquity to today. Music, from Pythagoras to Schopenhauer, is seen as primordial.

This idea of a music as a metaphor, or metonymy, of the harmony of the world was often meant to be taken literally. The arch-mathematician, Pythagoras, is the trendsetter in this universalizing, speculative mode of thinking. Much of what we know about Pythagoras comes down to us through various commentators, apologists, detractors and self-styled followers of his school. For example, the common idea that Pythagoras believed that "all things are number" comes to us largely through Aristotle. The best direct source of evidence for Pythagorean doctrines is found in the writings of his followers, such as Philolaus of Croton (5th century BC) - whom we've already met above. The Neo-Platonic tradition interpreted and transformed many of the principles of "original" Pythagoreanism into new speculative spheres, combining Plato and Pythagoras in a kind of hyper-idealism of the spheres. This blend of trends influenced much of subsequent hermeticism and idealistic cosmic cartography. In the Hellenic times, the implications of Pythagoras's idea of "the harmony of the spheres" for the arts were systematized in Boethius's tripartite division of music into *musica universalis*, *musica humana* and *musica instrumentalis*, of which the first category, *musica universalis (vel mundana)*, represented music in its highest, most abstract and universal form - what Karlheinz Stockhausen later would call "Cosmic Music."⁴ In its commonest form, this belief, in what is called the "Music of the Spheres", implied that the heavenly spheres, planetary orbits and celestial phenomena (as below, so above) emit deep, cosmic *sounds*. We humans can read these signs of their harmonic orderliness, which are perceivable by the well-tuned intellect, if not by the earthly ear... Some of Pythagoras's followers apparently believed it was possible to "tune in" to the sounds of the cosmos by following the dietary and life-style choices advocated by their teacher. This involved fasting, vegetarianism and meditative practices⁵. They were, in other words, early hippies. Johannes Kepler, on the other hand, believed that the planetary harmonies were intelligible (i.e. mathematical), but not audible, at least not to *us*. His 1619 work⁶, *Harmonices Mundi* (Harmony of the World), sought to combine recent research into astronomy with the theme of the Music of the Spheres (i.e. orbiting planets). In his words, summarizing a tradition where mysticism, hermetic correspondence and musical inspiration go hand-in-hand with physico-astronomical speculation: "the movements of the heavens are nothing except a certain

⁴ See his book, *Towards Cosmic Music* (Karlheinz Stockhausen & Tim Neville 1989)

⁵ There is some connection to meditative practices even in contemporary "cosmic music," like Stockhausen's. His pieces like *Stimmung* ("attunement" or "vibe"), *Hymnen* and, indeed, the entire *Licht* saga, are sort of spiritual passages and meant to be taken as such. So, for example, an anecdote: "A Catholic priest said of the performance of *Stimmung*, 'It was the longest prayer I have ever known, and the happiest.'" (quoted by Kurtz 1992: p.176)

⁶ If one cares to look, the entire text is available, in translation, at "<http://www.sacred-texts.com/astro/how/index.htm>".

everlasting polyphony."⁷ Yes, polyphony of the symmetrical orbits of the planets. Their respective speeds determine their pitches, and their distances are harmonic ratios⁸. But now, "for the first time, the music of the spheres is conceived of as being polyphonic"⁹, and *not* just a scaled hierarchy of numbers ordered according to linear proportions: we enter the aesthetics of Renaissance polyphony.

Kepler is indeed a surprising entry into this long list of people influenced by Pythagorean thinking. In the wake of the Renaissance, people like Marsilio Ficino, Athanasius Kircher, Johannes Kepler, Galileo Galilei and Robert Fludd (and later Isaac Newton) thought of themselves as continuing the work of the Master in their own way, both in terms of cosmological speculation, and in the empirical investigation of the musical principles of harmony and concord extended across the whole spectrum of the observable universe. Modern heliocentrism, as Kepler and Galilei would freely admit, owes a lot to Pythagoras's concentric visions of the planetary spheres, which anticipated Copernicus by two millennia. In pure musical principles, Pythagorean obsession with whole numbers reflects the system of proportional scales (where the octave is divided up into orderly fractions, like fourths and fifths) which underlies much of Western normative conceptions of musical harmony and disharmony (e.g. the fear of the "ugly" seconds). Moreover, his rational and speculative vision of the world as quantifiable domain of harmonic proportions predates Newtonian physics, which likewise sees the world in terms of quantifiable properties and relationships (forces, constants and variables), although in need of a complex fractional algebra to adequately decode the "book of nature" (a phrase used by Francis Bacon and Galileo Galilei). Indeed, the two fields of modern science launched by Newton - Physics (or *philosophiae naturalis principia mathematica*) and Optic(k)s - are governed by a sense that "the universe is quantized," a belief first attributable to Pythagoras, according to the scholars Imelda Caleon & Subramaniam Ramanathan¹⁰. Of course many people have held this view, but such sentiments were a novelty in the 5th century world where Pythagoras lived and taught. To understand the extent of the influence of Pythagorean number theory (the underlying thread of his cosmo-musicology) on modern science, it shall suffice here to point out that not only was the Heliocentric Revolution brought about by a combination of Pythagorean Idealism (as exemplified by Kepler's speculative fantasies) and the Empirical Method, but that even the sevenfold prismatic spectrum of visible light (as proposed by Newton in *Opticks*) was conceived "in analogy with the seven notes in the diatonic scale"¹¹! Twelve and Seven, the holy numbers of Pythagorean number

⁷ Kepler, *ibid.*, chapter 7: see "<http://www.sacred-texts.com/astro/how/how08.htm>"

⁸ But curiously enough, "with dissonant tunings, like certain syncopations or cadenzes." (*ibid.*)

⁹ James 1993: p. 142

¹⁰ See their article, *From Music to Physics: The Undervalued Legacy of Pythagoras* (2008: p. 450)

¹¹ Godwin 1995: p. 10

mystics, are still alive today in the diatonic and chromatic scales, and in the fear of atonality. But even "classical" atonality still relied on classically-tempered instruments, and Schoenberg's twelve-tonism was only a radicalization, not abandonment, of the chromatic scale. Especially destructive, and beyond the pale, would be disharmonious ratios, de-tunings, "aimless" glissandos etc...

As the musicologist and historian Joscelyn Godwin (b. 1945) has stated, the cosmological trait in the history of Western speculative music can be seen as forming a surprisingly unified and cohesive "living Pythagorean tradition", which, "understood as a certain way of thought, has never disappeared in the West."¹² Indeed, Iannis Xenakis has gone as far as to say that "we are all Pythagoreans."¹³

3. Beyond Pythagoras: Intimations of a Science of Music

"Communication must obey the fundamental physical laws governing all objects." - A. Moles¹⁴

Clearly not everybody is a Pythagorean who thinks of the world as a structured, orderly whole. It is even more clear that for many composers, the use of "Pythagorean" motifs, such as the aesthetics of proportion, extends only as far as a few scattered dilettantisms, like the use of the Golden Section motif in Debussy¹⁵. Ours, after all, is an age of (justified) indifference to questions that still troubled the cosmological sages of Renaissance: "In the Celestial Sphere, which Planet sings Soprano, which Alto, which Tenor, and which Bass?"¹⁶ This puzzling question was asked, in all seriousness, by none other than Kepler - the hero of modern, rational science. *We* would not care what the answers were¹⁷, or even see any sense in asking the question. Indeed, "Fludd and Kepler were the last to propose seriously a correlation of the planetary orbits and motions with specific musical tones."¹⁸ But the quest to understand the cosmic forces of the universe was never entirely quelled, only transformed. Indeed, "[t]he Pythagorean gesture whereby numbers are thought of as being immaterial, and mathematics is viewed analogously as providing divine access to the mysteries of the cosmos, is the *sine qua non* of modern scientific enquiry. At least one eminent physicist, Stephen Hawking, has referred to his work as an attempt to comprehend 'the mind of God.'"¹⁹ But here the author is being needlessly careful. From Einstein to Schrödinger and Heisenberg, the New

¹² Godwin 1995: p. 204

¹³ quoted on the (non-numbered) opening page of Jamie James 1993

¹⁴ Moles 1966: p. 200

¹⁵ Godwin 1995: p. 172

¹⁶ See Kepler, *Harmonices Mundi*: chapter 8, at "<http://www.sacred-texts.com/astro/how/how09.htm>"

¹⁷ The answers, by the way, are: Mercury = Soprano; Earth & Venus = Alto(s); Mars = Tenor; Saturn & Jupiter = Bass.

¹⁸ Godwin 1995: p. 5

¹⁹ Barker 2002: p. 47

Physics is full of mysteries of the deepest kind, asking questions of *primal origins* anew (e.g. the Big Bang) and of the *malleability*²⁰ - or insubstantiality - of *matter* (known intuitively to medieval alchemists): the dual "wave/particle" nature of physical phenomena. Newton was a millenarian Christian; Einstein, on the other hand, was a deist who, as a Masonic brother (like Mozart and Beethoven), believed in a depersonalized Nature's God. Another quantum physicist, David Bohm, sought a synthesis of QM and Eastern philosophy, embracing Krishnamurtian doctrines. From a musical perspective, however, it is in the *New New Physics*, string theory, which heralds a final return to the musical origins of Pythagorean physics. It is not my intention here to go into string theory in detail, but suffice it to say that here we have a theory explicitly grounded on a musical metaphor: a vibrating subatomic string, *pre-figuring* all measurable x-dimensionality. The billiard ball universe has given way to an understanding of nature as a sort of hyperdimensional concerto! For example, if the elusive Higgs boson is found, it will come to us as a "vibration" or a trans-dimensional "cloud" rather than a pointillistic event, even if its decay particles will flash as digital dots on some computer screen at CERN. What has happened? We have only come full circle: Pythagoras never left us. *Physics, mathematics and music* harmonize eternal trinitarian unity.

What is the science of sound? As Abraham Moles²¹ writes, "The musical message must be approached in its immediate materiality, not through the artificial operating scheme of the score". What lies beyond the score? On the face of it, sound has duration, pitch and timbre. Quantities and proportions: music is mathematics (although its syntax may be literary) stemming from matter's pre-existing physical potentialities of complex vibratory patterning. Indeed, medieval institutional learning taught music alongside arithmetic, geometry and astronomy as part of the grand unity of the *quadrivium*, because music was (rightly) seen as connected to number, proportion and form. As such, music *is* physics, *is* mathematics. Music represents the emergence of meaning (rhythm and order) out of chaos: "Noise constitutes the background against which we perceive messages from the surrounding universe."²² In the score to the prelude of Wagner's *Das Rheingold*, we find these words: *In der Tiefe des Rheines ... Auf dem Grunde des Rheines...* The "deep" Rhine represents the cosmic background noise, giving birth to music, modulation, meaning and the message. These deep, resonant drones and the sprinkling of life-force through the opening chords represent the emergence of order out of the primal chaos, and the seeping of cosmic "juice" into the world of human beings (who only *then* are allowed to talk, having been prefigured by the sonic

²⁰ Young's double-slit experiments proved the "wavicle"-nature of matter, energy and light. Einstein proved that $E=mc^2$.

²¹ Moles 1966: p.198

²² Moles 1966: p. 200

background). Human beings are thus "given birth" via music. Schopenhauerian Wagner knew what he was doing: the work's "rich harmonic and coloristic background"²³ recalls music's cosmic origin.

4. Coda: The Future of Pythagoreanism

"I do not make my music, but only relay the vibrations that I receive, [--] I function like a translator, [--] I am radio." - Stockhausen²⁴

Why Stockhausen? Firstly, he is a traditional Pythagorean in that he has used celestial workings in his music (*Tierkreis*, *Sirius*, *Licht*). I see him as belonging to the Wagnerian tradition of *Gesamtkunstwerk*²⁵ with his operatic dramas and loud, public spectacles. I would like to claim both Wagner and Stockhausen as heirs to this Pythagorean tradition. Next, I try to conclude by summarizing the advantages and disadvantages of this "Pythagorean" cosmo-musicological programme; disadvantages, if overcome, will lead us towards higher realms of agreement.

I have tried to show that Pythagoras has deeply influenced classical learning in the arts, sciences and the humanities. This project lies on the unity of music and mathematics. Where would modern cosmology be without the marriage of Mathematics and Music as exemplified by Kepler, Newton and modern string theory? Well, probably roughly where it is today, but with slightly different metaphors to guide its journey. Nonetheless, there is something stimulating and intoxicating about a view that sees us as capable of a true, equal communion with the vibratory frequencies of nature. Indeed, the capacity for extraordinary things is our birthright. Are we robots, or living, breathing, vibrating entities? If music is taken seriously, and if living-in-the-world is embraced in all its existential implications, then the quest for cosmic music becomes understandable as the tuning in of the mind to higher levels of consciousness, "timeless and universal."²⁶

It is only too easy to idealize the past.²⁷ Furthermore, it is easy to form a religion out of an idealism. For a dogmatic Pythagorean, "if someone does not appreciate the beauty of a world created according to the rules of harmony, it is not the result of a difference in taste: it is because of his ignorance [--], or because of an inharmonious state of his body, or soul, that one might hope to

²³ Stein 1960: p. 81

²⁴ Stockhausen 1989: p. 1

²⁵ After all, "[n]othing suited to the aspirant to a 'spiritual' music better than the mixture of metaphysics and synesthesia that was the Wagnerian *Gesamtkunstwerk*." (Godwin 1995: p.199)

²⁶ Stockhausen 1989: p. 2

²⁷ Some have sought after lost modes (or instruments, or scales) of pre-civilization to recover the Edenic contact with "cosmic music." Many have decried "the deliberately 'a-cosmic' quality of modern Western culture" (Godwin: p 216).

cure."²⁸ Godwin accuses this idealistic worldview of the schools of Pythagoras and Plato of "artistic Fascism" and of a moralizing tendency that is often "rigid, pedantic and unsubtle."²⁹ However, it is also possible to use such a system, *not* as a normative or moral doctrine, but as a personal guide to happiness and creativity (for example, in curative musical *therapia*). Moreover, if we transcend the implications of dividing everything up into "good" and "bad" (cosmic and non-cosmic), we can see the richness of scales, hierarchies, tunings and ecstasies as music's gift to harmonious life.

Indeed, I propose we accept the challenge and go even *further* than Pythagoras would permit. First, only the octave was "cosmic" - plus a couple of harmonic intervals that sounded good on a lyre. Next came the expansion of accepted concordant intervals; then polyphony; then the liberation of dissonance; then microtuning... The next stage, almost inevitably, is the recognition of all the perceived "disharmonies" as essential facts and facets of life. Atonality, noise and "sonic terrorism" can be understood as serving a necessary role in bringing people into an awareness of all human potential. After all, as Stockhausen puts it, what is essential is not "the technical aspect of the process," but that "we create sounds so pure that they are a vessel for the cosmic forces."³⁰

I agree with him that "what we badly need is people who bring themselves, and keep themselves, in a higher state of consciousness and are active in it."³¹ If, on the inspiration, the fire, of the Pythagorean tradition, even *one* person seeks to exceed the boundaries of the norm and, perhaps, succeeds, humankind has found a valuable ally in this most ancient and noble of doctrines.

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²⁸ Godwin 1995: p. 18

²⁹ *ibid.* p. 18

³⁰ Stockhausen 1989: p.4

³¹ *ibid.* p. 12

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