

LEARNING BY HEART: HARMONY AND MY JOURNEY AS A PYTHAGOREAN

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I OFFER THE FOLLOWING CHAPTER ABOUT HARMONY AND PYTHAGORAS from a deeply personal perspective of how those teachings and philosophies have been both a mirror of my life and a source of continual inspiration as a professional musician and independent scholar.

I begin with a dream I had when I was three years old:

There was a shiny black grand piano on a stage, nestled in the alcove of a beautiful and gracious building with beveled glass windows that looked out upon a grove of rustling birch trees. I began to run with excitement to the piano, but I fell down, wounded. Each step was excruciating, but I got up and continued on. Weaker with each movement, I fell down again and again. Exhausted, I finally crawled the last few feet to the piano until collapsing, I touched the keys. I had to. It was very clear in the dream: playing the piano would save my life.

The dream spoke truth to me: music did indeed save my life, over and over again. It gave purpose, inspiration and meaning to a painful childhood and adolescence. In times of grief, music has often been the only consolation I have found. It became the foundation of a multifaceted career that has encompassed composing, historical research, performing as a pianist, teaching pedagogy, and lecturing for symphonies orchestras, opera companies and music festivals. Most importantly, music has been my unfailing guide to discovering the Good, the True and the Beautiful throughout the centuries and for awakening my own spiritual and humanitarian impulses.

As a twelve-year old pianist, I made my debut performing a Mozart Concerto with a local community orchestra. I tried everything I could to have more practice time- including feigning illness. I dreamt of finding a school in nature where musicians would live able to devote themselves completely to their studies without the gross materialism, competition, shallowness and ugliness that defined my adolescent world. I resented every moment spent in mathematics class, where I resisted learning ancient geometric formulas that seemed inert and lifeless.

When I complained that as a concert pianist, I would never use the Pythagorean formula, my hapless teacher regrettably agreed. Indeed, he added, especially since I was female.

By the age of sixteen, I had fallen under the spell of philosophy, mythology and comparative religion. My maths homework took me away not just from practicing Mozart and Bach, but from reading Plato, Dante and Joseph Campbell, and from chanting with nuns in a Vedanta Temple. I could hardly wait to be finished with my required mathematics courses, which consisted of memorizing a seemingly endless string of formulas taken from worn out, ugly and colorless books.

How ironic it is, then, that the man who stands behind the formula of $A^2 + B^2 = C^2$ was not just a seminal figure in the history of numbers, but also the father of musical theory, the founder of Western philosophy, a student of Eastern religions and the hidden root of Western monasticism, who founded an egalitarian utopian community dedicated to the pursuit of wisdom and beauty.¹

It is Pythagoras who lies beneath the surface of so many things that enchanted me during those dark and troubled days of adolescence: Renaissance art, Gothic architecture, Greek philosophy, comparative religion. It is Pythagorean ideas that were reawakened in Leonardo da Vinci's notebooks; it is his theories of the music of the spheres which rippled forth to influence Hildegard of Bingen, Johannes Kepler and Dante. It is upon Pythagoras's giant shoulders that Plato and Aristotle stand, and it is his likeness that is inscribed in stone above the scholar's doorway of Chartres, the most glorious Gothic Cathedral in Europe, another Utopian school dedicated to the Good, the True and the Beautiful.

If only one of my mathematics teachers had known that Pythagoras and his followers believed fervently in a worldview that does not divide life into art / math or religion/science. Instead, the Pythagorean perspective held that there is a divine pattern that permeates every dimension of our universe and that Harmony is the result of a dynamic, ever fluid weaving of the seeming opposites. The Pythagoreans believed that if we search, we can find expressions of this pattern, this *logos*, in every facet of the world around us. I believe that we can discover it in the unfolding of the smallest chambered nautilus as well as in majesty of the spiral galaxy above us. If we have the eyes to see and ears to hear, we will find manifestations of the divine pattern in sound, number, form, and astronomy. If I had known the story and philosophy of Pythagoras, I would have been eager to embrace and explore the mathematical theories of geometry class.

Pythagoras was born circa 570 BCE in Samos, off the coast of Turkey. His passionate search for knowledge led him to travel to all the cities of high learning



Figure 1. Pythagoras and his monochord, Chartres Cathedral.
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in the ancient world. It is said that he imbibed the teachings of the Persian Magi, mastered the interpretation of dreams with the Hebrews, immersed himself into the hieroglyphic symbolism of the priests of Egypt and the absorbed the sagacity of the Chaldeans. When called the most perceptive of all persons, it is said he demurred, modestly calling himself only a lover of wisdom, literally a 'philosopher'.

At the end of all his far-flung travels, Pythagoras returned to the Mediterranean lands of his birth where he established a school in Southern Italy that was devoted to both scientific and ethical study: both aspects were thought to be necessary in the pursuit of wisdom. For the first few centuries after his death, Pythagoras's greatest fame actually rested not upon his mathematical formulas but as the founder of an ascetic way of life that emphasized dietary restrictions, religious ritual and rigorous self-discipline. He revered the principle of unity in all things and taught that the soul was eternal. The *telos*, or object, of life was to purify oneself to become like god: to become a source of harmony in service of the cosmic order. This would be done in a succession of lifetimes. Through spiritual practice and study, Pythagoreans believed that one could both purify oneself, and also come to remember previous incarnations.

Pythagoras believed that we were intimately connected with one another in a matrix of creation. Nothing stood outside of this, and so all aspects of the earth should be treated with reverence. Animals deserved empathy; plants were seen as having their own form of intelligence. Conversation with and reverence of all creation, rather than subjugation and dominion, was the guiding principle. A life of wisdom could not dismember the pursuit of the mind from the care of the body or the cultivation of the spiritual senses. In order for wisdom to flourish in the individual, all aspects must be nourished and integrated in concert with one another and within the bonds of friendship. In order for wisdom to flower in community, the ethical, intellectual, political and spiritual must be all aligned and connected.

The Pythagoreans saw the human being as akin to a musical instrument. Like a great violin in an orchestra, we can become discordant by being out of sync with the vibrations around us. What the Pythagorean community sought was a way of life that would allow them to come into tune with the harmony of all creation.

Remarkable for its egalitarian spirit, members would enter and donate all their possessions to be held in common. Both men and women were free to join and to leave—and if they did depart, they would be given double what they had contributed to the community. A rigorous course of life was prescribed, built on a

foundation of intellectual inquiry, music, physical exercise and above all, silence. In the mornings, the community would gather outside in silence to sing hymns to Apollo as the sun rose. After a day's labor of individual work punctuated by walks in nature, they would gather together again in the evening to listen to the lectures of the master before dancing and singing hymns once more, ending in silence. It is said that, before drifting off to sleep at night, each member would conduct a moral inventory of three questions: Where did I go wrong today? What did I accomplish? What obligation did I not perform?

Students in the first stages of instruction were known as *auditores*, or listeners, who were not allowed to ask questions but were to hear and memorize certain sayings, many which have the nature of zen koans. After successful completion of five years of silent study and initiation, they became *esoterics*, initiates into the inner circle of adepts. Aristotle reports that there were two rival schools of Pythagoreans: the *akousmatikoi* focused on ritual life, while the *mathematekoi* concentrated on the study of mathematics. Both circles pursued a lifestyle of simplicity where vegetarian diet, philosophical study and the disciplining of the passions were essential in the pursuit of an ethical life. The community flourished in Italy, where twelve hundred years later Benedictine monasticism took root. The parallels between the two lifestyles are striking, with their twin ascetic paths of study, silence and song. Both were in essence monotheists, though the Pythagoreans called God by the name of Apollo.

The Pythagorean curriculum comprised what later came to be known as the *Quadrivium*: arithmetic, geometry, music and astronomy. In this fourfold path, what was sought was the underlying principle of harmony that governed the cosmos. In each subject, the Pythagoreans sought to find the Divine Pattern. How was the sacred expressed in number? In geometric form? In sound? In astronomy? The Pythagoreans were searching for nothing less than God's DNA—a sacred fingerprint that left its mark in all creation.

A central tenet of Pythagorean life was the importance of balancing the opposites and the avoidance of excess. Vitality, beauty and well-being were to be discovered by harmonizing the ten opposites articulated by the Pythagoreans:²

finite, infinite
odd, even
one, many
right, left
rest, motion
straight, crooked

light, darkness
 good, evil
 square, oblong
 male, female

The Pythagorean rhythm of life seemed to also balance the multi-faceted needs of the human being. The community was composed of intellectuals who set aside time for exercise and dancing and abstract mathematicians for whom music and walks in nature were central spiritual practices. It was a life of shared community in which silence was an integral part. All of these point to a delicate and conscious balancing of seeming opposites.

Across the centuries, even before he was associated with the mathematical theorem that bears his name, Pythagoras was connected to music theory and sound healing. Like Orpheus, Pythagoras was identified with the lyre and with his capacity to use melody as a vehicle for transformation. The ancient Greek world did not see music as mere entertainment. Rather, it was a force that shaped the world and crafted character. It was a moral energy that bound together society. The correct application of music could heal- or harm. Most of Western music, whether classical or popular, confines itself to one of two modalities: either a major or a minor key. Most pieces that are meant to express happiness, contentment or joy are written in a major key; those that express anger, melancholy or despair are in a minor key. The Greeks were far more flexible and nuanced. There were seven modes, each the province of a different god, each associated with a different psychological state. Both Plato and Aristotle, influenced by Pythagoras, agreed that the modes of music used in educating the young should be carefully chosen.³ The application of the wrong mode could deform the character of an individual and even jeopardize the state.

Live music was not only essential in daily life, where it was to be found at the gymnasium as athletes practiced and competed. It was integral to well-being. In the ancient *Asclepeion*, the centers of healing scattered around the ancient world, music played a foundational part of any cure.⁴ A patient who was suffering in mind, body or spirit upon arriving would undergo ritual purification. They would participate in the catharsis of a dramatic production and then incubate a dream in the temple. The following day, the physician would attend them. Part of the prescribed cure would be medicine--herbs and tinctures. But an equally important part of it would be the application of music therapy: a homeopathic immersion into the mode that would draw out the ailment. For mania, immersion into one mode would be called for; for depression and listlessness, a sound bath in another

would be in order. Legends of Pythagoras emphasize his astonishing capacity as a sound healer. Through his lyre, he was able to create radical psychological shifts. In one famous story, he encountered a young man enraged and intent on murdering his unfaithful lover. Pythagoras, it is said, began to play in a mode that matched the cuckold's rage, but modulated to a more serene and accepting tune. Having received this infusion of musical homeopathy, the would-be assailant put down his tools of destruction and placidly left the scene.

According to another folk tale, Pythagoras was walking past a blacksmith's shop when he heard a ringing of beautiful sound. Perpetually tuned to finding the Divine Pattern in the cosmos, he investigated whereupon he discovered that the smith's hammers were precisely constructed in perfect mathematical proportions of 2:1. Pythagoras replicated this ratio with bells, flutes filled water glasses and on a monochord's strings and discovered that when mathematically pure ratios were present, the sound was harmonious indeed. If I had only learned that this legend was behind the final movement of Handel's the enchanting *Suite in E Major* ('Harmonious Blacksmith'), my two worlds (school and music) would have been harmonized themselves, becoming more integrated and meaningful. And if only I had learned in Geometry class that Pythagoras believed that music could heal the world, cure illness, quell rage and violence and lead to spiritual awakening, I might have developed an interest and even a fascination in searching for the *logos* inside mathematics. Instead, it took a Medieval Cathedral to open my heart to the power and beauty of Pythagoras.

Walking through the Scholar's Door of Chartres Cathedral for the first time at the age of 35, I was unaware of the encyclopedia of history and philosophy inscribed in stone and illuminated in glass. I was bathed in blue light cast from the windows above, I only knew that there was something profoundly beautiful and powerful that was creating a powerful effect in my body. The top of my head was vibrating, my pulse was racing and my breath began to change. Without knowing it, *I myself was being tuned*.

Over the course of the next few days, my mind happily absorbed a flood of information. I was able to give names to the figures depicted in the windows and statues and to analyze features of Gothic architecture. I had my first fascinating introduction to Sacred Geometry and I began to learn about the Cathedral School established by Bishop Fulbert in the 11th century.⁵ All of this was interesting to a mind that delighted in history.

But something profoundly deeper happened at the private labyrinth walk. As the crown of our week together, the Veriditas Labyrinth Organization took us after hours into the depths of the darkened crypt. We were instructed to sit in



Figure 2. Chartres Cathedral.

Photo by Jean-Louis Lascoux, public domain (retrieved from Wikimedia commons).



Figure 3. The interior of Chartres Cathedral.
Photo by Emma Asbo



Figure 4. The crypt of Chartres Cathedral.
Photo by Emma Asbo

silence for what seemed like an eternity. As the cathedral bells chimed, a poem was read, calling us to enter into ritual space. One by one, each pilgrim rose and followed a pathway of 3,000 candles that led past Fulbert's altar with its the statue of Notre Dame Sous Terre, past the ancient Druid well, and down the long cool corridor. From far away, as if underwater, the sound of voices singing Gregorian chant beckoned. Eventually, I came to two human sentinels holding lit torches by the baptismal font. Tremulously, I ascended up the staircase into the nave.

The cathedral was bathed in blue light as the last of the sun's rays streamed through the Medieval glass. Ahead lay the ancient labyrinth, surrounded by white votives. I took my place in line, awaiting my turn to step onto the worn path, placed here at the dawn of the 13th century by anonymous masons. As my bare feet kissed the cold contours of the stone, a woman's voice pierced my heart: her song buried its way into the knots of my being, causing shivers to run up my spine and tears to run down my cheeks. Music, architecture and ritual wove together to create an experience unlike anything I had ever known. I sensed in the depths of my being that something had shifted and I would never be the same.

That night at Chartres marked a threshold of transformation. Though I couldn't see it clearly while it was happening, the seeds of everything I have done for the fifteen years since were sown that evening. As a scholar, this experience awakened my interest in mythology and Medieval history. I read hundreds of books (and even collected two more degrees) because of the thirst for knowledge this ritual imparted. I learned in ever more fascinating detail how the labyrinth had been placed as a pathway of peace and reconciliation during a time of war, an alternative pilgrimage of inner transformation during the very years when the Albigensian Crusade and Inquisition was being launched by the Church of Rome. This experience conveyed to me in a way that my classical musical training had never addressed that music as *ritual* – and not passive entertainment- has a power and potency to alter destiny and shift consciousness. It also encodes information like clues, that when followed and decoded, contain *memory* and the *seeds of awakening and healing*.

When I returned to the United States, my old life was suddenly far too small. I had been a well-respected piano teacher with an elite studio and a professor of pedagogy at the San Francisco Conservatory of Music, but my appetite for the world of competition suddenly had vanished. My pleasure in either listening or performing Classical music in traditional ways waned. Now, I wanted to create transformative experiences that would be illuminating and healing, the way the labyrinth walk had been for me. I was drawn to creating rituals and multi-

dimensional experiences where music, story, poetry and embodied experience came together and where there was no longer a division between 'performer' (entering wordlessly onto a stage) and 'audience' (sitting passively in chairs). Over time, a new pattern of life emerged: three months of study and research and pilgrimage around the world; nine months living in California where the focus of my work would be to take the strands of what I had gathered and weave them into classes and events that would offer more than information: they would be communal events of inspiration, hope and integration.

The music I heard at the labyrinth walk sung by the Braslavksy Ensemble immediately had brought a lump to my throat and tears to my cheeks. In Benedictine monasticism, such tears in response to beauty are considered a *chrism*, a divine gift and a path to be followed. Over the next ten years, I searched out the stories behind the songs and found in each one of them a history that, in the true spirit of Pythagoras, reconciled opposites. *Stella Splendens* led me to Montserrat in Catalonia where I beheld the Black Madonna. Here I learned about the centuries of pilgrims who had come to this remarkable mountain for hope and healing singing the *Libre Vermell*, an astonishing manuscript of the 14th century that weaves together the seeming opposites of Gypsy songs and Gregorian chant. *Santa Maria Stella Do Dia* led me to the Camino Santiago Compostella where this song was composed by a team of Jewish, Christian and Islamic musicians as a hymn in praise by the enlightened courts of King Alfonso El Sabio. The tears that bathed my cheeks with *Benedicti e Laudate*, ran all the way to Italy, where I scoured Florence, Cortona and Assisi to discover the hidden story of the Franciscan Confraternities and the Roman Noblewoman, Lady Jacqueline de Settisole Frangipane whom Francis nicknamed 'Brother Jacoba'. Because of *Caritas Abundant*, I traversed to the Rhineland to walk in the footsteps of the mystical Benedictine Abbess, Hildegard von Bingen. The *Salve Regina* brought me to monasteries throughout France, where I learned about Troubadours who became Cistercians, and discovered how this song sung each night at the end of Compline represents a musical reconciliation between two enemies: Peter Abelard and Bernard of Clairvaux.

All of this knowledge was rich and wonderful in and of itself, but my own calling was to carry these stories and songs back and create ritual experiences for others so that they could experience an echo of these sacred sites themselves. Through concerts, classes and workshops, the songs and stories took root, not just as something performed on a stage, but as something shared in together in community.

My labyrinth walk at Chartres marked my conversion to being a teacher

and musician in the Pythagorean tradition. Like the Pythagoreans, I devote my days to a rhythm that begins with music, meditation and yoga. My long days of teaching and researching are punctuated by walks in nature. I am growing into the other practices so important to the Pythagoreans: care for the earth through a sustainable lifestyle, periods of sustained silence, and trying to hold the tension of the opposites. Gradually I am growing to see the world with eyes that try to embrace all creation as 'friend', and the works of all I do with the company I created, Mythica, are dedicated to the healing and service of the world.

In times of crisis - after the deadly fires that devastated Sonoma County, after a wave of suicides, after the shootings at the Synagogue in Pittsburg and the massacre at Christ Church, I've gathered the community together at labyrinths throughout the San Francisco Bay Area. The combination of ritual and song has worked time and time again to transform grief into hope and despair into creative action. I returned to Chartres in June 2019 for the tenth time. As a keynote speaker for a Veriditas pilgrimage, I wove stories of my favorite poets, the history of the Middle Ages, circle dancing and music together in a rhythm of life that is deeply consonant with Pythagorean philosophy. In a program called 'Beyond the Boundaries of Loss and Grief: Love and Friendship as A Transformative Path', I explored the Greek myths of Orpheus and Eurydice, myths that are intimately connected with Ancient Greek rituals and that may have even originated with the Pythagoreans. Amongst the songs that we sang each day was one written down by followers of St Francis in the town of Cortona, a Tuscan village that boasts a landmark known as 'Tonella di Pythagoras' (The Tomb of Pythagoras). In our tours of the Cathedral, we entered the scholars' door under which Pythagoras presides in order to share the story of how the Chartres School thrived as a beacon of learning and shined for centuries as a Christian temple of wisdom because it taught the works of both Plato and Aristotle - books that had been preserved by Islamic scholars. And together, as the heart of our week, we walked the labyrinth in a private ceremony of blessing, honouring a tradition that began as a movement for peace during a time of war, in the very same ritual that marked the beginning of my journey as a Pythagorean.

As an aspiring concert pianist in middle school, how I would have been astonished if you had told me that the re-enchantment of my life, its greatest flowering and fulfillment and its most long lasting inspiration would occur in a Gothic Cathedral based on the very mathematical formulas that seemed so dry and insignificant on page. How I would have marveled to learn that the man I only knew as a mathematician was not only the hidden source of beauty and wonder across the centuries, but a beacon of light that might guide us to a more

hopeful future from our tumultuous and troubled age.

Firmly rooted in the stance that there is an organizing pattern that is both intelligible and beautiful, the Pythagorean approach to life is suffused with reverence for all creation. It tells us that we do not need to choose between science or spirituality, art or geometry, ethics or politics. Each one is an essential and radiant expression of the One. Mathematics is not a merely rational dissection and explanation of dry formulas, but a cosmological perspective that affords an every expanding landscape of wonder.

A Pythagorean perspective sees nature as an expression of the divine and shrinks from any exploitation of animals or land. A Pythagorean approach suggests that the greatest wisdom flourishes when we can honor the seeming contradictions within our human existence. From silence and humility, within community and friendship with all beings, we can find a meaning far deeper than our individual pursuits.

Throughout the centuries, the ideals of the Pythagoreans have bubbled up as if from some neglected and forgotten fount, and when they did so, the world was re-enchanted. In the first few centuries in Alexandria, Egypt and in the School of Chartres during the 12th century, a holistic approach led to astonishing advancements in both science and architecture. The Pythagoreans provide a pattern for renewal and inspiration to reclaim a life saturated with beauty where science and the sacred are both in the service of humanity. Finally, what the legends of Pythagoras teach us is an echo of my dream as a three-year old: music can heal us when nothing else can, and if we can reach the place where black and white sound in harmony, we will be saved. I would like to end with my own poem, ‘Pythagoras Said’:

*...There is a symphony that never ceases
 Stretching out its ecstatic shimmer
 Through the waves of the sky
 Across the ripples of the late summer's shore
 And into the depths of your own being.
 If you are still,
 You can ride the crest of its vibrations.
 If you quiet your mind,
 You will know the voices of the stars.
 Tune, tune, tune your heart
 To hear the eternal celestial song.*

NOTES

1. For what follows on Pythagoras' life and teaching, see Kenneth Guthrie, *The Pythagorean Sourcebook and Library*, pp 137 - 140, Grand Rapids, Michigan, 1987; G.S. Kirk, G.S., J.E. Raven, M. Schofield, *The Presocratic Philosophers*, 2nd edition, (Cambridge: Cambridge University Press, 1983) pp. 214-239; Charles H. Kahn, *Pythagoras and the Pythagoreans* (Indianapolis: Hackett, 2001). For an introduction to Pythagoreanism, the philosophy emerging from Pythagoras see the excellent article by Carl Huffman, 'Pythagoreanism', *Stanford Encyclopaedia of Philosophy*, revised 31 October 2014 <https://plato.stanford.edu/entries/pythagoreanism/> [accessed 31 March 2019].
2. Aristotle, *Metaphysics*, 2 Vols, Vol. 1 trans. Hugh Tredennick, (Cambridge Mass., London: Harvard University Press, 1933), 986 a.23.
3. Plato, *Republic*, 2 Vols., trans. Paul Shorey (Cambridge Mass., London: Harvard University Press, 1935), III, 398-403; Aristotle, *Politics*, trans H.Rackham (Cambridge Mass., London: Harvard University Press, 1943) VIII.iv.3.
4. Emma J. Edelstein and Ludwig Edelstein. *Asclepius: a collection and interpretation of the testimonies*. 2 vols. The Publications of the Institute of the History of Medicine. (Baltimore: Johns Hopkins University Press, 1998):
5. For an introduction to the cosmology of Chartres see Bernadette Brady, 'Chartres Cathedral and the Role of the Sun in the Cathedral's Platonist Theology', in Nicholas Campion and Patrick Curry (eds.), *Sky and Psyche: the Relationship between Cosmos and Consciousness*, Edinburgh: Floris Books 2006, pp. 59-76.