

Chapter Two

. . . And Why Do We Listen?



Ex.1.1

A prairie music box, from the Butcher Collection

Sometimes we forget how magical music can be. In 1963 Mari Sandoz (1896-1966), the great chronicler of the American West, recalled this Christmas Eve from her childhood on a homestead in the Nebraska Sand Hills almost fifty years after the event.

It seems to me that I remember it all quite clearly. The night was very cold, footsteps squeaking in the frozen snow that had lain on for over two weeks, the roads in our region practically unbroken. But now the holidays were coming and wagons had pushed out on the long miles to the railroad, with men enough to scoop a trail for each other through the deeper drifts. My small brother and I had been asleep in our attic bed long enough to frost the cover of the feather tick at our faces when there was a shouting in the road before the house, running steps, and then the sound of the broom handle thumping against the ceiling below us, and Father booming out, "Get up! The phonograph is here!" The phonograph! I stepped out on the coyote skin at our bed, jerked on my woolen stockings and my shoes, buttoning my dress as I slipped down the outside stairs in the fading moon. Lamplight was pouring from the open door in a cloud of freezing mist over the back end of a loaded wagon, with three neighbors easing great boxes off, Father limping back and forth shouting, "Don't break my records!" his breath white around his dark beard.

Inside the house Mother was poking sticks of wood into the fire box of the cookstove, her eyes meeting mine for a moment, shining, her concern about the extravagance of a talking machine when we needed overshoes for our chilblains apparently forgotten. The three largest boxes were edged through the doorway and filled much of the kitchen-living room floor. The neighbors stomped their felt boots at the stove and held their hands over the hot lids while Father ripped at the boxes with his crowbar, the frozen nails squealing as they let go. First there was the

machine, varnished oak, with a shining cylinder for the records, and then the horn, a great black, gilt ribbed morning glory, and the crazy angled rod arm and chain to hold it in place.

By now a wagon full of young people from the Dutch community on Mirage Flats turned into our yard. At a school program they had heard about the Edison phonograph going out to Old Jules Sandoz. They stopped in at our door, piled their wraps in the lean-to and settled along the benches to wait.

Young Jule and James, the brothers next to me in age, were up too, and watching Father throw excelsior aside, exposing a tight packing of round paper containers a little smaller than a



Ex.2.2
The Edison “Triumph” from the
1910 Edison Catalogue

middle-sized baking powder can, with more layers under these, and still more below. Father opened one and while I read out the instructions in my German-accented fifth-grade country school English, he slipped the brown wax cylinder on the machine, cranked the handle carefully, and set the needle down. Everybody waited, leaning forward. There was a rhythmic frying in the silence, and then a whispering of sound, soft and very, very far away.

It brought a murmur of disappointment and an escaping laugh, but gradually the whispers loudened into the sextet from Lucia, into what still seems to be the most beautiful singing in the world. We all clustered around, the visitors, fourteen, fifteen by now, and Mother too, caught while pouring hot chocolate into cups, her long-handled pan still tilted in the air. Looking back I realize something of the meaning of the light in her face: the hunger for music she must have felt, coming from Switzerland, the country of music, to a western Nebraska government claim. True, we sang old country songs in the evenings, she leading, teaching us all she knew, but plainly it had not been enough, really nothing.¹

¹ “The Christmas of the Phonograph Records,” *Sandhill Sundays and Other Recollections*, Mari Sandoz (Lincoln, Nebraska: University of Nebraska Press, 1984) The photograph shows the 1910 “Triumph” model, which sold for \$65.00. The model Jules Sandoz bought was probably cheaper since for that price a buggy and horse could have been bought in 1910.

About the same time Sandoz describes the arrival of that Edison cylinder player, the photographer Solomon Butcher (1856-1927) was recording the life of settlers to her southeast, in Custer County, Nebraska. Between 1886 and 1912 Butcher took over three thousand photographs of homesteaders, a collection that remains the primary visual source for information about homesteader life. Traveling from homestead to homestead Butcher would invite the settlers to have their “picture took .” The photographs are frequently deeply moving, showing the grit it took to grind out a living on those beautiful but unforgiving prairies.

But what interests us here is how often the homesteaders made sure that somehow music was included in those photographs. There’s the David Hilton family, whose homestead was near Sargent, Nebraska (Ex. 2.3). Mrs. Hilton wanted a picture to send to her relatives back east but she didn’t want them seeing that she lived in a dirt house.



Ex. 2.3

So there they are, mother, father and the four children, with their team of mules, horses, cattle, and hogs and fenced corral, all arranged around their pump organ, hauled out from the house for the picture. In another photo there’s an unnamed mother and father and

their six children, arranged in front of their soddy, buggy and team in the background, and three of their children with violins and a battered three-string bass (Ex.2.4). There's the picture of the family in the Sand Hills, with their sheds, two teams of horses, buckboard, plows, soddy, potato cellar (complete with a basket of potatoes on top), family dog—and the son proudly holding his euphonium (Ex.2.5). There's a photograph of a family reunion, three generations arranged in front of their prosperous split-log home, with the patriarch in the middle, holding his violin (Ex.2.6). And my favorite: like the others, family arranged in front of their sod home, the two teams of horses, the sheds, the farm equipment, two small pigs—and in front, in the ground in front of the mother, a hand cranked music box with luxurious wood inlay (Ex.2.1 and Ex.2.7).



Ex. 2.4



Ex.2.5



Ex. 2.6



Ex. 2.7

If there's any problem with our discussion in the first chapter and the definition of music we developed there it's that, all-in-all, it seems quite lifeless. Surely music has to be more than just "the organization of sound and silence" and so forth. In her recollection, Sandoz goes on to tell of the exorbitant cost of that phonograph, of the three hundred cylinders of music by Schubert and Brahms and Puccini, of military bands and parlor songs and dances her father had bought from friends in New York and others still back in Europe, and how the family could have used that money to pay off mortgages and put shoes and thick socks on the feet of Mari and her brothers. But instead the money is spent on a music machine and people from all over the region brave the real dangers of winter travel on the high plains to come to the Sandoz cabin to hear the music and perhaps to even take a turn at a schottish or a polka when the furniture is pushed up against the cabin walls. Why would these homesteaders, with so many pressing needs, risk so much for a "kind of heightened poetry and dance"? And despite her feet half frozen through her homemade shoes and the continual privations of her homesteader youth, why isn't there even the hint of bitterness in Sandoz's voice as she recounts her father's extravagance? Why does she remember this frosty day so warmly? Why isn't she angry? And in that last photograph from the Butcher collection, why is the thing that the family is most proud of, that one thing that they set out before the world in

pride of place, is as ridiculous a thing as a music box? Is it merely because music is “cultivated for utilitarian and aesthetic purposes”?

For over three decades I have asked college freshmen to briefly describe what music means to them and why they are studying it. In these essays I’ve found that it’s not at all uncommon for a student to write “music is the most important thing in my life.” Now of course I know perfectly well that no one really means this. Upon reflection I’m sure that these writers would agree that things like their families, or lovers, or friends, or religion, or country, were really more important to them than music (for instance, I don’t think that anybody has ever died for a piano concerto or the top song on the Billboard chart). Their statements are hyperbole. But even here, even after consideration, I think that they would attest to the fact that music would still be right up there in importance with those other things, not as important as their beloved perhaps, but close—which is extraordinary since I don’t think that even many students eagerly studying something like accounting would say “accounting is the most important thing in my life.”

And this kind of importance isn’t relegated to students. Anthony Storr is a well-known writer, a fellow of both the Royal College of Physicians and of Psychiatrists, and a retired Oxford professor. He concluded his book *Music and the Mind*:

For those who love it, [music] remains a fixed point of reference in an unpredictable world. Music is a source of reconciliation, exhilaration, and hope which never fails. . . It is an irreplaceable, undeserved, transcendental blessing.”

These are extraordinary things to say. “Irreplaceable”? “Transcendental blessing”? A “hope which never fails”? That is a great deal of freight to be carried by what, after all, is only little vibrations in the air.

We are apparently more intimately connected with music than we typically are connected with other things—things like accounting or chemistry or plumbing, for instance. With Storr, music almost has the significance of a religion (indeed, if we take his “never” seriously it is a religion). Music is very important to us and like Sandoz’s father we’re willing to spend an extraordinary proportion of our wealth on it. The Sony Corporation is one of the world’s largest businesses, manufacturing audio and video components and owning recording companies and motion picture studios. Although roughly only .5% of its almost seventy-nine billion dollar revenue comes specifically from its music division (four billion dollars in 2008), most of Sony’s enterprises are united by their use of music—either its production, performance, incorporation (as in a file score) or reproduction. Vivendi SA is a French international media conglomerate with 2008 revenue of over thirty-five billion dollars. Vivendi owns the Universal Music Group which is the largest recording company in the world with annual sales of over six billion dollars. General Mills is one of the world’s largest distributors of food and Weyerhaeuser is one of the world’s largest suppliers of wood and wood products. In 2008 General Mills reported revenue of thirteen and a half billion dollars and

Weyerhaeuser slightly less than seventeen billion dollars, figures that look puny compared to those of Vivendi and Sony.²



Publicity photo, commemorating the 900th performance of *Phantom* on Broadway
Ex.2.8

Elvis Presley died in 1977. Twenty years after his death, Elvis Presley Enterprises continued to generate a yearly income of over seventy five million dollars (a figure that didn't include royalties for Presley's greatest hits since Presley himself sold those rights to RCA in 1973).³ When they were both on Broadway, the New York performances alone of *Phantom of the Opera* and *Cats* netted over a million dollars a week for the show's composer Andrew Lloyd Weber (and that didn't include income from performances in Europe, Asia, South America and the "road shows" being performed at the same time in The United States).⁴ Gordon Sumner, who is better known to the world as Sting, wrote the song "With Every Breath You Take" in 1983 when he was with the rock band *The Police*. The song has proven to be one of the most profitable songs ever recorded. Every day before Sting gets out of bed he has already earned over two thousand dollars of royalties on that song alone.⁵

² All figures are from the 2008 *Standard & Poors*.

³ "Love Me Legal Tender," *TIME*, 4 August, 1997.

⁴ *Variety*, 1 June, 1998. Since their opening in 1988 and 1982 respectively, *Phantom* and *Cats* have netted close to a billion dollars in New York performances alone, making Andrew Lloyd Webber the richest composer who has ever lived.

⁵ As reported by CBS news, "60 Minutes," 1 October 2003.



Sting performing “With Every Breath You Take” in 1983
Ex.2.9

Food and shelter are necessities. Without them we die from exposure or starvation. What General Mills and Weyerhaeuser provide is necessary for life. But music isn't required for life in the way that food and shelter are. I don't know of anyone who has died from lack of music. Certainly we value our educators and respect those who urge us to live better lives. But while they may possess many fine qualities, most musicians aren't quite like our best teachers nor do they typically present quite such unambiguous truths as do our greatest religious leaders. Yet we reward such musicians, such as Elvis, Garth Brooks, Madonna, and Eminem, as if they bring down in their own hands the heavenly Jerusalem itself.

Like the heavenly Jerusalem, we sometimes hear the most grandiose claims about music. Plato (427?-374?) believed that it could affect politics and the character of the state. The great medieval philosopher Abu Hamid al-Ghazzali (d. 1111) thought that particular kinds of songs catapulted hearers into religious trance. More recently Mozart's music has been hailed for its supposed ability to aid in healing sexual abuse, antisocial behavior, AIDS, allergies, Alzheimer's disease, arthritis, attention deficit disorder, back pain asthma, cancer, cerebral palsy, chronic fatigue syndrome, diabetes, Down's syndrome, epilepsy, heart disease, high blood pressure, learning disabilities, obesity, paranoia, Parkinson's disease, prejudice, premature birth, stroke, schizophrenia, toilet

training, and dental problems.⁶ Certainly such a list wouldn't be seriously considered twice if music were only the "organization of sound and silence . . ."

What is it about music that makes us attribute to it such extraordinary powers? Why are we willing to spend such princely amounts of money on it? And can music really do all that we think it can? Is all music like this—utilitarian and art music both—or just some kinds of music or music by only particular composers? Going back to that Edison phonograph, why was there the sudden light in Mari Sandoz's mother's face when the music of Donizetti gradually came floating through that cold homesteader cabin, lonely in the wilds of the Nebraska plains? With all she had to worry about, why did she even bother to listen?

I

It's not only a matter of chronological convenience to begin our discussion with the ancient Greeks but the notions about music they formulated have had a greater impact upon our thinking about music—for good or ill—than probably that of any other culture. And the most important figure in Greek musical thought is that shadowy figure from the 6th Century B.C., Pythagoras.⁷

I say "shadowy" because we actually know very little about him. There are no writings that can be confidently ascribed to him (in fact he forbade his disciples to write down his teaching on the very sensible notion that the purpose of philosophy was to direct one's life and not to be a subject for idle discussion). What we know of him comes

⁶ Don Campbell, *The Mozart Effect, Tapping the Power of Music to Heal the Body, Strengthen the Mind, and Unlock the Creative Spirit*, New York: Avon Books, 1997. This is a partial list of the ills Mr. Campbell believes music can assist in healing (pp. 220-283).

⁷ Here is it important to note that our Western musical tradition doesn't begin with the ancient Greeks' music but rather with the ancient Greeks' *writings about* music. Very little actual Greek music was preserved into the Medieval period, and that which was preserved wasn't discovered until modern times, and no Latin Roman music was preserved at all—at least in the sense that we can confidently reconstruct pieces of partial pieces of music from Imperial Roman sources. But writings about music were widely circulated, preserved in Greek, Latin, and Arabic translations. These writings, particularly by Plato and Aristotle's pupil Aristoxenus—a body of literature which itself contains significantly divergent arguments—became the philosophical basis for Medieval western music thought after it had passed through the Christian hands of the North African bishop Augustine (354-430) and, more importantly, the diplomat-turned philosopher Boethius (ca. 480 – ca. 524). Aristotle's own writings were relatively unknown to Latin speakers in the Middle Ages. They became more influential to early Renaissance writers after they had been translated from the Syriac and Arabic version in which they had been preserved by Arabic-speaking scholars.

from later ancient authors who either attribute various ideas to him (which is what Plato does) or generally describe the beliefs and practices of “the Pythagoreans” (which is how Aristotle handles the matter). According to some sources Pythagoras was born on the island of Samos as a result of the union of his mother Pythais and the god Apollo, lived as a hermit on top of Mount Carmel in Palestine, traveled to Egypt, was captured and taken as a slave to Babylonia, learned the lore of Persia and India from magi, eventually studied with Druids in Gaul and died in Croton, a Greek colony in Italy—which all makes him appear more like a brainy Paul Bunyan than a historic figure like Socrates.⁸ Nevertheless, he, or the ideas attributed to him, impacted our culture tremendously.



A 20th Century monument to Pythagoras in the Greek city of Pythagoreio on the island of Samos, where he was born.

Ex.2.10

What are these ideas? Doubtlessly you know one: his famous theorem about the right triangle: $a^2 + b^2 = c^2$, where c is the hypotenuse (and that theorem is what the

⁸ The source for this fantastic story is the “Life of Pythagoras” by the Neo-Platonic philosopher Iamblichus (c. 250-c.325 C.E.). For an excellent collection of Pythagorean materials see: *The Pythagorean Sourcebook and Library*, collected and translated by Kenneth Sylvan Guthrie (Grand Rapids, Michigan: Phanes Press, 1988).. Although it requires a reading knowledge of Greek, for an invaluable evaluation of these sources see: Walter Burkert, *Lore and Science in Ancient Pythagoreanism*, translated by Edwin L Minar, Jr. (Cambridge: Harvard University Press, 1972).

monument in Pythagoreio alludes to). And we most usually associate Pythagorean thought with geometry. But to fully appreciate its impact upon music we must understand that thought more fully within its context and that context involved much more than juggling numbers and aligning points into multi-sided figures. It involved the nature of the divine and the character of the cosmos. You see, $a^2 + b^2 = c^2$ *always*. That *always* is the most important thing about the theorem. *ALWAYS*

Put yourself into the sandals of a young Greek doing what you are doing now, thinking about the world and your place in it. Your teachers have taught you the importance of careful observation and not only that, but also how to shape your observations into useful generalizations and theories. And you have been taught some basic principles.

One of those principles is the idea that a primary characteristic, and perhaps the primary characteristic, of the world is *change*. Look around you. Observe carefully. What is the one thing that characterizes everything (or almost everything, I'll come back to that) that you see, that you experience? Isn't it the condition of change? We ourselves certainly change. We change from helpless infants to robust youths to infirm old men and women, and then we die and rot. We share this mutable progression with all other living things. Growth and decay, birth and death, creation and destruction, we see it in ourselves and everywhere we look. Earthquakes and volcanoes show us this process in the earth itself; mountains rise and crumble and are made and destroyed. The sea is constantly changing with the ebb of the tides and the skies over our heads change from cloudy to cloudless and from stormy to calm. Change is the primary characteristic of our condition. It is the foundation of our temporal, mortal state.

If change is indeed the foundation of our mortal state, and we consider for a moment the possibility of an alternate condition—a condition fundamentally different from our present one—what might the primary characteristic of that “other” condition be? What would be the opposite of our existence?

Isn't it reasonable to suppose that the exact opposite of this condition would be the condition of changelessness, of immutability? And if we, for a moment, use the notion of “mortal” to describe our own condition, could we not use the notion of “immortal” to describe that other condition? Wouldn't it be logical to define the primary character of “non-mortality,” or, if you wish, “divinity,” to be *changelessness*?

Although present in both Jewish and Christian theologies, this Greek concept of divinity is somewhat different than that usually entertained by most religious Westerners. In Judaism and Christianity the deity is usually described by the character of His acts; His is the God of the Exodus, or the God who raises Jesus from the dead. Miriam, the sister of Moses, proclaims after the destruction of Pharaoh and his army, “Sing to the Lord, for he has triumphed gloriously, the horse and his rider he has thrown into the sea!” God's

power is demonstrated by doing Godly things. Hence the traditional title of the God of the Bible: “the God of Abraham, Isaac, and Jacob,” in other words, the God who acts—who does things—through history.⁹

But in the Greek philosophic tradition, “divinity” is a quality of existence, an existence fundamentally different from our own. That “other” condition the Greeks tended to identify by one of the forms of their word “teleō” (τελέω verb, τέλος “telos” noun), which is frequently translated as “finished,” or “complete” (although it can mean other things). And although the word was used to describe the completing of a task or the reaching of a goal it also was used to describe a state of perfection, something was finished in the sense that nothing required alternation. It was perfect. It was changeless. It was “divine.”¹⁰

But how might such perfection be known? Was it only an abstract notion, something that could be imagined or could this divine quality ever be observed? Could it be based upon empirical evidence?

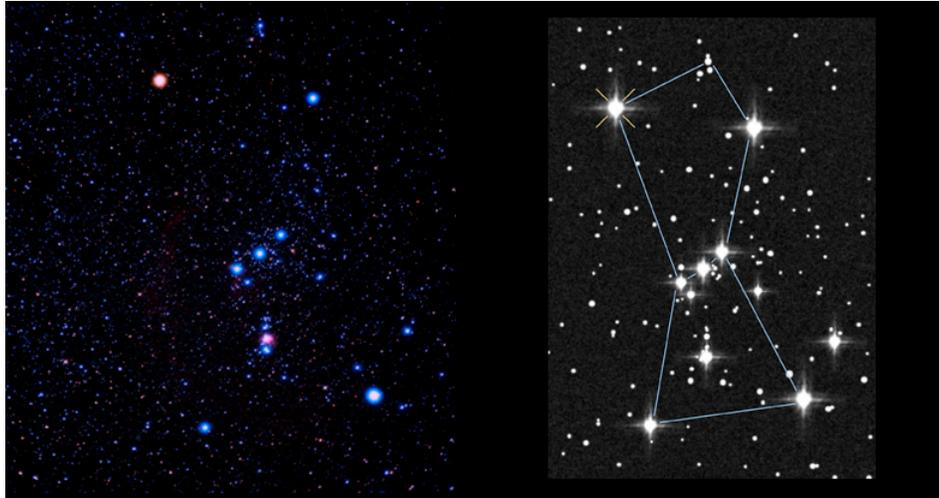
Again, imagine yourself a Greek. You don’t have electron microscopes and linear accelerators or Hubbel telescopes. You have only your unaided senses and your ability to observe and to question. Is there anything in your experience that appears to be always the same and in that sense “changeless” and hence divine?

Consider the stars. Although most of us don’t spend much time looking at them anymore our ancestors did and they observed the stars keenly and apparently with a great deal of enjoyment (they were certainly very inventive in making-up stories about them). Although the sky might change from day to night and from cloudy to sunny, the “heavens”—that realm of the stars—appeared to stay very much the same. The constellation of the Big Dipper always appears with four stars in its ladle. And there are

⁹ Exodus 15.12. See also Mary’s exclamations in the *Magnificat* (Luke 1.46-55): “. . .He hath sown strength with his arm; he hath scattered the proud in the imagination of their hearts.” God is worthy of praise because of the accomplishment of godly deeds.

¹⁰ Here we must be careful to note that we’re talking about the way Greek intellectuals tended to think about metaphysical matters. There were of course lots of Greeks who participated enthusiastically in the various temple cults and who believed the gods divine because they did supernatural things, and these Greeks went to oracles and undertook acts of propitiation. But while Greek intellectuals might or might not follow the forms of popular piety--Socrates was scrupulous in fulfilling his public religious obligations--they had very little sympathy for them because they seemed intellectually untenable; Socrates called them “lies told by poets.” If, for instance, it was so evidently sensible to recognize that the primary quality of divinity would be immutability, what was Zeus doing changing into bulls and swans and eagles and showers of gold in order to have sex with maidens and young men? These were completely ridiculous stories, entertaining and perhaps rich in psychological insights, but silly philosophically. For this reason, when Plato talks about “God” in his *Timeaus*, he doesn’t talk about a traditional Greek deity like Zeus or Apollo or Athena. Instead he invents an unnamed deity more in keeping with his metaphysical principles, a nameless “god who is forever.”

always three stars in Orion’s belt. Never just two or as many as five. The numbers don’t change, the constellations don’t change their shape and neither does the relation between one constellation and another. Yes, there are individual lights in the heavens that appear to move through the constellations, going from one to another, but these too seem to have their pattern and they were identified by the ancients as “wanderers;” the verb “to wander” in Greek is “planeo” from which we get the word “planet.”



the constellation Orion
Ex.2.11

Where might we as Greeks, or Babylonians, or Persians, or Chinese—because they all agreed on this point—observe with our own eyes “perfection” and immutability? At night as we look up at the stars! Then we could look into an existence of perfection, or regularity, and of changelessness.¹¹ At least as we’re discussing here, the idea that the heavens were “divine” didn’t come from the superstitious notion that divinities lived “up” in the sky where they made thunder and lightning but rather from the intellectual concept of the polarity between mutability and immutability and the actual observation of the difference between changes on earth and the consistency of the stars. In other words, the “heavens” were heavenly because of their observable perfection. They didn’t change.¹²

But where else might this perfection be observed?

It could be observed in *number*.

¹¹ Of course the stars change too, but in antiquity no one had yet observed things like a super nova or sunspots.

¹² Because of the changes wrought by the seasons and weather, the Greeks hypothesized that the immutable heavens began on the far side of the moon’s orbit. The area between the orbit of the moon and earth, that area we casually refer to as the “sky,” shared the character of change and imperfection characteristic of all mortal things. See C.S. Lewis, *The Discarded Image* (Cambridge: At the University Press, 1956), Chpt. 4.

What is four plus four? Is it ever seven? Or five? Do three points ever create a cube? Are any more than two points required to determine a straight line? And $a^2 + b^2 = c^2$ *always*. The various theorems associated with the Pythagoreans were more than clever calculations or tricks played with numbers—which is the way we tend to treat them when we’re introduced to them in school. They were instead statements about the basic metaphysical condition of existence. Without dealing with the idea of a supreme deity, or even deities with personalities at all, these were statements concerning the condition of eternity and the divine. They were religious exercises, glimpses into the mind of the divine which otherwise remained veiled. This is what the Pythagoreans meant by their famous dictum “All is number.”¹³

But what does this have to do with music? Pythagoras is credited with discovering the fact that musical intervals can be described by ratios and as ratios—numbers—music becomes a “divine” enterprise.



Pythagoras at the forge,
Munich: Bayerische Staatsbibliothek clm 259, fl 96v, 13th century
Ex.2.12

¹³ Aristotle reported that “the Pythagoreans first applied themselves to mathematics, a science which they improved; and, penetrated with it, they fancied that the principles of mathematics were the principles of all things.” (*Metaphysics*, i.5). Today we tend to regard number as a kind of adjective. When we say “seven apples” we’re generally making a comment about the quantity of fruit, not a remark about its essence. But the Pythagoreans regarded number as the first thing in all of existence. For them, “seven” would be the irreducible essence of the apples.

An old story tells that when Pythagoras happened to be passing by a blacksmith's shop he became intrigued by the sounds he heard coming from the little factory. He stopped and asked the smith what he was doing. The smith had four hammers. One weighed twelve pounds, one nine, one eight, and one six. When the smith pounded on the anvil with the twelve and six-pound hammers Pythagoras noted that he heard the "harmonious" interval of the octave (there's a reason why I have harmonious in quotes that I'll get to later). When the smith pounded with the hammers weighing twelve and eight pounds Pythagoras recognized the interval of the fifth. That same interval was produced when the smith pounded with the nine and six pound hammers. Pounding with the nine pound and eight pound hammers produced the interval of a whole tone while pounding with the twelve and nine pound hammers made a fourth.

Delighted by these discoveries, Pythagoras went home and arranged an experiment of his own. Driving a stake in his wall, Pythagoras tied four identical chords to it and suspended from the chords various weights. When he plucked the chord from which he had hung a twelve-pound weight, he produced a pitch an octave higher than that produced when he plucked the chord from which he had suspended a six-pound weight. The chord from which he had suspended an eight-pound weight sounded a fifth higher than the sound produced when he plucked the chord from which he had suspended the twelve-pound weight.¹⁴

From the smithy and his experiments with the weighted chords we are told that Pythagoras concluded that musical intervals could be described by numbers in the form of ratios. The octave could be described by the relationship between the two hammers that made it: twelve and six, or more simply, 2:1. The fifth could be described by the numbers twelve and eight or nine and six, both simplified to the ratio 3:4. The fourth could be described by the numbers twelve and nine, simplified to 4:3, and the whole tone by the ratio 9:8, which couldn't be reduced further. Because these intervals could be described by "perfect" numbers of 1, 2, 3, and 4, the intervals of the octave, fourth, and fifth were considered "perfect."¹⁵

¹⁴ None of this actually works as described. Hammers of these various weights do not produce the different intervals ascribed to them in the story and the pitch of a plucked string is proportional the square root of the tension (for example, four times as much weight produces an octave, not twice the weight). Although the fallacies of the particular examples must have been known for centuries by instrument makers, the impossibility of the story's experiments was not formally proved until the great French philosopher and mathematician Marin Mersenne (1588-1648) did so in his 1634 *Questions harmoniques*.

¹⁵ The numbers 1, 2, 3, and 4 were considered "perfect" by the Pythagoreans because they could be combined together in a way that resulted in the "perfection" of ten ($1+2 = 3$, $3+3 = 6$, $6 + 4 = 10$). The Greeks did arithmetic by stacking dots (perhaps reflection a practice originating in casting pebbles).

We will return to Pythagoras' ratios when we consider the matter of tuning in the next chapter but for now I want to emphasize the importance these numbers have had from classical antiquity through to our own day.

By the time the Classical Age came to a close in the fifth century (in other words, a thousand years after Pythagoras' life), many thinkers had contributed to the doctrine of "Pythagoreanism": Plato, Aristotle, Ptolemy, Aristides Quintilianus, Macrobius, Porphyry, Cicero, and even the Church Fathers Clement of Alexandria, John Chrysostom, and Augustine. But the most important of these was Plato.

You will remember the Greek's concept of immutability and perfection. We can see immutability in a changeless "heaven" when we observe the stars. And we can reflect upon immutable order when we are engaged in mathematics. But by discovering the mathematical relationship that underlay musical intervals the Pythagoreans believed that they had discovered a third manifestation of immutability: music. To the Pythagoreans and their heirs, *the fundamental character of the cosmos is manifested in number and the expression of number is music.*

Music expresses that "fundamental character" through "harmonia" which is defined as the "unity of opposites," "Opposites" are odd and even numbers or varying extremes, as between the numbers six and twelve. "Unity" can be expressed in the tetractys (see footnote 15) and in the ratios which define the Perfect intervals. The Perfect Octave (12:6 or 2:1) established the extremes and is divisible into two Perfect Fourths (8:6 and 12:9, or 4:3), or by a Perfect Fifth plus a Perfect Fourth. The division of



Ten was shown by a construction called the *tetractys* (shown above) and it was an object of almost endless fascination for them. Because it consisted of points and spaces between the points they viewed it as a model of "limit" (the points) and "unlimit" (the spaces between the points). This the Pythagoreans saw as fitting together of opposites into a universal *harmonia* not unlike the traditional Chinese views of *Ying* and *Yang*. When they took oaths, the Pythagoreans even swore by it, calling the figure the "... spring of all our wisdom, the perennial root of Nature's fount." Aristotle thought it was a bit absurd, noting that the Pythagoreans were so committed to the universal perfection of ten that should there be "a gap anywhere, they readily made additions so as to make their whole theory coherent. E.g. as the number 10 is thought to be perfect and to comprise the whole nature of numbers, they say that the bodies which move through the heavens are ten, but as the visible bodies are only nine, to meet this they invent a tenth--the 'counter-earth'." Aristotle: *Metaphysics* (i.5). See: Iamblichus, *The Life of Pythagoras* (in *The Pythagorean Sourcebook and Library*, compiled by Guthrie), p. 95; also Burkert, pp. 72. f.

the octave into two Perfect Fourths was called the “arithmetic” division of the octave and the division into a Perfect Fifth and a Perfect Fourth was called the “harmonic” division.

In his *Timaeus* Plato used this as a model for the “World Soul,” expanding it into a cosmic creation myth.¹⁶ The “god who is forever” constructs a sphere, which is the perfect geometric body, out of the four elements of fire, earth, air, and water. The “World Soul” (who Plato calls the “god who is to be”), which is composed of the three distinct forms of “existence,” “sameness,” and “difference,” is then animated within the sphere. At this point, Plato’s Divine Maker divides the World Soul in a process that eventually creates a Pythagorean scale, arranging the intervals into the descending order of tone, tone, semi-tone, tone, tone, semi-tone, tone, or what we today would call a the Aeolian mode, a white note scale descending from A to a. This, not harmonically divided World Soul, is stretched by the Maker into a strip that the Maker then cuts in two, lengthwise. The Maker places one of these strips across the other at its midpoint and pulls each of the strips’ ends to their beginnings. The Maker now has two circles made-up of World Soul stuff, and uses those circles to make the rest of the cosmos. One of the strips is left intact but the other, the interior strip, he divides into the orbits of the heavenly bodies.

What is significant, at least for our purposes, is that Plato uses a musical process to order the universe. In a Pythagorean methodology, the World Soul is stretched to fix the boundaries of existence. Since the World Soul is shared throughout the cosmos, it not only fixes heavenly boundaries but it also animates the stuff of life; plants, dogs, celery stocks, you and me—things within those boundaries. Plato’s purpose in writing the *Timaeus* is metaphysical; he wants to describe that thing which unites the cosmos into a comprehensible whole, at least metaphorically. He is not describing what he had physically measured or observed. Yet by the later Roman Empire, Pythagoras’ musical ratios, Plato’s metaphysics, and Ptolemy’s astronomy (which describes how the planets revolved around the earth) and all had been conflated into a coherent “scientific” structure of the universe as well.

That universe placed a spherical earth at its center. Around the earth circled the moon, then Mercury, Venus, the Sun, Mars, Jupiter, and Saturn. Beyond the sphere of Saturn was the Stellatum, or the sphere of the fixed stars: the Zodiac. Beyond the Stellatum was the “primum mobile” or that sphere which, when put into motion, gave life and movement to all the cosmos. Each of these spheres was assigned its own muse, who “sang” as the sphere orbited, their individual pitches provided by the ratios Plato

¹⁶ This is only the most minimal discussion of Plato’s cosmology. For a complete presentation of the difficult yet important topic see: *Plato’s Cosmology, the Timaeus of Plato*, translated with commentary by Francis MacDonald Cornford (Indianapolis: Library of Liberal Arts, 1937), pp. 66-74.

calculated in the *Timaeus*.¹⁷ This “music of the spheres” was inaudible to humans simply because, having heard it incessantly from birth, humans no longer noticed it.¹⁸

You will have already noted that nowhere in the discussion to this point have I mentioned actual music making, unless of course you call Pythagoras’ afternoon at the smithy a concert. In that story about the smithy it is not insignificant that the tellers of that tale do not have Pythagoras consulting with a musician to discover the nature of intervals, but rather tell of their hero observing phenomena, conducting experiments, and engaging in logical, numerical exercises. We rarely read of Pythagoras performing what we might recognize as a musical composition.

But this heavenly music was not without its terrestrial significance. Heavenly *harmonia* was also a characteristic of the earthly individual. Aristides Quintilianus writes “that not only the body of the universe but also the soul was organized and is considered through consonant numbers, the ancient and wise men affirmed confidently.”¹⁹ Ptolemy described that the soul is divided into three parts which corresponded to the Perfect intervals of the octave, fourth, and fifth. Health and well being are dependent upon how well the soul is “tuned.”²⁰ As Thomas Mathiesen eloquently observes in the introduction to his translation of Aristides Quintilianus’ *On Music*, music was thought of as the “palpable paradigm of the body and soul of the universe.” As such it provided a model for learning the higher philosophical contemplation that would lead to divine transference.²¹

That kind of discussion—talking about “real music”—is absent for two reasons. First, in Antiquity it was considered demeaning for a person of standing to perform on an instrument, at least in public. The mighty Athena, we are reminded, invented the aulos but discarded it in disgust when she saw how it contorted her face when she played it. Puffing-out her cheeks and turning red was beneath her godly dignity. Although men played the lyre (Homer gives both Achilles and Paris the ability to play it in the *Iliad* and scenes of men playing the lyre are frequent in vase paintings), performances were private

¹⁷ Plato does not mention the muses in the *Timaeus* but refers to them in the *Republic*.

¹⁸ Aristotle was dubious that the motion of the heavenly bodies made actual sounds. If anything characterized the spheres’ orbits he thought it was silence, not sound. But Aristotle’s skepticism was shared by very few in either the ancient or medieval worlds. Even Cicero believed that the heavenly bodies produced real tones but thought that men were unable to hear them because their omnipresence. See: Aristotle, *De caelo*, ii.9; Cicero: *De Republica*, Book VI, 18-19.

¹⁹ Aristides Quintilianus, *On Music*, translated by Thomas J. Mathiesen (New Haven: Yale University Press, 1983), p. 195.

²⁰ M.L. West, *Ancient Greek Music* (Oxford: Oxford University Press, 1992), p. 252.

²¹ Aristides Quintilianus, *On Music*, *op cit.*, pp. 56-57.



A symposium scene with a heteraei playing an aulos. Attributed to the Peleus Painter Ca 450 BC. Excavated at Vulci, Italy

or relegated to that part of the symposium where each guest was expected to either recite or sing. If the guest could play, he accompanied his songs on the lyre. If he couldn't, one of the entertainers hired by the host accompanied him on the pipe. In any case, each new verse was greeted with another round of drinks so that the longer the poem the more intoxicated the performance (it is within this context that we must understand Aristotle's famous quip, preserved in his *Politics*, that a gentleman only plays an instrument when either drunk or for a joke²²).²³ In Greece the professional musicians at the symposium were of a class of female entertainers called *hetaerai*; that their services also included

²² Aristotle: *Politics*, 1339a-41b10.

²³ West, *Music in Greek Life*, pp. 25-26.

group sex did little to enhance the dignity of the profession.²⁴ By late Antiquity the reputation of professional musicians was so bad (along with actors) that Christians were forbidden by their bishops entry into the profession or participation in music entertainments.²⁵

But the disparagement of professional musicians and the actual business of music making by the intellectuals of Classical Antiquity was based upon more than mere social snobbery. The “music” of the Pythagoreans, that business of the Perfect intervals and their ratios and the *tetractys*, is a music that does not strike the ear but rather the mind. Their interest, and of Plato in the *Timaeus*, is not in the music of the kithara players or the winners of the Pythian festival at Delphi but rather in numbers and ratios and their manipulation into metaphysically illuminative formulae. The Pythagoreans don’t talk about music. The dictum that I stated earlier that, to the Pythagoreans, “the fundamental character of the cosmos is manifested in number and the expression of number is music” is true, but in the final analysis, misleading. It’s misleading because the sounds that the intervals make—and, as musicians, to you and me it’s the actual sounds that are all important—are of only secondary interest to the Pythagoreans. Apparently, they’re quite content not to hear them at all but only to think about them. What’s of primary interest is the numbers and the numbers are of interest because they are changeless and because of that immutability they are vehicles of divine illumination.

Contemplation of the numbers brings visions of the eternal, or so they thought. The third century theorist Aristides Quintilianus went so far in his *Peri Mousikes* as to tell that, on his deathbed, Pythagoras “advised his companions to study the monochord, showing how it is necessary to adopt excellence in music mentally more through numbers than sensibly through hearing.”²⁶ For the strict Pythagorean, actual *sounds* just get in the way.

In the Pythagorean tradition music—or at least the contemplation of the ratios that define musical intervals—is a means of internalizing the properties of divinity. Through

²⁴ Eva C. Keuls, *The Reign of the Phallus, Sexual Politics in Ancient Athens* (New York: Harper and Row, 1985), p. 160 – 161.

²⁵ The early fourth century Christian writer Arnobius writes about contemporary musicians: “Was it for this that he sent souls, that as members of a holy and dignified race they practice here the arts of music and piping, that in blowing on the tibia they puff out their cheeks, that they lead obscene songs, that they raise a great din with the clapping of the scabella; under the influence of which a multitude of other lascivious souls abandon themselves to bizarre movements of the body, dancing and singing, forming rings of dancers, and ultimately raising their buttocks and hips to sway with the rippling motion of their loins? Was it for this that he sent souls, that in men they become male prostitutes and in women harlots, sambucists and harpists? Arnobius, *Adversus nationes*, II. 42, translated by James McKinnon, *Music in Early Christian Literature* (Cambridge: Cambridge University Press, 1987), p. 49.

²⁶ Aristides Quintilianus, *On Music*, Book III, translated by Thomas J. Mathiesen (New Haven: Yale University Press, 1983). P. 162.

thinking about number the Pythagorean is able to obtain transcendence. And not only does such contemplation result in spiritual awakening it is believed to produce physical healing as well. The healthy body reproduces the harmonies of the cosmos (as described by Plato) and disease results when those “natural” relationships become unbalanced. But by contemplating divine proportion, and perhaps by even internalizing those proportions by hearing music made-up of those proportions, health can be restored as the body realigns itself out of disharmonious relations back into conformity with the cosmic order. A thousand years after Pythagoras, Marsilio Ficino (1422-1499), the greatest philosopher of Renaissance Florence, argues this Pythagorean position when he suggests that music should be the principle tool for physicians. It is, he writes, the natural nourishment for the spiritus which is a “vapor of the blood” that rises from the heart to the brain. Disease and melancholy, caused by an upset spiritus, can be cured by music.²⁷

When reading about the Pythagoreans and their notion of the “divinity” of music it is crucial for us to keep in mind that what they are calling “music” we today would better call something like “acoustic geometry.” It is only very distantly related to the kind of music we defined in the last chapter since “sound” for the Pythagoreans is fundamentally an impediment to truly understanding music’s divine properties. In fact, you very well might say that our attitude to music today is exactly the opposite of the Pythagoreans in antiquity. We *listen* to music. The sounds to us are important; its sensuous character is of primary importance for us, we think about too (which is exactly what we’re doing here, thinking about music), but thinking about music is secondary to making it or listening to it. But the Pythagoreans contemplated the ratios of the musical intervals first, listening or performing music was of secondary importance if it was done at all.

II

I wrote that we rarely read of Pythagoras himself actually dealing with what we would recognize as “real” music. The key word here is “rarely” because there is at least one exception that is of tremendous importance.

One night, the story goes, Pythagoras went outside to meditate on the stars when his contemplations were disturbed by the arrival of a youth violently unhappy in love. The youth’s mistress had been unfaithful to him, he was furiously jealous and drunk and his anger was being stoked into a murderous rage by a piper playing music in the Phrygian mode. The youth was about to set his mistress’ house afire when the

²⁷See: Paul Kristeller, *The Philosophy of Marsilio Ficino*, translated by Virginia Conant (Gloucester, Mass.: Peter Smith, 1943); and D.P. Walker, “Ficino’s ‘Spiritus’ and Music,” *Annals musicologiques*, I (1953).

philosopher calmed the poor boy's fury by having the piper play a more irenic melody. Although this story is first told by Cicero in his *De consiliis suis* and later repeated by Iamblichus (Boethius includes it in Book Five of *De institutione musica*) it's actually a version of an ancient tale that appears in a great variety of forms.²⁸ In a Greek myth, Orpheus' music not only so transfixes the guardians of Hades that they allow him passage to the subterranean regions but it also alters Pluto's character, making the god take pity on the hero's sorrow. The semi-legendary Terpender of Methymna (c. 650 B.C.) is credited with calming a revolt by his singing. When the Lacedaemonians (which is the term the Greeks used for Sparta) were torn by civil strife, an oracle prophesied that peace could be restored if Terpender would sing to them accompanied by the cithara. He did, and we're told that the citizens were completely changed from attacking each other to embracing one another.²⁹ Plutarch tells of an occasion in which Alexander the Great was said to have been so thrown into a martial passion by a certain Antigenide's playing of the aulos in the Phrygian mode that he rushed to his weapons and would have killed a guest had not the musician changed the mode of his tune. When the mode changed Alexander's composure returned and he resumed his place at the feast. Another version of this tale has Timotheus, who was one of the most famous musicians of antiquity, as the performer—which isn't very likely since Timotheus probably died when Alexander was only a year old. In any case, here the guest isn't so lucky. Alexander is so exercised by Timotheus' music that he kills the guest. By changing the mode of his music, the musician is able to reduce the great conqueror to tears over his deed.³⁰

Music not only affects people. It can charm nature. Amir Khusraw Dihlawi (1253-1325) was one of the greatest poets of Mughal India. In the late 16th Century his poems were collected and illustrated in one of the most sumptuous books ever produced in on the Indian subcontinent. In one of the poems, the hero Bahram Gur comes upon a scene of a heard of deer mesmerized to sleep by the harp playing of the musician Dirlaram. Spread around the musician, some deer, a hare, and an ibex slumber while two quail watch the singer and all nature appears to repose.

There are two things we must note from these tales. First, in all of them we are dealing with what you and I would call "real" music. This is not the intellectual musings of a Pythagorean philosopher or the intricate calculation of intervals according to ratios. This is music that musicians perform and people listen to. Secondly, and for us now more importantly, what people listen to is believed to *change* them. A sad person is

²⁸ West, *Ancient Greek Music*, p. 31. Here it's interesting to note that Pythagoras himself does not play the music but instead instructs the lower class piper to change his tune. The actual performance of music is beneath the philosopher's dignity.

²⁹ Plutarch, *De cohib. Ira*, 9, p. 458

³⁰ Plutarch, *De Alexander Fortibus*, p. 335. Dio Chrysostom (ca.40 – ca. 120) tells a variation on the story in his "First Discourse on Kingship" but says that the king "was so affected not so much the power of the music as the temperament of the king, which was high-strung and passionate." Dio Chrysostom, *The First Discourse on Kingship* (Loeb Classical Library, 1932), p. 3

made happy. The heart of a cruel god is softened. A relaxed monarch is first enraged and then pacified. These are the kinds of notions that echo within William Congreve's "music hath charms to soothe the savage breast." Music can change behavior. It can make you *different*. This is known as the Doctrine of Ethos.³¹

Of course when things are said to shape behavior, politicians, ever interested in the business of getting people do what they want them do to--either through agreement, or trickery, or force—start getting interested. This notion was first put forth in a political oration set before the Areopagus Council of Athens by the musician Damon of Oa sometime around 440 B.C. Simply put, Damon wanted the state to censor music. Scales and rhythms, he argued, were intimately bound up with ethics and he gave a list of modes and rhythms with the corresponding ethical qualities to prove his point. Plato, who perhaps studied music with one of Damon's students, developed Damon's notion in one of the most famous passages of *The Republic*.

We must remember Plato's purpose in *The Republic* is to outline the structure of the ideal state; it is a work about politics and not aesthetics. Music for him, and in this case we must remember that Plato is not talking about the "pure" music of the Pythagoreans but the real kind of music you might hear in the street or at a dinner party, this music, as for Damon, has political significance. Since an ideal state can not be made up of un-ideal people, a good deal of his discussion is focused on how to educate boys into the kinds of youths who would support and guide such an ideal society.³²

Plato believes that this can best be done by focusing on two things in a boy's education: gymnastics and music. The ways in which gymnastics would train the body are pretty clear: building endurance, strengthening bone and toughening muscle, and enhancing physical beauty. In these ways gymnastics shapes the body. Music is to mold the spirit.

The Doctrine of Ethos holds that music does not merely depict qualities and emotional states but embodies them. Thus a performer singing about the rage of Achilles, for instance, would not only be depicting the emotional states of anger and violence of Homer's hero but the singer would be experiencing those things himself. And not only would the performer, so too would the listeners. Plato believes that music encodes ethical qualities already found in human conduct and that music feeds those qualities back to the souls of the performer and his listener. Thus certain sorts of music

³¹ Although Plato does not use the term itself (it comes from Aristotle), it has become customary to use ethos to describe any notion that attributes ethical or moral characteristics to particular kinds of music and in which music is believed to be capable of arousing those in the listener. For discussions of the Doctrine of Ethos see: Gilbert Rouger, *Music and Trance, a Theory of the relations between Music and Possession* (Chicago: University of Chicago Press, 1985), pp. 220 ff; and M. L. West, *Ancient Greek Music* (Oxford: Oxford University Press, 1992), pp.246 ff.

³² Plato, as was typical of his time, was concerned only with the education of men.

educates boys into living lives of high ethics while other sorts could educate them into baseness.

. . . education in music is most potent, because by this chiefly rhythm and harmony sink into the inmost part of the soul and fasten most firmly upon it, bringing gracefulness and making it graceful if one is well trained, but otherwise just the opposite: and again because if any things are defective or badly made or badly grown, one trained as he should be in that way would perceive it at once and would be pleased or pained with true taste. He would praise the beautiful things, and eagerly receive them into his soul, and feed on them, and become himself beautiful and good; but the ugly things he would blame with true taste, while still too young to have reason by which to understand about them, and when reason came to him he would gladly welcome her as a friend whom he recognized by a sense of affinity.”³³

It’s crucial to note that Plato here is not just talking about what we would call aesthetics or “the appreciation” of fine music and poetry although that is an important part of his thought. That’s not all he means by the “praise of beautiful things.” It’s much more than that. Plato is talking about a kind of person who would be disposed to praise great deeds and who would typically act heroically. His concern is in providing the kind of education that can produce that kind of man. By developing conscience and shaping character, Plato believes that music (with gymnastics) can produce that kind of man and with such men entrusted with government Plato believes that an ideal political order can be established. Briefly put, the proper education in music is part of the road to an earthy paradise.

The key word here is “proper” because for Plato there are types of music that will make that ideal state possible and there are types of music that will corrode it. Because the Mixolydian and the intense Lydian modes are used for dirges, Plato forbids them. They are “useless for women if they are to be decent, much more [useless] for men.” Since they are “soft, lazy, and fit for drunkenness,” the Ionian and Lydian modes are also not to be heard by youths. But the Dorian and Phrygian modes are the modes which

Could suitably imitate the notes and tones of a brave man in warlike action and in all violent doings, or defending himself against fortune steadily with endurance when he had bad luck and faces wounds or death or falls into any other trouble. And leave another [mode] for the works of peace without violence, when a man acts of his own free will, whether persuading or beseeching someone for something, as praying to a god or instructing or admonishing a man, or on the other hand when he is yielding to another who beseeches or instructs or persuades him/ and if he wins his object by these means, he is not overbearing or triumphant, but temperate and moderate in every case and well content with what follows. Leave them these two scales—the violent and the voluntary, such as will imitate best the tones of men unhappy or well off, temperate and brave.³⁴

³³ Plato, *The Republic*, translated by W.H.D. Rouse, Book III, in *Great Dialogues of Plato*, pp. 200-201. “Harmony” in this context could probably be better translated as “scale” or “mode” “Fine arts” refers to poetry, not painting or sculpture, which Plato detested.

³⁴ Plato, *The Republic*. Book III, p. 197.

The Dorian and the Phrygian modes (the “voluntary” and the “violent”) are then the only modes that Plato would allow his youths to hear. Mature men, gathered at a symposium, would have use for the Ionian and Lydian. Dirges, should there be occasions for them, would be in the Mixolydian mode. And slaves and commoners would have their own base kinds of base music too. But in Plato’s ideal state boys would be restricted to music in the Dorian and Phrygian modes so that they might take on the moral and ethical characteristics of these modes embody.³⁵

Although Plato’s ideals were deeply respected and profoundly influential through classical antiquity (for instance Aristotle—who disagreed with many of Plato’s notions about music—agreed that music could influence behavior), they were never formally institutionalized as state policy. It wasn’t until the Renaissance with its revived interest in Greek philosophy that philosophers gained the ears of monarchs and the rulers attempted to impose state censorship of music. At the urging of the philosopher/poet Jean de Baïf, in 1570 the French king Charles IX created the Académie de Poésie et de Musique for the purposes of elevating his subjects’ morals and bringing peace to his kingdom torn by feuding noble families. In the *Lettres patentes* that created the Académie, the king declared that:

... it is of great importance for the morals of the citizens of a town that the music current in the country should be kept under certain laws, all the more so because men conform themselves to

³⁵ These modes (Dorian, Phrygian, Ionian, Lydian, Mixolydian, etc.) must not be confused with the scales we give those names to today; they were rather different, and the transmission of Greek music to the medieval period and into the modern area is complex. Confusions began early. Latin writers, using Boethius as their source, describe Greek scales as ascending (as we still think about our scales today). They apparently based this on the Greek’s habit of describing pitches as “high” and “low.” The Latin writers interpreted a Greek “high” pitch to being a pitch “high” on an ascending scale. But by “high” the Greeks meant that the pitch was produced “high” on the kithara which was a lyre-like instrument used by professional musicians. The strings on the kithara were laid-out as on a modern guitar: a pitch was “high” because it was high on the kithara. It would actually sound what we would call a low pitch today. A pitch was low because it was played low on the kithara, but it would be what we would call a high pitch (strum a guitar, going from the top string to the bottom and you get a series of pitches starting with a low pitch and then going up—the kithara was like that). Latin writers apparently didn’t understand kithara performance, or performance practice had changed by the time they wrote, so they transmitted a confused notion of Greek modes. The Renaissance Phrygian scale (called by some Medieval writers the *Deuterus* mode) is the familiar scale ‘e’ to ‘e’ without chromatic alteration (but that’s even problematic since musicians in the Middle Ages and during much of the Renaissance usually didn’t think in octave scales but instead in interlocking sets of hexachords, or six-note scales). But the second century AD writer Aristides Quintilianus describes the Phrygian mode of his day (and he’s writing hundreds years after Plato) as the eight member scale: d, e, e (about a quarter tone sharp), f, a, b, b (quarter tone sharp), and c. That, and not the modern e to e octave, is probably close to what Plato refers when he discusses the Phrygian mode in *The Republic*. Close, but we can’t be sure. The main thing to remember here is that the modes named by Plato are not the same scales that we identify by those names today. See: M.L. West, *Ancient Greek Music* (Oxford University Press, 1992), pp. 64 and 174.

kings” who rose to their rank by virtue of their personal accomplishments, so too Confucius thought that social order could be best maintained through a class of gentleman-governors—themselves servants of the emperor—who lead by the example of their personal conduct. Beginning with the rise of the Qin Dynasty (221-206), Confucius’ ideas gradually began to take on the character of official state policy. By the Tang Dynasty (618-907) all applicants to the civil service were required to pass an



Confucian ritual *Jongmyo jeryeak* (Royal Shrine Ritual) performed in Korea, 2006
 Insert: a performance a Confucian ritual at the Confucius Temple in Qufu, China, 2009.
 Ex.2.15

examination on Confucian beliefs. In this system, music was seen as a way of shaping civilization to conform with the natural world’s inherent balance. It worked like this.

Music was considered an aspect of *chhi*, a word which first means the “fragrant steam of the cooking pot” but which translators also render variously as “vapor,” “air,” “breath,” “vital principle,” “to beg,” or “to ask.” In Confucian ritual, music, as *chhi*, ascends with the vapors of the burning offerings to the ancestors, tempting them to return to earth. First enticed by the music, when they arrive they are further delighted by the splendid costumes and ritual movements of the ceremonial participants (called *li*). As the ancestors descend, they bring with them the *chhi* of heaven which spreads the ancestors’ reinvigorating influence over the people. The descending *chhi* from heaven and the ascending *chhi* from music and *li* intermingle, creating wind, which make the music of heaven. This wind makes rainbows, causes flowers and crops to flourish, and maintains

the orderly change of the seasons.³⁷ The civilization of ancient China depended upon the climatic balance between flood and drought. Too much of one or the other brought disaster. Prosperity depended upon balance.

It is the *tao* of heaven and earth that if cold and heat do not come at the right time there will be epidemics; if wind and rain do not come in due proportion there will be famine. [When the ruler] teaches [what is required by ritual]: that is the people's cold and heat. If his teaching does not come at the right time he may blast a whole generation. [When the ruler] acts: that is the people's wind and rain. If his actions do not observe due proportion they will be without effect. That is why the former kings organized ritual and music, and so governed by force of example [i.e., by sympathetic magic]. If these were good, the activity of the people mirrored his moral power.³⁸

The *li* regulate the people's minds. Music harmonizes their sounds. Government serves to carry this out, and [inflicts] punishments to guard against its violation. *Li*, music, punishments and government; when these four have full play without irregularity or collision, the Kingly Way is complete.³⁹

Of course, not any music would do for this "Kingly Way." Confucius was careful to discriminate between *ya-sheng*, "right music", and *cheng-sheng*, "vulgar music." Just as the proper use of music and *li* can result in a well-ordered kingdom, the improper use can result in disaster.

The mode of C is the symbol of the king; the mode of D is the symbol of the minister; the mode of E is the symbol of the people; the mode of G is the symbol of the affairs for the country, and the mode of A is the symbol of the natural world. When the five modes are arranged in order, we do not have discordant sounds. When the mode of C loses its tonality then the music loses its fundamental and the king neglects his duties. When the mode of D loses its tonality, then the music loses its gradation, and the ministers become unruly. When the mode of E loses its tonality, then the music is sorrowful and the people feel distressed. When the mode of G loses its tonality, then the music is mournful and the affairs of the country become complicated. When the mode of A loses its tonality, the music suggests danger, and the people suffer from poverty. When all the five modes lose their tonality and upset one another, we have a general discord, and the nation will not have long to live.⁴⁰

In Confucian China, prosperity was the result of balance. The fundamental purpose of government was to ensure balance by regulating *li* and music.

[To avoid the way of chaos] the people are therefore controlled through *li* and music instituted by the ancient kings. The weeping and wailing and wearing of the dress of mourning, made of hemp and without hemming, are for the purpose of regulating sorrow at funerals. The bell, the drum, the

³⁷ Joseph Needham, Wang Ling, and Kenneth Robinson: *Science and Civilisation in China*, (Cambridge: Cambridge University Press, 1962), IV/i, p. 133.

³⁸ From the *Yo Chi* (Record of Ritual Music and Dance), late Chou Period (480-221 B.C.). Joseph Needham, et al, *op cit*, p. 228.

³⁹ Fung Yu-Lan, *A History of Chinese Philosophy*, trans. by Derk Bodde (Princeton: Princeton University Press: 1952), Vo. 1, p. 343.

⁴⁰ The Wisdom of Confucius edited and translated with notes by Lin Yutang (The Modern Library, 1994), pp. 253-254.

shield and the hatchet (in dance and music) are for the purpose of celebrating peace and happiness. The marriage ceremony and the “capping” ceremony for boys reaching maturity and the “coiffure” ceremony for girls reaching maturity are for the purpose of establishing distinctions between the sexes. The archery contests and feasting at the village are for the purpose of normalizing social intercourse. The rituals regulate the people’s feelings; music establishes harmony in the sounds of the country; the government orders their conduct and the punishments prevent crimes. When rituals, music, punishments and governments are all in order, then the principles of political order are complete. . . Therefore the ancient kings did not initiate rituals and music for the mere purpose of satisfying the desires of our senses [‘the mouth, the stomach, the ear and the eye’] but rather for teaching the people the right taste and the return normality.⁴¹

Although supported by a very different cosmology and religious framework than that of either Plato’s ancient Athens or Charles IX’s Renaissance Paris, we can see that in Confucian China music had a remarkably similar importance. As in Ancient Greece and Renaissance France, in China music was believed to both reflect and affect character. This worked on both an individual and a corporate level. Because of this power, education in the “proper” kind of music was seen as necessary for a society’s welfare and was thus a principle concern of government. Good government meant cultivating good music.⁴²

Recently the ancient notion of ethos has been given a modern twist by the experimental findings of psychologists and neurologists. In 1993 researchers at the University of California at Irvine reported that listening to Mozart made students smarter. Or at least it made some students smarter for a while. Thirty-six students were divided into three groups. One group spent ten minutes listening to part of Mozart’s “Sonata in D Major for Two Pianos”, K488, a second to a “relaxation tape.” The third sat in silence. After the ten minutes the students were given a paper folding and cutting test (A piece of paper is folded over several times and then cut. You have to mentally unfold it and chose the right shape from five examples). The students who listened to the Mozart sonata showed an eight to nine point increase in their IQ scores over their scores when they took the test after either a period of silence or listening to the relaxation tape. The bump in IQ was temporary, not lasting beyond the time required to sit through the experiment.⁴³

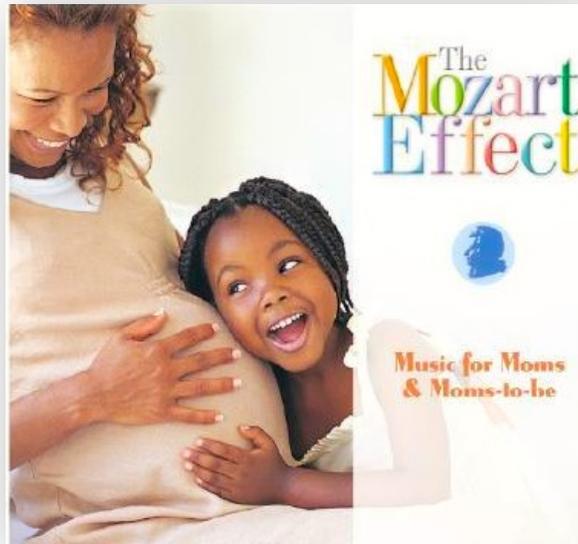
Don Campbell is an American entrepreneur. In April, 1996, he filed to trademark the phrase “The Mozart Effect” and a year later published *The Mozart Effect: Tapping the Power of Music to Heal the Body, Strengthen the Mind, and Unlock the Creative Spirit*. In it he claimed that Mozart’s music was the embodiment of “the innocence,

⁴¹ *The Wisdom of Confucius*, pp. 255-256.

⁴² Just as not all Greek philosophers agreed with Plato, the Confucians also had their critics. Mo Tzu (ca. 470 - ca. 391 B.C.), roughly a contemporary of Confucius, attacked music as a needless waste of resources. See Wing-Tsit Chan, *A Source Book in Chinese Philosophy* (Princeton: Princeton University Press, 1963), pp. 211 – 228.

⁴³ Frances Rauscher, G.L. Shaw, K.N. Ky, “Music and spatial task performance,” *Nature*, 1993, Vol 365 , p 611.

inventiveness, and promise of the birth of a new order of the ages.” Not quite as important as that rather grand claim, he also suggested that The Mozart Effect® could cure backache. And asthma. And obesity, writer's block, antisocial behavior, alcoholism, schizophrenia, Alzheimer’s disease, anxiety, prejudice, heart disease, drug addiction,



Cover of one of a number of CD's released under Don Campbell's trademark.
Ex.2.16

acute pain, headaches, diabetes, Downs syndrome, breast cancer, cerebral palsy, chronic fatigue syndrome, abrasions, sexual abuse, AIDS, and writer’s block—and it also made bread rise better and improved the taste of beer.⁴⁴ Campbell also began to market CD’s and cassettes of music he claimed would heighten intelligence, heal the body, and unlock previously inhibited creativity. A year after the book’s publication, Zell Miller, the Governor of Georgia, prevailed on the state legislature to give over one hundred thousand dollars to a program that would provide every new born baby in the state with a CD of Mozart’s music. The intention was to produce smarter Georgian babies (the CD was called “Build Your Baby’s Grain – Through the Power of Music). Not to be out done, Donald Sunquist, the governor of Tennessee, announced in September 1998 a partnership with the recording company NAXOS; every baby born in Tennessee in 1999 would receive a CD of classical music called “Listen, Learn and Grow, Music to Stimulate and

⁴⁴ Don Campbell, *The Mozart Effect* (New York: Avon Books, 1997), p. 29 The list comes from the book’s “Postlude.”

Inspire Young Minds.”⁴⁵ About the same time an obstetrician in Indiana began marketing a device that played Mozart’s music for the fetus in utero.⁴⁶ The Florida state legislature passed into law a bill requiring all child-care facilities receiving state aid to include at least on half-hour of listening to Mozart daily. In 2002, Campbell published *The Mozart Effect for Children*. In a chapter entitled, “Twinkle, Twinkle, Little Neuron” he claimed that the composer’s music aided the networking of neurons in the infant brain.

II

All of this seems a long way from that high plain Christmas Eve with which we began this chapter and I realize that you must be wondering what these things have to do with that charming story and our initial questions. Although Plato, Confucius, researchers at the University of California at Irvine and the Georgia state legislature all have a lot to do with them, before we discuss that there’s one bit of business that I think requires acknowledging here.

Isn’t it interesting that in each of the cases we looked at—Pythagoras, Plato, the French Renaissance, ancient China and contemporary America—music is believed to be a principle contributor to whatever that particular culture deems most important to its flourishing? For the Pythagoreans nothing is more important than experiencing the Divine and the Divine is approached through number. Music, or what for the Pythagoreans is music, is a manifestation of the Divine. At least in politics, nothing is more important than the establishment of a state under the leadership of philosopher kings. In conjunction with gymnastic training, Plato argues that instructing boys in modes which embody noble characteristics (and learning the poetry associated with those modes) will produce rulers who will govern with naturally cultivated taste, ethics, and discipline. In metaphysics, for Plato nothing is more important than the fundamental nature of the cosmos and that he suggests is literally built out of musical principles. Social harmony, in a France split by religious wars, is the primary concern of Jean Antoine de Baif. Cultivation of the proper kind of music (and the forced suppression of all improper music) could heal those divisions and return the kingdom to peace and

⁴⁵ The Georgia program lasted only one year, 1 July 1998 to 1 July 1999. The Tennessee program was announced on 28 September, 1998 and ran for the 1999 calendar year. A committee, chaired by the governor’s wife, chose the music that was selected from “popular classical works by Mozart, Bach, and others.” News Release, Office of Governor Don Sunquist, 9/28/98.

⁴⁶ Dr. David Min developed the Rock-a-Bye Music System in Munster, Indiana. It was an apron with pockets for a compact disc player or tape recorder. *Orlando Sentinel*, 4 February 1998.

prosperity. In the traditional culture of China nothing is more important than balance, a notion best known to Westerners through the complimentary opposites *ying* and *yang*. For the Confucian, performance of “right music”, along with the performance of right *li*, insures prosperity by maintaining cosmic balance through the beneficent intervention of the ancestors. Today in America we value intelligence because of the competitive advantage we believe it gives. Most of us measure success in financial terms and people who are able to out-perform others are seen as having an advantage in securing and holding the most lucrative jobs. The “right” kind of music is valuable because it can give someone a competitive edge by making him or her smarter in the work place. In all of these cases, music is not valued for what it is itself but instead for of what it can do. And what it does is thought to be necessary for an individual’s flourishing and a society’s survival. In short, music gives power. No wonder it’s so important.

To bad it’s all nonsense. Or at least most of it is. The primary character of the divine isn’t deductible to musical ratios. Tunes don’t change a person’s character. The right music doesn’t balance the heavens. And listening to Mozart sonatas won’t make you particularly clever.

We know that the “heavens” aren’t changeless. We’ve seen super novas and, with the help of the Hubbel telescope, even the birth of stars. And the idea that thinking



Gas pillars in the Eagle Nebula which incubate new stars
Picture taken by the Hubble Space Telescope, November, 1995
Ex.2.16

about Perfect Fifths puts us in contact with our existential being makes a better Monty Python skit than it does thoughtful metaphysics. Besides, Moses did not come down the mountain with a tuning fork, nor, for that matter, did Muhammad or Jesus or Joseph Smith. And, as we'll see in the next chapter, the numbers themselves don't work. In Pythagorean tuning, one plus one doesn't equal two. Ever.

Plato's ideal school of music and gymnastics doesn't fair any better. Musical scales, modal or tonal, do not carry in them some sort of germ that infects their hearers with particular dispositions. Listening to music in the Dorian mode, whatever that might have been in Plato's day—will not dispose a naughty boy to tell the truth when doing so will result in a spanking. Singing patriotic songs in the third grade does not guarantee heroism on the battlefield, honesty in the boardroom, or fidelity in marriage. And if early training in gymnastics and music really did result in philosopher kings the world's greatest leaders would be trained as ballet dancers (think of either Caesar Augustus or Winston Churchill in a tutu). Play whatever music you like for them, boys will be boys.



Medal struck by Pope Gregory XIII
celebrating the massacre of Protestants
on St. Bartholomew's Day 1572

The cultivation of “right” music does not result in a political paradise. For all the glories of dynastic China and its administration under Confucian bureaucrats (which were significant) it was still a society of despotism, cruelty, superstition and racism and one which the modern Chinese have little wish to resurrect. On 23 August, 1572--the evening before the Feast of St. Bartholomew—the gates of the city of Paris were closed on order of Charles IX and the Swiss Guards in his employ began a systematic slaughter of Protestants. Mobs quickly joined the soldiers in their

work. The massacre continued for three days in Paris and violence spread to a dozen French cities. Somewhere between five and thirty thousand Protestants were murdered. Jean de Baif wrote and published a sonnet praising the massacre that was much admired in his day (at least by Catholics, the Pope even had a medal struck to commemorate the event). So much for the right music elevating the morals of the state—or even religion.

And listening to Mozart doesn't make you particularly smarter or better than someone who doesn't. In 1994, researchers at the University of Auckland tried to reproduce the findings of the Irvine researchers. They were unable to do so and concluded that the Irvine conclusions were invalid. Several of the original Irvine



Cover of the report on the “Mozart effect”,
commissioned by the German Ministry of Education and Research, 2006
Ex.2.17

researchers then conducted more tests, the results of which they said reinforced the validity of their original conclusions. Still other researchers repeated the Irvine experiments but failed to support the Irvine conclusions.⁴⁷ Meanwhile, and predictably, music educators seized upon the notion that training in music made children smarter and used the Irvine findings (or better, the rather unprincipled exaggerations of those findings, similar to Don Campbell's) to harass school boards and departments of education into upping funding for music education programs. Valid or not, “listen to music and be smart in trigonometry” was good for the music ed business. Because they found themselves flooded with requests for projects linking music education with other

⁴⁷ See Strough et. al., *Personality and Individual Differences*, 1994, 17, p. 695; and Rauscher et. al., *Neuroscience, Letters*, 1995, Vol. 185, pp. 44-47.

areas, the German government's Federal Ministry for Education and Research funded a thorough study of the matter. Assembling a team of nine neuroscientists, psychologists, educators and philosophers—all of whom were also musicians—the Ministry published its 179 page report in 2006, called *Macht Mozart Schlau?* (“Does Mozart Make You Clever?”). In an interview for the journal *Nature*, the study's lead author, Ralph Schlumacher, a philosopher and pianist at Berlin's Humbolt University, said “We went through all the literature to find out which questions were still open.” The report pronounced the “Mozart effect” dead.⁴⁸

After examining nearly three hundred reports, Schlumacher and his colleagues found that scientists who had tested the Mozart effect either were unable to duplicate the UC Irvine original research or that the effect was short lived, lasting no more than twenty minutes. And that short result could be obtained by any kind of music or even story reading, as long as the music or the story was something the listener liked. Chess games had the same effect too, as long as the person liked chess. But the Germans did find that actually learning an instrument and playing it might strengthen cognitive skills. And if music (or story telling, or chess) lifts a listener's mood, then it can contribute to motivation and in that way modestly help with homework. In short, doing something pleasant can help you with a task, but it just helps a bit and it won't make you particularly more clever doing it.

Francis Rauscher, who was one of the original Irvine researchers, believes the findings inconclusive and at the University of Wisconsin has continued her research, now focused on rodents. She writes frequently on issues of music education.⁴⁹ Don Campbell continues to sell his books and CD's; the commercial enterprise keeps chugging along. But it's a more problematic enterprise than even its most critical scientific critics argue. It's racist, and pretty stupid. Because it argues that Mozart's music possesses a basic structure which uniquely triggers a fundamental linguistic mechanism in the brain that in turn strengthens the brain's mechanisms to the point where intelligence is heightened (which was the justification for Georgia's and Tennessee's programs of providing infants with recordings of classical music), the Mozart effect simultaneously argues that music radically different from Mozart's will not do this, or at least not do it as well. The musics

⁴⁸ Alison Abbott, “Mozart doesn't make you clever,” *Nature*, 13 April 2007.

⁴⁹ Rauscher conducted a study on rats, published in 1998. Here is the report's summary: “Rats were exposed in utero plus 60 days post-partum to either complex music (Mozart Sonata K. 448), minimalist music (a Philip Glass composition), white noise or silence, and were then tested for five days, three trials per day, in a multiple T-maze. By Day 3, the rats exposed to the Mozart work completed the maze more rapidly and with fewer errors than the rats assigned to the other groups. The difference increased in magnitude through day 5. This suggests that repeated exposure to complex music induces improved spatial-temporal learning in rats, resembling results found in humans. Taken together with studies of enrichment-induced neural plasticity, these results suggest a similar neurophysiological mechanism for the effects of music on spatial learning in rats and humans.” See: Rauscher, et. al. “Improved maze learning through early music exposure in rats”, *Neurological Research*, 1998, Volume 20, July, 427-432; and Rauscher, F.H. ,”The Mozart effect in rats: Reply to Steele”. *Music Perception*, 23 (2006), 447-453.

of West Africa, or Korea, or Indonesia, or central Australia, or even contemporary Rock, are all very different from Mozart's. For the proponents of the Mozart effect, these kinds of music must be somehow fundamentally structurally degenerate because they cannot impact the mind as forcibly and directly as can Mozart's. Because those other musics cannot effect the biology of the brain as directly as Mozart's, they must be the products



The Mozart Effect® Web Page, February, 2010
Ex.2.18

of biologically inferior peoples. Thus the Mozart effect argues that the music cultivated in a tiny province, in the interior of Western Europe, in the closing decades of the eighteenth century, conforms to the biological structure of the human brain more than any other kind of music of any other place and any other time and, by extension, the people most exposed to that music would not only be smarter than any other people but would continue to grow smarter because of their continual exposure to it.

Okay. If Mozart's music were able to improve health, why was Mozart himself so sick? If listening to his music increases intelligence and encourages spirituality, why aren't the world's smartest and most spiritual people (whatever that means) Mozart specialists? According to the argument of the Mozart effect, shouldn't the world's intellectual and spiritual center, peopled with our civilization's most generous and healthful beings, be where Mozart is most revered, studied, and performed—in other words someplace like the backstage canteen of any opera house during the intermission of *Cossi fan tutti*? Wouldn't we expect the singers, stagehands, pit musicians, costume

fitters, accountants, managers—people who had spent weeks listening, playing, and singing Mozart—to brilliantly represent the summit of wit, be spectacularly healthy, exemplify the pinnacle of enlightenment, and be the model of courtesy, kindness, and humility?

Yeah. Right. For years the principle flute and oboe players on one of America's leading orchestras so detested each other that almost no one remembered a time when they spoke. There's a very long bar at London's Royal Opera manned by two bartenders whose feud is famous throughout Britain; although working side by side they've had nothing to do with each other for years. And there's more than one story of a prima donna, upset about her dressing room assignment, storming into her rival prima donna's dressing room, grabbing the other singer's costumes and throwing them out the door. Opera companies, orchestras, and conservatories are full of people who love and with equal passion hate each other. Look down from the balcony onto the pit and stage of a performance of any Mozart opera and you'll see a group of people performing Mozart exquisitely while beset with carpal-tunnel syndrome, back problems, high blood pressure, exhaustion, diabetes, depression, failed relationships, sexual dysfunction (and over function), and even murderous rage; in 1999 one trombonist of an Israeli orchestra murdered another trombonist in the same orchestra so that he could take his place in the orchestra. Simply put, musicians—the ones who know Mozart best—are cantankerous, egotistical, selfish, stupid, cowardly, generous, even-tempered, compassionate, intelligent, humble, and kind in about the same proportion as teamsters—who, for the most part, hardly know any Mozart at all.

IV

This is a very important issue and because there is so much confusion about it we need to spend more time with it before we move on. Here I think that we can be helped by focusing our discussion upon three areas where many people have speculated that music might have some importance and where a great deal of research has been done:

1. The physiological effect of music, or the way music effects our bodies
2. The social and psychological effect of music, particularly on adolescents
3. Music's effectiveness in advertising

But already you are ahead of the game. After trading the first chapter you are probably quick to ask: “Music? But *what* music? And who is listening to it? Are we talking about *p’ian sori*, or *bel canto*, or the music of Niger, or a fugue by Bach or the battle movement from Henze’s *El Cimmaron*? Are we talking about a cultivated Frenchman or a Japanese physician listening to the same nocturne by Chopin? We must remember that these fundamental questions are not asked by the researchers who conducted the research we’ll be looking at below. Naively, they all assume the universality of music: that all music is heard by all people in pretty much the same way and to hear music, to simply be in the presence of music, means that the music is understood. They are pretty much unaware that music is fundamentally a cultural construct and don’t know that simply to occupy the same bit of space as a piece of music is not to ensure that someone listens to it or even recognizes the sounds as “music.”

First, does music change our bodies? When we go outside in a blizzard we get cold and the actual effect of that cold can be measured by the changes of temperature of our skin. If our skin gets cold enough we suffer frostbite and need medical assistance. Should we hold our finger over a flame, that flame will scorch our skin and we will blister, and yelp. These environmental conditions, the blizzard or the flame, affect us involuntarily and how our bodies react to them can be objectively measured and calculated. Our bodies also react involuntarily to drugs. If I am allergic to penicillin and am administered penicillin I will have a predictable and unpleasant reaction to the drug. If I am given a particular narcotic I will experience the predictable effects of that drug. Of course, in all these cases there will be exceptions and variations between individuals but the general effects are considered to be largely universal and predictable non-the-less. Does music act like that?

This has been a question of interest to researchers who over the past century have conducted experiments testing the effect of music (or even just sound) on people’s heart rate, blood pressure, electrodermal response (skin conductance), respiratory rate, muscle tension, blood volume, skin temperature, digestion, and hormone secretion.⁵⁰ A look at the experiments dealing with heart rate is instructive. Of the sixty-eight hypotheses reported, fifteen produced results that showed an increase in heart rate (or 22%), twenty-five produced results that showed a decrease in heart rate (or 36%) while twenty-eight showed findings of no change at all (or 41%). The research becomes even more perplexing when looked at more closely. One study reported that subjects who listened to the first movement of Beethoven’s Fifth Symphony showed a *decreased* heart rate—which doesn’t make much sense because if anything you might expect an increase in heart rate when listening to one of the most exciting and densely composed pieces in the Western heritage—that is if one listens with understanding. A study which reported an

⁵⁰ The following discussion is drawn from Dale Bartlett’s research synopsis. It is assumed in these experiments that Westerners are exposed to Western music, although that is not discussed. See Dale L. Bartlett, “Physiological Responses to Music and Sound Stimuli” in *Handbook of Music Psychology*, edited by Donald A Hodges (San Antonio: Institute for Music Research, 1999), pp. 343-385.

increase in heart had subjects listen to very loud pure tones of various frequencies, which of course isn't listening to music at all but is rather an exercise in acoustic assault which would raise anybody's heart rate. In another study, premature infants who had been listening to their mothers' voices had their heart rates increase when suddenly presented with white noise (which is that annoying "fuzz" you hear when a television station goes off the air). Not hearing their mothers' voices and then hearing that racket the premature infants' heart rates went up. Well surprise, surprise. And in what has to be one of the most unethical experiments reported in recent literature, a Polish PhD candidate told patients that they were required to undergo "anxiety-laden" surgery and then had them listen to music they selected to see if their heart rate changed. Apparently the experiment went something like this: The graduate student comes into the patient. "Good morning Mrs. Godebski. I'm very sorry to inform you that you have stomach cancer and require surgery. Now I'm going to strap this monitor on your arm. You pick out a nice piece of music to listen to and I'll be back in a bit."⁵¹ Oh. Really.

The results for studies testing other areas are no more conclusive (although I haven't come across one as inhumane as the Polish study). Whether dealing with blood pressure, muscle tension, stomach contractions or hormone secretion, rest results which support a hypothesis of music's ability to change physiology are refuted by as many that do not. And frequently the research methodology is itself deeply problematic. What emerges is that fact that music does not appear to effect human physiology in any clear and predictable manner.

But the notion of music's power, and here we have the echo of the Doctrine of Ethos, is so cherished that we can almost hear the exasperation in one researcher's voice as he writes ". . .experience tells us that music is capable of enhancing and/or altering our psychological state and of causing us to feel and to emote. In theory, however, we may never completely be able to demonstrate, through experimental research, an understanding of why music has that capability. Yet we continue to try."⁵²

Another area where recent researchers have continued "to try" is in the area of contemporary adolescents' and their music. When I said that I found many of my students saying that music was the most important thing in their lives I wasn't reporting something seen only with music students. That kind of sentiment is typical of adolescents across the Western world (although it is certainly not necessarily typical of adolescents of other cultures).⁵³ Researchers have found this very interesting. What is it

⁵¹ B.Z. Miluk-Kolasa, "Effects of listening to music on selected physiological variable and anxiety level in presurgical patients." PhD dissertation, Institute of Surgery, Medical University at Loez, 1993, reported in Hodges, *Handbook of Music Psychology*.

⁵² David L. Bartlett, *op. cit.*, p. 378.

⁵³ M.Fitzgerald, A.P. Joseph, M Hayes, and M O'Pegan, "Leisure Activities of Adolescent Children," *Journal of Adolescence*, 1995, Vol. 18, pp. 348-349.

about music that western adolescents find so important? How do adolescents structure music within their lives? And can music effect their behavior?

In the middle of the 1980's, from seventh grade through the senior year in high school, the average American teenager listened to 10,500 hours of music. Most of this is classified as one kind or another of rock, which is to say that it is primarily vocal music with words, something that researchers are frequently all too prone to ignore. That is a remarkable number, since it is only slightly less than the total number of hours that teenagers spend in school from kindergarten through high school graduation.⁵⁴ In 1991, Swedish researchers questioned a thousand sixteen through twenty-five year olds about their leisure time activities and found that 94% of them said that they were either "very interested" or "fairly interested" in music, percentages that were higher than any other activity, including sports.⁵⁵ Teenagers, at least American teenagers, tend to watch a lot of television. But the importance of songs is different for teenagers in two ways. First, as adolescents grow older, television viewing typically decreases while listening to music increases. Second, televisions are as likely as not to be in "public" spaces within the home. Watching TV is frequently done with friends or family members and, most important, is potentially subject to parental supervision. Music isn't like that. Teenagers often listen to songs in the privacy of their bedrooms. Even when in public they can still listen to it privately through their iPods.

The potential privacy of music listening is crucial to keep in mind for several reasons. And while we will address other issues this raises elsewhere (such as the profound distance it places between music in our own culture and most of the music of the past), here we need to focus on just one. It is certainly a commonplace to recognize that, perhaps more than anything else, adolescence is a period of self-discovery. And by discovery we don't mean that we just grow into sexually mature males and females capable of reproduction and discover that sex is very important to us—although that is certainly a big part of it. More than that, we recognize that this is a period of life when we begin to discover the contours of our personality. We have dreams for our lives and conjure-up goals—to call such things "fantasies" misses their importance; no matter how unrealistic, those dreams are the centers of our lives and are deeply important to us. We find out what we like and dislike, and try out different things to see how well they "fit;" things like clothes, vocabularies, companions, and even sometimes personalities. At the same time, we find ourselves accelerating the separation process from our parents that had begun in childhood. We become more ourselves and less the constructs simply imposed upon us by our families. As with all periods of discovery, there is a concomitant confusion. And confusion leads to stress, and stress leads to pain.

⁵⁴ S. Davis, "Pop Lyrics: A Mirror and Molder of Society," *Et cetera*, Summer 1985, 167-169.

⁵⁵ Adrian North, David Hargreaves, Susan O'Neil, "The Importance of music to adolescents," *British Journal of Educational Psychology*, 2000, Vol. 70, p 257.

This may be too dark a view but I think that pain very well may be the primary condition of adolescence, at least in America (certainly it was mine).⁵⁶ We seem to have “public” and “private” selves, one self that we show to our friends and family and the world at large and another we almost fanatically guard and keep secret. But even that guarded, that secret private self is itself divided. In our thoughts and imaginations we begin to glimpse who we think we want to be (and again, even here there are frequently multiple, and conflicting, visions), and then recognize who we are (a picture clouded by the fact that we’re uncertain just “who” that that is), and then we somehow have to deal with the distance between the two. Even the good swimmer isn’t quite fast enough, the pretty girl not pretty enough, and the bright scholar not bright enough, or the scholar wants to be the swimmer or the pretty girl the scholar, and everyone wants to be accepted and treasured and loved but isn’t, or thinks they aren’t, and on and on the discontent goes until it coalesces into that knot of pain that we know as adolescence.

In America, music is an important way many adolescents deal with that pain. And adolescents typically use it in several ways. Sometimes music just drowns-out the pain. Much of the ubiquitous music in adolescent’s lives--and adult’s lives too for that matter—the always on car stereo, the CD playing in the crowded room, the iPod mini-speakers plugged in the ears—is there simply to muffle the painful thoughts that arise in silence. The music thus is a kind of noise that really isn’t listened to at all but instead numbs the mind to those distressing thoughts that are a part of the progression from childhood to maturity. When young people say that they use music to relieve tension, to relax, and to deal with boredom, this is actually what they are using music for. It’s a kind of narcotic. Music is not used to quicken life but rather to deaden it. It’s a sonic novacaine.

Another, and perhaps more healthy, way adolescents use music is to establish communities (actually, probably “tribes” is a better term but I’ll stick with “communities”). But again we must remember that “music” in this context is much more than just the acoustic phenomenon. This music almost always has *words* and the words are extremely important. But besides the words and the music, there are things like hair styles, jewelry, clothing, vocabulary, political viewpoint, morals, and even posture and demeanor that function as public identifiers of the young person’s membership in a particular community. To be an enthusiast for a particular kind of music places a young person in a voluntary community distinct from that of his parents and even many of his peers. In this way music choice is a way of socializing the separation I mentioned above, of “marking the movement from parental protection and guidance to self-determination and independence.”⁵⁷ Punk and grunge rock, soft rock, acid rock, rap, rhythm and blues, country, Christian contemporary (to list some of the commercial types of music) and even

⁵⁶ Dark view or not, it seems to be supported by research. See: Reed Larson, “Secrets in the Bedroom: Adolescent’s Private Use of Media,” *Journal of Youth and Adolescence*, Vol. 24, No. 5, 1995, pp. 535-550)

⁵⁷ Dolf Zillman and Su-lin Gan, *op. cit.*, p. 172.

folk and Western European Classical are all musics which proclaim a certain kind of creed around which a particular community coheres. Spend time in almost any high school cafeteria or college dining hall and you can identify these cultures as they congregate in their own areas. In all of these cases, the music itself is a kind of adornment or even a uniform which marks the enthusiast as a member of a particular group. And, as a uniform, it can be put on and taken off or exchanged for something else.

But most people wouldn't say that a hairstyle, or a particular brand or cut of jeans, or even a manner of speaking, was "the most important thing in my life," something you remember that isn't at all unusual to hear from young people. So, important as it is as a social marker, music's function as a marker really isn't what teenagers mean when they say that music is crucial to them. They mean something else, something deeper than fashion, something more important than even what binds them to their friends.

Within all the confusion and pain that marks adolescence no time is typically more important than that time spent alone. Many American teenagers find that solitude in their bedrooms and their time there is almost always accompanied by music (and here again we must remember that this music is almost always joined with words). Reed Larson, who has written widely on teenagers, recalls this little story told to him by a seventeen year old girl. She would lie alone in her room, listening to music and daydream.

I'd like to find a perfect guy and live a simple happy life, dedicating ourselves to saving the world and everything in it. I want an empty apartment with a beautiful view—only necessary furniture and artistic decorations (my husband's?). I hope my life won't turn out too disappointing.⁵⁸



Ex.2.19

⁵⁸ Reed Larson, "Secrets in the Bedroom: Adolescent's Private Use of Media," *Journal of Youth and Adolescence* (Vol. 24, No. 5, 1995), p. 535.

There is so much here: the wish for sexual fulfillment with “a perfect guy,” the suggestion of marriage and a life together, generosity and a grandiose philanthropy, being rich (cheap apartments don’t come with beautiful view) along with a conflicting desire for simplicity and modesty, and finally a deep fear that none of it will turn out as hoped. These kinds of musing, with all their contradictions and fantastic overreaches, are typical of us when we’re young. But more than just typical--like acne—they are apparently necessary for our psychological health. Here, by themselves, adolescents both cultivate their private identity and find ways of regulating the pain that is the result of the contradictions they face both within and without themselves. So important are these private occasions that they may be likened to a chrysalis through which we must pass to reach a sane adulthood.

And here we have the third way that music plays a role in an adolescent’s life. In those private settings music is commonly a crucial element (and again remember this is *texted* music). Not only does it give the adolescent a tool for managing the emotional turmoil that characterizes his life, but it also serves as a fantasy ground for exploring other possible selves.⁵⁹ Instead of being used as a narcotic to deaden thought, here music is used to stimulate and focus reflection.

It works like this. The teenager alone in her room experiences a particular mood. But moods, being what they are, are blurry, indistinct, and nebulous. The teenager picks out a particular piece of music that she thinks corresponds to her mood. She listens to it and, by listening to the song that mood—which had been a largely inexpressible feeling—through the music (and the song’s text) now becomes specific and intelligible. And becoming specific and intelligible that once vaporous emotion is clarified. It becomes meaningful. And being meaningful it becomes bearable. In one study girls alone in their rooms selected soft rock to listen to. They typically felt sad and lonely and found themselves asking questions such as why everybody else had a boyfriend and they didn’t. The researchers were somewhat surprised that the girls would cultivate such a depressed state: the music the girls had selected was fairly melancholy, why didn’t they choose more upbeat music to cheer them up?⁶⁰ But it wasn’t that the music the girls selected depressed them or that they purposefully sought-out dysphoria. Instead, in the privacy of their bedrooms, the girls sought-out a music which gave them a way of articulating the depression and self-doubt which haunted them daily. It was as if they were saying, “Do you want to know how I feel? Here, listen to this. THIS is how I feel.”

We are not done with this issue. The relationship between music and emotions is a very important one and we will revisit it later in this chapter. But before we go on there is an area we need to consider first: can music influence what people *do*? There has

⁵⁹ *Ibid.*, p. 547.

⁶⁰ Reed Larson, *op. cit.*, p. 545.



Vincent Neil Wharton (b. 1961), lead singer of Mötley Crüe, ca. 1984
Ex.2.20

Plug me in
I'm alive tonight
Out on the streets again
Tune me on
I'm too hot to stop
Something you'll never forget
Take my fist
Break down walls
I'm on top tonight.

[Pre Chorus]
No, no
You better turn me loose
You better set me free

[Chorus]
Cause I'm hot, young, running free
A little bit better than I use to be
[Chorus]
Cause I'm alive
Live Wire
Cause I'm alive
I'm a Live Wire
Cause I'm alive

Live wire
Cause I'm alive
I'm a live wire

I'll either break her face
Or take down her legs
Get my was at will
Go for the throat
[Chorus]
Never let loose
Goin' in for the kill
Take my fist
Break down walls
I'm on top tonight

[Chorus]
Come on baby
Gotta play with me
Well I'm your live wire
You better lock your doors
I'm on the prowl tonight
You'll be mine tonight
[Chorus}

been a great deal of research done on this and it's a question we can answer relatively quickly.

Although usually described as a kind of music, "heavy metal" is really a culture that coheres around a particular kind of rock music. Notorious for its volume, the music is also known for the violence of its lyrics and its general aesthetic of brutality, cynicism, rape, and mayhem. It's not unusual for heavy metal lyrics to praise violence and to exult the inversion of traditional Western and Eastern morality. The text for the song "Live Wire" from the Mötley Crüe 1981 album *Too Fast for Love* is not unusual.

Hyperregotism, rape, strangulation, battery and disfigurement, this strident sociopathology extends beyond lyrics. Wharton's costume and gesture are as important as his lyrics and music. Heavy metal costume often incorporates elements of Nazi uniforms (and in particular the runic *Schuetzstaffel* of the Gestapo) and heavy metal concerts are known for their high rates of arrest and physical injuries. There also appears to be a strong interest in heavy metal music among youth who exhibit a variety of delinquent behaviors; one study found heavy metal fans to be hypersexual, disrespectful, amoral, manipulative, and cynical.⁶¹ This relationship has lead many to wonder if there might be a casual relationship between heavy metal music and lawless behavior. Basically the question was asked: could listening to heavy metal music influence a young person's character to the point where that person embraced delinquency? It was a question that harkened back to Plato: can listening to a certain kind of music produce a certain kind of character?

No. In 1993 Simon Singer, Murray Levine, and Susyan Jou published the results of their study of heavy metal and juvenile delinquency.⁶² Among other things, they had tested the hypothesis that "a preference for heavy metal leads to higher rates of delinquency among youth, independent of other important indicators of delinquent behavior." That position had been argued by critics of heavy metal and had even received enough credence that in 1989 the American Medical Association published an advisory to physicians, suggesting that they question their adolescent patients' music preferences as an early sign for possible social dysfunction.⁶³ While the researchers did discover that youth who preferred heavy metal music reported significantly more delinquency than youth with other musical tastes, there was no clear evidence that a

⁶¹ Dolf Zillman and Su-lin Gan, *op. cit.*, p. 177.

⁶² Simon Singer, Murray Levine, Susyan Joy, "Heavy Metal Music Preference, Delinquent Friends, Social Control, and Delinquency," *Journal of Research in Crime and Delinquency*, Vol. 30, No. 3, August 1993, 317-329.

⁶³ Elizabeth Brown MD, William Hendee PhD, "Adolescents and Their Music: Insights Into The Health of Adolescents," *Journal of the American Medical Association*, September 22.29, 1998, Vol. 262, No. 12, pp. 1659-1663. These results were further confirmed by a study in 2003. See: Kelly D. Schwartz, Gergory T. Fauts, "Music preferences, personality style, and developmental issues of adolescents," *Journal of Youth and Adolescence*, June (2003), Vol. 32, Iss. 3, pf. 205.

preference for heavy metal music *by itself* significantly contributed to delinquency. Instead, they found that heavy metal along with low parental supervision and several other factors combined to contribute to higher levels of lawlessness. This finding tended to support earlier suggestions that adolescents who exhibit psychoticism and rebelliousness were predisposed to enjoy music that was similarly deviant. Heavy metal music—and again, we must remember that here “music” is emblematic of a whole subculture embracing texts, costume, ethics, etc.—appealed to youths who were *already* prone to hypersexuality and manipulative and amoral behavior. It did not particularly influence a change in behavior but instead confirmed a behavior in adolescents who had at least already shown a propensity for the behavior and values that heavy metal exalts. The music thus could not be said to cause the behavior but instead contributed to its aesthetic expression. And, although by giving the culture and its values aesthetic expression, heavy metal potentially reinforces those cultural values (violence, mayhem, hypersexuality, etc.), listening to the music alone does not cause the listener to embrace the values or behaviors the music commends. Plato was wrong. And so was the AMA. Going back to our discussion above, the teenager, a hurricane of chaotic emotions, finds a piece of heavy metal music, plays it, and when you ask him how he feels and thinks about life, he points to his iPod, glowers and says, “I feel like this, F**k off.”

So far we have seen that there is no clear evidence that music either induces physiological changes or by itself influences behavior. Instead, it generally testifies to a feeling and character already present. But what about advertising? In the first chapter we noted that advertising uses music and in that way music in advertising serves a utilitarian purpose. But just what purpose? What does music *do* in advertising?

Bluntly put, businessmen hope that music increases profit. And they hope that this happens either by using music to make environmental conditions generally conducive to sales or by using music to get the consumer to buy something which without music he might not have purchased. In both cases the intention is to use music as a means of persuasion or possibly even subtle coercion. Of course music also has been used a third way. For a long time marketers have believed that they can enhance their cognition of their product name if it is made more memorable by incorporating it in a tune (In the first chapter we already noticed how helpful music is for memorization, remember the tune we use to learn our A B C’s and Hooked-On-Phonics®?). Although research has cast some doubt on the assumption that combining a product name and its attributes with a melody makes them both more memorable (apparently it doesn’t),⁶⁴ what I would like us to concentrate on here are two other areas where music is used to assist marketing: (1) if music possibly influences mood and thus increases a product’s sales; and (2) the usefulness of music as a tool of “classical conditioning.” We will look at the matter of classical conditioning first.

⁶⁴ David W. Seward and David H. Furse, *Effective Television Advertising, A Study of 1000 Commercials* (Lexington, MA: Lexington Books, 1986), pp. 16-17.

“Classical conditioning” suggests that if a product (the “conditioned stimulus”) is paired with something a potential buyer already has positive feelings about (the “unconditioned stimulus”), then the potential buyer will form an association between the two and have a positive impression of the previously unfamiliar product. If the unfamiliar product is for sale, the potential buyer will like it too and purchase it. It is as if the good feelings associated with the first thing rubbed off on the new thing with which it was associated.⁶⁵ In 1982, Gerald Gorn published the results of several experiments he conducted to test the effectiveness of music in classical conditioning and marketing.⁶⁶

Gorn told his test subjects (who were two hundred and five marketing students) that an advertising agency was trying to decide on what kind of music to use in a commercial for a pen.⁶⁷ They were then shown slides of two pens, identical except for color (half were blue and half beige). The slides were accompanied by two kinds of music; Gorn used a selection from the musical *Grease*—he didn’t say which one—and an otherwise unidentified selection of “Indian” music. Projections of slides of both colors of pens were accompanied by the *Grease* selection or the Indian music. The subjects then were asked to evaluate the music on a scale ranging from “dislike very much” (1) to “like very much” (5). At the end of the session they were told that the advertising agency had provided free pens as gifts for participants and that the students could pick up their pens as they submitted their questionnaires. The beige pens were in boxes on one side of the room and blue pens in boxes on the other.

Gorn’s interest was in seeing which kind of pen his students preferred. Through prior testing he had confidence that the *Grease* selection would be received positively by his students and that the Indian selection would be received negatively. If classical conditioning held true more students would select the pen associated with the “liked” music than the “disliked.” It turned out that seventy nine percent of the students selected the pen that had been associated with the “liked” music, a significant percentage. Classical conditioning seemed to have been demonstrated. Music could subtly influence a consumer’s behavior.

⁶⁵ This is why popular politicians are asked to campaign with lesser known politicians and why it’s so important who you get to stand next to in photographs. You liked Barak Obama? Then when you see Martha Coakley, who was running for the US Senate in Massachusetts in 2010, stand next to him you’ll like her too and vote for her. It works the other way too. During the 2009 presidential campaign, G.W. Bush was so unpopular with voters that almost no Republican running for office wanted to be seen with him. Classical conditioning is also the basis behind athletes’ relationships with things like shoe makers.

⁶⁶ Gerald J. Gorn, “The Effect of Music In Advertising On Choice Behavior, A Classical Conditioning Approach,” *Journal of Marketing*, Vol. 46 (Winter 1982), pp. 94-101.

⁶⁷ It isn’t insignificant that the experiment was based upon a lie. There is a deep oddity about professors who value their professional profiles more than they do the basic ethical treatment of their students. Of course, the mantra is pulled out that the lie is justified by the knowledge gained. But is knowledge gained based upon a lie reliable? This kind of behavior seems to be a continuing problem with research psychologists.

Gorn's experiment has been cited in both scholarly literature and marketing textbooks as proof that classical conditioning is "well established and widely used."⁶⁸ But is it? Not really. In 1985 the results of a study similar to Gorn's were published where humor replaced music as the 'unconditioned stimulus.' When no conditioning effect was obtained, the authors were forced to speculate that music might have some unique conditioning powers not yet fully described (which of course reminds us of those researchers who were so frustrated by their failures to prove the Doctrine of Ethos).⁶⁹ In 1989, James Kellaris and Anthony Cox published the results of their three attempts to replicate Gorn's findings using music.⁷⁰ They all failed and the authors concluded that Gorn's hypothesis was insupportable. Far from being "well established," they suggested that the ability of music to influence consumer behavior through classical condition was "elusive"—which is a polite way scholars say "fat chance."

So it appears that there is little evidence to support the notion that a merchant can essentially trick a customer into buying a particular product by associating it with some kind of music the customer (or rube?) already likes. But while classical conditioning does not appear to operate with music, can music shape a customer's mood, and by shaping his mood influence that customer's purchasing decisions?

We know that we behave better when we're in a good mood than when we're in a bad one, or better, that we know that it takes less effort to behave decently when we're in a good mood than when we're crotchety. And we know that we're more likely to be granted a favor from someone if we ask when he's cheerful instead of grumpy. Merchants similarly have found that customers' moods impact some kinds of sales and that mood manipulation can be an important part of making a sale.⁷¹ Stores are designed to encourage cheerfulness. Lightening, color, and product placement are all controlled to make shopping a pleasant experience. Customers who find the design of a store confusing or dreary become frustrated and curtail the time they spend there. But customers who find a store particularly pleasant tend to linger and the longer a customer stays in a store the more exposure he has to the merchant's wares and the more likely he is both to make considered and impulse purchases. Can music play a role here? Can music manipulate a customer's mood in a way that enchances sales?

⁶⁸ Del Hawkins, Roger Best, and Kenneth Coney, *Consumer Behavior* (Plano, Texas: Business Publications, 1983), p. 314.

⁶⁹ Chris Allen and Thomas Madden, "A Close Look at Classical Conditioning," *Journal of Consumer Research*, Vol. 12, December 1985, pp. 301-315.

⁷⁰ James J. Kellaris, Anthony D. Cox, "The Effects of Background Music in Advertising: A Reassessment," *Journal of Consumer Research*, Vol. 16, June 1989, pp. 113-118.

⁷¹ See: Tobert Donovan and John Tossiter, "Store Atmosphere: An Environmental Psychology Approach," *Journal of Retailing*, Vol. 58 (Spring 1982), pp. 34-57.

We should first be clear about our terms. Although in daily speech we tend to use “mood” and “feeling” and “emotion” interchangeably, in technical literature they have more specific meanings. An emotion is more intense than a feeling. It involves the intellect. We know we’re feeling it, others recognize that we’re feeling it, and it is tied to specific behaviors. Anger is a good example of an emotion. I remember watching my three-year-old nephew and my five-year-old daughter one morning. My daughter took his toy car. He got angry, obviously thought about his resources, and went over and bit her. That’s what an emotion is like. He felt the emotion, he thought about it, and he acted on it. A “mood” on the other hand is a more transient condition. We know we’re feeling it but others might not, in that way it’s more subjective than an emotion. Moods change quickly and do not always result in specific behaviors. They also have less of a cognitive character. If we’re mad, we usually know what or who made us mad (my nephew knew very well who made him mad and what she did to make him mad). But we find ourselves in a particular mood without being able to say exactly why. “Feelings,” or what are sometimes called “feeling-states” are actually what used to be called (and better called) “dispositions.” When we describe someone as “melancholy” we’re describing a disposition. It’s an affective state that is general and pervasive.

One way that music has been studied to see how it possibly influences mood is to look at the way fast and slow background music affects the length of time a person spends in a place of business. In a 1982 study, Ronald Milliman found that that (1) shoppers tended to spend more time in a supermarket when the background music was slow than when it was fast and (2) that longer time spent in the store translated into a significant 38% bump in sales.⁷² Almost in the tradition of old work songs, what apparently happened is that shoppers unconsciously adapted their walking to fit the music’s tempo. And the longer they were in the store the more they bought. Four years later Milliman repeated his experiment, but this time he studied the affect of fast and slow background music in a restaurant.⁷³ The slower the music, the longer the patrons lingered over their meals. Waiting times for tables were longer too, but bar bills were higher.

So it appears that the activity of crowds can be subtly, and modestly, influence by the tempo of the background music they hear. In certain circumstances, fast tempo music speeds their activity, more languid music tends to slow it down. This in and of itself is not insignificant and we will return to it in a moment, but it doesn’t help us know if music and influence the “mood” of the individuals in that crowd and whether or not a music induced mood (if indeed that is possible) can trigger them into making a particular purchase.

⁷² Milliman defined “slow” as any piece of music having a tempo of seventy-two beats per minute (or less) and “fast” as having ninety-four beats per minute (or more). Ronald E. Milliman, “Using Background Music to Affect the Behavior of Supermarket Shoppers,” *Journal of Marketing*, . 46 (Summer 1982), pp. 86-91.

⁷³ Ronald E. Milliman, “The Influence of Background Music on the Behavior of Restaurant Patrons,” *Journal of Consumer Research*, Vol, 13 (September 1986), pp. 286-289.

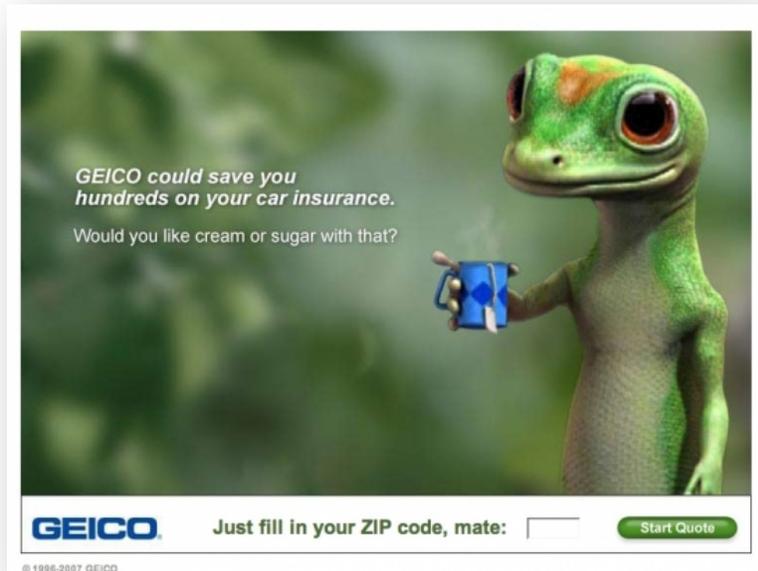
In a study that has received wide recognition, Judy and Mark Alpert sought to find this out in a test they gave to marketing students in 1990.⁷⁴ The students were shown three greeting cards that previously had been determined to be either “happy,” “sad,” or “neutral.” While looking at the cards, in the background they heard snippets of ten preludes from the first volume of Johann Sebastian Bach’s *Well Tempered Clavier* (in a previous experiment, the researchers had already found that listeners tended to hear the major preludes as “happy” and the minor preludes as “sad.”) The students looked at the cards, heard bits of happy Bach, or sad Bach, or silence, and recorded how the cards made them feel on a “mood monitor” (what that is isn’t explained). Basically, the researchers wanted to see if (1) listening to happy music while looking at a “happy” greeting card made the test subjects happier than looking at the card without music (and of course if sad music with the sad greeting card had a similar affect, etc., etc.), (2) if this enhanced the impact of the card (or how well the subject liked it) and (3) if perhaps that enhanced or changed mood might prod a subject to buy the card. The results were mixed. Subjects reported that looking at the happy card while listening to happy Bach resulted in higher happy ratings than listening to sad Bach or sitting in silence, but the score was not significantly higher. Music did appear to strengthen the subjects’ intention to purchase a card—a little. Listening to sad Bach while looking at the sad card showed the strongest intent to purchase tendency. Yet overall, the presence, character, or absence of music had no significant impact on the subjects’ attitudes to the cards—and it must be stated that nobody actually lay down cash to buy a card. The best that the researchers could conclude was that the results of their study were “congenial” to the hypothesis that background music in commercials might have an influence over the emotional responses of an audience.⁷⁵

But even these very modest and nuanced conclusions appear even more modest when compared with the findings of researchers who examined the effectiveness of one thousand television commercials.⁷⁶ Music as a mood setter or as a major element either showed minimal effectiveness or actually diminished a commercial’s appeal. The strongest commercials, or those which were found to be most memorable, understandable, and persuasive were (1) those in which the setting related directly to the product being promoted, (2) employed a memorable rhyme or mnemonic device, (3) opened with suspense, (4) involved cute, small, animated animals in a (5) humorous situation. An example of this is the gecko lizard that the GEICO insurance company has used so successfully. In marketing effectiveness, music ranks considerably below funny cartoon critters.

⁷⁴ Judy Alpert and Mark Alpert, “Music Influences on Mood and Purchase Intentions,” *Psychology & Marketing*, Vol. 7, no. 2 (Summer 1990), pp. 109-133.

⁷⁵ Alpert and Alpert, *op. cit.*, p. 126.

⁷⁶ David W. Steward and David H. Furse, *op. cit.*, pp. 149-155.



The GEICO gecko lizard
Ex.2.21

V

I think that we're now in a position to more clearly understand some of the claims made for music and their validity. Music does not affect us physically in the way that drugs do. When administered to a person, a drug can force a particular, and predictable, behavior through chemical intervention. Certain chemicals can excite a person's senses, others can dull them. Some drugs can sedate, others can stimulate. The effectiveness of a drug does not depend upon the willingness of the person to cooperate with the drug nor are drugs, like music, culturally specific; ibuprofen works pretty much the same way on a fellow in Indianapolis as it does on a fellow in New Delhi. Music does not affect the body like that.

Music itself also does not mold character. It does not somehow seep into the brain and automatically re-wire our thoughts and thus direct our actions. Violent and destructive teenagers are not violent and destructive because they listen to heavy metal

music. Devout Christians are not devout because listening to Bach's music makes them so. Particular kinds of music may appeal to particular people because of the kinds of lives these people already live (or may wish to live); a particular music may either reinforce already established behaviors or suggest others, but listening to a particular music does not cause a particular behavior. Listening to Bach's *St. Matthew Passion* may strengthen and enrich my prayer life but it does not make me pray, the tunes and harmonies and counterpoint do not force me to my knees (but would that they could).

Music alone cannot be used to coerce or manipulate us into doing something we would otherwise not do. A merchant cannot trick us into buying something we do not want by playing a particular music in our ear. Again, music may be used with a variety of other things to encourage us to behave in a particular way. Fast music can apparently cause shoppers to move more quickly through the supermarket and slower music can slow them down (already given that the aisles are well lighted and clearly laid out), but slow music will not force a shopper on a tight schedule to dawdle at the meat counter. And music can be used as part of décor. Rock music can be played in an Abercrombie & Fitch store as part of the corporation's marketing program of elevated sexuality and Mozart can be played in a shop specializing in fine wine, thus giving the store an ambiance of "class," but the music by itself won't get you buy either the jeans or the chardonnay. And the fake 18th century furniture in lawyers' offices can give the rooms an air of stability and seriousness but it can't make you sign a contract if you don't want to; you can't go to a judge and complain that you agreed to a contract because the Chippendale highboy forced you. Music can be like that. It can be part of a décor, but it can't impose a behavior.

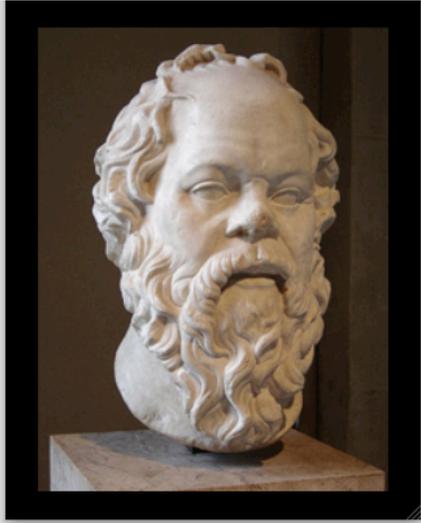
In other words, the old Doctrine of Ethos doesn't hold up. Our actions are the result of our own wills. And while what we do may be influenced by a host of factors, our actions certainly are not the sole consequence of some semi-magical musical incantation. Similarly, the presence of music does not ennoble us, or improve our ethics or dampen our selfishness. When Shakespeare has Lorenzo conclude his oration to Jessica about the glories of the Pythagorean heavens with the famous lines,

The man who hath no music in himself
Nor is not mov'd with concord of sweet sounds,
Is fit for treasons, stratagems, and spoils;
The motions of his spirit are dull as night,
And his affections dark as Erebus:
Let no such man be trusted.⁷⁷

his lines are full of irony: the loan that proves to be so disastrous for Lorenzo's friend Antonio is the result of Lorenzo's foolish "stratagem." Lorenzo may have music "in himself" but his judgment isn't any more trustworthy because of it. If we strive for

⁷⁷ William Shakespeare, *The Merchant of Venice*, Act V, scene 1.

honesty, openhandedness and humility, developing a taste for music will not necessarily make us more so. And if we're lying, grasping, duplicitous scoundrels having a good ear for a tune won't make us less so. Despite the loveliness of the lyric, music does not have "charms that sooth the savage breast." At most, it might make us walk a little faster.



Plato (or possibly Socrates)
Louvre, Paris



Confucius

Ex.2.21

But here again we must be careful. Plato and Confucius were not fools, they were the greatest thinkers of their times. And Congreve's lyric would not be so often repeated if it did not have the ring of truth. What is it about music that led these men and so many others into such ridiculous positions when they came to consider it? Why is the discussion we just went through so unsettling and why do we have so many intuitions about music that suggest that all that research is somehow off the mark?

One of the things we discussed above was the matter of how important music is in adolescents' lives and in particular how important it is to them when they're alone. It's time to return to that. You will remember that I suggested that music in that context helped the adolescent clarify his or her emotional life. I'd like to explain what I meant but to do so we need to go back to our earliest days of childhood.

Scholars who study children's development of language suggest that when we are born we already possess both the ability to vocalize the all sounds characteristic of human

speech and the ability to process these sounds into a language.⁷⁸ Of course we can't do that yet, we don't come out of the womb speaking full sentences, but the mechanism for doing so is already there. It's apparently part of our DNA code. We don't have to be "taught" how to pull together a language in the same way that we, for example, might have to be "taught" how to sew. This means that soon after birth, babies begin to make sounds characteristic of English, Algonquin, Czech, Chinese, Hindi, Arabic—the whole repertory of "phonemes" (or speech sounds) characteristic of the human family. Not all of these sounds are available at the same time. Vowels come first and then some consonants. For instance, typically the earliest consonant-like sounds are the ones made in the front of the mouth: /b/, /p/, /t/, /d/, and /m/. Other phonemes require development of the vocal mechanism that happens only several months after birth. But within their first eight months infants are vocalizing all sorts of sounds, and this is as true of deaf infants as it is of hearing infants. After eight months, as they become more and more attuned to the specific language that surrounds them, babies gradually lose their ability to immediately make sounds not characteristic of what will be their "mother tongue." This means that at about nine months of age a baby in an English speaking environment will stop vocalizing the Slavic "ts" sound in favor of the English "st" which she hears around her daily. That Slavic sound will simply drop out of the baby's repertory phonemes. Eventually that baby will lose the ability to say the sound at all, which is why adult learners of languages almost always have accents (think of Arnold Schwarzenegger).

Gradually this process develops into mature language skills. After about a year infants begin to make their first recognizable words, an event always of great significance to parents (our oldest daughter's first word was *dog*, our second daughter's *NO*—spoken in capitals—and our youngest daughter's *shopping?* which is an interesting progression from a simple noun, to an emphatic absolute, to an interrogative verb filled with hope). By two years old most children are combining words into sentences.

While the movement from babbling to actually talking is of immense importance, I would like us to focus a bit more carefully on the early stages of that progression, and in particular on "cooing" and "babbling." New born babies make a great many noises. They burp and sneeze (these are called by specialists "vegetative sounds"). And they cry. By a couple of months they are starting to make vowel-like sounds called "cooing", frequently done in response to something pleasant their mothers or other caregivers have done. By six months old, babies have begun to string together cooing sounds and consonants in what's called "babbling." They're vocalizing things like *mamam*, *tititit*, and even something as complicated as *dadabidiba*.

⁷⁸ For an overview of language development in children see: Peter A. deVilliers and Jill G deVilliers, *Early Language* (Cambridge, MA: Harvard University Press, 1979); and Sharon. James, *Normal Language Acquisition* (Boston: Little, Brown and Company, 1990)

This business of babbling deserves close attention. When a baby babbles, typically that's not all she's doing. The baby isn't just lying there on her back and vocalizing. The baby is also moving. She's kicking her legs or swinging her arms. A little older and the baby is rattling her crib or even hopping up and down. And all this time the baby is making those phonemes, making sounds that come up from her lungs and through her chest and over her vocal mechanism and out her mouth: *Dadadada latilatiatilada padidada*. And these are *happy* sounds. And the kicking and crib shaking and hand movements are happy gestures. Babies don't make these vocalizations just any old time. They make them when they're happy. And it isn't that these sounds symbolize happiness, it's not that they exist and point to something outside of themselves for their significance, they are part of the emotion itself. Babies can't exist in happiness without babbling and cooing and kicking and swaying. It's certainly a common place to recognize that cooing and then babbling are the beginnings of speech. How true. But it's also important to recognize that this is the beginning of poetry and dance, and of course, music.

Let's jump a few years to the age of four and five and consider toddlers. By this time their language skills are almost fully developed. For several years they have been able to combine words into complex sentences and to negotiate syntax. Specifically musical skills are more developed too. Discreet pitches can be matched and tunes can be learned and sung. How can you tell when a four year old is happy? He might say, "I'm happy" and tell you through speech. But before he speaks, he smiles and maybe giggles. He also skips and jumps and sings. Sometimes he sings little songs he has been taught. But more often he makes up his songs on the spot. The song is as spontaneous as the smile and just as inextricably linked with the emotion. In fact, it's not too much to say that when a child is happy the primary ways that a child exists in happiness is to do so musically; he dances and sings.

I've use the phrase "exist in happiness" several times. It's a very odd construction and I want you to clearly understand what I mean. When the infant is happy, the infant babbles. When the infant grows into a child and is happy, she dances and sings. Happiness and singing and existence are one thing. It's not that the child possesses happiness and then by singing testifies to what she possesses. Singing is part of that happiness, as is dancing. It is not an adornment to the emotion that can be added to it or removed; it is not "about" happiness. The child's singing is not a sign that points to something other than itself—her happiness—and indicates "she's happy!" No, it's more than that. It's part of the emotion itself. Not to have it, not to sing and dance, means that the emotion is somehow incomplete and even fraudulent. And that's what we mean when we hear people saying that they felt like "bursting into song." The emotion compels something for it to be—just not expressed, but for it fully *to be*.

As we mature, the cooing that we do as infants grows into babbling and babbling to full blown speech. What was once limited to "laladaladi" changes into descriptions of

quantum mechanics and talk about love and directions for putting together bicycles, all of those things that make up the panoply of the business of human life. In much the same way babbling grows from just the manifestation of happiness to the expression of all of the emotions to which we are prone. Happiness is there too, but so also are joy and sorrow and fear and disappointment. Growing out of those first sounds of infants, music develops into the basic way we as adults understand ourselves emotionally. Remember our discussion of how adolescents used music in their private moments? I think we are now in a position to understand that a little better. In that context music is a primary way through which these young people are able to understand the way they feel. In a period of life notorious for conflict, ambiguity, contradictions and instability, music brings emotional clarity. That emotion may be loneliness, melancholy, sexual anxiety, frustration, powerless, anger, aggression, fear, or labyrinthine combinations of them all. Music appears to make these things keenly comprehensible in a way that nothing else does. The music makes it *sensible*. Another way of saying this is to assert that music is the fundamental way we construct meaning out of our emotional lives.

It's tricky to speak of universals in music. Cultures vary so deeply from one another that even after studying a culture different from your own for an extended period it's hard to be sure you're interpreting it right. Yet the one thing that appears to characterize the music of all cultures is that it is used for emotional expression; of course, as we discussed in the first chapter, people use music for all sorts of purposes but this seems to be particularly important. Apparently this use of music, like language itself, is simply part of what it means to be human. Like the ability to construct language, it is not an absurdity to speculate that it's imbedded in our genetic code.

So, music—that “heightened form of poetry and dance”—is the way we give our emotional lives meaning. Through it we give those otherwise vaporous fogs that are our feelings coherent shapes. But more than that, music is also a way we can socialize our feelings. We can not only come to a kind of understanding of our own feelings (as does the teenager alone in her room), but through music we can share our feelings with each other and, by sharing something so intimate as our inner lives, form connections with other people. Music helps us move from *me* to *we*.

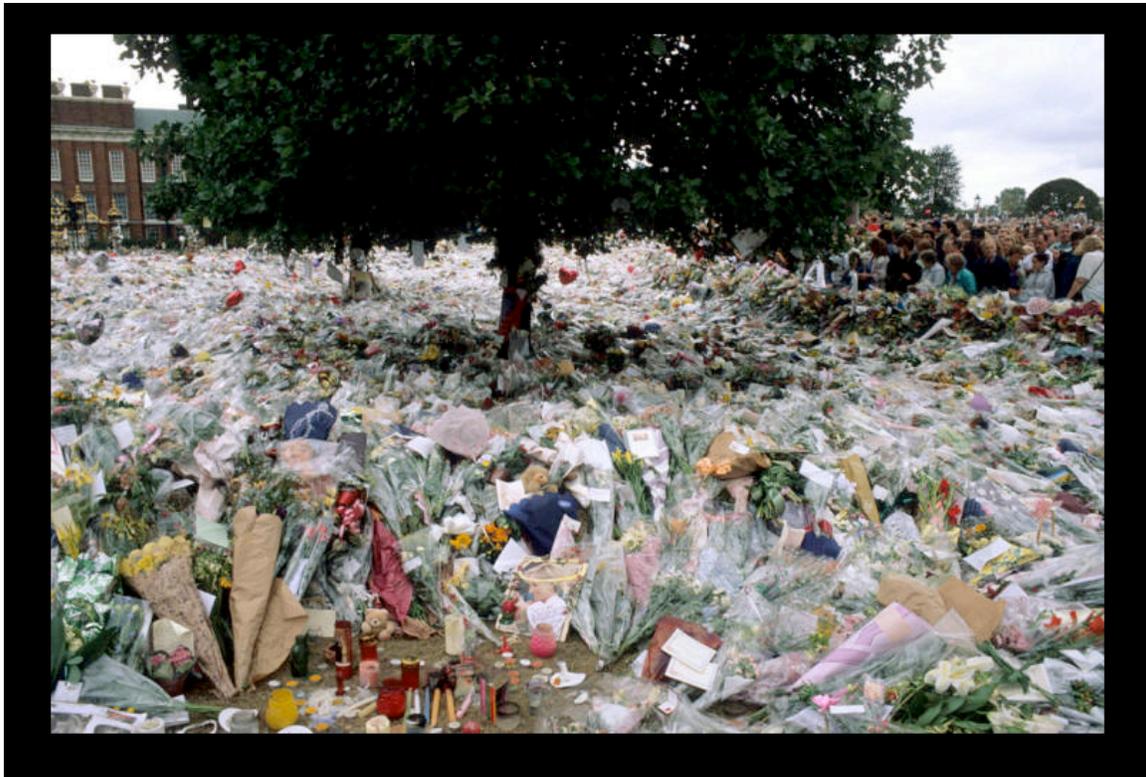
Let me give you a couple of examples. For over thirty years my wife and I served as musicians in a number of churches of various Protestant denominations. We split between us the duties of organist, pianist, and choir directors. One of our regular responsibilities was to provide music for communion that we usually fulfilled by improvising on hymns together at the organ and piano. We selected the hymns because of their texts: the words (which were well known to the congregations) reinforced various elements of the sermon that we had just heard which, of course, meant that we had to choose the hymns pretty much on the spot since we didn't know that the preacher was going to say ahead of time (and, sometimes neither did he). Week after week, year after year, people cried during those improvisations. There weren't buckets of tears

being shed, but with some frequency folks would come up to us after the service, somewhat embarrassed by their wet eyes, and thank us for the music, telling us how deeply meaningful it had been for them (and I don't remember anybody very often crying during the sermons, which isn't a trivial point that I'll return to).

What was going on here? The improvisations were pretty simple affairs, there was never anything virtuosic about them, most began very simply with just a single line of the hymn melody that I played on the piano, they became more involved from there. So it wasn't flashy artistry that impressed them. And it was just piano and organ, no more complicated instrumentation than that—which by the standards of our day is pretty bare bones. What I think was happening was that the music gave these people a vehicle through which the depth of their religious feeling was made emotionally sensible to them and in that way became comprehensible. It worked like this. The hymn tunes—and remember, this music was texted and even through the texts of the hymns weren't sung the listeners knew them and we expected them to hear the words in their minds as we played the melodies (just hum to yourself the melody of the “Star Spangled Banner”—don't you “hear” the words too? “Oo-oh say can you see. . . “?)—were played simply and quietly. Because of the people's religious convictions, and because of how these religious convictions shaped their lives, these hymns were of the greatest importance to them. But the emotional significance of these convictions, although certainly deeply felt, was usually hidden or veiled in the day to day rush of life in much the same way that our love for our spouse, or children, or friends—although deep—is generally hidden (I usually don't go through the day a bit teary eyed thinking about how much I love my wife. In that sense the depth of my love for her is generally hidden). But, for the Christian, the quiet of the communion service is very much *not* the daily rush of life. It is a unique occasion where through faith the Christian believes that he stands before God in a particularly way, intimately and timelessly. If music in general can be said to be the primary way we understand our feelings, in this situation music takes on an even greater importance because the feelings involved are so much more profound. Here the hymns gave people an occasion and a medium for feeling. They provided a mechanism through which they were able to express to themselves and share with each other (because they are gathered with others who shared those same feelings) the profound emotional importance their religious convictions had for them.

As we improvised upon those hymns my wife and I were able to manipulate some of the subtleties of Western harmonic practice in ways that gave greater aesthetic weight to the tunes (modulations, introduction of dissonances—never doubt the power of a strategic *appoggiatura*—inventions of new counter melodies, etc., etc.). The improvisations in turn heightened the hymns' artistic interest and focused their emotional impact. But while the aesthetic impact was important, the emotional response was not due to their artistic character alone, although that was part of it. I have no doubt that in some other setting, or before some other listeners, these same variations would have had a different reception. But here, before these people, in the setting of coming forward and

receiving communion, using these materials in the ways we did, the listeners found themselves emotionally touched. They found in the music (and in the texts that they remembered) some of their deepest feelings articulated, and released, and shared. And that is a kind of transfiguring experience, to suddenly find your emotional life made sensible and coherent, understood by yourself within a community of brethren. Sometimes that brings tears to your eyes.



Flowers left in memory of Princess Diana at the gate of her home Kensington Palace, London
First week of September, 1997.

Ex.2.22

I'd like to end this section with one more example. On August 31, 1997, Diana, Princess of Wales, was killed in a car accident that also took the life of her lover and the car's driver while seriously injuring her bodyguard. The world was stunned. There was no one on the world's stage more glamorous than Princess D. She was admired for her beauty, loved for her genuine warmth, and pitied for the disarray into which her life had sunk since her marriage and divorce from Britain's Prince Charles. The outpouring of grief was beyond precedent. The British, so famous for their emotional reticence, were seen to cry on the street. Average citizens, by the tens of thousands, left so many bouquets in memory of the Princess at the gates of her residences that within several days

the commercial floral supplies of Europe and the Middle East were completely exhausted. There was nowhere in London where you could escape the sent of flowers.

The Princess was given a funeral at Westminster Abbey. A crowd of several million crowded London's streets to stand silently as her funeral procession passed by. While the leaders of the world worshipped inside the Abbey, thousands watched the funeral service on huge screens set up in the city's parks while perhaps as much as a quarter of the world's population followed on television. The rock star Elton John was a friend of Princess D and as part of the service he was asked to sing. He took a ballad he had composed in 1973, altered the text slightly to make it refer specifically to the Princess as "England's rose," and sang it while accompanying himself at the piano. The moment was electric. Somehow, everything of what the Princess was and everything that the Princess meant to so many was summed-up in that music. Through "Candle in the



Elton John performing "Candle in the Wind" at the funeral of Princess Diana
Ex.2.23

Wind" people all over the world not only found themselves suddenly eloquent in their individual grief but also united with strangers in a community of mourning. When Elton John released the song on CD it quickly became the second best selling recording in history (Bing Crosby's *White Christmas* was first). More than anything else, that simple performance of "Candle in the Wind" galvanized the world's sorrow.

Nothing else seems to be able to do this as well as can music. And that is what Walter Pater (1839-1894) meant when he said, "all art constantly aspires towards to the condition of music."⁷⁹ Painting, sculpture, architecture, poetry—each strive to attain the immediacy of music's emotional eloquence. But it is an impossible task. They can't reach music's eloquence because music itself is the fundamental way we experience emotion, and clarify that emotion to ourselves, and then express it to each other. It goes back to those first days of happiness when in pleasure we cooed and babbled and danced

⁷⁹ Walter Pater, *The School of Giorgione*.

and sang our first songs. And this is why music is so important. It provides us with our most powerful means of emotional self-discovery.

VII

Now I think we're finally in a position to understand the workings of that Christmas Eve story and those photographs taken by Solomon Butcher with which we began this chapter. How warm that music machine must have made Mari's frigid cabin. Of course not warm the way that wood in the stove would have warmed the room or new cedar planking would have blocked those prairie winds, but warm instead with the clarification of feelings of hope and discouragement, isolation and companionship, aspiration and disappointment. I think we can understand Mari's mother, poised over those little cups of hot chocolate, now suddenly motionless as the music rose up out of the little machine. It isn't enough to simply be alive, to move through life sentient. We seek understanding. And I imagine at that moment suddenly Mari's mother was just not listening to Donizetti in the icy wastes of the Nebraska prairie, hands hard calloused and cold, but she was a girl again back in Switzerland, with the hopes and dreams of a girl, and she was an emigrant thrown among strangers in the North Atlantic, eager for yet frightened about a new life in a new land, and she was a care-worn mother and highly put-upon wife, struggling against the loneliness of the homestead and the continual threats of ruin—all the vicissitudes of life for a moment clarified as the music of Donizetti spread over the cabin like a benediction.



Remember that family gathered around the music box, who Butcher photographed in Nebraska? I'd like to return to them too. It's been a hard life, even a brutal one; the mother bearing its wounds in her bandaged hand and the father in his knotted knees; that cane isn't the accoutrement of a dandy, it's there because he needs it, it hurts to walk. The daughters, in freshly laundered dresses of matching fabric, matching--because that was the one bolt of cloth their mother had, the youngest squinting against the sun while leaning into the sheltering arm of her sister, stretch out to their parents' left. The sons stand behind them, more confident, perhaps even a bit rakish. And behind them are the buggies and the horses and the barrels and the pigs and the soddy with windows made of glass.

And in front is the music box. Like a talisman. Or a family altar. Of course it's neither of those and I suspect that they would take great--and legitimate--offense at the suggestion. Yet there it is, carried out from the soddy with the family grouped around it for the fancy picture by the photographer. Of course it's there because it's like the buggies and the horses and the farm equipment—it testifies to their prosperity, something they had every right to be deeply proud of. And the inlaid woods and elegant design of that music box stand in sharp contrast against the utilitarian roughness of so much else, and probably that elegance reminds the mother of a life left behind back east, or in the Old Country. But, like the Edison phonograph that was being shipped to the Sandoz homestead over near Hays Springs, it's there for another reason too. It's a music box.

And while it's certainly not as important as the family Bible or even the hard earned deed to the homestead that certified that it was "proved-up," the box is charmed; the music that floats out from it over the prairie giving a brief emotional clarity to a world that is mute and lonely. For Mari's mother standing over the chocolate cups, for this family squinting into the sun, for that teenage girl alone in her room wishing for a happy life yet lonely and frightened, for us—music, lightening like, clarifies the depths of our emotional lives and for that moment, just for a moment, we *understand*. And then it's gone.

That is why we listen. And that is what music does. And that is why it is so important to us. We may try to use it to sell pens and may hope that it can lower blood pressure and relieve tension. We may even daydream that it can make us better than we are and lead to ideal civilizations. But what music really does is allow us to glimpse ourselves. Music cannot be like religion which gives us hope of redemption and, being redeemed, eternally life in paradise (and if it's anything, music is certainly *not* eternal) and it is a very poor substitute for ethics, which imposes templates against which we can judge and discipline ourselves. And it certainly makes for absurd politics, whether it is the politics of Versailles, Woodstock or Bayreuth. But, all in all, Congreve was really right. Music is almost magical. For a moment, music can make our otherwise stuttering—or even mute—tongues eloquent. And in lives that are more often than not confused stammers that bit of emotional clarity and eloquence is deeply precious, and charmed.

