

Material Engagement: The Instrument's Musician

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A spate of discoveries of ancient flutes over the last ten years has ignited our imaginations around the origins of human subjective experience. Musical instruments represent an indicator of the consciousness of modern man, signaling the emergence of a new kind of being, perhaps a distinct species, involving the symbiosis of a soul and a biological entity.

The connection between the musical instrument and the musician presents an ideal test case for ideas proposed by Lambros Malafouris in his 2012 book *How Things Shape the Mind: A Theory of Material Engagement*. The application of this theory is a departure from reductive thinking that limits investigation to biological cognitive processes. His competing notion is that our consciousness extends beyond organic and material confines, embracing what Malafouris calls “artifact metaphysics”.

After a review of four existential predispositions that help distinguish influences on our lives, I will apply these to my personal musicianship, using it as a crucible for mixing and testing these factors.

INSTRUMENT AS STORYTELLER.

The artifact tells a story. Why else would we be interested in archeology? Ponder this prototype flute, its proto-artisan, its proto-musician. The implications run rampant, an archeologist's mother lode. We can reach conclusions that transcend speculation. The flutes are evidence of:

- Purposeful craftsmanship of resonant chambers.
- Cognitive grasp of tonal intervals.
- Aesthetic experimentation and refinement.
- A source of creativity not explained by biological or sociological processes.

The carbon dating places these flutes at time and geography of a sudden appearance of artistic playfulness, an expansive juncture in the history of *homo sapiens*. Around this time a new creativity became evident. Art, personal expression, and aesthetic appreciation are unmistakably revealed in these flutes.

Consider the proto-musician. When exploring the development of his instrument he could have had no conception of advancement toward virtuosity. Pleasing tones were self fulfilling events, produced at first by a surprising accident. Imagine this scenario of two ancients sitting by the fire:

“Hey, what was that?”

“I was blowing on the coal at the end of this stick and it made that sound.”

“Can you do it again? Wow! Pass it over. Let’s see if I can do it.”

“OK, blow toward that little worm hole just below the coal.”

Then came intentional attempts to carve cavities and mouth pieces out of various materials at hand, refined by artisanship and dexterous technique to a reproducible familiarity. One resulting flute was collected in 31 pieces at a dig in southwestern Germany. These pieces, reconstructed down the road in a lab at Tübingen University, confirm a sophistication in the spacing of the finger holes that produced intervals of notes progressing to octaves, which are the mathematical doubling or halving of sound frequencies. Before the invention of finger holes, our proto-musician must have noticed that octave notes could be produced with a hollow pipe by blowing it with different intensities. Other archeological sites show evidence that multiple pipes of different lengths were either bound together like South American pan pipes or played separately by groups of musicians. The octaves produced by these simple pipes established a parameter, a sonic space beckoning to be filled with intermediate notes, forming what we call a scale. So, the resonant hollow spaces of a pipe revealed pure notes of a particular frequency and their octaves, creating a rudimentary lesson in the science of

sound. The flute, as an instrument illustrating physics, then coaxed the musician into aesthetically pleasing progressions of tones that approximate the pentatonic scales and precision of modern instruments.

The proto-musician must have noticed that when two flutes are played at the same time there is a resonance in two closely matched notes. The carving of holes in the tube enabled production of multiple notes with one tube. Imperfectly spaced holes produce off-key notes that can be corrected by a variety of techniques, such as partially covering a finger hole.

At this point in the early emergence of scale-based note patterns, there were no cultural motivations. The conformity was between the musician's imagination, dexterity of finger movement and exhalations, and the physical properties and capabilities of the instrument that he may well have crafted himself.

Was the flute a practical, functional tool, something like a shepherd's dog whistle? Or an instrument of social control that signaled commands like cavalry bugles? Darwin suggested that music augmented sexual selection, a troubadour factor, an aphrodisiac. But the intricacies of these early flutes and my own orientation as a musician make it impossible for me to discount purely aesthetic motivations. I have found great satisfaction in musical spontaneity, my personal enlightenment coming in college after abandoning the formal orchestral orientation promoted by my parents and public schooling. Switching from violin to guitar greatly enhanced my versatility in a wide range of musical endeavor. Finally, I felt I was making the music that my heart desired.

BECOMING ONE WITH THE INSTRUMENT

In his discussion of "becoming one with the clay" Malafouris lays a foundation for the consideration of material engagement with musical instruments. His example of the potter connecting with his medium is applicable also to instrumental music. In the following passage from his book I have replaced the terminology of ceramics with that of rock music.

Imagine a *rock star jamming out on his axe*. Try to follow the complex orchestration of action throughout the stages of the creative process.

Consider, for instance, the moment the *guitarist's* intention to *play* is formed.

The *guitarist's* hands are skillfully sensing and grasping the *instrument* so that

the *guitarist* can decide precisely how much forward or downward pressure is needed to *position the instrument for optimal playability*. What is it that guides the dexterous positioning of the *guitarist's* body? How do the *guitarist's* fingers come to know and control the precise force and position of the appropriate grip for the *chord shapes*? The ease with which the *rock star* seems to accomplish the task makes these questions even more fascinating. An experienced *guitarist* does not have to attend to the movements of his or her hands. Most embodied motor control is non-conscious and automatic. Moreover, the *guitarist* seems to possess the tacit knowledge needed to do what is necessary to *play the instrument* without necessarily being able to communicate or explicitly reflect upon what this know-how consists of. In the case of embodied skill, explicit representational thinking and verbal description are not needed and can hardly capture the phenomenological perturbations of real activity or the reciprocity between the *instrument* and the *musician*.

Gary Marcus is a neuroscientist at New York University. In middle age he wondered if it might be possible to realize his long-frustrated desire to play the guitar. He chronicles this effort and applies it to brain research in his book *Guitar Zero: The Science of Becoming Musical at Any Age*. He reviews the complex simultaneous processing involved in playing the guitar. Reflecting on my participation in a rock trio in which I did all the guitar work and sang most of the vocals, I embellish his review with more detail:

While playing a song the rock guitarist must concurrently...

- Ensure the instrument is properly set up.
 - ✓ Maintain the precise tuning of six strings.
 - ✓ Adjust volume, tone, and effects controls on the fly.
 - ✓ Assess the state of string wear by listening to their level of brilliance.
- Carefully place hands and fingers.
 - ✓ Constrain selection of notes to the scale of the song key.
 - ✓ Mute the strings that are not being sounded.
 - ✓ Arrange left hand fingers into chord shapes.
 - ✓ Adjust finger positioning between frets.
 - ✓ Apply subtle pressure to strings, bending to raise pitch, and vibrato.

- ✓ Sense the spacing of the strings with the right hand.
- ✓ Correctly position a pick between the index finger and thumb.
- Know the song.
 - ✓ Recall the blocking of song into verse, chorus, bridge, and breaks.
 - ✓ Transition smoothly from rhythm to lead playing.
 - ✓ Accent notes and chords on the correct beats of each measure.
 - ✓ Maintain a strict tempo.
- Simultaneous singing:
 - ✓ Accurately recite lyrics from memory.
 - ✓ Find correct pitches for melody and/or harmony notes.
 - ✓ Maintain appropriate mouth distance to the microphone.
- Ensemble considerations:
 - ✓ Consider band member preferences and limitations.
 - ✓ Anticipate compatibility, competitive and jealousy issues.
- Performance considerations:
 - ✓ Notice audience attention.
 - ✓ Gauge audience response and applause after songs.

Perhaps the most astounding requirement of all is to maintain the overall integrity of the song from introduction to conclusion. Even granting the enormous processing power of our brain, it still seems incredible that so much can occur at the same time. Clearly, most of what transpires must progress on a kind of automatic pilot, done out of habit after considerable practice. But how do we account for that small portion that is actively considering alternatives, wants to experiment with nuance or to improvise? This part can't be taught, doesn't operate in imitation.

PREDISPOSITIONS: THE IMPETUS TO MUSIC

All of this technical detail does not explain the “Why bother?” of music. What was going on in the consciousness of our proto-musician to motivate him to seek resonant sound production? I find it helpful to analyze the making and playing of instruments in terms of predisposition. Several qualities of nature are powerful predictors. This is not a nod to predestination because the various sources of predisposition interact and influence each other with infinite variety. These predispositions form a broad developmental sequence; each step increases adaptability in a broad leap.

FIRST PREDISPOSITION – Our environment: The physical universe of space, time, energy, and matter. Unshakable: We note a supreme certainty in the movements of galaxies and the attractions of atoms. But within this hegemony there is also capacity for complexity, intricacy. The second predisposition is built on DNA molecules that conform to this first one.

SECOND PREDISPOSITION – Add to the environment a unique genetic code that contains instructions for a life form. The resulting anatomy, metabolism, and behaviors are vulnerable to disruption by injury or illness stemming from environmental vagaries. Following the principles of Darwin’s natural selection we again find a predisposition for greater complexity which usually results in a gradually more efficient use of environmental resources. A huge organic breakthrough was a nervous system coordinated by a brain.

THIRD PREDISPOSITION – Add on a social system evident in birds and mammals that care for their young. In the complex structure of a human society this predisposition assigns names, mores, work, reputations, etc. and uses symbolic systems to communicate. Conditioning by reward and punishment is the driving force that moves life beyond static genetically based instincts.

FOURTH PREDISPOSITION – Add on a soul, another unique code, the origin of which is not environmental, genetic, nor cultural. This code connects something to *homo sapiens* that is analogous to our nervous system in that it enables an interface that influences the emotional/volitional nature of a human intelligence. The range of code variation is similar to that of DNA: Our souls have a lot in common but each one is unique in the fine detail.

Regarding our second predisposition of genetics, we accept that as sensory organs receive data, it is converted to nerved-based impulses that disperse to different areas of the brain. But then, an unfathomable pattern-based process is engaged, decisions are made and transformed into action. My introduction of the Fourth Predisposition postulates a second channel for entering data into that unfathomable process.

My hypothesis defines a “soul” as a set of inclinations, preferences, or even obsessions that become evident early in the life of human beings. What are souls made of? From where do they originate? All we know is that they are not made manifest by any means related to the

other three predispositions. They have no physical properties yet they somehow influence our intellect, emotion, and volition in a manner similar to the input of our senses.

MUSIC AS PERSONAL FULFILLMENT

James Hillman employed the Greek word *daimon* to distinguish this fourth predisposition. His publishers must have been leery of this word and its similarity to “demon” and insisted on *The Soul’s Code* for the title of his book. Soul, along with spirit, are the most generic references. Hillman also uses the terms angel, genius, character, and acorn in attempts to convey the nature of the daimon. Charles Tart, in his book *Waking Up*, prefers the term essence. “Essence is your genuine, deepest self, your desires, tastes, likes and dislikes, potentials, inherent in you before the consensus trance induction process (Third Predisposition) has begun to change it. Essence is who we really were when we came into this world.” I maintain that the essence works in tandem with the other predispositions to make us who we really are but since the fourth predisposition is often underrepresented in the mix—to the point of being negated—I appreciate Tart’s emphasis.

Hillman draws heavily from the biography of eminent musicians in his discussion of the daimon. In his book, Hillman repeatedly refers to a story from the life of the young Yehudi Menuhin who is regarded by many as the preeminent violin master of the twentieth century. When he was only four years of age, it is told, the precocious child was demanding a violin because he was keen on reproducing the sounds of great violinists he heard with his family at orchestral concerts. Thinking it preposterous that a four-year-old could begin serious violin study, he was given a toy metal violin. Yehudi threw a fit and dashed the toy to the floor in frustration.

Hillman’s fascination with this story illustrates his thesis: Little Yehudi possessed in his soul a predisposition that was the impetus for his passion. This did not arise from his biological or social influences. Here, we break down Yehudi’s story into the four predispositional elements:

First Predisposition: Yehudi’s environment had at hand the woods, guts, and hairs necessary as raw materials for the construction of violins. An atmosphere of nitrogen and oxygen provides a medium for the transmission of sound waves.

Second Predisposition: Yehudi possessed digital appendages, the dexterity of which was

conducive to manipulation of a violin. His metabolism included extraordinary cognitive capacities to process pitch variation and a prodigious perception of tonal quality, rhythms and complex melodies.

Third Predisposition: Yehudi was born into a family and culture that nurtured him with instruments, musical notation, teachers, and the accolades that encouraged his musicianship.

Fourth Predisposition: In Hillman's view, the first three dispositions only supplied the means by which Yehudi could bring the predisposition of his daimon to fruition. His drive, impetus, or passion existed independently prior to his experiencing the conditions that gave it expression. His other faculties would not have focused on music without the organization of the soul. There could only be material Disengagement with the toy violin because it was a mockery of the aspirations of his fourth predisposition.

Hillman uses biography to illustrate his thesis but the influence of the daimon is universal, down to the most obscure individual. Here is a personal illustration of the working of the daimon in my life:

Sitting in classrooms as a child, I often found myself "bored spitless" as my father used to say. Desperate to extract something novel from this monotony, I looked for non-standard ways of using the materials around me. The straws that accompanied the small cartons of milk we were given at lunch were ripe for exploitation. Of course, shooting the paper sleeve off the straw by exhalation was a common subversive activity. One day, I snipped off one end of the straw to form a point, then flattened out the two triangle-shaped tips so that there was a narrow space between them. Using my best exhalation technique I blew through this end and the most audacious honking sound issued forth.

"Richard! Stop that noise this instant!"

In more discrete settings I refined my new-found craft, called them my "hobo oboes" (they did use double reed technology). I did not often provoke the teacher's wrath by public performance, but merely the knowledge that I could, in seconds, transform these innocuous items into weapons of mass distraction gave me smug private enjoyment.

These hobo oboes are in the same class of musical instruments as our proto-musician's flute and the process of their discovery and development were similarly motivated by factors that stem from an inner drive rather than social influences. My story illustrates a propensity for impishness in my life that I have known as long as I can remember, and has tended to irritate those who encounter it.

Once Gary Marcus gained initial momentum, a passion swept over him. "Learning about music soon became, for all intents and purposes, an addiction. Each new note, each new chord, each new scale, and each new rhythm brought me closer to something that I desperately longed for: the capacity to make my own music." This deep longing for a particular fulfillment is characteristic of Hillman's daimon. "The daimon then becomes the source of human ethics, and the happy life—what the Greeks called *eudaimonia*—is the life that is good for the daimon. Not only does it bless us with its calling, we bless it with our style of following."

Elena Mannes was surrounded by music and prominent musicians in childhood. Her recent book *The Power of Music* is based on the interviews she conducted for her PBS documentary called *The Music Instinct*. She introduces us to famous musicians and neuroscientists like Daniel Levitin, who wrote *This is Your Brain on Music*. Her interviewees fascinate us with the latest brain research and vague attempts to describe the subjective experiential qualities of music making. Then, suddenly, on the last page she states, "And I agree with Bobby McFerrin (of *Don't Worry, Be Happy* fame) when he says that music *is* (their emphasis) fundamentally spiritual." I wish Mannes could convince us that these spirits exist, explain where they come from and how they obtain this power. She might have acknowledged that her particular daimon is spurring her on to personal fulfillment through work on documentary productions.

"The thing about guitar is you have to make it your friend." A professional studio musician made this statement to Gary Marcus, who found it puzzling. Reflecting on this claim he wonders, "What did he mean by that? Did making it your friend mean spending thousands upon thousands of hours with it? Did it mean knowing and celebrating its capabilities and how they complement your own? Or did it mean being yourself in its presence?" To me, it

seems more reasonable to conclude that in making a friend of the instrument, the musician has found a relationship that facilitates expression of an inner drive.

The closest Malafouris comes to conceding the influence of a soul is when he distinguishes agency from the *sense* of agency. “Agency, or the agentive capacity, is something we share with other animals. In contrast, ‘sense of agency’—this is, conscious agency—is distinctively human.” It is distinctively human in that each individual carries their own slant on what feels worthwhile, regardless of social validation. He continues, “To the extent that the sense of agency involves not only generation and awareness of voluntary behaviors but also conscious perception of the effects of such behaviors and a sense of responsibility, I consider such a sense of agency to be uniquely human.” Citing Andy Clark’s book *Mindware* he makes the point that “...much of what matters about human intelligence is hidden not in the brain, nor in the technology, but in the complex and iterated interactions and collaborations between the two.” Based on his investigation of neuroscience, Marcus agrees: “In no way is the amygdala, or any of the other (brain) regions I just discussed, specifically tailored to music; if there is a music-specific region in the brain, nobody has yet been able to identify it.” If there is no organic or material force governing musical interactions and collaborations, then what holds them together? Marcus concludes that “To the degree that we ultimately become musical, it is because we have the capacity to slowly and laboriously tune broad ensembles of neural circuitry over time, through deliberate practice, and not because the circuitry of music is all there from the outset.” But Hillman disagrees, noting that “Musicians often hear the call first: At six Pablo Casals already knew piano and organ music; Marian Anderson gave her first paid performance (she earned fifty cents) at eight; Mozart, of course, and Mendelssohn too; ‘even before Mahler could stand, he would hum tunes he had heard’; Verdi’s father, to stop his son’s pleading, acquired a spinet for Guiseppe, age seven; Tchaikovsky was pleading already at age four.” Malafouris, Marcus, and Mannes need the concept of a daimon to account for instigations of the individual that are not cultural in origin. Yehudi’s daimon was latent until his biological and social development were sufficient to support it. Then, somehow, his passion was integrated when his daimon interfaced—wedded might be an appropriate metaphor—and began influencing his thinking, directing his choices to focus on playing the violin. As for material engagement, the mystery of the musician-instrument connection is solved. This same

daimon that influences our intellect must also have the power to connect with the material world in creative, artistic ways.

ARCHEAOLOGICAL EVIDENCE

A compelling proof of the existence of a fourth predisposition is the sudden emergence of unprecedented inspiration. Artifacts of paintings, musical instruments and small sculptures were discovered in strata dating to about 42,000 years before the present. But evidence of *homo sapiens* in the same geographic area dates to about 50,000 years indicating these primitives did not bring these creative capabilities with them. The speed of this transformation can not be explained by the slower process of natural selection which depends on many birth cycles implementing genetically-based refinements. Addressing the role of culture in this transformation, the *kulturpumpe* hypothesis suggests that innovations emanated from a small geographic area then were spread by the social interactions of the third predisposition. But this art appeared out of nowhere. What started it? My guess is that, at the level of the individual, the human animal suddenly began entering into a symbiotic union with souls of a spiritual origin. These individuals then felt the tug of their daimon and independently generated unprecedented approaches to life situations. Some undoubtedly dreamed up novel practical solutions that helped their society survive a mini ice age that gripped Europe about 40,000 years ago. One eccentric was inspired to draw pictures on cave walls. Another tooted on a little flute concocted from a bird bone.

When the scientist scoffs at any spiritual explanation he reveals a daimon which craves order, rationality, verification. How ironic that his rejection of the notion of the daimon impedes discovery of the truths of his own predisposition and those of his life associates! The investigation of the daimon is crippled unless its hypothesis is entertained.

THE HARMONY OF OUR PREDISPOSITIONS

What is this power that engages the animate with the inanimate, turning the musician into the one who is being played? The soul, Hillman's daimon, and Tart's essence can account for this. Spinning our theme into a metaphor, the soul is an instrument, not corporeal tubes and

finger holes or strings, but the range of tones that have a characteristic resonance to each of us privately. When the musician submits to his instrument according to his intuition, he enjoys a deep sense of fulfillment.

“Maybe the human task is to bring our behavior into line with [our daimon’s] intentions, to do right by it, for its sake.” Hillman’s ideas pave the road to self-actualization and point to a major advance in social tolerance. Much of our tendency to violence abates when we are in touch with our own predispositions and are attentive to those of our supposed adversaries.

“If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away.”

Henry David Thoreau

References

Hein, Wulf, (A scientist plays tunes on a flute that he constructed based on the design of one discovered at the Geißenklösterle dig in southwestern Germany.)
<https://www.youtube.com/watch?v=tBUFRmQ4eso>

Higham, Thomas, et al. Testing models for the beginnings of the Aurignacian and the advent of figurative art and music: The radiocarbon chronology of Geißenklösterle. *Journal of Human Evolution*, 2012; DOI: [10.1016/j.jhevol.2012.03.003](https://doi.org/10.1016/j.jhevol.2012.03.003).

Hillman, James. *The Soul's Code: In Search of Character and Calling*. New York: Random House, 1996.

Malafouris, Lambros. *How Things Shape the Mind: A Theory of Material Engagement*. Cambridge, Massachusetts: MIT, 2013.

Mannes, Elena. *The Power of Music: Pioneering Discoveries in the New Science of Song*. New York: Walker, 2013

Marcus, Gary. *Guitar Zero: The Science of Becoming Musical at Any Age*. New York: Oneworld Publications, 2012.

Tart, Charles T. *Waking Up: Overcoming the Obstacles to Human Potential*. Boston: New Science Library, 1986.

University of Oxford. "Earliest musical instruments in Europe 40,000 years ago." *ScienceDaily*, 27 May 2012.
www.sciencedaily.com/releases/2012/05/120527195720.htm