

Can art change the listener or viewer? The world? I remember when I was young, there was no separation between the artist and the viewer. I assumed I could go visit my favorite singers to have lunch if they were in town; painting pictures of their faces in my little head. Today, with the rapid-fire sharing of ideas through screens, fewer music-lovers find themselves sitting in little bars to see their friends' band play. Many young people seem to have abandoned their posts in galleries and museums to see the opening of a local artist. Yet a true experience with the arts makes me feel in tune with the earth's movement. Some concerts have brought me to tears in wordless appreciation of the complex beauty in song. I have stood before a canvas and felt my heart sprint. As it turns out, the emotional impact and expression of music and visual art are not so different. Humans have been partaking in creative expression as long as we know. Science and history have attempted to answer the mystery and complexity of emotions evoked by art and music, yet there is something completely indescribably beautiful that comes from the arts-- something so human that even the greatest minds of our time cannot explain. In music, as in visual arts, people are able to connect with their inner selves, their peers, and the universe. The arts are a raw, pure representation of human emotion and perception. I believe there is a much stronger correlation between the arts themselves, between creativity and life, than is given credit in today's Western society. The arts marry imagination and knowledge, no matter which medium is used.

I may not hold any clear answers to why music and art are so moving. I may not be able to accurately describe my emotional reaction to a piece of work. You, the reader, will not have experienced the same things I have and thus, will never see mental images identical to mine when you look at a sculpture or hear a song. Although the words on this page are not comparable to a vibrant red or a softly hummed d minor, it is not just the artistic act that makes us human. It is also our attempt to understand both the act and the reaction and why the arts potentially define our humanity. I am not going to analyze a piece of music that moves me to tears nor will I explain why the key changes work or how the dissonance in the minor chords send powerful images and colors into my mind. I am interested in why, as a person, I am able to experience the arts so vividly. Historians and scientists have long grappled with the purposes and the effects of art and music. Studies and experiments can help us to see on a biological or an evolutionary level why we might experience emotional responses to the arts. History and science are attempts to rationalize feeling. They cannot accurately describe a person's emotional responses or say what makes each individual unique in their reactions. Neither can I. It is my attempt to grapple with where my sense of awe comes from that I hope to better understand.

Perhaps musical communication developed in prehistoric societies before spoken word (Mannes). We are naturally creative beings, but it is possible that music actually evolved for the purpose of reading emotion and connecting with each other (Hughes). Music is universal across cultures, throughout human history, bringing communities together in powerful expression (Mannes). Archaeologists have discovered evidence of bone whistles, reed flutes, and drumsticks in the remnants of Paleolithic societies (Fleming, 10). Cave acoustics, the discovery of fire, and music-making materials naturally promoted musical creation (Mannes). In historically-recorded civilizations, music was often an expression of culture and a key piece in daily life (Mannes). In terms of the development of Western empires, music began in the Hellenistic era as anything tonal-- dance, drama, literature, and the modern concept of "music" (Fleming). When western notation emerged, developing Christian societies viewed music as natural to the universe, humans, and instruments (Fleming). The development of parts, precise mathematical rhythms, and the view of music as a science arose later, as well as the class distinctions that went with it.

A distinction emerged between sacred or congregational/choral musical expression, courtly music to please kings and queens, and the popular music of the streets that would have been rejected in formal settings (Fleming). I would argue that although most musical theorists and historians see the world of sound as much more open-minded, these divisions in musical culture are very much present today. Outside of the western world, music seems much more raw, pure, and preserved-- more reflective of its rich history. Researchers have discovered, however, that even with a language barrier, people in cultures never exposed to Western music could fully understand the underlying emotion behind musical pieces (Mannes). Have humans evolved musically? It is important to note music's presence in history because no one knows certainly where it originated. The closer we come to this discovery, the more we can understand our own development in the animal kingdom and why we are so receptive to aesthetic noise.

Similarly, the visual arts have always been an integral part of human history, dating from caves found in Spain and France aged roughly 20,000 years (Fleming, 10). People began to grapple with philosophical concepts of living, dying, and the hunt, and expressed these through artwork (Fleming, 11). From the silhouettes of cave drawings, evolving into the art of historically-documented ancient civilizations, the development of free expression and artwork more interpretive of one's surroundings came about. Artists began to experiment with their identities (Fleming). In general, the more visual art was present and accepted in societies, the more dynamic the culture and society. Art makes us individuals, but is also a powerful connecting force. Art gives us a look into another's mind and represents the truth (Kandel, 393). Some societies did use uniformity in artwork without many individualistic styles, such as ancient Egypt, where there is a more universal artistic style that came alongside the worshipping nature and hierarchical organization of the society (Fleming). Generally, however, art is at its best when all of its creators are collaborating and empathizing. Collaboration between individuals in societies, artistically and otherwise, creates a "genius." (Fleming). Throughout history, art has allowed people to express themselves, represent the world around them, and understand one another. Additionally, humans have manipulated pitches to better express themselves. Our use of sound naturally connects us to ourselves and the earth.

Why, on a scientific level, is music so appealing? Music has been found to evolve from natural human detection of emotion (Clark). The sharing of tonal sound has not only given a sense of community pleasure throughout history, but has actually promoted movement and emotion (Hughes). People have manipulated the noise they could to make something beautiful. Studies show that the same parts of the brain used in detecting and creating physical movement are active during musical participation (Hughes). Fetuses in the womb develop a sense of sound from sixteen weeks, experiencing the rhythm of a mother's heart and body, as well as noises outside the uterus (Mannes). In other words, infants become used to the tone of their parents' vocals and tones from before birth. Additionally, babies tend to babble in perfect major and minor thirds (Mannes). This shows that even within each person, if not in the human race as a whole, music and tonal recognition come before language can be formulated. Has science found the world to be musical? Or is it unique to our species? Birds and whales demonstrate tone through strong, long-distance communication (Mannes). In fact, the universe expresses pitches too low for the human ear to detect (Mannes). Fifty-seven octaves below our lowest b-flat in modern music lies the pitch of black holes (Mannes). However, studies show that while a human brain fills with dopamine when music is played, animals do not have the same happy reaction (Hughes). Noise seems almost more utilitarian for other species. On a neurological and biological level, when a person listens to music, he or she is enhancing the brain in both the

motor and auditory areas (Mannes). These areas in musicians, or anyone who participates in the art of creating music, are even further enlarged (Mannes). Music is much more complicated than language, in the sense that the musician must be aware of under and over tones in each note, the natural sounds and emotions produced by the combination of these notes, etc (Mannes). Creating music can also change one's brain for the better. Neuroplasticity refers to one's ability to reshape his or her brain through creativity (Mannes). Even in adults, when someone learns a new instrument, their auditory and movement cortexes will slowly expand and grow (Clark). Music is a proven form of neuro-therapy for this reason (Mannes). The recent field of studying music as a form of neurology is important because music changes both a person's state of mind and his or her physical brain. We have such strong emotional reactions to songs not only because we have heard them previously and can link them with experience, but because our brains are wired for music.

Science has also worked to find why the visual arts have been so appealing throughout history. Half of our sensory inputs are visual, from which information is selected as important or discarded (Kandel, 238, 261). We can identify faces and locations through visual cues, in the pathways leading out of the primary visual cortex in the back of our brain. (Kandel, 282). Here, we identify cognitive antecedents, the natural, emotional inferences humans make from visual cues (light, shape, color, symbolism) (Clark). MRIs have shown that brain activity in art-viewing is almost identical to that in reading human faces (Clark). *Psychology Today* boiled this down to what they call the "Ten Perceptual Principles" that the human brain loves in artwork. First, and most interestingly, is the concept of peak shift. Artwork exaggerates and distorts life to bring out what the artist wants his or her viewers to focus on. Even the old masters of painting or more modern abstract artists create not a replication of the world around them, but a representation of it. Whether artists focus on colors, narrating the story of a seemingly-mundane object, or facial features, viewers are intrigued by the visual arts because they bring a new perspective and focus into the world. People can actually better recognize a caricature of someone's face than a photograph.

The second principle is grouping. Artists portray distinct objects that their viewers can mentally group, which makes art "solvable" and unique to each beholder. Third is the balance that comes in using an entire space. Fourth is contrast, be it between edges of parts of a visual piece, between colors, or between two distinct works of art, we are naturally intrigued by contrast. Fifth, minimalism works because isolation, or simplification, excites our neurons and leaves more for interpretation. This brings us to the sixth principle, perceptual problem solving. Additionally, humans generally find beauty in symmetry, which many visual works naturally have. Repetition, rhythm, and orderliness, like in music, are the eighth key to striking visual work. Most art has a sort of visual rhythm that draws in any viewer. Additionally, the generic perspective in artwork is often necessary so the piece can be viewed from many points and understood.

Lastly is the concept of metaphor. We like art which compares two seemingly-unrelated objects. The breaking of these "rules" excites our neurons in a new way. When Rothko blended his colors, for example, he created what appeared to some to be floating windows into another realm. We experience and "read" artwork as we might human emotion in facial expressions or in the world around us (Prinz). Color, light, and symbolism all have the power to evoke strong emotion in a viewer (Prinz). Although no two people perceive and experience aesthetics in identical manners, the science of neuroaesthetics, a relatively new field examining the effects of creativity on the brain, can point to some generic answers surrounding the beauty of visual work.

For example, scientists have discovered that some works of art are the perfect balance of dorsal vision, or motion and location, and ventral vision, or form and color (Palmer). The more qualities of depth a viewer can experience, the more aesthetically engaged and moved he or she will be. Additionally, humans experience three stages of vision, no matter what they observe (Palmer). The first and most rudimentary stage is our perception of simple elements, such as color, light, and shape. The intermediate stage is when our eyes give some form of structure to a chaotic image. Lastly, we attach memory and experience to the totality of the image, particularly the coherent regions. Ramachandran and Hirstein, the leaders of the field, also proposed the concept of primitives, which refers to the stimuli involved in the stylized versions (or peak shift) of what we see (Palmer). Scientific research in the aesthetic field leaves a lot to be answered, due to the complexity of individualized aesthetic response.

There is much to be said for the validity of history and science, but there is also something very uniquely human about works of art and music-- something we may never be able to harness with the description of language. Music gives us a strong, instantaneous fight or flight response-- it is in our evolution. Music is in the rhythms of our hearts. It literally touches us, by moving our eardrums and neurons. It is universal across cultures, throughout human history. We take our experiences and turn them into musical memory. It comes from the body, the brain, and, ultimately, our hearts. Studies show that, across cultures, people have an inherent response to music in major versus minor keys. We directly relate sounds into feeling. Dissonance and consonance, while generally understood on a technical musical level, have the ability to truly make a person feel. While many of our reactions to music spawn from experience as it relates to a particular piece of sound, oftentimes music, particularly when performed live in its "purest form," can touch us in a way hardly anything else can. We take our past experience and turn them into musical memory, something that is constantly changing and evolving. Music itself has developed over time, not just through ancient history, but in recent years. Musical movements, the introduction of electric and electronic instruments, and the acceptance of sounds that were once considered ugly, such as 7<sup>th</sup> chords, have opened the minds of people around the world (Mannes). John Cage, a converted "experimental music" enthusiast, sees music as organized sound (Cage). Modern composers have not only a plethora of pitches and notes to choose from in their creations (Cage). The world is opening up, and society's creative horizons are expanding. Pitch, amplitude, and timbre may control a piece's position in "sound-space," but music is not a "thing." Making a piece of music, then performing one, then mere listening to a work, are different degrees of connection humans have with this intangible "object" of sound (Cage). The closer one gets to the actual creation of music, and the more accepting to unplanned occurrences in rhythmic structure, the more "special luminous character," Cage says a piece will hold. I believe he means that music is colorful. It exists in one's mind, in a sort of "sound-space." It brightens one's head in a powerful way that may not be concretely visual, but is purely "luminous" or sublime. Music evokes such a range of emotions in humans that it can hardly be described concretely. It just is.

Additionally, despite research on our visual development and neuroaesthetics, there is an indescribably strong reaction that comes along with art. When I stood before Mark Rothko's *No. 14, 1960*, I could feel the pulsing colors and became entirely engulfed in the otherworldly experience this piece promoted in me. There are no words I can use to entirely describe or justify seeing Rothko's work in person, except that the canvas disappeared and the colors took over, shimmering and pulsing, as if they were alive. The rich red was like seeing a beating heart, blown up and hung on a white wall. Surely you, the reader have experienced something similar?

Mark Rothko pondered deeply the role of art in society-- about what his art could do for the world. Could it feel like love and grief simultaneously and harmoniously? (Schama). His colors were his "performance," a sort of powerful "wordless teaching" (Schama). He viewed color and shape as the purest forms of expression (Schama). He wanted people to weep before his works, as he had when creating them (Schama). His paintings were "pockets of silence" in the white noise of daily life for his audience, as they continue to be today (Schama). It was standing before his beating colors when many discovered what it meant to be human. The pieces were both disturbing and exciting. We may be able to stick our heads under an MRI and see how different areas of the brain respond to various art forms. We can look to the walls of caves in Europe and see humans not unlike ourselves, hunting for food, water, and shelter. The arts bind us together invisibly. Our attempts to understand this powerful and unseen link itself and to understand the art that sparks the empathy show that we try to consciously connect with one another. When we see art, we detect emotion both consciously and subconsciously. The unconscious emotion has to do with sensation and the conscious with perception (Kandel, 324). "Our conscious emotional response to art can be traced to the unfolding of a series of cognitive appraisal processes" (Kandel, 329). Perhaps visual art is not solely visual, but of the communication between brain and body, since it evokes so much emotion. Artwork stands out from its surroundings because, even in realism or photography, artists select the important or compelling facets of their world and portray them in their art (Hastie). All art is abstraction in a sense, or at least exaggeration, since it is viewed through the lens of an individual artist. It is through art that we can connect with others' perceptive vision.

We communicate ideas, identity, community, and our surroundings through many different creative mediums, and reveal our aspirations and our nature in this way. Art represents the point of view of its creator, of individuals, of cultures, of humanity. Art reveals the truth of emotion, which is between nature and nurture. There is nothing that so clearly expresses humanness than the arts, which cannot easily be fathomed or described. Artists are influenced by variables of time and place and idea, which come together in work to unite people within specific communities and to relate various societies to one another. The French writer Romain Rolland once said, "Art, like life, is inexhaustible; and nothing makes us feel the truth of this better than music's ever-welling spring, which has flowed through the centuries until it has become an ocean" (Fleming). The arts have been building and evolving along with the creators. Perhaps the differences we place between the arts are more arbitrary than most believe. All art forms are used to knit humanity together and help the artist better understand his or her place in the universe. I believe that music in its purest form, performed live, is visual and that art in its purest form, seen in person, is audible. The arts should be seen not as separate from our daily lives, but completely connected and woven into our existence.

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