

2012

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Recommended Citation

Lill, Karel (2012) "Comparative Theories of Visual Art and Music: May I Play You a Picture?," *McNair Scholars Journal*: Vol. 16: Iss. 1, Article 7.

Available at: <https://scholarworks.gvsu.edu/mcnair/vol16/iss1/7>

Comparative Theories of Visual Art and Music: May I Play You a Picture?



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Relationships among the visual and aural arts—especially between color and sound—have been postulated by artists and composers for a variety of purposes. For many, a comparative theory between the two art forms functions as a guide to understanding an art form in which they are inexpert. With a comparative theory, the musician can use his expertise to understand a piece of visual art by comparing it to music, and vice versa for the artist.

Comparative theories can be used to produce art. Some artists and musicians attempt to objectively translate a work of visual art into music or vice versa. Ann Adams diligently studied every detail of Ravel's *Bolero* and created a visual interpretation of what she heard by methodically representing each aspect of the music in her painting *Unraveling Bolero* (1994).

Comparative theories are also used to develop non-representational forms of art. Walter Pater said, "All art constantly aspires to the condition of music."¹ Artists who created "color-music" knew that to be true. They created art that was akin to music, borrowing characteristics such as form, tone color, rhythms, development, and harmonies. Kandinsky was creative and expressive in his *Compositions* (ca. 1912), in which accurate representation of real objects were superfluous.

The desire for color-centered art led to the development of various "color-organs:" keyboard type instruments used to activate colored lights during both "light-only" performances and performances of coordinated music. Plans for some of these instruments were technologically advanced for their time; some had to wait to be realized. A 1975 laser-light performance of Scriabin's 1910 *Prometheus* at the University of Iowa finally

came close to realizing what the composer meant by including a color organ ("luce") in his score. Others were impractical because they relied on unsafe technology such as gas lamps or early unreliable electric bulbs.²

What, specifically, do music and art have in common? Is it the framework or the details, the forms or techniques, or is it the creator's motivation? Various comparative theories exist to answer these questions. The goal of this study is to develop an understanding of how theories compare, with the intent of realizing whether or not, or to what degree, visual art and music are related.

Due to the span of time that these speculations cover—from ancient Greece to today—putting them into historical context will be necessary. Explaining how theories were inspired by ancient Greek ideas (or how they reacted against them), and by the scientific community of the eighteenth century, and/or by the subjective creativity of romanticism, will help to better understand them. After a historical introduction, the defining features of representative theories will be compared.³ This will show the ways in which visual art and music have been compared and also suggest avenues for future creative speculations.

History

Theories proposing the interrelation of the visual arts and music can be traced back to three key concepts by Greek philosophers. While many later theories may acknowledge direct influence and others may make no acknowledgement of it, all theories are related to Greek thought. By attempting to relate visual art and music, a theory will inevitably be subscribing to, or reacting against, the idea of Music of the Spheres.

1. Walter Pater, *The Renaissance: Studies in Art and Poetry*. (Berkeley and Los Angeles: University of California Press, 1980), 189.
2. Kenneth Peacock, "Instruments to Perform Color-Music: Two Centuries of Technological Experimentation," *Leonardo* 21 (1988):397-406.
3. For example, alignment of color and pitch can repeat throughout musical octaves, or they can change with register.

Music of the Spheres, or *Musica Universalis*, is an ancient philosophical concept that connects not only the movement of all celestial bodies but of all things in the universe and their movements, in harmony or mathematical proportions.⁴ In book X of Plato's *Republic*, he refers to this with his description of the Myth of Er.⁵ Plato describes a moving solar system in which each of eight circling orbits are colored and accompanied by its own pitch. With this image, Plato shows color, music, and the cosmos all interacting in the Music of the Spheres. Plato, however, considered only God to be capable of fathoming them, though he did think there were numerical relationships among colors.⁶

Not all Greeks were satisfied with this explanation however. Aristotle entertained the notion that colors may be quantifiable. He speculated that proportions of black and white produce different colors. He also proposed that the proportions of color are similar to the proportions of music. However, the Greeks had not made the discovery that light is a vibration. Pythagoras explored the principle that vibration produces sound.

Pythagoras discovered that changing the vibrating length of a string changes the pitch. He also discovered the ratios used to ascertain specific pitches. For example, the octave being 2:1, and the fifth being 3:2. He clearly showed the existence of proportions and ratios in sound. Music of the Spheres, proportion in music, and the use of black and white to produce colors, set up a foundation that would influence all future attempts to relate color and sound, and eventually visual art and music.

In medieval times, the Aristotelian notion of color proportions on a finite scale of black and white opened the idea of color scales separate from music. Thinkers like Vincent Beauvais elaborated on Aristotle by filling in Aristotle's scale between black and white.⁷ Largely, however, music theory

was making more advancements than art in scales. Musicians began including more complicated ratios to produce pitches like the minor third and the major sixth. Adding notes to the Greek tetrachords made it easier to make comparisons in scales between color and pitches, because previously there were not enough pitches to accommodate the number of colors.

Newton paved the way for new thought on the ideas of color scales in his writings on color.⁸ He arranged colors into a scale of seven colors as they are broken down by a prism. He directly compared this scale of seven colors to a major scale. By doing so he opened the possibility for a color scale that repeats, accounting for possibility of octaves in a color scale.⁹ Newton, without using Aristotle's notion of a scale from black to white, gave new life to Music of the Spheres by showing new potential for finding analogous ratios and proportions throughout visual art and music.

Bertrand Castel, in the 1720s, continued where Newton had left off. He proposed a color organ using a scale of 12 notes, C (blue) to B (violet).¹⁰ Important here is the way that the color scale is repeatable. All 12 hues were capable of being modified by 12 degrees of light and dark, essentially creating a color version of a 12-octave chromatic organ. Each modification of light or dark acted as an octave. He combined the thoughts of Newton and Aristotle by having a color scale that accounts for the octave, and accounts for degrees of light and dark, or black and white.

In the early 19th century, the ideas of color scales seemed unlikely to reach a consensus, and artists and composers began to move away from scientific attempts at comparing color and sound. Discoveries in visible and audible vibration had made it clear that the two were quite distinct. The 19th century is instead the time when artists began to compare style,

movement, and rhythm in the arts. Color hearing, or synaesthesia, changed people's perceptions on the analogy. J. L. Hoffman, for example, related orchestration to different colors in a painting. This came at a time of great expansion and experimentation with orchestration.¹¹

The rekindling of an interest in Bach in the 19th century led to a borrowing of baroque musical techniques in artwork. Kandinsky frequently wrote that a well-established theory, like thorough-bass in music, was needed in art.¹² Kandinsky even called some of his paintings compositions. Paul Klee on the other hand, took a methodical approach to recreating many Baroque musical elements in painting. Most famous is his use of fugal technique in creating paintings like *Fugue in Red* (1921).

In summation, the translatability of the arts was an idea dependent on its beginnings in Greek thought which influenced it for nearly two thousand years. In the wake of the Greeks came Newton and an attempt at objective comparison of sound and color. Eventually, the objective gave way to subjective and artistic comparisons of visual art and music. Having established how thought on the subject had its influence, theories can now be compared.

Making Analogies

Pitch is often the first aspect to be considered when attempting to translate or compare visual art and music. Both pitch and hue are quantifiable by vibrations and wavelengths, so they will be compared first. In comparing pitch and hue, however, two inherent differences make comparison difficult: The spectrum of visible light is only a minuscule portion of the light spectrum, and the colors do not repeat in octaves the way pitches do. The first step is then to circumvent this problem. The

4. John Gage, *Color and Culture: Practice and Meaning from Antiquity to Abstraction* (Berkeley and Los Angeles: University of California Press, 1993), 228.

5. Plato, *Republic*, trans. Allan Bloom (New York: Basic Books, 1991), 10.614- 10.621

6. Gage, *Color and Culture*, 228.

7. Gage, *Color and Culture*, 229.

8. Isaac Newton, *Optiks: or a treatise of the reflections, refractions, inflections and colours of light*, trans. Duane H. D. Roller (Mineola, New York: Dover Publications, 1979).

9. Gage, *Color and Culture*, 231

10. A.W. Rimington, *Colour-Music: The Art of Mobile Colour* (New York: Frederick Stokes Company, 1911), p. 140.

11. Gage, *Color and Culture*, 236.

12. *Ibid.*, 241.

solution to a finite and non-repeating scale of hue is the color wheel, with the two ends of the visible spectrum, red and violet, joining in a circle, repeating infinitely, similarly to a pitch wheel. Because there are 12 pitches in the repeating musical chromatic scale, an easy analogy is made to the 12 colors in the pitch wheel.

Many people made one-to-one correlations between pitch and hue, including Newton, Jameson, Castel, and so on. Using a one-to-one correlation between pitch and hue allows for a literal application of music theory into color. For example, a major chord could be replicated by using the colors red, blue and yellow-green. These colors are found on the color wheel to be in the same relationship as the pitches C, E and G are in a pitch wheel. The visual harmony of these three colors is then analogous to the aural harmony of the major chord.

The next step is deciding which pitch to associate to which color. Commonly, red is attributed with C, as red is the first visible light and C is the first note of the C major scale. This is an arbitrary assignation. With a system of equal temperament, where all twelve pitches are equal, choice of key is irrelevant because any piece would be performed in any key. If any piece could be in any key, assigning any specific note to a color becomes arbitrary. In actual musical practice, musical keys have, and continue to suggest, colors and even emotional auras to practicing musicians. Synaesthetics, however, do not support one color being correlated to one pitch or key.

Synaesthetics, who see colors when they hear sound, do not agree what pitches or keys correlate to what colors. Thus we cannot claim that there is a one-to-one correspondence amongst each other as to what notes are attributed to what color. This makes it less likely that there is a natural equivalency between a specific color and a specific note.

Color may correspond to more than just pitch and hue. Another idea is that timbre is equivalent to color, proposed by J.L. Hoffman.¹³ This would equate to every instrument producing a different color, and color harmony would be a matter

of harmony of timbre and orchestration. However, experiments in instrument identification reveal a flaw in this theory. Experiments have shown that if you record the sound of various instruments producing the same pitch, but cut the sound of the articulation, distinguishing the instruments becomes nearly impossible. For timbre to equate to color, the differences in timbre of instruments should be as stark as the difference between the color red and the color blue. However, this analogy does not hold true, and thus weakens the argument for the color-timbre equivalency.

Color is considered by David Ward-Steinman to be analogous to harmony. In this scenario, lines and shapes without color could be equivalent to melodies or separate voices. This implies that if two pitches sound simultaneously, a color is generated. However, a single pitch is only a line of black. This creates a situation where you have two black lines, which is equivalent to two pitches, which in turn creates color. However, two black lines do not in reality produce color. Also, if line was melody/voices, that would imply that a polyphonic work like a fugue is without harmony. Clearly, harmony cannot be color.

The question of how to account for black and white still exists. An answer to that question lies in that a lack of color can be compared to a lack of definite pitch, or music played by non-pitched instruments. The presence of black and grays in art is equivalent to a piece of music with only rhythm and the timbre of non-pitched instruments.

Form is inseparable from music, and we can find its presence in visual arts. However, a discussion of form becomes significantly more subjective than previous ideas. The formal division of music into multiple movements can be analogous to a piece of art separated into many parts by frames. Within movements, musical forms, like binary, ternary, and others, can be represented as grouped subject matter in visual art. For example, Michaelangelo's *Creation of Adam* (1511) is a binary form, with Adam at the left as the A section, and God the Father as the B section on the right. As in the musical form, energy

is drawn towards the center of the work. Larger musical forms can also be found in art: Philippe de Champaigne's *Triple Portrait of the Head of Richelieu* (1642) is a ternary form, and Duchamps' *Nude Descending a Staircase* (1912) uses theme and variation technique.

Lastly, the most subjective comparison is the comparison of stylistic or historical aspects. Analogies between visual art and music can be made comparing the style and the historical context in which the pieces were composed. Due to the irregularity of this type of comparison, an example will be used as an explanation. For example, David Ward-Steinman, in his lecture, *Toward a Comparative Structural theory of the Arts*, quotes Kenneth Clark who equates Edvard Munch's *The Scream* (1893) to Stravinsky's *Rite of Spring* (1913). Clark made this comparison because he heard the dissonant polychords of Stravinsky as shrieks of anguish. Ward-Steinman claims this to be a very weak comparison, considering that the Munch has a very different aesthetic from Stravinsky. He says that Munch, as a German expressionist, is a better match to German expressionists in music like Schoenberg or Berg, while Stravinsky, whose music is often considered unemotional, is a foil to expressionism. Ward-Steinman provides Picasso's *Les Femmes d'Alger (O. J. R. Version O)* (1911) as a better comparison to Stravinsky. He shows that they are similar by comparing a lack of traditional perspective in Picasso as a lack of traditional harmony in Stravinsky. He also mentions that the African influence in cubism can be equated to the non-European influence of rhythm in Stravinsky.¹⁴

The Picasso-Stravinsky comparison is strengthened by looking closer than Ward-Steinman does. The jagged lines and quick contrast in Picasso can be compared to the quickly changing melody and harmony in Stravinsky. Furthermore, the multi-perspective aspect of the cubist work can be related to how melody in Stravinsky is often switched quickly between instruments mid phrase with jagged rhythmic changes. A comparison of coeval works of different media can relate visual art and music.

13. Rimington, *Colour-Music*, 114.

14. David Ward-Steinman, *Toward a Comparative Structural Theory of the Arts* (San Diego, San Diego University Press. 1989), 9-13.

In conclusion, visual art and music are two inherently different arts which rely on inherently different physics. Our understanding of the two arts at this time does not support the idea that they may be intrinsically linked, either in the physical realm or our minds. The differences in the electromagnetic and the audible spectrums, along with an inconsistency among synaesthetics to specific color and pitch correlation are just examples of objective data which does not support the existence of a single framework which the two arts are built upon.

However, the similarities that exist do provide enough material that creative comparisons can be made. Similar to the way twelve-tone rows can be used to generate material even for tonal compositions, visual art and music comparisons can generate creative material for both art forms. By interpreting musical techniques into his style, the artist broadens his creative horizon, and vice versa for the musician. Attempts to compare visual art and music can create unique ideas that enrich artists and art in general. Hopefully, artists and composers alike, will not only continue to be aware of the other arts, but also continue to work on understanding the long tradition of comparing visual art and music.

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