

## Abstract

Rhythm to the Art Educator  
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Rhythm is a basic principle of art, taught to beginners and explored by master artists. However, rhythm is a difficult concept to understand and apply visually. The basic definition of rhythm is defined, and the use of rhythm is explored through artwork and the writings of historians and aestheticians. The use of rhythm in other disciplines is also examined. Lessons and recommendations are suggested for the art educator.

Rhythm to the Art Educator

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## CHAPTER 1

The arts include many areas of human inquiry such as, music, painting, drawing, dance, and theater. Some of the basic elements and concepts flow between all the arts. Rhythm and movement are two of the most interwoven and sometimes obscured principles found in the arts. Rhythm can mean a “movement or action marked by the regular recurrence of different quantities or conditions” as well as “the patterned, recurring alternations of contrasting elements of sound” (*American Heritage Dictionary*, 2001, p. 717). Movement, is in relation to this because it is an “act of moving or a change in position” as well as a section within a musical composition (*American Heritage Dictionary*, 2001, p. 717).

*Rhythm in Art Education.*

The principles and elements of art are the basis of an art educators’ curriculum and they are expected to be knowledgeable and creative in their approach to teaching them to students. These concepts can be obscure and vaguely defined even in the best of textbooks. Gene Mittler and Rosalind Ragans (1992) wrote that rhythm is, "The repeating of an element to make a work seem active" (p. 11). Both authors have gone on to write individual books with slightly different definitions. Mittler (2000) writes that rhythm "refers to the careful placement of repeated elements in a work of art to cause a visual tempo or beat," (p. 44) while Ragans (2000) specifies rhythm as indicating "movement by the repetition of elements" (p. 462). Ragans adds, "Visual rhythm is perceived through the eyes and is created by repeating positive spaces separated by negative ones" (p. 462). Five types of rhythm are also listed in this definition: random, regular, alternating, flowing, and progressive. The only common thread is that rhythm has the

aspect of repetition. Pattern can also be defined as repetition creating a problem when differentiating between the two elements.

There are three separate concepts of rhythm. The first concept relates to the patterns of stress in oral and music meters. This sense of rhythm in meter offers measurable patterns to music and speech. The second concept of rhythm pertains to human activities and the rhythm of the body. Aristotle and Plato both discussed the rhythm of the heartbeat and the cycle of sleep and waking as a pattern influential on human perception of the world. The last concept focuses on human movement and gesture. Rhythm in art and music is a symbolic depiction of internal emotional life (Krois, Rosengren, Steidele, & Westerkamp, 2007).



## CHAPTER 2: Statement of the Problem

The third competency goal set by the *North Carolina Standard Course of Study* (North Carolina Department of Public Instruction, 2000) states that the learner would organize the components of a work into a cohesive whole through knowledge of organizational principles of design and art elements. This is based on the second goal in the *National Standards for Art Education* (North Carolina Department of Public Instruction, 2000). Rhythm is one of those organizational principles of design. As stated above, information on the principle of rhythm in visual art is not fully developed in art education literature. Teachers need to be provided with a foundation of knowledge about the principle through a review of historic and contemporary literature related to the principle of rhythm. The various definitions of rhythm can be vague and may not necessarily correspond with one another. Explaining the concept of rhythm to youth can be a difficult task when the information written in the textbook is vague.

An artist will incorporate other elements of art to create rhythm in a composition. The most common elements used are color and line. Color can be used to create patterns and moods that portray rhythm. Lines can be used to create a metrical visual path through a composition. Lines can also express moods and types of rhythm depending on the quality of the line. A thick fat line could be a slow steady rhythm while a thin jagged line would be a fast alternating tempo. The use of color and line contributions to rhythm has been of close interest to many different artists.

This review will explore answers to the following questions: Will a better understanding of the principle of rhythm enable art educators to engage students with a better understanding of the importance of the basic principle? How do humans perceive

rhythm? How is rhythm tied to other disciplines? Do biological processes generate a sensation of rhythm?

### CHAPTER 3: Methods to Investigate the Problem

In order to develop a better understanding of the principle of rhythm in the visual arts, we can read materials written by artists, aestheticians, art historians, and art critics. Aristotle (Krois, Rosengren, Steidele, & Westerkamp, 2007) and Alberti (1970) both wrote on the principles that define art. Many modern artists experimented and wrote about the element of rhythm, such as Paul Klee (2004) and Wassily Kandinsky (2004). We can also look at and analyze the art images that have been identified as displaying the principle of visual rhythm.

Klee and Kandinsky were influenced in part by the work of Gestalt psychologists (Ione, 2004). Gestalt psychologists were interested in the whole effect of stimulus on human perception and how humans literally perceive rhythm through the eyes and feel a connection to the concept due to biological rhythm.

The last step to investigating rhythm in art education is to identify how rhythm is integrated into other disciplines. Music uses rhythm in the repetition and patterns of notes. Math also uses rhythm in patterning, as well as using symmetry and congruence. Classical architecture also used rhythm to create balance and symmetry within a structure. Literature and writing uses rhythm pertaining to the flow of writing. Whether a work is poetry or prose will determine the type of rhythm.

## CHAPTER 4: Review of Literature

### *Aestheticians, Critics, and Historians*

To place this into visual art terms “rhythm and movement are like music created by repeating elements in a regular beat or order,” (Chapman, 1992, p. 52) which means that rhythm can be different. Rhythm can be regular, one beat; alternating, a series of visual changes; progressive, built on regular changes in a repeated element; flowing, a graceful path with no sudden changes; and jazzy, elements that are varied in complicated patterns and combined with unexpected elements. Rhythm in visual art is still very similar to the musical definition, only replacing the elements of notes with color or line. Movement is also similar in both visual art and music in the sense that the dominant path of movement can add to the mood and sense of movement within a composition (Chapman, 1992). Artists have interpreted and created a sense of rhythm and movement in many different ways through the years. For example Vincent van Gogh has created rhythm in his work *Starry Night (1889)* through the use of color and expressive brush strokes, where as Vermeer created rhythm through the position of bodies and sight lines in his work *Christ in the house of Mary and Martha (1654-1656)*.

Critics wrote that Aristotle (2007) philosophized on the relation of art to human nature. He wrote that humans were attracted to visual and musical rhythm because of a physiological sequence of movement experienced through heartbeat, breath, the motion of legs and arms, and the cycle of waking and sleeping. Aristotle felt that rhythm was a derivative of the human soul expressed through visual art and music (Krois, Rosengren, Steidele, & Westerkamp, 2007). These writings influenced other artists and aestheticians through history.

Alberti, cited in Spencer (1970), was one of the first artists to write on the subject of art. He addresses rhythm in an obscure way through repetition, animate, and inanimate movement. Like most scholars, Alberti links rhythm with musical notation and poetry: “We weep with the weeping, laugh with the laughing... These movements of the soul are made known by movements of the body” (p. 62). He goes on to state that artists who are concerned with showing the movements of the soul move the bodies around within a composition, rising and descending, changing place in the work. Alberti also examines the inanimate movement of hair and draperies blown by wind. These inanimate objects create visual movement by how they may twist and curl, rise and fall. This too can add to the viewers’ perception of the movement of soul.

To move further back into the history of rhythm and movement we can look at ancient cultures and rituals. Many ancient cultures and Aboriginal tribes used music and art together in ritual. The rhythm of the music and dance spilled over into the artwork. Ritual objects would display, patterning, channeling and formalizing of emotion. This concept of the movement of the soul relates to Alberti’s own perspective of art in the Renaissance. Dissanayake (1979) states that the relationship between art and ritualized behavior (which includes a rhythm and repetition) is intertwined and instinctual. “Like much of human ritual ceremony, art is frequently intended to be many-layered and ambiguous. In art the organization is both predictable and unpredictable – producing the tension and release that are considered to be important to aesthetic response” (p. 29). This notion of ritual ceremony being many layered and drawing on human experience is similar to Alberti’s quote of “weep with the weeping” (Spencer, 1970, p. 62). Humans want to share experience and create experiences together. We have done so through

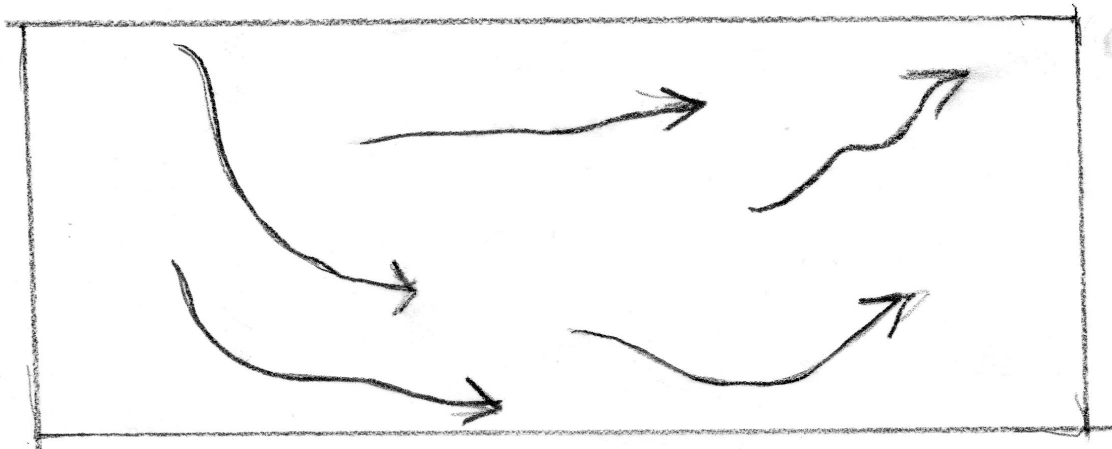
rituals, art, and music. The first actual paintings that man created were of his everyday life. He did so with a notion of rhythm and movement by depicting the way that herds would run from the hunters. These paintings were created on rock walls using various tools and methods but all still had a certain level of rhythm and most notably movement within the composition. The rhythm may have been created intentionally but the prehistoric artist may not have consciously developed ideas of rhythm and movement in art. The artist may have seen the rhythm within the herd, recognized it for being an organized structure and wished to portray that, but we cannot ever really know for certain the motives. The paintings on cave walls in Lascaux, France demonstrate how the animals were grouped in herd formations. The images and theories of the formations can be easily accessed through Wikipedia.

In the western world some scholars wrote that the Renaissance was the height of artistic creation and development of theory (Konneman, 1997). Many painters followed guidelines of the elements of art and principles of design very closely. Sandro Botticelli uses a strong sense of rhythm and movement in his paintings *Venus and Mars* (1483), *Birth of Venus* (1484-86), and *Spring* (1475-82). In the first painting, Venus is sitting upright gazing toward Mars. The couple's bodies are facing each other, legs and arms almost entwined. Mars however is relaxed; his head slouched back, effectively making his head lower than that of Venus. The Fawns in the background further this idea of movement in their playful handling of Mars' sword. All the fawns face him and are pointing the sword in his direction. The fawns are equally spaced within the couple, who are also equally spaced from the edges of the composition creating a simple and precise rhythm across the painting. *Birth of Venus* (1484-86) and *Spring* (1475-82) again use the

body to create rhythm and movement, but add in the use of drapery blowing in the wind to further enhance the idea of movement throughout the picture plane.



Sandro Botticelli, *Mars and Venus*, 1483, National Gallery at London, England.



Rhythm Diagram by author #1.



Sandro Botticelli, *Birth of Venus*, 1484-1486, Galleria degli Uffizi, Florence.

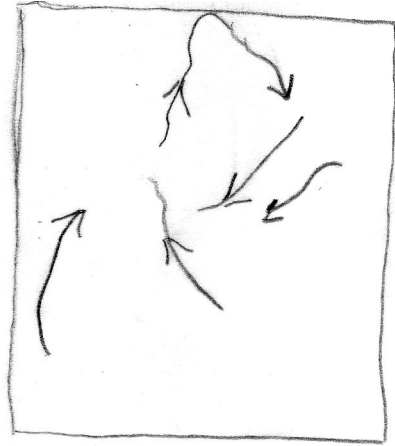
Sandro Botticelli, *Spring*, 1475-1482, Galleria degli Uffizi, Florence.

The Dutch masters, such as Jan Vermeer and Rembrandt van Rijn continued this preservation of high art techniques of the renaissance, in their use of elements of art and principles of design. The Dutch developed these important elements into paintings of a less sacred nature and into more profane depictions of life. One of the great preoccupations of the Dutch was their “rhythmic and significant ordering of the imagined three-dimensional space of the picture” (Fry, 1929, p. 54). Fry suggests that this holds true from Vermeer to Rembrandt through Van Gogh. The Dutch had a particularly unique problem of being confined in a relatively small genre and yet exhibited freedom and ease of movement within the scene.

The concept of rhythm and movement can be found in prose literature. A prose rhythm does not have an exact repetition but does hint at some recurrence within the piece using the sound of a word or the number of syllables in the phrase. Certain rules and guidelines must be followed. In literature, those rules are grammar, and in art and in certain conventions of composition utilize the elements and principles of design.

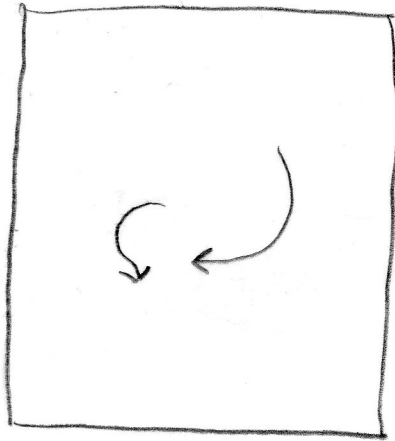
Artists had to adapt the style of the times to all kinds of peculiarities of form (Fry, 1929). Vermeer himself has changed across his lifetime from the seductive rhythms of the Italian Baroque in *Christ In The House of Mary and Martha (1654-1656)*, and then in *The Cook* also known as *The Milkmaid (1658-1660)* he has fully adopted the Dutch Prose rhythm (Fry, 1929).





Jan Vermeer, *Christ in the House of Mary and Martha*, 1654-1656 National Gallery of Scotland, Edinburgh.

Rhythm Diagram by author #2.



Jan Vermeer, *The Cook (The Milkmaid)*, 1658-1660 Rijksmuseum at Amsterdam.

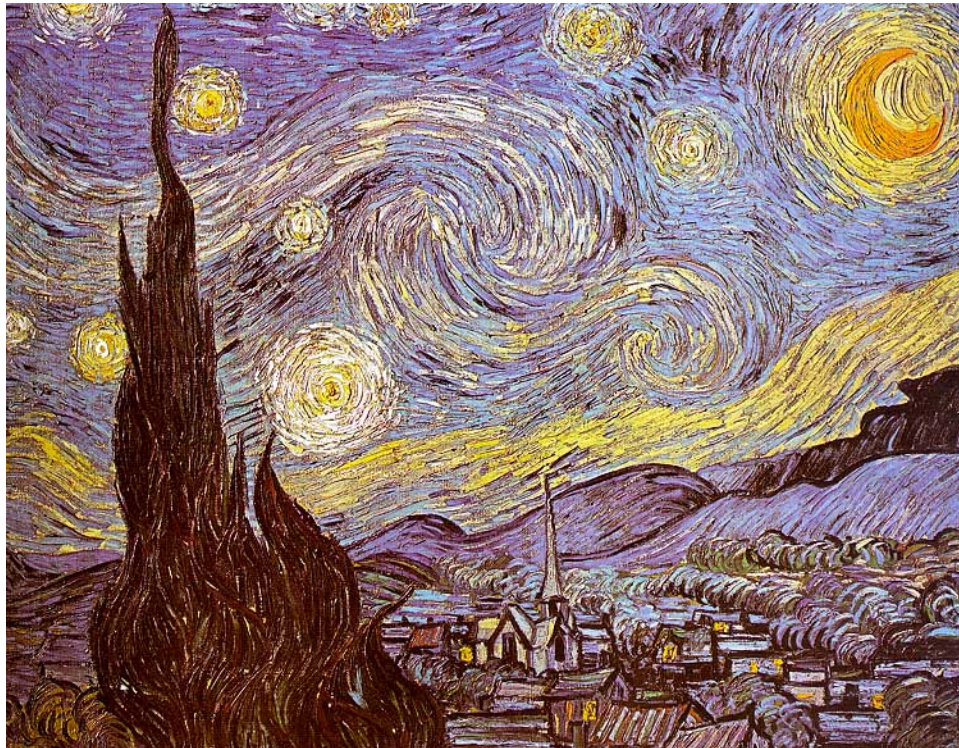
Rhythm diagram by author #3.

The painting of Christ has the rich contrasts and full picture plane that provides a bold, high-energy rhythm that moves around Christ's hand, through the color of the draped clothing and the sight line of the figures. Just a few years later Vermeer has stopped using the high contrast colors for a simpler palette. The composition is also less busy, using only one figure standing at a table in a sparsely furnished room.

Rembrandt creates rhythms that become more expressive, energetic and vital than the average Dutch prose. He uses a continuous undulating phrase which flows slowly

more like verse. Even in his handwriting a viewer can notice his ingrained rhythmic sense. As he grew older and developed his style the rhythm became more structured and forcible in its statement of direction, however he never loses his verse like quality. His “exultation of mood, an inner tension, which translated itself in the vibration of his rhythmic handling” was always discernable regardless of how blunt the rhythm may become (Fry, 1929, p. 67).

Vincent Van Gogh changes in his application of rhythm and movement, but the principles are still a large part of his landscapes. Van Gogh uses exaggeration, a quantitative change in the linear perspective, combined with his brush strokes and dots to create the “vehement movement and the violence of spatial recession” (Novotny, 1953, p. 36).



Vincent Van Gogh, *Starry Night*, 1889, Museum of Modern Art, New York City.

Van Gogh's concentration on the object ultimately pulls the rhythm together. His broken flow of lines is staccato and mixes with the S and C- shaped whorls, which finally center on a specific object.

### *Gestalt Psychology*

Gestalt psychology was first developed by Max Wertheimer, Kurt Koffka, and Wolfgang Kohler. Max Wertheimer had his first inspiration when he saw flashing lights at a railroad crossing. The timing of the flashing of the lights created an illusion of a moving light. This illusion is known as the phi phenomenon and motion pictures are based on this principle (Van Wagner, 2008). Rhythm is essentially what Wertheimer saw in the lights when he was inspired to think deeper about how the human mind perceives objects, color, and light. Wertheimer went on to write a paper titled, *Theory of Form* that had a lasting influence on art and design. He wrote that humans have an innate tendency to group similar objects together (Behrens, 1998). Gestalt psychology has a set of principles based on the belief that the whole is different than the sum of its parts (Behrens, 1998).

The first law is the law of similarity. This states that items that are similar tend to be grouped together. Similarity and repetition lend to the concept of rhythm. A person views items that are similar and groups these items together. If the first items are interspersed at seemingly regular intervals with other items a sense of rhythm is perceived. The law of proximity also groups objects. In this law objects are grouped by how near they are to each other. The law of continuity relates to rhythm and movement in art by stating that lines are seen as following the smoothest path (Van Wagner, 2008). In order for an artwork to have rhythm a visual path must be followed. These laws are

based on the original idea that humans inherently want to group things together. The human eye and brain is wired in such a way as to search and recognize similar or repeated shapes and create rhythm and order out of the chaos in the natural world (Van Wagner, 2008).

Most contemporary artists were first introduced to the theories of Gestalt not from the lectures of Wertheimer, but the subsequent writings of Gyorgy Kepes, who taught at the New Bauhaus in Chicago, and Rudolf Arnheim, who became Professor of the Psychology of Art at Harvard University. Artists felt that these writings provided a scientific validation of the principles of composition that had been established long before (Behrens, 1998). Art could have reason and theory that related to scientific facts therefore validating the importance of art in society.

Rudolf Arheim is a noted gestalt psychologist who has done a large amount of research and writing on the topic of rhythm. Arnheim theorized that motion is the strongest visual appeal to gain and hold the eye's attention. This is why people watching television get so mesmerized by television shows and advertisements (Arnheim, 1954). The eye will automatically scan over different parts in a painting in succession in any particular order and still perceive a sense of movement or rhythm. Arnheim wrote that there are three factors associated with rhythm; the physical movement, the optical sensation, and the perception of the brain of the first two factors (Arnheim, 1954).

#### *Paul Klee and Wassily Kandinsky*

Two artists who concentrated on rhythm and movement within their work were Paul Klee (1879 – 1940) and Wassily Kandinsky (1866 - 1944). The artists were active in learning about and creating new art theories through the influence of the work of the

Gestalt Psychologists such as Max Wertheimer, Kurt Koffka, and Wolfgang Kohler.

Klee and Kandinsky both attended lectures at the German Staatliches Bauhaus by Gestalt psychologists. The repercussions of these lectures are evident in their artwork.

Kandinsky tried to find a higher spiritual rhythm that ran through the world and his artwork. Klee actually used Wertheimer's (p. 155) diagrams in a few of his paintings.

The diagrams are nearly indistinguishable among the other elements of the work (Ione, 2004, p. 155).

Both painters were also musicians with a passion to combine both art forms. Klee was the more process oriented artist and "aimed to feel the pulse of his piece and to slowly nurture it along in tune to a tempo we can feel looking at it" (Ione, 2004, p. 150) in a progressive and jazzy rhythm. By using different elements such as line variation or chromatic tonality he could make the rhythm more flowing or staccato depending on the mood of the piece. Klee would relate these progressive rhythm and movements to his own soul searching and deeper feeling within, a hint towards the ritualistic nature of art. Kandinsky was more interested in creating a prose rhythm with a regular pattern that was logical and measured in his approach. Kandinsky was also interested in the hidden and emotional meanings that evoke an unconscious response from the viewer. Both artists succeeded in their tasks by different methods to create "imagery (that) is so infused with the delicate rhythms and intricate counterpoint of musical composition that the symbolic language becomes secondary" (Ione, 2004, p. 149).

Wassily Kandinsky approached rhythm primarily through the use of color and color patterns. This may be attributed to the fact that he had synaesthesia. Synaesthesia is "the experience of an associated sensation when another sense is stimulated" (Donnell,

1977, p. 70). The most well known example of synaesthesia is seeing colors associated with sounds. This should not be confused with intersense transfer in which a person is given a stimulus in one sense and asked to represent it in another. Color is the art element that is easiest to react to. Colors have influenced human vocabulary with expressions such as "green with envy" and "feeling blue". Artists and scientists have been researching the area of synaesthesia as early as Sir Isaac Newton (Donnell, 1977).



(Sadness)



(envy)

Pablo Picasso, *The Tragedy*, 1903, National Gallery of Art, Washington D.C.

Rebecca Solomon, *The Governess*, 1854, Royal Academy, London

Kandinsky went further in his artistic endeavors to express sound through the color in his paintings. Kandinsky described his observation of the human reaction to color as: "The sound of color is so definite that it would be hard to find anyone who would express bright yellow with bass notes or dark lake with the treble" (Donnell, 1977, p. 74). His strong reactions to color are primarily what drove his paintings by creating rhythm through color patterns and the movement of the shapes of color in his paintings. Without this heavy emphasis on color there would not be any rhythm to be seen in Kandinsky's paintings. Kandinsky was greatly interested in the spiritual aspect of the

ultimate state of the universe. He felt that this spiritual side was mainly manifested by vibrations from sound (Ashmore, 1977). Kandinsky was interested in constructing his spiritual sound vibrations as a visual manifestation in his paintings. Inherently the rhythm of sound was transferred via color and color patterns that created visual rhythm and movement throughout a composition.

Paul Klee was incredibly interested in the influence of musical rhythm on visual art. Klee went so far as to create three different educational lessons for his art students to express the differences in rhythm. Klee started his exploration with simple linear rhythms and gradually worked to color and patterns, eventually overlaying textural patterns with painted color patterns. His interest in creating visual rhythm in painting may have been influenced by his family being comprised of mainly musicians.



Paul Klee, *Station L112*, Kunstmuseum, Bern.

Klee was frustrated with the lack of precise terminology for visual elements and instead started using musical terminology when discussing pictorial art. He soon abandoned the verbal juggling and worked to uncover a common point of origin in the

plan of both music and visual art (Verdi, 1968). Klee compared starting a painting to a journey through space and time thereby the painting was a manifestation of actual movement. This concept is easier to grasp in the art of music as music is clearly and necessarily perceived in time (Verdi, 1968). Klee tried to reproduce the metrical patterns of music and the temporal denominator inherent in all creation through the progress of a single line.

Paul Klee separated rhythm into three different components to be found in music and art. The first individual component of rhythm is non-repetitive and the second is the opposite of structural component which is a rhythmic repetition without variation. The third level of his rhythmic organization was a fusion of individual and structural rhythm where the two are separate and yet intertwined into repeating and flowing within and out of each other. Klee experimented in pedagogical examples in which he instructed students to create a line that moved throughout the composition in reaction to a sound stimulus or in relation to other components of lines, colors, and shapes (Verdi, 1968). These examples gradually built upon each other until Klee had created a multitude of rhythmic paintings such as *Snake Paths (1934)*, *Arctic Thaw (1920)*, and *The Thinking Eye (1935)*. Klee wanted to maintain interest and ingenuity by limiting the resources used to produce a picture (Verdi, 1968). Gradually Klee moved from the simplicity of a single line or interaction and quality of lines creating rhythm to using color and even layering lines, color and texture in his later works such as *Garden Rhythm (1932)*. This painting shows a manipulated grid with each square a different pattern or color but yet the textural lines continue from one square to another through the entire composition.



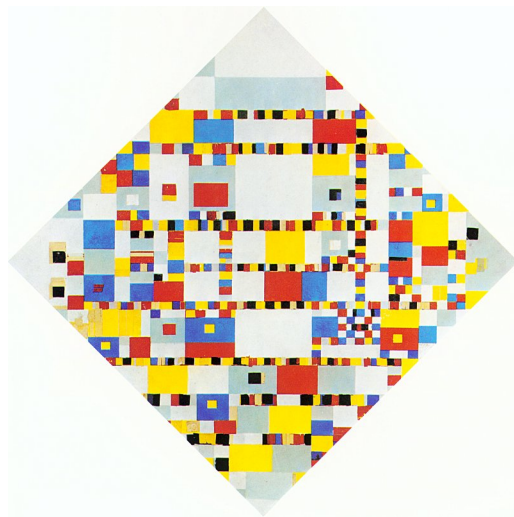
Polyphonic painting was the last type of painting that Klee explored. This method involved applying dots of color to the canvas, thus allowing for a simultaneous perception of several planes. These works could then "acquire an additional richness and complexity through their seeming ability to permit two or more distinct experiences to occupy the same place at the same time in the viewer's mind, a sensation rarely encountered in confronting works of visual art" (Verdi, 1968, p. 88). Gregory P. Garvey (2002) later explored this concept with his Split-Brain Human Computer User Interface, by creating a state of cognitive dissonance by playing two speaking voices at the same time or displaying two images simultaneously.

### *Piet Mondrian*

Piet Mondrian was originally inspired by the facades of Paris buildings full of windows and covered with colored posters. He created the stone masonry flatly but still resembling a three dimensional view. Mondrian wanted to abstract natural form. He tried to accomplish this by eventually eliminating the third dimension and using only the surface of the canvas. He also stopped using natural color, preferring primary color and adopted the right angle as "the most constant and universal means of expression" (Wiegand, 1943, p. 66). Mondrian created rhythm in the orderliness and mathematical equations that can be found within his works. The lines are smooth and flowing both vertically and horizontally while the colored squares provide a staccato beat that harmonizes with the main rhythm of the lines.

When Mondrian moved to New York City his style started to change. He substituted the black lines for red, blue and yellow lines. In order to keep the paintings from taking on certain rigidity, he broke the colored lines into a new rhythm by inserting

sections of opposing colors (Wiegand, 1943). The new rhythm twinkles and sparkles with a quick excitement. When Mondrian resorted to this method he was felt that the grid and rhythm of the black lines was still too natural and he did not want to re-create the natural. Mostly he felt, "it exalted rhythm and repetition which were inseparable from symmetry for Mondrian at that time" (Bois, & McIntosh, 1988, p. 248). The new rhythm is most apparent in his painting *Broadway Boogie Woogie* (1942-43). The colorful lines intersect and react with each other allowing the entire painting to vibrate with a boogie woogie type of musical beat.



Piet Mondrian, *Broadway Boogie Woogie*, 1942-1943, Private collection.

### *How Rhythm is Perceived*

The eyes are the key to sensing rhythm in the world but there are also many different biological ways that the mind perceives rhythm. Saccadic eye movements can be linked to the perception of rhythm. "Visual perception and cognition as well as visual attention are closely coupled to the movement of the image on the retina, so that eye movements offer clues about higher functions" (Feiler, Kirschfeld, & Wolf-Oberhollenezer, 1996, p. 459). To understand the process of visual perception requires

information on the activation order of different brain areas (Hari, Seppa, Tanskanen, Uutela, & Vanni, 2001). There are two cortical areas that visual stimuli activate. The first area is related to early responses and analyzes dynamic visual information and visuomotor transformation. This includes distinguishing figures from their background (Desimone, & Wise, 1988). The second area has longer latencies and identifies object form and color as well as object recognition (Hari, Seppa, Tanskanen, Uutela, & Vanni, 2001). This second stage is thought to only operate serially on one or two objects at a time (Desimone, & Wise, 1988). The perception of rhythm takes much more than just the eye being directed across a space or painting. There are specific responses that are activated in the brain by each stimulus that cause the sensation of rhythm. There are six steps involved in moving the eye: disengaging attention from the current object, moving attention to the new point of interest, re-engaging attention there, releasing eye fixation, moving the eyes, and re-engaging fixation (Feiler, Kirschfeld, & Wolf-Oberhollenezer, 1996). The eye must move from one object to another because we cannot attend to more than one or two objects at a time (Desimone, & Wise, 1988).

There are over a hundred functions and structural elements in the body that oscillate between maximum and minimum values every day. These functions include deep body temperature to rhythms in mood and mental performance (Arehart, 1971). These are just some of the functions that Plato (2007) and Aristotle (2007) could have referenced when they wrote that humans perceive rhythm because we are creatures based in rhythm. There are two schools of thought on biological rhythm. The first is that the biological clock lies within the organism; the second is that rhythms are paced by external factors such as light, temperature and electromagnetic fields (Arehart, 1971).

According to Arehart (1971) light is the most critical external timer of rhythm because visual stimuli are perceived by the eye taking in different light patterns.

Yet another way to view rhythm and movement is from the scientific perspective on aesthetics in the human eye and mind. An early writer, J.J. (1886,) states that, “aesthetic pleasure is caused by an unconscious intuited analysis” (p. 420). Aesthetic impressions are divided into two categories. The first category is ruled by sensation in the eye and brain and the second category by emotion. Symmetrical impressions on the eye are viewed as pleasing due to the fact that both eyes share similar halves of the same whole. Artwork and architecture that present repetition are pleasing to the viewer in both an unconscious aesthetic aspect and in an educated mathematical recognition (J.J. 1886). Peter D. Stebbing re-examines this concept in 2004 with an investigation into Contrast, Rhythm, Balance, and Proportion (CRPB) as universal components of our species’ artistic behavior. Stebbing’s hypothesis is that human aesthetic behavior when creating and appreciating compositions has evolved from an innate ability to recognize organic forms (plants are to eat, rocks cannot be eaten) to organizing principles in art. An early human being who was not able to distinguish between an edible and an inedible mushroom, or a skunk from a squirrel would not live for very long. Different plants and animals all look very different. Some are hard to recognize quickly but if a person is fighting for life on a daily basis this is a very quickly learned skill. The inherent intelligence of distinguishing between organic forms expanded to “facilitate the development of ‘cognitive fluidity,’ enabling the creation of ‘art’” (Stebbing, 2004, p. 68). CRBP were used by ancient humans to distinguish useful organic forms and have since expanded and modified into components used in perception of aesthetic expression.

This research reinforces the notion that the cave artist understood how to compose his painting of everyday life in a comprehensive and visually pleasing manner.

Psychophysics is another way to look at how humans perceive rhythm. Psychophysics can be explained as the science of human sensitivity, dedicated to discovering the relationship between experiences and the world. Gustav Fechner is one scientist who expanded on Weber's law explaining that, "except at extremes, a just noticeable change in a stimulus is a constant fraction of that stimulus" (Shapiro, 1994, p. 48). Rhythm is a sensation caused by the eye's reaction to a visual pattern of color or shapes within an artwork.

#### *Rhythm in other disciplines*

##### *Architecture*

Rhythm and movement can be seen in the classical art and architecture of the Greeks and Romans. Lines of columns, a pediment frieze, and temple floor plans all show a precise and measured rhythm and movement throughout. The pediment frieze depicts a scene that starts small and cramped at the outer edges and grows larger and more important as the triangle grows taller in the center. The natural movement in the scene is from the outside inward. As societies change and cultures develop different styles of architecture develop. The onion domes of Byzantine architecture are bright and create a jazzy rhythm and movement that dazzles the eye. Renaissance structures and later Plantation homes of the American south bring back regular rhythm in their precise and symmetrical placing of windows, doors, and columns. Architecture is also a backdrop and frame for many artists. In this way, it also helps to create a sense of

movement within a space by blocking movement or adding to the flow of other elements (Hansen, 2002).

### *Music and Film*

Rhythm is most commonly identified with music and in an era of MP3's, MTV, and iTunes, it is hard to avoid but also difficult to distinguish amid other elements. Art in this environment of media sensationalism has also taken on a more digital approach. Walter Ruttmann was one of the first cinematographers to use the concept of abstract animation. This is when an artist uses video or film to create an artwork of moving images that is often playing in conjunction with music. Ruttmann created a 70 minute movie called "Berlin, Symphony of a Great City" in 1927. He created rhythm on screen by changing through a series of images and focusing on objects that created pattern, such as moving and still train tracks, row upon row of apartment houses, and the people moving in natural rows on the street. There is no dialogue just the symphony playing to match the speed and rhythm of the images. Ruttmann explores many different kinds of rhythm in his piece with each act focusing on a specific time of day or sequence of events. Act one is of the factories and the train. This is specific at times, a prose type of rhythm that relates to the prose rhythm of Dutch masters. Other scenes alternate jazzy and flowing, especially towards the end when the viewer is experiencing nightlife and the winding down of a great city.

Rhythm of film is much different than that of a painting in the sense that a painting has a still or stationary set of signs and symbols which have been related according to variety and uniformity on a two-dimensional plane by the artist but must be related again by the viewer (Kolaja, & Foster, 1965). Film on the other hand has many

shots, many paintings that each have a rhythm and create a rhythm together. Rhythm relies on memory, more so in film. Each shot may connect back to an earlier one. Film also contains twenty-four stills per second. There are 24 mini paintings seen by the human eye in one second, playing an optical trick causing the viewer to see movement on the screen. In digital film this has been eliminated. The eye is seeing exactly what the digital program has actually created.

Modern artists have taken the idea of abstract animation and are applying it to a purely digital format. Those artists have taken inspiration from breakthrough directors that mask reality in different ways, such as Abel Gance (*Napolean, 1927*) using multiple screen composition, Bokanowski and Hollis Frampton (*Hapax Legomena I: Nostalgia, 1971*) using graphic and audio masking, and Rohmer's "virtual" images created via computer. "Computer graphics allow the discreet elements of a visual composition to be brought under detailed control. Abstract animation brings in the dimension of time and the desire to structure time with a formal elegance that was heretofore only achievable in music" (Evans, 1992, p. 13). Artists have been attracted to this control and manipulated the idea into varying works of art. Hisham M. Bizri has expounded on Ruttman's work with his own film *City of Brass* (2002). Bizri juxtaposes optical and computer environments to expand the language of film. He uses the notion of conscious mind and real environment alternating with the unconscious and a digital environment to alter and enhance the viewer's perception. Bizri is focused on bringing fantasy to life in film through the blending of reality with computer imagery. He fears that today's society has a motivation "to politicize and subsequently standardize concreteness and suppress fantasy" because of commercial markets (Bizri, 2003, p. 7). Rhythm plays an important

role in this creation how it reflects the reality of the narrative through slow measured shots or staccato and fragmentary shots reminiscent of Ruttman. Eric Rohmer is another good example of a director interested in creating art within every frame and has been accused of filming to a metronome (Cohn, 2007). This creates a film that is without much action or change in pace but with a rhythm that is regular and flowing. The films he produces move along moral themes in the lives of people. Considering that the point of the film is to accurately portray the life of a person and only one moral dilemma there cannot be much change in the pace or rhythm of the film.

Another way to build a time structure in artwork is to move through points of visual resonance. This is exemplified in the work by John Whitney (*Arabesque, 1980*) in which “it is possible to watch an array of points move in and out of resonance, as if following a single melodic line moving through cadences. There are times when this line breaks into distinct elements that work themselves apart and back together” (Evans, 1992, p. 13). Those elements can be in the form of line, shape, color or a combination within the work. Balance creates rhythm by moving from balance to imbalance and back to “provide a means of structuring time with visual elements and allows us an approach to temporal design” (Evans, 1992, p. 15). Overall a work can be defined through devices of repetition variation and contrast whether the media is film, digital imagery, or paint.

Can we take the idea of digital film even further and use it to create optical effects similar to traditional film? According to the research and experimentation of Gregory P. Garvey we can by using a Split-Brain Human Computer User Interface. The phenomenon of a split brain occurs in epilepsy patients who receive a surgical procedure that severs the connection between each half of the brain. They are then unable to



process truth and untruth at the same time. To simplify this when one is looking at the image of faces/vase they see either one or the other. Normal brains cannot compute both at the same time. Many artists are first introduced to this idea of separate halves of the brain performing different functions in college when reading Betty Edwards' (1989) book, *Drawing on the Right Side of the Brain*. By playing two different videos on each side of the screen Garvey is trying to create a sensory experience for the viewer in which both videos are seen simultaneously and register in the unconscious as an altogether new form and video. Garvey has created a headset in which the viewer wears and watches the videos. These videos may appear at the outer edge or the inner edge of the viewer's eyesight. The position of the image in relation to the hemi-field of the eye determines how the video is perceived by that viewer. Most viewers experience that their attention moved from one image to the other, creating a staccato and fragmentary rhythm. They could not focus on both simultaneously. Few viewers were only able to focus on one image entirely and very few could see both at the same time and relate them to the double audio track also being played (Garvey, 2002). The few who could see both at the same time would experience a jazzy image, full of layers and sound, but regular rhythm as the two people in the separate videos spoke regarding a similar issue.

Salvador Dali touched on abnormal mental states during the Surrealist movement. He was interested in creating ways to undermine conventional notions of reality and stimulate creativity. He created a paranoiac-critical method in which he used effects of composite images similar to the faces/vase or the portraits in vegetables by Giuseppe Arcimboldo (1527-1593). Dali created the painting *Athens is Burning*(1979-1980) by

painting two images seen side by side; one seen with the left eye and the other seen with the right.

Joanne Culver, Frank Dietrich, and Zsuzsanna Molnar are three artists who combined their own ideas into one interface using a computer to control a multi channel television matrix. This format allowed four separate tracks to be played simultaneously in any order or placement within the sixteen televisions. Rhythm and speed could be varied within the track or changes made from one track to another. The artists were given the freedom to create tools to serve their own concepts rather than adapting their concepts to tools designed for other purposes (Culver, Dietrich, & Molnar, 1984). Each artist created a separately themed artwork and controlled the patterning by writing computer programs that order the relationship of the images.

#### *Math and Literature*

Rhythm in literature was first made well known with the sonnets of William Shakespeare. A sonnet follows strict guidelines pertaining to the number of lines and how they are arranged. Shakespearian sonnets contain fourteen lines grouped into four line units called quatrains followed by a couplet (Holt, Rinehart, & Winston, 2006). This type of sonnet is written in a rhythmic pattern called iambic pentameter, with each line consisting of five unstressed syllables alternating with five stressed syllables. The Shakespearian sonnet is a regular part of the North Carolina English curriculum under competency goal 5.01, “The learner will read and analyze various literary works by recognizing and analyzing the characteristics of literary genres, including fiction (e.g., myths, legends, short stories, novels), nonfiction (e.g., essays, biographies, autobiographies, historical documents), poetry (e.g., epics, sonnets, lyric poetry, ballads)

and drama (e.g., tragedy, comedy) (NCDPI, 2001). Even Dante Alighieri used rhythm in the lines of his *Divine Comedy (1308-1321)*. Most poetry has some kind of rhythm or order to the placing of syllables and lines, such as haiku or quatrain.

Math is quite similar to literature in the respect that most rhythm pertains to patterns and sequences. When adding like terms one takes terms that are ordered into patterns and puts them into groups. Any number sequence is a form of pattern or rhythm. Many different parts of algebra are based on functions and patterns. Mathematical equations have been used by artists such as Leonardo da Vinci (1452-1519) in his drawings of the correct proportions of the human body, and when sketching inventions. The broad base of visual arts naturally incorporates other content areas.

## CHAPTER 5: Findings and Summary

Rhythm and movement have changed in their use in art and their influence as a focus or minor element within the arts. Musicians continue to develop new and interesting compositions, and painters continue to manipulate new patterns of rhythm into artworks. Most notably rhythm and movement have played a dominant role in film, inspiring digital film makers to push the limits and boundaries of traditional film making and plot development to focus on the intricate balance and rhythm of the visual scene in each shot and over the course of a full length feature film. Other artists have dropped film altogether and used computers to piece together ever changing displays and video montage. Some have even researched into brain development and diseases to use that information for manipulating the viewers' perception of reality. Rhythm and movement are so intricately woven in the fabric of the arts that it is inevitable to see them develop more closely in modern art, cinema, and music.

By better understanding the concept of rhythm and exploring the reason that human react to rhythm art educators will have more tools and options in which to demonstrate and share the concept of rhythm in visual art. Questions of how humans perceive art have been answered by investigating internal rhythm and inner workings of the eye and brain. Rhythm as it is incorporated into other disciplines has also been examined to provide other avenues for art educators to demonstrate rhythm in multiple contexts and for multiple intelligences. As for the ideas presented by Aristotle and Plato there is much more knowledge about biological rhythm as well as research on the idea. It is common knowledge that the heart has a regular beat and that there is a normal sleep

cycle to create patterns in daily life, but to actually know why people react to rhythm and create a sense of rhythm in art is still a mystery of the inner workings of the brain.

### *Recommendations*

In order to teach rhythm an art educator must thoroughly understand the concept and have a plan set in place to describe the concept to students. That plan should include visual aids of the kinds of rhythm, artwork exemplifying rhythm, ways for student to connect from themselves to the world, and how rhythm connects to other disciplines. The types of rhythm may vary according scholars and text books, but generally the types are known as jazzy, regular, random, and flowing. Students can also learn how to sense their own physical rhythms such as heartbeats, walking and dancing rhythms, and saccadic eye movements.

Below are some examples illustrating rhythm in artwork and lessons for children to complete with the teacher. First, is a simple poster on the different kinds of rhythm using patterns. The teacher can review pattern with the class and have the students create a pattern. Most of these patterns will resemble a regular rhythm. Next the teacher can explain the different kinds of pattern. These explanations may be related to the world around the students by playing jazz or classical music to illustrate the pattern and rhythm set forth by the beat. Allow the students to experiment with crayons or paint by moving them along with the sound of the music. After the experimenting compare and contrast the student created patterns with the poster of different kinds of rhythm. Next introduce selected artworks for discussion by comparing them to the patterns illustrated in the poster and student samples.

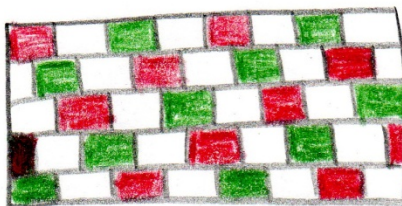
### Jazzy Rhythm



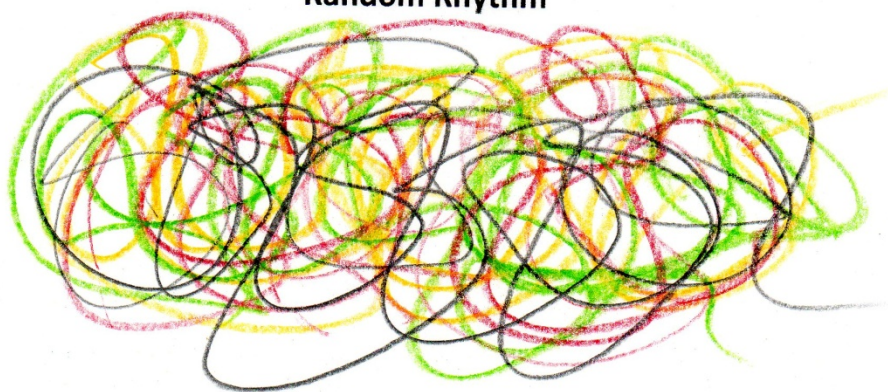
### Flowing Rhythm



### Regular Rhythm



### Random Rhythm



Comparison of four visual rhythms by author.

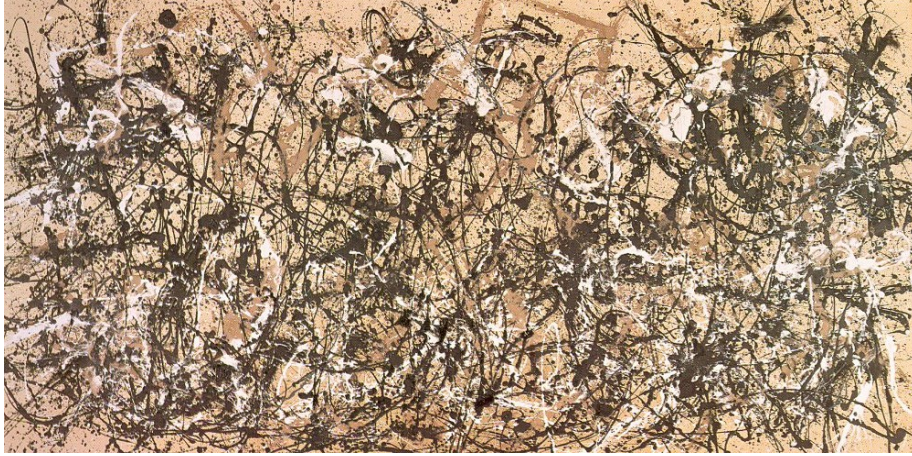


R. Heath, *Blue McCaw Parrot*, 2008.



Illustration of jazzy rhythm by author.

Jazzy rhythm is the type of rhythm that is syncopated, bright, quick and alive. A jazzy rhythm in a painting may be more than one rhythm that overlaps. One pattern may start and be overlapped and joined by another which then creates yet another combined rhythm. The parrot picture illustrates a jazzy rhythm by the repeating lines of blue on white, the blue swoosh through the middle, and then the white on yellow diagonal lines. All the pieces are their own rhythm but each fits well within each other.



Jackson Pollock, *Autumn Rhythm*, 1950, Metropolitan Museum of Art.

### Random Rhythm

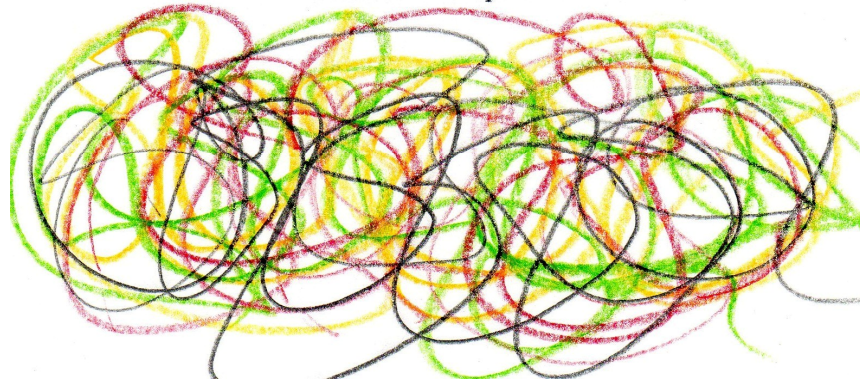
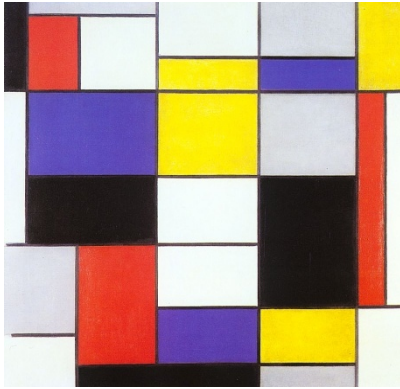


Illustration of random rhythm by author.

Random rhythm almost seems to have a lack of rhythm, however the eye is still able to move through the piece. In Pollock's paintings the drips of each color lead the eye through the painting. The path is not planned nor set out for the viewer to follow. Each viewer will have a different experience of the piece.

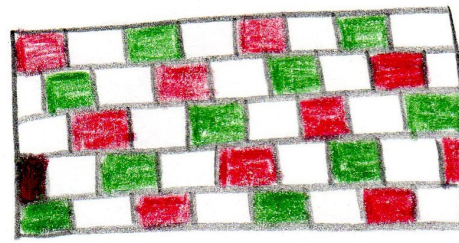




Piet Mondrian, *Composition A*, 1920, Galleria Nazionale d'Arte Moderna e Contemporanea, Rome.

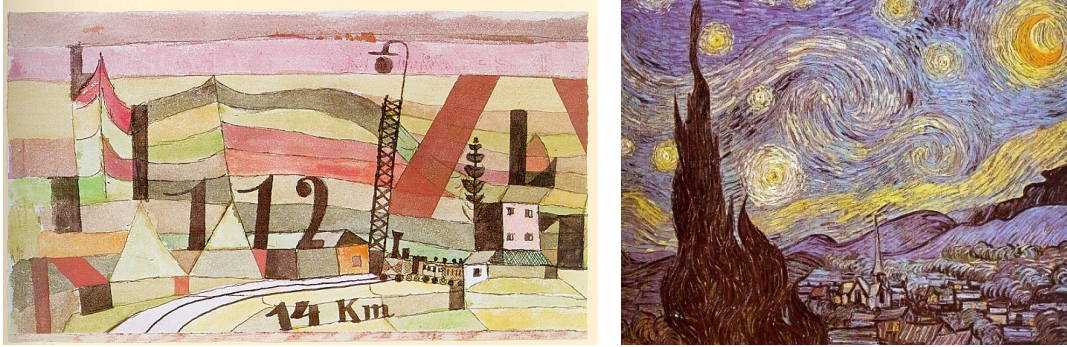
Illustration of regular rhythm by author.

## Regular Rhythm



Mondrian is a perfect example of a regular rhythm. Regular rhythms are measured and thought out with a purpose in mind. The most basic regular rhythm is two shapes or colors repeating over and over. Mondrian is an excellent example of a regular rhythm because he very carefully planned his lines and colors. Even with as many colors that are used in the above painting there is still a plan of precise shapes, colors, and lines used throughout the painting.

Flowing rhythm can be illustrated by either Klee or Van Gogh. Klee has thin black lines that break the space into long sections that waver horizontally. Van Gogh's flowing rhythm is created by the swirls and circles that intertwine in his night sky. Flowing rhythm is slow and drawn out, steady, soft and constant. This rhythm feels as if it could continue off of the picture plane.



Paul Klee, *Station L112*, Kunstmuseum, Bern.

Vincent Van Gogh, *Starry Night*, 1889, Museum of Modern Art, New York City.

### Flowing Rhythm



Illustration of flowing rhythm by author.

In order to help students connect to self and connect self to world would be to have them create a beat with a sponge on the table. Count out the beats for them first regularly, such as, "one, two, three, beat." Practice a physical beat with each rhythm. Then add paint to the sponges and allow students to move across the paper with the counted out beats. This process allows students to learn visually, audibly, and kinesthetically the concept of what rhythm is. This lesson is just the most basic step in understanding the concept of rhythm. Rhythm is also found in music and math. Reviewing with students what rhythm is in music and pattern in math will help them further to make connections to previous knowledge. In order to go beyond the elementary classroom an art educator must have a better understanding of what rhythm is and ways in which to teach the concept to students of all ages.

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