Ω Curve: A Prototype for Explosive Dynamic Forces in Visual Art

By Lampo Leong, Ph.D.

[Abstract] Adopting the theoretical assumptions and research methodology of formalist aesthetics, this study identifies a common stylistic and compositional pattern of "Ω Curve" as a consistent element enabling works of visual art to attain a greater sense of grandeur, loftiness, monumentality, and explosive dynamic forces. Such hypothesis is theoretically supported by the research of Kandinsky and Arnheim, and further reinforced by scientific indications and experiments. Combining visual analysis with critical theory and aesthetics, this investigation: 1) makes a contribution toward depth and specificity to contemporary art theory and formalist studies; 2) offers a unique insight into the creative process, contributes to the understanding of visual art on a profound level; and 3) provides inspiration to artists wishing to strengthen the visual impact and expressive power of their work in any visual art media.

[Keywords] "Ω curve", formal aesthetics, grandeur, loftiness, monumentality, explosive dynamic forces

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When we study a piece of art, we often concentrate on the content of the work rather than the form or the process of creating the work. We frequently found that educational materials tend to provide information such as the biographic data and life story of the artists, the subject matter (or the story behind the subject matter) of the work, the conceptual aspects, the influences, the cultural relevance, as well as the social and historical impact of the work. However, hardly mentioned are the formal aspects of the work, such as how the work is produced (procedures), the media used, techniques employed, image manipulation, and studied decisions of color and composition. While content analyses are very important and contribute greatly to the understanding of the work, nevertheless, conceptual elements are often not the only issues an artist has in mind when he/she is creating a piece of work. The idea and content of the work need to be tied in and carried out by a series of formal decisions made by the artist during the creative process. Since form and content are inseparable, missing the understanding of either would prevent a full appreciation of the work; therefore, *formal* analysis along with *content* analysis ought to be an integral part of the study. As an example of the kind of formal analysis that I believe would shed light on the creative process and provide a deeper understanding to the art, I, here within, offer a case study of the "Ω Curve" to demonstrate how a common compositional pattern hidden in visual art could possibly contribute to the formation of a particular expression in art.

1 Hidden Patterns in Art that May Provide a Specific Expression

Formalistic aesthetics or formalism is the study of art through the analysis of form—the way the works are made. In painting, for example, formalism emphasizes elements such as color, line, shape (pattern), composition, and texture rather than the historical, cultural and social context. The concept of formalism can be traced back to antiquity and has had many stages of development over the years. Today, formalistic analysis remains one of the most important tools for people to gain in-depth understanding of art and, as such, it deserves further development in the 21st century.

Composition is a very important element in painting and drawing; how the images are arranged on the picture plane directly affect the outcome of the work. There may even be hidden patterns created by the artist and embedded within the work, which provide the viewers with particular feelings. Featured in this research is an exploration of a particular compositional pattern with an intended expression in order to demonstrate the intimate relationship between form and content. This study will be a good example of just how and why this kind of analysis might help audiences appreciate artworks from a very different perspective and thus provide a better understanding of the work.

Let's take a look at the label that explains Anselm Kiefer's *The Sixth Trumpet* (Figure 1) in a museum: "The monumental size of Kiefer's work echoes its grand themes. Whether he is addressing German history or more universal topics, the artist deliberately takes advantage of giant scale to depict imposing structures, cavernous interiors, and vast landscapes. Here, a sea of dark rain pours from an open sky. Rolling hills snake toward the horizon, and deep cuts in the ground suggest furrowed land waiting to be planted. These elements conjure up many associations: a desert, a pasture, or a war-torn countryside. In the biblical prophecy of the Apocalypse, an angel sounds the sixth trumpet to signal the release of a cavalry that destroys a third of humankind. Kiefer's rendition suggests parallels with modern military action, but the sunflower seeds swarming in the sky offer a potent symbol of hope. Seeds betoken life and regeneration; the correspondence between heaven and earth in this work is echoed through the falling of real seeds onto the arid painted landscape: a vivid evocation of Kiefer's faith in the possibility of rebirth even after massive devastation has occurred." [1]

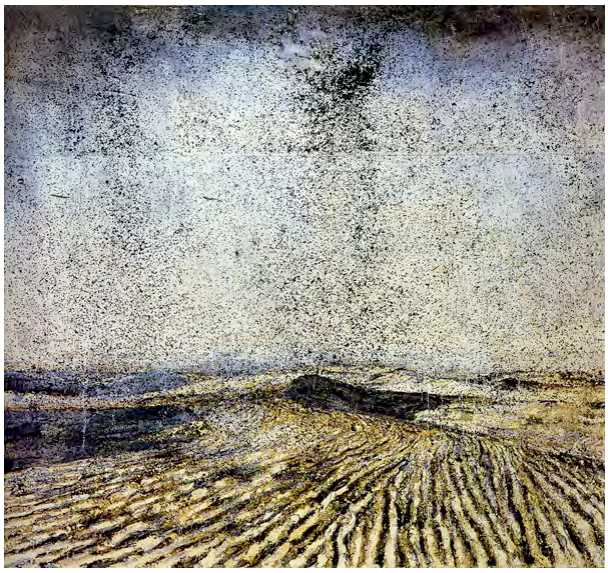

Figure 1 • Anselm Kiefer: *The Sixth Trumpet*. Emulsion, acrylic, shellac, and sunflower seeds on canvas, 520 x 560cm, 1996, Collection of the San Francisco Museum of Modern Art, USA

This kind of description is very typical of art educational materials, and, while the explanation is wonderful in that it provides profound meaning to the work, nevertheless, the

[1] *About the Artwork,* San Francisco Museum of Modern Art, San Francisco, USA, http://www.sfmoma.org/explore/collection/artwork/22317 (Accessed 8/11/2013).

formal elements of the work and how the artist achieved such meaning or expression through specific manipulation of the image is hardly mentioned, other than the symbolism of sunflower seeds.

One must wonder if the sunflower seeds had not been arranged this way, but had been only stuck to the ground, would the same symbolic meaning have been achieved? It should, according to the description, but probably not! Then, how is the meaning achieved? Upon a close observation, we found that Kiefer's pictorial arrangement is very special in this work: the foreground seems to follow a view of single-point perspective to create the depth of a wild field; but not too far into the distance, the dark slope in the mid-ground leaps up and blocks the view, so the composition starts to jump upward and the field seems to flow upward connecting to the particles falling from the sky. The upper and side edges of the sky are painted quite dark, framing the sky and making the bright lights radiate from the canvas. For a traditional landscape painting, the clouds in the sky that form the lighter Ω-like shape in the center of the canvas would be considered too dark. However, it is exactly because of this spatial and compositional arrangement that the picture plane is flattened and the background is tilted forward, thus rendering a strong sense of overwhelming power and energy descending from the heaven. Standing in front of this very large, over seventeen feet square painting, audiences inevitably gain the feeling of grandeur and monumentality, together with the hope and evocation of rebirth that Kiefer's work embodies.

Obviously, this formalistic analysis provides viewers with a very different way of understanding the work, not from the symbolic meaning of the material employed, such as sunflower seeds, but from the series of painterly decisions regarding the relationship between the sky and the barren field. My evaluation is that the utter vitality and the ensuing sense of hope is generated by the glowing and expanding light in the middle of the canvas and the upward-leaping motion of the composition from the earth to the sky, no matter that the falling rain is compiled with the symbolic sun flower seeds or not. Visitors in the museum would most likely not be able to recognize that the particles on the sky are sunflower seeds unless they get up to this seventeen-feet-high painting to see the particles. I believe that the shape of Ω curve in the composition contributes greatly to the dynamic force and the sense of hopefulness in the work.

One must wonder, is this a single case or is the Ω curve a common pattern in art that could help generate this kind of power? Let's examine another masterpiece.

Figure 2 is a section of Michelangelo's fresco *The Last Judgment* behind the altar of the Sistine Chapel. At the center above the clouds stands the muscular, powerful, and dignified Savior Jesus Christ, who raises his arm to signify the start of the final and eternal judgment by God of all humanity. Behind him a cluster of onlookers, together with an orange halo, encircles the two central figures into a Ω-shaped space, the focal center of the entire mural. Again, a strong sense of energy generates from this center and expands outward, first spreading to the second layer of the Ω shape formed by the twelve apostles and prominent saints crowded around Christ. In addition, all the people around Jesus are looking toward him, therefore creating a directed tension and a radiation of energy from Christ through their implied line of sight. Moreover, the cohesion of the crowd and the motion of Christ's arm-swing establish a contrast between repression and expansion, making the burst of energy from Jesus emanate to

the entire picture plane and beyond. For centuries, Michelangelo's masterwork has radiated great power and impacted every viewer who has paused in front of the mural.

Figure 2 • Michelangelo: *The Last Judgment* (Detail), Fresco, 1536-1541, Sistine Chapel, Vatican City

So, is the power in the work brought about by the Ω-shaped composition or by other factors? Most certainly it comes from the combination of many elements, nevertheless, we can certainly claim that the Ω-shaped pattern in the composition contributes greatly to engendering the radiating explosive dynamic force in the work.

I could review many more masterpieces in art history to further illustrate this hidden Ω pattern in their compositions, but the question at hand must be how this feeling of grandeur, monumentality, loftiness and dynamic forces is generated in such a pattern.

2 The "Ω Curve" as a Prototype for Dynamic Force in Visual Art

In many masterpieces that convey strong feelings of grandeur and dynamic forces, we seem to be able to distill or extract a subtle shape of "Ω Curve" (Figure 3) in their composition. Through extensive research, I have discovered that the energy in the shape of "Ω Curve" seems able to swell and expand from the center outward and from the bottom upward, thus possibly contributing to the production of explosive dynamic forces in visual art. Therefore, the "Ω Curve" could be identified as a prototype in compositions that could better generate the sense of expanding dynamic force in visual art. This hypothesis can also be supported by many scientific indications and theoretically backed by the research of Kandinsky and Arnheim.

Figure 3 • The pattern of Ω Curve

Figure 4 • Mushroom clouds produced by an atomic bomb explosion

The shape of "Ω Curve" is in fact very similar to some well-known images associated with great power. The best example would be the iconic image of the mushroom clouds produced by a blast of an atomic bomb (Figure 4). If we watch a video of a nuclear explosion, from the formation and

movement of a mushroom cloud, one can see that a great deal of energy is being sucked into the center of the explosion from the bottom, and that the energy is being pushed upward,[2] forming a mushroom shape that keeps rising and expanding. Such imagery has become a symbol of the greatest explosive nuclear power on earth.

Figure 5 • A hot air balloon

The parachute is another example of the Ω shape. Such a device can be used to slow down the motion of a falling object through the atmosphere by creating a drag. The drag is achieved by a parachute's interior space that holds and retains denser air as it falls through the air. The hot air balloon (Figure 5), on the other hand, consists of a Ω-like envelope to capture and contain heated air that could generate enough power to lift the heavy balloon through the air.

Another example on a personal level was an experience we had in a restaurant across from the Guangxi Arts Institute. A group of us were positioned in a space within a hall that had an arch-shaped glass-wall (Figure 6). Since hot air was trapped in that space more so than in the other areas of the restaurant, everyone at our table felt so much hotter while inside the space than when stepping outside of that arch-shaped space into the same dinning hall.

Figure 6 • An arch-shaped space in a restaurant

All these examples in physics demonstrate that the Ω-like shape holds energy better than other geometric shapes. But then, even so, one must ask how can this kind of power or energy be transferred into visual artworks through the use of a Ω shape, since a piece of artwork is generally considered to carry energy visually and not physically? Actually, what is the connection between physical effect and visual effect?

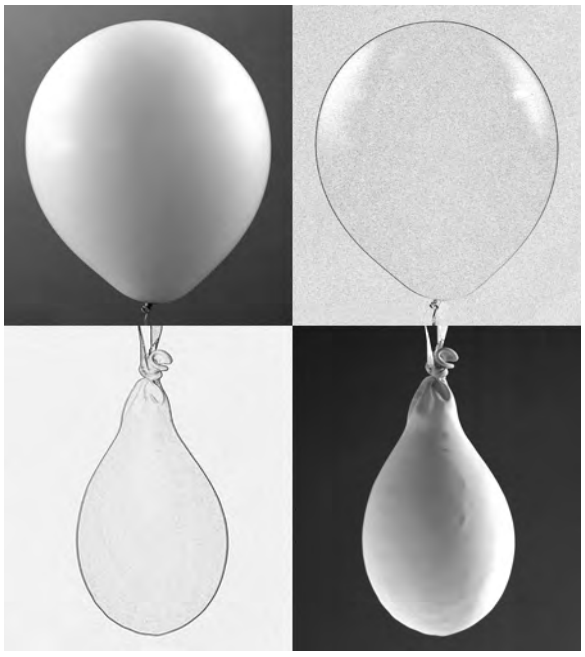

Figure 7 • Comparing the shapes of balloon in different inflation stages, photo and computer generated images

In *Art and Visual Perception: A Psychology of the Creative Eye*, Rudolf Arnheim wrote: "the dynamics is not a property of the physical world, but the stimulus patterns projected upon our retinas can be shown to determine the range of dynamic qualities inherent in the percept. "[3] That is to say, the shape of the object often determines the physical forces that create the

[2] Ester Inglis-Arkell. "Why are atomic bomb clouds mushroom-shaped?" *We come from the future*, io9.com, http://io9.com/5948842/why-are-atomic-bomb-clouds-mushroom+shaped (Accessed 8/9/2013).

[3] Rudolf Arnheim. *Art and visual Perception: A Psychology of the Creative Eye*, Berkeley, CA, USA: University of California Press, 1974, p. 437-438.

object; thus, visual forces can be reflected in the shape of the object, or in the case of visual art, in the image, pattern, or composition.

Let's look at the case of an inflated balloon (Figure 7). A fully inflated balloon is full of energy, the surface is stretched tight, and it can be said that the balloon bursts with great tension and visual force at this stage. But after a few days, the balloon deflates, so it appears weak and tired. Obviously, by that time, the tension or force of the balloon is no longer great. Our sight alone can detect the changes of tension levels in this deflating process because the changes are reflected in the shape of the balloon; we do not even need to measure the level of air pressure with scientific instruments or feel the balloon with our hands to know the difference. Comparing the shapes captured by camera and the curvature generated by a computer program, one can clearly see that the fully inflated balloon has a rounder and fuller body and the curvature is smoother, full of vitality and resilience, while the deflated balloon has a contracted body shape and bumpy surface curve.

After an example from physics demonstrating the relationship between shape and visual force, let's see how a biologist describes the formation of wrinkles in an object and how that relates to visual forces. "Wrinkles form when an applied compressive force acts on a rigid skin that rests on a softer foundation. For example, many fruits have a thin outer skin that surrounds a soft, hydrated interior. When the fruit ages, water is lost from the interior, and the volume of the fruit decreases. Consequently, there is too much skin, which shrinks and forms wrinkles."[4] Obviously, water loss in fruit causes the tension of the cortex to decrease, which produces wrinkles in its form. When wrinkles appear, the tension of the skin, freshness of the fruit, and the visual forces of the object are all reduced (Figure 8). Such change is apparent on the surface indicated by its shape and can be detected by sight. The same principle applies to visual art, in which the dynamic force can be caused by the shape of the image.

Figure 8 • The relationship between skin tension and wrinkles

3 Theoretical Support for the "Ω Curve" as a Prototype for Dynamic Force in Visual Art

Taking the above-mentioned examples from physics and biology, one can see that the dynamic force of an object is, in a way, produced by internal energies expanding from the center of a confined space and reflected on the shape of the object. In visual art, the explosive dynamic forces can also be represented by a pattern that can provide the viewer with the same kind of visual experience – the expansion of power from the center outward in a confined, enclosed or semi-enclosed space. Such description fits the prototype of the "Ω Curve" here within proposed.

[4] Aline F. Miller. "Exploiting Wrinkle Formation," *Science Magazine*, American Association for the advancement of Science, Washington D.C., USA, Vol 317 (August 3, 2007): 605.

There have been a few classic research cases dealing with similar patterns that could be used to support this theory. In the classic book on formalism study, *Point and Line to Plane,* Kandinsky wrote: "[A curve] is really a straight line which has been brought out of its course by constant sideward pressure—the greater was this pressure, the farther went the diversion from the straight line and, in the course of this, the greater became the outward tension and, finally, the tendency to close itself. " [5] In the diagram Kandinsky provided to illustrate his research (Figure 9)[6], we note that while he marked the pressures applied onto both ends of the line, a counter force going upward (or outward) is generated at the center of the line. Kandinsky further explained: "The inner difference from the straight line consists in the number and kind of tensions: the straight line has two distinct primitive tensions which play an unimportant role in the case of the curved line, whose chief tension resides in the arc (third tension, which opposes and out-sounds the others). While the piercing quality of the angle disappears, there is still greater force confined here which, even though it is less aggressive, has greater endurance concealed with it. Something thoughtlessly youthful exists in the angle while in the arc is a mature energy, rightfully self-conscious." [7] It appears that Kandinsky already noticed that the tension in the straight line is different from the tension in the arc, even though he did not give a specific name to the kind of tension he found but only listed it as "the third kind of tension." Nevertheless, through the descriptions he gave such as "there is still greater force confined here," "has greater endurance concealed with it," and "in the arc is a mature energy," we can feel that what he described is very similar to what is being described here in the Ω shape — some kind of explosive dynamic force resides in this curve. One can say that Kandinsky's schema is an early stage of the prototype for explosive dynamic force.

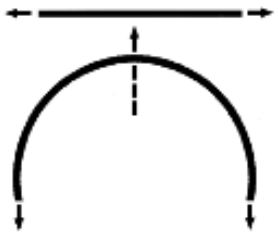

Figure 9 • Kandinsky: Tensions of straight and curved lines

Rudolf Arnheim's research in 1974 seems a bit more specific and scientific. He studied dynamic force and directed tension through experiments with gamma motion. In *Art and Visual Perception: A Psychology of the Creative Eye,* he wrote: "The so-called gamma motion comes about when objects suddenly appear or disappear. A traffic light flashing on at night seems to expand from its center toward the outside in all directions.... Experiments have shown that this motion varies with the shape and orientation of the object. It occurs essentially along the axes of what I called the

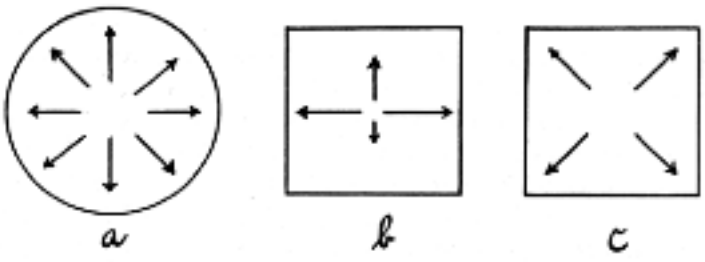

Figure 10 • Arnheim: Directed tensions perceived in gamma motion

[5] Wassily Kandinsky. *Point and Line to Plane.* Translated by Howard Dearstyne and Hilla Rebay, New York, NY, USA: Dover Publications, Inc., 1979, p. 79.

[6] Wassily Kandinsky. *Point and Line to Plane.* Translated by Howard Dearstyne and Hilla Rebay, New York, NY, USA: Dover Publications, Inc., 1979, p. 80.

[7] Wassily Kandinsky. *Point and Line to Plane.* Translated by Howard Dearstyne and Hilla Rebay, New York, NY: Dover Publications, Inc., 1979, p. 79.

structural skeleton of the pattern or, to use Edwin B. Newman's language, along the lines of force. It issues from a vaguely circular central spot and, in a disk-shaped object, radiates in all directions. A square or rectangle unfolds in the directions of its sides...." [8]

From the diagrams that Arnheim uses to illustrate the directions and forces that the gamma motion generate (Figure 10), we can reasonably conclude that even though he was discussing "directed tension" in the book, he was actually talking about explosive dynamic forces. Wordings that he selected were something like these: "through the outward shooting of its corners," "strike energetically outward and upward," and "a violent upward thrust of the apex from the base." [9] Such descriptions are normally used to describe the concept of an explosion or some sort of powerful radial energy shooting from the center outward or from the base upward. Apparently, Arnheim was also describing the visual effect of an explosive energy though in his book, he did not actually use such a term.

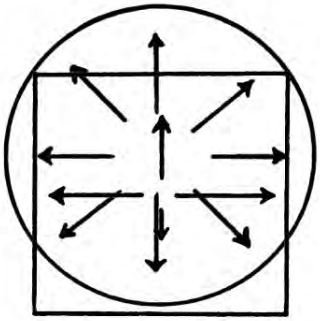

Figure 11 • Combination of Arnheim's square and circle diagrams for gamma motion, schema created by the author

In fact, it is easy to see that the diagrams that both Kandinsky and Arnheim used to illustrate dynamic forces were very similar to each other and very similar to the "Ω shape" I proposed. Kandinsky applied pressure on both ends of a straight line and bent the line downward to form an arc shape that is over half of the circle, while Arnheim's paradigm was an elliptical arc shape with energy expanding from the center outward. Most notably, if we combine the square and the circle (Figure 11) that Arnheim used for demonstrating gamma motion, we can see more clearly the similarity between his suggested prototype and the "Ω Curve".

Regrettably, the research by both Kandinsky and Arnheim stopped at the level of diagrams and was never linked to any specific artwork with the prototype, though both of them realized that their studies should not stop at such a stage. Arnheim wrote: "up to now the procedure seems to have been applied experimentally only to a very few, elementary patterns. It would be in the interest of psychologists and artists alike if these studies were continued with more complex shapes and configurations." [10]

4 Definition and Parameters for the Proposed "Ω Curve"

Even though studies from physics, biology, formalistic aesthetics, and psychology all indicate that a shape similar to the "Ω Curve" could provide greater dynamic forces than other shapes, a more explicit definition for the "Ω Curve" as a prototype for explosive dynamic forces needs to be formulated and its specific parameters set. Since the clearest and most typical

[8] Rudolf Arnheim. *Art and visual Perception: A Psychology of the Creative Eye*, Berkeley, CA, USA: University of California Press, 1974, p. 438-439.

[9] Rudolf Arnheim. *Art and visual Perception: A Psychology of the Creative Eye*, Berkeley, CA, USA: University of California Press, 1974, p. 439.

[10] Rudolf Arnheim. *Art and visual Perception: A Psychology of the Creative Eye*, Berkeley, CA, USA: University of California Press, 1974, p. 440.

manifestation of the “Ω Curve” shape is in line art, it is, thus, that Chinese calligraphy by an ancient master is used here as illustrations for the discussion of the specifications.

1) The "Ω Curve" is an arc greater than that of a half circle, and when possible, it should be oval rather than circular (Figure 12-F, E, and B).

2) The "Ω Curve" should emphasize the angularity of the turns when possible; that means it should be a curved line combined with angular turns (Figure 12-A, C and D).

3) The "Ω Curve" has direction, the upward shape being the most common and carrying the most energy; tilted left or right is often seen but the downward pattern may carry less force (compare the "Ω Curve" between Figure 12-F and 12-C).

4) Often, there are straight lines or angular lines nearby or at the bottom of the "Ω Curve" in order to create greater contrast between a curved line and a straight line (Figure 12-A, D, and E). Moreover, wherever possible, the bottom shape may be emphasized as a straight line, but this situation happens more so in paintings than in calligraphy since calligraphy is very restricted by the particular shape of a specific character.

Figure 12-ABCDEF • Huaisu: *Autobiography*, Details, Lines marked by author

5) Near the "Ω Curve", there may be a secondary curved line bending in the opposite direction to counterbalance the major arc shape (Figure 12-C, D, and E).

6) When creating an "Ω Curve" shape in Cursive Chinese calligraphy or an ink painting, the tip of the brush often remains in the center of the line to ensure a more rounded and smooth curvature for fuller strength and energy.

The assorted details selected from Huaisu’s *Autobiography* (Figure 12), a masterpiece from the Tang Dynasty, and the white geometric marks added to the pictures for comparison clearly highlighted how Huaisu took advantage of the shape of "Ω Curve" in order to provide greater strength for his calligraphy. Similarly, such strategy can also be applied to other visual art forms in the shape of the image and/or overall composition.

5 Advantage of the "Ω Curve" Over Other Basic Geometric Shapes

After establishing the basic theory and setting the parameters for the "Ω Curve," further research on why the shape of "Ω Curve" is able to provide a more powerful dynamic force than any other basic geometric shape needs to be conducted. I believe that a comparative study would be helpful to reveal the unique characteristics and the advantages of the "Ω Curve."

1) A curved line presents greater force than a straight line because a curve "has greater endurance concealed with it." [11] For example, we notice that almost all the bridges employ the arc shape. Even without going into the reasons of physics, we feel that a flat bridge just doesn't look right as it gives us the impression that it might collapse soon.

2) An arc shape has a stronger visual force than a circle. As we mentioned earlier, in a circle, the body is full, complete and stable, the forces are radiated from the center evenly to all directions, therefore, offsetting each other and resulting in a static balance. But an arc is very different; it has a gap, no longer perfect, not as stable, as if still in the process of formation, and thus the sense of movement is enhanced. Moreover, since the arc has a sense of direction, the forces are not distributed evenly in all directions, but, rather, flow from the flat base toward the top, although sometimes its substrate is recessive.

3) An oval conveys a stronger force than a circle. "Compared with the circle, the oval pays with a loss of centric symmetry for an increase in tension," [12] wrote Arnheim in *The Power of the Center: A Study of Composition in the Visual Arts*.

4) The "Ω Curve" transmits more dynamic force than an arch. When we talk about "Ω Curve", people often think of an arch. Indeed, there is similarity between the two; however, there also exist many subtle differences that make the "Ω Curve" exhibit greater forces than an arch. Normally, an arch is half of a circle, but a "Ω Curve" is larger than a half circle. And since the lower curve bends inward, the curvature is increased, making the shape a more confined space for containing energy and pushing the energy toward the top. In addition, when we think of an arch, we generally do not emphasize the role of the bottom edge and mostly pay attention to the upper section of the shape. In the case of the "Ω Curve", the bottom edge is an integral part of the shape. Whenever possible, we tend to emphasize the straight line and the angular arrows at the bottom; such components create a pattern that contains a sharp contrast between the round and the angular. More importantly, the straight bottom edge provides a solid base for the Ω shape and, with such a substrate, visual tension is made to bounce to the top.

In short, the "Ω Curve" is a shape that combines roundness and angularity. It possesses the mature and elastic qualities of a curve, while at the same time, the strength and sharpness of straight line and arrows on the base. It surely presents a greater explosive dynamic force when comparing it to other basic geometric shapes and provides a much stronger feeling of grandeur and monumentality.

Conclusion

Adopting the theoretical assumptions and research methodology of formalist aesthetics, this study identifies a common stylistic and compositional pattern of "Ω Curve" as a consistent element enabling works of visual art to attain a greater sense of grandeur, loftiness, monumentality, and explosive dynamic forces. Such hypothesis is theoretically backed by the

[11] Wassily Kandinsky. *Point and Line to Plane.* Translated by Howard Dearstyne and Hilla Rebay, New York, NY, USA: Dover Publications, Inc., 1979, p. 79.

[12] Rudolf Arnheim. *The Power of the Center: A Study of Composition in the Visual Arts*, Berkeley and Los Angeles, California, USA: University of California Press, 1988, p. 88-89.

research of Kandinsky and Arnheim and further reinforced by scientific indications and experiments. The kind of formal and stylistic analysis conducted earlier in this article for the works of Kiefer and Michelangelo is grounded in solid foundation, and most certainly, such analysis could provide a unique insight into the creative process, and, thus, contribute to the understanding of art on a profound level. Accordingly, developing research that addresses both form and content in art, as well as the inter-connection between them, would offer a well-rounded perspective aimed at enhancing the viewers' experience and appreciation of the work. On the other hand, the research conclusions reached here can provide inspiration to artists who wish to strengthen the visual impact and expressive power of their work in any visual art media. Therefore, it is my hope that, by combining visual analysis with critical theory and aesthetics, this investigation makes a contribution toward depth and specificity to contemporary art theory and formalist studies.

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